

## A Revision of the Australian Funnel-web Spiders (Hexathelidae: Atracinae)

MICHAEL R. GRAY

Australian Museum, 6 College Street, Sydney NSW 2010, Australia  
mikegray7@optusnet.com.au

**ABSTRACT.** The Australian funnel-web spiders of the subfamily Atracinae are revised. The Atracinae are divided into three genera—*Atrax* O.P.-Cambridge with three species (two new), *Hadronyche* L. Koch with 31 species (18 new), and *Illawarra* n.gen. with one new species. *Hadronyche* is divided into four species groups—the *lamingtonensis*, *adelaidensis*, *infensa* and *cerberea* groups. Fourteen previously described species are redescribed or diagnosed. Twenty one new species are described: *Atrax sutherlandi* n.sp., *A. yorkmainorum* n.sp., *Illawarra wisharti* n.sp., *Hadronyche alpina* n.sp., *H. emmalizae* n.sp., *H. marracoonda* n.sp., *H. monaro* n.sp., *H. tambo* n.sp., *H. nimoola* n.sp., *H. mascordi* n.sp., *H. jensenae* n.sp., *H. orana* n.sp., *H. lynabrae* n.sp., *H. kaputarensis* n.sp., *H. levittgreggae* n.sp., *H. macquariensis* n.sp., *H. walkeri* n.sp., *H. raveni* n.sp., *H. lamingtonensis* n.sp., *H. annachristiae* n.sp. and *H. monteithi* n.sp. Two species described from Melanesia, *H. hirsuta* Rainbow and *Styphlopis insularis* Rainbow, are regarded as *nomen dubia*.

GRAY, MICHAEL R., 2010. A revision of the Australian funnel-web spiders (Hexathelidae: Atracinae). *Records of the Australian Museum* 62(3): 285–392.

### Contents

Taxonomic history.....	288
Material and methods.....	289
Notes on descriptions.....	289
Abbreviations.....	290
Systematics.....	290
Family Hexathelidae Simon.....	290
Subfamily Atracinae Hogg.....	290
Comments on morphology.....	292
Keys to Atracinae.....	294
Key to genera.....	294
Key to <i>Atrax</i> species.....	294
Key to <i>Hadronyche</i> species.....	294
<i>Atrax</i> O.P.-Cambridge.....	297
<i>Atrax robustus</i> O.P.-Cambridge.....	299
<i>Atrax yorkmainorum</i> n.sp.....	302
<i>Atrax sutherlandi</i> n.sp.....	304
<i>Illawarra</i> n.gen.....	308
<i>Illawarra wisharti</i> n.sp.....	308

<i>Hadronyche</i> L. Koch.....	311
<i>cerberea</i> species group.....	312
<i>Hadronyche cerberea</i> L. Koch.....	312
<i>Hadronyche versuta</i> (Rainbow).....	316
<i>Hadronyche emmalizae</i> n.sp. ....	319
<i>Hadronyche formidabilis</i> (Rainbow).....	322
<i>Hadronyche alpina</i> n.sp. ....	326
<i>Hadronyche venenata</i> (Hickman).....	329
<i>Hadronyche marracoonda</i> n.sp. ....	332
<i>Hadronyche tambo</i> n.sp. ....	335
<i>Hadronyche monaro</i> n.sp. ....	337
<i>Hadronyche mascordi</i> n.sp. ....	339
<i>Hadronyche nimoola</i> n.sp. ....	342
<i>Hadronyche modesta</i> (Simon) .....	346
<i>Hadronyche meridiana</i> Hogg .....	348
<i>Hadronyche jensenae</i> n.sp. ....	351
<i>Hadronyche pulvinator</i> (Hickman).....	354
<i>infensa</i> species group .....	355
<i>Hadronyche infensa</i> (Hickman).....	355
<i>Hadronyche orana</i> n.sp. ....	358
<i>Hadronyche valida</i> (Rainbow & Pulleine) .....	361
<i>Hadronyche lynabrae</i> n.sp. ....	364
<i>Hadronyche kaputarensis</i> n.sp. ....	367
<i>Hadronyche macquariensis</i> n.sp. ....	368
<i>Hadronyche walkeri</i> n.sp. ....	371
<i>Hadronyche levittgreggae</i> n.sp. ....	374
<i>lamingtonensis</i> species group .....	377
<i>Hadronyche raveni</i> n.sp. ....	378
<i>Hadronyche lamingtonensis</i> n.sp. ....	379
<i>Hadronyche annachristiae</i> n.sp. ....	381
<i>Hadronyche monteithi</i> n.sp. ....	383
<i>Hadronyche anzses</i> Raven .....	384
<i>adelaidensis</i> species group.....	385
<i>Hadronyche flindersi</i> (Gray).....	385
<i>Hadronyche adelaidensis</i> (Gray) .....	386
<i>Hadronyche eyrei</i> (Gray) .....	387
References.....	390
Appendix 1.....	391
Appendix 2.....	392

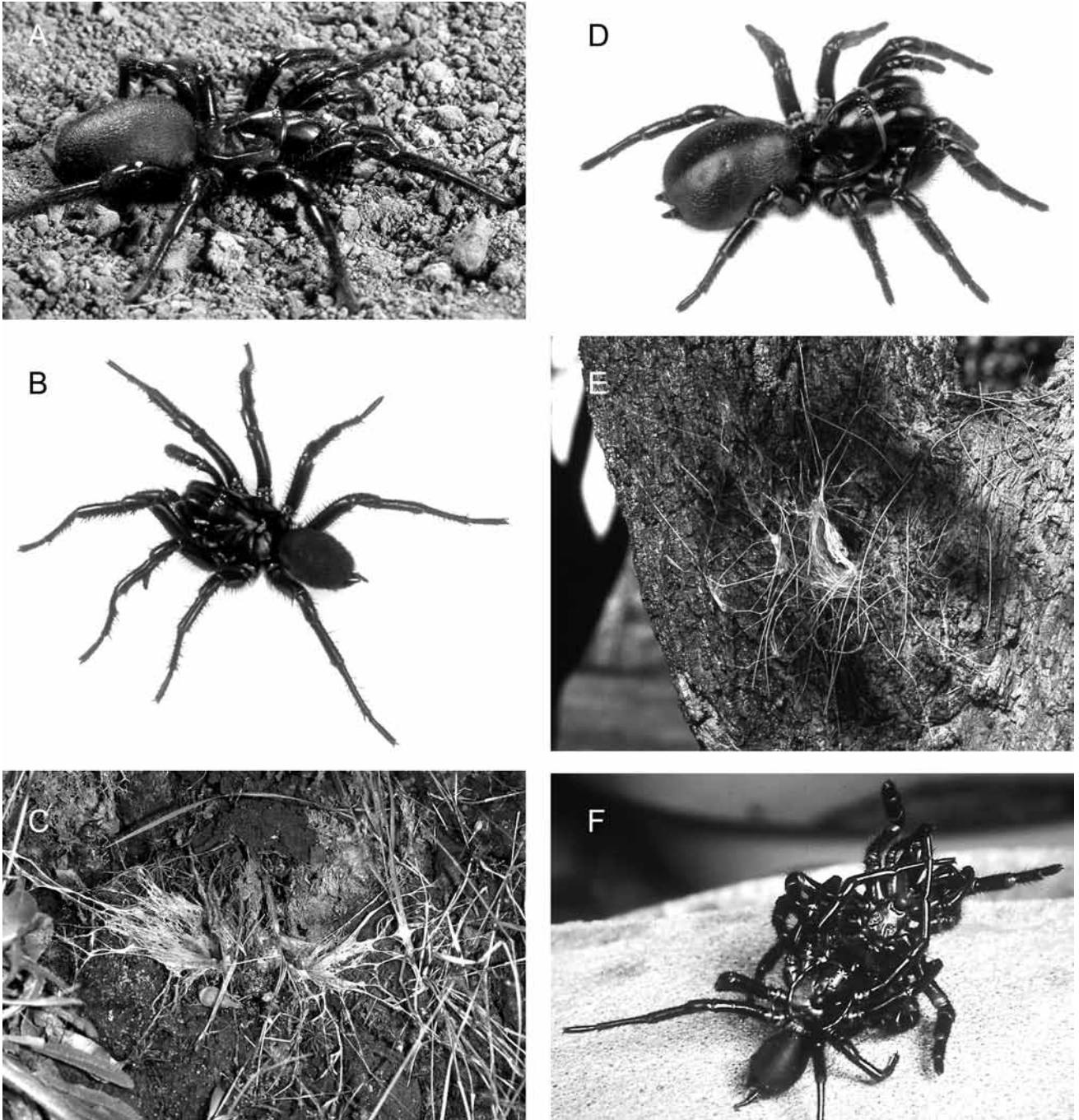
The atracine spiders include some of the most venomous animals in the world. They have been responsible for many serious envenomations and at least 13 deaths in Australia (Sutherland & Tibballs, 2001). Much of their notoriety can be attributed to a single species, *Atrax robustus* O.P.-Cambridge, 1877, better known as the Sydney funnel-web spider.

Fourteen valid atracine species have been described previously (Table 1)—the first by L. Koch (1873) as *Hadronyche cerberea*. Work by Gray (1986) resulted in preliminary reports on atracine spider relationships and distribution (Gray, 1987, 1988). This publication provides the first taxonomic revision of the group. It includes re-descriptions of valid genera and species, and descriptions of a new genus (*Illawarra* n.gen.) and twenty-one new species (*Atrax sutherlandi* n.sp., *A. yorkmainorum* n.sp., *Illawarra wisharti* n.sp., *Hadronyche alpina* n.sp., *H. emmalizae* n.sp., *H. marracoonda* n.sp., *H. monaro* n.sp., *H. tambo* n.sp., *H. nimoola* n.sp., *H. mascordi* n.sp., *H. jensenae* n.sp., *H. orana* n.sp., *H. lynabrae* n.sp., *H. kaputarensis* n.sp., *H. levittgreggae* n.sp., *H. macquariensis* n.sp., *H. walkeri* n.sp., *H. raveni* n.sp., *H. lamingtonensis* n.sp., *H. annachristiae* n.sp., *H. monteithi* n.sp.). A full list of atracine species is given in Appendix 1. Recent genetic studies (e.g., Beavis &

Rowell, 2006) and morphological observations suggest that many more species await characterization.

Valid distribution records of atracine spiders are limited to eastern Australia, including Tasmania and the Gulf region of South Australia—the Eyre Peninsula marks the current western limit of the group (Fig. 2; Gray, 1987). The description of *Hadronyche anzses* Raven, 2000 from the Mosman region in north Queensland greatly extended knowledge of the northern distribution of the group from its former known limits in southeastern Queensland.

The Atracinae are typically a moist-adapted forest dwelling group, but they can be found in habitats ranging from montane herbland and open woodland to closed forest. Most species are ground dwellers that occupy burrow retreats in sheltered microhabitats—under rocks and logs, inside rotting logs and stumps, and on stable, vegetated or mossy soil banks (Fig. 1C). Ground burrowers often make use of natural soil crevices such as rotted root channels. At least two species (*H. cerberea* and *H. formidabilis* [Rainbow, 1914]) are associated with standing trees, their retreats occupying trunk holes resulting from branch fractures or borer damage, as well as the rotted internal pipes of older trees (Fig. 1E). Most atracine spider retreats are characterized



The original caption has been corrected by the author on this replacement page. The original PDF of the entire work (dated 25 November 2010) has been replaced by the present PDF (dated 7 August 2012) which has the replacement page inserted [Editor, 7 August 2012].

Figure 1. (A) *Atrax robustus*, female; (B) *A. robustus*, male; (C) *Hadronyche macquariensis* n.sp., burrow with two entrances on soil bank; (D) *H. versuta*, female; (E) *H. cerbera*, single entrance retreat in rot-hole on tree trunk (*Casuarina* sp.); (F) *H. formidabilis*, mating (photo: P. Walker).

by the presence of silk trip-lines radiating out from a silk entrance sheet (Fig. 1E). The entrance tunnel (typically one to three) usually has a crescentic opening with the surface part of the silk lumen more or less collapsed when not in use—perhaps as a predator deterrent. A few, more specialized atracine species have burrow entrances opening within the litter layer, and they lack any trip-lines. These species include *Illawarra wisharti* n.sp., and the “*adelaidensis* group” species of *Hadronyche*—the latter species are unique in having an internal burrow chamber with a trapdoor (Main,

1967; Gray, 1984). Biological data on atracine spiders are mostly anecdotal (e.g., McKeown, 1963) or associated with field collecting observations (Main, 1976; Gray, 1986), apart from a few studies by Levitt (1961), Bradley (1993) and Wishart (1993). Of particular interest are atracine eco-evolutionary studies by Cooley (1989) on diet related character displacement in sympatric species, Woodman *et al.* (2006) on climatic impacts on saproxylic habitats and demography of associated atracines, and a genetic phylogeographic study by Beavis & Rowell (2006).

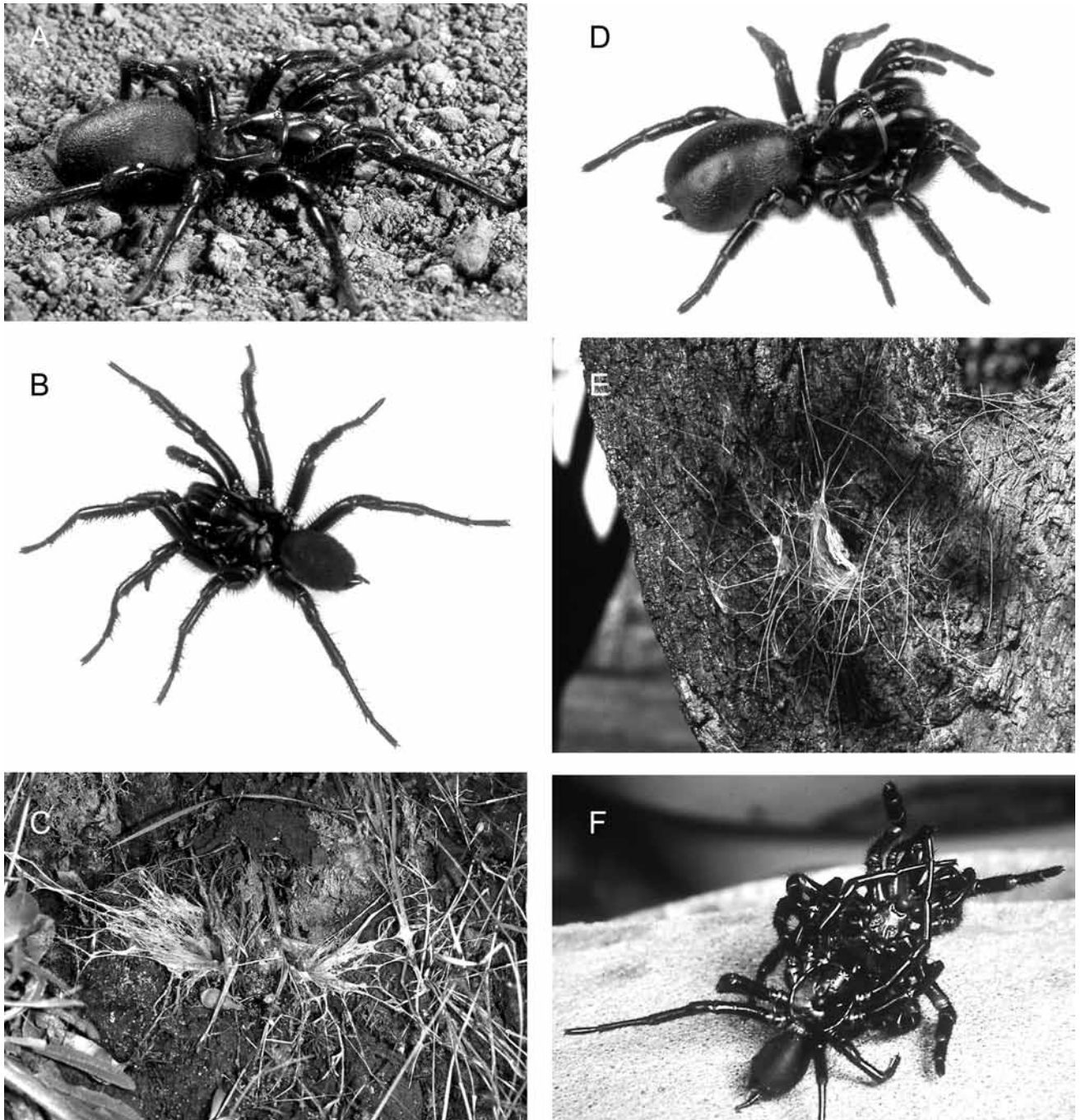


Figure 1. (A) *Atrax robustus*, female; (B) *Hadronyche versuta*, female; (C) *A. robustus*, male; (D) *H. cerbera*, single entrance retreat in rot-hole on tree trunk (*Casuarina* sp.); (E) *H. macquariensis* n.sp., burrow with two entrances on soil bank; (F) *H. formidabilis*, mating (photo: P. Walker).

by the presence of silk trip-lines radiating out from a silk entrance sheet (Fig. 1E). The entrance tunnel (typically one to three) usually has a crescentic opening with the surface part of the silk lumen more or less collapsed when not in use—perhaps as a predator deterrent. A few, more specialized atracine species have burrow entrances opening within the litter layer, and they lack any trip-lines. These species include *Illawarra wisharti* n.sp., and the “*adelaidensis* group” species of *Hadronyche*—the latter species are unique in having an internal burrow chamber with a trapdoor (Main,

1967; Gray, 1984). Biological data on atracine spiders are mostly anecdotal (e.g., McKeown, 1963) or associated with field collecting observations (Main, 1976; Gray, 1986), apart from a few studies by Levitt (1961), Bradley (1993) and Wishart (1993). Of particular interest are atracine eco-evolutionary studies by Cooley (1989) on diet related character displacement in sympatric species, Woodman *et al.* (2006) on climatic impacts on saproxylic habitats and demography of associated atracines, and a genetic phylogeographic study by Beavis & Rowell (2006).



**Table 1.** Atracinae—list of valid taxa, synonyms and transfers.

valid species—current placement (transfers from <i>Atrax</i> to <i>Hadronyche</i> by Gray, 1988)	original name, synonyms and transfers
<i>Hadronyche cerbera</i> L. Koch, 1873 <i>Atrax robustus</i> O.P.-Cambridge, 1877	<i>Hadronyche cerbera</i> L. Koch, 1873 <i>Atrax robustus</i> O.P.-Cambridge, 1877 <i>Euctimena tibialis</i> Rainbow, 1914 (synonymy with <i>A. robustus</i> by Musgrave, 1927). <i>Poikilomorpha montana</i> Rainbow, 1914 (transfer to <i>Atrax</i> by Main, 1985 after Gray, 1978. Synonymy with <i>A. robustus</i> by Gray, 1988).
<i>Hadronyche modesta</i> (Simon, 1891) <i>Hadronyche meridiana</i> Hogg, 1902 <i>Hadronyche versuta</i> (Rainbow, 1914)	<i>Atrax modesta</i> Simon, 1891 <i>Hadronyche meridiana</i> Hogg, 1902 <i>Atrax versutus</i> Rainbow, 1914 <i>Pseudatrax moreaui</i> Rainbow, 1914 (transfer to <i>Atrax</i> by Main, 1985 after Gray, 1978. Synonymy with <i>H. versuta</i> by Gray, 1988). <i>Aname bicolor</i> Rainbow, 1914 (transfer to <i>Atrax</i> by Rainbow & Pulleine, 1918. Synonymy with <i>H. versuta</i> by Gray, 1988).
<i>Hadronyche formidabilis</i> (Rainbow, 1914) <i>Hadronyche valida</i> (Rainbow & Pulleine, 1918)	<i>Atrax formidabilis</i> Rainbow, 1914 <i>Atrax validus</i> Rainbow & Pulleine, 1918. Transfer to <i>Hadronyche</i> by Gray, 1988). <i>Anepsiada ventricosa</i> Rainbow & Pulleine, 1918. Synonymized with <i>A. validus</i> (Gray, in Main, 1985).
<i>Hadronyche pulvinator</i> (Hickman, 1927) <i>Hadronyche venenata</i> (Hickman, 1927) <i>Hadronyche infensa</i> (Hickman, 1964) <i>Hadronyche adelaidensis</i> (Gray, 1984) <i>Hadronyche flindersi</i> (Gray, 1984) <i>Hadronyche eyrei</i> (Gray, 1984) <i>Hadronyche anzses</i> Raven, 2000	<i>Atrax pulvinator</i> Hickman, 1927 <i>Atrax venenatus</i> Hickman, 1927 <i>Atrax infensus</i> Hickman, 1964 <i>Atrax adelaidensis</i> Gray, 1984 <i>Atrax flindersi</i> Gray, 1984 <i>Atrax eyrei</i> Gray, 1984 <i>Hadronyche anzses</i> Raven, 2000
<b>nomen dubia</b> <i>Styphlopis insularis</i> Rainbow, 1913. Solomon Islands. <i>Hadronyche hirsuta</i> Rainbow, 1920. Papua [= Papua New Guinea]. (Listed with comments in Main, 1985).	

## Taxonomic history

Atracine spiders were first described by L. Koch (1873) who erected the genus *Hadronyche* for *H. cerbera* L. Koch, 1873 from Sydney, New South Wales. Four years later O.P.-Cambridge erected a second genus, *Atrax*, for *A. robustus* O.P.-Cambridge, 1877 (locality “Australia”). Both species were described from females. The female syntypes of *H. cerbera* were destroyed during World War II (Main, 1985). The resultant uncertain identity of this species was discussed by Gray (1981, 1986) and *H. cerbera* was fixed as the southern tree funnel-web spider, a species common in the Sydney region.

By 1920, 14 species had been described, some more than once, in no less than eight genera. Of these taxa, only seven species and two genera are now recognized as valid (Table 1). Most species described during that period were based only upon females or, even more uninformatively, juveniles, i.e. generally character poor and taxonomically difficult specimens—and several had suspect locality data. The only species described from male spiders were *H. meridiana* Hogg, 1902 and *Euctimena tibialis* Rainbow, 1914—the latter spider proved to be a male of *Atrax robustus* (Musgrave, 1927). Rainbow (1914) also described the female of *Atrax robustus* as *Poikilomorpha montana* Rainbow (synonymized by Gray, 1988—Table 1).

After 1920, the older generic name, *Hadronyche*, largely fell into disuse (although still listed in catalogues) and Atracinae were associated almost exclusively with the genus *Atrax* (Table 1). This process was facilitated both by

uncertainty about the taxonomic identity of the type species, *H. cerbera*, and the increasing medical notoriety of *A. robustus*. *Hadronyche* was listed in synonymy with *Atrax* by Raven (1980), from which it was implicitly removed by Main (1985) when she listed 11 species in *Atrax* and three in *Hadronyche*. Most of the species listed under *Atrax* in Main (1985) were subsequently transferred to *Hadronyche* (Gray, 1988). All atracine species now regarded as valid have been described from Australia. These species and their synonyms are listed in Table 1. Collection data for two species from Melanesia are regarded as unreliable (Main 1982, 1985).

The relationships of the Atracinae remain uncertain. Simon (1892) placed *Atrax* and *Hadronyche* within his Macrotheleae in the family Dipluridae. His key grouped them with the genera *Macrothele* and *Porrhothele* Simon, 1892 by the presence of labial cuspules. In 1901, Hogg erected the group Atracinae to distinguish these genera from the remaining members of Simon’s Macrotheleae. This distinction was based upon the sternal sigilla (large size and marginal position), presence of three rows of cheliceral teeth and the relatively short apical segment of the PLS.

Raven (1980, 1985) removed Simon’s Hexatheleae from the Dipluridae, elevating it to family status. Within his Hexathelidae he included part of Simon’s Macrotheleae, i.e., those quadrithelinae genera possessing labial cuspules (*Atrax*, *Porrhothele* and *Macrothele* Ausserer, 1871), making the possession of numerous labial cuspules the unifying character for the Hexathelidae. Gray (1988) re-instated the Atracinae, comprising *Hadronyche* and *Atrax* (Atracinae of Hogg, 1901), additionally distinguishing these taxa from

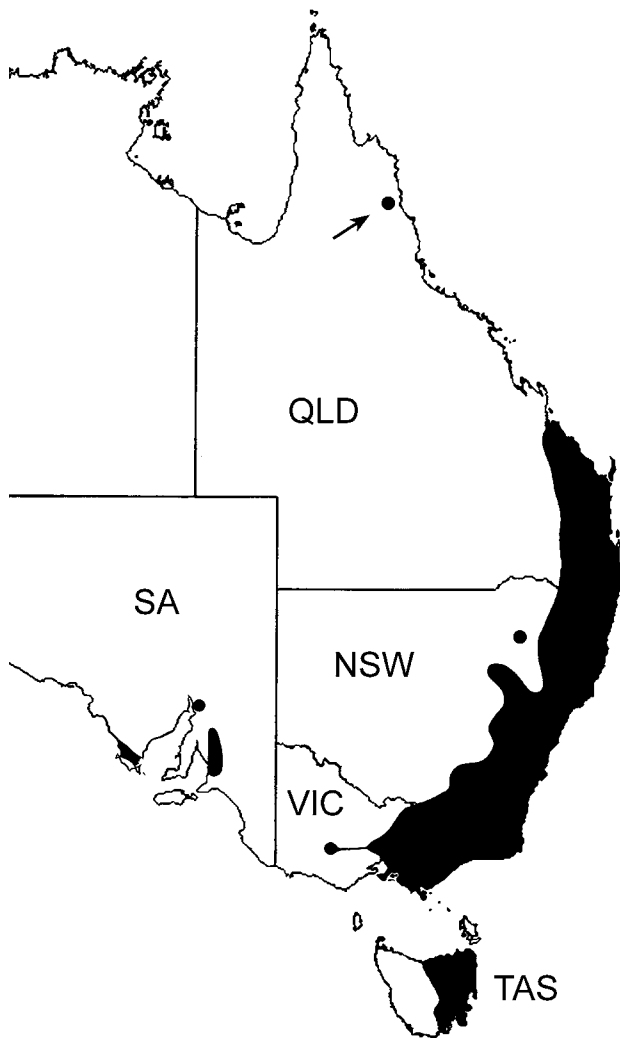


Figure 2. Distribution of atracine spiders in eastern Australia arrow points to locality of *Hadronyche anzses*.

*Porrhothele* and *Macrothele* by the presence of a wider embolus, strong retromarginal cheliceral teeth, maxillary lobe and procurved fovea.

Raven (1985) acknowledged difficulties with the placement of *Atrax* in the Hexathelidae and noted several characters that suggested possible (but less parsimonious) affinity with the Cyrtacheniiidae. Goloboff (1993), in his morphologically based reanalysis of mygalomorph relationships, found weak support for a monophyletic Hexathelidae. A molecular study of mygalomorph relationships (Hedin & Bond, 2006) did not find support for the monophyly of the Hexathelidae—*Atrax* and *Hadronyche* were always recovered as sister taxa but were not associated with other hexathelid taxa. However, as similar anomalies were recorded for several well established families, interpretation of these results is problematic.

## Material and methods

Observations, measurements and illustrations were made using a Wild M5 stereomicroscope with measuring graticle and drawing attachment. All measurements are given in millimetres. Appendage illustrations are of the left hand side unless otherwise stated. Genitalic preparations were made using lactic acid or 4% KOH solution. SEM micrographs were made from ethanol dehydrated specimens, air dried and gold coated.

## Notes on descriptions

Keys are given to atracine genera and species of *Hadronyche* and *Atrax*; *Illawarra* is monotypic. Identification to species requires male specimens.

In the species descriptions given below, measurement/count data given are for the holotype or specified paratype specimens. Additional range, mean and ratio data (which includes the paratype specimens) are given in tables accompanying the descriptions (males) or in Table 34 (females). Qualitative data given in descriptions refers to both holotype and paratype specimens. On a few occasions when type material was not available for re-description, non-type material is described and illustrated. Types, non-type figured or described material and *Other material examined* are listed with the descriptions.

Undescribed species dealt with in Gray (1986, 1987, 1988) were then identified by number codes. These codes are given in Appendix 2 with the corresponding species names allocated here.

*Measurements and counts.* Body, leg and palpal measurement positions are illustrated in Appendix 1. Measurements, counts and ratios given in keys and diagnoses refer to male spiders unless specifically noted as data from females.

*Palpal organ (bulb).* “Tegular area” refers to tegulum/subtegulum region of bulb. Palpal organ measurements, viz., bulb length; bulb width; embolus length and mid-width, plus other bulbal characters, viz. “basal embolus offset from tegulum” and “twisting of distal embolus”, are illustrated in Appendix 1. (Note: palpal orientation should be as shown in Appendix 1 “A”)

*Colour.* Atracine spiders are typically glossy black on the carapace and mat black, often with a plum tinge, on the dorsolateral abdomen. They rarely possess distinctive colour patterning that can be used to characterize species, and melanic pigmentation intensity and distribution may vary intraspecifically (pigment intensity also fades with preservation). In species descriptions any consistent variations in colour pattern are noted.

*Leg spination.* In descriptions, the total spine count per leg segment is given first. This count includes the ventral/retroventral spines (usually the most numerous spine category on the tibia, metatarsus and tarsus), plus any dorsal, prolateral and retrolateral spines present. Counts for the dorsal (d), prolateral (p) and retrolateral (r) spines are given in brackets after the total count. Total spine counts for selected leg segments are given in tables with the descriptions. Patellal counts include total ventral and prolateral dorsal spines, with the latter also numbered in brackets (pd) if present. Tibial and metatarsal counts refer to total ventral or retrolateral ventral (retroventral) spines, including apical ventrolateral spines and prolateral spines; the latter are also given separately in brackets when present.

## Abbreviations

*Morphology.* BulbL—palpal bulb length; BulbW—palpal bulb width; CL—carapace length; CW—carapace width; CFW—carapace anterior width; CH—carapace height; ChGL—cheliceral groove length; ChGW—cheliceral groove width; ChGCT—cheliceral groove central row teeth number; CUSP—labium cuspule number; EmbL—embolus length; EmbmidW—width of embolus at middle; Fe1S—femur I spine number; LL—labium length; LW—labium width; Mt1S—metatarsus I spine number; Mt2S—metatarsus II spine number; Pa1S—patella I spine number; PalpTibL—male palpal tibia length; PalpTibW—male palpal tibia width; PalpFemS—male palpal femur spine number; PalpPatS—male palpal patella spine number; PalpTibS—male palpal tibia spine number; PLSAPL—posterior lateral spinneret apical segment length; PLSAPW—posterior lateral spinneret apical segment width; SL—sternum length; SW—sternum width; Ta1S—tarsus I spine number; Ti1S—tibia I spine number; Ti2S—tibia II spine number; STC—superior tarsal claws; STC2teeth—number of teeth on tarsus II superior claws; Pa3proS—patella III prolateral dorsal spine number.

*Australian political boundaries (states).* Qld—Queensland; NSW—New South Wales; VIC—Victoria; SA, South Australia.

*Repository institutions.* AMS—Australian Museum, Sydney; MNHN—Muséum national d'Histoire naturelle, Paris; NHM—Natural History Museum, London; QMB—Queensland Museum, Brisbane; QVM—Queen Victoria Museum, Launceston; MV—Museum Victoria, Melbourne; SAM—South Australian Museum, Adelaide; TM—Tasmanian Museum and Art Gallery, Hobart; ANIC—Australian National Insect Collection.

*Specimen registration codes.* AMS KS—prefix of Australian Museum, Sydney register numbers; S—prefix of Queensland Museum, Brisbane, register numbers.

## Systematics

### Family Hexathelidae Simon

#### Subfamily Atracinae Hogg

- Macrotheleae (part): Simon, 1892: 182.  
 Atracinae Hogg, 1901: 250; Simon, 1903: 961, 968; Rainbow, 1913: 4, 1914: 252.  
 Pseudotracheae Rainbow, 1914: 258, 259.  
 Poikilomorphae Rainbow, 1914: 260, 162.  
 Anaepsiadiæ Rainbow & Pulleine, 1918: 166; Roewer, 1942: 208.  
 Atraxae Roewer, 1942: 207.  
 Pseudoatraxae Roewer, 1942: 208.  
 Atraxini Bücherl, 1971: 211.  
 Macrothelinae (part): Musgrave, 1948: 77; Gray, 1978: 125; Raven, 1980: 254, 1985: 71, 441.  
 Atracinae.—Gray, 1988: 115.

**Diagnosis.** Atracinae differs from Hexathelinae in having only 2 pairs of spinnerets and from Macrothelinae in having a relatively broad embolic shaft (not spiniform), cheliceral

retromargin with row of large teeth, posterior sternal sigilla large, maxillae with coniform anterior lobe, PLS relatively short, and fovea a transverse groove.

**Description.** Basic colour pattern: carapace, chelicerae and legs dark brown to black, sometimes a lighter reddish brown; carapace with a polished appearance; Abdomen brown to black often with a maroon tint; anterodorsal abdomen with a pair of unpigmented sigilla (often subdivided) which flank a weakly pigmented mid-dorsal patch of cuticle. Posterior to the sigilla are 3–5 pairs of more or less distinct, narrow chevron markings made up of small unpigmented sigilla-like spots. Abdomen with thin cover of dark hairs and bristles. Carapace almost glabrous, with striae, midline and marginal setae. Carapace with caput arched and weakly to strongly raised (Fig. 1A,D). Thoracic margins grooved. Fovea a transverse groove, straight to strongly procurved. Eye tubercle low or absent. Cheliceral groove with promarginal (few in *H. anzses*) and retromarginal tooth rows plus smaller teeth in a central irregular row(s) of variable length of (Figs. 3D, 5F); paturon robust, more so in females, with a distally widening dorsal band of strong dark hairs and bristles and a medial dorsofrontal swelling developed into boss-like protuberance in many *Hadronyche* spp. No intercheliceral tumescence. Fangs with ventrolateral longitudinal keels. Maxillae longer than wide with a strong coniform lobe anteromedially (Figs. 5A, 21E); serrula usually present (absent in *adelaidensis* group), serrula teeth variably clustered on apicodorsal face of maxillary lobe (Fig. 3H); numerous cuspules along medioventral surface of maxilla, dense basally, diminishing toward lobe (Fig. 3H). Labium large, more or less rectangular and rounded anteriorly, varying from clearly wider than long (i.e., relatively short) (Fig. 5A) to about as long as wide (i.e., relatively long) (Fig. 21E). Labial cuspules usually numerous, occasionally relatively few (c. 50–500); cuspules clustered over anteroventral half to two-thirds of labium (Fig. 3E). Labiosternal sigilla typically a wide transverse groove, rarely reduced to a pair of small, lateral sigilla (*H. mascordi*). Sternum ovoid, wide to moderately narrow, six submarginal to central sigilla, anterior pair small, circular, posterior pair large, ovoid. Cuticle with scaliform patterning. Legs moderately to weakly hirsute with longitudinal glabrous strips on dorsal and lateral surfaces. Leg tarsi ventrally spinose, spines usually confined in two lateral rows (Fig. 3A), sometimes with isolated central spines (1–3), rarely with a full central spine row (Fig. 3B). Three tarsal claws, each STC with a sigmoid row of 7–15 strong teeth, ITC with few slender to short teeth; numerous long fimbriated hairs arise at base of claws (Fig. 3F). Tarsal scopulae absent in females, weak to moderate in males, sometimes extending onto distal metatarsus; scopula hairs short, thick, tapering (Fig. 3C). Metatarsal preening combs absent. Male tibiae I and metatarsi I often strongly spinose with spines placed on retroventral and ventral surfaces respectively. Male tibiae II either unmodified with clustered or scattered ventral spines, or weakly sinuous (distoventrally concave) with a ventral spined apophysis or apophyseal swelling. Male metatarsus II either unmodified, or sinuous (proximoventrally concave) with small mid-ventral apophysis. Trichobothria filiform with weakly collariform bothria; in zig-zag row on tarsus, linear dorsal row on metatarsus, double row on tibia. Tarsal organ dome-like, with a few weak concentric ridges. (Fig. 1I). Male palpal patella and tibia more or less swollen (least

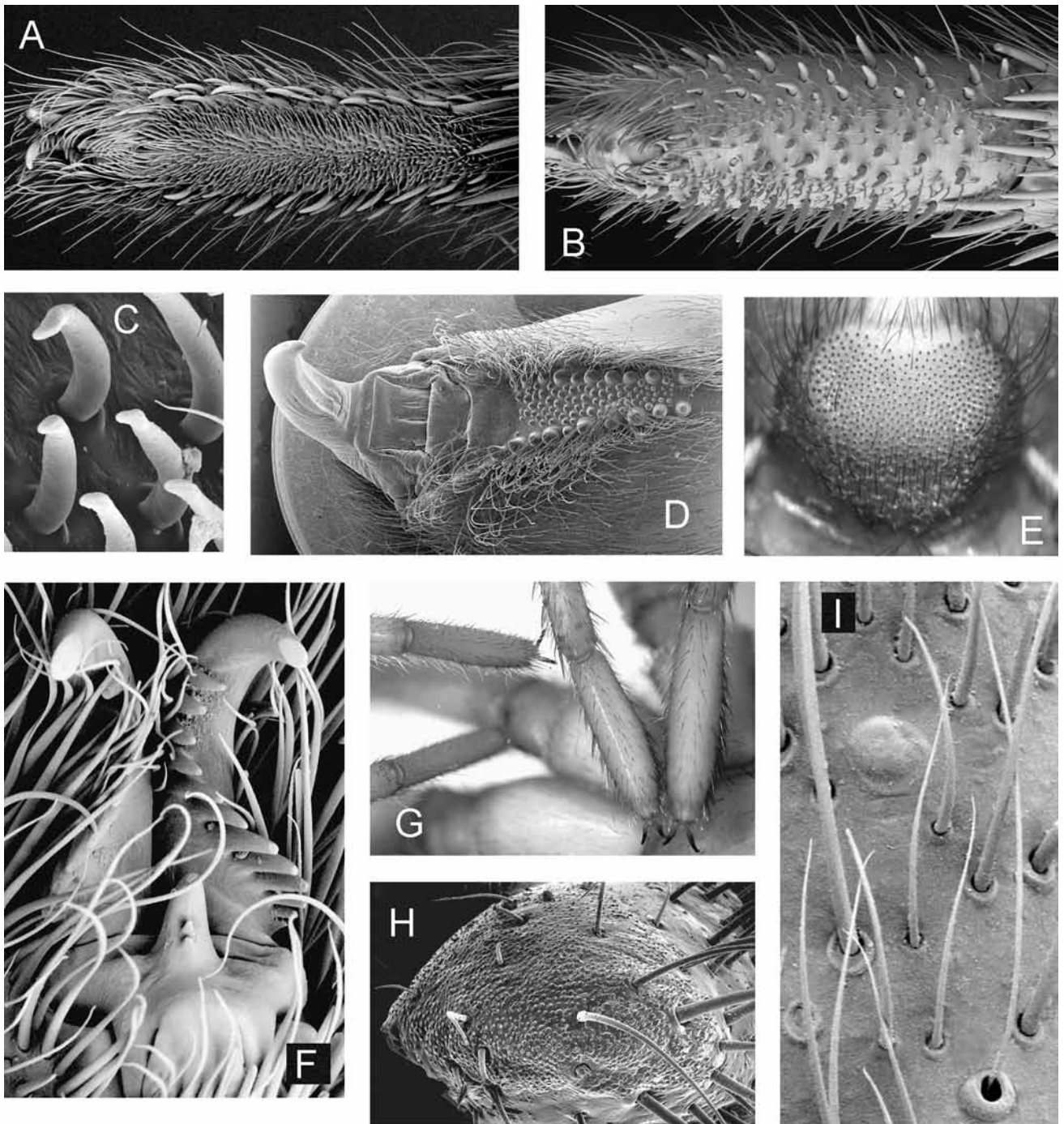


Figure 3. (A) *Hadronyche infensa*, ventral tarsus II, scopula and lateral spine rows; (B) *Illawarra wisharti* n.gen., n.sp., ventral tarsus II with weak divided scopula and medial and lateral spine rows; (C) *H. nimoola* n.sp., scopula setae; (D) *H. versuta*, fang and cheliceral groove teeth; (E) *H. infensa*, labium and cuspules; (F) *H. infensa*, tarsus I, claws, teeth and fimbriated hairs; G, *H. annachristiae* n.sp., male leg tarsi: I, II unmodified (left), III, IV enlarged (right); H, *H. formidabilis*, maxillary serrula; I, *H. tambo* n.sp., tarsus II, distal trichobothrium and tarsal organ.

in some *Atrax* spp.), patella about as wide or wider than the femur; (Figs. 10A, 77A, 100A). Cymbium short, equally bilobed anteriorly, without spines. Bulb with ovoid-pyriform tegular area, a deep, longitudinal groove separating tegulum and subtegulum; groove occasionally broadly open, exposing middle haematodocha (Fig. 102D). Embolus a relatively wide, flattened rod, variable in taper, length and curvature, more or less twisted distally; apical embolus with a broad or

narrow ejaculatory groove with a flange-like lower margin (Figs. 6B, 29B, 59B). Female genitalia with a pair of simple, unilobate spermathecae, often slightly constricted subapically (Figs. 5G, 31H). Four spinnerets. PMS separated by width of basal segment; PLS with long or short digitiform terminal segment, spigots present on all segments; spigot shafts with scaliform patterning. Mating involves leg II embrace—male tibia II/metatarsus II clasping base of female leg II.



**Included genera.** *Hadronyche* L. Koch, 1873; *Atrax* O.P.-Cambridge, 1877; *Illawarra* new genus

**Distribution.** Eastern Australia, including Tasmania (Fig. 2).

**Melanesian species of uncertain status.** Two atracine species have been described from Melanesia—*Styphlopis insularis* Rainbow 1913 from the Solomon Islands (AMS KS993); and *Hadronyche hirsuta* Rainbow 1920 from Papua (Chevert Expedition) (KS992). These species are regarded here as *nomen dubia* (Table 1). Both were described from large female specimens that are attributable to the genus *Hadronyche*. Female atracines mostly lack defining specific characters, but the presence of a relatively long labium suggests that both species could be placed in either the *infensa* or *cerberea* species groups. At present, these species groups are known only from southeastern Australia. Although atracine spiders were recently found in northeastern Australia (Mosman region), they belong to a different, highly distinctive species group. Neither melanesian species has been validated by subsequent collecting and no other atracine species have been recorded outside Australia. Consequently, both species are regarded here as mislocated, possibly Australian taxa of uncertain species status. Main (1982, 1985) had reached the same conclusions regarding *H. hirsuta*.

## Comments on morphology

**Body size (carapace length).** Some 14 species of Atracinae have a relatively small body size (male CL 4.5–7.5). These include the *lamingtonensis* and *adelaidensis* group species, plus *H. jensenae*, *H. mascordi*, *H. meridiana*, *H. modesta*, *H. monaro* and *H. nimoola* (currently members of the *cerberea* group). Most of the remaining species fit, with some overlap, into the medium (CL 7.5–10.0) or large (CL 10–12) male size classes.

**Carapace height and cheliceral robustness.** The arched cephalic area or caput is weakly to strongly raised in Atracinae. It is lowest in *Atrax* and *Illawarra* spp. (male CH/CW 0.35–0.37) (Figs. 4B, 16B). It is more strongly raised in *Hadronyche* spp. (male CH/CW 0.40–0.53) (Fig. 30A). The higher caput in *Hadronyche* spp. is associated with broadening of the carapace and a deeper, more robust cheliceral paturon, both in males and especially females (cf. Fig. 9B,F and Fig. 21B,C).

**Cheliceral groove and teeth.** The cheliceral groove is usually widest distally and clearly tapering proximally, but the margins of narrower grooves may be subparallel or only weakly tapered. The groove is narrow in *Atrax* and *Illawarra* (Figs. 4C, 16C), and in the *lamingtonensis* group of *Hadronyche*. In most other *Hadronyche* spp. the groove is relatively wider, particularly in females (Fig. 3D). Three tooth rows are present—two more or less full (long) rows of large teeth on the prolateral and retrolateral groove margins, plus a mid-groove, central row of much smaller teeth. This central row is always short and basal in *Atrax*, *Illawarra* (Figs. 4C, 16C) and the *lamingtonensis* group spp.

of *Hadronyche*. In most *Hadronyche* spp. the central teeth typically occupy the full groove length, with one (males) to several (females) irregular rows of small teeth (Figs. 20G, 21D). In *H. meridiana* a few mid row or distal teeth may be missing, making some individuals difficult to key out. *Hadronyche anzses* is unusual in having the prolateral tooth row reduced to a few basal teeth (Raven, 2000).

**Labium and cuspules.** The labium is typically wider than long, but varies considerably in relative length. It is consistently short and wide in both *Atrax* and *Illawarra* (Figs. 5A, 16D) and in the *lamingtonensis* and *adelaidensis* species groups of *Hadronyche* (0.700.80). By contrast, the labium is relatively longer (occasionally about as long as wide) in the *cerberea* and *infensa* species groups of *Hadronyche* (Figs. 27A, 72A), except in four *cerberea* group species (see group diagnosis) including *H. modesta* (Fig. 57E). A short labium is also seen in *H. mascordi* (Fig. 50A). In this species the labiosternal sigilla is uniquely divided into 2 lateral sigilla (usually an entire groove-like sigilla), with fusion of the medial labium and sternum between them—the short labium is regarded as a probable apomorphic condition related to these modifications.

The short, coniform to bluntly pointed labial cuspules (similar in males and females) are mostly clustered on the anterior part of the ventral labium (Fig. 3E). They are usually numerous (200–500), but may be relatively few in some species (e.g., 50–125 in most *lamingtonensis* group spp.). Cuspule numbers in males are categorized as follows: high, >250; moderate, 125–250; low, <125.

**Maxillary serrula.** A serrula is usually present on the maxillary apical lobe (absent in *adelaidensis* group spp.). The serrula field consists of many minute pointed teeth spreading from the anterior lobe surface onto the dorsomedial face (Fig. 3H). There is considerable variation in serrula size and number of teeth.

**Anterolateral sternal bristles.** This is a group of bristles, stronger and thicker than those generally found on the sternum, placed at the sternal angles on each side of the labium (Fig. 20H). They are best developed in *H. cerebera* (both sexes) and variably present in a few related species (e.g., *H. emmalizae*), but absent in *H. versuta*.

**Coxal setae.** Setae on the anterobasal surface of coxae 1, 2 are usually hair-like. In a few species some of these may be shortened and basally thickened. This is best developed in *H. cerebera*, resulting in thorn-like setae (Fig. 21H) in both sexes (absent in *H. versuta*).

**Posterior lateral spinnerets.** The PLS are much shorter than in *Macrothele* and *Porrhothele*. However, PLS length still varies considerably in the Atracine, especially the apical segments—from relatively long digitiform (c. length 4X mid-width) to short, wide digitiform (c. length 1.5X mid-width). The longest spinnerets are found in *Atrax* spp. (Fig. 4G), while shorter states are found in *Illawarra* (Fig. 17F) and in *Hadronyche*, notably in the *lamingtonensis* species group (Fig. 97A). Many *Hadronyche* spp. have spinnerets of intermediate length but a few species (e.g., *H. formidabilis*) have PLS almost as long as *Atrax* spp.

**Male tarsi III, IV shape.** Typically, Atracinae have more or less “cylindrical” tarsi. Occasionally, tarsi III and IV are swollen and lengthened (tarsus IV is usually most affected) compared with tarsi I and II, giving them a “boat-shaped” appearance (Fig. 3G). This character is associated with several species in the *lamingtonensis* species group of *Hadronyche*, including the north Queensland species, *H. anzses*. Comparable swelling of tarsi III, IV is seen in *H. lynabrae*, and weaker swelling of these tarsi has been observed in *H. flindersi* and *H. jensenae*, and of tarsus IV in *H. mascordi* and *H. monaro* all species outside the *lamingtonensis* group.

**Tarsal scopulae.** Scopulae are present only in males. Scopula setae are numerous to relatively few in number (Fig. 3A,B). The setae are short, thick and curved (rather vermiform), and set in ovoid bases (Fig. 3C). The shafts have finely circumferentially ribbed or annulate patterning while the tapering distal region may be more or less flattened apically. The structure of these scopula setae is quite different from that seen in the dense scopulae of barychelids and theraphosids, but I am unfamiliar with scopula setal morphology in other mygalomorph groups.

#### **Male legs I, II spination.**

**Femur.** The presence of mid-dorsal spines (one to row of several), with or without some distad prolateral dorsal spines, is characteristic of all *Atrax* and *Illawarra* spp. In *Hadronyche* these spines are absent in both the *infensa* and the *lamingtonensis* species groups. They are present in *cerbera* group species, but a few species have individuals that lack dorsal spines.

**Patella.** Both prolateral dorsal spines (sometimes with additional prolateral spines) and distal ventral spines are often present, sometimes absent.

**Tibia.** Tibia I spines may be numerous and distributed ventrally and retrolaterally (retroventrally) (Fig. 22D,E), or less numerous and more ventrally placed, with one to several lateroventral apical spines; prolateral surface with 0–4 spines. Tibia II spines are mostly placed ventrally, either scattered or more or less midventrally grouped, with 0–5 spines placed prolaterally and one to several lateroventral apical spines. Both scattered and clustered spine patterns are associated with species lacking tibial modifications. (Figs. 55H,I; 93H,I). Tibial apophyses and swellings are always associated with clustered spines (Fig. 32H,I).

**Metatarsus.** Ventrally spinose, metatarsus I with spines often denser proximomidventrally, sometimes associated with proximal–midventral metatarsal thickening (Fig. 32F). Metatarsus II with ventral spines mostly placed midventrally to distally (Fig. 55J,K), sometimes associated with a midventral apophysis/swelling (Fig. 32J,K). Prolateral surface with 0–1 spines.

**Tarsus.** Typically with two rows of small spines ventrolaterally (Fig. 3A). An additional complete row of midventral spines characterizes males of the genus *Illawarra* (Fig. 3B).

**Male leg II apophyses.** Apophyses, and less prominent

apophyseal swellings, are found on both the second tibia and metatarsus of some atracine species. They are any ventral cuticular projections or swellings, placed in the middle to proximal part of the segment and clustered with spines. These leg II structures are found in all *Atrax* spp. and several species currently placed in the *cerbera* species group of *Hadronyche*. All other atracines, comprising *Illawarra* and most *Hadronyche* spp., lack such structures. Tibial apophyses are best developed in *Atrax* spp., as a prominent coniform apophysis with short, stubby spines (Figs. 4F; 6H,I). In *Hadronyche*, a less specialized structure occurs in the form of a broad, ovoid to rounded ventral swelling, placed midventrally to proximally and clustered with strong, often somewhat shortened spines. This type of apophysis is most strongly developed in *H. formidabilis* (Fig. 32H,I). In other species it is represented as a weaker apophysis or apophyseal swelling (Figs. 22J, 36I, 40I). The latter term refers to a low ventral tibial thickening upon which spines are clustered—however tibial apophyses and apophyseal swellings tend to intergrade into each other. Tibial apophyses and apophyseal swellings are associated with a variably developed distoventral concavity that adjoins a similar anteroventral concavity on the metatarsus. Metatarsal apophyses are strongly to weakly developed, spinose, and typically associated with a variable sinuosity of the metatarsus, (Figs. 22K, 29K). However, in *H. venenata* the apophyseal swelling is very weak and there is no metatarsal apophysis (Fig. 38E); and in *H. monaro* the tibia is unmodified but the metatarsus has a small apophysis (Fig. 47G).

**Male palp** (Figs. 6A,B,C; 43A,B,C; 65A,B,C) (Appendix 1). The palpal bulb is rather simple in structure, comprising an ovoid-pyriform tegular area and a rod-like embolus. The tegular area consists of an ovoid tegulum separated by a deep, curved groove from the smaller subtegulum (Fig. 48B). The tegulum and subtegulum are sometimes widely separated in *lamingtonensis* group spp. (and often in *Illawarra wisharti* also), exposing the membranous median haematodocha spanning the widened space (Figs. 97H, 100B). The relatively wide embolic shaft is quite different from the slender spiniform embolus of macrotheline and hexatheline spiders. It is variably basally offset from the tegulum and varies in width, length, curvature, taper and degree of distad axial twisting. On the distal part of the embolus the ejaculatory duct opens into a broad or narrow distal groove, the lower margin of the groove appearing as a more or less flange-like structure.

The male palpal patella and tibia are enlarged in many atracine species. Raven (2000) suggested that the greater width of the palpal patella compared to the femur represents a synapomorphy for the genus *Hadronyche*—in most other mygalomorph spiders (as in *Atrax*) the palpal patella may be as wide but not wider than the femur. A limited survey confirms Raven’s observation in both smaller-sized *Hadronyche* species—*lamingtonensis* and *adelaidensis* group species and most smaller *cerbera* group species (Figs. 64G, 100A)—and several larger species examined, e.g., *H. venenata* (Fig. 40A). While this character state is present in many *Hadronyche* species, it does not seem to be universal (e.g., in *H. levittgreggae* the femur is as wide as the patella). Interestingly, the wider patella state is present in *Illawarra wisharti*. A fuller survey of atracine species is needed to determine both the distribution of this character and its status in *Hadronyche*.

## Keys to Atracinae

The information given in these keys relies upon characters taken from male spiders—the keys require male specimens. Measurements, counts and ratios given in these keys refer to male spiders unless specifically noted as female data. Leg and palp spine counts represent totals for the segment, unless otherwise noted.

Species attributed to the diverse *cerberea* group show intra-specific variation in dorsal femoral I, II spination (spines present in most spp., but absent in some individuals of a few spp.). This means that some species have two (part

key outcomes. The use of ratio data in some parts of the key make it less user friendly than one would like, especially for inexperienced users.

No species key is given for the genus *Illawarra* (monotypic). Males of the Tasmanian species, *H. pulvinator* (Hickman, 1927) and the South Australian species, *H. eyrei* (Gray, 1984), are unknown and these species are not included in keys—their species diagnoses and apparently limited distributions should assist with their identification.

### Key to genera

- 1 Male tibia II with large, prominent, conical apophysis (Fig. 6I). Caput weakly raised (Figs. 4B, 5B). Central cheliceral tooth row short, basal (Fig. 5F). Labium short (Fig. 4A) ..... *Atrax* O.P.-Cambridge
- Male tibia II not with a prominent conical apophysis—tibia II either unmodified or with bluntly rounded apophysis or apophyseal swelling. Caput weakly to strongly raised ..... 2
- 2 Male tibia II unmodified (Fig. 16F). Caput weakly raised and frontally narrow, cheliceral paturon relatively weak (Figs. 16A,B; 17B,D). Male tarsi I, II with a midventral spine row as well as two lateral rows (Fig. 3B). Central cheliceral tooth row short, basal (Fig. 16C). Labium short. PLS short (Figs. 16E, 17F) ..... *Illawarra* n.gen.
- Caput moderately to strongly raised and frontally broad, cheliceral paturon robust (Figs. 20B,E; 21B,C). Male tarsi I, II lacking a full midventral spine row. Male tibia II either unmodified (Fig. 68F), or with rounded apophysis/apophyseal swelling (Figs. 30C, 34G). Central cheliceral tooth row long or short. Labium long or short ..... *Hadronyche* L. Koch

### Genus *Atrax*—Key to species

- 1 Palpal tibia with 4–11 spines, dorsal spines present ..... *A. robustus*
- Palpal tibia with few or no spines (0–4), dorsal spines absent ..... 2
- 2 Embolus long and slender, strongly curved; base strongly offset from tegulum (Fig. 10B) ..... *A. yorkmainorum*
- Embolus relatively shorter, wider and more weakly curved (Fig. 14B) ..... *A. sutherlandi*

### Genus *Hadronyche*—Key to species

- 1 Large spiders (male CL 10.0–12.0). Tibia II with a large, protuberant, rounded apophysis (Fig. 30C). PLS relatively long (PLSASL > 3×W) (Figs. 1F, 30D) ..... *H. formidabilis*
- Spiders usually smaller. Tibia II apophysis less prominent or absent. PLS often shorter ..... 2
- 2 Tibia I and metatarsus I incrassate (Fig. 106F) ..... *H. adelaidensis*
- Tibia I and metatarsus I not incrassate ..... 3
- 3 Palpal patella with many spines (12–16) (Fig. 103F). Leg II unmodified ..... *H. flindersi*
- Palpal patella spines absent or fewer (0–9). Leg II modified or unmodified ..... 4
- 4 Labium and sternum fused medially, labiosternal sigilla divided (Fig. 50A) ..... *H. mascordi*
- Labium and sternum not fused, labiosternal sigilla entire ..... 5

- 5 Caput high and wide frontally, almost bulbous, rising relatively steeply from fovea ( $CH \geq 0.5 \times CW$ ) (Figs. 53A,C; 54B). Metatarsus II unmodified (Fig. 53E) ..... *H. nimoola*  
 — Not in above combination ..... 6
- 6 Chelicerae with central tooth row short, basal (Fig. 82D). Labium almost as long as wide ( $LL/LW 0.96$ ) (Fig. 82A) ..... *H. kaputarensis*  
 — Not in above combination ..... 7
- 7 Embolus short, with distal flanged part set at distinct angle to shaft (Fig. 65B,C) ..... *H. jensenae*  
 — Distal embolus not as above ..... 8
- 8 Chelicerae with central tooth row short, basal. (Fig. 97E). Palpal middle haematodocha widely exposed (Figs. 97H, 100B). Caput strongly raised (Fig. 97B). PMS apical segment short (Fig. 97A) (*lamingtonensis* species group) ..... 9  
 — Chelicerae with central tooth row typically long (Fig. 20G), rarely short. Palpal middle haematodocha not or rarely exposed (Fig. 48B). Caput height and PMS length variable ..... 13
- 9 Cuspules on labium relatively numerous (200–225). Cheliceral margins diverge distally (Fig. 94C) ..... *H. raveni*  
 — Cuspules on labium relatively sparse (40–100). Cheliceral margins subparallel (Fig. 97E) ..... 10
- 10 Male tarsi III and IV unmodified ..... *H. lamingtonensis*  
 — Male tarsi III and IV swollen (“boat-shaped”) than. tarsi I and II (Fig. 3G) ..... 11
- 11 Cheliceral promargin with few teeth (c. 3), in short basal row. Embolus straight ..... *H. anzses*  
 — Cheliceral promargin with several teeth (c. 6–12) in longer row (Figs. 99D, 102C). Embolus strongly curved (Figs. 100A,B; 102D) ..... 12
- 12 Male tarsus I strongly spinose (24–43) ..... *H. annachristiae*  
 — Male tarsus I weakly spinose (5–7) ..... *H. monteithi*
- 13 Labium relatively short ( $LL/LW 0.70-0.80$ ) (Figs. 57E, 60D). Tibia II and metatarsus II with apophyseal swellings ..... 14  
 — Labium relatively long ( $LL/LW 0.85-1.05$ ) (Figs. 23A, 68A). Tibia II and metatarsus II apophyses/apophyseal swellings present or absent ..... 15
- 14 Embolus short ( $BulbW/Embl 0.80$ ), not apically twisted (Fig. 59B,C) ..... *H. modesta*  
 — Embolus longer ( $BulbW/Embl 0.60$ ), twisted apically (Fig. 62B,C) ..... *H. meridiana*
- 15 Dorsal femur I and/or II with spines ..... 16  
 — Dorsal femur I, II with no spines ..... 23
- 16 Tibia II with weak, proximad, spinose apophyseal swelling (Figs. 38F; 40H,I); metatarsus II lacks apophyseal swelling (Fig. 40K). Carapace relatively low ( $CH/CL 0.40$ ) (Fig. 38B) ..... *H. venenata* (Tasmania)  
 — Not as above ..... 17
- 17 Tibia II unmodified, with few spines (7–11); metatarsus II with small apophyseal swelling (Figs. 47G; 48H,I). Carapace relatively high ( $CH/CL 0.49$ ) (Fig. 47B) ..... *H. monaro*  
 — Not as above ..... 18

18	Tibia II and metatarsus II with apophyses/apophyseal swellings .....	19
—	Tibia II and metatarsus II lacking apophyses/apophyseal swellings .....	22
19	Embolus with strongly curved shaft (Fig. 29B) .....	<i>H. emmalizae</i>
—	Embolus shaft weakly curved–straight (Fig. 25B) .....	20
20	Male (and female) coxae I, II with thorn-like setae anterobasally (Fig. 21H), and anterolateral sternal angles with tuft of bristle-like hair (Fig. 20C,H) .....	<i>H. cerberaea</i>
—	Not as above .....	21
21	Tibia II with spines distributed over apophysis and distoventral tibia (Figs. 23C; 25H,I). PLS relatively short (PLSAPW/ L 0.49) (Fig. 23E) .....	<i>H. versuta</i> (part)
—	Tibia II with spines grouped on apophyseal swelling, few or none on distoventral tibia (Figs. 34G; 36H,I). PLS relatively long (PLSAPW/ L 0.33) (Fig. 34F) .....	<i>H. alpina</i> (part)
22	Tibia II and metatarsus II ventrally concave (bowed) (Fig. 43I,K). Embolus relatively wide (EmbmidW/ L 0.12) (Fig. 43B) .....	<i>H. marracoonda</i>
—	Tibia II and metatarsus II more or less straight, not bowed (Fig. 46I, K). Embolus narrower (EmbmidW/ L 0.08) (Fig. 46B) .....	<i>H. tambo</i> (part)
23	Tibia II and metatarsus II with apophyses/apophyseal swellings .....	24
—	Tibia II and metatarsus II lacking apophyses/apophyseal swellings .....	25
24	Tibia II with spines distributed over apophysis and distoventral tibia (Figs. 23C; 25H,I). PLS relatively short (PLSAPW/ L 0.49) (Fig. 23E) .....	<i>H. versuta</i> (part)
—	Tibia II with spines grouped on apophyseal swelling, few or none distributed onto distoventral tibia (Figs. 34G; 36H,I). PLS longer (PLSAPW/ L 0.33) (Fig. 34F) .....	<i>H. alpina</i> (part)
25	Embolus relatively broad (EmbmidW/L 0.12–0.16); moderately to strongly twisted distally (Fig. 86B,C) .....	26
—	Embolus relatively narrow (EmbmidW/L 0.06–0.09); weakly to moderately twisted distally (Fig. 74B,C) .....	29
26	Embolus base strongly offset from tegulum (Figs. 70B, 81B) .....	27
—	Embolus base weakly offset from tegulum (Figs. 86B, 89B) .....	28
27	Embolus shaft strongly curved proximally, distal third strongly twisted (Fig. 81B,C). Tarsi III, IV swollen, “boat-shaped” .....	<i>H. lynabrae</i>
—	Embolus shaft curvature and distal twisting less strongly developed (Fig. 70B,C). Tarsi III, IV unmodified .....	<i>H. infensa</i>
28	Tibia II sinuous ventrally, with ventral spines clustered in proximal half, (Fig. 89H,I). Tarsus I spines 8–38 .....	<i>H. walkeri</i>
—	Tibia II not sinuous, ventral spines more scattered (Fig. 86H,I). Tarsus I spines often more numerous (30–63) .....	<i>H. macquariensis</i>
29	Embolus slender, elongate (EmbL 3.53–4.15) (Fig. 93B) .....	<i>H. levittgreggae</i>
—	Embolus not as long (EmbL 2.18–3.06) .....	30
30	Labial cuspule number moderate (149–184). Bulb shorter than palpal tibia (BulbL/TibL 0.77) (Fig. 46A) .....	<i>H. tambo</i> (part) (Gippsland, Victoria)
—	Labial cuspules numerous (246–393) Bulb almost as long as palpal tibia (BulbL/TibL 0.86–0.89) (Fig. 77A) .....	31
31	Leg spines relatively few: tarsus I with 4–10, metatarsus I with 10– 16, tibia II with 3–7 spines .....	<i>H. orana</i>
—	Leg spines more numerous: tarsus I with 23–46, metatarsus I with 31–56, tibia II with 13–25 spines .....	<i>H. valida</i>



## Generic and Species Descriptions

### *Atrax* O.P.-Cambridge

*Atrax* O.P.-Cambridge 1877: 26. Type species *Atrax robustus* O.P.-Cambridge 1877 by monotypy. Simon, 1891: 302; 1892: 175, 182, 186; 1903: 967–969. Hogg, 1901: 272; Rainbow, 1911: 121; 1913: 4; 1914: 252. Rainbow & Pulleine, 1918: 165. Hickman, 1927: 63; 1964: 107. Musgrave, 1927: 33; 1948: 77. Roewer, 1942: 207. Bonnet, 1955: 772. Main, 1976: 70; 1981: 839; 1985: 40. Gray, 1978: 121, 125. Raven, 1980: 255; 1985: 55, 71; Brignoli, 1983: 122. Gray, 1984: 441; Gray, 1988: 114. Goloboff, 1993: 6. Hedin & Bond, 2006: 467. Platnick, 2010.

*Euctimena*.—Rainbow 1914: 248. Type species *Euctimena tibialis* Rainbow 1914 by monotypy. First synonymized by Musgrave, 1927: 33. Hickman, 1964: 107. Gray, 1978: 125. Raven, 1980: 255. Main, 1985: 40. Gray, 1988: 114.

*Poikilomorpha*.—Rainbow 1914: 264. Type species *Poikilomorpha montana* Rainbow 1914 by monotypy. First synonymized by Gray, 1978: 125. Raven, 1980: 255. Main, 1985: 40. Gray, 1988: 114.

**Diagnosis.** Differs from other atracine genera by presence of a large coniform apophysis on male tibia II (Fig. 6H,I); and from *Hadronyche* by lower caput height.

**Description.** With characters of Atracinae. Medium to large sized Atracinae. Carapace longer than wide, caput only weakly raised (CH/CW 0.35–0.36) and narrow frontally (CFW/CL 0.55–0.62). Cheliceral paturon relatively less robust and narrower than in most *Hadronyche* spp. (Figs. 4B,D; 5B,E). Cheliceral groove narrow, V-shaped; central teeth in single short row confined to the basal half of the groove, lateral marginal tooth rows run full length of groove. (Fig. 4F). Labium relatively short (LL/LW 0.70–0.75) (Fig. 4A). Sternum ovoid to narrow ovoid. Apical segment of posterior lateral spinnerets relatively long, digitiform (PLSAPW 0.25–0.28) (Fig. 4G). Male femora I, II with dorsal spines (Fig. 4F). Male palp with patella width less than or equal to femur width. Bulb with a long, slender, curved embolus (EmbmidW/L 0.06–0.08) (Fig. 6B). Male tibia II with a large mid-ventral conical apophysis, the narrow apex surmounted by short, peg-like spines (Fig. 6H,I); metatarsus II sinuous (proximoventrally concave) with a small mid-ventral apophysis (Fig. 6J,K). Spermathecal sacs narrow, elongate (Fig. 5G).

**Included species.** *Atrax robustus* O.P.-Cambridge, *A. sutherlandi* n.sp., *A. yorkmainorum* n.sp.

**Distribution.** Southeastern coast and highlands of Australia, from the Hunter River region, New South Wales, to eastern Victoria.

**Comments.** Burrows often with a weak or incomplete silk lining, typically sited under rocks and logs

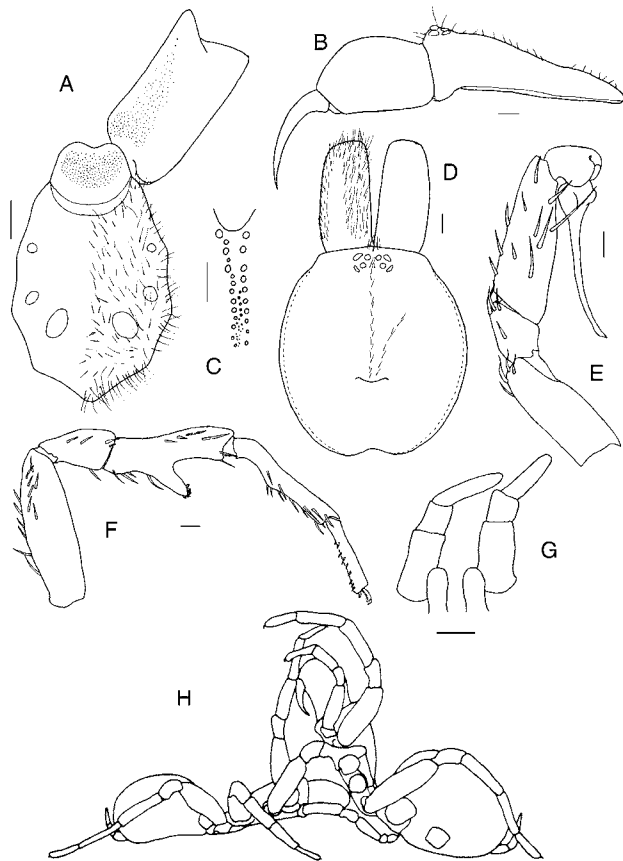


Figure 4. *Atrax robustus*, male: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) cheliceral groove teeth; (D) cephalothorax and chelicerae, dorsal; (E) palp, prolateral; (F) leg II, prolateral; (G) spinnerets. Scale lines 1 mm.

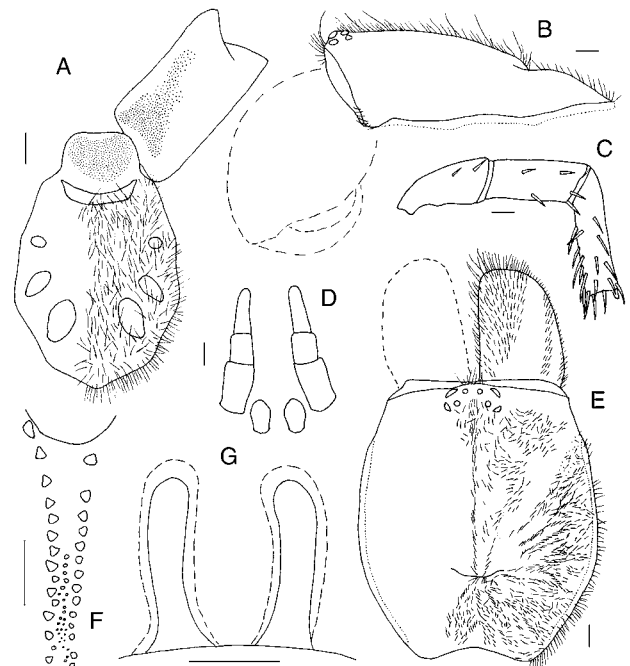


Figure 5. *Atrax robustus*, female: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) leg III, prolateral, patella, tibia, metatarsus; (D) spinnerets; (E) cephalothorax and chelicerae, dorsal; (F) cheliceral groove teeth; (G) spermathecae. Scale lines 1 mm.

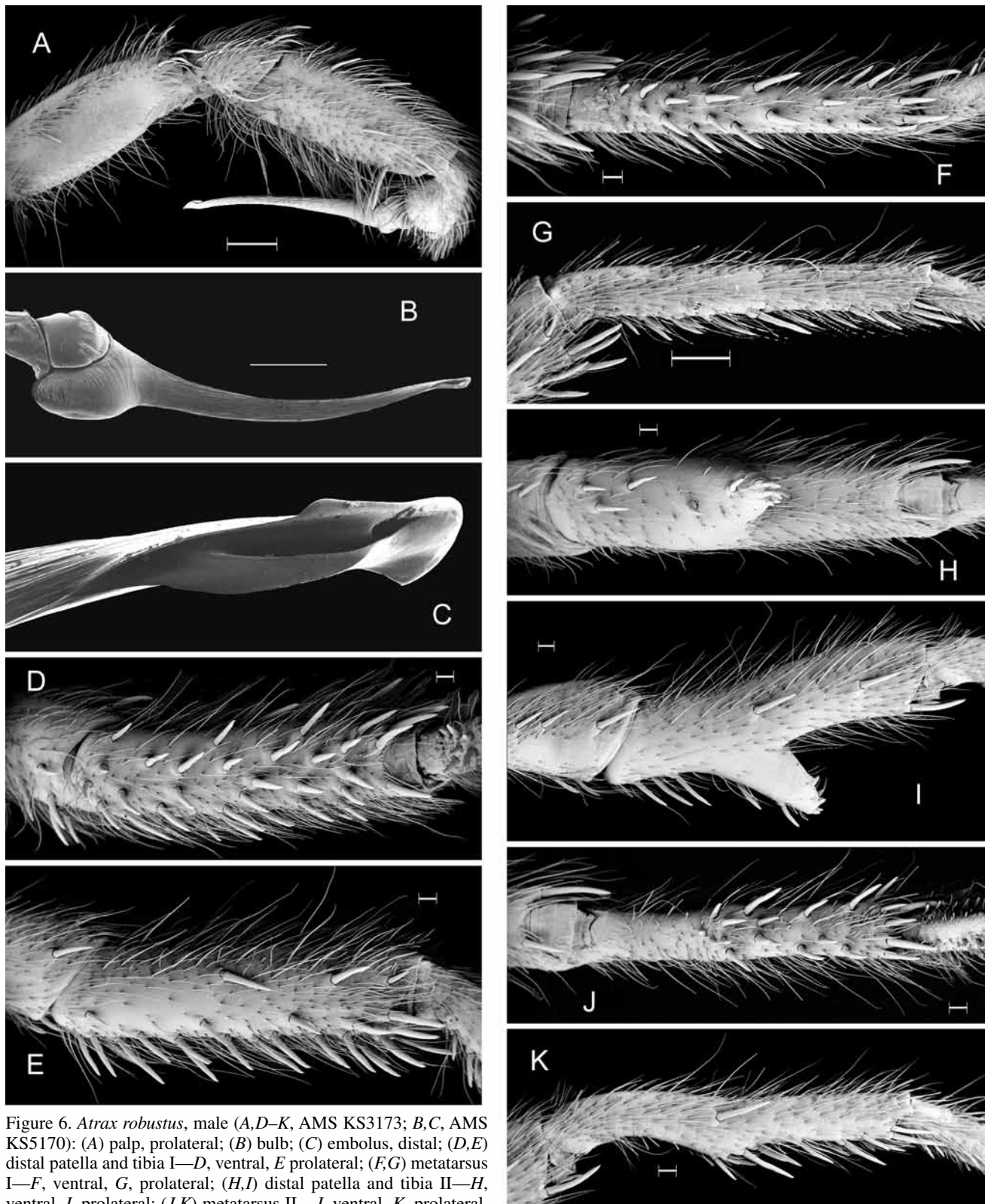


Figure 6. *Atrax robustus*, male (A,D–K, AMS KS3173; B,C, AMS KS5170): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J,K) metatarsus II—J, ventral, K, prolateral. Scale lines: 0.3 mm, except A,B,G, 1.0 mm.

*Atrax robustus* O.P.-Cambridge

Figures 4–7; Tables 2, 34

*Atrax robustus* O.P.-Cambridge, 1877: 26. Hogg, 1901: 273. Musgrave, 1927: 33. Nishikawa, 1976: 179. Main, 1985: 41. Gray, 1978: 122. Gray, 1987: 314. Gray, 1988: 114.

*Euctimena tibialis*.—Rainbow, 1914: 249. First synonymized by Musgrave, 1927: 33.

*Poikilomorpha montana*.—Rainbow, 1914: 265.

*Atrax montana*.—Main, 1985: 41 (Transferred from *Poikilomorpha*). First synonymized by Gray, 1988: 114.

**Types.** Holotype female: BMNH 71 (NMH). Type dry, pinned, labelled “New Holland”, no other data (not seen).

**Other material examined. New South Wales (males):** AMS KS2698, Austinmer, 6 January 1959, N. Mitchell; AMS KS4812, Avalon Beach, 14 March 1976, Porritt; AMS KS4837, Avoca, 11 January 1975; AMS KS4197, Balgowlah, 7 January 1960, Burch; AMS KS4946, Balmoral, 18 April 1974, Robinson & Hoey; AMS KS4902, Bankstown, 14 April 1965; AMS KS5137, Baulkham Hills, 18 January 1973, M. Gray; AMS KS4080, Bayview, 2 April 1974, S. Thompson; AMS KS2956, Beecroft, 25 April 1979, D. Dean; AMS KS3999, Belrose, 19 January 1967, Anderson; AMS KS1152, “The Mists”, Berambing, December 1976, K.J. Street; AMS KS8376, Berowra, December 1981, J. Hingley; AMS KS1852, Bilgola Plateau, 26 May 1977, H. Newton; AMS KS1148, Bilpin, 17 January 1930, E.M. Hunt; AMS KS4961, Burraneer Bay, 15 December 1972; AMS KS1154, Camden, 21 February 1974, G. Seymour; AMS KS4914, Campsie, 12 February 1975, R.N. Peck; AMS KS4915, Caringbah, 4 April 1972, M. Sinclair; AMS KS4773, Cardiff, 21 January 1979; AMS KS4194, Castlecrag, May 1963, I. Webb; AMS KS4484, Charlestown, 1 February 1980, G. Anderson; AMS KS4372, Chatswood, 16 April 1972, W. Leonard; AMS KS3990, Cheltenham, 2 April 1974, S.K. Pearson; AMS KS14383, Cherrybrook, 1 April 1984, M. Backing; AMS KS2957, Chester Hill, 27 May 1979, J. Paull; AMS KS4395, Clarevale Beach, 16 January 1976, K.H. Sinfield; AMS KS4378, Clifton Gardens, 20 April 1972, Dr C.A. Monticone; AMS KS5013, Cobbitty, 11 March 1959, T. Down; AMS KS4066, Collaroy, near Dee Why Lagoon, 14 December 1958, A. Kabanoff; AMS KS5072, Cromer, 6 April 1980, M. Duncan; AMS KS3036, Denistone, 26 April 1979, M. Richison; AMS KS4001, Dundas, 1 March 1976, B. & A.C. Oldsen; AMS KS7470, Dural, March 1981; AMS KS2432, East Maitland, H. Miller; AMS KS4815, Eastwood, 30 March 1976, D. Griffith; AMS KS7477, Elizabeth Bay, 5 May 1981, D.T. Cave; AMS KS1153, Engadine, 28 November 1972, S. Couglin; AMS KS1132, Epping, January 1977, W.J. Bunton; AMS KS1143, Faulconbridge, 8 January 1973, Stewart; AMS KS5694, Fox Valley Reserve, near Wahroonga, 22 June 1980, B. Henke; AMS KS4071, Frenchs Forest, 5 June 1972, N. Hailstone; AMS KS13409, Galston, 2 February 1981, G. Jackson; AMS KS10976, Galston Gorge, 4 May 1983, G. Jackson; AMS KS1156, Gladesville, 20 February 1970, McElwaine; AMS KS13752, Gordon, 22 December 1983, M. Gray; AMS KS4771, Gosford, 21 January 1979, R.E. Mascord; AMS KS4005, Grays Point, 5 February 1977, P. Poppett; AMS KS4382, Greenwich/Willoughby; AMS KS1160, Hartley Vale, 8 December 1952, E.S. Miller; AMS KS4297, Hazelbrook, 8 January 1980, S. Clark; AMS KS5071, Heathcote, 20 April 1980, R. Witchard; AMS KS2323, Helensburgh, 6 January 1979, N. West; AMS KS1157, Hornsby, 3 March 1976, Reed; AMS KS4949, Hurstville, 5 June 1972, A. Osten; AMS KS1161, Kembla Heights, 11 November 1963, G. Pearce; AMS KS8678, East Beach, Kiama area, 20 January 1982, D. Bennedett; AMS KS4377, Killara, February 1972, P. Mayman; AMS KS3200, Kurrajong Heights, 30 November 1969, G. Hunt; AMS KS4944, Lakemba, 7 January 1948; AMS KS1159, Lane Cove, 22 April 1930, ? Graham; AMS KS1146, Lawson, March 1956, R. Schleicher; AMS KS8920, Lindfield, 14 April 1982, B. Henstridge; AMS KS4078, McMahons Point, May 1972, N. Mayfield; AMS KS6067, Manly, 3 November 1980; AMS KS10783, Matcham, near Gosford, 27 March 1983, van Derbruggen; AMS KS1162, Minnamurra Falls, 12 May 1964, R. Mascord; AMS KS4022, Mona Vale, 26 February 1973, T. Govranik; AMS KS4948, Mortdale, 13 February 1975; AMS KS5314, Mosman, 19 June 1980, S. Pfeiffer; AMS KS4947, Mount Colah, 25 January 1979, M. Gray; AMS KS1155, Mount Irvine, 14 November 1944, E.L. Troughton; AMS KS5016, Mount St. Thomas, near Wollongong, 17 June 1956, L. Evans; AMS KS2146, Mount Wilson, 15 November 1978–11 December 1978, C. Horseman; AMS KS4009, Neutral Bay, AMS KS3189, Newport, September 1959, A.J. Wright; AMS KS13560, Northbridge, 30 December 1983, J. Mayer; AMS KS4950, Parramatta, 25 March 1959, W.G. Ashford; AMS KS4951, Peakhurst, 24 April 1945, H. Inder; AMS KS2712,

Pennant Hills, 21 March 1979, Thompson; AMS KS4045, Penrith, 25 August 1979, A. Johnson; AMS KS4399, Potts Point, 5 July 1956, P. Berry Smith; AMS KS4015, Pymble, 14 March 1949; AMS KS7466, Queenscliff, April 1981; AMS KS4027, Rhodes, 12 May 1930, T. White; AMS KS4921, Riverwood, 12 April 1966, R.E. Mascord; AMS KS2995, Roseville, 3 June 1979, ? Hidder; AMS KS4869, Rydalmere, 13 March 1974, R. Hood; AMS KS4070, Ryde, January 1971; AMS KS4007, St. Ives, 12 May 1971; AMS KS4083, Scotland Island, 1 April 1974; AMS KS3457, Springwood, 1978, A. McLean; AMS KS4922, Stanmore, 1949, January; AMS KS4971, Telopea, 25 April 1971, K.P. Reid; AMS KS2713, The Oaks, Apr 1979, P. McIntosh; AMS KS4203, The Spit, 4 July 1948, Page; AMS KS4013, Thornleigh; AMS KS4373, Turramurra, 1 April 1970; AMS KS8664, Wahroonga, 31 January 1982, A.S. Martin; AMS KS4008, Waitara, 11 March 1949; AMS KS10782, Warrawee, 12 April 1983, Ralleston; AMS KS5146, Waverley, 15 May 1973, L. Gibson; AMS KS4367, Waverton, 4 March 1971, Dr C. Browne; AMS KS5131, West Pennant Hills, 19 May 1973, R. McDonald; AMS KS6148, West Ryde, 1 January 1980, W. Bennett; AMS KS2670, Whale Beach, 21 April 1974; AMS KS4025, Willoughby, 30 July 1973, A.C. Jones; AMS KS3185, Winston Hills, 21 July 1973, M. Gray; AMS KS3404, AMS KS5720, Woonona, near Bulli, December 1960, S.H. Roberts; AMS KS4662, Wyoming, near Gosford, 14 March 1980; AMS KS2600, New Lambton, near Newcastle, 1979, L. Hallinan; AMS KS1150, Newcastle, 13 March 1963, B.C. Dyson; AMS KS4125, Wyong, 18 March 1978; AMS KS2923, Benandarah State Forest, 22 March 1979–25 April 1979, C. Horseman; AMS KS5205, Foxground, near Gerringong, 10 April 1980, G. Wishart; AMS KS5170, Ryde, 33°49'S 151°06'E, 20 May 1980, A. Brown. **New South Wales (females):** AMS KS4076, Artarmon, Apr 1927, J. Stewart; AMS KS4930, Ashfield, 20 December 1930, E. Hudson; AMS KS1826, Austinmer, 23 November 1959, F.E. Havand; AMS KS1377, Avalon, 15 May 1978, L. Reneman; AMS KS5017, Avoca, 20 September 1968, N. Tweedale; AMS KS4825, Balgowlah, 2 May 1970, G. Smith; AMS KS4987, Bankstown, 19 April 1949, E.A. Cox; AMS KS5140, Baulkham Hills, 18 January 1973, M. Gray; AMS KS2716, Bayview, 20 April 1979, B. Makins; AMS KS4358, Beecroft, February 1928, G.A. Heumann; AMS KS4903, Belmore, 25 April 1924, M. Codd; AMS KS4803, Belrose, 19 January 1967, Anderson; AMS KS1827, Bilpin, 12 April 1972, R. McDonald; AMS KS7564, Birmingham Gardens, near Newcastle, 6 December 1978, R. Mascord; AMS KS1674, Blackheath, 24 April 1948, R. McKay; AMS KS4887, Bowral; AMS KS8733, Bundanoon, February 1982, B. Erdman; AMS KS4913, Camden, 21 February 1974, G. Seymour; AMS KS4408, Berowra, 15 September 1973, J. Disney; AMS KS3524, Carlingford, 26 September 1979, J. Armitage; AMS KS3175, Castle Hill, Apr 1979, F. Pearce; AMS KS4206, Castlecrag, 17 July 1973, J. Bunce; AMS KS4242, Chatswood, 14 November 1928, R. Barnes; AMS KS4325, Cheltenham, Apr 1972, D. Levy; AMS KS4211, Clarevale Beach, L. & M. Mortimer; AMS KS4030, Clifton Gardens, 21 April 1961, Bradley; AMS KS3188, Collaroy, February 1928, E. Osborne; AMS KS4400, Collaroy Plateau, July 1966, B. Tye; AMS KS4892, Colo Vale, July 1958, D.H. Wallace; AMS KS4905, Coogee, November 1926, Stokes; AMS KS4233, Cremorne, 21 June 1927, F.L. Grutzmacher; AMS KS4962,

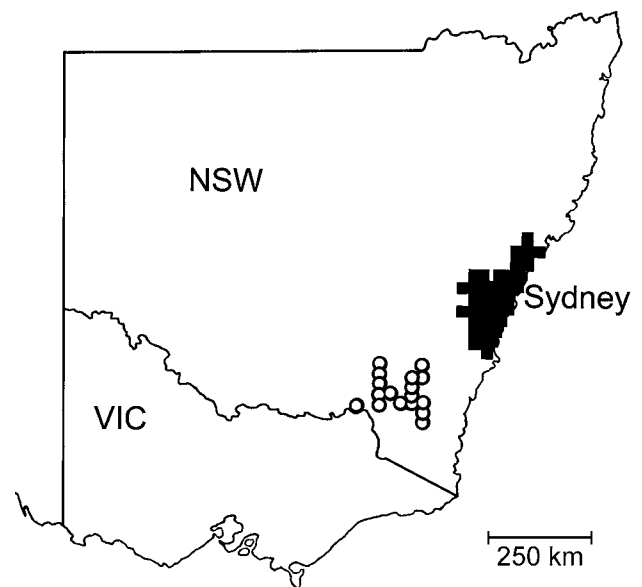


Figure 7. Collection records for *Atrax robustus* (squares) and *A. yorkmainorum* (circles).

Cronulla, 13 January 1971; AMS KS4828, Dee Why, May 1932, Rowe; AMS KS4804, Dundas, January 1975, M. Denham; AMS KS4865, Dural, 18 January 1971, M. Thornley; AMS KS3319, Eastwood, 8 July 1979, J. Cullen; AMS KS4829, Elanora, 1 March 1967, S. Marshall; AMS KS4989, Elizabeth Bay, 9 January 1958, D.T. Cave; AMS KS1830, Emu Plains, 30 July 1957, G.D. Sutherland; AMS KS4770, Enfield, 5 June 1905; AMS KS4546, Epping, 17 February 1980, J. Brand; AMS KS4990, Five Dock, May 1928, R. Williams; AMS KS4361, Forestville, 19 August 1971; AMS KS8868, Freeman's Reach, near Windsor, 26 January 1982, M. Gray; AMS KS8377, French's Forest, 24 October 1981, R. Scott; AMS KS4661, Galston, 3 February 1980; AMS KS4963, Garrie Beach, 7 October 1965, R. Mascord; AMS KS4839, Gosford, 25 September 1964, E. Worrell; AMS KS4207, Greenwich, 5 May 1970, K. Burns; AMS KS4966, Guildford West, 27 August 1957, S.R. Kirkwood; AMS KS1220, Hazelbrook, 23 November 1976, G. Weatherspoon; AMS KS1675, Hazelbrook, February 1976; AMS KS4985, Heathcote, 26 June 1975, R. Witchard; AMS KS4967, Helensburgh, 11 June 1951, L. Reed; AMS KS4225, Hornsby, 7 May 1940; AMS KS1208, Jamieson Valley, 22 June 1953, A.W. Gayley; AMS KS4065, Killara, 8 March 1928; AMS KS5078, Kingsgrove, 1952; AMS KS4993, Kingswood, May 1962; AMS KS4410, Kuring-ai Chase National Park, 23 January 1980, M. Gray; AMS KS1310, Kurrajong, February 1978; AMS KS4945, Lakemba, 17 March 1930; AMS KS4853, Lane Cove, 15 March 1973; AMS KS4968, Leichhardt, 2 September 1913, D. Hunter; AMS KS1834, Linden, 3 September 1950, K. Baames; AMS KS5031, Lindfield, 29 September 1962, M. & V. Gregg; AMS KS4234, McMahons Point, Apr 1972, J. Suich; AMS KS6025, Manly, Manly Hospital, 3 November 1980; AMS KS4907, Matraville South, 20 October 1952, A. Brown; AMS KS4238, Meadowbank, March 1963, R.H. Hall; AMS KS1829, Megalong Valley, R. Ibow; AMS KS4856, Middle Harbour, 6 September 1933, Kaufman; AMS KS4896, Mittagong, 30 December 1975, M. & V. Gregg; AMS KS4360, Mona Vale, 9 November 1975, J. Walker; AMS KS1125, Morpeth; AMS KS4204, Mortdale, 31 January 1974, C. Stewart; AMS KS4403, Mosman, 3 March 1932, Patton; AMS KS3693, Mount Colah, 29 July 1979, J. Fairlie; AMS KS4189, Mount Fairy, 25 November 1979; AMS KS1835, Mount Irvine, 14 November 1944, E. Troughton; AMS KS2960, Mount Keira, 12 May 1979, Walsh; AMS KS4832, Mount Kuring-ai, 5 November 1972; AMS KS4808, Naremburn, 26.ii.1961, M. Fairburn; AMS KS1126, Narara, 20 March 1930, B.R. Everingham; AMS KS4405, Narrabeen, 29 September 1957, L.B. Trapp; AMS KS4046, Neutral Bay, 3 November 1979; AMS KS797, Newport, 7 December 1977; AMS KS4064, Normanhurst, 6 April 1969, ? Dymock; AMS KS4085, Northbridge, 26 July 1975, D. Dickerson; AMS KS3401, Northmead, March 1973, J. Deviana; AMS KS4195, North Narrabeen, 11 June 1952, L.J. Lizara; AMS KS4232, North Sydney, May 1925, Dr S.J.W. Moreau; AMS KS4908, Oatley, 15 February 1963; AMS KS4858, Palm Beach, 1 February 1951, H.R. Swaine; AMS KS4909, Parramatta, 21 March 1910; AMS KS1131, Peakhurst, 15 November 1969, D. Fantom; AMS KS1837, Pearl Beach, 24.iii.1966, J. Cooks; AMS KS1930, Pennant Hills, 6 October 1978, S. el-Issa; AMS KS4045, Penrith, 25 July 1979, A. Johnson; AMS KS4969, Penshurst, R. Pollett; AMS KS1844, Picton, November 1946, J.K. McFarlane; AMS KS4072, Pittwater, 1927, A. Musgrave; AMS KS4824, Point Clare, T.A. Trewheeler; AMS KS4910, Potts Point, 5 October 1969, C. Catterall; AMS KS4931, Punchbowl, 17 July 1947, F.J. Donald; AMS KS4809, Pymble, November 1971, A. Ritchie; AMS KS1850, Richmond, 12 October 1977, Ambulance Station; AMS KS3168, Roseville, 18 January 1948, H. Chadwick; AMS KS4964, Royal National Park, October 1966, R. Mascord; AMS KS4911, Rushcutters Bay, 24 May 1971, S.J. Penlington; AMS KS4810, Ryde, 28 October 1969, J. Garden; AMS KS4084, St. Ives, March 1967; AMS KS4912, St. Peters, 2 February 1959, D.J. Gilks; AMS KS5240, Scotland Island, 29 February 1980, J. Lowry; AMS KS5023, Somersby, J. Brown; AMS KS1839, Springwood, 4 August 1971; AMS KS1135, Sydney, 17 November 1969; AMS KS2715, Terry Hills, 30 April 1979, R. Gleeson; AMS KS4891, The Oaks, 25 February 1956; AMS KS4899, Thirroul, September 1933, D. King; AMS KS796, Thornleigh, 8 January 1978; AMS KS4844, Tuggerah, September 1927, H.W. Legge; AMS KS4376, Turramurra, 1928, H.S. Wales; AMS KS13791, Wahroonga, 2 February 1984, A.S. Martin; AMS KS4845, Wamberal, 4 December 1972, J.N. K Gour; AMS KS4243, Warrawee, 24 December 1972, ? Ricketts; AMS KS4063, West Pennant Hills, 15 May 1973, S. Zucher; AMS KS6069, West Ryde, 10 November 1980; AMS KS4846, West Wallsend, 30 May 1956, J. Donne; AMS KS4847, Weston, 4 November 1969, I. Waugh; AMS KS4357, Willoughby, 17 August 1969; AMS KS5151, Winston Hills, 9 September 1972, J. Deviana; AMS KS1848, Warrimurr Sanctuary, 9 July 1969, M.N. Fackender; AMS KS4862, Woolwich, May 1927, H. Switzer; AMS KS4848, Woy Woy, 13 July 1933, B. Hynson; AMS KS8295, Yagoona, February 1981; AMS KS1274, Yerranderie, 20 February 1978, H. Kenny.

**Diagnosis.** CL 9.22–12.30 (male). Differs from other species by having a relatively spinose palpal tibia (4–11) with dorsal spines present. Differs from *A. sutherlandi* by having a more elongate embolus (BulbW/EmblL 0.30) (Fig. 6B), and from *A. yorkmainorum* by larger body size (CL 9.22–12.30) and shallower offset of embolus base from tegulum (Fig. 6B).

**Male** (AMS KS4016, Gordon, New South Wales, 32°38'S 148°39'E, F. Hatton, 10 December 1949). —*Size*. Carapace length 10.20, width 8.70. Abdomen length 9.52, width 7.38. —*Colour*. Basic colour pattern. —*Carapace*. Longer than wide. Height 2.86. Frontal width 5.14. Fovea narrow, procurved. Mid-dorsal cephalic setae reach fovea. Anterior striae setae numerous. Anterolateral carapace angle with small, weak bristles. —*Eyes*. Central eye region weakly raised. Eye group width 1.85. Median ocular quadrangle length 0.70; anterior width 0.76, posterior width 1.13. Diameters: AME 0.28, ALE 0.58, PLE 0.38, PME 0.26. —*Chelicerae*. Cheliceral groove narrow, weakly divergent. Groove length 2.92, middle width 0.41. Cheliceral teeth: 18 central, occupying proximal half of groove; 12 prolateral; 13 retrolateral. —*Labium*. Much wider than long, apically indented. Length 1.08, width 1.68. Labiosternal sigilla broad, entire. Cuspules c. 300, number high, in crescentic transverse band. —*Sternum*. Ovoid, long. Length 5.45, width 3.88. Posterior sigilla ovoid, broad. Strong bristles on posterior margin. —*Palp*. Bulb about as long as tibia. Tegular region rather small, slightly wider than long. Base of embolus weakly offset from tegulum. Embolus shaft long, gently curved, strongly tapered. Distal embolus weakly twisted, ejaculatory groove wide. Bulb length 4.62, width 1.12. Embolus length 3.60, midwidth 0.25. Length of femur 4.35, patella 1.96, tibia 4.71. Width of tibia 1.80. Spination: femur 7, patella 5, tibia 10 (dorsal spines present). Some distal femoral bristles and spines sinuous. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	8.43	4.21	6.36	6.69	3.87	29.56
2	7.75	3.86	6.36	6.28	3.89	28.14
3	7.14	3.18	5.15	6.03	3.94	25.44
4	8.32	3.81	6.80	7.41	4.40	30.74

*Tibia I* width 1.50. Femora I and II with dorsal spines. Leg I unmodified, tibial and metatarsal spines numerous. Tibia II with large, conical, apophysis set just proximal of centre. A few ventral tibial spines placed proximally, absent in distal half (except apical ventral spines). Distal tibia II ventrally concave. Metatarsus II sinuous, curved proximally, ventral spines placed upon and distal to a small, subcentral apophysis. Anterior coxal hairs unmodified. Scopulae legs I–IV: tarsus, weak; distal metatarsus, absent to weak. Tarsal claw teeth legs I, II: superior 13, 11; inferior 2, 2. Trichobothria legs I, II: tarsus 20, 19; metatarsus 15, 12; tibia p9 r9, p8 r8. —*Leg spination*. Leg I: femur 9 (d6 p3), patella 13 (p2), tibia 51 (p8), metatarsus 29, tarsus 20. Leg II: femur 12 (d6 p6), patella 6 (p2–3); tibia 18 (p4), metatarsus 22(p1), tarsus 23. Leg III: femur d7 (plus strong bristles), patella 5 (p3 r2), tibia 15 (p2 r3), metatarsus 25, tarsus 25. Leg IV: femur 0 (long bristles present), patella r1, tibia 18 (p1 r4), metatarsus 20, tarsus 21. —*Abdomen*. Posterior lateral spinnerets, lengths: total 4.68; basal segment 1.52; middle 1.08; apical 2.08. Apical segment width 0.60.

**Table 2.** Male morphological data—*Atrax robustus* (n = 24).

character	range	mean	character	range	mean	character	ratio	SD
CL*	9.22–12.30	10.48	Mt1S	24–32 (p0–1)	27	CW/CL	0.89	0.033
CW	8.27–10.59	9.28	Ta1S	12–27	19	CH/CW	0.35	0.025
CH	2.86–4.06	3.28	Ti2S	13–27 (p2–5)	18	CFW/CL	0.55	0.038
CFW	4.49–7.38	5.78	STC2teeth	10–15	13	CHGW/L	0.14	0.015
ChGL	2.84–3.60	3.09	BulbL	4.08–9.06	5.79	SW/SL	0.74	0.043
ChGW	0.41–0.55	0.44	EmbL	3.28–5.26	4.25	LL/LW	0.75	0.052
ChGCT	10–29	20	BulbW	1.12–1.48	1.28	PLSAPW/L	0.25	0.032
LL	1.08–1.62	1.41	EmbmW	0.20–0.30	0.27	BulbW/EmbL	0.30	0.055
LW	1.60–2.16	1.87	PalpTibL	4.65–6.61	5.53	EmbmW/L	0.06	0.012
CUSPS*	261–494	340	PalpTibW	1.59–2.08	1.83	PalpTibW/L	0.33	0.035
SL	5.30–6.56	5.81	PalpTibS*	4–11	8	BulbL/Tib L	0.97	0.068
SW	3.88–5.83	4.31	PalpPatS*	1–8	5			
PLSAPW	0.46–0.64	0.53	PalpFem*	5–9	6			
PLSAPL	1.64–2.40	2.03						
Fe1S	2–10	6						
Pa1S	6–13 (p2–4)	10						

**Female** (AMS KS13470, Gordon, N.S.W., 32°38'S 148°39'E, 1 November 1983, C. Horseman). —*Size*. Carapace length 12.63, width 10.41. Abdomen length 14.82, width 12.07. —*Colour*. Basic colour pattern. —*Carapace*. Much longer than wide. Height 2.72, frontal width 8.28. Cephalic length 8.50. Fovea narrow, procurved, anterior margin slightly indented. Mid-dorsal cephalic setae numerous, reach back to fovea. Anterior strial setae numerous. Strial and marginal setae numerous, rather short. Anterolateral carapace angle with several short, weak bristles. —*Eyes*. Central eye region slightly raised. Eye group width 2.60. Diameters: AME 0.26, ALE 0.60, PLE 0.44, PME 0.36 Interdistances: AME–AME 0.39, AME–ALE 0.27, ALE–PLE 0.27, ALE–PME 0.14, PME–PME 1.05. Median ocular quadrangle length 0.90, anterior width 0.94, posterior width 1.73. —*Chelicerae*. Groove narrow, margins diverging distally; groove length 3.70, middle width 0.59. Cheliceral teeth: 29 central, occupying basal half of groove; 15 prolateral; 14 retrolateral. —*Labium*. Wider than long, anterior margin weakly indented. Length 2.18, width 2.64. Cuspules occupying central two thirds of labium. Labiosternal sigilla entire. —*Sternum*. Ovoid. Length 6.89, width 5.17. Posterior sigilla ovoid: length 1.10, width 0.60. —*Palp*. Spination: patella p1 (bristle-like), tibia 5, tarsus 12. Trichobothria: tibia p11 r10, tarsus 22. Tarsal claw with 10 teeth. —*Legs*. 4123. Legs I, IV subequal.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	9.50	5.32	7.32	6.40	3.44	31.98
2	8.45	4.88	6.15	5.79	3.28	28.55
3	7.46	3.94	4.80	5.66	3.69	25.55
4	9.00	4.88	6.71	7.18	4.22	31.99

*Tibia I* width 2.30. Metatarsus I proximal width 1.44. Coxae I, II with short, anteromedial bristle-like setae. Tarsal claw teeth legs I, II: superior 11, 11; inferior III, IV. Trichobothria legs I, II: tarsus 24, 24; metatarsus 21, 19; tibia p10 r9, p9 r10. —*Leg spination*. Leg I: femur p1, patella p1, tibia 3 (p2), metatarsus 11, tarsus 15. Leg II: femur p2, patella p2, tibia 5 (p2), metatarsus 14, tarsus 14. Leg III: femur 0, patella

3 (p2 r1), tibia 8 (p2 r2), metatarsus 23 (p9 r2), tarsus 17. Leg IV; femur 0, patella r1, tibia 6 (p1 r2), metatarsus 22 (p6 r2), tarsus 25. —*Abdomen*. Posterior lateral spinnerets-lengths: total 6.20; basal segment 2.40, middle 1.32, apical 2.48. Apical segment width 0.77. —*Genitalia*. Spermathecae long, slender; gently curved toward midline. Basal separation twice the width of a spermatheca. Length 1.50, width 0.41.

**Distribution.** Sydney, Central Coast and Illawarra regions and west to the Blue Mountains (Fig. 7).

**Comments.** Specimens from the Hunter River/Newcastle region are typically larger than other individuals (male CL c. 12 mm) and the palpal tibia and embolus may be more elongate.

**Mating position in *A. robustus*.** Mating was observed for *A. robustus* (Gray, 1986), a species with well-developed apophyses on tibia and metatarsus II. The position adopted during its mating is almost identical to that recorded for *H. formidabilis* (Fig. 1F: Walker, in Mascord, 1980; Walker, 1982), another species with large apophyses, the *A. robustus* male, uses his second legs to clasp the basal parts of the female femora II, locking them in the cavity between the tibial and metatarsal apophyses. At the same time he braces his first legs against the chelicerae and palps of the rearing female, pushing her up and backwards. The main difference in the *H. formidabilis* mating was the distal crossing of the bracing first legs (Fig. 1F)—this was not seen in the *A. robustus* matings. Hickman (1964) described mating in *H. infensa*, a species lacking leg II apophyses. The accompanying plate shows the spiders in an almost identical position to that observed for *A. robustus* (although Hickman's notes are somewhat contradictory).

Snazel & Allison (1989) noted the marked similarities between mating in *H. formidabilis* and *Macrothele*, another genus in which leg II modifications are present or absent. Coyle (1986) observed similar mating behaviour in *Euagrus* sp., a diplurid genus with tibia II apophyses.



*Atrax yorkmainorum* n.sp.

Figures 7–10; Tables 3, 34

**Etymology.** The species is named for Dr Barbara York Main and Professor Bert Main, in recognition of their remarkable achievements in Arachnology and Ecology.

**Types.** Holotype male: AMS KS1042, Batlow, New South Wales, 35°30'S 148°08'E, H.V. Smith, 16 June 1951. Paratypes (AMS). New South Wales. *Males:* AMS KS4104, Bago Forest, nr. Batlow, 35°41'S 148°09'E, 5 November 1979, J. Kovacs; AMS KS4607, Batlow-Tumut area, 35°25'S 148°10'E, 5 March 1980, N. Robinson; AMS KS4718, Tumbarumba, 35°45'S 148°00'E, 25 Mar AMS KS1043, Batlow, 35°30'S 148°08'E, 1980; AMS KS12361, AMS KS1050, Wondalga, 35°23'S 148°07'E, 14 October 1948, C.H. Jagoe; *Females:* AMS KS16451, Batlow, 35°30'S 148°08'E, 16 June 1951, H.V. Smith; AMS KS5054, Bago Forest, 35°41'S 148°09'E, 8 January 1979, J. Kovacs; AMS KS1047, Tumut, 35°18'S 148°13'E, 4 May 1977, B. Buckley. Australian Capital Territory. *Males:* Uriarra Forest, Brindabella Range, 35°18'S 148°56'E, 9 July 1983, M.R. Gray; AMS KS13396, Tidbinbilla Nature Reserve, 35°28'S 148°54'E, 26 October 1983, W. Osborne. *Females:* AMS KS3542, Tidbinbilla Nature Reserve, 35°28'S 148°54'E, November 1978, P. Ormay; AMS KS928, Gibraltar Falls, 35°29'S 148°56'E, 24 October 1971, T. McGregor.

**Other material examined. New South Wales (males).** AMS KS13534, Bago Forest, near Batlow, 5 November 1979, J. Kovacs; AMS KS1041, Batlow, December 1948, C.H. Jagoe; AMS KS1042, Dora Dora National Park, Jingellic near Albury, 16 January 1979, A.B. Rose (AMS). **New South Wales (females):** AMS KS1041, Batlow, December 1948, C.B. Jagoe; AMS KS4608, Batlow-Tumut area, 5 March 1980, N. Robinson; AMS KS7566, Cooma, 19 January 1980, R. Mascord; AMS KS13545, Gundagai, 25 October 1983. **Australian Capital Territory (males).** AMS KS13397, Tidbinbilla Nature Reserve, 26 October 1983, W. Osborne; AMS KS13592, Canberra area, 35°17'S 149°13'E, 13 Dec 1983, T. Mitchell. **Australian Capital Territory (females):** AMS KS654, Honeysuckle Creek, 24 February 1977, M. Noble; AMS KS12032, Gudgenby National Park; AMS KS929, near Piccadilly Circus, 25 January 1972, K. Watson.

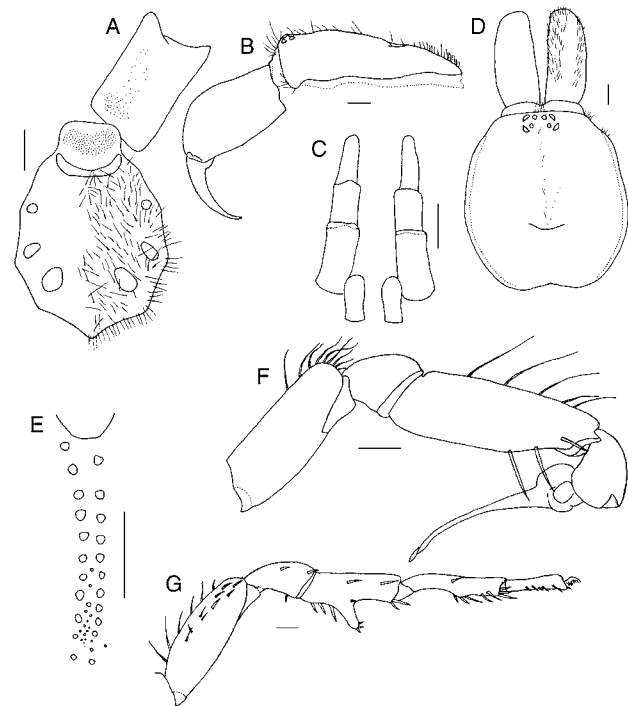


Figure 8. *Atrax yorkmainorum*, male: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) spinnerets; (D) cephalothorax and chelicerae, dorsal; (E) cheliceral groove teeth; (F) palp, prolateral; (G) leg II, prolateral. Scale lines 1 mm.

**Diagnosis.** CL 7.39–9.22 (male). Usually smaller than *A. robustus* and differs from it by palp lacking dorsal tibial spines, embolus base more strongly offset from tegulum, and apical part of embolus set at angle to strongly curved embolic shaft (Fig. 10B,C). Differs from *A. sutherlandi* by its more elongate, slender and curved embolus.

**Male (holotype).** —*Size.* Carapace length 8.42, width 7.48. Abdomen length 8.50, width 6.90. —*Colour.* Basic colour pattern. —*Carapace.* Height 2.69. Frontal width 4.57. Fovea narrow, procurved. Mid-dorsal cephalic setae few, reach fovea. Anterior striae setae present. Anterolateral carapace angle with small, weak bristles. —*Eyes.* Central eye region weakly raised. Eye group width 1.66. Median ocular quadrangle length 0.57, anterior width 0.69, posterior width 1.05. Diameters: AME 0.20, ALE 0.36, PLE 0.35, PME 0.19. —*Chelicerae.* Cheliceral groove narrow, margins subparallel, diverging slightly distally. Groove length 2.48, middle width 0.26. Cheliceral teeth: 16 central, confined to basal half of groove; 11 prolateral; 12 retrolateral. —*Labium.* Much wider than long, apically weakly indented. Length 1.49, width 1.08. Labiosternal sigilla broad, entire. Cuspules c. 193, number moderate, in crescentic transverse band; frequency moderate. —*Sternum.* Ovoid. Length 4.43, width 3.62. Posterior sternal sigilla ovoid, broad. Strong bristles on posterior margin. —*Palp.* Tegular area small, slightly wider than long. Embolus long, slender; shaft tapered and strongly curved. Distal embolus very slender, apical region weakly twisted and set at angle to the embolic axis; ejaculatory groove narrow. Embolus base strongly offset from tegulum. Bulb length 4.16, width 1.10. Embolus length 3.23, midwidth 0.18. Length of femur 3.48, patella 1.57, tibia 4.61. Width of tibia 1.71. Spination: femur 3, patella 0, tibia 3 (all bristle-like). Distal femoral bristles and spines sinuous. —*Legs.* 4123.

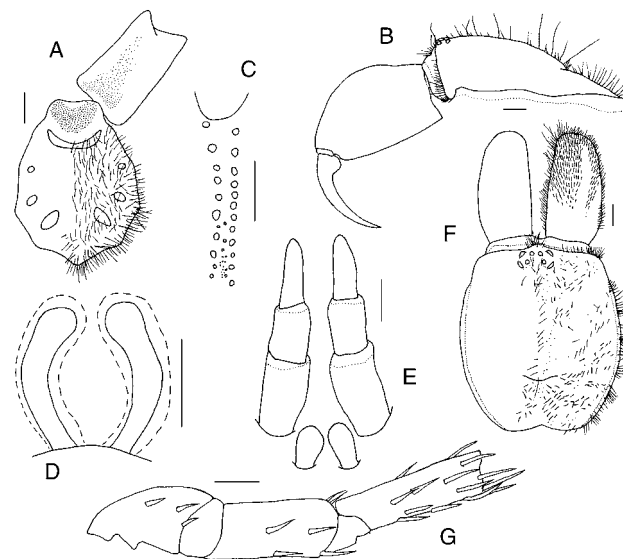


Figure 9. *Atrax yorkmainorum*, female: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) cheliceral groove teeth; (D) spermataecae; (E) spinnerets; (F) cephalothorax and chelicerae, dorsal; (G) leg III, prolateral, patella, tibia, metatarsus. Scale lines 1 mm.

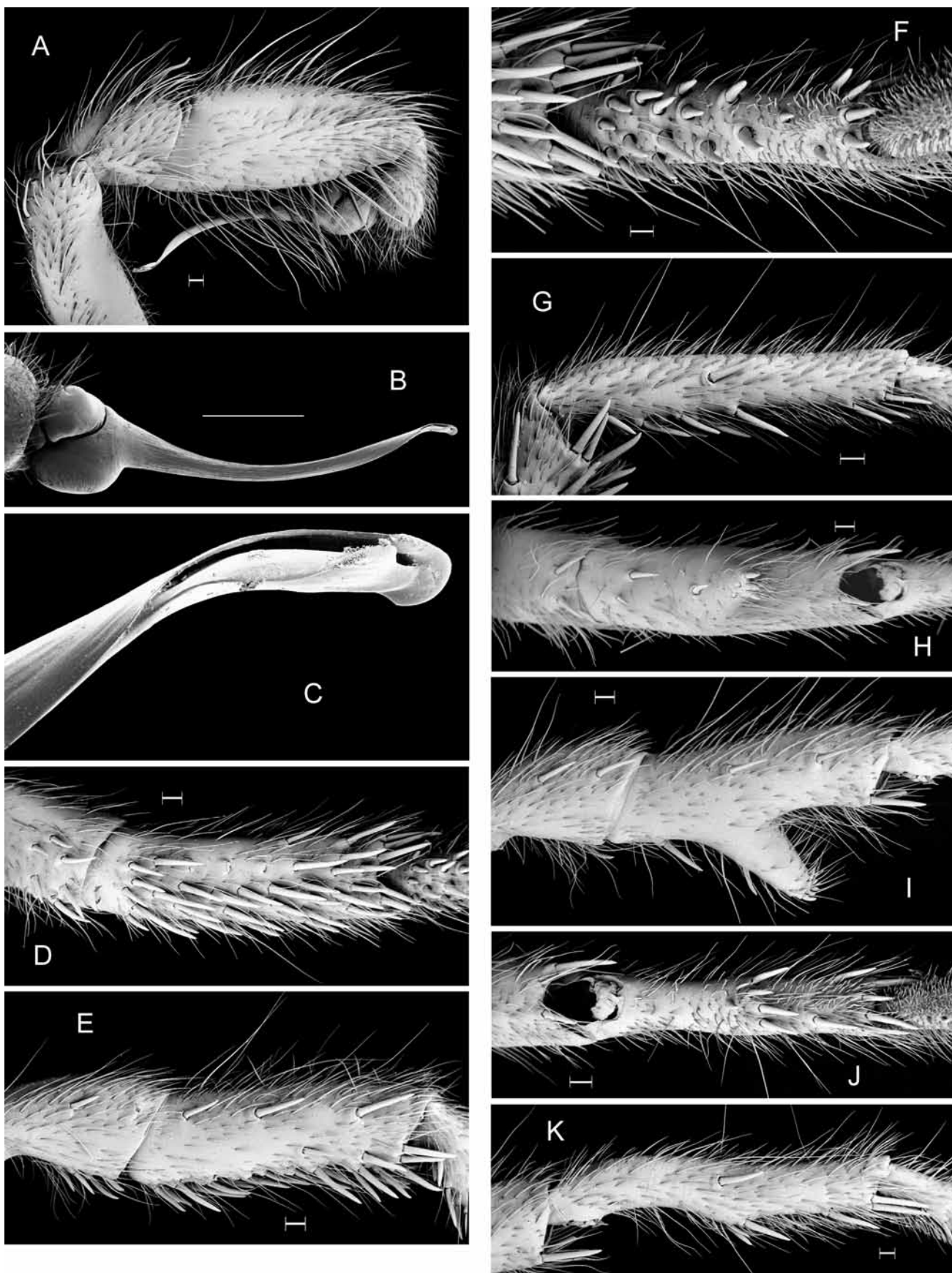


Figure 10. *Atrax yorkmainorum*, male (A,D–K, AMS KS13592; B,C, AMS KS1034): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J,K) metatarsus II—J, ventral, K, prolateral. Scale lines: 0.3 mm, except A,F,K 0.2 mm and B 1.0 mm.

**Table 3.** Male morphological data—*Atrax yorkmainorum* (n = 10).

character	range	mean	character	range	mean	character	ratio	SD
CL	7.83–9.22	8.47	Mt1S	12–26 (p0–1)	19	CW/CL	0.92	0.027
CW	7.14–8.60	7.76	Ta1S	7–13	10	CH/CW	0.35	0.021
CH	2.53–3.03	2.72	Ti2S	13–20 (p1–3)	16	CFW/CL	0.56	0.042
CFW	4.14–5.20	4.69	STC2teeth	12–15	13	CHGW/L	0.11	0.016
ChGL	2.33–2.70	2.59	BulbL	3.93–4.78	4.36	SW/SL	0.77	0.032
ChGW	0.22–0.35	0.28	EmblL	2.92–3.71	3.37	LL/LW	0.72	0.023
ChGCT	9–18	14	BulbW	1.08–1.22	1.12	PLSAPW/L	0.28	0.023
LL	1.03–1.30	1.16	EmbmW	0.18–0.25	0.20	BulbW/EmblL	0.34	0.019
LW	1.41–1.77	1.58	PalpTibL	4.32–5.10	4.72	EmbmW/L	0.06	0.008
CUSP	167–228	199	PalpTibW	1.56–1.87	1.69	PalpTibW/L	0.36	0.022
SL	4.19–5.06	4.56	PalpTibS	1–4	3	BulbL/TibL	0.92	0.047
SW	3.28–3.83	3.52	PalpPatS	0–2	<1			
PLSAPW	0.36–0.51	0.42	PalpFemS	3–4	3			
PLSAPL	1.15–1.84	1.51						
Fe1S	5–13	8						
Pa1S	5–12 (p2–4)	8						

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	6.40	3.40	4.98	4.73	2.69	22.20
2	5.98	3.26	4.69	4.61	2.61	21.15
3	5.30	2.79	4.01	4.59	3.06	19.75
4	6.19	2.92	5.00	5.44	3.40	22.95

*Tibia I* width 1.35. Femora I and II with dorsal spines. Leg I unmodified, tibial spines numerous. Tibia II with large, conical apophysis placed centrally. Metatarsus II sinuous, curved proximally with a weak, spined apophysis centrally; ventral spines lacking proximally. Anterior coxal hairs unmodified. Tarsal scopulae legs I–IV: weak. Distal metatarsal scopulae legs I–IV: absent to weak. Tarsal claw teeth leg I, II: superior 14, 13; inferior 0, 2. Trichobothria legs I, II: tarsus 15, 15; metatarsus 14, 14; tibia p8 r8, p8 r8. —*Leg spination*. Leg I: femur 7 (d3 p4) (some bristle-like), patella 5 (p2), tibia 36 (p2), metatarsus 19, tarsus 10. Leg II: femur 10 (d4 p6) (plus several bristle-like), patella 5 (p2), tibia 16 (p2), metatarsus 16 (p1), tarsus 10. Leg III: femur 0 (long bristles), patella 5 (p4 r1), tibia 14 (p2 r3), metatarsus 23, tarsus 12. Leg IV: femur 0 (long bristles), patella r1, tibia 13 (p1 r3), metatarsus 20, tarsus 17. Abdomen. Posterior lateral spinnerets, lengths: total 4.41; basal segment 1.63; middle 1.18; apical 1.60. Apical segment width 0.41.

**Female** (paratype AMS KS16451). —*Size*. Carapace length 8.57, width 7.14. Abdomen length 10.27, width 7.89. —*Colour*. Basic colour pattern. —*Carapace*. Much longer than wide. Height 3.16; frontal width 5.64. Cephalic length 6.05. Fovea narrow, procurved. Mid-dorsal cephalic setae few, alternating large and small, reach back to fovea. Anterior striae setae numerous. Anterolateral carapace angle with weak bristles. —*Eyes*. Eye region slightly raised centrally. Eye group width 1.65. Diameters: AME 0.20, ALE 0.45, PLE 0.35, PME 0.26. Interdistances: AME–AME 0.23, AME–ALE 0.15, ALE–PLE 0.14, PLE–PME 0.07, PME–PME 0.59. Median ocular quadrangle length 0.59, anterior width 0.63, posterior width 1.05. —*Chelicerae*. Cheliceral groove narrow, margins subparallel, weakly divergent distally. Groove length 2.63, middle width 0.35. Cheliceral teeth: 16 central in basal half of groove; 11 prolateral, 12 retrolateral. —*Labium*. Wider than long, anterior margin indented. Length 1.36, width 1.78. Cuspules spread in shallow v-shape across anterior two-thirds of labium. Labiosternal sigilla

entire or narrowed centrally. —*Sternum*. Ovoid, moderately wide. Length 4.59, width 3.84. Posterior sigilla moderately short, ovoid: length 0.75, width 0.37. —*Palp*. Spination: tibia 4, tarsus 14. Trichobothria: tibia p6 r7, tarsus 12. Tarsal claw with 7 teeth. —*Legs*. 4123. Legs I, IV subequal.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	5.98	3.57	4.56	3.71	2.24	20.06
2	5.30	3.37	3.88	3.47	2.24	18.26
3	4.56	2.82	3.15	3.30	2.38	16.21
4	5.59	3.18	4.28	4.38	2.75	20.18

*Tibia I* width 1.51. Metatarsus I proximal width 1.02. Coxal setae unmodified. Tarsal claw teeth legs I, II: superior 9, 9; inferior 2, 2. Trichobothria legs I, II: tarsus 13, 15; metatarsus 12, 11; tibia p9 r8, p8 r7. —*Leg spination*. Leg I: femur 0, patella 0, tibia 2, metatarsus 11, tarsus 10. Leg II: femur 0, patella 0, tibia 2 (p1), metatarsus 12, tarsus 8. Leg III: femur 0, patella pd3, tibia 6 (p2 r1), metatarsus 20 (p6 rd2). Leg IV: femur 0, patella 0, tibia 4, metatarsus 14, tarsus 12. —*Abdomen*. Posterior lateral spinnerets, lengths: total 4.20; basal segment 1.73, middle 1.08, apical 1.39. Apical segment width 0.45. —*Genitalia*. Spermathecae elongate, strongly curved, approximated basally and apically but well separated in middle. Apical region slightly wider than remainder of spermatheca. Length 1.84, width 0.35.

**Distribution**. Southeastern New South Wales and Australian Capital Territory (Fig. 7).

### *Atrax sutherlandi* n.sp.

Figures 11–14; Tables 4, 34

**Etymology**. The species is named for the late Professor Struan Sutherland, whose venom research resulted in the production of a successful funnel-web spider antivenom.

**Types**. Holotype male: AMS KS1076, Bermagui, New South Wales, 36°25'S 150°04'E, K. Walker. Paratypes. New South Wales (AMS). *Males*: AMS KS7464, Bega, 36°40'S 149°54'E, K. Walker; AMS KS1595, Nadgee Nature Reserve; AMS KS1074, Bermagui, 36°25'S 150°04'E, K. Walker; AMS KS11748, Bondi State Forest, nr. Bombala, 37°06'S 149°15'E, 14 November 1980, G. Gowing *et al.*; AMS KS1075, Bermagui, 36°25'S 150°04'E, K. Walker. *Females*: AMS KS5127, Bermagui, 36°25'S 150°04'E, 18 May 1973, M. Gray; AMS KS4886, Bockelo Creek, 18 May 1972, M. Gray;

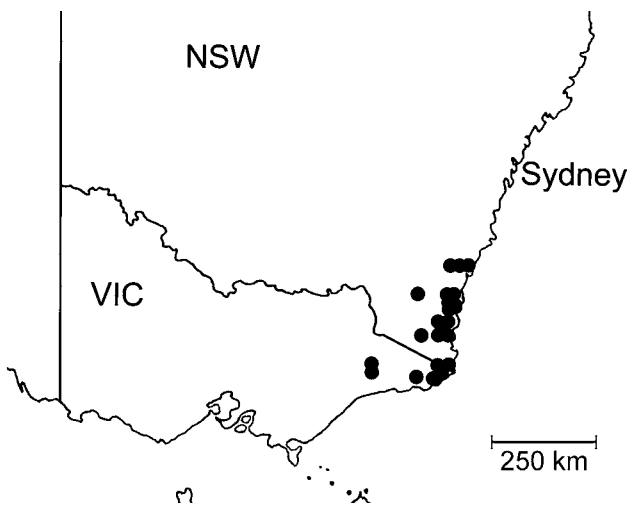


Figure 11. Collection records for *Atrax sutherlandi*.

AMS KS11848, Bondi State Forest, nr. Bombala, 37°06'S 149°15'E, 14 November 1980, G. Gowing; AMS KS3618, Merimbula, 36°53'S 149°54'E, 6 September 1976, H. Harvey. **Males.** K11078 (MV), Noorinbee, 37°31'S 149°10'E, Vic., 12 November 1969, A. Neboiss; K11088 (MV), Cann River, 37°34'S 149°09'E, 5 March 1964. **Females** (AMS): AMS KS3397, Mallacoota Inlet, 37°33'S 149°46'E, 9 October 1971, S. Sutherland; AMS KS1092, Genoa, 37°28'S 149°35'E, 1 November 1964.

**Other material examined. New South Wales (males):** AMS KS8467, Bombala, 1981; AMS KS5118, Bega, 17 May 1973, Ambulance Station; Merimbula, March 1965 (MV); AMS KS9561, Monga; AMS KS5120, Mount Doctor George, near Bega, 17 May 1974; AMS KS6072, Mumbulla State Forest, near Bega, November 1980, R. Wells; AMS KS1085, Bemboka, 10 May 1970, M. Clune; AMS KS14232, Bermagui, 8 April 1984; AMS KS11528, Bondi State Forest, near Bombala, 14 November 1980, G. Gowing *et al.*; AMS KS1084, Brogo, 4 December 1962, K. Walker; AMS KS5497, Kioloa State Forest, 4 October 1979–30 October 1979, C. Horseman; AMS KS5121, Beckelo Creek, 18 May 1973, M. Gray;

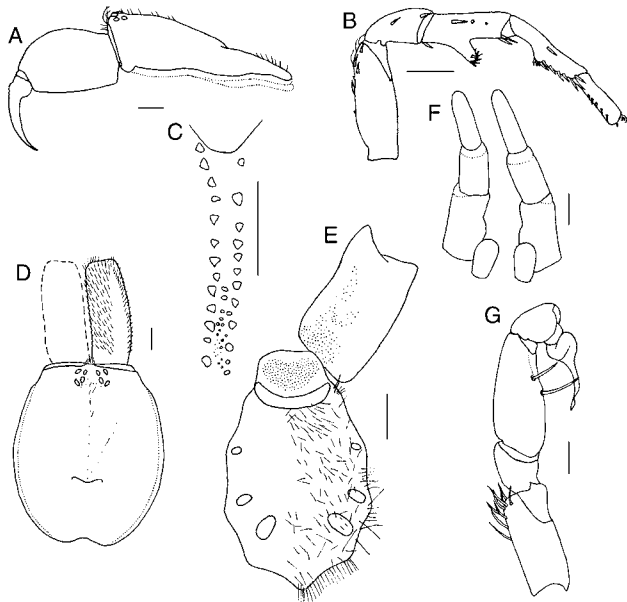


Figure 12. *Atrax sutherlandi*, male: (A) cephalothorax and chelicerae, lateral; (B) leg II, prolateral; (C) cheliceral groove teeth; (D) cephalothorax and chelicerae, dorsal; (E) sternum, labium and maxilla; (F) spinnerets; (G) palp, prolateral. Scale lines 1 mm.

AMS KS5119, Bega, March 1974, Ambulance Station; AMS KS5126, Bega, Autumn 1973; AMS KS1086, Bemboka, July 1977, G. Wishart; AMS KS1074, Bermagui, K. Walker; AMS KS3619, Bombala, 17 January 1930, A.J. Barrett; AMS KS11445, Bondi State Forest, near Bombala, 31 March 1981, G. Gowing; Brown Mountain, 30 March 1967, R.J.B. (ANIC); AMS KS5042, Candelo, 17 May 1973, M. Gray; AMS KS7299, Cooma, 6 April 1981, A.N. Wallace; AMS KS1102, Merimbula, 5 June 1964; AMS KS1595, Nadgee Nature Reserve; AMS KS1088, Narooma, 29 January 1959, R. Martin; AMS KS3624, Narooma, 15 June 1971, J. Cobcroft; AMS KS1083, Nerrigundah, 1 October 1977, C. Cowall. **Victoria (males):** AMS KS1055, Murrindal, 2 km N. of, 3 June 1973, L. Windsor; Buchan, 9 January 1964, Dingey & Peshurst (MV); AMS KS1087, Cobargo, June 1957, C.G. Bradford; Cobargo, 5 November 1964 (MV); Mallacoota, 26 September 1963 (MV); AMS KS1057, Gelantipy, 6 May 1947; AMS KS1091, Mallacoota, May 1957; Mallacoota, January 1963, C. McArthur; AMS KS3397, Mallacoota Inlet, October 1971, S. Sutherland; AMS KS1055, Murrindal, 3 June 1973, L. Windsor; AMS KS1095, Noorinbee, 17 June 1957, N.A. Wakefield; AMS KS1096, Noorinbee, 25 September 1963, D.S. Broome; AMS KS1108, Wingan, 27 February 1946.

**Diagnosis.** CL 7.22–10.20 (male). Differs from other *Atrax* spp. by having a relatively shorter and wider embolus, and a shorter palpal tibia (PalpTibW/ L 0.43) (Fig. 14A–C; Table 4).

**Male (holotype).** —*Size.* Carapace length 7.56, width 6.59. Abdomen length 6.93, width 5.76. —*Colour.* Basic colour pattern. —*Carapace.* Longer than wide. Height 2.55. Frontal width 4.12. Fovea narrow, procurved. Mid-dorsal cephalic setae reach fovea, anterior strial setae present. Anterolateral carapace angle with small, very weak bristles. —*Eyes.* Central eye region weakly raised. Eye group width 1.58. Median ocular quadrangle length 0.63, anterior width 0.71, posterior width 1.03. Diameters: AME 0.19, ALE 0.44, PLE 0.32, PME 0.25. —*Chelicerae.* Cheliceral groove narrow, margins subparallel except distally where they diverge. Groove length 2.27, middle width 0.24. Cheliceral teeth: 23 central, confined to basal half of groove; 13 prolateral;

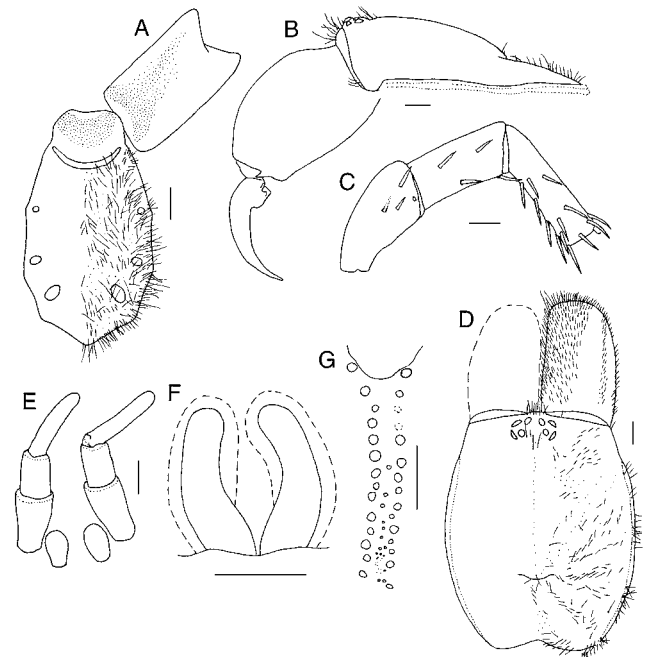


Figure 13. *Atrax sutherlandi*, female: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) leg III, prolateral, patella, tibia, metatarsus; (D) cephalothorax and chelicerae, dorsal; (E) spinnerets; (F) spermathecae; (G) cheliceral groove teeth. Scale lines 1 mm.

**Table 4.** Male morphological data—*Atrax sutherlandi* (n = 17).

character	range	mean	character	range	mean	character	ratio	SD
CL	7.22–9.64	8.23	Mt1S	18–35	23	CW/CL	0.87	0.039
CW	6.49–8.45	7.21	Ta1S	9–24	13	CH/CW	0.36	0.025
CH	2.13–3.36	2.62	Ti2S	10–23 (1–4)	15	CFW/CL	0.62	0.039
CFW	3.81–5.57	4.45	STC2teeth	12–14	13	CHGW/L	0.12	0.018
ChGL	2.15–3.16	2.41	BulbL	2.79–4.40	3.26	SW/SL	0.70	0.042
ChGW	0.19–0.34	0.28	EmblL	2.02–3.01	2.34	LL/LW	0.70	0.056
ChGCT	10–32	21	BulbW	0.90–1.21	1.02	PLSAPW/L	0.25	0.023
LL	0.92–1.39	1.07	EmbmW	0.15–0.22	0.19	BulbW/Embl*	0.44	0.043
LW	1.36–1.77	1.53	PalpTibL	3.24–4.56	3.65	EmbmW/L*	0.08	0.012
CUSP	142–295	209	PalpTibW	1.34–1.85	1.56	PalpTibW/L*	0.43	0.035
SL	4.25–5.47	4.83	PalpTibS	1–3	3	BulbL/TibL	0.89	0.077
SW	2.82–3.85	3.41	PalpPatS	0–1	<1			
PLSAPW	0.38–0.66	0.44	PalpFemS	0–4	2			
PLSAPL	1.26–2.07	1.53						
Fe1S	2–10	6						
Pa1S	5–16 (p0–3)	10						

13 retrolateral. —*Labium*. Much wider than long, apically weakly indented. Length 0.99, width 1.49. Labiosternal sigilla broad, entire. Cuspules c. 218, number moderate, grouped in broad, central band. —*Sternum*. Ovoid, long. Length 4.73, width 3.28. Posterior sigilla ovoid. Bristles on posterior margin strong. —*Palp*. Tegular area wider than long. Embolus of moderate length, shaft gently curved and strongly tapered. Distal embolus slender, weakly twisted, ejaculatory groove wide. Embolus base moderately to strongly offset from tegulum. Bulb length 2.82, width 0.96. Embolus length 2.10, midwidth 0.19. Length of femur 3.32, patella 1.47, tibia 3.26. Width of tibia 1.48. Spination: femur 3, patella 0, tibia 2. Distal femur with sinuous spines and strong bristles. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	5.63	3.16	4.23	4.08	2.41	19.51
2	5.10	2.98	4.10	4.00	2.43	18.60
3	4.75	2.61	3.41	3.92	2.81	17.50
4	5.28	2.79	4.61	4.80	3.04	20.52

*Tibia I* width 1.26. Femora I and II with dorsal spines. Leg I unmodified, patella and tibial ventral spines numerous. *Tibia II* with large, conical apophysis placed just proximal of centre. Metatarsus II sinuous, strongly curved proximally, with a small, spined, central apophysis. Anterior coxal hairs unmodified. Tarsal scopulae legs I–IV: weak to moderate. Distal metatarsal scopulae legs I–IV: absent to weak. Tarsal claw teeth legs I, II: superior 13, 13; inferior 3, 2. Trichobothria legs I, II: tarsus 14, 13, metatarsus 14, 14; tibia p9 r9, p9 r8. —*Leg spination*. Leg I: femur d6, patella 11 (p2), tibia 39 (p2), metatarsus 24, tarsus 12. Leg II: femur d7, patella 5 (p2), tibia 16 (p3), metatarsus 16 (p1), tarsus 13. Leg III: femur 0 (long bristles), patella 6 (p5 r1), tibia 11 (p4 r3), metatarsus 15, tarsus 11. Leg IV: femur 0 (long bristles), patella r1, tibia 8 (p1 r2), metatarsus 21, tarsus 17. —*Abdomen*. Posterior lateral spinnerets, lengths: total 3.82, basal segment 1.36; middle 0.98; apical 1.48. Apical segment width 0.41.

**Female** (paratype AMS KS3397). —*Size*. Carapace length 10.20, width 8.16. Abdomen length 10.88, width 9.18. —*Colour*. Basic colour pattern. —*Carapace*. Much longer than

wide. Height 3.74; frontal width 6.39. Cephalic length 7.11. Fovea narrow, procurved. Mid-dorsal cephalic setal row with alternating large and small bristles which extend back to the fovea. Anterior striae setae numerous. Anterolateral carapace angle with weak bristles. —*Eyes*. Eye region weakly raised. Eye group width 1.99. Diameters: AME 0.21, ALE 0.41, PLE 0.45, PME 0.27. Interdistances: AME–AME 0.27, AME–ALE 0.20, ALE–PLE 0.20, PLE–P.M.E 0.12, PME–PME 0.81. Median ocular quadrangle length 0.78, anterior width 0.78, posterior width 1.34. —*Chelicerae*. Cheliceral groove narrow, margins subparallel, divergent distally. Groove length 3.26, middle width 0.47. Cheliceral teeth: 25 central, occupying basal half of groove; 14 prolateral; 14 retrolateral. —*Labium*. Much wider than long, anterior margin indented. Length 1.60, width 2.28. Cuspules occupy anterior two-thirds of labium. Labiosternal sigilla entire. —*Sternum*. Long, ovoid. Length 6.12, width 4.01. Posterior sigilla short, ovoid: length 0.48, width 0.27. —*Palp*. Spination: tibia 5, tarsus 11. Trichobothria: tibia p8 r8, tarsus 18. Tarsal claws with 8 teeth. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	7.48	4.15	5.64	4.84	2.72	24.83
2	6.58	3.88	4.73	4.32	2.65	22.11
3	5.81	3.16	3.50	4.35	2.92	19.74
4	7.11	3.84	5.03	5.54	4.01	25.53

*Tibia I* width 1.77. Metatarsus I proximal width 1.13. Tarsal claw teeth legs I, II; superior 10, 11; inferior 3, 2. Trichobothria legs I, II: tarsus 20, 16; metatarsus 20, 13; tibia p10 r9, p9 r9. —*Leg spination*. Leg I: femur 0, patella 0, tibia 2, metatarsus 12, tarsus 15. Leg II: femur p1, patella 0, tibia 4 (p2), metatarsus 11, tarsus 12. Leg III: femur 0, patella pd3 r1, tibia 7 (p2 r2), metatarsus 17 (p6 rd2), tarsus 17. Leg IV: femur 0, patella 0, tibia 7 (r2), metatarsus 21 (p4 rd2), tarsus 18 —*Abdomen*. Posterior lateral spinnerets, lengths: total 5.55; basal segment 2.04, middle 1.16, apical 2.35. Apical segment width 0.54. —*Genitalia*. Spermathecae moderately elongate, gently curved, basally approximated. Length 1.66, width 0.52.

**Distribution**. Southeastern New South Wales and north-eastern Victoria (Fig. 11).



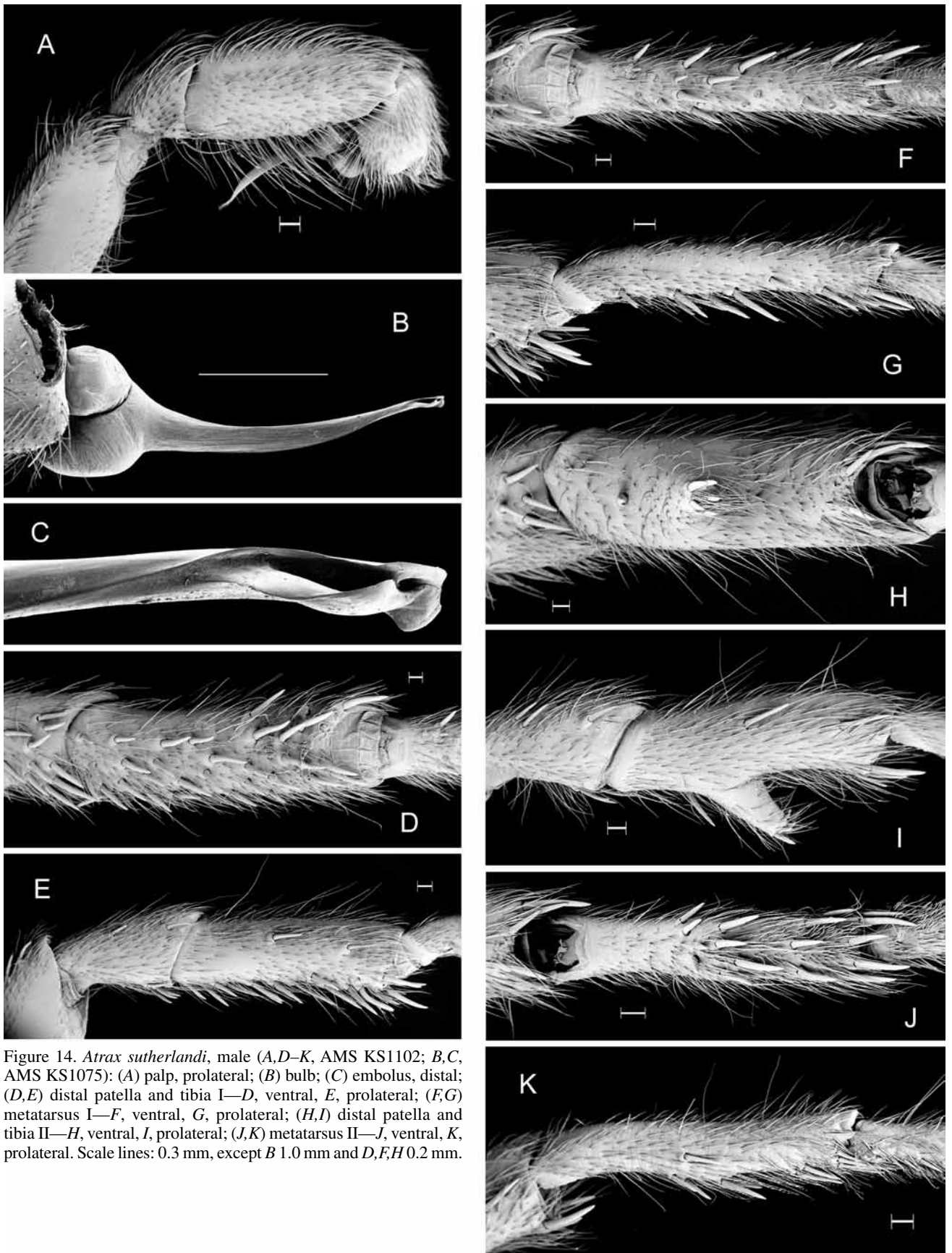


Figure 14. *Atrax sutherlandi*, male (A,D–K, AMS KS1102; B,C, AMS KS1075): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J,K) metatarsus II—J, ventral, K, prolateral. Scale lines: 0.3 mm, except B 1.0 mm and D,F,H 0.2 mm.

***Illawarra* n.gen.**

Type species *Illawarra wisharti* new species.

**Diagnosis.** Differs from other atracine species as follows—in males, by having broad midventral spine row on male tarsi I–IV (Fig. 3B); in females, by having a robust, aspinose leg I with metatarsus partially fused to tarsus and tarsal claws enlarged.

**Description.** With the characters of the Atracinae. Colour light to dark brown with distinct abdominal chevrons. Carapace longer than wide; relatively low with caput weakly raised (CH/CW 0.37) and narrow frontally (CFW/CL 0.54). Cheliceral paturon less robust than in other genera. (Figs. 16A,B; 17B,C). Cheliceral groove narrow, lateral margins parallel; central tooth row short; basal; prolateral tooth row may be incomplete; retrolateral row complete (Fig. 16C). Labium short (LL/LW 0.70) (Fig. 16D), cuspule numbers low to moderate (85–154). Apical segment of posterior lateral spinnerets relatively short. Leg I more robust than other legs, especially in females; female leg I without spines, tarsal claws enlarged and metatarsus thickened proximally (wedge-shaped) and partially fused to the tarsus (Fig. 17H,I). Male tarsi highly spinose (43–93 spines), with two lateral spine rows and a full midventral spine row (Fig. 3B). Female tarsi with few spines. Male femora I, II with slender dorsal spines (Fig. 16F,H); legs I, II without apophyses; tibia I, II and metatarsus I, II spinose, spines slender and scattered (Fig. 18D–J). Male palpal patella a little wider than femur. Palpal bulb with a broad tegular area; groove between tegulum and subtegulum sometimes wide, exposing middle haematodocha.; embolus short, wide. (Figs. 16I, 18B). Female spermathecae two very short, distally broad sacs (Fig. 17E).

**Included species.** *Illawarra wisharti* n.sp.

**Distribution.** The Illawarra region of southern New South Wales.

***Illawarra wisharti* n.sp.**

Figures 3B, 15–18; Tables 5, 34

**Etymology.** The species is named for Graeme Wishart, Australian Museum Associate, idiopid spider researcher, and collector of many mygalomorph spiders in the Illawarra region.

**Types.** Holotype male: AMS KS5357, Nowra, New South Wales, 34°52'S 150°36'E, 17 March 1980. Paratypes (AMS). New South Wales. *Males:* AMS KS15748, Willowvale near Gerringong, 34°45'S 150°47'E, 25 Mar 1985, G. Wishart; AMS KS920, Avondale, 34°30'S 150°45'E, March 1956 R.K. Hayes; AMS KS2721, Figtree, 34°25'S 150°50'E, 16 March 1979, J. Lewis; AMS KS919, AMS KS5355, Nowra, 34°52'S 150°36'E, 7 April 1980; AMS KS8921, Swan Lake, nr. Sussex Inlet, 35°10'S 150°34'E, 10 April 1982, A. McLaughlin; AMS KS15746, Willowvale, nr Gerringong, 34°52'S 150°36'E, 29 April 1977, G. Wishart; AMS KS16450, Unanderra, 34°27'S 150°50'E, 8 February 1979, J. Waffle; AMS KS5356, Bangalee Scout Camp, Nowra area, 14 March 1980; *Females:* AMS KS30273, Willowvale, 4km W. of Gerringong, 34°35'S 149°37'E, November 1979, G. Wishart; AMS KS2667, AMS KS4778, Nowra South, 34°54'S 150°35'E, March 1959; AMS KS13781, Farmborough Heights, near Unanderra, 34°27'S 150°48'E, J. Waffle, 8 February 1979.

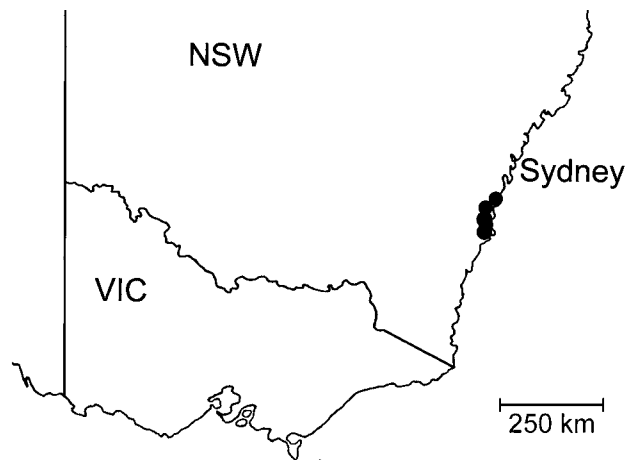


Figure 15. Collection records for *Illawarra wisharti*.

**Other material examined.** New South Wales (males): AMS KS921, Willowvale, 4 km W. of Gerringong, 11 May 1977, G. Wishart; AMS KS922, Willowvale, 4 km W. of Gerringong, 20 May 1977, G. Wishart; AMS KS1448, Willowvale, 4 km W. of Gerringong, 5 April 1978, G. Wishart; AMS KS918, Ulladulla, Ulladulla Ambulance Station; AMS KS10796, Unanderra, January 1983, M. Senior.

**Diagnosis.** CL 6.77–10.13 (male). Male tarsi I–IV strongly spinose (tarsus I with 43–93 spines), with a middle ventral spine row as well as lateral ventral rows (Fig. 3B). Female leg I robust, aspinose; metatarsus I thickened proximally and partially fused with tarsus I, tarsal claws enlarged (Fig. 17H,I).

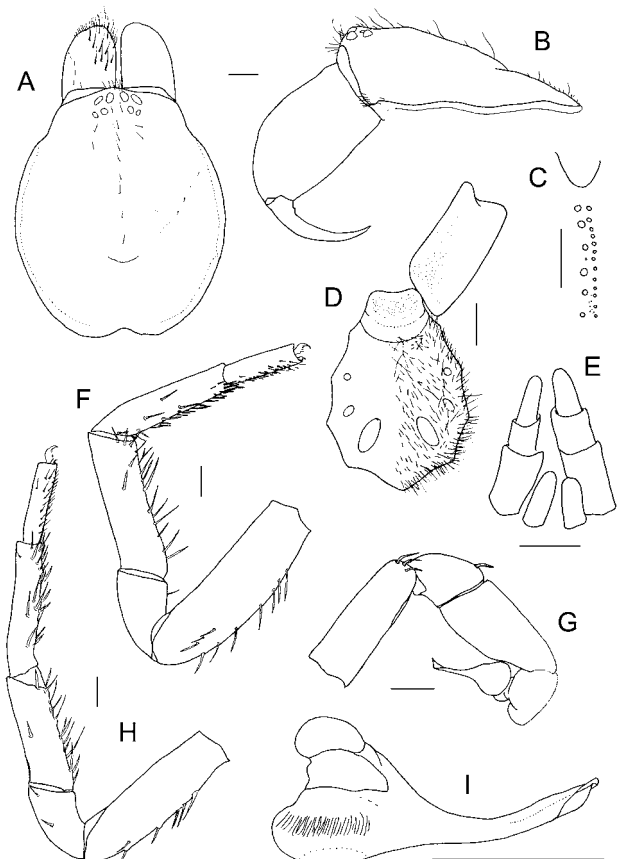


Figure 16. *Illawarra wisharti*, male: (A) cephalothorax and chelicerae, dorsal; (B) cephalothorax and chelicerae, lateral; (C) cheliceral groove teeth; (D) sternum, labium and maxilla; (E) spinnerets; (F) leg I, prolateral; (G) palp, prolateral; (H) leg II, prolateral; (I) palpal organ. Scale lines 1 mm.

**Table 5.** Male morphological data—*Illawarra wisharti* (n = 12).

character	range	mean	character	range	mean	character	ratio	SD
CL	6.77–10.13	8.00	Mt1S	28–76 (p0–1)	48	CW/CL	0.90	0.031
CW	6.36–9.36	7.18	Ta1S*	43–93	70	CH/CW*	0.37	0.02
CH	2.50–2.83	2.66	Ti2S	10–17 (p0–1)	13	CFW/CL*	0.54	0.021
CFW	3.94–5.17	4.32	STC2teeth*	6–10	8	CHGW/L*	0.11	0.016
ChGL	2.01–2.42	2.19	BulbL	1.73–2.11	1.89	SW/SL	0.82	0.021
ChGW	0.20–0.32	0.23	EmbL	1.02–1.22	1.12	LL/LW*	0.70	0.038
ChGCT	7–17	11	BulbW	0.76–0.98	0.84	PLSAPW/L	0.45	0.034
LL	0.86–1.18	0.98	EmbmW	0.10–0.19	0.14	BulbW/EmbL*	0.76	0.047
LW	1.31–1.62	1.39	PalpTibL	2.36–2.92	2.65	EmbmW/L	0.13	0.024
CUSP*	85–154	113	PalpTibW	1.10–1.46	1.24	PalpTibW/L	0.47	0.022
SL	3.60–4.79	4.28	PalpTibS	0–3	1	BulbL/TibL	0.72	0.027
SW	2.95–3.91	3.51	PalpPatS	0–3	1			
PLSAPW	0.30–0.42	0.35	PalpFemS	0–1	1			
PLSAPL	0.68–0.93	0.79						
Fe1S*	3–16	9						
Pa1S	0–4 (p0–1)	2						

**Male** (holotype). —*Size*. Carapace length 7.54, width 6.75. Abdomen length 7.88, width 5.90. —*Colour*. Basic colour pattern, often brown overall, with distinct, narrow abdominal chevrons. —*Carapace*. Longer than wide, weakly raised. Height 2.62. Frontal width 4.06. Fovea procurved. Mid-dorsal cephalic setae few, almost reach fovea. Anterior strial setae absent basally. Anterolateral angle of carapace with weak hairs only. —*Eyes*. Central eye region sessile to slightly raised. Eye group width 1.62. Median ocular quadrangle length 0.78, anterior width 0.75, posterior width 1.05. Diameters: AME 0.30, ALE 0.48, PLE 0.27, PME 0.24. —*Chelicerae*. Anterodorsal paturon bristles strong, sparse. Cheliceral groove very narrow, margins parallel. Groove length 2.15, middle width 0.26. Cheliceral teeth: 10 central, confined to base of groove; 7 prolateral; 13 retrolateral. —*Labium*. Much wider than long, broadly indented apically. Length 0.90, width 1.37. Labiosternal sigilla broad, complete.

Cuspules c. 122, number low to moderate. —*Sternum*. Ovoid, moderately broad. Length 4.12, width 3.32. Posterior sigilla of moderate size, ovoid. —*Palp*. Tegular area almost as long as wide, pear shaped. Middle haematodocha sometimes exposed, in broad tegular-subtegular groove. Embolus short, moderately broad and gently curved, embolus weakly to moderately twisted distally. Embolus weakly offset from tegulum. Bulb length 1.80, width 0.80. Embolus length 1.08, midwidth 0.12. Length of femur 2.96, patella 1.24, tibia 2.36. Width of tibia 1.13. Spination: spines bristle-like; femur 2 sinuous, patella 1 sinuous, tibia 0. Sinuous bristles on femur and patella, strong bristles on tibia. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	6.64	3.06	5.08	5.12	2.54	22.44
2	5.72	2.79	4.10	4.59	2.71	19.91
3	5.33	2.54	3.44	4.55	2.95	18.81
4	6.31	2.87	4.55	5.95	3.53	23.21

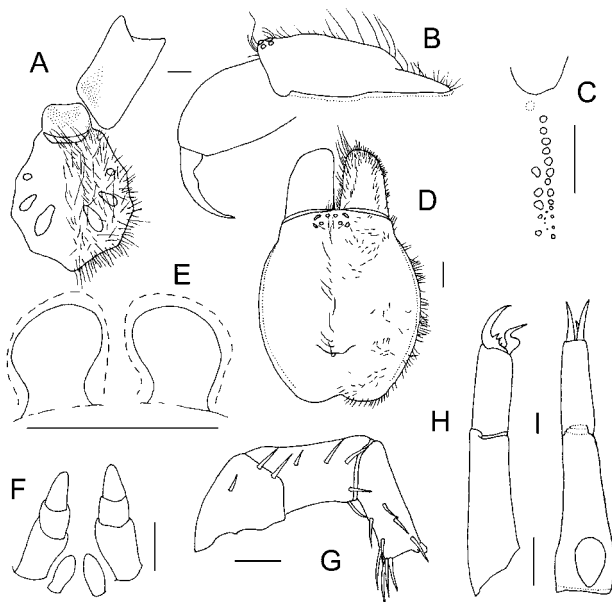


Figure 17. *Illawarra wisharti*, female: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) cephalothorax and chelicerae, dorsal; (D) cheliceral groove teeth; (E) spermathecae; (F) spinnerets; (G) leg III, prolateral, patella, tibia, metatarsus. (H, I) Leg I, metatarsus and tarsus—H, prolateral; I, dorsal. Scale lines 1 mm.

*Tibia I* width 1.44. Femora I–III with dorsal spines, bristle like spines on femur IV. Metatarsus I slightly thickened proximally, dorsal sigilla broad. Metatarsus II slightly bent proximally, tibial and metatarsal spines scattered. Anterior coxal hairs normal. Tarsal spines very numerous with a mid-ventral spine row as well as lateral ventral spine rows. Tarsal scopulae very weak to absent, distal metatarsal scopulae absent. Tarsal claw teeth legs I, II: superior 8, 10; inferior 0, 2. Trichobothria legs I, II: tarsus 10, 8; metatarsus 9, 10; tibia p5 r5, p6 r5. —*Leg spination*. Leg I: femur 9 (d7 p2), patella 1, tibia 23 (p1) metatarsus 56 (p1), tarsus 93. Leg II: femur 7 (d6), patella p2, tibia 16 (p1), metatarsus 48, tarsus 79. Leg III: femur 5, patella 9 (p6 r3), tibia 25 (p7 r6), metatarsus 38, tarsus 80. Leg IV: femur 0 (strong bristles), patella 4 (p2 r2), tibia 19 (p4 r6), metatarsus 42, tarsus 67. —*Abdomen*. Numerous weak dorsal bristles, hair cover sparse. Posterior lateral spinnerets with apical segment rather short. Lengths: total 2.68; basal segment 1.12, middle 0.66, apical 0.90. Apical segment width 0.35.

**Female** (paratype AMS KS2667). —*Size*. Carapace length 8.12, width 6.72. Abdomen length 9.79, width 7.48. —*Colour*. Commonly brown in colour overall, abdominal chevrons distinct. Otherwise colour pattern basic. —*Carapace*. Longer than wide, moderately-weakly raised and

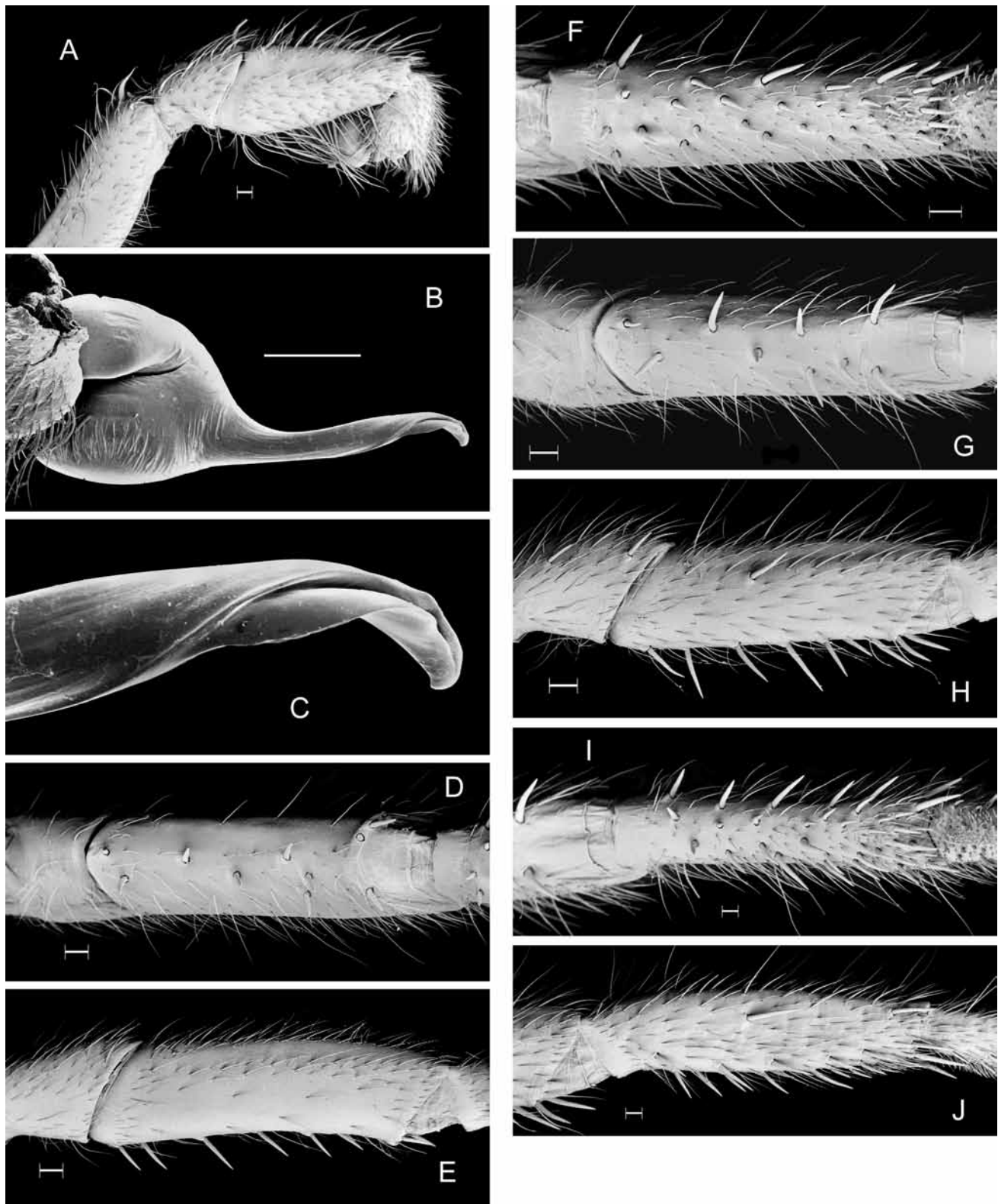


Figure 18. *Illawarra wisharti*, male (A,D–J, AMS KS15748; B,C, AMS KS5356): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F) metatarsus I, ventral; (G,H) distal patella and tibia II—G, ventral, H, prolateral; (I,J) metatarsus II—I, ventral, J, prolateral. Scale lines: 0.3 mm, except A 0.2 mm, and B 1.0 mm.

frontally narrow. Height 2.87, frontal width 4.72. Cephalic length 6.19. Fovea strongly procurved, anterior margin indented. Mid-dorsal cephalic setae long, in single row, may or may not extend back to fovea. Anterior strial setae absent basally. Anterolateral carapace angle with a few very weak

bristles. —*Eyes*. Central eye region slightly raised. Eye group width 1.56. Diameters: AME 0.21, ALE 0.43, PLE 0.24, PME 0.18 Interdistances: AME–AME 0.24, AME–ALE 0.18, ALE–PLE 0.22, PLE–PME 0.12, PME–PME 0.66. Median ocular quadrangle length 0.52, anterior width 0.60,

posterior width 1.05. —*Chelicerae*. Cheliceral groove very narrow, margins parallel. Groove length 2.14, middle width 0.32. Cheliceral teeth: 5 central, confined to basal third of groove; 6 prolateral, a gap separating the distal tooth from the rest; 13 retrolateral. —*Labium*. Wider than long, anterior margin widely indented. Cuspules distributed in shallow V-shaped band on anterior half of labium. Labiosternal sigilla narrow. —*Sternum*. Broad. Length 4.29, width 3.70. Posterior sigilla ovoid: length 0.72, width 0.38. —*Palp*. Spination: tarsus 4. Trichobothria: tibia p5 r5, tarsus 5. Tarsal claw long, slender with two basal teeth. —*Legs*. 1423. Leg I robust, spines absent.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	5.66	3.28	4.43	3.44	2.00	18.81
2	4.43	2.62	2.79	2.61	1.74	14.19
3	4.13	2.17	2.11	2.61	1.89	12.91
4	5.91	2.79	3.32	3.77	2.38	18.17

*Tibia I* width 1.62. Metatarsus I wedge shaped, wide proximally with a large dorsal sigilla, fused distally with tarsus; proximal width 1.15. Tarsus I claws enlarged, strong, hook-like. Coxal hairs unmodified, long. Tarsi I–IV with few ventral spines, all lateral. Tarsal claw teeth few, basal—legs I, II: superior claws 3, 2; inferior 0, 0. Trichobothria legs I, II: tarsus 8, 10; metatarsus 10, 8; tibia p6 r5, p5 r6. Short setae interspersed with trichobothria. —*Leg spination*. Leg I: spines absent. Leg II: femur 0, patella 0, tibia 0, metatarsus 5, tarsus 4. Leg III: femur 0, patella p3, tibia 5 (p3), metatarsus 9 (p3), tarsus 8. Leg IV: femur 0, patella 0, tibia 2, metatarsus 9 (p3), tarsus 8. —*Abdomen*. Posterior lateral spinnerets with short apical segment. Lengths: total 2.38; basal segment 1.14, middle 0.52, apical 0.44. Apical segment width 0.35. —*Genitalia*. Spermathecae very short, only slightly longer than wide. Length 0.78, width 0.58. Apical two-thirds bulbous.

**Distribution.** Illawarra region of New South Wales (Fig. 15).

**Comments.** Burrows are found in the ground litter layer or under rocks. The entrance is at ground level and lacks silk trip-lines. The burrow silk lining is very weak to absent. The spiders are often noted to have a characteristic “ant-like” smell.

### *Hadronyche* L. Koch

- Hadronyche* L. Koch, 1873: 463. Type species by monotypy *Hadronyche cerberaea* L. Koch, 1873. Ausserer, 1875: 143. Simon, 1892: 186; 1903: 969. Hogg, 1901: 274. Rainbow, 1911: 121; 1913: 4; 1914: 252. Roewer, 1942: 208. Bonnet, 1957: 2070. Main, 1976: 74; 1985: 42. Gray, 1978: 125. Gray, 1981: 265; 1988: 114. Raven, 1980: 225 (synonymized with *Atrax*); 2000: 225. Goloboff, 1993: 6. Hedin & Bond, 2006: 467. Platnick, 2010.
- Styphlopis*.—Rainbow, 1913: 5. Type species by monotypy *Styphlopis insularis* Rainbow, 1913. Roewer, 1942: 208. Bonnet, 1958: 4193. Gray, 1978: 125 (synonymized with *Atrax*). Raven, 1980: 255. Main, 1985: 40. First synonymized by Gray, 1988: 114.
- Pseudatrax*.—Rainbow, 1914: 260. Type species by monotypy *Pseudatrax moreaui* Rainbow, 1914. Bonnet, 1958: 3807. Gray, 1978: 125 (synonymized with *Atrax*). Raven, 1980: 255. Main, 1985: 40. First synonymized by Gray, 1988: 114.

*Anepsiada*.—Rainbow & Pulleine, 1918: 167. Type species by monotypy *Anepsiada ventricosa* Rainbow & Pulleine, 1918. Roewer, 1942: 208. Bonnet, 1955: 323. Gray, 1978: 125 (synonymized with *Atrax*). Gray, 1981: Raven, 1980: 255. Main, 1985: 40. First synonymized by Gray, 1988: 114.

**Diagnosis.** Differs from *Atrax* in tibia II being either unmodified or having a blunt, rounded apophysis or apophyseal swelling. Differs from both *Atrax* and *Illawarra* in having caput moderately to strongly raised and cheliceral paturon more robust. Differs from *Illawarra* by male tarsi having two instead of three ventral spine rows.

**Description.** With characters of the Atracinae. Carapace broad, often not much longer than wide, or as wide; caput moderately to strongly raised (CH/CW 0.40–0.53) and wide frontally (CFW/CL 0.61–0.83). (Figs. 20B,E; 23B,G). Cheliceral paturon typically more robust than in other Atracinae, thicker both dorsoventrally and laterally. Cheliceral groove a wide to narrow V-shape with central cheliceral teeth distributed along its full length, in a staggered row (males—Fig. 20G) or one to several irregular rows (females—Fig. 21D); or, less commonly, central teeth confined to a short, basal row (Fig. 97E). Labium subquadrate, often almost as long as wide (LL/LW 0.86–1.20) (Fig. 20C), sometimes shorter (LL/LW 0.64–0.79) (Fig. 18E). Sternal sigilla ovoid to narrowly elongate. Terminal segment of posterior lateral spinnerets short to moderately long digitiform. Male tibia II either unmodified with ventral spines grouped or scattered (Fig. 43H,I); or with a rounded spined ventral apophysis or low apophyseal swelling (Figs. 32H,I; 36H,I). Metatarsus II either sinuous (proximoventrally concave) with a small, spined mid-ventral apophysis (Fig. 29K), or weakly sinuous to unmodified (Fig. 70K). Tibia and metatarsus I ventrally spinose (tibial spines may extend retrolaterally); metatarsus sometimes proximally thickened. Male palpal patella large, often wider than the femur, or about as wide. Palpal organ morphology variable but, compared to *Atrax* spp., the tegular area of the bulb is often larger, the embolus broader and shorter with the distal ejaculatory groove narrow and slanting above the flange-like lower margin (Figs. 25B,C; 32B,C). Spermathecal shape variable, basic pattern a pair of relatively short, broad sacs.

**Included species.** 31 species They are placed here in four species groups: the *lamingtonensis* group; the *adelaidensis* group; the *infensa* group; and the *cerberaea* group.

**Distribution.** Eastern Australia from northeast Queensland to Tasmania and the Gulf Ranges region of South Australia.

**Comments on genera and species groups.** Both *Atrax* and *Illawarra* are easily characterized genera with few species. By contrast, *Hadronyche* is a diverse and speciose genus, mainly characterized by the caput being relatively higher and broader than in the other two genera. The separation of *Atrax* and *Hadronyche* was supported by results from electrophoretic studies (Gray, 1988), and more recently, Raven (2000) has suggested that greater palpal patella/femur width may be an apomorphy of *Hadronyche*. Another source of differentiation between *Hadronyche* and both *Atrax* and *Illawarra* comes from mass profile analyses of funnel-web



spider venom peptides by Wilson (2001). This study found that *Atrax robustus* and *Illawarra wisharti* had similar venom profiles. However, the *Hadronyche* species sampled, viz. *Hadronyche versuta*, *H. cerbera* and *H. formidabilis*, had profiles that were similar to each other but quite different from those observed for *Atrax* and *Illawarra* spp.

Of the four putative *Hadronyche* species groups recognized here, only two seem likely to be natural groups—the morphologically distinctive *lamingtonensis* group and the isolated door building *adelaidensis* group. Both groups lack leg II modifications and retain the short labium present in *Atrax* and *Illawarra*. The short, basal central cheliceral tooth row seen in these genera is also present in the *lamingtonensis* group. However, in the *adelaidensis* group this is replaced by a long central tooth row, a character shared with species in the *infensa* and *cerbera* groups. The *infensa* and *cerbera* groups are united by the longer labium (with a few exceptions in the latter group). The *infensa* group is characterized by the absence of dorsal femoral spines—these spines are present in most, but variable in a few, *cerbera* group species. The *cerbera* group is currently a diverse “dump” taxon for species of uncertain affinities, and includes all *Hadronyche* species with leg II modifications.

### *cerbera* species group

**Description.** (Figs. 30–32, 41–43). Small to large sized Aracinae. Male femora I, II usually with dorsal spines, sometimes spines absent. Labium relatively long, (LL/LW 0.86–0.99), sometimes shorter (LL/LW 0.64–0.79) (see comments below). Male tibia II shape and spination variable: unmodified cylindrical to weakly sinuous, with a few ventral spines clustered proximally or scattered; or sinuous with a spinose, rounded apophysis or apophyseal swelling placed mid-ventrally to proximally. Metatarsus II either cylindrical to weakly sinuous and without an apophysis, or sinuous (often ventrally concave proximally) with a mid-ventral apophysis/apophyseal swelling. Male palp with embolus often moderately short and broad, weakly curved and twisted. Ratio of bulb length to palpal tibia length 0.64–0.77. Central cheliceral tooth row long. Apical segment of posterior lateral spinnerets short to long (PLSAPW/L 0.29–0.51).

**Included species:** *H. versuta* (Rainbow), *H. formidabilis* (Rainbow), *H. venenata* (Hickman), *H. cerbera* L. Koch, *H. modesta* (Simon), *H. meridiana* Hogg, *H. pulvinator* (Hickman), *H. marracoonda* n.sp., *H. jensenae* n.sp., *H. tambo* n.sp., *H. monaro* n.sp., *H. emmalizae* n.sp., *H. alpina* n.sp., *H. nimoola* n.sp., *H. mascordi* n.sp.

**Distribution.** *Cerbera* group species are found mainly from south of the Hunter River region in mid-eastern New South Wales, into Victoria and Tasmania. Only *H. formidabilis* occurs north of the Hunter River and into southeastern Queensland.

**Comments.** The *cerbera* group is a diverse and problematic “convenience” grouping of 15 species. These spiders usually have dorsal spines on male femora I or II, but these spines may be absent in some individuals of *H. alpina*, *H. versuta*, *H. tambo* and *H. nimoola*. Eight of the 14 species for which males are known have variably developed apophyseal structures on tibia II and, usually, metatarsus

II. The remaining species, *H. nimoola*, *H. mascordi*, *H. tambo*, and *H. marracoonda*, lack such structures, except *H. monaro* which has a weak apophysis on metatarsus II. Most *cerbera* group species have a relatively long labium (a character also present in *infensa* group species). However, a putatively related group of four species from Victoria and Tasmania—*H. modesta*, *H. meridiana*, *H. jensenae* and *H. pulvinator*—have a shorter labium (LL/LW 0.69–0.79). Gray (1987, 1988) placed them as a separate species group. A short labium state also exists in *H. mascordi* (LL/LW males 0.64), but this is probably associated with the partial fusion of the labium with the sternum in this species. Excluding these 5 species, the remainder have a male LL/LW almost identical to that of the *infensa* group.

### *Hadronyche cerbera* L. Koch

Figures 19–22; Tables 6, 34

*Hadronyche cerbera* L. Koch, 1873: 463. Karsch, 1878: 798. Main, 1985: 43. Gray, 1988: 114.

**Types.** SYNTYPES: females from Sydney region, New South Wales, lost (see below). NEOTYPE, here designated as follows: one male, registered AMS KS6873 in the research collection of the Australian Museum, Sydney; with label-data: Blackwall, near Woy Woy, New South Wales, 33°30'S 151°20'E, R. McDonald, 10 June 1973, from paperbark tree.

**Other material examined. New South Wales (males):** AMS KS6874, Antonio, 21 September 1973, R. McDonald; AMS KS4597, Avalon, 15 January 1980; AMS KS8729, Awabakal Nature Reserve, near Newcastle, 7 August 1981, G. Anderson; AMS KS4104, Bago Forest way, near Batlow, 5 November 1979, AMS KS. Kovacs; AMS KS6871, Bilgola, 18 February 1974, B. Mercer; AMS KS6872, Bilgola Heights, 5 February 1978; AMS KS2261, Blackheath, November 1978; AMS KS4782, Empire Bay, near Gosford, 18 March 1978, L. Abra; AMS KS8568, Gosford, 12 April 1979; AMS KS13367, Gosford area; AMS KS1347, Kuringai Chase National Park, 1978, M. Arena; AMS KS14058, Mudgee, 13 February 1984, W. Bennett; AMS KS13346, Mullion Creek, near Orange, September 1983, D. Ogilvy; AMS KS16587, Olinda, near Rylstone; AMS KS5850, Orange; AMS KS5900, Springwood, 21 February 1930; AMS KS4485, Swansea, 4 February 1980, G. Anderson; AMS KS4783, Terrigal, 18 March 1978, L. Abra; Terrigal, 10 January 1959, T.E. Dence; AMS KS8923, Toukley, 4 April 1982, R. Hay; AMS KS5901, Valley Heights, 21 October 1921, R.S. Thornthwaite; AMS KS10784, Walang, near Bathurst, 23 March 1983, A. Boesen; AMS KS5902, Wentworth Falls, 27 April 1943. **New**

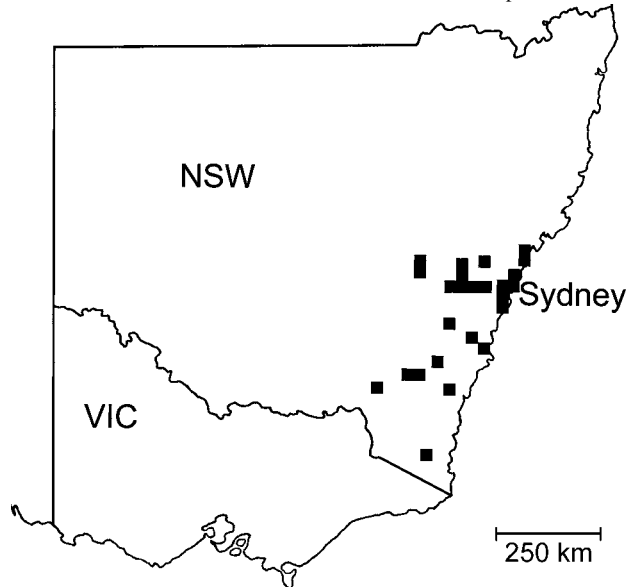


Figure 19. Collection records for *Hadronyche cerbera*.

**South Wales (females):** AMS KS6874, Antonio/Rydal, 21 September 1973, R. McDonald; AMS KS3438, Baulkham Hills, 27 March 1979, K. Moore; AMS KS6870, Bobbin Head, 18 March 1972, A.B. Rose; AMS KS7296, Bombala, 16 April 1981; AMS KS2331, Burrawang, May 1977, R. Merrick; Collaroy Plateau, February 1975, A. Goodridge; AMS KS13978, Dooralong, 24 February 1984, L. Abra; AMS KS3461, Gosford, May 1979, D. Jones; AMS KS4606, Highfields, 7 February 1980, G. Anderson; AMS KS5362, Monga, 1980, D. Rowell; Mount Fairy, 25 November 1979; AMS KS5903, Newcastle area, 1973; AMS KS5842, Pearl Beach, 27 July 1980, V. Serventy; AMS KS5976, AMS KS6217, Wamberal, 6 March 1980, M. Gray & C. Horseman.

**Comments on syntype loss and erection of neotype.**

with the inadequacy of the original description based on female characters and loss of the type material, the identity of *Hadronyche cerberea* L. Koch, the type species of the genus, has long been conjectural. The syntype female specimens, labelled "Sydney", were formerly housed in the Staatliche Museum, Stuttgart, West Germany. They were lost during World War II (pers. comm., Dr M. Janus, formerly Hauptkonservator, Staatliche Museum, Stuttgart). Determination of the identity of *H. cerberea* was facilitated by the presence of only two common atracine species in the Sydney region. These are *Atrax robustus*, the Sydney funnel-web spider, and a then unidentified tree dwelling species of *Hadronyche*, common in forest habitats of southeastern New South Wales, including the Sydney region (where wood cutting and clearing activities could have facilitated encounters with this spider). The description of the female

spider given by Koch (1873) indicated that he was dealing with a species of *Hadronyche*. Consequently, the decision was made to identify Koch's *H. cerberea* with the tree dwelling Sydney *Hadronyche* species (Gray, 1981, 1988).

Designation of a neotype will stabilise the taxonomic status of *Hadronyche cerberea* L. Koch as the type species of the genus. The presence of a raised caput, a long labium and a bluntly rounded tibia II apophysis refers the species unequivocally to the genus *Hadronyche* as here defined. A diagnosis and description of the species is given below. The original type locality was given as "Sydney" but this locality could refer to anywhere from the Hawkesbury River/Central Coast region in the north to the Illawarra region in the south, where these spiders are common. The neotype male specimen is held in the research collections of the Australian Museum, Sydney.

**Diagnosis.** CL 7.18–8.77 (male). Tree-dwelling spiders in sclerophyll forests. Differs from most species by presence (in both sexes) of thorn-like setae on coxae I, II and a bristle-like tuft of setae at anterolateral sternal angles (Figs. 20H, 21H); from *H. formidabilis* by smaller size of tibia II apophysis; and from *H. emmalizae* by embolus almost straight (Fig. 22B), not strongly curved.

**Neotype male Size.** Carapace length 8.18, width 7.83. Abdomen length 7.87, width 6.97. —**Colour.** Basic colour

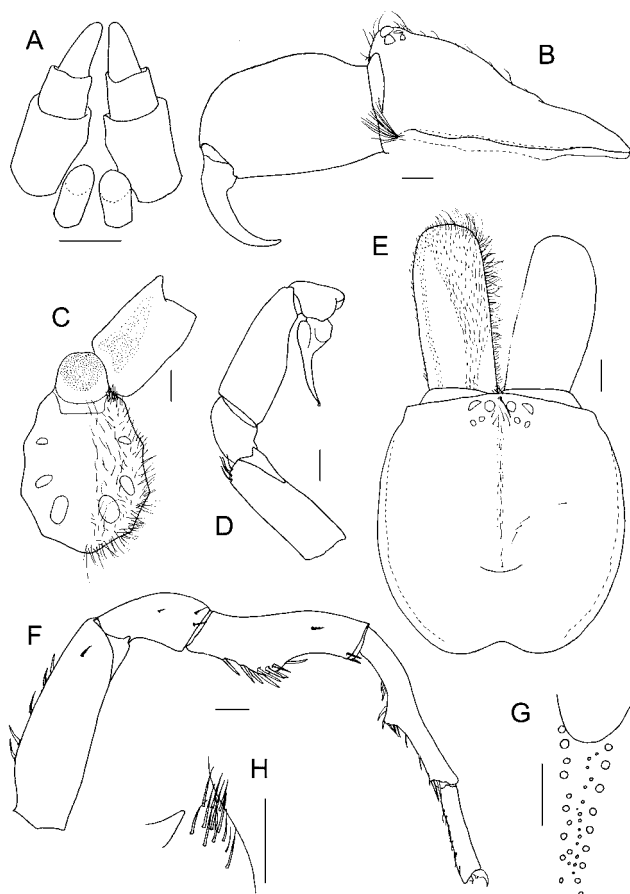


Figure 20. *Hadronyche cerberea*, male: (A) spinnerets; (B) cephalothorax and chelicerae, lateral; (C) sternum, labium and maxilla; (D) palp, prolateral; (E) cephalothorax and chelicerae, dorsal; (F) leg II, prolateral; (G) cheliceral groove teeth; (H) sternum, anterolateral bristles. Scale lines 1 mm.

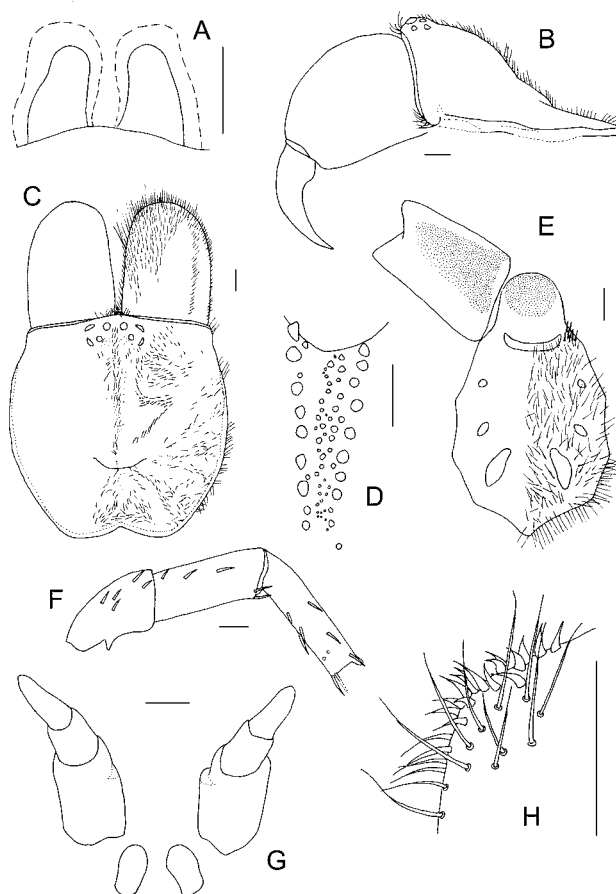


Figure 21. *Hadronyche cerberea*, female: (A) spermathecae; (B) cephalothorax and chelicerae, lateral; (C) cephalothorax and chelicerae, dorsal; (D) cheliceral groove teeth; (E) sternum, labium and maxilla; (F) leg III, prolateral, patella, tibia, metatarsus; (G) spinnerets; (H) coxa I, anteromedial thorn-like setae. Scale lines 1 mm.

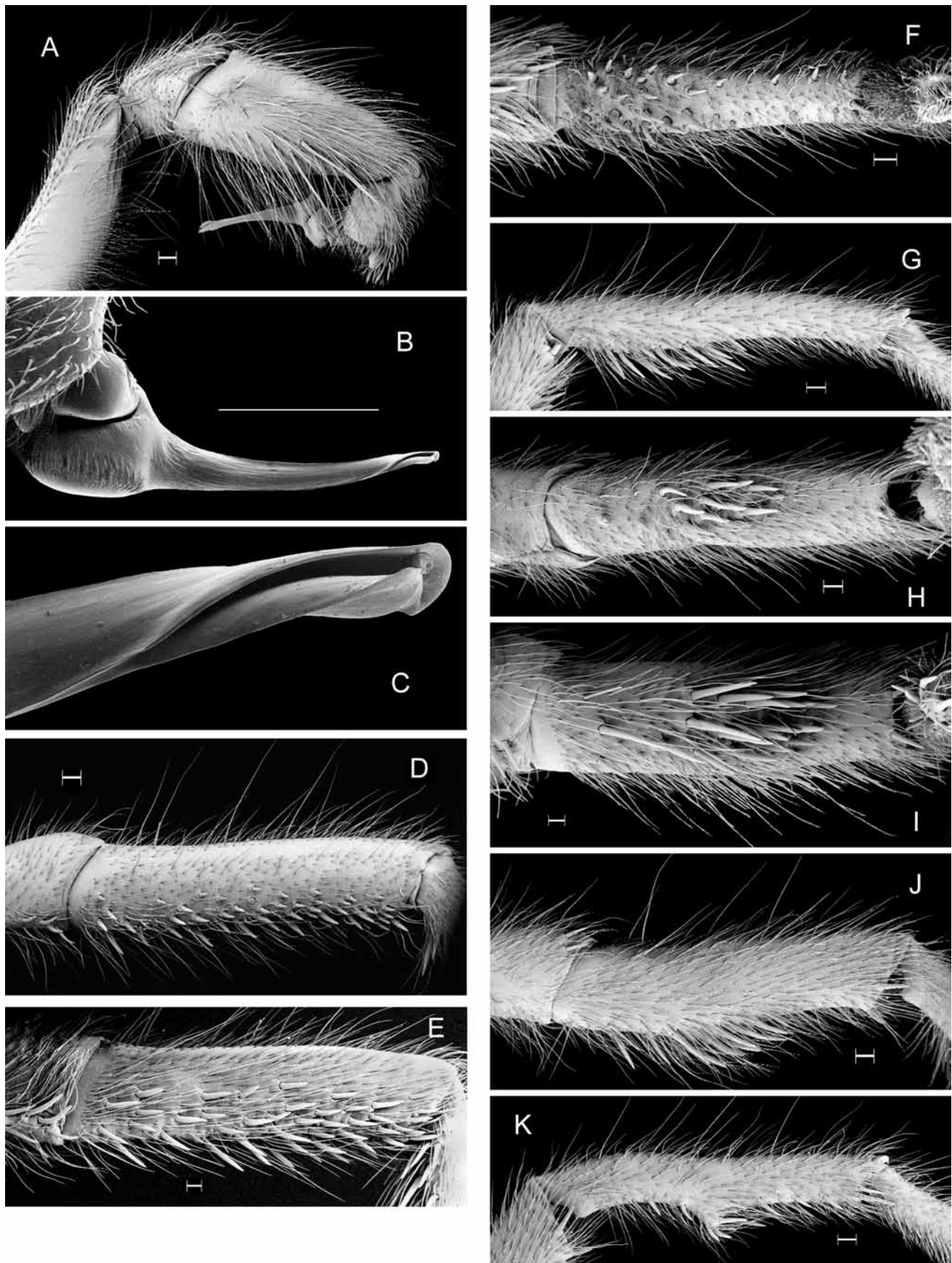


Figure 22. *Hadronyche cerbera*, male (A,D,F-H,J,K, AMS KS4783; B,C,E,I, AMS KS16587): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal tibia I, retrolateral—D, small spines (Terrigal); E, large spines (Rylstone); (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II, ventral—H, Terrigal; I, Rylstone; (J) tibia II, prolateral; (K) metatarsus II, prolateral. Scale lines: 0.3 mm, except B 1.0 mm and E,I 0.2 mm.

**Table 6.** Male morphological data—*Hadronyche cerbera* (n = 12).

character	range	mean	character	range	mean	character	ratio	SD
CL	7.18–8.77	8.17	Mt1S	26–46	34	CW/CL	0.95	0.034
CW	6.84–8.39	7.77	Ta1S	8–17	10	CH/CW	0.46	0.018
CH	3.12–3.94	3.54	Ti2S	15–39 (p0–1)	26	CFW/CL	0.71	0.02
CFW	5.25–6.31	5.81	STC2teeth	10–14	12	CHGW/L	0.21	0.022
ChGL	2.00–2.70	2.33	BulbL	2.66–3.07	2.82	SW/SL	0.75	0.031
ChGW	0.37–0.58	0.43	EmbL	1.64–2.11	1.86	LL/LW	0.97	0.08
ChGCT	15–26	20	BulbW	1.01–1.24	1.09	PLSAPW/L	0.42	0.047
LL	1.28–1.89	1.51	EmbmW	0.18–0.24	0.20	BulbW/EmbL	0.60	0.056
LW	1.36–1.74	1.57	PalpTibL	4.02–4.82	4.37	EmbmW/L	0.10	0.014
CUSP	194–293	252	PalpTibW	1.48–1.93	1.78	PalpTibW/L	0.41	0.027
SL	4.92–5.81	5.26	PalpTibS	0–4	2	BulbL/TibL	0.64	0.025
SW	3.63–4.35	3.95	PalpPatS	0	—			
PLSAPW	0.34–0.68	0.50	PalpFemS	0–3	1			
PLSAPL	1.00–1.42	1.18						
Fe1S	2–12	7						
Pa1S	3–14 (p1–5)	7						

pattern. Abdomen colour variable, light maroon brown to dark brown. —*Carapace*. Slightly longer than wide, moderately raised. Height 3.65. Frontal width 5.99. Fovea procurved. Mid-dorsal cephalic setae reach fovea. Anterior strial setae present. Anterolateral angle of carapace with strong bristles. —*Eyes*. On slight tubercle. Eye group width 2.05. Median ocular quadrangle length 0.77, anterior width 1.10, posterior width 1.35. Eye diameters: AME 0.32, ALE 0.47, PLE 0.32, PME 0.27. —*Chelicerae*. Groove broad, margins diverging distally, length 2.36, middle width 0.56. Cheliceral teeth: 17 central, running full length of groove, 10 prolateral; 9 retrolateral. —*Labium*. Almost as long as wide; shape as in female. Length 1.64, width 1.66. Labiosternal sigilla entire. Cuspules c. 223, number moderate to high. —*Sternum*. Ovoid to broadly ovoid. Length 5.37, width 4.06. Posterior sigilla large, broadly elongate. Bristle-like hairs grouped in anterolateral angles. —*Palp*. Tegular area slightly longer than wide. Embolus shaft weakly curved, of medium length and taper. Distal embolus weakly to moderately twisted. Embolus weakly offset from tegulum. Bulb length 2.86, width 1.09. Embolus length 1.88, midwidth 0.19. Length of femur 4.12, patella 1.72, tibia 4.30. Width of tibia 1.79. Spination: femur 3, tibia 2. Sinuous bristles on distal femur. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	6.93	3.24	6.03	5.66	2.95	24.81
2	6.72	3.44	5.74	5.74	2.99	24.63
3	7.28	3.08	5.00	5.41	3.03	23.80
4	7.46	3.40	6.40	6.48	3.36	27.10

*Tibia I* width 1.23. All femora with dorsal spines. Metatarsus I proximally thickened, larger ventral spines grouped proximally. Ventral tibia II with centrally placed, low, spinose apophyseal swelling; distoventral tibia concave and without spines (except apically). Metatarsus II moderately to weakly sinuous with small central, spined apophysis. Coxae I and II with basally thickened and thorn-like setae on anteromedial surface. Tarsal and distal metatarsal scopulae weak on legs I and II, well developed on legs III and IV. Tarsal claw teeth legs I, II: superior 12, 11; inferior 4. Trichobothria legs I, II: tarsus 14, 14; metatarsus 12, 13; tibia p6 r6, p5 r7. —*Leg spination*. Leg I: femur 12(d9p3), patella 6(p5 v1), tibia 41(p2), metatarsus 29, tarsus 8. Leg II: femur 6(d5p1), patella

p3, tibia 19(p1), metatarsus 20, tarsus 11. Leg III: femur d8, patella 5(p4 r1), tibia 9(p2 r3), metatarsus 26(pd3 rd3), tarsus 16. Leg IV: femur d6, patella 2(p1 r1), tibia 6(r2), metatarsus 19, tarsus 13. —*Abdomen*. Posterior lateral spinnerets with moderately short apical segment. Lengths: total 3.14; basal segment 1.44, middle 0.70, apical 1.00. Apical width 0.46.

**Female** (AMS KS6869, Canalack Gully, Hornsby Heights, 33°39'E 151°05'S, New South Wales, 19 February 1973, M. Gray and M. Robinson, from tree web). —*Size*. Carapace length 9.95, width 9.93. Abdomen length 14.62, width 12.24. —*Colour*. Basic colour pattern except that abdomen is often weakly pigmented dorsally (light maroon brown colour) and dark pigment is weak or absent ventrally (light maroon colour). —*Carapace*. Broad, about as long as wide, cephalic area strongly raised. Height 4.52; frontal width 8.67. Cephalic length 6.66. Fovea strongly procurved, anterior margin slightly indented. Mid-dorsal cephalic setae numerous, reach back to fovea. Anterior strial setae present. Anterolateral carapace angle with numerous bristles. —*Eyes*. Eye region raised centrally. Eye group width 2.76. Diameters: AME 0.34, ALE 0.54, PLE 0.48, PME 0.29. Interdistances. AME–AME 0.41, AME–ALE 0.43, ALE–PLE 0.37, PLE–PME 0.19, PME–PME 1.87. Median ocular quadrangle length 0.85, anterior width 1.16, posterior width 1.83. —*Chelicerae*. Groove wide, margins diverge distally; groove length 3.26, middle width 1.02. Cheliceral teeth: 45 central in 2–3 irregular rows occupying full length of groove; 11 prolateral; 12 retrolateral. —*Labium*. Long; as long as wide or longer, sides sloping to a narrower rounded apex, anterior margin not indented apically. Length 2.38, width 2.31. Cuspules grouped on anterior two-thirds. Labiosternal sigilla broad, entire. —*Sternum*. Ovoid. Length 6.90, width 5.10. Bristle-like hairs grouped in anterolateral angles. Posterior sigilla elongate: length 1.43, width 0.54. —*Palp*. Spination: tibia 3, tarsus 6. Trichobothria: tibia p8 r8, tarsus 13. Tarsal claw with 7 teeth. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	7.45	4.01	6.00	5.29	2.99	25.74
2	6.83	3.77	5.30	4.98	2.97	23.85
3	6.04	3.26	4.18	4.69	2.99	21.16
4	7.72	3.98	5.81	5.81	3.13	26.45

*Tibia I* width 1.73. Metatarsus I proximal width 1.14. Coxae I, II with basally thickened thorn-like setae anteromedially. Tarsal claw teeth legs I, II: superior 10, 10; inferior 4, 4. Trichobothria legs I, II: tarsus 17, 15; metatarsus 18, 16; tibia p8 r7, p8 r7. —*Leg spination*. Leg I: femur 0, patella 0, tibia 3, metatarsus 13, tarsus 8. Leg II: femur 0, patella 0, tibia 3 (p1), metatarsus 13, tarsus 9. Leg III: femur rd2, patella p5 r1, tibia 7(p3 r2), metatarsus 15 (p3 r2), tarsus 8. Leg IV: femur 0, patella 0, tibia 5 (r3), metatarsus 11, tarsus 10. —*Abdomen*. Posterior lateral spinnerets with short apical segment. Lengths: total 4.05; basal segment 1.60, middle 1.02, apical 1.43. Apical segment width 0.65. —*Genitalia*. Spermathecae short, digitiform, apical third slightly narrower than basal region; basal separation equivalent to spermatheca width. Spermatheca length 1.09, width 0.63.

**Distribution.** Southeastern coast and highlands in New South Wales as far north as the Hunter River, Central Coast region (Fig. 19).

**Comments.** Thorn-like setae (short, strongly thickened basally) on coxae I, II (Fig. 21H) and bristle-like tuft of anterolateral sternal hairs (Fig. 20H) are well developed in both sexes. Thorn-like setae are also present in males of *H. formidabilis* and, more weakly, in some *H. tambo* and *H. emmalizae* males.

Male tibia I retroventral spines are sometimes reduced in size (Fig. 22D). The extent of such variation in this widely distributed species needs further examination.

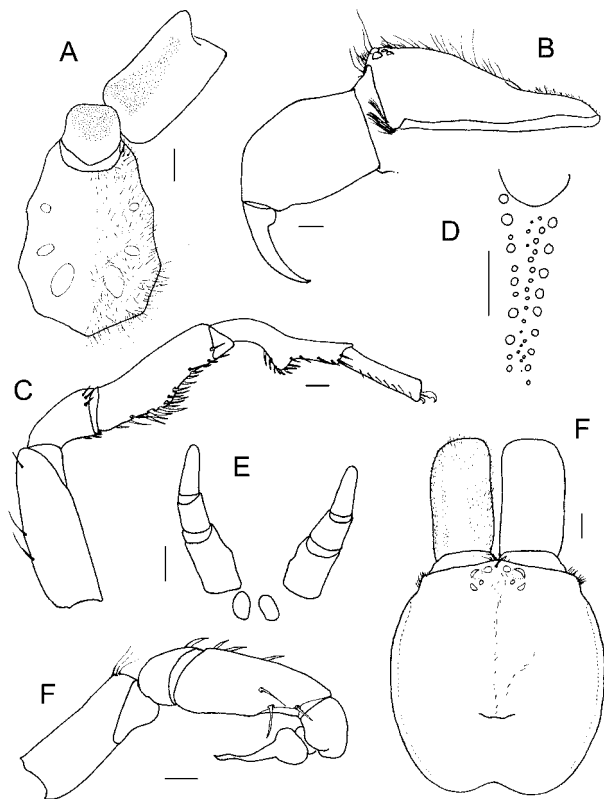


Figure 23. *Hadronyche versuta*, male: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) leg II, prolateral (NB, dorsal femoral spines present or absent); (D) cheliceral groove teeth; (E) spinnerets; (F) palp, prolateral; (G) cephalothorax and chelicerae, dorsal. Scale lines 1 mm.

**Biology.** This is a tree-dwelling species that is widely distributed in open forest habitats. It is often associated with rough-barked trees such as *Melaleuca*, *Banksia*, *Casuarina* and some eucalypts (Fig. 1D). Burrows are associated with tree-trunk fractures, rot-holes and borer holes, with the entrance sheet and trip-lines often disguised by bark/leaf detritus and frass.

### *Hadronyche versuta* (Rainbow)

Figures 1, 23–26; Tables 7, 34

*Atrax versuta* Rainbow, 1914: 253.

*Aname bicolor*.—Rainbow, 1914: 233.

*Pseudatrax moreaui*.—Rainbow, 1914: 261.

*Atrax bicolor*.—Hickman, 1964: 107 (transferred from *Aname* after Rainbow & Pulleine, 1918: 139). Main, 1985: 40. First synonymized by Gray, 1988, 114.

*Atrax moreaui*.—Main, 1985: 40 (transferred from *Pseudatrax*). First synonymized by Gray, 1988, 114.

*Hadronyche versuta*.—Gray, 1988: 114 (transferred from *Atrax*).

**Types.** Two subadult syntypes: AMS KS969 (old catalogue number K12907). Jenolan, New South Wales, J. Wibur, 1901.

**Other material examined.** New South Wales (males): AMS KS844, Antonio Creek, 28 April 1973, R. McDonald; AMS KS1008, Antonio, 26 December 1974, R. McDonald; AMS KS999, Blackheath, 11

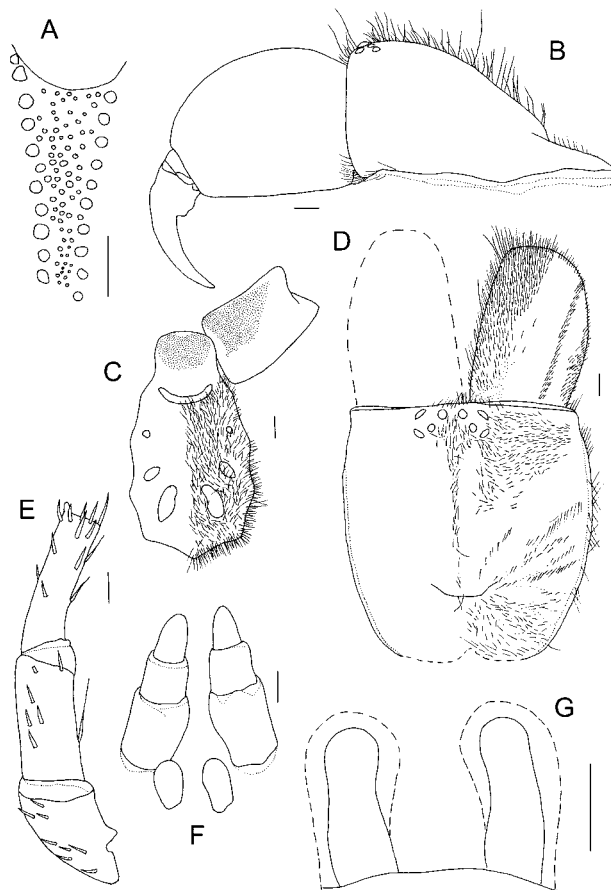


Figure 24. *Hadronyche versuta*, female: (A) cheliceral groove teeth; (B) cephalothorax and chelicerae, lateral; (C) sternum, labium and maxilla; (D) cephalothorax and chelicerae, dorsal; (E) leg III, prolateral, patella, tibia, metatarsus; (F) spinnerets; (G) spermathecae. Scale lines 1 mm.

**Table 7.** Male morphological data—*Hadronyche versuta* (n = 15).

character	range	mean	character	range	mean	character	ratio	SD
CL	7.84–10.39	9.16	Mt1S	19–39	29	CW/CL	0.96	0.032
CW	8.13–9.84	8.83	Ta1S	8–26	14	CH/CW	0.44	0.027
CH	3.49–4.42	3.90	Ti2S*	37–75 (p0–1)	48	CFW/CL	0.70	0.039
CFW	5.95–7.17	6.43	STC2teeth	11–15	13	CHGW/L	0.22	0.019
ChGL	2.20–2.87	2.54	BulbL	2.88–3.44	3.25	SW/SL	0.72	0.025
ChGW	0.37–0.67	0.55	EmbL	1.84–2.40	2.21	LL/LW	0.98	0.055
ChGCT	16–32	22	BulbW	1.15–1.34	1.26	PLSAPW/L*	0.49	0.071
LL	1.56–1.88	1.70	EmbmW	0.24–0.41	0.30	BulbW/EmbL	0.57	0.031
LW	1.60–1.84	1.74	PalpTibL	3.79–4.90	4.51	EmbmW/L	0.14	0.016
CUSP	227–413	292	PalpTibW	1.82–2.24	1.98	PalpTibW/L	0.44	0.023
SL	5.37–6.39	5.90	PalpTibS*	4–13	8	BulbL/TibL	0.72	0.029
SW	3.90–4.76	4.28	PalpPatS	0–4	1			
PLSAPW	0.39–0.68	0.54	PalpFemS	2–7	4			
PLSAPL	0.82–1.49	1.11						
Fe1S*	0–3	1						
Pa1S	4–14 (p1–3)	9						

January 1930, Dr V.K. Spence; AMS KS4431, Bomaderry, 19 January 1980, G. Wishart; AMS KS13790, Bungonia Heights, near Goulburn, 21 January 1984; AMS KS1179, Callala Beach via Nowra, near Jervis Bay, January 1959, J. Coppin; AMS KS3607, Capertee, 25 July 1973, R. McDonald; AMS KS1182, Erowal Bay, Georges Basin, 3 December 1950, E.C. Hammond; AMS KS4620, Gerroa, 24 December 1979, D. Tidmarsh; AMS KS2433, Goulburn, 24 January 1979, T. Smith; AMS KS8535, Goulburn, December 1981; AMS KS2962, Gulgong, May 1979, Gillman; AMS KS5305, Hargraves, near Mudgee, 4 June 1980, C. Knott; AMS KS997, Hazelbrook, February 1976; AMS KS1177, Honeymoon Bay, near Jervis Bay, 25 December 1954, P. Harvey; AMS KS846, AMS KS857–8, Jenolan, February 1932, J.C. Wiburd; AMS KS1178, Jervis Bay, October 1958, K. Sanders; AMS KS860, Kanangra-Boyd National Park, 21 May 1971, M. Gray; AMS KS1003, Mount Wiburd, Kanangra-Boyd National Park, 9 January 1973, G.S. Hunt; AMS KS1200, Katoomba, 24 January 1950, C. Batty; AMS KS851, Echo Point, Katoomba, 14 February 1953, A. Henry; AMS KS843, Leura, December 1972, Maguire; AMS KS856, Lithgow area, 1961, Lithgow Pharmacy; AMS KS1007, Mittagong, N.S.W., R.N. Lochhead; AMS KS996, Mount Irvine, 1959, P.G. Valder; AMS KS2493, Mount Wilson, 12 January 1979–7 February 1979, C. Horseman; AMS KS1174, Nowra, February 1975; AMS KS3357–8, Nowra, 12 January 1979, Sister Green; AMS KS7690, Olinda, 28 May 1981, J. Kirk; AMS KS1176, Shoalhaven Heads, 7 April 1969, B. Virtue; AMS KS4123, Springwood, 1 February 1979, Mascord; AMS KS6840, Springwood, 1 February 1979, Mascord; AMS KS1001, Wentworth falls, January 1951, H. Holland; AMS KS1002, Wentworth falls, January 1951, H. Holland; AMS KS1114, Rydal, November 1973, R. McDonald; AMS KS1118, Mittagong, 12 February 1977, B. Telfer; AMS KS1014, Kandos, June 1968, G. Daniels; AMS KS1016, Mudgee, 29 April 1974, Ambulance Stn.; AMS KS1855, Peel, near Bathurst, 20 May 1974, P. Wolfe; AMS KS1010, Rylstone, 24 km N. on Bylong Road; AMS KS1013, Sodwalls, 29 January 1973, R. McDonald; AMS KS4411, Turondale, Apr 1979, **New South Wales (females):** AMS KS1671, Bilpin; AMS KS4776, Blackheath, 14 March 1959, Heywood; AMS KS4664, Bundanoon, February 1980; AMS KS1179, Callala Beach, January 1959, J. Coppin; AMS KS8296, Culburra, near Nowra, September 1966, R. Esgate; AMS KS6281, Currarong, 6.x.1980; AMS KS1207, Faulconbridge, 7 December 1976, C. Watson; AMS KS793, Gerroa, 28 March 1977, G. Wishart; AMS KS12625, Goulburn, 16 March 1983; AMS KS6732, Goulburn, January 1981, Ambulance Stn.; AMS KS1115, Hazelbrook, 8 October 1973, K. Lay; AMS KS9964, Jenolan, N.S.W., December 1979; AMS KS1862, Kanangra-Boyd National Park, 26 November 1974, M. Gregg; AMS KS3385, Kangaroo Valley, 1 July 1979, N.L. Boomer; AMS KS1859, Katoomba, N.S.W., February 1927, F. Walford; AMS KS1860, Kurradjong Heights, 4 March 1973, R. McDonald; AMS KS4127, Lake Conjola, 29 April 1979, R. Mascord; AMS KS5926, Marulan, September 1980; AMS KS1117, Medlow Bath, 12 October 1945; AMS KS6216, Moss Vale, 6 October 1980; AMS KS10677, Nowra, 20 January 1983, W. Lamond; AMS KS5332, Shoalhaven Heads, 11 June 1980, H. Pepper; AMS KS2262, Sussex Inlet, 29.xi.1978, S. Prince; AMS KS1672, Wentworth Falls, 31 March 1936, K.K. Graham; AMS KS3814, Mittagong, 21 October 1979, B. Day; AMS KS1012.

**Diagnosis.** CL 7.84–10.39 (male). Differs from most species by male tibia II having spinose rounded apophysis with ventral spines always extending onto distal tibia (Fig. 25H,I); from *H. emmalizae* by having embolus almost straight; from *H. formidabilis* by having a less prominent tibia II apophysis and shorter spinnerets (Fig. 25C,E; Table 7).

**Male** (AMS KS4477), Lithgow, New South Wales, 33°28'S 150°09'E, J.W. Rayner, 18 January 1980). —*Size.* Carapace length 9.51, width 9.14. Abdomen length 10.58, width 6.97. —*Colour.* Basic colour pattern. Dorsum of abdomen usually with definite paler patch anteriorly flanked by small sigilla. —*Carapace.* Slightly longer than wide, moderately raised. Height 3.80. Frontal width 6.81. Fovea procurved. Mid-dorsal cephalic setae reach fovea. Anterior strial setae present. Anterolateral angle of carapace with strong bristles. —*Eyes.* Sessile. Eye group width 2.39. Median ocular quadrangle length 0.86, anterior width 1.07, posterior width 1.58. Diameters: AME 0.33, ALE 0.54, PLE 0.47, PME 0.29. —*Chelicerae.* Cheliceral groove of moderate length and width, margins diverging distally. Groove length 2.72, middle width 0.58. Cheliceral teeth: 21 central, running full length of groove; 11 prolateral; 9 retrolateral. —*Labium.* About as long as wide. Length 1.80, width 1.78. Labiosternal sigilla entire. Cuspules c. 288, number moderate to high. —*Sternum.* Ovoid. Length 5.90, width 4.27. Posterior sigilla large, broad, ovoid. —*Palp.* Tegular area wider than long. Embolus shaft broad, weakly tapered and curved. Distal embolus weakly to moderately twisted. Embolus slightly offset from tegulum. Bulb length 3.32, width 1.29. Embolus length 2.32, midwidth 0.32. Length of femur 4.24, patella 2.12, tibia 4.87. Width of tibia 1.99. Spination: femur 2, patella 1, tibia 6. Distal femur with sinuous bristles. —*Legs.* 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	7.75	3.67	6.28	6.22	3.75	27.67
2	7.41	3.66	5.85	6.20	3.69	26.81
3	6.56	3.36	5.33	5.67	3.73	24.65
4	8.28	3.36	6.88	6.97	4.10	29.59

*Tibia I* width 1.51. Femora I and II with few, weak dorsal spines, occasionally none. Metatarsus I proximally weakly thickened, larger ventral spines grouped proximally. Tibia II apophysis a low, blunt swelling, centrally placed; ventral



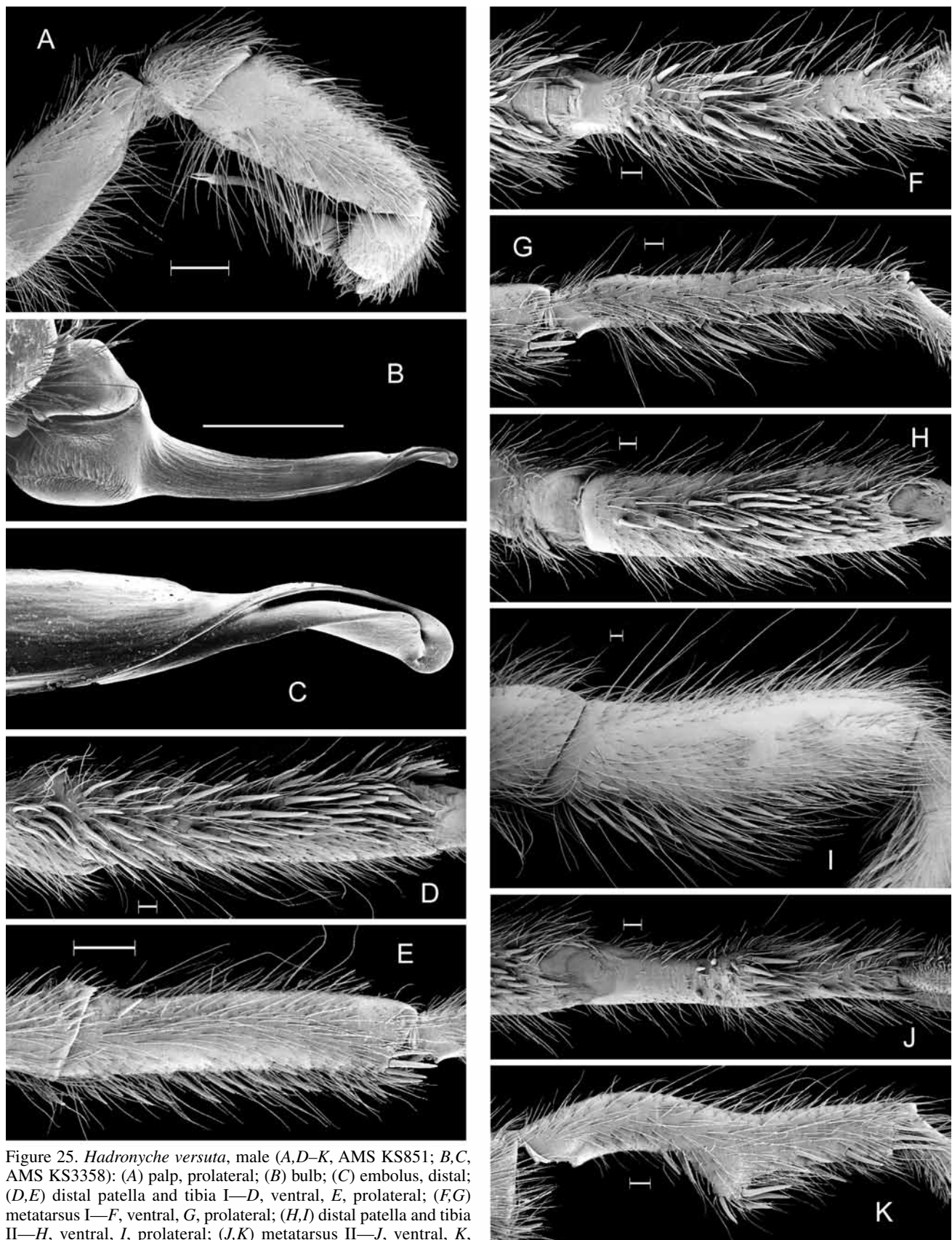


Figure 25. *Hadronyche versuta*, male (A,D–K, AMS KS851; B,C, AMS KS3358): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J,K) metatarsus II—J, ventral, K, prolateral. Scale lines: 0.3 mm, except A,E 1.0 mm and I 0.2 mm.

spines numerous, larger spines grouped upon apophysis, shorter spines in weakly excavated distoventral region. Metatarsus II strongly sinuous with a prominent spined apophysis. Coxal hairs normal. Scopulae weak or lacking

on first and second tarsi and distal metatarsi; well developed on tarsi and distal metatarsi III and IV. Tarsal claw teeth legs I, II: superior 13, 13; inferior 3, 3. Trichobothria legs I, II; tarsus 14, 11; metatarsus 18, 18; tibia p7 r6, p8 r8. —*Leg*

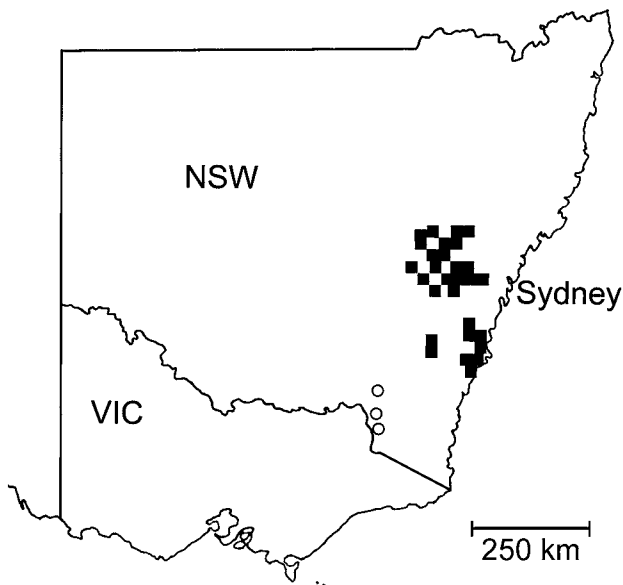


Figure 26. Collection records for *Hadronyche versuta* (squares) and *H. emmalizae* (circles).

*spination*. Leg I: femur d1, patella 14 (p3 v11), tibia 56 (p1), metatarsus 25, tarsus 12. Leg II: femur d1, patella 7 (p3 r4), tibia 45 (p1), metatarsus 23, tarsus 18. Leg III: femur 0, patella 9 (p8 v1), tibia 13 (p4 r2), metatarsus 30, tarsus 17. Leg IV: femur 0, patella 0, tibia 7 (r1), metatarsus 21, tarsus 21. —*Abdomen*. Numerous strong bristles dorsally. Posterior lateral spinnerets with rather short apical segment. Lengths: total 4.29; basal segment 1.76, middle 1.04, apical 1.49. Apical segment width 0.65.

**Female** (AMS KS1233), Mt. Wiburud, Kanangra-Boyd National Park, New South Wales, 33°49'S 150°01'E, G.S. Hunt, 10 January 1973). —*Size*. Carapace length 11.18, width 11.20. Abdomen length 16.12, width 12.72. —*Colour*. Basic colour pattern. Abdomen usually dark maroon brown, sometimes paler. —*Carapace*. About as wide as long, strongly raised, broad frontally. Height 5.54; frontal width 10.29. Cephalic length 9.86. Fovea strongly procurved, anterior margin slightly indented. Mid-dorsal cephalic setae numerous, reach back to fovea. Anterior strial setae present. Antero-lateral carapace angle with numerous bristles. —*Eyes*. Ocular area sessile or slightly raised centrally. Eye group width 3.60. Diameters: AME 0.37, ALE 0.72, PLE 0.60, PME 0.38. Interdistances: AME–AME 0.66, AME–ALE 0.50, ALE–PLE 0.46, PLE–PME 0.25, PME–PME 1.61. Median ocular quadrangle length 0.97, anterior width 1.42, posterior width 2.36. —*Chelicerae*. Cheliceral groove margins diverge distally, groove wide. Groove length 3.60, middle width 1.06. Cheliceral teeth: 66 central, in several irregular rows, occupying full length of groove; 11 prolateral; 10 retrolateral. —*Labium*. Long; about as long as wide, rounded, anterior margin not indented. Length 2.90, width 2.88. Cuspules grouped on anterior half. Labiosternal sigilla entire. —*Sternum*. Long. Length 8.46, width 5.74. Posterior sigilla elongate, length 1.64, width 0.76. —*Palp*. Spination: tibia 7, tarsus 11. Trichobothria: tibia p8 r8, tarsus 13. Tarsal claw with 4 teeth. —*Legs*. 1423 or 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	8.69	5.17	8.35	5.78	3.36	31.35
2	7.81	4.76	6.19	5.45	3.28	27.49
3	6.72	3.53	4.33	4.84	3.16	22.58
4	8.94	4.92	6.12	5.07	3.31	28.36

*Tibia I* width 2.00. Metatarsus I proximal width 1.31. Coxa I, II with weakly basally thickened or unmodified setae frontally. Tarsal claw teeth legs I, II: superior 9, 9; inferior 4, 4. Trichobothria legs I, II: tarsus 18, 18; metatarsus 18, 17; tibia p10 r9, p8 r8. —*Leg spination*. Leg I: femur 0, patella 0, tibia 7, metatarsus 11, tarsus 8. Leg II: femur 0, patella p2, tibia 5, metatarsus 16, tarsus 13. Leg III: femur 0, patella p8, tibia 10 (p5 r2), metatarsus 20 (p7 r4), tarsus 12. Leg IV: femur 0, patella 0, tibia 1, metatarsus 12, tarsus 19. —*Abdomen*. Posterior lateral spinnerets stout with short, thick apical segment. Lengths: total 5.11; basal segment 2.34, middle 1.23, apical 1.54. Apical segment width 0.94. —*Genitalia*. Spermathecae large, digitiform, slight constriction separating apical third from basal two thirds. Length 1.66, width 0.67.

**Distribution**. Blue Mountains to Illawarra region of New South Wales (Fig. 26). Specimens probably attributable to this species have been collected from as far south as the Eden region near the NSW border.

**Notes**. Retreat burrows are often built within rotting logs and stumps with entrance silk sometimes disguised by rotting wood particles and prey remains.

### *Hadronyche emmalizae* n.sp.

Figures 26–29; Tables 8, 34

**Etymology**. The species is named for my daughter, Emma Elizabeth Jensen Gray.

**Types**. Holotype male: AMS KS13464, Geehi Rest Area, Swampy Plains River, Kosciuszko National Park, New South Wales, 36°22'S 148°10'E, A.B. Rose, 30 November 1983. Paratypes (AMS). New South Wales. *Males*: AMS KS4114, Bago State Forest, 35°41'S 148°09'E, 20 November 1979, L. Hedt; AMS KS6648, Geehi, 36°23'S 148°10'E, 27 January 1981, J. Robson; KS 113352, Khancoban, 36°13'S 148°08'E, 4 December 1980, S. Bates. *Females*: AMS KS10675, Paddy's River Dam, Bago State Forest, 35°41'S 148°09'E, L. Hedt, 5 November 1983; AMS KS4096, Bago, 35°37'S 147°59'E, 1 January 1979, L. Hedt; AMS KS4256–7, Bago State Forest, 35°41'S 148°09'E, 11 December 1979, L. Hedt.

**Diagnosis**. CL 8.06–9.78 (male). Differs from other species in having both a rounded apophysis on tibia II and a strongly curved embolus (Fig. 29B).

**Male** (holotype). —*Size*. Carapace length 9.78, width 8.91. Abdomen length 7.68, width 7.14. —*Colour*. Basic colour pattern. —*Carapace*. A little longer than wide, cephalic area moderately raised. Height 4.22; frontal width 6.87. Fovea weakly procurved, anterior margin not indented. Mid-dorsal cephalic setae reach fovea. Anterior strial setae numerous. Anterolateral carapace angle with strong bristles. —*Eyes*. Eye region raised. Eye group width 2.20. Median ocular quadrangle length 0.82, anterior width 1.04, posterior width 1.54. Diameters: AME 0.31, ALE 0.48, PLE 0.36, PME 0.22. —*Chelicerae*. Cheliceral groove margins diverge distally. Groove length 2.87, middle width 0.68. Cheliceral teeth:

21 central, occupying full length of groove; 11 prolateral; 10 retrolateral. —*Labium*. About as long as wide, apically weakly indented. Length 1.73, width 1.70. Labiosternal sigilla entire, broad. Cuspules c. 229, number moderate to high, placed in anterior third to half of labium. —*Sternum*. Ovoid. Length 5.58, width 4.25. Posterior sternal sigilla narrow, elongate. —*Palp*. Tegular area wider than long. Embolus offset from tegulum; embolic shaft moderately wide and strongly curved with distal section recurved at angle to shaft. Bulb length 3.57, width 1.43. Embolus length 2.41, midwidth 0.27. Length of femur 5.17, patella 1.80, tibia 5.03. Width of tibia 2.26. Spination: femur 1, patella 0, tibia 7 (3 dorsal). Distal femur with sinuous bristles. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	8.16	3.81	6.80	6.56	3.88	29.21
2	7.86	3.64	6.66	5.88	3.88	27.74
3	6.63	3.06	4.96	5.68	3.91	24.24
4	8.43	3.33	6.60	6.83	4.93	30.12

*Tibia I* width 2.35. Femora 1 and II with dorsal spines. Metatarsus I thickened proximally, ventral spines numerous. Metatarsus II strongly sinuous with ventral spined apophysis; ventral spines absent proximally. Ventral tibia II with a rounded, spined apophysis centrally; spines lacking proximally and distally (apart from distal apical spines). Coxae frontal thorn-like setae weak or absent. Tarsal, distal metatarsal scopulae: leg I, II weak to absent; leg 3, 4

moderate-strong. Tarsal claw teeth legs I, II: superior 13, 11; inferior 0, 0. Trichobothria legs I, II: tarsus 13, 13; metatarsus 17, 12; tibia p7 r6, p7 r7. —*Leg spination*. Leg I: femur 6 (d4p2), patella v2, tibia 43, metatarsus 24, tarsus 21. Leg II: femur 6 (d5p1), patella p2, tibia 31, metatarsus 32, tarsus 26. Leg III: femur d5 (bristle-like), patella p5, tibia 9 (p2 r2), metatarsus 30, tarsus 34. Leg IV: femur 0 (strong bristles), patella 0, tibia 3, metatarsus 27, tarsus 39. —*Abdomen*. Posterior lateral spinnerets with moderately long apical segment. Lengths: total 3.31; basal segment 1.29, middle 0.61, apical 1.41. Apical segment width 0.49.

**Female** (paratype AMS KS10675) —*Size*. Carapace length 11.05, width 10.34. Abdomen length 12.92, width 9.35. —*Colour*. Basic colour pattern. —*Carapace*. Slightly longer than wide, cephalic area broad, strongly raised. Height 5.10; frontal width 9.69. Cephalic length 7.96. Fovea procurved. Mid-dorsal cephalic setae numerous, reach back to fovea. Anterior striae setae present. Strial and marginal carapace hairs numerous. Anterolateral carapace angle with numerous, slender bristles. —*Eyes*. Central eye region slightly raised. Eye group width 2.72. Diameters. AME 0.29, ALE 0.65, PLE 0.36, PME 0.28. Interdistances: AME–AME 0.44, AME–ALE 0.37, ALE–PLE 0.29, PLE–PME 0.20, PME–PME 1.31. Median ocular quadrangle length 0.85, anterior width 1.09, posterior width 1.84. —*Chelicerae*. Cheliceral groove wide, margins diverging distally. Groove length 3.24,

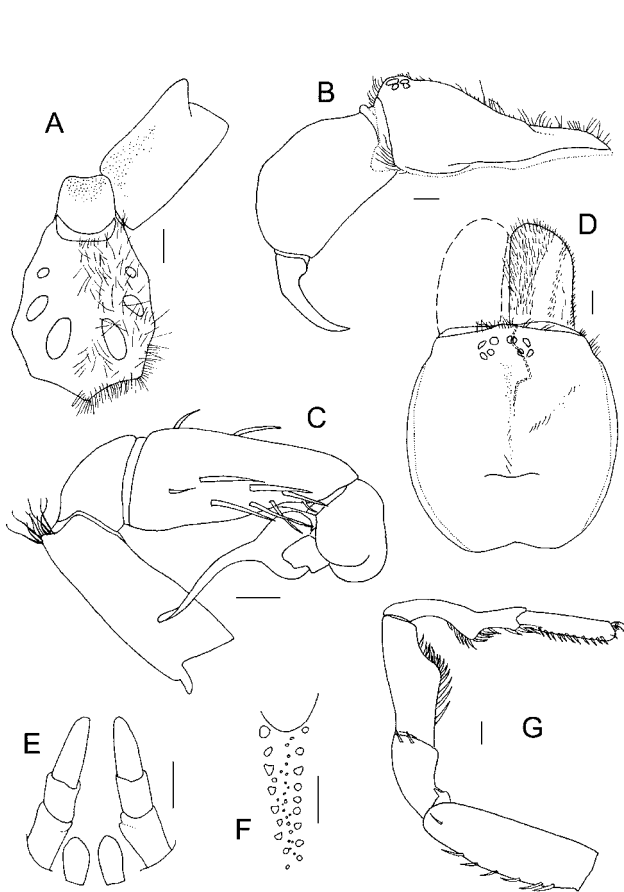


Figure 27. *Hadronyche emmalizae*, male: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) palp, prolateral; (D) cephalothorax and chelicerae, dorsal; (E) spinnerets; (F) cheliceral groove teeth; (G) leg II, prolateral. Scale lines 1 mm.

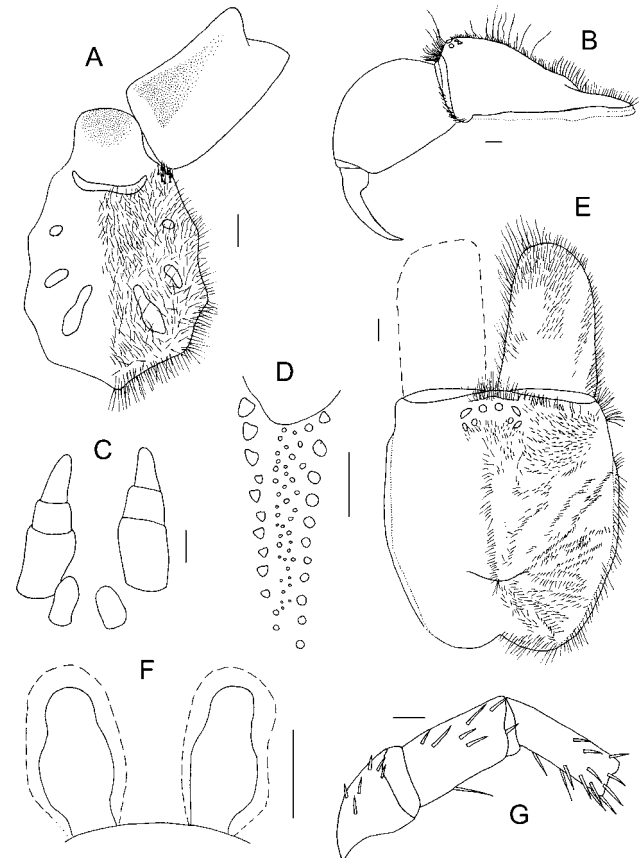


Figure 28. *Hadronyche emmalizae*, female: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) spinnerets; (D) cheliceral groove teeth; (E) cephalothorax and chelicerae, dorsal; (F) spermathecae; (G) leg III, prolateral, patella, tibia, metatarsus. Scale lines 1 mm.

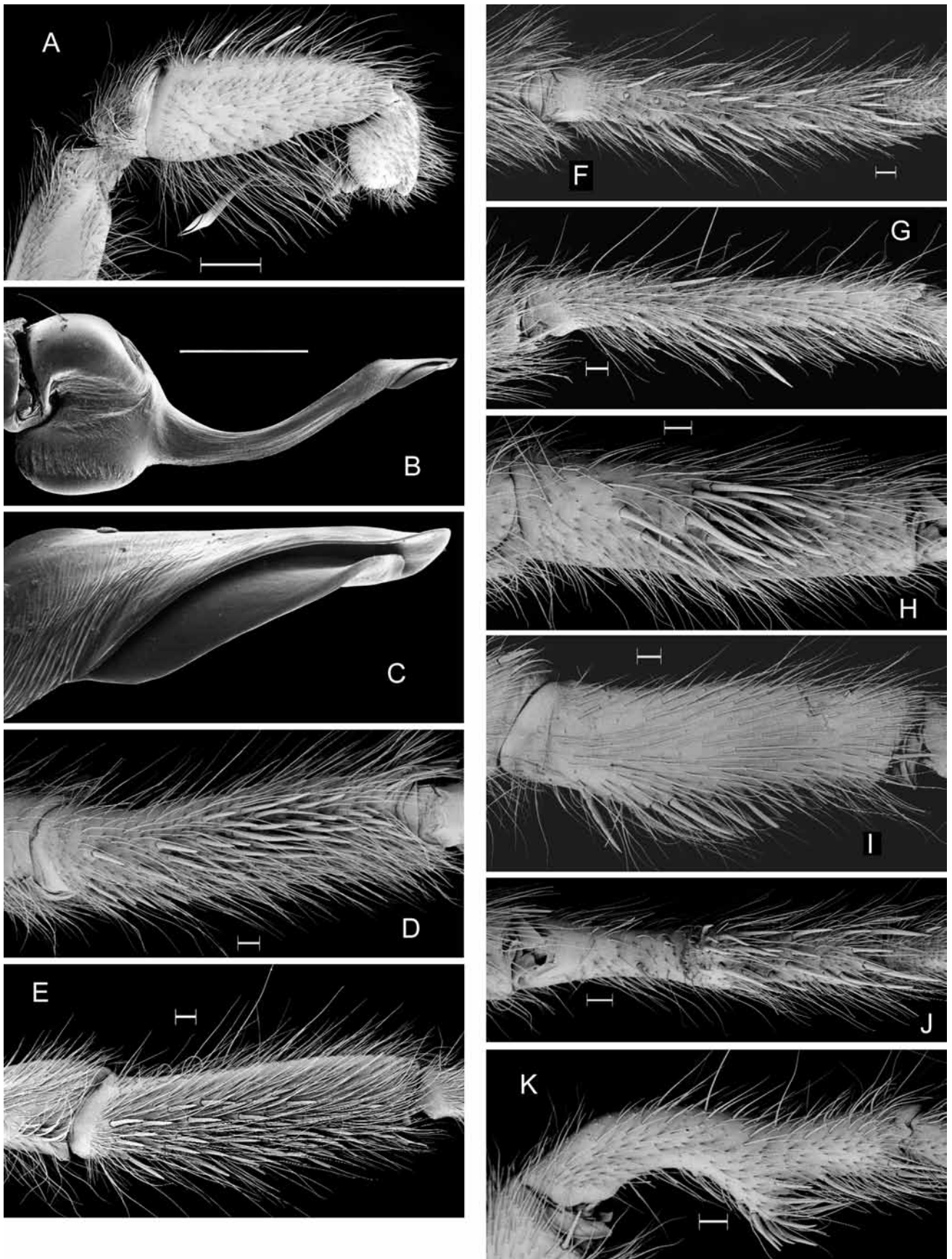


Figure 29. *Hadronyche emmalizae*, male (A,D–K, AMS KS113352, Khancoban, NSW; B,C, AMS KS4114): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J,K) metatarsus II—J, ventral, K, prolateral. Scale lines: 0.3 mm, except A,B 1.0 mm.

**Table 8.** Male morphological data—*Hadronyche emmalizae* (n = 3).

character	range	mean	character	range	mean	character	ratio	SD
CL	8.06–9.78	8.89	Mt1S	24–35 (p0–1)	28	CW/CL	0.93	0.021
CW	7.68–8.91	8.25	Ta1S	11–21	14	CH/CW	0.46	0.04
CH	3.40–4.22	3.81	Ti2S	25–35	31	CFW/CL	0.72	0.049
CFW	6.12–6.87	6.41	STC2teeth	11–14	13	CHGW/L	0.24	0.006
ChGL	2.52–2.87	2.71	BulbL	3.31–3.67	3.51	SW/SL	0.79	0.025
ChGW	0.60–0.68	0.64	EmblL	2.19–2.72	2.44	LL/LW	0.99	0.064
ChGCT	17–22	20	BulbW	1.23–1.46	1.37	PLSAPW/L	0.39	0.04
LL	1.65–1.73	1.70	EmbmW	0.22–0.27	0.25	BulbW/EmbL	0.57	0.11
LW	1.67–1.80	1.72	PalpTibL	4.62–5.03	4.78	EmbmW/L	0.10	0.021
CUSP	222–260	237	PalpTibW	2.09–2.26	2.18	PalpTibW/L	0.46	0.017
SL	5.22–5.58	5.41	PalpTibS	7	7	BulbL/TibL	0.74	0.038
SW	4.15–4.39	4.26	PalpPatS	0–2	1			
PLSAPW	0.41–0.59	0.49	PalpFemS	3–5	4			
PLSAPL	1.09–1.41	1.28						
Fe1S	2–6	4						
Pa1S	2–6 (p1–2)	3						

middle width 0.99. Cheliceral teeth: 47 central, occupying full length of groove in 2–3 irregular rows; 12 prolateral; 11 retrolateral. —*Labium*. Slightly wider than long, rectangular, anterior margin weakly indented. Length 2.24, width 2.52. Cuspules occupying anterior half of labium. Labiosternal sigilla entire, slightly narrowed centrally. —*Sternum*. Ovoid. Length 7.28, width 5.95. Anterolateral angles with basally thickened, bristle-like setae. Posterior sigilla narrow, elongate, length 1.84, width 0.54. —*Palp*. Spination: patella 1 prolateral bristle, tibia 15, tarsus p6, 3 ventral bristles. Trichobothria: tibia p8 r7, tarsus 11. Tarsal claws with 7 teeth. —*Legs*. 1423.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	8.43	4.52	6.49	5.47	3.47	28.38
2	7.65	4.25	5.44	4.96	3.40	25.70
3	6.22	3.12	4.15	4.27	3.26	21.02
4	8.13	3.60	6.36	5.71	3.88	27.68

*Tibia I* width 1.98. Metatarsus I proximal width 1.29. Coxae I, II with several thorn-like setae fronto-medially. Tarsal claw teeth legs I, II: superior 10, 10; inferior 2, 2. Trichobothria legs I, II: tarsus 16, 16; metatarsus 19, 18; tibia p10 r9, p9 r9. —*Leg spination*. Leg I: femur 0, patella 0, tibia 2, metatarsus 13, tarsus 11. Leg II: femur 0, patella 0, tibia 3, metatarsus 12, tarsus 12. Leg III: femur p1, patella pd8, tibia 11 (p7 r2), metatarsus 20 (p4 r4), tarsus 14. Leg IV: femur 0, patella 0, tibia 3 (p1), metatarsus 23, tarsus 25. —*Abdomen*. Frontal abdomen with a group of strong, spine-like bristles. Posterior lateral spinnerets with short apical segment. Lengths: total 4.85; basal segment 2.24, middle 0.99, apical 1.70. Apical segment width 0.89. —*Genitalia*. Spermathecae short. Basal two thirds strongly dilated, wider than digitiform apical third. Well separated basally (by the width of a spermatheca); apices rounded, diverging slightly from each other. Length 1.33, width 0.80.

**Distribution.** South from Bago State Forest to the Khancoban-Geehi region, western side of Snowy Mountains, New South Wales (Fig. 26).

### *Hadronyche formidabilis* (Rainbow)

Figures 1F, 30–33; Tables 9, 34

*Atrax formidabilis* Rainbow, 1914: 255. 1955: 772. Main, 1967: 40. Walker, 1982: 4. Main, 1985: 40.

*Hadronyche formidabilis*.—Gray, 1988: 114 (transferred from *Atrax*).

**Types.** Holotype male: AMS KS1038 (old catalogue number K35282). Richmond River, New South Wales

**Other material examined. New South Wales (males):** QMB S13892, Dorrigo, 10 February 1984, R. Gordon; AMS KS950, Gibraltar Range, near Glen Innes, 12 May 1966, Schultz (matured as male 27 December 1967); AMS KS935, Karuah State Forest, near Dungog, 13 January 1976; AMS KS4514, Lakes Way, near Forster, 15 January 1980, G. Sanders; AMS KS951, South Grafton, July 1965, C. Snook; AMS KS8791, Taree, 29 December 1981; AMS KS934, Taree, 9 January 1976; AMS KS952, Tea Gardens, 3 January 1969, van Dreuten; AMS KS13390, Ulong, 60 km W. of Coff's Harbour, 23 November 1983, C. Martin; AMS KS3245, Wollomombi via Armidale, 2 May 1973, M. Wyndham; AMS KS946, Wongwibinda, 1951, D. Wright; AMS KS949, Armidale Caravan Park; QMB S383, Armidale, Apr 1979; AMS KS947, Barrington Tops, 12 November 1961, B. Salkind; AMS KS1667, Comboyne, 16 January 1946, H.J. Davidson; AMS KS4775, Dalby, 17 February 1938, N. Geary. **New South Wales (females):** AMS KS13391, Ulong, 23 November 1983, C. Martin; AMS KS13392, Ulong, 23 November 1983, C. Martin; AMS KS1313, Upper Allyn River area, 10 February 1978, A. D'Ornbrain; AMS KS3547, Wauchope, 10 October 1934; AMS KS7293, Wilson Creek, 31 March 1981, P. Giraud; AMS KS3234, Wollomombi via Armidale, 2 May 1973, M. Wyndham; AMS KS946, Wongwibinda, 1951, D. Wright; AMS KS1864, Bellingen, AMS KS1058, Cascade, 6 February 1976, R. Holmes; AMS KS14225, Dorrigo, 2 April 1984; AMS KS4663, Dungog area, February 1980; AMS KS5175, Grevillia Saw Mill, May 1980; AMS KS1367, Kempsey, September 1977, B. Mercer; AMS KS2652, Kempsey, February 1979, Daniels; AMS KS13628, Lismore, 30 April 1982; AMS KS3544, Murwillumbah, 1 April 1971, J.O'Reilly; AMS KS5108, Newee Creek, 8 April 1980, T. Foley; AMS KS8363, Niangla, 2 October 1981, M. Keat. **Queensland (males):** QMB S186, Danabah, 1–7 March 1976, V.E. Davies & R. Raven; QMB S185, O'Reilly's, Lamington Plateau, 1 January 1973, R. Raven; QMB S184, Binna Burra, 12 March 1954, W. McIntyre; QMB S187, Binna Burra, 18 December 1976, T. Gynther.

**Diagnosis.** CL 10.03–12.30 (male). Large, tree dwelling Atracinae. Differs from most species by tibia II having a large, rounded spinose apophysis with spines extending onto distoventral tibia (Figs. 30C; 32H,I); Differs from

*H. cerbera*, *H. versuta* and *H. emmalizae* by the more prominent tibia II apophysis (Fig. 30C) and longer spinnerets, PLSAPW/L 0.29 (Fig. 30D; Table 9). Females differ from other atracine species by presence of dense cover of long, fine hairs laterally and ventrally on tibiae & metatarsi I, II (Fig. 31B).

**Redescription of male holotype.** *Size.* Carapace length 11.39, width 10.27. Abdomen length 10.20, width 7.48. — *Colour.* Basic colour pattern. — *Carapace.* Longer than wide, cephalic area moderately raised. Height 4.76; frontal width 7.48. Fovea weakly procurved, anterior margin indented centrally. Mid-dorsal cephalic setae extend almost to fovea. Anterior strial setae absent basally. Anterolateral carapace angle with strong bristles. — *Eyes.* Central eye region raised. Eye group width 2.65. Median ocular quadrangle length 0.90, anterior width 1.17, posterior width 1.80. Diameters: AME 0.37; ALE 0.56; PLE 0.39; PME 0.29. — *Chelicerae.* Cheliceral groove rather narrow, margins weakly divergent distally. Groove length 3.75, middle width 0.61. Cheliceral teeth: 22 central, occupying full length of groove; 12 prolateral; 11 retrolateral. — *Labium.* Slightly wider than long, apically weakly indented. Length 1.96, width 2.19. Labiosternal sigilla entire, broad. Cuspules c. 338 cuspules, number high. — *Sternum.* Long, ovoid. Length 6.87, width 4.56. Several bristles grouped at anterolateral angles. Posterior sternal sigilla broad, elongate. — *Palp.* Tegular area wider than long. Embolus of moderate length, weakly

offset from tegulum. Shaft moderately wide, weakly curved, moderately twisted distally. Bulb length 3.60, width 1.36. Embolus length 2.51, midwidth 0.29. Length of femur 5.24, patella 2.38, tibia 5.40. Width of tibia 2.31. Spination: femur 3; patella 2; tibia 12, (3 dorsal). Distal femur with sinuous bristles. — *Legs.* 1423. Legs I and IV subequal.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	10.54	4.65	9.01	8.55	4.76	37.51
2	9.04	4.69	8.02	7.93	4.62	34.30
3	8.36	3.84	6.72	7.13	4.54	30.59
4	10.47	4.37	9.04	8.87	4.72	37.47

*Tibia I* width 1.72. Femora I and II with dorsal spines. Metatarsus I with numerous ventral spines grouped on thickened proximal region. Tibia I with many ventral spines, distal spines short, prolateral spines present. Tibia II with a large, rounded, strongly spined ventral apophysis placed slightly proximal of centre. Ventral spines proximal and distal to apophysis few and small; prolateral spines present. Metatarsus II strongly sinuous with a prominent spined ventral apophysis; ventral spines mainly on and distal to apophysis, few proximally. Thorn-like setae present on coxae I, II, frontal. Tarsal and distal metatarsal scopulae: legs I, II very weak to absent; legs 3, 4 weak to moderate. Tarsal claw teeth legs I, II: superior 13, 12; inferior 3, 3. Trichobothria legs I, II: tarsus 16, 14; metatarsus 16, 14; tibia p8r8, p8r8. — *Leg spination.* Leg I: femur 11 (d3 pd8), patella 11 (p5), tibia 131

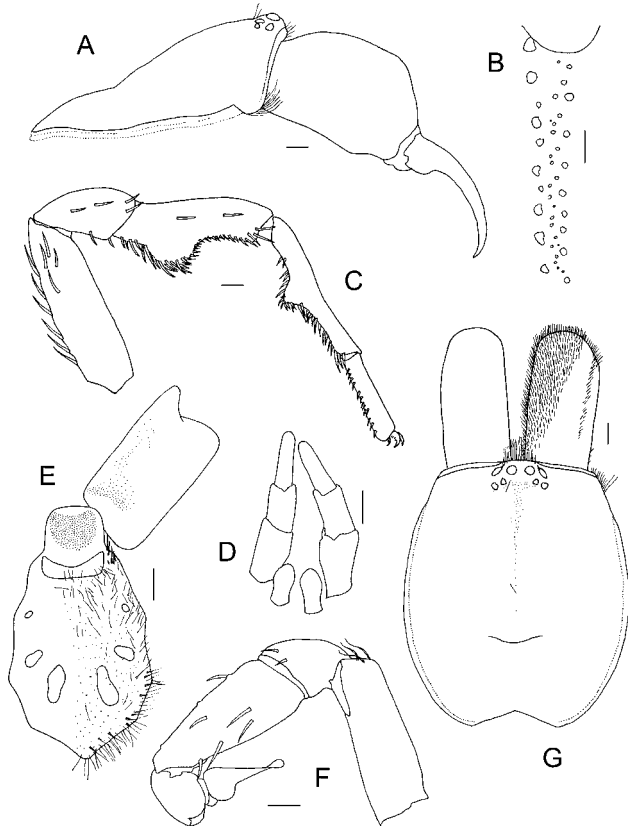


Figure 30. *Hadronyche formidabilis*, male: (A) cephalothorax and chelicerae, lateral; (B) cheliceral groove teeth; (C) leg III, prolateral; (D) spinnerets; (E) sternum, labium and maxilla; (F) palp, prolateral; (G) cephalothorax and chelicerae, dorsal. Scale lines 1 mm.

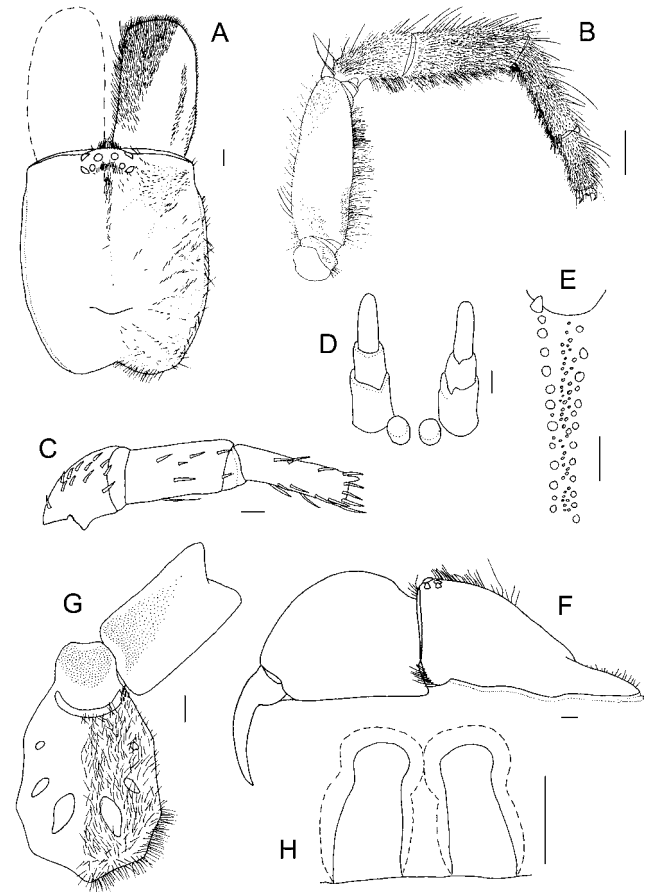


Figure 31. *Hadronyche formidabilis*, female: (A) cephalothorax and chelicerae, dorsal; (B) leg I, hair cover; (C) leg III, prolateral, patella, tibia, metatarsus; (D) spinnerets; (E) cheliceral groove teeth; (F) cephalothorax and chelicerae, lateral; (G) sternum, labium and maxilla; (H) spermathecae. Scale lines 1 mm.



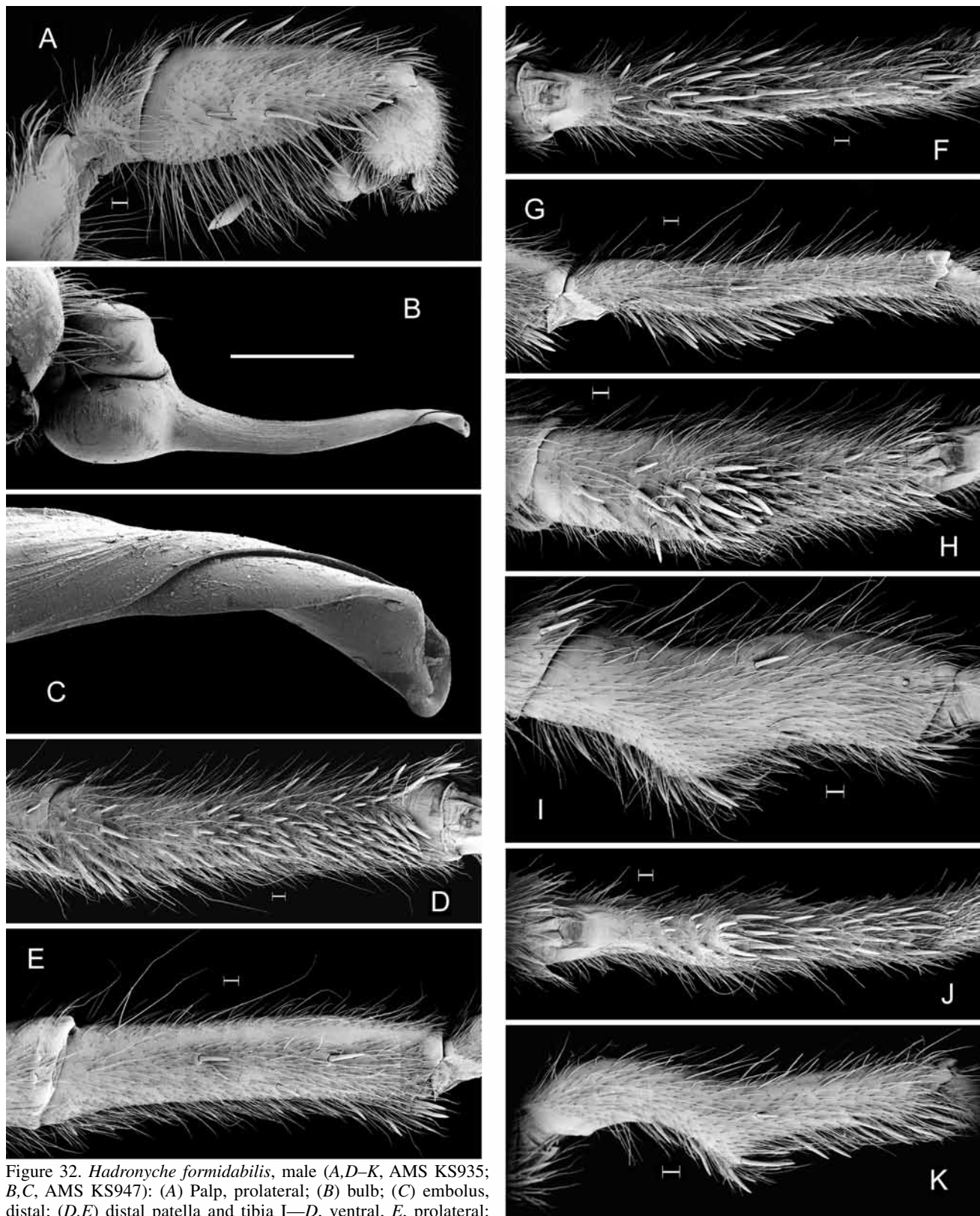


Figure 32. *Hadronyche formidabilis*, male (A,D–K, AMS KS935; B,C, AMS KS947): (A) Palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J,K) metatarsus II—J, ventral, K, prolateral. Scale lines: 0.3 mm, except B 1.0 mm.

(p7), metatarsus 45, tarsus 44 (2 mid ventral). Leg II: femur 14 (d7pd7), patella 5(p4), tibia 65 (p2), metatarsus 44, tarsus 35 (3 mid ventral). Leg III: femur pd10, patella 13 (p12 r1), tibia 24 (p6 r4), metatarsus 32 (p3 rd2), tarsus 24. Leg IV:

femur 0 (strong bristles), patella r1, tibia 11 (r3), metatarsus 26, tarsus 30. —*Abdomen*. Posterior lateral spinnerets with a rather long apical segment. Lengths: total 5.32; basal segment 2.09; middle 1.36; apical 1.87. Apical segment width 0.58.

**Table 9.** Male morphological data—*Hadronyche formidabilis* (n = 10).

character	range	mean	character	range	mean	character	ratio	SD
CL*	10.03–12.03	11.06	Mt1S	36–69 (p0–1)	49	CW/CL	0.91	0.02
CW	9.39–11.29	10.06	Ta1S	18–71 (0–5 midv)	39	CH/CW	0.45	0.026
CH	4.10–5.08	4.50	Ti2S*	38–88 (p0–2)	63	CFW/CL	0.67	0.031
CFW	6.36–8.64	7.41	STC2teeth	10–13	11	CHGW/L*	0.15	0.021
ChGL	3.23–3.94	3.55	BulbL	3.40–4.01	3.66	SW/SL	0.73	0.029
ChGW	0.45–0.61	0.53	EmbL	2.04–2.70	2.48	LL/LW	0.92	0.021
ChGCT	15–34	22	BulbW	1.30–1.56	1.39	PLSAPW/L*	0.29	0.024
LL	1.74–2.04	1.87	EmbmidW	0.26–0.33	0.30	BulbW/EmbL	0.56	0.043
LW	1.94–2.26	2.04	PalpTibL	4.88–6.12	5.44	EmbmidW/L	0.12	0.009
CUSP*	331–417	371	PalpTibW	2.13–2.58	2.30	PalpTibW/L	0.43	0.04
SL	6.27–7.28	6.72	PalpTibS	6–16	9	BulbL/TibL	0.67	0.044
SW	4.51–5.44	4.93	PalpPatS	1–3	2			
PLSAPW	0.50–0.67	0.57	PalpFemS	2–5	3			
PLSAPL	1.67–2.29	1.99						
Fe1S	2–17	9						
Pa1S*	5–25 (p2–8)	11						

**Female** (AMS KS4663), Dungog area, New South Wales, 32°23'S 151°45'E, February 1980). —*Size*. Carapace length 14.84, width 12.22. Abdomen length 14.28, width 10.54. —*Colour*. Basic colour pattern. Abdomen dark or light maroon brown. —*Carapace*. Clearly longer than wide, strongly raised. Height 6.46; frontal width 10.66. Cephalic length 11.36. Fovea procurved. Mid-dorsal cephalic setae weak but numerous anteriorly, few posteriorly, do not reach fovea. Anterior strial setae absent basally. Anterolateral carapace angle with many bristles. —*Eyes*. Eye region sessile, very slightly raised centrally. Eye group width 3.53. Diameters: AME 0.38, ALE 0.78, PLE 0.70, PME 0.40. Interdistances: AME–AME 0.58, AME–ALE 0.44, ALE–PLE 0.38, PLE–PME 0.12, PME–PME 1.54. Median ocular quadrangle length 1.08, anterior width 1.11, posterior width 2.38. —

*Chelicerae*. Cheliceral groove narrow, margins diverging distally. Groove length 4.72, middle width 0.82. Cheliceral teeth: 44 central, in irregular double row, occupying full length of groove; 13 prolateral; 13 retrolateral. —*Labium*. Almost as long as wide, rounded, anterior margin broadly indented. Length 3.08, width 2.95. Cuspules occupying anterior three quarters of labium. Labiosternal sigilla entire. —*Sternum*. Long. Length 9.10, width 6.60. Posterior sigilla elongate: length 1.85, width 0.80. —*Palp*. Spination: tibia 4, tarsus 7. Trichobothria: tibia p10 r9, tarsus 22. Tarsal claw with 6 teeth. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	10.40	5.60	8.36	7.01	4.10	35.47
2	9.43	5.49	7.13	6.48	3.98	32.51
3	8.12	4.51	5.41	5.99	3.98	29.01
4	10.66	5.62	8.20	7.63	4.59	36.70

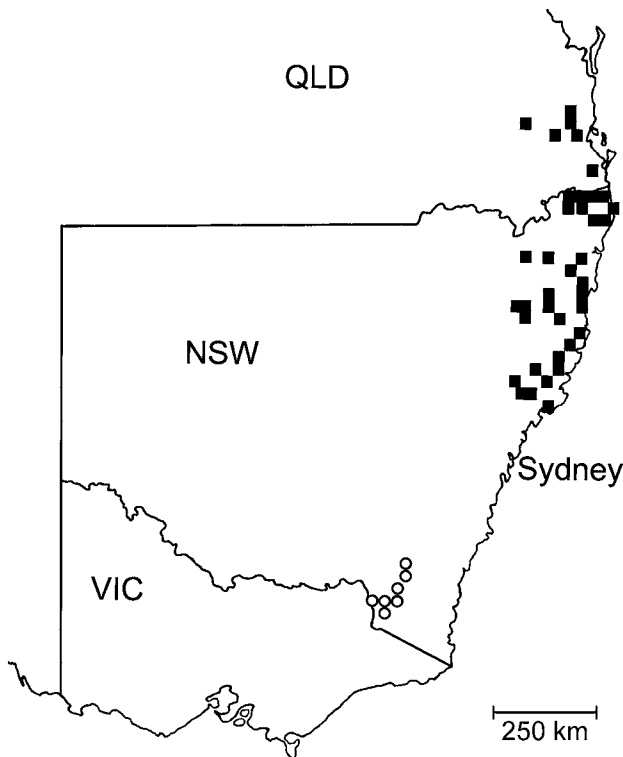


Figure 33. Collection records for *Hadronyche formidabilis* (squares) and *H. alpina* (circles).

Tibiae and metatarsi I, II with dense cover of long, fine hairs ventrally and laterally. Tibiae I, II with 0–1 spines. Tibia I width 2.62. Metatarsus I proximal width 1.64. Coxae I, II with a few thorn-like setae frontally. Tarsal claw teeth legs I, II: superior 7, 6; inferior 3, 3. Trichobothria legs I, II: tarsus 19, 15, metatarsus 26, 23; tibia p9 r9, p8 r8. —*Leg spination*. Leg I: femur 0, patella 0, tibia 1, metatarsus 6, tarsus 7. Leg II: femur 0, patella 0, tibia 1, metatarsus 8, tarsus 9. Leg III: femur 0, patella pd13 r1, tibia 11 (p4 r3), metatarsus 21 (p5 rd3), tarsus 11. Leg IV: femur 0, patella 0, tibia 4, metatarsus 7, tarsus 22. —*Abdomen*. Posterior lateral spinnerets stout, apical segment thick and moderately long. Lengths: total 6.73; basal segment 2.54; middle 1.44; apical 2.75. Apical segment width 0.94. —*Genitalia*. Spermathecae broad, converge slightly anteriorly. Apical third rounded, clearly set off from basal two thirds by a constriction. Spermatheca length 1.49, width 0.65.

**Distribution.** Northeastern New South Wales, from the Hunter River, to southeastern Queensland (Fig. 33). A single record exists from southeastern New South Wales (Robertson, southern highlands) but remains unconfirmed.

**Comments.** This is the largest atracine spider known. Both males and especially females have noticeably narrower carapaces than comparable species. They are a tree dwelling

species associated with tall open forest and rainforest habitats. Their retreats are associated with trunk/branch fracture holes, rotten heartwood pipes and epiphytic growths. During timber milling, these spiders are regularly found in the rotting wood and frass environment of heartwood pipes in large trees such as Tallowwood (*Eucalyptus microcorys*). They probably feed on wood eating beetles and associated fauna inhabiting the tree pipe habitat.

### *Hadronyche alpina* n.sp.

Figures 33–36; Tables 10, 34

**Etymology.** The specific epithet refers to the species presence in the Snowy Mountains alpine region of New South Wales.

**Types.** Holotype male: AMS KS872, Mt. Kosciuszko, Kosciuszko National Park, New South Wales, 36°27'S 148°15'E, 13 January 1968, J. Child. Paratypes (all AM). New South Wales. *Males*: AMS KS13808, Kosciuszko National Park, 5 December 1983, J. Gold; AMS KS8515, South Ramshead, Kosciuszko National Park, 36°31'S 148°14'E, 16 December 1981, W.S. Osborne; AMS KS875, West slope of Mt. Kosciuszko, Kosciuszko National Park, 36°27'S 148°15'E, 17 December 1971, R.L. Jenz; AMS KS871, Seaman's Hut, Mt. Kosciuszko, Kosciuszko National Park, 36°27'S 148°15'E, 28 November 1966, H. Cogger; AMS KS23643, Charlotte Pass area, Kosciuszko National Park, 36°26'S 148°19'E, J. Molan; AMS KS877, Mt. Kosciuszko, 7 January 1929, H.O. Fletcher & A. Musgrave. *Females*: AMS KS8730, Daner's Gap, Kosciuszko National Park, 36°21'S 148°28'E, W.S. Osborne, 12 January 1982; AMS KS8514, South Ramshead, Kosciuszko National Park, 36°31'S 148°14'E, 16 December 1981; AMS

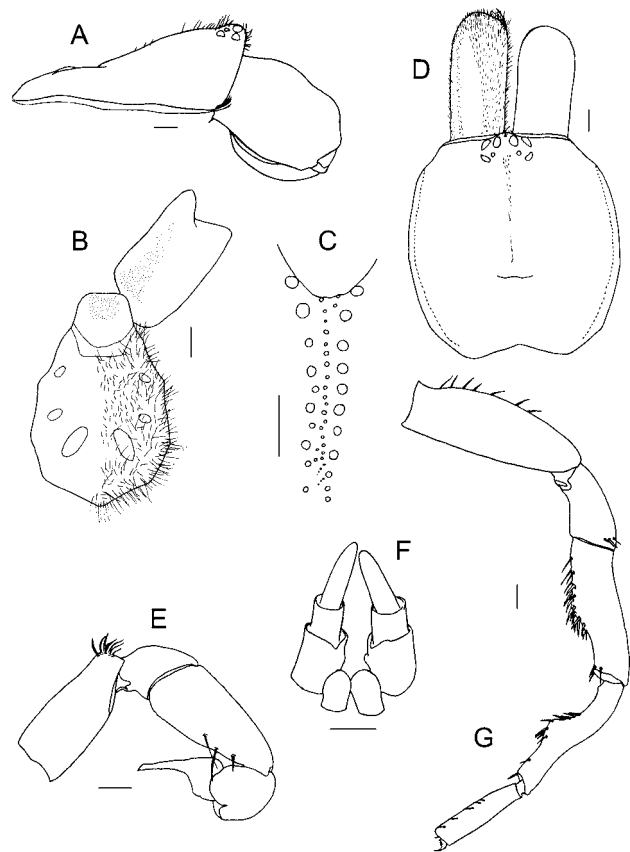


Figure 34. *Hadronyche alpina*, male: (A) cephalothorax and chelicerae, lateral; (B) sternum, labium and maxilla; (C) cheliceral groove teeth; (D) cephalothorax and chelicerae, dorsal; (E) palp, prolateral; (F) spinnerets; (G) leg II, prolateral (NB, dorsal femoral spines present or absent). Scale lines 1 mm.

KS876, Mt. Kosciuszko, Kosciuszko National Park, 36°27'S 148°15'E, 6 January 1929, H.O. Fletcher; AMS KS10602, Thredbo, 36°26'S 148°27'E, 13 January 1983, G. Jackson. Australian Capital Territory. *Male*: AMS KS870, Mt. Ginini, Brindabella Ranges, 35°31'S 148°46'E, 5 December 1966, R. Wood.

**Other material examined.** New South Wales (*males*): AMS KS878, Australian Alps, 1950, S.G. Alley; AMS KS876, Mount Kosciuszko, Kosciuszko National Park, 6 January 1929, H.O. Fletcher; AMS KS873, Mount Kosciuszko, Kosciuszko National Park, 31 January 1974; AMS KS874, Mount Kosciuszko near summit, Kosciuszko National Park, 9 February 1952, C.E. Chadwick.

**Diagnosis.** CL 8.16–10.06 (male). Apophyseal swelling present on tibia II (Fig. 36H,I). Differs from *H. versuta* by shorter embolus and *H. emmalizae* by shorter, straight embolus (BulbW/Embl 0.76) (Fig. 36B); from *H. cerebera* by absence of coxal thorns; from *H. venenata* by presence of metatarsus II apophysis (Fig. 36K); and from *H. meridiana* and *H. modesta* by longer labium (Fig. 34B).

**Male (holotype).** —*Size.* Carapace length 9.31, width 9.28. Abdomen length 9.02, width 6.72. —*Colour.* Basic colour pattern. —*Carapace.* Almost as wide as long, moderately raised. Height 3.81. Frontal width 5.95. Fovea weakly procurved-straight. Mid-dorsal cephalic setae almost reach fovea. Anterior stria area with none or few setae. Strong bristles on anterolateral carapace angle. —*Eyes.* Sessile to slightly raised. Eye group width 2.28. Median ocular

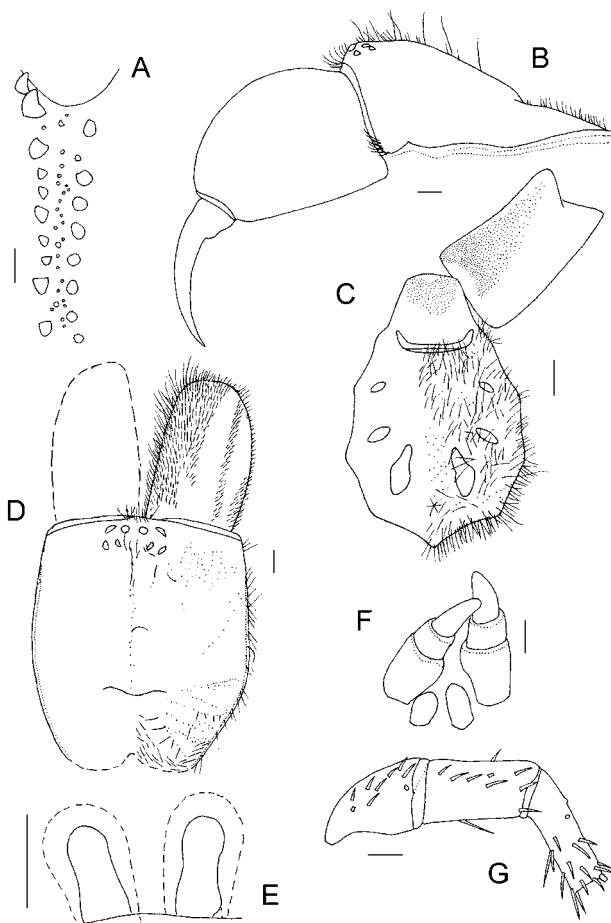


Figure 35. *Hadronyche alpina*, female: (A) cheliceral groove teeth; (B) cephalothorax and chelicerae, lateral; (C) sternum, labium and maxilla; (D) cephalothorax and chelicerae, dorsal; (E) spermatacae; (F) spinnerets; (G) leg III, prolateral, patella, tibia, metatarsus. Scale lines 1 mm.

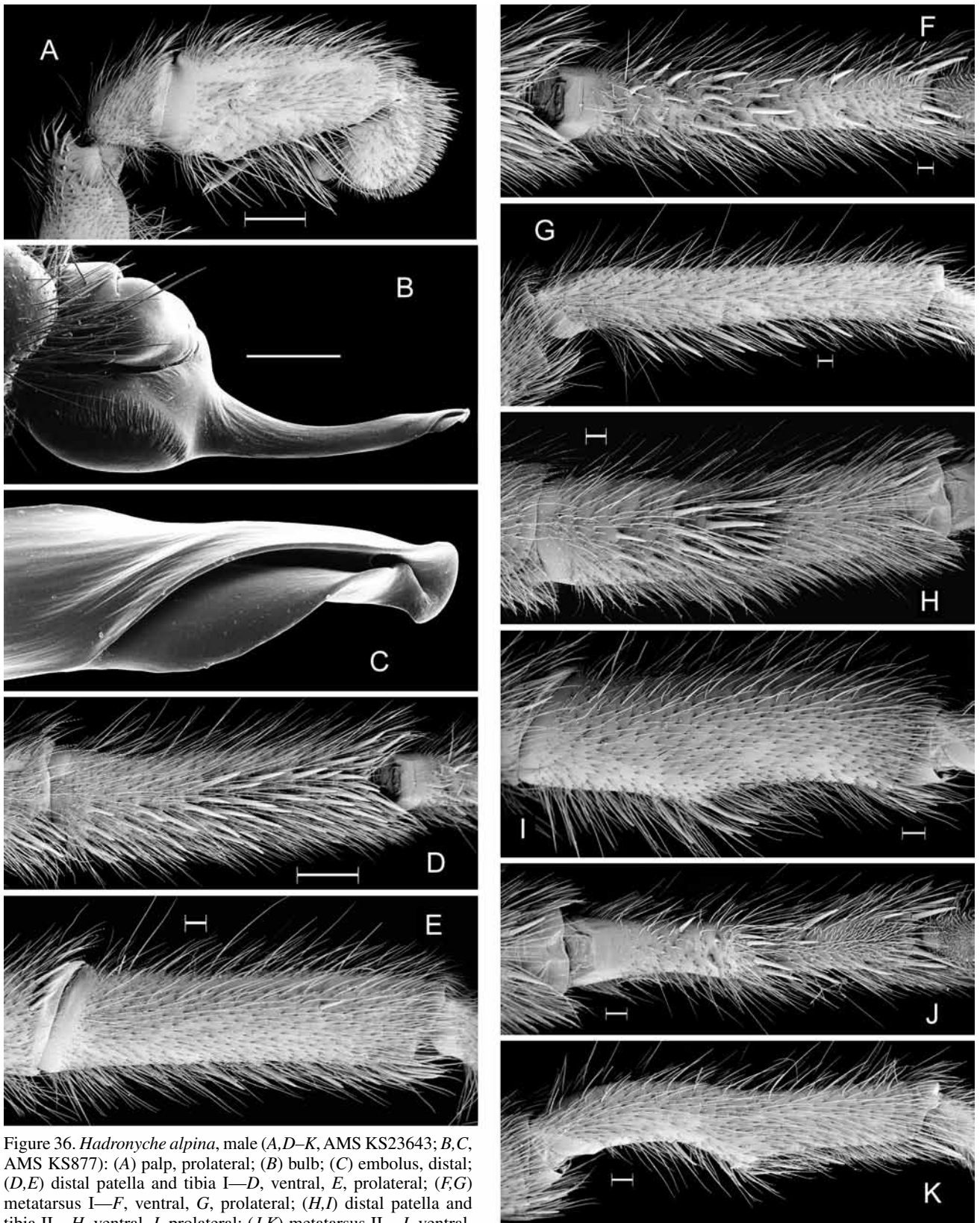


Figure 36. *Hadronyche alpina*, male (A,D–K, AMS KS23643; B,C, AMS KS877): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J,K) metatarsus II—J, ventral, K, prolateral. Scale lines: 0.3 mm, except A 0.5 mm, D 1.0 mm and F,H, 0.2 mm.

quadrangle length 1.10, anterior width 1.04, posterior width 1.44. Diameters: AME 0.30, ALE 0.47, PLE 0.41, PME 0.21. —*Chelicerae*. Cheliceral groove rather narrow, margins subparallel to weakly divergent. Groove length 3.18, middle

width 0.58. Cheliceral teeth: 29 central, running full length of groove, many often proximally placed; 10 prolateral; 11 retrolateral. —*Labium*. Slightly wider than long. Length 1.60, width 1.74. Labiosternal sigilla, broad entire. Cuspules

**Table 10.** Male morphological data—*Hadronyche alpina* (n = 10).

character	range	mean	character	range	mean	character	ratio	SD
CL	8.16–10.06	9.21	Mt1S	25–45	35	CW/CL	0.96	0.038
CW	7.63–9.32	8.81	Ta1S	8–15	12	CH/CW	0.41	0.021
CH	3.31–4.08	3.65	Ti2S	21–48	32	CFW/CL	0.66	0.045
CFW	5.44–6.36	6.04	STC2teeth	13–16	14	CHGW/L	0.18	0.029
ChGL	2.53–3.18	2.84	BulbL	2.61–3.20	2.87	SW/SL	0.77	0.037
ChGW	0.40–0.63	0.51	EmblL	1.59–1.96	1.75	LL/LW	0.89	0.038
ChGCT	4–29	15	BulbW	1.17–1.67	1.31	PLSAPW/L*	0.33	0.042
LL	1.07–1.64	1.49	EmbmW	0.21–0.28	0.23	BulbW/Embl*	0.76	0.059
LW	1.25–1.84	1.67	PalpTibL	3.94–4.76	4.42	EmbmW/L	0.14	0.011
CUSP*	110–140	128	PalpTibW	1.87–2.28	2.10	PalpTibW/L	0.48	0.033
SL	4.66–6.05	5.55	PalpTibS	0–7	3	BulbL/TibL	0.66	0.041
SW	3.67–4.72	4.29	PalpPatS	0–1	1			
PLSAPW	0.41–0.56	0.48	PalpFemS	3–5	4			
PLSAPL	1.29–1.78	1.46						
Fe1S	0–8	3						
Pa1S	3–10 (p1–4)	6						

c. 130, number low to moderate. —*Sternum*. Ovoid. Length 5.58, width 4.32. Posterior sigilla large, elongate. —*Palp*. Tegular area slightly wider than long. Embolus short, weakly curved, with short, weakly twisted distal part; basal embolus slightly or not offset from tegulum. Bulb length 2.83, width 1.34. Embolus length 1.65, midwidth 0.27. Length of femur 4.31, patella 1.97, tibia 4.43. Width of tibia 2.12. Spination: femur 3; tibia 2. Femur with distal sinuous bristles. —*Legs*. 4213. Legs I, 2 subequal.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	8.36	4.06	6.39	6.31	4.17	29.29
2	8.16	4.10	6.89	6.52	4.10	29.77
3	6.93	3.47	5.46	5.82	4.02	25.70
4	8.36	3.85	7.16	6.97	4.67	31.01

*Tibia I* width 1.62. Femora I and II usually with, sometimes without, dorsal spines. Femora III and IV with strong, long bristles. Metatarsus I slightly thickened proximally, larger ventral spines grouped proximally. Tibia II with small apophyseal swelling, centrally placed with spines grouped upon it. Tibia II weakly concave distoventrally. Metatarsus II sinuous with a prominent ventral, spined apophysis. Coxal hairs unmodified. Scopulae well developed on tarsi of all legs and distal metatarsi of legs II–IV. Tarsal claw teeth legs I, II: superior 4; inferior 2. Trichobothria legs I, II: tarsus 12, 13; metatarsus 17, 16; tibia p9 r8, p7 r6. —*Leg spination*. Leg I: femur d3 (plus bristles), patella 10 (p4 v6), tibia 72 (p4), metatarsus 39, tarsus 12. Leg II: femur d3 (plus bristles), patella 3 (p2 v1), tibia 32, metatarsus 21, tarsus 12. Leg III: femur 0, patella 8 (p7 v1), tibia 10 (p4 r2), metatarsus 22, tarsus 10. Leg IV: femur 0, patella 0, tibia 2, metatarsus 17, tarsus 18. —*Abdomen*. Posterior lateral spinnerets with moderately long apical segment. Lengths: total 3.36; basal segment 1.20, middle 0.64, apical 1.52; apical width 0.49.

**Female** (paratype AMS KS8730). —*Size*. Carapace length 10.02, width 9.35. Abdomen length 15.64, width 11.22. —*Colour*. Basic colour pattern. —*Carapace*. Slightly longer than wide, strongly raised. Height 5.07, frontal width 8.23. Cephalic length 7.14. Fovea procurved. Mid-dorsal cephalic

setae almost reach or reach fovea. Anterior striae setae few to absent basally. Anterolateral carapace angle with a few weak bristles and hairs. —*Eyes*. Central eye region weakly raised. Eye group width 2.72. Diameters: AME 0.25, ALE 0.52, PLE 0.44, PME 0.20. Interdistances: AME–AME 0.44, AME–ALE 0.31, ALE–PLE 0.42, PLE–PME 0.22, PME–PME 1.16. Median ocular quadrangle length 0.98, anterior width 1.03, posterior width 1.69. —*Chelicerae*. Cheliceral groove margins diverge distally. Groove length 3.59, middle width 0.82. Cheliceral teeth: 28 central, in single row, occupying full length of groove; 11 prolateral; 9 retrolateral. —*Labium*. Slightly wider than long, sides sloping medially to convex anterior margin. Length 2.04, width 2.41. Cuspules on anterior half of labium. Labiosternal sigilla entire, narrow. —*Sternum*. Ovoid. Length 6.90, width 5.24. Posterior sigilla elongate: length 1.36, width 0.58. —*Palp*. Spination: tibia 2, tarsus 7. Trichobothria: tibia p6 r7, tarsus 8. Tarsal claw with 6 teeth. —*Legs*. 1423. Legs I, IV subequal.

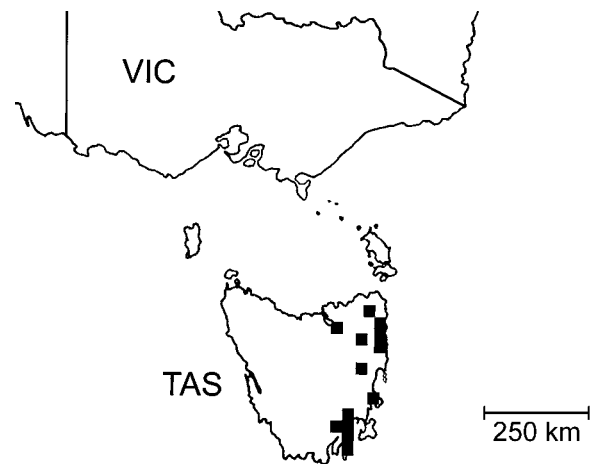
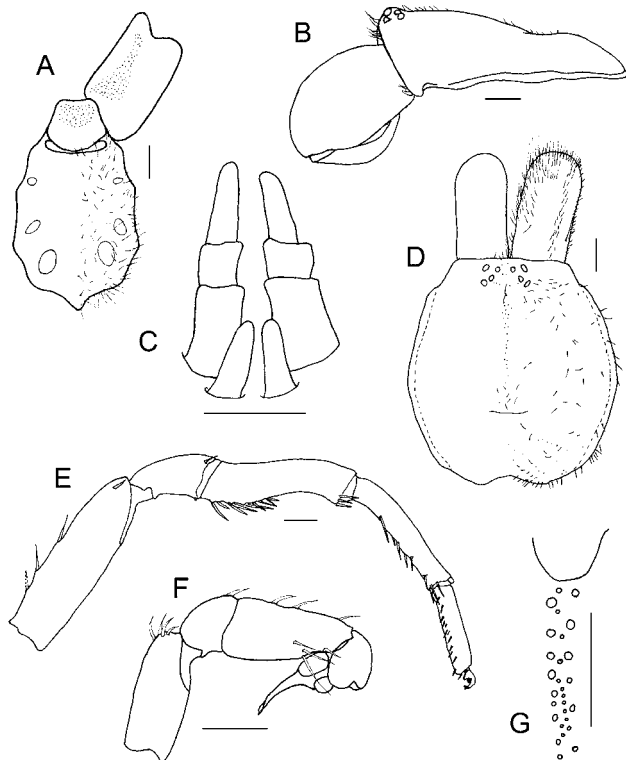
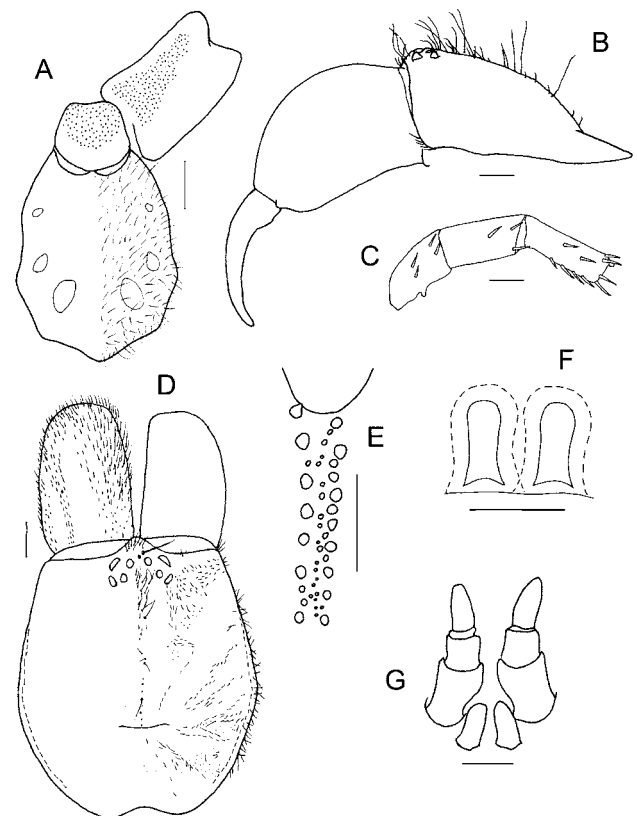
Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	8.15	4.32	5.81	4.79	3.20	26.27
2	7.00	3.94	5.24	4.28	2.86	23.32
3	6.12	3.37	3.77	3.92	2.99	20.17
4	7.75	4.22	5.62	5.09	3.33	26.01

*Tibia I* width 1.84. Metatarsus I proximal width 1.26. Coxa I with anterior setae thickened basally. Tarsal claw teeth legs I, II: superior 11, 11; inferior 3, 3. Trichobothria legs I, II: tarsus 11, 12; metatarsus 14, 14; tibia p9 r7, p7 r8. —*Leg spination*. Leg I: femur 0, patella 0, tibia 1, metatarsus 8, tarsus 6. Leg II: femur 0, patella 0, tibia 1, metatarsus 9, tarsus 8. Leg III: femur 0, patella pd8, tibia 15 (p8 r4), metatarsus 20 (p9 rd3), tarsus 16. Leg IV: femur 0, patella 0, tibia 2, metatarsus 22, tarsus 33. —*Abdomen*. Posterior lateral spinnerets with short apical segment. Lengths: total 3.95; basal segment 1.63, middle 0.82, apical 1.50. Apical segment width 0.67. —*Genitalia*. Spermathecae about twice as long as wide, digitiform, apical half slightly enlarged. Length 0.95, width 0.45. Spermathecae diverge slightly anteriorly.

**Distribution**. Kosciuszko National Park, New South Wales and Brindabella Range, Australian Capital Territory (Fig. 33).

***Hadronyche venenata* (Hickman)**

Figures 37–40; Tables 11, 34

*Atrax venenatus* Hickman, 1927: 63. Hickman, 1967: 20. Main, 1985: 42.*Hadronyche venenata*.—Gray, 1988: 114 (Transferred from *Atrax*).**Types.** Holotype male: QVM 957–13–16 Type 28. Newtown Creek, Hobart, Tasmania, V.V. Hickman, 22 December 1925. Allotype female: QVM 1957–13–17 Type 29. Data as for holotype.**Other material examined. Tasmania (males):** AMS KS6071, Lambert Park, near Hobart, 3 June 1980, M. Gray; Bicheno, 22 January 1972, B. Stephenson (QVM); Cape Lodi, near Bicheno, 5 March 1978, A. McBain (QVM); Cole's Bay, 27 April 1972, N.S. Freeman (QVM); Cole's Bay, 13 March 1978, Monaghan (QVM); Cole's Bay, 24 February 1971, M. O'Toole (QVM); Mathina, 16 February 1972 (QVM); Mathina, 10 February 1971, J. Turner (QVM); AMS KS972, Mount Ben Lomond, 11 April 1926, A.L. Meston; J1916 (TM), Geilston Bay, 16 May 1984, J. McDavitt; J1360 (TM), Rosny, Hobart, 17 April 1978, Mr Ward; E938 (TM), Blackman's Bay, 5 May 1974, E. Cunliffe; Hobart, June 1971, K. Hamilton (QVM); J1917 (TM), Winnebah, May 1984, F. Wagner; J 739 (TM), Tinderbox, 8 March 1971, D. Milledge; J1113 (TM), West Hobart, 26 March 1976, R. van de Uusse; J1025 (TM), Taroon, Hobart, 9 March 1975, Ms Stottard. **Tasmania (females):** Blackman's Bay, Apr 1983 (TM); AMS KS975, Cascades, 3 January 1967; Coles Bay, February 1970, N. Lawson (TM); Cromwell, 20 April 1971, N. Toombs (TM); Golden Ridges, 13 February 1946, W. Bart (QVM); Hobart, June 1971, K. Hampton (QVM); Liffy, 28 October 1972, K. Watson (QVM); Mathina, 10 February 1971, J. Turner (QVM); Mount Victoria, 14 January 1972, N.B. Brown (QVM); Mount Young, 18 January 1971, ? Simpson (QVM); Poatina, 28 September 1963, F. Fishwick (QVM); Ringarooma, 7 June 1963, J. Kidd (QVM); Rosetier, 7 June 1971 (TM); AMS KS974, Sandy Bay, 12 December 1966, J. Cossum; St. Marys, 16 July 1971, K. Cook (QVM); AMS KS6214, Taroon, near Hobart, 8 September 1980, R. Parrott; AMS KS973, Trevallyn, 1 February 1928.Figure 37. Collection records for *Hadronyche venenata***Diagnosis.** CL 6.88–9.59 (male). Differs from other *Hadronyche* spp. by having a weak spined apophyseal swelling on tibia II but metatarsus II not modified (Figs. 38E, 40H–K). Male caput relatively weakly raised (Fig. 38B; CH/CW 0.40).**Redescription of male holotype.** *Size.* Carapace length 6.88, width 6.19. Abdomen length 5.30, width 4.42. —*Colour.* Basic colour pattern. —*Carapace.* Longer than wide, cephalic area moderately raised, rather narrow frontally. Height 2.46. Frontal width 3.69. Fovea straight, narrow. Mid-dorsal cephalic setae reach fovea. Anterior strial setaeFigure 38. *Hadronyche venenata*, male: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) spinnerets; (D) cephalothorax and chelicerae, dorsal; (E) leg II, prolateral; (F) palp, prolateral; (G) cheliceral groove teeth. Scale lines 1 mm.Figure 39. *Hadronyche venenata*, female: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) leg III, prolateral, patella, tibia, metatarsus; (D) cephalothorax and chelicerae, dorsal; (E) cheliceral groove teeth; (F) spermathecae; (G) spinnerets. Scale lines 1 mm.



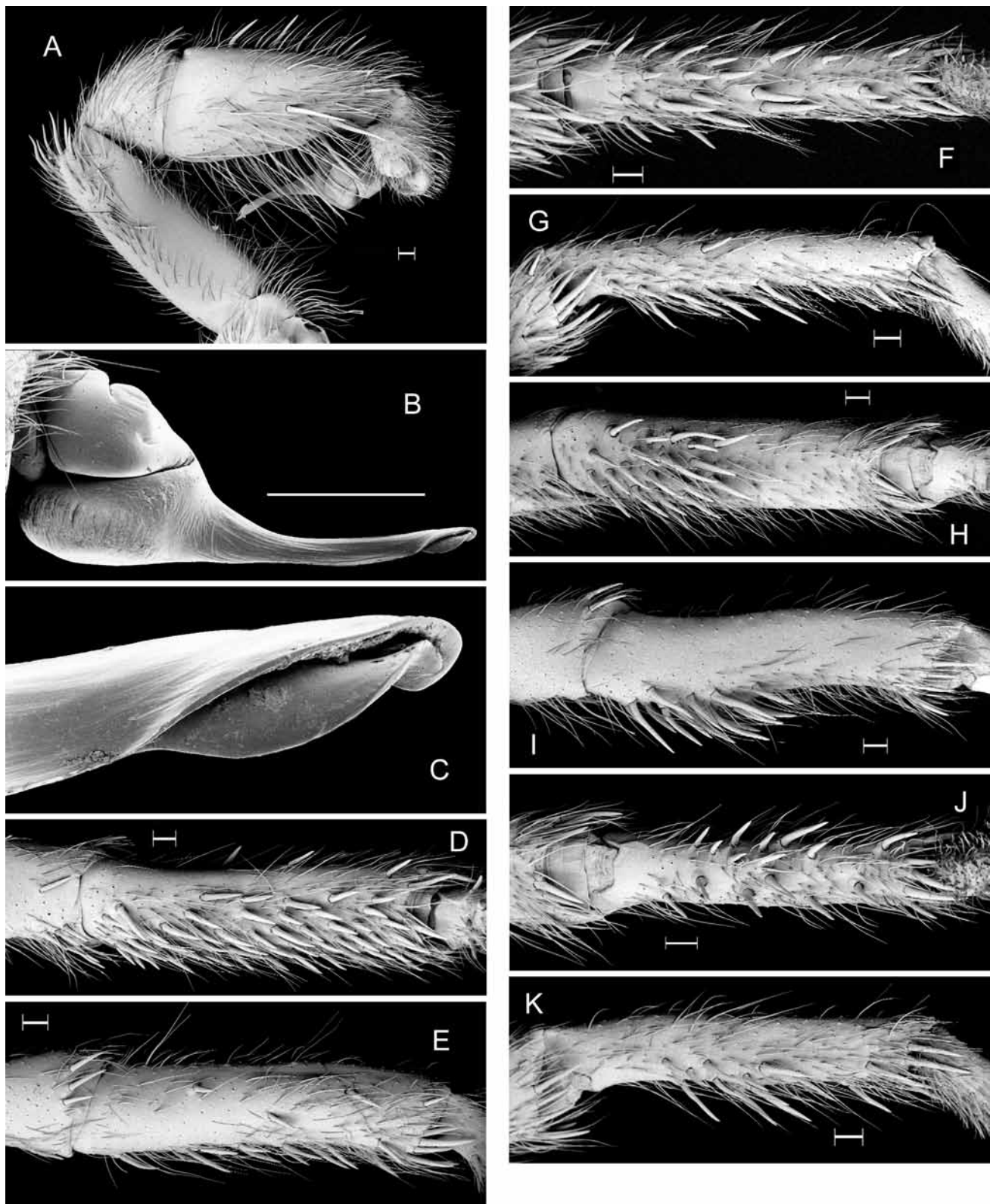


Figure 40. *Hadronyche venenata*, male (A,D–K, AMS KS6071; B,C, AMS KS972): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J,K) metatarsus II—J, ventral, K, prolateral. Scale lines: 0.3 mm, except A 0.2 mm and B 1.0 mm.

present. Anterolateral carapace angle with several weak bristles. —*Eyes*. Central eye region raised. Anterior median eyes small. Eye group width 1.60. Median ocular quadrangle length 0.58, anterior width 0.70, posterior width 1.09. Diameters: AME 0.17, ALE 0.38, PLE 0.26, PME 0.20. —

*Chelicerae*. Groove margins subparallel, weakly divergent distally; length 2.02, middle width 0.26. Cheliceral teeth: 16 central, occupying full length of groove; 9 prolateral; 7 retrolateral. —*Labium*. Slightly wider than long, weakly indented apically. Length 1.14, width 1.24. Labiosternal

**Table 11.** Male morphological data—*Hadronyche venenata* (n = 12).

character	range	mean	character	range	mean	character	ratio	SD
CL	6.88–9.59	8.52	Mt1S	24–53 (p0–1)	37	CW/CL	0.95	0.029
CW	6.19–8.82	8.11	Ta1S	9–24	14	CH/CW*	0.40	0.016
CH	2.46–3.62	3.27	Ti2S	16–39	26	CFW/CL	0.65	0.047
CFW	3.69–6.45	5.49	STC2teeth	12–16	13	CHGW/L*	0.13	0.014
ChGL	2.02–2.83	2.53	BulbL	1.58–2.83	2.44	SW/SL	0.71	0.056
ChGW	0.26–0.39	0.32	Embl	1.33–1.84	1.57	LL/LW	0.93	0.029
ChGCT	12–24	17	BulbW	0.94–1.44	1.09	PLSAPW/L*	0.36	0.057
LL	1.14–1.60	1.44	EmbmW	0.16–0.22	0.18	BulbW/Embl	0.67	0.037
LW	1.24–1.72	1.56	PalpTibL	3.03–4.18	3.77	EmbmW/L	0.12	0.008
CUSP	213–325	269	PalpTibW	1.41–1.96	1.77	PalpTibW/L	0.47	0.042
SL	3.94–5.92	5.28	PalpTibS	4–8	6	BulbL/TibL	0.65	0.032
SW	2.84–4.20	3.53	PalpPatS	1–3	1			
PLSAPW	0.32–0.64	0.46	PalpFemS*	5–11	7			
PLSAPL	0.84–1.53	1.43						
Fe1S*	0–3	1						
Pa1S	4–14 (p1–3)	9						

sigilla narrowed toward midline. Cuspules c. 220, number moderate to high. —*Sternum*. Ovoid, moderately long. Length 3.94, width 2.84. Posterior sigilla ovoid, broad. —*Palp*. Tegular area wider than long. Embolus rather short, base hardly offset from tegulum. Embolus shaft weakly curved to straight, only slightly tapered distally. Distal part of embolus weakly twisted and short. Bulb length 2.07, width 0.94. Embolus length 1.37, midwidth 0.16. Length of femur 3.00, patella 1.34, tibia 3.03. Width of tibia 1.41. Spination: femur 4, patella 1, tibia 7 (3 dorsal). Some distal femoral spines and bristles sinuous. —*Legs*. 4123. Legs I, IV subequal.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	5.99	2.87	4.94	4.55	2.96	21.31
2	5.90	2.83	4.72	4.26	2.80	20.51
3	5.03	2.43	3.85	3.53	2.79	17.62
4	5.99	2.68	4.84	4.90	2.94	21.35

*Tibia I* width 1.17. Femora I and II with dorsal spines. Tibia I ventral spines numerous. Metatarsus I slightly thickened proximally, larger ventral spines grouped proximally. Tibia II with weak apophyseal swelling in proximal half, ventral spines grouped upon it; distal ventral tibia II weakly concave, without spines (except apically). Metatarsus II without apophysis, straight to weakly sinuous (midventral region sometimes slightly thickened) with strong midventral to distal spines. Coxal setae unmodified. Scopulae legs I–IV: tarsus, weak to moderate; metatarsus, absent to weak. Tarsal claw teeth legs I, II: superior 13, 13; inferior 2, 1. Trichobothria legs I, II: tarsus 10, 10, metatarsus 10, 11; tibia p6 r6, p6 r6. —*Leg spination*. Leg I: femur 4(d3 p1), patella 6(p2 v4), tibia 46, metatarsus 28, tarsus 12. Leg II: femur d3, patella p1, tibia 26, metatarsus 16, tarsus 9. Leg III: femur d3, patella p3, tibia 11 (p2 r2 d2), metatarsus 15, tarsus 10. Leg IV: femur d4, patella 0, tibia 9 (r3), metatarsus 16, tarsus 12 —*Abdomen*. Posterior lateral spinnerets: apical segment moderately long. Lengths: total 2.36; basal segment 0.96, middle 0.56; apical 0.84. Apical segment width 0.32.

**Redescription of female allotype.** *Size*. Carapace length 7.38, width 6.81. Abdomen length 10.61, width 8.70. —*Colour*. Basic colour pattern. 3–4 pairs abdominal chevrons, middle pairs distinct and almost meeting mid-

dorsally. —*Carapace*. Slightly longer than wide, strongly raised. Height 3.03. Frontal width 5.13. Cephalic length 5.34. Fovea slightly procurved–straight, anterior margin slightly indented. Mid-dorsal cephalic setae numerous and run back to fovea. Anterior strial setae present. Anterolateral carapace angle with several hairs and weak bristles. —*Eyes*. Central eye region slightly raised. Eye group width 1.91. Diameters: AME 0.18, ALE 0.45, PLE 0.37, PME 0.24. Interdistances: AME–AME 0.30, AME–ALE 0.18, ALE–PLE 0.27, PLE–PME 0.14, PME–PME 0.79. Median ocular quadrangle length 0.60, anterior width 0.70, posterior width 1.25. —*Chelicerae*. Groove margins diverge weakly distally; length 2.20, middle width 0.40. Cheliceral teeth: 18 central, in single row occupying full length of groove; 11 prolateral; 11 retrolateral. —*Labium*. Slightly wider than long, rounded, apically indented. Length 1.47, width 1.65. Cuspules occupying anterior two-thirds. Labiosternal sigilla constricted at midline. —*Sternum*. Ovoid, moderately long. Length 4.80, width 3.54. Posterior sigilla ovoid: length 0.78, width 0.42. —*Palp*. Spination: tibia 2, tarsus 7. Trichobothria: tibia p5 r4, tarsus 9. Tarsal claw with 3 teeth. —*Legs*. 1423.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	5.58	3.12	4.31	3.44	2.13	18.58
2	5.08	2.92	3.49	3.02	2.05	16.56
3	4.26	2.46	2.71	2.67	2.05	14.15
4	5.25	2.87	3.90	3.36	2.42	17.80

*Tibia I* width 1.40. Metatarsus I proximal width 0.97. Coxal setae unmodified. Tibia I, II with few or no spines. Tarsal claw teeth legs I, II: superior 10, 9; inferior 3, 3. Trichobothria legs I, 2: tarsus 10, 9; metatarsus 11, 10; tibia p7 r7, p6 r5. —*Leg spination*. Leg I: femur 0, patella 0, tibia 0, metatarsus 11, tarsus 8. Leg II: femur 0, patella 0, tibia 0, metatarsus 10, tarsus 8. Leg III: femur 0, patella pd2, tibia 6 (p3 1r), metatarsus 13 (p4 r1), tarsus 12. Leg IV: femur 0, patella 0, tibia 2 (r1) metatarsus 9, tarsus 13. —*Abdomen*. Posterior lateral spinnerets with short apical segment. Lengths: total 3.02; basal segment 1.30, middle 0.72, apical 1.00. Apical segment width 0.52. —*Genitalia*. Spermathecae digitiform, about three times longer than wide. Length 0.82, width 0.29. Apical third set off from basal two thirds by a slight constriction.

**Distribution.** Eastern Tasmania (Fig. 37).

**Comments.** Hickman (1927, 1967) described tibia II of this species as lacking “spurs or apophyses”, but with the “basal half ... slightly expanded and ... heavily spined”. This low spinose swelling on tibia II is interpreted here as a weak apophyseal swelling.

*Hadronyche marracoonda* n.sp.

Figures 41–44; Tables 12, 34

**Etymology.** The specific epithet is an Aboriginal word meaning toward the west, a reference to the western slopes distribution of this species in New South Wales.

**Types.** Holotype male: AMS KS892, Wagga Wagga Teachers College, Wagga Wagga, New South Wales, 35°06'S 147°22'E, 20 April 1971. Paratypes (all AM). New South Wales. *Males*: AMS KS890, “The Decca”, Bigga area, 34°04'S 149°09'E, 12 May 1972, M. Chudleigh; AMS KS13353, 3 km E. of Binda, 34°04'S 149°09'E, 28 March 1983, M. Gray & C. Horseman; AMS KS5223, Crookwell, 34°27'S 149°28'E, 19 May 1980, L.E. Willis; AMS KS879, Oberon, 33°41'S 149°52'E, May 1974, J. Bearup; AMS KS2719, Tumbarumba, 35°45'S 148°00'E, 10 April 1979, J. Frost; AMS KS43617, Carcoar Dam, 55 km SW of Bathurst, 33°37'S 149°14'E, 17 May 1995, J. Chaffey; AMS KS6876, Caloola via Newbridge, 12 February 1981, Callan. *Females*: AMS KS10831, Bigga, 34°04'S 149°09'E, 60 km N.W. of Crookwell, 23 March 1983; AMS KS5740, Adelong area, 35°17'S 148°03'E, July 1980, M. Pearce; AMS KS8796, Gocup, 35°13'S 148°12'E, 9 March 1982, B. Laird; AMS KS1371, Oberon, 33°41'S 149°52'E, 16 May 1978, D.H. Clowes, AMS KS10681, Orange, 33°16'S 149°06'E, 17

January 1983, E.T. Bannigan; AMS KS2668, Tumut, 35°18'S 148°13'E, 30 January 1979, K. Pearce.

**Other material examined. New South Wales (males):** AMS KS900, “Bonniemuir”, Adelong area, 29 April 1955, J.D. McMahon; AMS KS893, Barry, 27 November 1975, Drs. Jones & Redhead; AMS KS891, “Yewrangara”, 8 km W. of Bigga, 11 July 1972, I. Chudleigh; AMS KS5202, 64 km W. of Crookwell & 20 km from Wyangla Dam, 6 May 1980, L.E. Willis; AMS KS13354, 3 km E. of Binda, 28 March 1983, M. Gray & C. Horseman; AMS KS888, Bloomfield, N.S.W.; AMS KS2720, Cowra, 18 April 1979, M. Henderson; AMS KS898, Crookwell, 22 February 1958, Clifton's Pharmacy; AMS KS3077, 10 km N. of Goulburn, May 1979, N. Vickers; AMS KS884, Holbrook area, 15. iv.1971, R. Flynn; AMS KS9314, Humula, 19 May 1982; AMS KS894, Kanangra Walls, near Oberon, 5 June 1956, F.B. Ilann; AMS KS886, Limekilns, 20 October 1967, O. Stark; AMS KS8364, Livingstone State Forest, near Wagga Wagga, 16 September 1981, Dr Cook; AMS KS897, Nashdale, 10 February 1969, Dixon; AMS KS880, Oberon, 22 September 1972; AMS KS902, Orange, 20 February 1976, Bloomfield Hospital; AMS KS903, Orange, 1. ix.1969, F. Freeman; AMS KS905, Rosewood, 10 May 1972, O. Portors; AMS KS906, Rosewood, February 1976, G. Portors; AMS KS904, Spring Hill, 20 km E. of Orange, 28 March 1974; AMS KS883, Taralga area, 1977, Goulburn Ambulance; AMS KS885, Towac, 21 March 1965, J. Maybin; AMS KS6645, Trunkey Creek, 27 January 1981, J. Dellow; AMS KS889, Tumbarumba, August 1957, R.A. Castle; AMS KS901, Tumorrana, 19 May 1972, M. Blundell; AMS KS2965, Tumut, 5 May 1979, P.D. Slater; AMS KS8922, Tumut, 6 April 1982, Pearce; AMS KS13424, Wagga Wagga, R. Faulder; AMS KS887, Yetholme, 19 October 1967, O. Stark; Binalong, 20 February 1975 (ANIC). **Australian Capital Territory (male):** Campbell, 1974, D.J. Belford (ANIC).

**Diagnosis.** CL 8.92–10.71. Larger spiders, leg II without apophyses/swellings, tibia II and metatarsus II ventrally

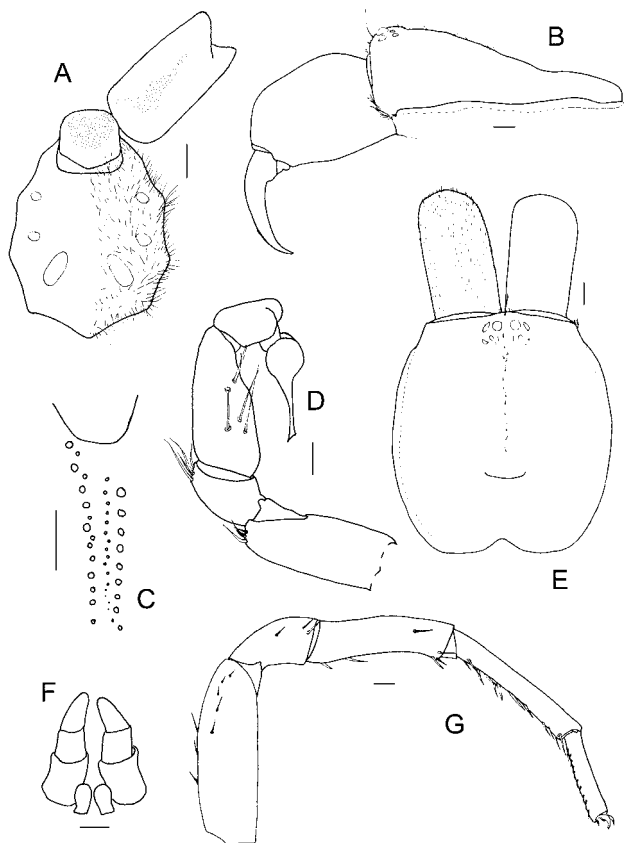


Figure 41. *Hadronyche marracoonda*, male: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) cheliceral groove teeth; (D) palp, prolateral; (E) cephalothorax and chelicerae, dorsal; (F) spinnerets; (G) leg II, prolateral. Scale lines 1 mm.

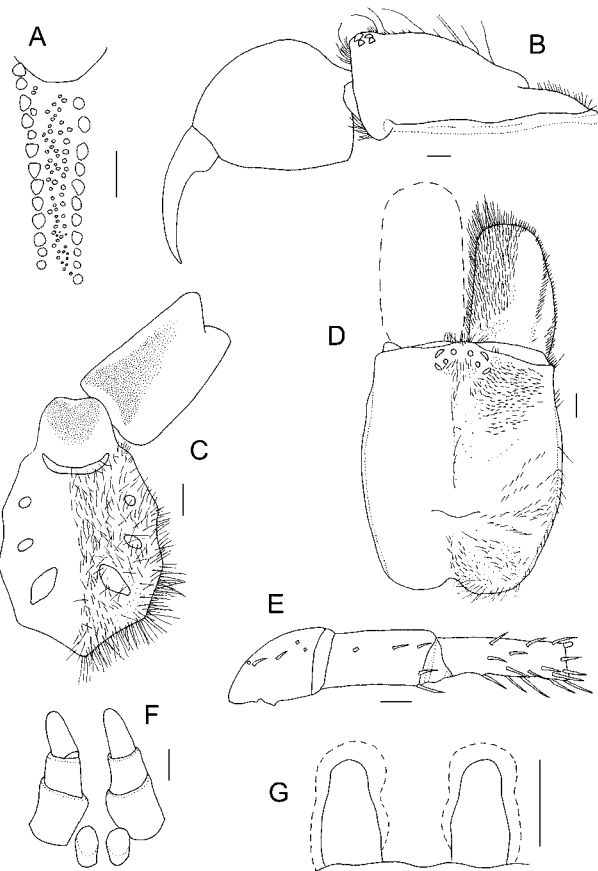


Figure 42. *Hadronyche marracoonda*, female: (A) cheliceral groove teeth; (B) cephalothorax and chelicerae, lateral; (C) sternum, labium and maxilla; (D) cephalothorax and chelicerae, dorsal; (E) leg III, prolateral, patella, tibia, metatarsus; (F) spinnerets; (G) spermathecae. Scale lines 1 mm.

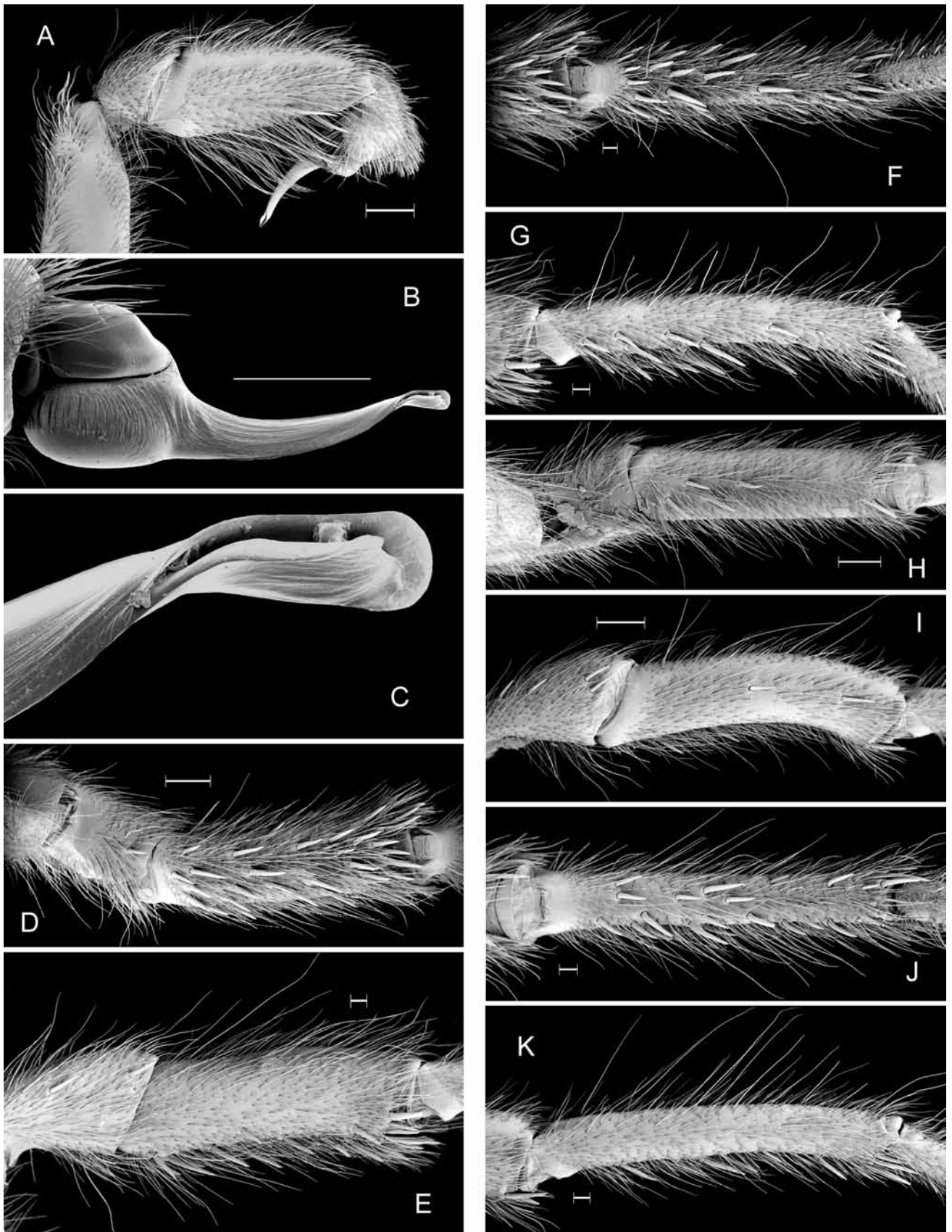


Figure 43. *Hadronyche marracoonda*, male (A,D–K, AMS KS43617; B,C, AMS KS6876): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J,K) metatarsus II—J, ventral, K, prolateral. Scale lines: 1.0 mm, except E–G,J,K 0.3 mm.

**Table 12.** Male morphological data—*Hadronyche marracoonda* (n = 21).

character	range	mean	character	range	mean	character	ratio	SD
CL	8.92–10.71	9.99	Mt1S	29–50	40	CW/CL	0.92	0.026
CW	8.05–10.05	9.23	Ta1S	15–51	28	CH/CW	0.44	0.037
CH	3.44–4.63	4.10	Ti2S*	6–19 (p0–2)	11	CFW/CL	0.66	0.028
CFW	5.90–7.48	6.64	STC2teeth	12–16	14	CHGW/L	0.20	0.023
ChGL	2.51–3.09	2.83	BulbL	2.90–3.60	3.19	SW/SL	0.79	0.03
ChGW	0.48–0.70	0.56	EmblL	1.91–2.42	2.06	LL/LW	0.89	0.041
ChGCT	12–37	24	BulbW	1.15–1.46	1.32	PLSAPW/L*	0.34	0.026
LL	1.48–1.96	1.69	EmbmW	0.18–0.31	0.24	BulbW/EmblL	0.65	0.032
LW	1.67–2.16	1.90	PalpTibL	3.98–4.85	4.50	EmbmW/L	0.12	0.02
CUSP	230–384	280	PalpTibW	1.80–2.25	2.11	PalpTibW/L	0.47	0.02
SL	5.44–6.70	6.06	PalpTibS	2–5	3	BulbL/TibL	0.71	0.032
SW	4.12–5.18	4.77	PalpPatS	0	—			
PLSAPW	0.43–0.64	0.54	PalpFemS	0–4	1			
PLSAPL	1.43–1.91	1.59						
Fe1S	1–13	8						
Pa1S	2–12 (p2–7)	7						

concave, bowed (Fig. 43I, K). Differs from *infensa* and *lamingtonensis* group species by having dorsal spines on femur I, II; from *adelaidensis* group species by having a long labium; from *H. monaro* by lacking metatarsus II apophyseal swelling, and having numerous tarsus II spines (Table 12); from *H. nimoola* by caput not as strongly raised; from *H. tambo* by more spinose femur I and palpal tibia (Table 12).

**Male** (holotype) —*Size*. Carapace length 9.68, width 8.86. Abdomen length 9.51, width 7.13. —*Colour*. Basic colour pattern. —*Carapace*. Longer than wide, moderately raised. Height 3.69. Frontal width 5.99. Fovea gently procurved. Mid-dorsal cephalic setae do not reach fovea. Anterior striae absent. —*Eyes*. On low tubercle. Eye group width 2.08. Median ocular quadrangle length 0.90, anterior width 1.05, posterior width 1.37. Diameters: AME 0.37, ALE 0.52, PLE 0.43, PME 0.34. —*Chelicerae*. Cheliceral groove of moderate width, margins diverging. Groove length 2.64, middle width 0.55. Cheliceral teeth: 20 central, running full length of groove; 15 prolateral; 10 retrolateral. —*Labium*. Slightly wider than long. Length 1.54, width 1.82. Labiosternal sigilla narrowed centrally. Cuspules c. 248 cuspules, number moderate to high. —*Sternum*. Ovoid, broad. Length 5.74, width 4.84. Posterior sigilla large, elongate. —*Palp*. Tegular area slightly wider than long. Embolus rather short, wide and gently curved; distal embolus twisted. Embolus hardly offset from tegulum. Bulb length 3.01, width 1.24. Embolus length 1.91, mid width 0.22. Length of femur 4.17; patella 1.60; tibia 4.23. Width of tibia 2.02. Spination: tibia 4. Sinuous bristles on distal femur. —*Legs*. 4213.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	7.87	3.28	5.21	6.27	3.77	26.40
2	7.83	3.77	6.71	6.78	4.17	29.26
3	6.97	3.16	5.33	6.11	4.14	25.71
4	8.12	3.44	6.77	7.30	4.59	30.22

*Tibia I* width 1.72. Metatarsi longer than tibiae. Femora I and II with dorsal spines. Bristle-like spines on femora III and IV. Metatarsus I slightly thickened proximally. Tibia II without apophysis, slightly bowed and ventrally concave, spines few, grouped proximally. Metatarsus II straight to slightly bowed and ventrally concave and lacking an apophysis,

rarely weakly sinuous. Coxal hairs unmodified. Tarsal and distal metatarsal scopulae weakly developed, strongest on tarsi 3, 4. Tarsal claw teeth legs I, II: superior 15, inferior 4, trichobothria legs 1, 2: tarsus 12, 11; metatarsus 16, 14; tibia p6 r7, p6 r7. —*Leg spination*. Leg I: femur 9 (d3p6), patella 5 (p3), tibia 29 (p2), metatarsus 33, tarsus 19. Leg II: femur 10 (d4p6), patella 4 (p4), tibia 9 (p1), metatarsus 19, tarsus 29. Leg III: femur rd5 (long, bristle-like), patella 9 (p8), tibia 18 (r2 d2), metatarsus 21, tarsus 14. Leg IV: femur r8 (long, bristle-like), patella p1, tibia 9(r2), metatarsus 21, tarsus 19. —*Abdomen*. Numerous long bristles dorsally, strongest anteriorly. Posterior lateral spinnerets with moderately long apical segment. Lengths: total 3.90; basal segment 1.48, middle 0.92, apical 1.50; apical width 0.52.

**Female** (paratype AMS KS10831) —*Size*. Carapace length 11.64, width 9.35. Abdomen length 10.88, width 8.84. —*Colour*. Basic colour pattern. —*Carapace*. Clearly longer than wide, strongly raised. Height 4.84; frontal width 8.30. Cephalic length 8.16. Fovea procurved. Mid-dorsal cephalic setae do not reach fovea. Anterior striae absent. Anterolateral carapace angle with numerous strong bristles. —*Eyes*. Ocular area strongly raised, anteriorly protuberant. Eye group width 2.62. Diameters: AME 0.33, ALE 0.52, PLE 0.36, PME 0.22. Interdistances: AME–AME 0.44, AME–ALE 0.34, ALE–PLE 0.26, PLE–PME 0.20, PME–PME 1.30. Median ocular quadrangle length 0.80, anterior width 1.10, posterior width 1.81. —*Chelicerae*. Cheliceral groove margins diverge distally, groove wide. Groove length 3.37, middle width 0.87. Cheliceral teeth: 68 central, in several rows, occupying full length of groove; 15 prolateral; 11 retrolateral. —*Labium*. Slightly wider than long, rounded, anterior margin weakly indented. Length 2.36, width 2.68. Labiosternal sigilla entire. —*Sternum*. Ovoid. Length 7.05, width 5.54. Posterior sigilla long, ovoid: length 0.88, width 0.54. —*Palp*. Spination: tibia 4, tarsus 9. Trichobothria: tibia p9 r9, tarsus 13. Tarsal claw with 5 teeth. —*Legs*. 1423. Legs I, IV subequal.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	8.12	4.51	5.99	5.05	3.06	26.73
2	7.30	4.20	5.33	4.89	3.12	24.84
3	6.17	3.28	3.77	4.39	3.08	20.69
4	7.83	4.06	5.58	5.37	3.42	26.26

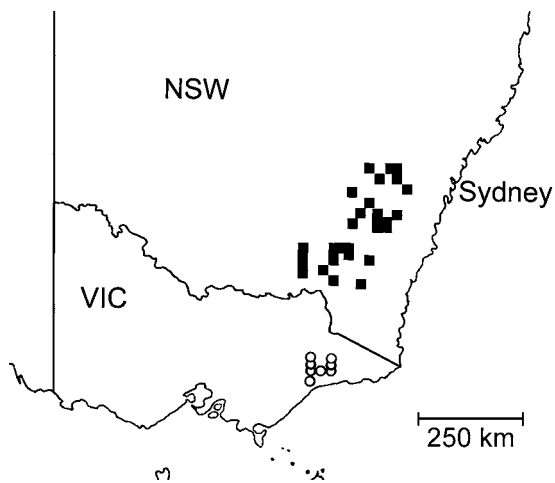


Figure 44. Collection records for *Hadronyche marracoonda* (squares) and *H. tambo* (circles).

*Tibia I* width 2.01. Metatarsus I proximal width 1.38. Coxae I, II with numerous basally thickened thorn-like setae anteriorly. Tarsal claw teeth legs I, II: superior 9, 9; inferior 5, 5. Trichobothria legs I, II: tarsus 15, 16; metatarsus 17, 15; tibia p9 r10, p10 r9. —*Leg spination*. Leg I: femur 0, patella 0, tibia 3, metatarsus 1, tarsus 7. Leg II: femur 0, patella p1, tibia 3 (p2), metatarsus 13, tarsus 8. Leg III: femur 0, patella pd6, tibia 7 (p3 r2), metatarsus 19 (p6 r2), tarsus 10. Leg IV: femur 0, patella 0, tibia 1, metatarsus 13, tarsus 15. —*Abdomen*. Posterior lateral spinnerets with short apical segment. Lengths: total 5.24; basal segment 2.21, middle 1.31, apical 1.72. Apical segment width 0.88. —*Genitalia*. Basal two thirds of spermathecae wide, apical third narrower. Length 1.09, width 0.72.

**Distribution.** Southwestern region of the Great Dividing Range in New South Wales (Fig. 44).

### *Hadronyche tambo* n.sp.

Figures 44–46; Table 13

**Etymology.** The specific epithet is taken from the Tambo River in Gippsland, Victoria.

**Types.** Holotype male: AMS KS8341, 10km north of Bairnsdale, Victoria, 37°49'S 147°37'E, February 1980, C. Brimblecombe. Paratypes. Victoria. *Males*: AMS KS10595, 3km NW. of Bairnsdale, 13 January 1983, N. Barton; AMS KS10561, Butchers Ridge, via Buchan, 37°15'S 148°14'E, December 1982, N. Barton; AMS KS14336, Granite Rock, NE. of Bairnsdale, 37°45'S 147°39'E, 28 April 1984; K11081 (MV), Nowa Nowa, Vic., 37°44'S 148°06'E, 23 November 1964; AMS KS16275, Bairnsdale area, 37°50'S 147°37'E, Dec 1985; AMS KS8362, Sarsfield, 37°45'S 147°43'E.

**Diagnosis.** CI 8.23–9.59 (male). Differs from *H. modesta*, *H. meridiana*, *H. jensena* by leg II without apophysis/swelling (Fig. 46H–K) and labium long (LL/LW 0.94) (Fig. 45A); from *H. marracoonda* by tibia and metatarsus II not bowed (ventrally concave) (Fig. 46I,K); from *infensa* group species by presence of spines on femur I, II (but may be absent).

**Male** (holotype) —*Size*. Carapace length 9.59, width 8.41. Abdomen length 9.25, width 6.70. —*Colour*. Basic colour pattern. —*Carapace*. Longer than wide, cephalic area moderately raised. Height 4.35. Frontal width 6.62. Foveae

procurred. Mid-dorsal cephalic setae almost reach fovea. Anterior striae setae few to absent. Anterolateral carapace angle with many strong bristles. —*Eyes*. Central eye region raised. Eye group width 2.20. Median ocular quadrangle length 0.84, anterior width 1.12, posterior width 1.43. Diameters: AME 0.38, ALE 0.50, PLE 0.37, PME 0.28. —*Chelicerae*. Cheliceral groove moderately short and wide, margins diverging distally. Groove length 2.64, width 0.76. Cheliceral teeth: 18 central, occupying full length of groove; 8 prolateral; 9 retrolateral. —*Labium*. About as long as wide, apical indentation weak to absent. Length 1.84, width 1.88. Labiosternal suture narrowed toward midline. Weak transverse groove behind cuspules. Cuspules c. 171, number moderate to low. —*Sternum*. Ovoid. Length 5.81, width 4.27. Posterior sigilla elongate, broad. Anterolateral angles of sternum with weakly grouped bristles. —*Palp*. Tegular area wider than long. Embolus of moderate length, gently curved, weakly to moderately offset from tegulum; shaft strongly tapered distally. Distal embolus weakly twisted, slender. Flange narrow. Bulb length 3.40, width 1.28. Embolus length 2.33, midwidth 0.19. Length of femur 4.29, patella 1.58, tibia 4.45. Width of tibia 1.91. Spination: no spines; a few prolateral tibial bristles, several sinuous bristles on distal femur. —*Legs*. 1423. Legs strongly hirsute.

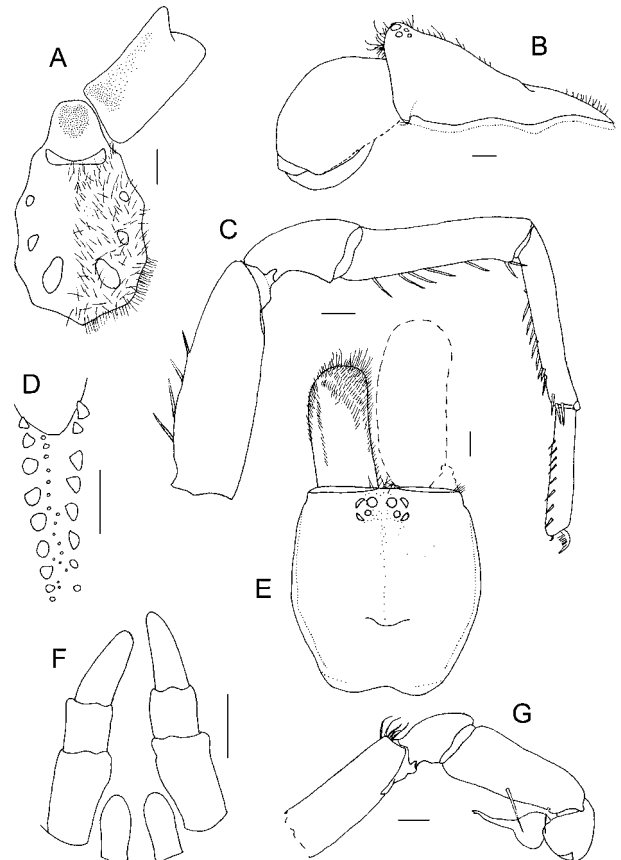


Figure 45. *Hadronyche tambo*, male: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) leg II, prolateral (NB, dorsal femoral spines present or absent); (D) cheliceral groove teeth; (E) cephalothorax and chelicerae, dorsal; (F) spinnerets; (G) palp, prolateral. Scale lines 1 mm.



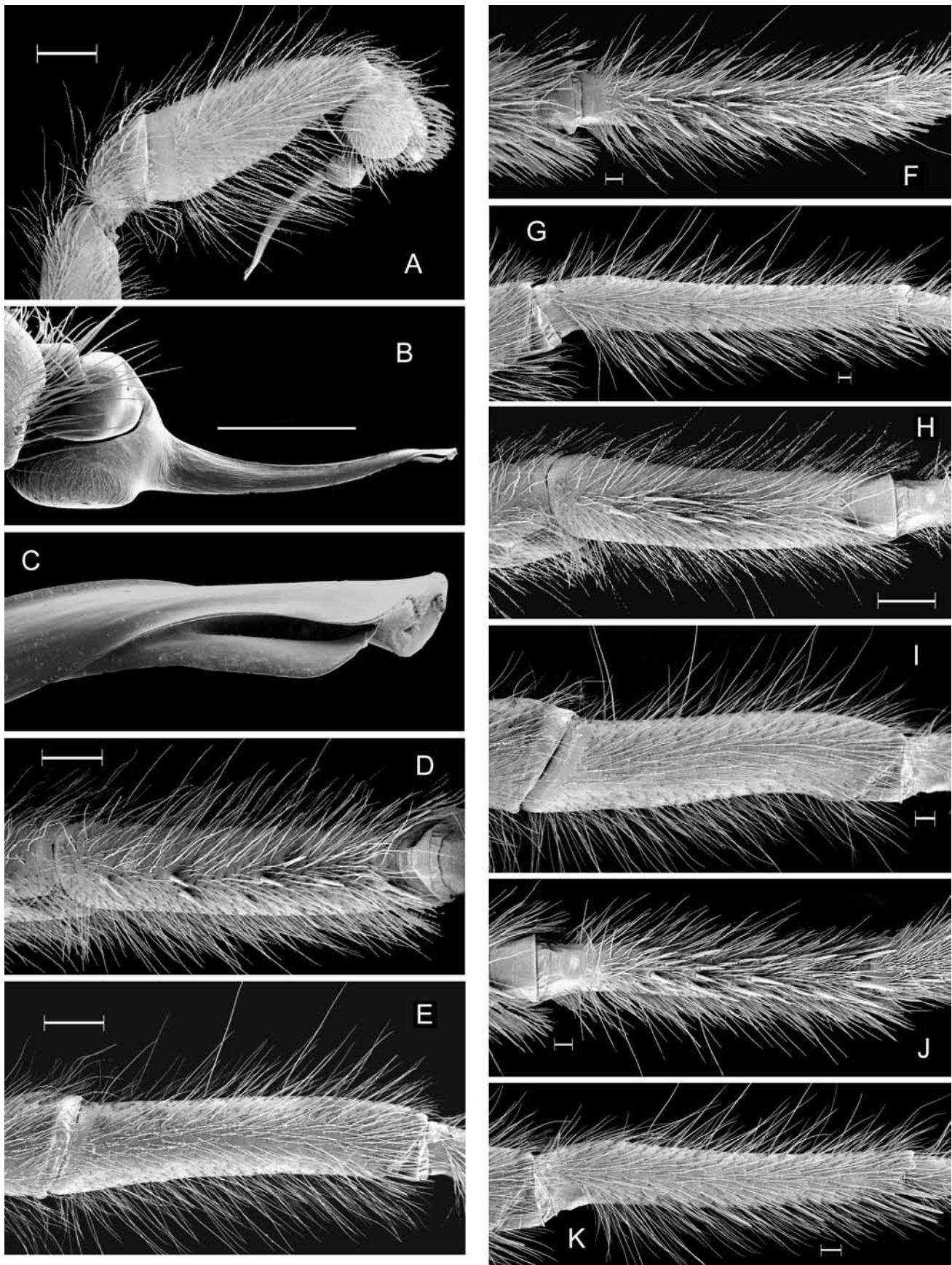


Figure 46. *Hadronyche tambo*, male (A,D–K, AMS KS16275; B,C, K11081 [MV]): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J,K) metatarsus II—J, ventral, K, prolateral. Scale lines: 1.0 mm, except F,I–K 0.3 mm and G 0.2 mm.

**Table 13.** Male morphological data—*Hadronyche tambo* (n = 4).

character	range	mean	character	range	mean	character	ratio	SD
CL	8.23–9.59	8.66	Mt1S	13–41	27	CW/CL	0.96	0.017
CW	7.46–8.84	8.12	Ta1S	5–15	11	CH/CW	0.49	0.017
CH	3.61–4.42	4.08	Ti2S*	4–18	12	CFW/CL	0.74	0.038
CFW	5.80–7.07	6.42	STC2teeth	10–11	11	CHGW/L	0.26	0.035
ChGL	2.22–2.78	2.48	BulbL	3.17–3.77	3.38	SW/SL	0.77	0.028
ChGW	0.53–0.76	0.66	EmbL	2.18–2.65	2.35	LL/LW	0.94	0.04
ChGCT	18–24	20	BulbW	1.14–1.28	1.21	PLSAPW/L*	0.35	0.042
LL	1.43–1.90	1.67	EmbmW	0.16–0.21	0.19	BulbW/EmbL	0.52	0.029
LW	1.56–1.98	1.76	PalpTibL	3.94–4.76	4.39	EmbmW/L*	0.08	0.013
CUSP*	149–184	165	PalpTibW	1.66–1.92	1.80	PalpTibW/L	0.41	0.025
SL	4.74–5.99	5.47	PalpTibS	0–1	<1	BulbL/TibL	0.77	0.039
SW	3.74–4.59	4.20	PalpPatS	0–1	<1			
PLSAPW	0.40–0.60	0.51	PalpFemS	0				
PLSAPL	1.32–1.69	1.44						
Fe1S*	0–1	<1						
Pa1S	0–1	<1						

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	8.27	4.02	6.68	6.29	4.10	29.36
2	7.46	3.77	6.31	5.90	3.94	26.98
3	6.29	3.28	4.39	5.13	4.12	23.21
4	8.04	3.62	6.37	5.96	4.42	28.41

*Tibia I* width 1.46. Femur I usually without spines; dorsal spines present or absent on femur II. Patella III with few spines. Tibia II without apophysis, weakly sinuous; ventral spines few, scattered, larger proximally. Metatarsi I and II ventrally flexed basally, slightly concave dorsally; metatarsus II without apophysis. Anterior coxae with some basally thickened setae on frontal coxal surfaces. Tarsal scopulae: leg I weak; legs II–IV moderate to strong. Distal metatarsal scopulae: legs I, II absent; legs III, IV moderate to strong. Metatarsus IV weakly curved and dorsally concave distally, ventral scopula occupying most of distal half of segment. Tarsal claw teeth legs I, II: superior 11, 11; inferior 2, 3. Trichobothria legs I, II: tarsus 14, 13; metatarsus 17, 15; tibia p7 r7, p7 r7. —*Leg spination*. Leg I: femur 0, patella 1, tibia 20, metatarsus 25, tarsus 15. Leg II: femur d4, patella 2, tibia 10, metatarsus 23, tarsus 17. Leg III: femur 1 (strong bristles present), patella p2, tibia 13 (p5 r3), metatarsus 23, tarsus 22. Leg IV: femur 0 (strong bristles), patella 0, tibia 4, metatarsus 19, tarsus 27. —*Abdomen*. Posterior lateral spinnerets with moderately long apical segment. Lengths: total 3.72; basal segment 1.52; middle 0.82; apical 1.38. Apical segment width 0.50.

**Distribution.** Bairnsdale/Buchan region of Gippsland, Victoria (Fig. 44).

**Comments.** Dorsal spines are usually absent on leg I and present on leg II.

*Hadronyche monaro* n.sp.

Figures 47–49; Table 14

**Etymology.** The specific epithet refers to the Monaro region of New South Wales.

**Types.** Holotype male: AMS KS8744, Sawpit Creek, Kosciuszko National Park, New South Wales, 28°22'S 152°49'E, J. Gold, February 1982. Paratypes (all AM). New South Wales. *Males*: AMS KS6647, Sawpit Creek,

Kosciuszko National Park, 28°22'S 152°49'E, 27 January 1981, J. Robson; AMS KS1571, Braemer Caravan Park, Lake Eucumbene, 35°58'S 148°39'E, 6 December 1977, G. Goodfellow.

**Diagnosis.** CL 6.23–6.43 (male). Small Atracinae. Differs from most *Hadronyche* species by having tibia II unmodified, but metatarsus II with a small, low midventral apophyseal swelling (Figs. 47G; 48I,K). Differs from *H. jensena* by labium almost as long as wide (Fig. 47A) and distal embolus not at angle to shaft (Fig. 48B,C).

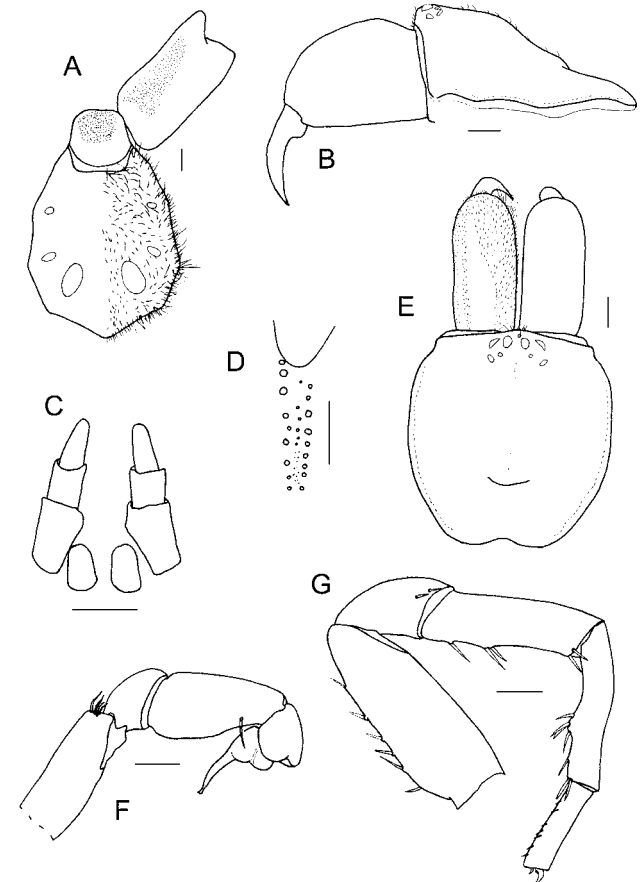


Figure 47. *Hadronyche monaro*, male: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) spinnerets; (D) cheliceral groove teeth; (E) cephalothorax and chelicerae, dorsal; (F) palp, prolateral; (G) leg II, prolateral. Scale lines 1 mm.

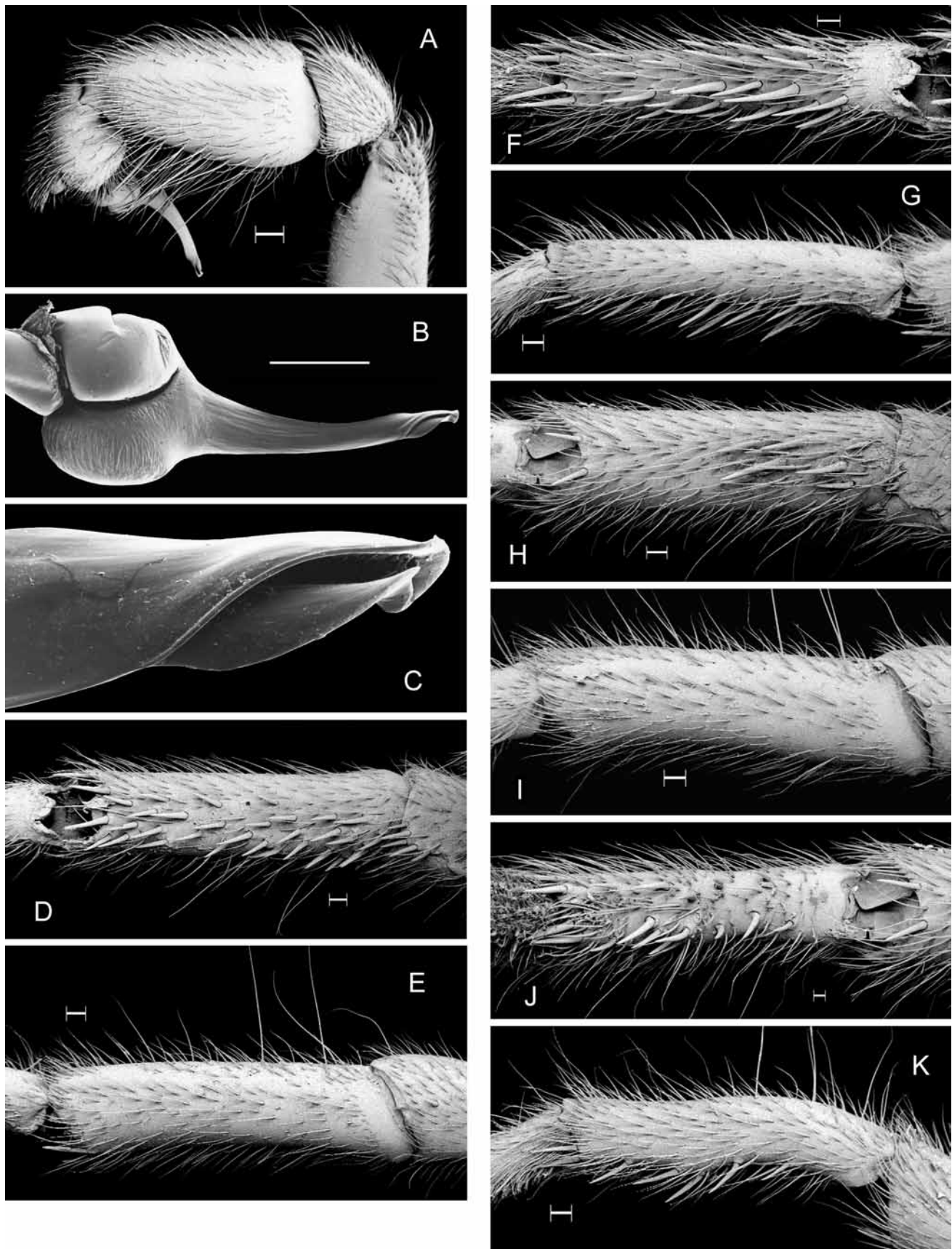


Figure 48. *Hadronyche monaro*, male (A,D–K, AMS KS1571, RHS; B,C, AMS KS6646): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J,K) metatarsus II—J, ventral, K, prolateral. Scale lines: 0.2 mm, except A 0.3 mm and J 0.1 mm.

**Table 14.** Male morphological data—*Hadronyche monaro* (n = 3).

character	range	mean	character	range	mean	character	ratio
CL*	6.23–6.43	6.33	Mt1S	23–30	27	CW/CL	0.97
CW	6.08–6.20	6.14	Ta1S*	7–9	8	CH/CW	0.49
CH	2.95–3.08	3.02	Ti2S*	7–11	9	CFW/CL	0.74
CFW	4.65–4.67	4.66	STC2teeth	10–11	11	CHGW/L	0.21
ChGL	1.85–1.94	1.90	BulbL	2.05–2.19	2.14	SW/SL	0.84
ChGW	0.37–0.41	0.39	EmbL	1.34–1.42	1.38	LL/LW*	0.97
ChGCT	19–26	23	BulbW	0.81–0.93	0.87	PLSAPW/L	0.43
LL	1.02–1.28	1.15	EmbmidW	0.18–0.20	0.19	BulbW/EmbL	0.63
LW	1.07–1.29	1.18	PalpTibL	2.50–3.00	2.85	EmbmidW/L	0.14
CUSP*	143–226	185	PalpTibW	1.46–1.50	1.48	PalpTibW/L	0.52
SL	3.86–4.08	3.96	PalpTibS	0	—	BulbL/TibL	0.75
SW	3.22–3.42	3.32	PalpPatS	0	—		
PLSAPW	0.32–0.46	0.39	PalpFemS	0–3	2		
PLSAPL	0.76–1.06	0.91					
Fe1S	2–9	6					
Pa1S	2–6 (p1–2)	5					

**Male** (holotype) —*Size*. Carapace length 6.23, width 6.08. Abdomen length 7.24, width 5.23. —*Colour*. Basic colour pattern. —*Carapace*. Slightly longer than wide, cephalic area moderately raised. Height 2.95. Frontal width 4.67. Fovea procurved, anterior margin weakly notched. Mid-dorsal cephalic setae do not reach fovea. Anterior strial setae absent. Anterolateral carapace angle with small, weak bristles. —*Eyes*. Central eye region slightly raised. Eye group width 1.76. Median ocular quadrangle length 0.66, anterior width 0.80, posterior width 1.14. Diameters: AME 0.20, ALE 0.33, PLE 0.20, PME 0.16. —*Chelicerae*. Cheliceral groove short, of medium width, margins diverging distally. Groove length 1.85, middle width 0.41. Cheliceral teeth: 19 central, occupying full length of groove; 9 prolateral; 9 retrolateral. —*Labium*. Almost as long as wide, not indented apically. Length 1.28, width 1.29. Labiosternal sigilla narrowed toward midline. Cuspules c. 226, number moderate. —*Sternum*. Ovoid. Length 4.08, width 3.22. Posterior sigilla oval, broad. —*Palp*. Tegular area wider than long. Embolus of moderate length and width; shaft straight to slightly curved, weakly tapered distally. Distal part of embolus weakly twisted and flange rather short. Embolus slightly offset from tegulum. Bulb length 2.19, width 0.93. Embolus length 1.42, midwidth 0.18. Length of femur 2.86, patella 1.40, tibia 3.00. Width of tibia 1.46. Spination: femur 2, patella 0, tibia 0. A few sinuous bristles on distal femur. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	5.04	2.50	4.12	3.77	2.26	17.69
2	4.76	2.38	3.76	3.47	2.26	16.63
3	4.22	1.81	2.61	3.33	2.31	14.28
4	5.03	2.38	3.69	4.22	2.85	18.17

*Tibia I* width 0.94. Femora I and II with dorsal spines. Leg I unmodified. *Tibia II* without apophysis, weakly excavated distoventrally; ventral spines grouped in proximal half. Metatarsus II weakly sinuous with a small spined mid-ventral apophyseal swelling. Metatarsus IV slightly enlarged distally, concavely arched dorsally. Anterior coxal hairs normal. Tarsal scopulae: legs I, II weak; legs III, IV moderate to strong. Distal metatarsal scopulae: legs I–III absent to weak; leg IV moderately developed, extending to midventral metatarsus. Tarsal claw teeth legs I, II: superior 11, 10,

inferior 1, 0. Trichobothria legs I, II: tarsus 11, 8; metatarsus 13, 10; tibia p6 r6, p5 r5. —*Leg spination*. Leg I: femur d9, patella 2 (p1 v1), tibia 25, metatarsus 23, tarsus 9. Leg II: femur d6, patella p2, tibia 7, metatarsus 13, tarsus 9. Leg III: femur d2, patella 12 (p10 r2), tibia 17 (p4 r4), metatarsus 25, tarsus 13. Leg IV: femur d4 (bristle-like), patella r1, tibia 6 (p1 r3), metatarsus 23, tarsus 21. —*Abdomen*. Sparsely covered with weak bristles and hairs. Posterior lateral spinnerets with medium length apical segment. Lengths: total 2.34; basal segment 1.00, middle 0.58; apical 0.76. Apical segment width 0.32.

**Distribution.** East of the Snowy Mountains in the Eucumbene/Jindabyne region of New South Wales (Fig. 49).

### *Hadronyche mascordi* n.sp.

Figures 49–52; Tables 15, 34

**Etymology.** The species is named for Ramon Mascord—author, photographer and student of Australian spiders.

**Types.** Holotype male: AMS KS2065, Somersby, via Gosford, New South Wales, 33°21'S 151°17'E, L. Abra, October 1978. Paratypes (all AM). New South Wales. *Males*: AMS KS13393, Kulnura, 33°13'S 151°13'E, 25 October 1983; AMS KS13401, Kulnura, 33°13'S 151°13'E, September 1983, Nelson and Rodgers; AMS KS4102, Somersby, 33°21'S 151°17'E, 3 October

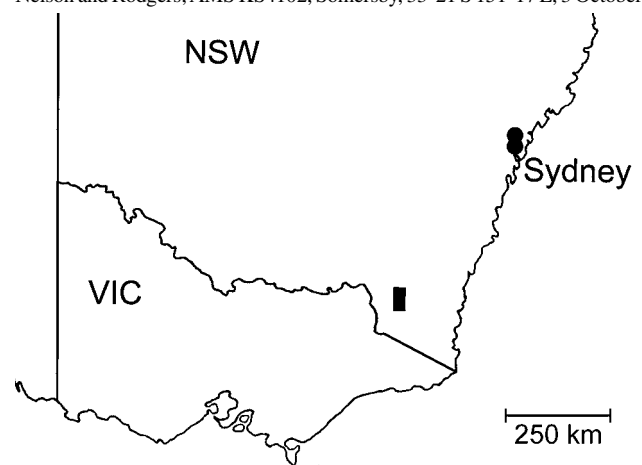


Figure 49. Collection records for *Hadronyche monaro* (squares) and *H. mascordi* (circles)

1979, R. Mascord; AMS KS8571, Somersby, 33°21'S 151°17'E, 12 October 1981, L. Abra; AMS KS4108, Somersby, 33°21'S 151°17'E, 3 October 1979, K. Mascord; AMS KS991, Somersby, 33°21'S 151°17'E, November 1956, J.V. Brown. AMS KS7335, Somersby, 33°21'S 151°17'E, 12 September 1956, J. Brown. *Females*: AMS KS15749, Kariong, near Gosford, 33°26'S 151°18'E, L. Abra, October 1984; AMS KS14381, Kulnura, 33°13'S 151°13'E, 23 March 1984, M. Gray; AMS KS14757, Kariong, 33°26'S 151°18'E, 4 June 1984; AMS KS14234, Kulnura, 33°13'S 151°13'E, 10 April 1984, B. Thomas; AMS KS14233, Kulnura, 33°13'S 151°13'E, 10 April 1984, B. Thomas; AMS KS14551, Kulnura, 33°13'S 151°13'E, 21 March 1984, E. Thompson; AMS KS14226, Kulnura, 33°13'S 151°13'E, 5 April 1984; AMS KS14547, Kariong, 33°26'S 151°18'E, 13 April 1984.

**Other material examined. New South Wales (males):** AMS KS13394, Kulnura, 25 October 1983; AMS KS13399, Kulnura, September 1983; AMS KS13400, Kulnura, September 1983; AMS KS13377, Somersby, 14 September 1983, K. Gould; AMS KS1929, Somersby, October 1978, L. Abra; AMS KS23333, Kulnura–Somersby area.

**Diagnosis.** CL 5.54–6.68 (male). Small Atracinae. Differs from other atracine species in having a short labium (LW/LL 0.64) that is fused with the sternum posteromedially (Figs. 50A, 51A).

**Male (holotype)** —*Size*. Carapace length 6.19, width 5.68. Abdomen length 6.07, width 4.51. —*Colour*. Basic colour pattern, dark brown to black. Abdomen with 4–5 pairs of small distinct chevron markings on lateral dorsal abdomen. —*Carapace*. Slightly longer than wide, strongly raised. Height 3.01. Frontal width 4.63. Fovea procurved. Mid-dorsal cephalic setae numerous, reach fovea. Anterior striae present. Anterolateral angle of carapace with strong bristles. —*Eyes*. Sessile. Eye group width 1.74. Median ocular quadrangle length 0.62, anterior width 0.79, posterior

width 1.22. Diameters: AME 0.25, ALE 0.42, PLE 0.33, PME 0.30. —*Chelicerae*. Anterodorsal paturon bristles rather short. Cheliceral groove moderately short and wide, margins diverging distally. Groove length 1.69, middle width 0.42. Cheliceral teeth: 7 central, running full length of groove; 8 prolateral; 6 retrolateral. —*Labium*. Short—length 0.98, width 1.39. Labium fused posteromedially with sternum. Labiosternal sigilla reduced to a weak, transverse line suture flanked by two small lateral sigilla. Cuspules c. 209, covering most of ventral labium, number moderate. —*Sternum*. Ovoid. Raised anteriorly and continuous with labium. Length 3.81, width 2.82. Posterior sigilla very small, ovoid to elongate. —*Palp*. Tegular area slightly wider than long. Embolus shaft short, tapering, weakly curved. Distal embolus weakly to moderately twisted, often with a subdistal “notch”. Embolus moderately offset from tegulum. Bulb length 2.10, width 0.84. Embolus length 1.34, midwidth 0.15. Length of femur 2.70, patella 1.40, tibia 2.68. Width of tibia 1.22. Spinination: femur 1; few weak sinuous bristles on distal femur. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	5.11	2.38	3.81	3.03	1.97	16.30
2	4.88	2.42	3.90	2.69	1.89	15.78
3	4.10	1.91	2.95	3.03	2.13	14.12
4	5.08	2.15	4.04	3.81	2.50	17.58

*Tibia I* width 0.88. All femora with dorsal spines. Metatarsus I normal to slightly thickened proximally. Tibia II lacking apophysis, spines centrally-proximally placed. Metatarsus II weakly sinuous, with a small mid-ventral swelling. Coxal hairs normal. Tarsal and distal metatarsal scopulae: weak to absent on legs I, II; well developed on legs III, IV. Tarsal claw teeth legs I, II: superior 13, 13; inferior 6, 5. Trichobothria legs I, II: tarsus 8, 9; metatarsus 12, 10; tibia p6 r6, p6 r6. —*Leg spinination*. Leg I: femur d4, patella 0,

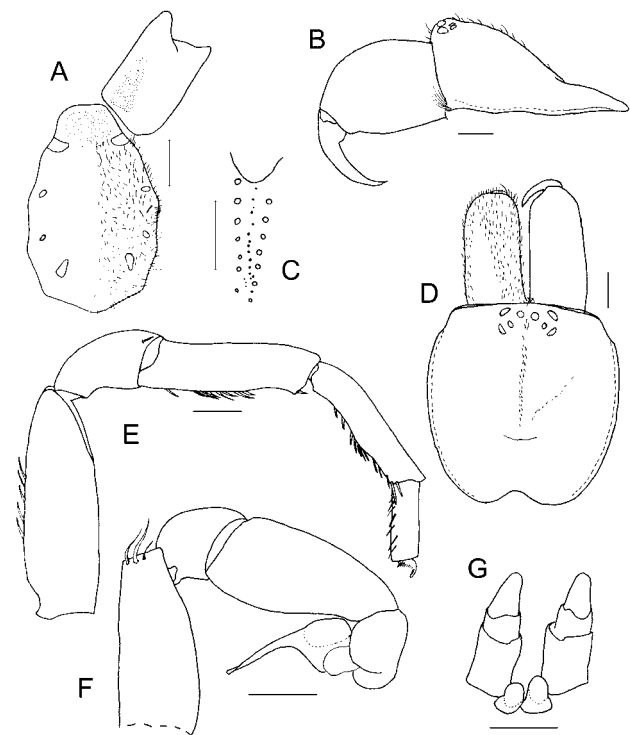


Figure 50. *Hadronyche mascordi*, male: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) cheliceral groove teeth; (D) cephalothorax and chelicerae, dorsal; (E) leg II, prolateral; (F) palp, prolateral; (G) spinnerets. Scale lines 1 mm.

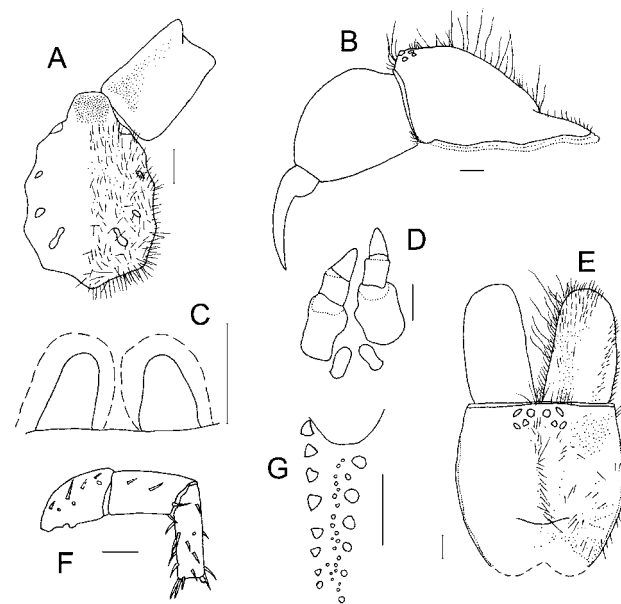


Figure 51. *Hadronyche mascordi*, female: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) spinnerets; (D) cephalothorax and chelicerae, dorsal; (E) leg III, prolateral; (F) leg III, prolateral, patella, tibia, metatarsus; (G) cheliceral groove teeth. Scale lines 1 mm.



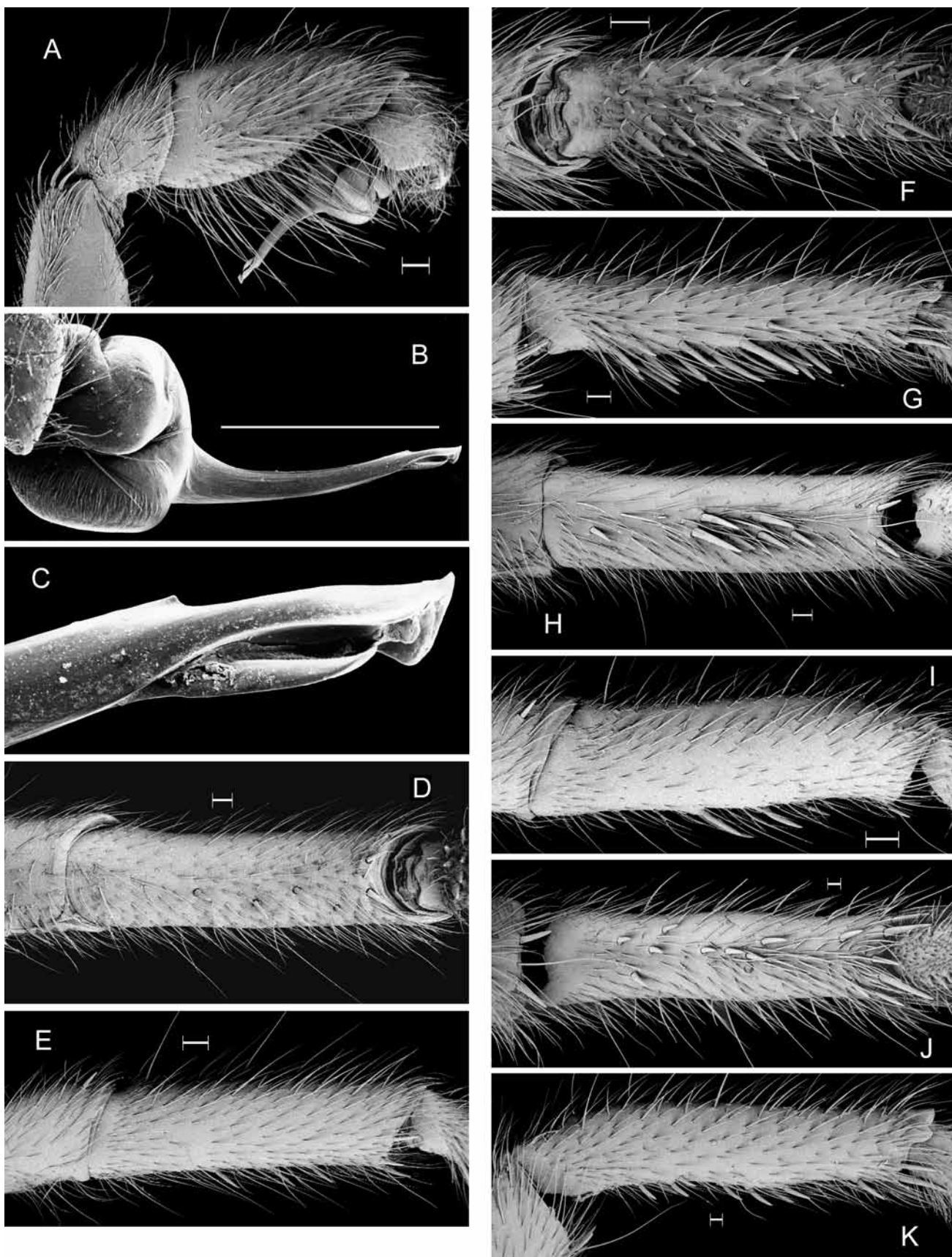


Figure 52. *Hadronyche mascordi*, male (A, D–K, AMS KS23333; B, C, AMS KS7335): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D, E) distal patella and tibia I—D, ventral, E, prolateral; (F, G) metatarsus I—F, ventral, G, prolateral; (H, I) distal patella and tibia II—H, ventral, I, prolateral; (J, K) metatarsus II—J, ventral, K, prolateral. Scale lines: A, E, F, I, 0.3 mm, B 1.0 mm, D, G, H 0.2 mm and J, K 0.1 mm.

**Table 15.** Male morphological data—*Hadronyche mascordi* (n = 8).

character	range	mean	character	range	mean	character	ratio	SD
CL*	5.54–6.68	6.27	Mt1S	22–43	33	CW/CL	0.97	0.061
CW	5.60–6.26	5.96	Ta1S	9–24	14	CH/CW*	0.50	0.018
CH	2.83–3.22	3.00	Ti2S*	8–13	10	CFW/CL	0.77	0.036
CFW	4.63–5.33	4.81	STC2teeth	13–14	14	CHGW/L	0.22	0.022
ChGL	1.69–1.86	1.80	BulbL	1.95–2.13	2.06	SW/SL	0.75	0.026
ChGW	0.33–0.46	0.40	EmblL	1.25–1.39	1.32	LL/LW*	0.64	0.051
ChGCT	7–18	12	BulbW	0.84–0.95	0.89	PLSAPW/L*	0.51	0.066
LL	0.8–1.03	0.94	EmbmW	0.12–0.16	0.14	BulbW/EmblL*	0.68	0.033
LW	1.39–1.58	1.47	PalpTibL	2.68–3.00	2.88	EmbmW/L	0.11	0.008
CUSP	194–260	223	PalpTibW	1.22–1.41	1.31	PalpTibW/L	0.45	0.01
SL	3.73–4.35	3.95	PalpTibS	0	—	BulbL/TibL	0.71	0.031
SW	2.70–3.05	2.94	PalpPatS	0	—			
PLSAPW	0.33–0.41	0.37	PalpFemS	1–3	2			
PLSAPL	0.60–0.87	0.75						
Fe1S	2–5	4						
Pa1S*	0	0						

tibia 10, metatarsus 30, tarsus 11. Leg II: femur d5, patella p1, tibia 10, metatarsus 13, tarsus 15. Leg III: femur d2, patella p4, tibia 10 (p5 r2), metatarsus 19, tarsus 18. Leg IV: femur d5, patella 0, tibia 6, metatarsus 20, tarsus 16. —*Abdomen*. Posterior lateral spinnerets with short apical segment. Lengths: total 1.99; basal segment 0.76, middle 0.50, apical 0.73. Apical width 0.38.

**Female** (paratype AMS KS15749) —*Size*. Carapace length 7.14, width 7.04. Abdomen length 12.50, width 8.78. —*Colour*. Basic colour pattern. —*Carapace*. Almost as wide as long; strongly raised, broad frontally. Height 3.81; frontal width 6.05. Cephalic length 5.44. Fovea procurved. Mid-dorsal cephalic setae reach fovea. Anterior striae setae present. Anterolateral carapace angle with a few bristles. —*Eyes*. Central eye region slightly raised. Eye group width 2.11. Diameters: AME 0.22, ALE 0.46, PLE 0.34, PME 0.28. Interdistances: AME–AME 0.37, AME–ALE 0.20, ALE–PLE 0.26, PLE–PME 0.14, PME–PME 0.95. Median ocular quadrangle length 0.73, anterior width 0.91, posterior width 1.45. —*Chelicerae*. Cheliceral groove margins diverge distally. Groove length 2.31, middle width 0.65. Cheliceral teeth: 22 central in a single row occupying full length of groove; 8 prolateral; 6 retrolateral. —*Labium*. Short (length 1.09, width 1.67), fused with sternum as in male; anterior margin not indented. Cuspules distributed over most of ventral labium. —*Sternum*. Ovoid, fused anteriorly with labium, surface strongly convex. Length 4.62, width 3.81. Posterior sternal sigilla small, narrow and elongate: length 0.61, width 0.21. —*Palp*. Spination: tibia 0 (strong bristles), tarsus 6. Tarsal claw with 8 teeth. Trichobothria: tibia p5 r6, tarsus 10. —*Legs*. 4123. Legs I and IV subequal.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	5.66	2.99	4.11	3.32	2.21	18.29
2	5.10	2.79	3.88	3.18	2.18	17.13
3	4.22	1.97	2.48	2.89	2.24	13.80
4	5.58	2.58	3.89	3.77	2.48	18.30

*Tibia I* width 1.20. Metatarsus I proximal width 0.86. Coxal setae unmodified. Tarsal claw teeth legs I, II: superior 10, 10; inferior 5, 5. Trichobothria legs I, II: tarsus 11, 11; metatarsus 13, 10; tibia p6 r6. —*Leg spination*. Leg I: femur 0, patella 0, tibia 1, metatarsus 6, tarsus 5. Leg II: femur 0, patella 0, tibia 2, metatarsus 11, tarsus 7. Leg III: femur 0,

patella p4, tibia 8 (p4 r2), metatarsus 23 (p6 r3), tarsus 13. Leg IV: femur 0, patella 0, tibia 3, metatarsus 21, tarsus 21. —*Abdomen*. Sparse cover of weak hairs and bristles. Posterior lateral spinnerets with short apical segment. Lengths: total 2.58, basal segment 1.53, middle 0.82, apical 0.82. Apical segment width 0.55. —*Genitalia*. Spermathecae short, bluntly conical, lateral margins sloping medially; wide basally, separated by about half basal width. Length 0.75, width 0.68.

**Distribution**. Kulnura/Somersby region, Central Coast, New South Wales (Fig. 49).

**Comments**. A female spider from Kulnura, NSW was collected (apparently dead) in her burrow with 14 young (KS14551). These “spiderlings” were remarkable because of their large size—their mean carapace length was 4.0 mm, compared with 8.0 mm for the female.

### *Hadronyche nimoola* n.sp.

Figures 53–56; Tables 16, 34

**Etymology**. The specific epithet is taken from an aboriginal word for a steep slope, a reference to the caput profile of this species.

**Types**. Holotype male: AMS KS867, Batemans Bay, New South Wales, 35°43'S 150°13'E, J.R. Mylott, 3 March 1973. Paratypes (all AM). New South Wales *Males*: AMS KS2276 Benandarrah State Forest, 35°39'S 150°15'E, 30 November 1978–4 January 1979, C. Horseman; AMS KS863, Bermagui, 36°25'S 150°04'E, K. Walker; AMS KS12124, Bondi State Forest, nr. Bombala, 37°06'S 149°15'E, 26 January 1981, G. Gowing *et al.*; AMS KS2665, Bowral, 34°28'S 150°25'E, 7 February 1979, G. Goodfellow; AMS KS2081, Crookwell, 34°27'S 149°28'E, 28 November 1978, L.E. Willis; AMS KS862, Narooma, 36°12'S 150°08'E, 14 February 1971, B. Plunkett-Cole; AMS KS88199, Exeter, 34°36'S 150°19'E, 21 January 2004; AMS KS3876, Narooma, 36°13'S 150°08'E, January 1979, B.H. Plunkett-Cole. *Females*: AMS KS4664, Bundanoon, 34°39'S 150°18'E, February, 1980; AMS KS16446, Bermagui, 36°25'S 150°04'E, K. Walker; AMS KS12139, Bondi State Forest, nr. Bombala, 37°06'S 149°15'E, 26 January 1981, G. Gowing *et al.*; AMS KS6163, Bowral, 34°28'S 150°25'E, October 1980, H. Styles; AMS KS6825, Grabben Gullen, 34°32'S 149°24'E, 16 December 1980, R. Chown; AMS KS4506, Moruya, 35°54'S 150°06'E, January 1980; AMS KS3625, Narooma, 36°12'S 150°08'E, 15 June 1971, J. Cobcroft.



**Other material examined. New South Wales (males):** AMS KS2032, Benandarah State Forest, 5 October 1978–2 November 1978, C. Horseman; AMS KS867, Bateman's Bay, 3 March 1973; AMS KS12150, Bondi State Forest, near Bombala, 26 January 1981, G. Gowing *et al.*; AMS KS3460, Yass River, 30 July 1966, A.B. Thompson; AMS KS6163, Bowral, October 1980, H. Styles; AMS KS13806, Bundanoon, 5 February 1984, W. Nooijen; AMS KS6825, Grabben Gullen, 16 December 1980, R. Chown; AMS KS7567, Grabben Gullen, 23 October 1980, R. Chown; AMS KS2117, Kioloa State Forest, 2 November 1978–30 November 1978, C. Horseman; AMS KS2293, Kioloa State Forest, 30 November 1978–4 January 1979, C. Horseman; AMS KS1163, Mittagong, 13 January 1978, M. Johnson; AMS KS6275, Moss Vale, 27 December 1980, J. Kelly; AMS KS868 & 869, Nerrigundah, December 1945, V. Haskell; AMS KS861, Narooma, 16 November 1974, B. Plunkett-Cole. **New South Wales (females):** AMS KS1865, Bega, 24 January 1976, H.W. Kemp; AMS KS1867, Bermagui, May 1964, K. Walker; AMS KS11996, Bondi State Forest, near Bombala, 14 November 1980, G. Gowing *et al.*; AMS KS1872, Bowral, H.H. Florence; AMS KS1873, Bundanoon, 8 January 1952, N.C. de Meyrick; Merimbula, 5 June 1964 (MV); AMS KS4777, Mittagong, June 1937, A. Livingstone; AMS KS2961, Narooma, 29 April 1979, A. Brown. **Australian Capital Territory (male):** AMS KS13824, Tidbinbilla Nature Reserve, 9 March 1978, P. Ormay.

**Diagnosis.** CL 5.85–7.22 (male). Small atracine spiders without leg II apophyses. Differs from most *Hadronyche* spp. by caput being high and wide, almost bulbous (CH/CW: male 0.53 [Fig. 53A], female 0.61 [Fig. 54B]), and having relatively few STC teeth (7–9) on tarsi I, II; from *H. mascordi* by having an entire labiosternal sigilla; from *lamingtonensis* group species by having a long central cheliceral tooth row.

**Male (holotype)** —*Size.* Carapace length 7.01, width 7.30. Abdomen length 8.44, width 6.03. —*Colour.* Basic colour

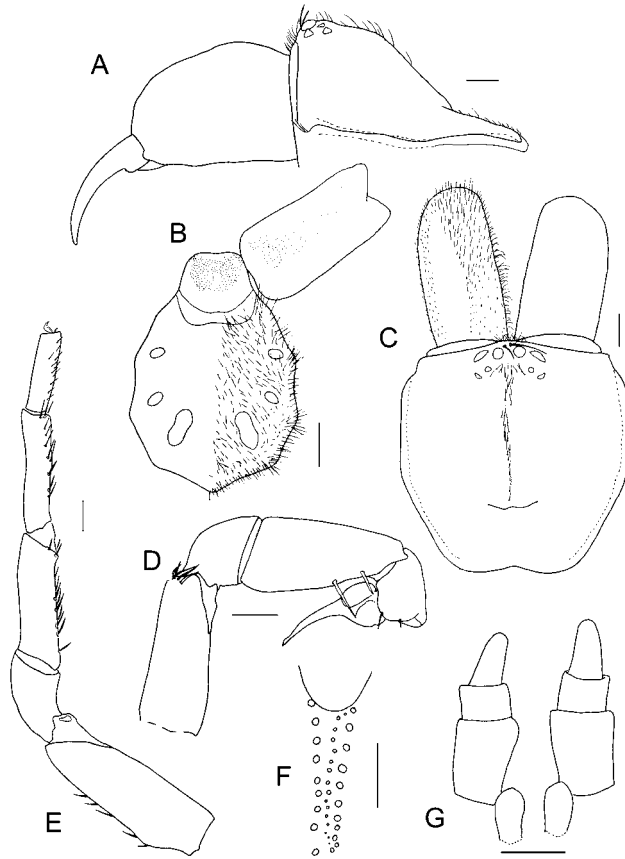


Figure 53. *Hadronyche nimoola*, male: (A) cephalothorax and chelicerae, lateral; (B) sternum, labium and maxilla; (C) cephalothorax and chelicerae, dorsal; (D) palp, prolateral; (E) leg II, prolateral (NB, dorsal femoral spines present or absent); (F) cheliceral groove teeth; (G) spinnerets. Scale lines 1 mm.

pattern. —*Carapace.* About as wide as long, strongly raised. Height 3.61. Frontal width 5.99. Fovea broad, procurved, anterior margin weakly indented. Mid-dorsal cephalic setae small, closely spaced, reach, or almost reach, fovea. Anterior strial setae absent. Anterolateral angle of carapace with weak bristles. —*Eyes.* Sessile to slightly raised in central eye region. Eye group width 2.32. Median ocular quadrangle length 0.78, anterior width 1.05, posterior width 1.60. Diameters: AME 0.33, ALE 0.47, PLE 0.37, PME 0.25. —*Chelicerae.* Cheliceral groove broad, margins diverging distally. Groove length 2.28, middle width 0.52. Cheliceral teeth: 16 central, running full length of groove; 9 prolateral; 11 retrolateral. —*Labium.* Wider than long. Length 1.44, width 1.66. Labiosternal sigilla narrowed in midline. Cuspules c. 234, number moderate. —*Sternum.* Ovoid, broad. Setae weak. Length 4.35, width 3.65. Posterior sigilla elongate, ovoid. —*Palp.* Tegular area wider than long. Embolus rather short, strongly tapered distally, weakly curved. Distal part moderately twisted, embolic groove sometimes rather wide. Embolus weakly to moderately offset from tegulum. Bulb length 2.43, width 0.99. Embolus length 1.61, midwidth 0.18. Length of femur 3.50, patella 1.45, tibia 3.49. Width of tibia 1.64. Spination: femur with 7 sinuous bristle-like spines, tibia with 2 bristle-like spines. —*Legs.* 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	6.23	3.01	4.80	4.26	2.65	20.95
2	5.66	2.87	4.43	3.90	2.46	19.32
3	4.82	2.34	3.28	3.62	2.65	16.71
4	6.10	2.88	4.92	4.74	3.15	21.79

*Tibia I* width 1.15. Femur I with few or no dorsal spines; femur II usually with spines, occasionally none; femora III and IV with spines. Legs I and II unmodified, spines small, scattered. Metatarsus IV thickened distally, concavely arched

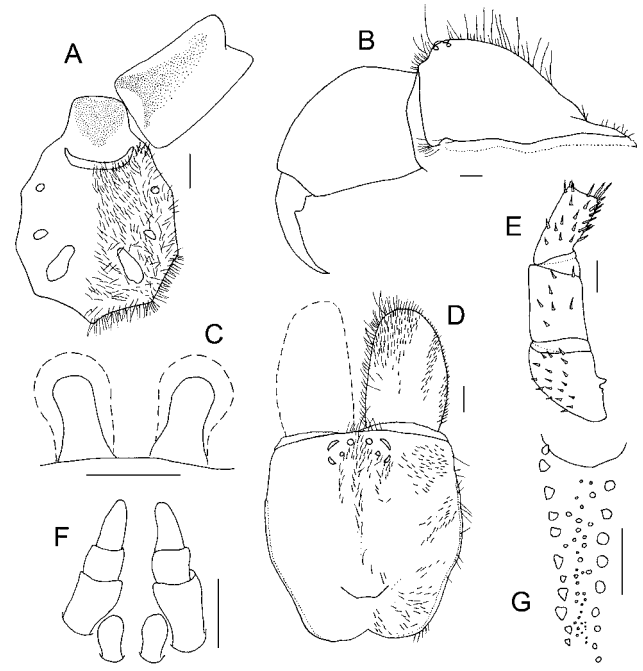


Figure 54. *Hadronyche nimoola*, female: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) spermataecae; (D) cephalothorax and chelicerae, dorsal; (E) cheliceral groove teeth; (F) spinnerets; (G) leg III, prolateral, patella, tibia, metatarsus. Scale lines 1 mm.

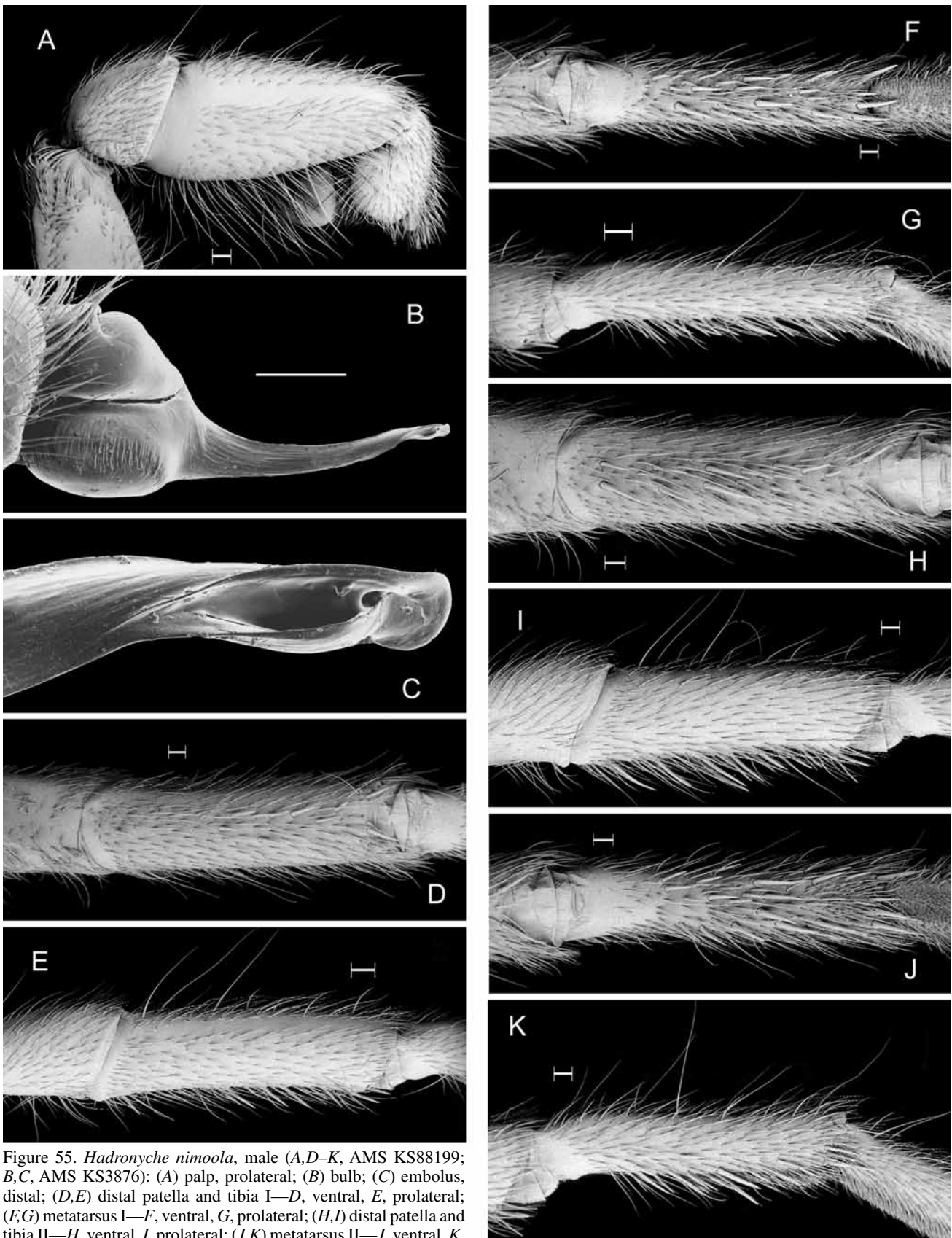


Figure 55. *Hadronyche nimoola*, male (A,D–K, AMS KS88199; B,C, AMS KS3876): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J,K) metatarsus II—J, ventral, K, prolateral. Scale lines: 0.2 mm, except B 0.5 mm and E,G 0.3 mm.

**Table 16.** Male morphological data—*Hadronyche nimoola* (n = 17).

character	range	mean	character	range	mean	character	ratio	SD
CL*	5.85–7.22	6.62	Mt1S	6–25	17	CW/CL*	1.01	0.032
CW	6.07–7.46	6.72	Ta1S	6–22	13	CH/CW*	0.53	0.029
CH*	3.20–4.03	3.56	Ti2S*	4–18	10	CFW/CL*	0.83	0.042
CFW	4.81–6.23	5.5	STC2*teeth	7–9	8	CHGW/L	0.24	0.041
ChGL	1.97–2.56	2.17	BulbL	2.14–2.70	2.38	SW/SL*	0.88	0.034
ChGW	0.42–0.78	0.51	EmbL	1.30–1.75	1.54	LL/LW	0.85	0.053
ChGCT	9–26	17	BulbW	0.90–1.40	0.99	PLSAPW/L	0.45	0.029
LL	1.06–1.60	1.28	EmbmW	0.12–0.18	0.15	BulbW/EmbL	0.64	0.053
LW	1.34–1.68	1.49	PalpTibL	2.65–3.77	3.21	EmbmW/L	0.10	0.012
CUSP	160–281	219	PalpTibW	1.44–1.74	1.58	PalpTibW/L	0.49	0.031
SL	3.82–4.67	4.12	PalpTibS	0–2	<1	BulbL/TibL	0.74	0.029
SW	3.25–4.14	3.63	PalpPatS	0	—			
PLSAPW	0.38–0.49	0.42	PalpFemS	0–4	1			
PLSAPL	0.82–1.20	0.95						
Fe1S	0–5	<1						
Pa1S	0–3	<1						

dorsally. Anteromedial hairs on coxae I, II usually thickened basally. Tarsal and distal metatarsal scopulae moderately developed on legs I, II; strongly developed on legs III, IV. Metatarsi IV scopulae extend to mid ventral area. Tarsal claw teeth legs I, II: superior 7, 8; inferior 0, 0. Trichobothria legs I, II: tarsus 11, 10, metatarsus 13, 13; tibia p6 r6, p6 r6. —*Leg spination*. Leg I: femur 0, patella p1, tibia 11 (p3), metatarsus 25, tarsus 22. Leg II: femur d5, patella p1, tibia 17, metatarsus 32, tarsus 23. Leg III: femur d6, patella 33 (p26 r7), tibia 22 (p7, r2, d2), metatarsus 40, tarsus 27. Leg IV: femur d7, patella r5, tibia 8 (r1 d2), metatarsus 22, tarsus 35. —*Abdomen*. Sparse, fine hair cover, bristles lacking or very weak. Posterior lateral spinnerets with moderately short apical segment. Lengths: total 2.88; basal segment 1.32; middle 0.58; apical 0.98. Apical segment width 0.48.

**Female** (paratype AMS KS4664) —*Size*. Carapace length 8.74, width 8.65. Abdomen length 12.24, width 8.30. —*Colour*. Basic colour pattern. —*Carapace*. About as long as wide, cephalic area broad and very strongly raised. Height 5.08; frontal width 7.84. Cephalic length 6.90. Fovea wide, deeply procurved, anterior margin indented. Mid-dorsal cephalic setae variable, may or may not reach fovea. Anterior strial setae absent. Anterolateral carapace angle with several weak bristles. —*Eyes*. Eye region sessile. Eye group width 2.76. Diameters: AME 0.28, ALE 0.47, PLE 0.38, PME 0.24. Interdistances: AME–AME 0.55, AME–ALE 0.43, A.L.E–PLE 0.40, PLE–PME 0.26, PME–PME 1.36. Median ocular quadrangle length 0.88, anterior width 1.17, posterior width 1.88. —*Chelicerae*. Cheliceral groove wide, margins diverging distally. Groove length 2.83, middle width 0.74. Cheliceral teeth: 36 central, occupying full length of groove in irregular double row; 11 prolateral; 9 retrolateral. —*Labium*. Slightly wider than long, anterior margin weakly or not indented. Length 2.10, width 2.46. Cuspules occupy anterior two-thirds of labium. Labiosternal sigilla entire, narrow. —*Sternum*. Broad, subcircular. Length 5.78, width 5.08. Anterolateral angles with a few short, basally thickened, bristle-like setae. Posterior sigilla long, ovoid: length 1.31, width 0.49. —*Palp*. Spination: tibia 1, tarsus 8. Trichobothria: tibia p6 r5, tarsus 14. Tarsal claws with 6 teeth. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	6.11	3.36	4.18	3.28	2.12	19.05
2	5.45	3.20	3.62	3.03	2.26	17.56
3	4.58	2.36	2.59	2.83	2.35	14.71
4	6.15	3.77	4.63	3.98	2.74	21.27

*Tibia I* width 1.48. Metatarsus I proximal width 1.03. Coxae I, II with basally thickened and thorn-like setae anteriorly. Tarsal claw teeth legs I, II: superior 7, 7; inferior 2, 2. Trichobothria legs I, II: tarsus 11, 11, metatarsus 12, 11; tibia p6 r5, p6 r5. —*Leg spination*. Leg I: femur 0, patella 0, tibia 1, metatarsus 10, tarsus 7. Leg II: femur 0, patella 0, tibia 1, metatarsus 14, tarsus 7. Leg III: femur 0, patella pd 20, tibia 12 (p6 r3), metatarsus 33 (p14 r6), tarsus 15. Leg IV: femur 0, patella 0, tibia 1, metatarsus 14, tarsus 7. —*Abdomen*. Posterior lateral spinnerets with short apical segment. Lengths: total 3.95; basal segment 1.79, middle 0.87, apical 1.29. Apical segment width 0.69. —*Genitalia*. Spermathecae short, digitiform, well separated basally (by slightly more than basal spermatheca width); diverge toward rounded and slightly enlarged apices. Length 0.87, width 0.44.

**Distribution.** Southern highland and south coastal regions of New South Wales (Fig. 56).

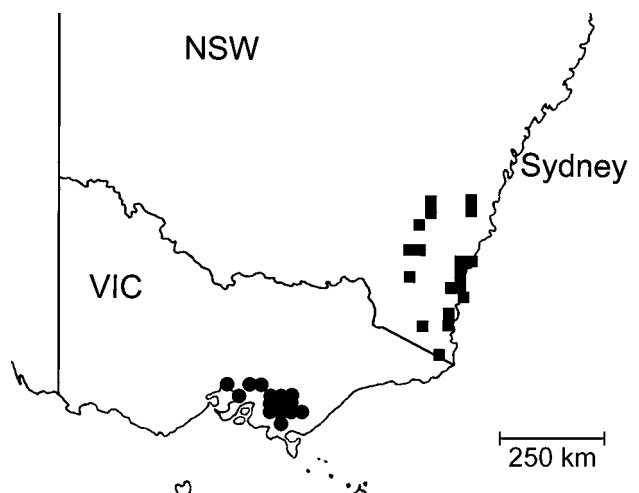


Figure 56. Collection records for *Hadronyche nimoola* (squares) and *H. modesta* (circles).

***Hadronyche modesta* (Simon)**

Figures 56–59; Tables 17, 34

*Atrax modesta* Simon, 1891: 302. Hogg, 1901: 272. Main, 1985: 41.*Hadronyche modesta*.—Gray, 1988: 114 (transferred from *Atrax*).**Types.** Holotype female: MNHN, Paris (not seen). Melbourne, Victoria.

**Other material examined. Victoria (males):** Ellinbank via Warragul, 11 May 1962, J. Copley (MV); AMS KS8471, Emerald, 3 April 1978; AMS KS8472, Emerald, 20 April 1979; Leongatha, 6 June 1963, I. Bissett (MV); AMS KS7292, Back Creek Rd., Gembrook State Forest, near Gembrook, Victoria, L. Gibson, 10 March 1981; Mirboo North 15 April 1966, G.B. Burr (MV); 6 km NE. of Mirboo North, 26.iii.1967, J. Seebeck (MV); AMS KS8473, Mount Eliza, 23 April 1979; AMS KS8930, Mount Tassie, Strezelecki Ranges, 25 March 1982, R. Waters; AMS KS8933, Tanjil South, near Moe, February 1982, N. Barton; AMS KS8474, Thorpdale, 10 April 1980; Wright, SE of Emerald, September 1951, C. Oke (MV); Yallourn, 6 February 1963, J. Irving (MV); Yarra Junction, 4 May 1964, J. Mooney (MV); Yarra Junction 20 April 1964, J. Mooney (MV). **Victoria (females):** AMS KS10775, Cockatoo, 10 October 1982, ? McKelvey; AMS KS8477, Ferny Creek, 6 October 1979; AMS KS12618, Hawthorn, 23 January 1983, M. Harvey; AMS KS8476, Milford, 26 October 1976; AMS KS8339, Mirboo North, Apr 1980; AMS KS8932, Moe area, October 1981, N. Barton; AMS KS8470, Mount Evelyn, Lilydale Shire, 5 June 1979; AMS KS8931, Newborough, near Moe, March 1982, N. Barton; AMS KS8926, Sassafra, 14 February 1982, N. Wentworth; AMS KS10560, Warragul, January 1983, N. Barton; AMS KS3386, Yinnar, 9 July 1979, N. Barton.

**Diagnosis.** CL 5.48–7.30 (male). Small atracine spiders with leg II apophyseal swellings (Figs. 57G, 59H–K). Differs from *H. meridiana* and *H. jensena* by having a short, straight embolus but with the distal part neither twisted nor angled, respectively (Fig. 59B,C). Differs from other *Hadronyche* spp. with leg II apophyses/swellings by having a relatively short labium (LL/LW 0.71) (Fig. 57E).

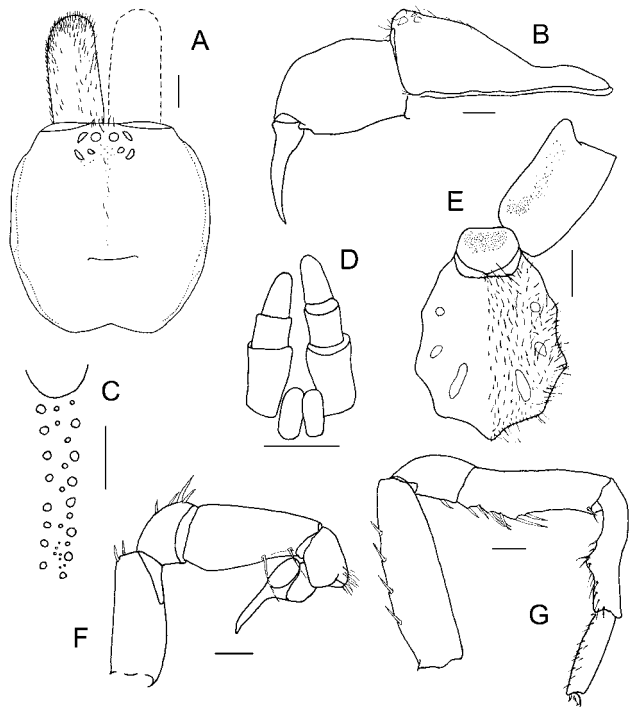


Figure 57. *Hadronyche modesta*, male: (A) cephalothorax and chelicerae, dorsal; (B) cephalothorax and chelicerae, lateral; (C) cheliceral groove teeth; (D) spinnerets; (E) sternum, labium and chelicerae, dorsal; (F) spermathecae; (G) leg III, prolateral, patella, tibia, metatarsus. Scale lines 1 mm.

**Male** (AMS KS8475, Lilydale, 14 May 1980). —*Size.* Carapace length 6.40, width 6.10. Abdomen length 5.85, width 6.12. —*Colour.* Basic colour pattern. —*Carapace.* Slightly longer than wide, cephalic area moderately raised. Height 2.68, frontal width 4.16. Fovea slightly procurved. Mid-dorsal cephalic setae few, do not reach fovea. Anterior striae setae absent. Anterolateral carapace angle with a few very weak bristles. —*Eyes.* Central eye region raised. Eye group width 1.82. Median ocular quadrangle length 0.64, anterior width 0.86, posterior width 1.14. Diameters: AME 0.28, ALE 0.32, PLE 0.22, PME 0.14. —*Chelicerae.* Cheliceral groove margins subparallel to weakly divergent. Groove length 2.06, middle width 0.34. Cheliceral teeth: 23 central, occupying full length of groove; 8 prolateral, 9 retrolateral. Central tooth row occasionally shorter. —*Labium.* Wider than long, apically indented. Length 1.00, width 1.38. Labiosternal sigilla narrowed toward midline. Slight transverse groove behind cuspules. Cuspules c. 123, number low-moderate. —*Sternum.* Ovoid. Length 4.01, width 3.28. Posterior sigilla elongate, narrow. —*Palp.* Tegular area wider than long. Embolus short and broad, almost straight, base moderately offset from tegulum; distal embolus straight, hardly twisted. Bulb length 2.26, width 1.03. Embolus length 1.37, midwidth 0.20. Length of femur 3.06, patella 1.36, tibia 3.18. Width of tibia 1.71. Spination: femur 3, patella 4, tibia 0. Distal femur spined, sinuous bristles few to absent. —*Legs.* 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	6.16	2.69	4.82	4.45	2.75	20.87
2	5.91	2.61	4.82	4.20	2.75	20.29
3	5.22	2.23	3.76	4.20	2.92	17.33
4	6.32	2.72	5.24	5.44	3.48	23.20

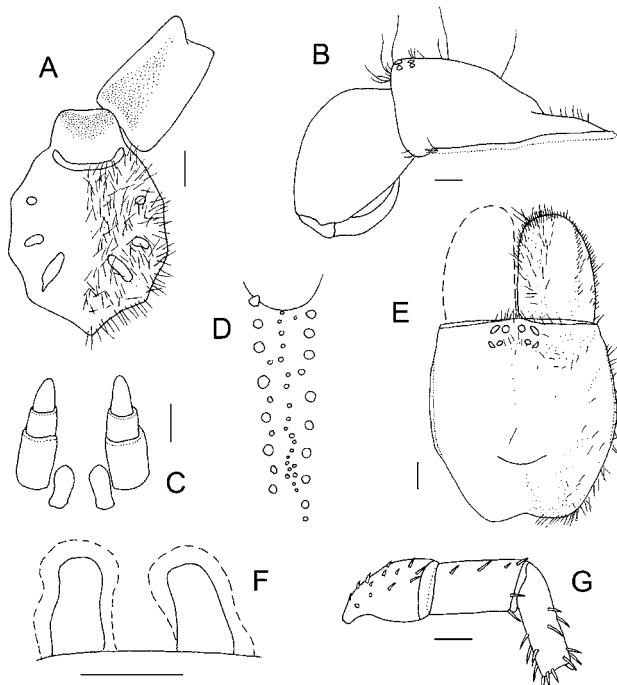


Figure 58. *Hadronyche modesta*, female: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) spinnerets; (D) cheliceral groove teeth; (E) cephalothorax and chelicerae, dorsal; (F) spermathecae; (G) leg III, prolateral, patella, tibia, metatarsus. Scale lines 1 mm.

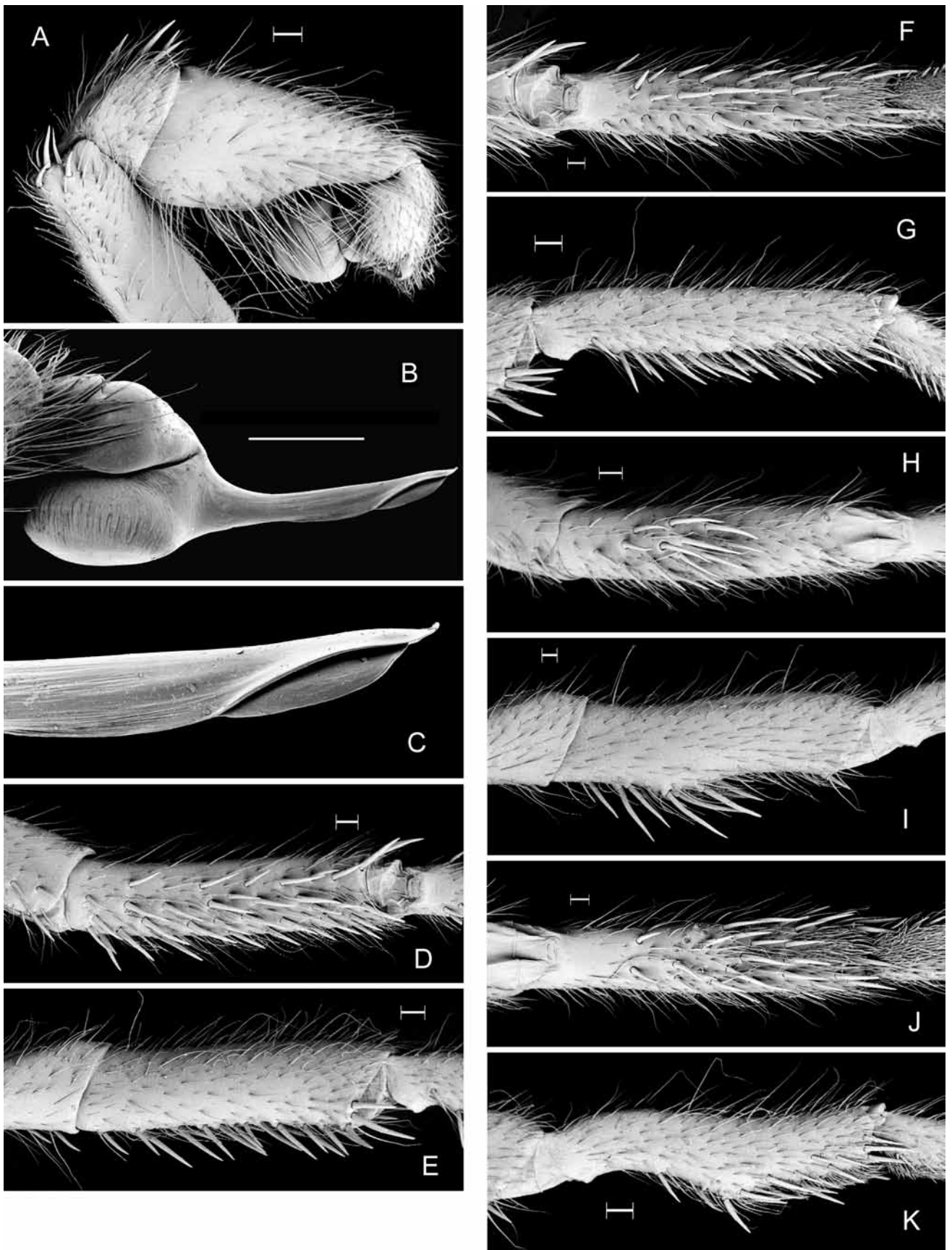


Figure 59. *Hadronyche modesta*, male (KS7292): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J,K) metatarsus II—J, ventral, K, prolateral. Scale lines: 0.3 mm, except B 0.5 mm and F,I,J 0.2 mm.

**Table 17.** Male morphological data—*Hadronyche modesta* (n = 26).

character	range	mean	character	range	mean	character	ratio	SD
CL*	5.48–7.30	6.24	Mt1S	20–49	36	CW/CL	0.96	0.026
CW	5.28–6.85	5.97	Ta1S*	15–41	28	CH/CW	0.44	0.025
CH	2.36–3.03	2.64	Ti2S	5–19	13	CFW/CL	0.67	0.015
CFW	3.73–4.96	4.20	STC2*	7–10	8	CHGW/L	0.17	0.011
ChGL	1.76–2.24	2.01	BulbL	1.89–2.38	2.13	SW/SL	0.81	0.027
ChGW	0.30–0.40	0.31	EmblL	1.12–1.41	1.28	LL/LW*	0.71	0.055
ChGCT	8–23	19	BulbW	0.91–1.15	1.03	PLSAPW/L*	0.51	0.053
LL	0.76–1.15	0.95	EmbmW	0.15–0.24	0.17	BulbW/Embl*	0.80	0.048
LW	1.13–1.52	1.37	PalpTibL	2.53–3.59	3.06	EmbmW/L*	0.15	0.014
CUSP*	104–160	129*	PalpTibW	1.39–1.83	1.55	PalpTibW/L*	0.52	0.023
SL	3.50–4.70	3.93	PalpTibS	0–5	1	BulbL/TibL	0.70	0.024
SW	2.84–3.79	3.19	PalpPatS*	3–9	5			
PLSAPW	0.27–0.52	0.36	PalpFemS	3–7	5			
PLSAPL	0.53–0.92	0.70						
Fe1S	3–8	5						
Pa1S	0–4 (p0)	2						

*Tibia I* width 1.14. Femora I and II with dorsal spines. Leg I unmodified, tibial and metatarsal ventral spines numerous. Patella I and II lack prolateral spines. Ventral tibia II weakly swollen and spinose proximally-centrally; with a few enlarged central spines; distal tibia II concave ventrally and lacking spines (other than apical pair). Metatarsus II sinuous, with a small, spined, midventral apophysis. Coxal setae unmodified. Scopulae legs I–IV: tarsus, weak to moderate; distal metatarsus, all weak. Tarsal claw teeth legs I, II: superior 9, 8; inferior 0, 2. Trichobothria legs I, II: tarsus 9, 8; metatarsus 9, 9; tibia p5 r5, p6 r5. —*Leg spination*. Leg I: femur d4, patella 1, tibia 30, metatarsus 41, tarsus 32. Leg II: femur d4, patella 2, tibia 12, metatarsus 32, tarsus 32. Leg III: femur d2 (plus strong bristles), patella p9, tibia 15 (p1 r4), metatarsus 24, tarsus 31. Leg IV: femur 0 (strong bristles present), patella 0, tibia 12 (r3), metatarsus 21, tarsus 32. —*Abdomen*. Posterior lateral spinnerets with short apical segment. Lengths: total 2.01; basal segment 0.94; middle 0.40; apical 0.67. Apical segment width 0.31.

**Female** (MV K11082), Hoddles Creek, Victoria, 37°50'S 145°36'E, S. Johnson, 18 October 1981). —*Size*. Carapace length 7.48, width 7.11. Abdomen length 10.74, width 7.21. —*Colour*. Basic colour pattern. Anterodorsal abdominal sigilla prominent. —*Carapace*. Slightly longer than wide, strongly raised. Height 3.60. Frontal width 6.02. Cephalic length 5.57. Fovea strongly procurved. Mid-dorsal cephalic setae few, reach only two-thirds way to fovea. Anterior striae absent. Anterolateral carapace angle with a few hairs, no bristles. —*Eyes*. Central eye region weakly raised. Eye group width 1.97. Diameters: AME 0.25, ALE 0.43, PLE 0.27, PME 0.18. Interdistances: AME–AME 0.37, AME–ALE 0.26, ALE–PLE 0.28, PLE–PME 0.30, PME–PME 0.84. Median ocular quadrangle length 0.71, anterior width 0.81, posterior width 1.24. —*Chelicerae*. Paturon with sparse anterodorsal bristle cover. Cheliceral groove moderately wide, margins diverging distally. Groove length 2.65, middle width 0.68. Cheliceral teeth: 18 central, in single row occupying full length of groove, occasionally row shorter; 11 prolateral; 9 retrolateral. —*Labium*. Wider than long, apically shallowly indented. Length 1.43, width 2.01. Cuspules grouped on anterior half. Labiosternal sigilla slightly narrowed toward midline. —*Sternum*. Broad, ovoid.

Length 5.08, width 4.38. Posterior sigilla elongate, length 1.02, width 0.39. —*Palp*. Spination: tibia 1–3 ventral bristle-like spines, tarsus 9. Trichobothria: tibia p5 r4, tarsus 7. Tarsal claw with 5 teeth. —*Legs*. 1423.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	7.08	4.04	5.29	4.11	3.01	23.53
2	6.29	3.13	4.74	3.64	2.41	20.21
3	4.83	2.72	3.01	3.11	2.62	16.29
4	6.30	3.70	4.82	4.32	3.05	22.19

*Tibia I* width 1.40. Metatarsus I proximal width 0.88. Coxal setae unmodified. Tibia I, II with no to few spines. Tarsal claw teeth legs I, II: superior 7, 8; inferior 0, 0. Trichobothria legs I, II: tarsus 10, 9; metatarsus 10, 9; tibia p6 r6, p6 r5. —*Leg spination*. Leg I: femur 0, patella 0, tibia 0, metatarsus 6, tarsus 12. Leg II: femur 0, patella 0, tibia 0, metatarsus 7, tarsus 16. Leg III: femur 0, patella pd13, tibia 5 (p2 r1), metatarsus 17 (pd4 rd2) tarsus 19. Leg IV: femur 0, patella 0, tibia 0, metatarsus 12, tarsus 24. —*Abdomen*. Sparse cover of weak hairs and bristles. Posterior lateral spinnerets with short apical segment. Length: total 3.16; basal segment 1.50, middle 0.67, apical 0.99. Apical segment width 0.56. —*Genitalia*. Spermathecae digitiform, short, apical third separated from basal two thirds by a slight constriction. Length 0.85, width 0.41.

**Distribution.** Melbourne/Dandenong Range region to eastern Gippsland, Victoria (Fig. 56).

### *Hadronyche meridiana* Hogg

Figures 60–63; Tables 18, 34

*Hadronyche meridiana* Hogg, 1902: 122. Original description by Hogg (1901, 274) as mis-identified male of *H. cerbera*.

**Types.** Holotype male: BMNH 1903.2.10.6 (NHM). Mt. Macedon, Victoria, 37°23'S 144°35'E, H.R. Hogg.

**Other material examined.** **New South Wales (males):** AMS KS4503, Adelong, 22 July 1980, M. Pearce; AMS KS917, Kunama, 10 January 1971; AMS KS916, “Loch Haven”, Wantagong, 20 June 1971, R. Flynn; AMS KS915, Wantagong, 1 April 1971, R. Hunter; AMS KS913, Wondalga, 23 September 1948, C.H. Jago. **New South Wales (females):** AMS KS4973,



Adelong, 10 January 1980, M. Pearce; AMS KS6053, Rosewood, 20 October 1980, D.M. Fordham. **Victoria (males):** AMS KS8488, Baranduda, 13 October 1978, A. McDonald; AMS KS10771, Lake Bolac, June 1982, H. Parnaby; Avenel, 6 September 1963 (MV); Benalla, 20 October 1968 (MV); Euroa, 19 June 1965 (MV); Pranjip, Longwood area, 4 July 1965 (MV); AMS KS8484, Trawool, near Seymour, 15 August 1980, P May Williams; Violet Town, 5 February 1980, A. Kube (MV); AMS KS8485, Willowmavin, near Kilmore, 29 April 1974. **Victoria (females):** Rutherglen Research Institute; AMS KS13651-3, Shepparton, 15 January 1984, M. Gardener; Violet Town, 5 February 1980, A. Kube (MV); AMS KS3399, Hall's Gap, 26 March 1974, M. Gray.

**Diagnosis.** CL 5.44-7.04. Small atracine spiders with weak apophyseal swellings on leg II (Figs. 60F, 62H-J). Differs from *H. modesta* and *H. jensenae* by having embolus apically twisted (Fig. 62B,C). Differs from other *Hadronyche* spp. with leg II apophyses/swellings by having a relatively short labium (LL/LW 0.78) (Fig. 60D).

**Male** (AMS KS8490), Avenel, Victoria, 36°54'S 144°12'E, May 1981). —*Size.* Carapace length 6.92, width 6.64. Abdomen length 7.17, width 5.23. —*Colour.* Basic colour pattern. —*Carapace.* Slightly longer than wide, cephalic area moderately raised. Height 3.12. Frontal width 5.45. Fovea straight to slightly procurved. Mid-dorsal cephalic setae do not reach fovea. Anterior strial setae present. Anterolateral angle of carapace with weak bristles. —*Eyes.* Central eye region slightly raised. Eye group width 1.86. Median ocular quadrangle length 0.75, anterior width 0.96, posterior width 1.24. Diameters: AME 0.32, ALE 0.46, PLE 0.43, PME 0.20. —*Chelicerae.* Cheliceral groove rather narrow, margins subparallel. Groove length 2.35, middle width 0.38. Cheliceral teeth: 7 central (6 in basal half, 1 in distal half); 12 prolateral; 12 retrolateral. Central tooth row distribution

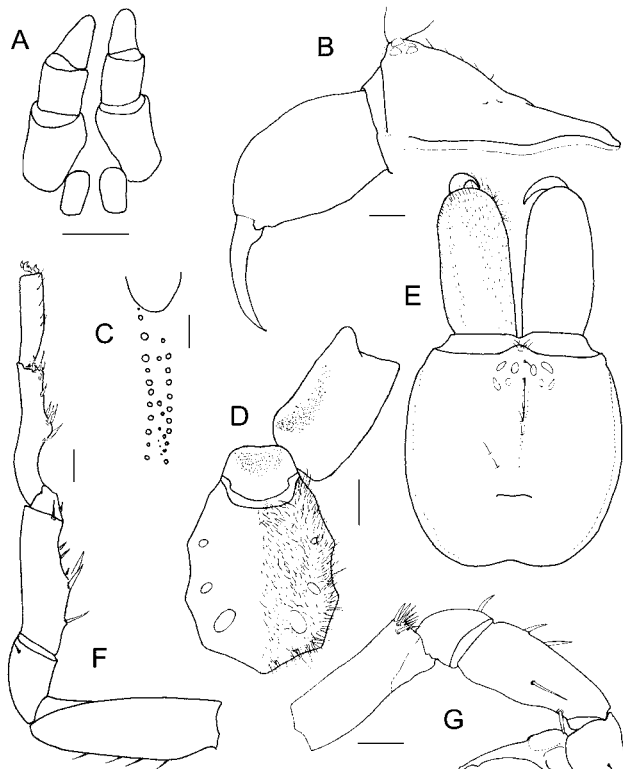


Figure 60. *Hadronyche meridiana*, male: (A) spinnerets; (B) cephalothorax and chelicerae, lateral; (C) cheliceral groove teeth; (D) spinnerets; (E) cephalothorax and chelicerae, dorsal; (F) leg II, prolateral; (G) palp, prolateral. Scale lines 1 mm.

varies from basal area only to full length of groove. —*Labium.* Wider than long, surface flattened. Length 1.20, width 1.58. Labiosternal sigilla narrowed centrally. Cuspules c. 134, number low to moderate. —*Sternum.* Ovoid. Length 4.20, width 3.24. Posterior sigilla ovoid. —*Palp.* Tegular area slightly wider than long. Embolus of moderate length, rather broad, weakly curved and tapered, with distal part twisted. Embolus base weakly to moderately offset from tegulum. Bulb length 2.51, width 0.95. Embolus length 1.67, midwidth 0.30. Length of femur 3.24, patella 1.27, tibia 3.30. Width of tibia 1.48. Spination: femur 5, patella 1, tibia 3. Sinuous bristles and spines present on distal femur. —*Legs.* 4123. Legs I, 2 subequal.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	6.15	2.87	4.59	4.48	2.99	21.08
2	5.82	2.81	4.84	4.43	3.05	20.95
3	5.01	2.40	3.52	4.16	3.09	18.18
4	6.03	2.68	4.89	5.09	3.35	22.04

*Tibia I* width 1.07. Femora I and II with dorsal spines; bristle-like spines on femora II, IV. Metatarsus I slightly thickened near middle, large ventral spines grouped here. Metatarsus II sinuous with spined midventral apophysis. Tibia II with weak, spined apophyseal swelling mid ventrally, ventral spines grouped with 2-4 central spines enlarged. Tibia II weakly excavated distally. Anterior coxal hairs normal. Tarsal scopulae: leg I weak; legs II-IV moderate to strong. Distal metatarsal scopulae: legs I, II weak to absent, legs III, IV moderate to strong. Tarsal claw teeth legs I, II: superior 12, 11; inferior 2, 2. Trichobothria legs I, II: tarsus 9, 9; metatarsus 11, 8; tibia p5 r5, p6 r5. —*Leg spination.* Leg I: femur d5, patella v1, tibia 26, metatarsus 33, tarsus 13. Leg II: femur d4, patella p1, tibia 9, metatarsus 20, tarsus 13. Leg III: femur d4 (bristle like), patella p7, metatarsus 17, tarsus 20. Leg IV: femur d5 (bristle like), patella 0, tibia 2 (d1), metatarsus 10, tarsus 19. —*Abdomen.* Sparsely covered with weak bristles and hairs with a pair of larger bristles above pedicel. Posterior lateral spinnerets with a rather short apical segment. Lengths: total 2.84; basal segment 1.24; middle 0.74; apical 0.86. Apical segment width 0.46.

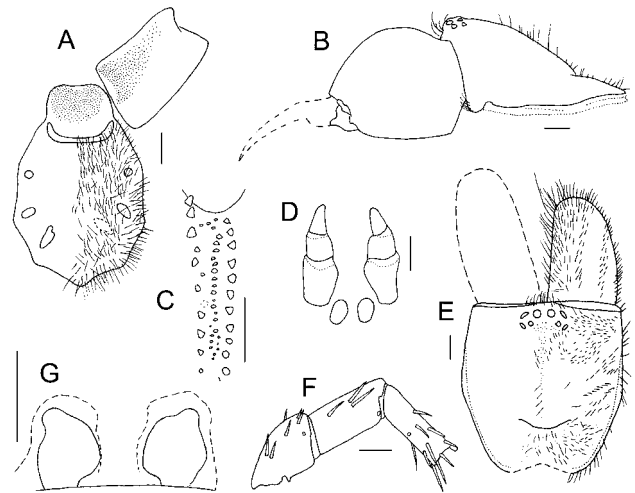


Figure 61. *Hadronyche meridiana*, female: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) cheliceral groove teeth; (D) spinnerets; (E) cephalothorax and chelicerae, dorsal; (F) leg III, prolateral, patella, tibia, metatarsus; (G) spermathecae. Scale lines 1 mm.

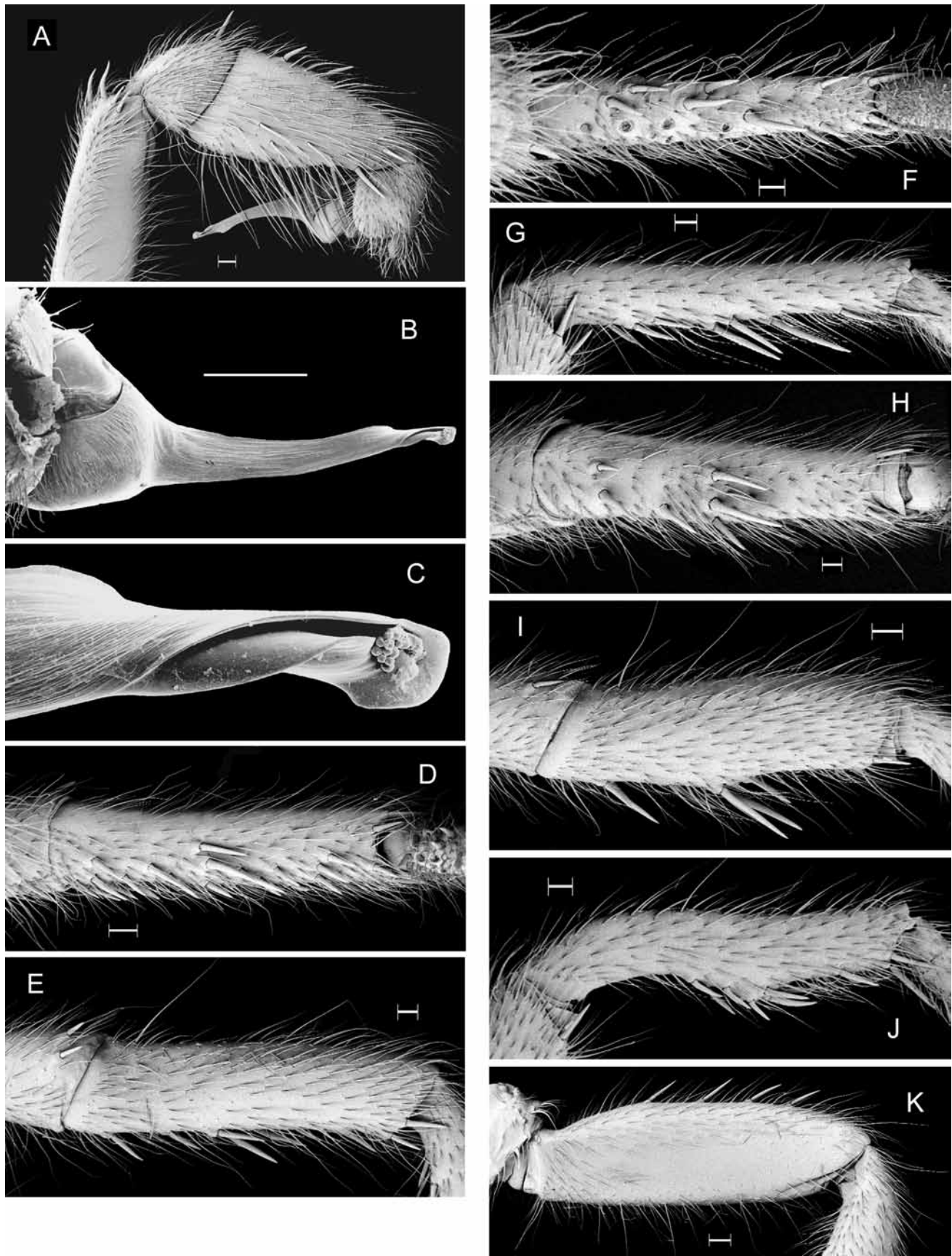


Figure 62. *Hadronyche meridiana*, male (A,D–K, AMS KS8485; B,C, Pranjip, Victoria, [MV]): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J) metatarsus II, prolateral; (K) femur II, prolateral. Scale lines: 0.2 mm, except B 0.5 mm and D,I,J 0.3 mm.

**Table 18.** Male morphological data—*Hadronyche meridiana* (n = 12).

character	range	mean	character	range	mean	character	ratio	SD
CL*	5.44–7.04	6.37	Mt1S	18–37	27	CW/CL	0.98	0.035
CW	5.51–6.64	6.26	Ta1S	7–22	14	CH/CW	0.50	0.026
CH	2.68–3.53	3.10	Ti2S	8–20	12	CFW/CL	0.73	0.047
CFW	4.15–5.45	4.68	STC2teeth	9–12	10	CHGW/L	0.16	0.011
ChGL	1.96–2.48	2.20	BulbL	2.11–2.54	2.68	SW/SL	0.78	0.028
ChGW	0.27–0.42	0.35	EmbL	1.36–1.67	1.54	LL/LW*	0.78	0.02
ChGCT	3–16	10	BulbW	0.83–1.00	0.93	PLSAPW/L	0.47	0.055
LL	0.96–1.24	1.09	EmbmW	0.15–0.30	0.20	BulbW/EmbL*	0.60	0.033
LW	1.19–1.58	1.38	PalpTibL	2.74–3.30	3.07	EmbmW/L	0.14	0.019
CUSP*	117–191	157	PalpTibW	1.26–1.53	1.41	PalpTibW/L	0.46	0.024
SL	3.52–4.40	4.02	PalpTibS	2–7	5	BulbL/TibL	0.77	0.031
SW	2.89–3.40	3.15	PalpPatS	1–2	1			
PLSAPW	0.31–0.46	0.35	PalpFemS	5–7*	6			
PLSAPL	0.68–0.98	0.70						
Fe1S	3–9	6						
Pa1S	0–7 (p0–3)	4						

**Female** (K11083 MV), Strathbogie Range, Victoria, 36°56'S 145°38'E, 7 March 1982) —*Size*. Carapace length 7.83, width 7.07. Abdomen length 11.02, width 7.48. —*Colour*. Basic colour pattern. Abdominal chevrons distinct, well separated. —*Carapace*. Slightly longer than wide, strongly raised. Height 4.01; frontal width 6.60. Cephalic length 5.60. Fovea wide, procurved anterior margin indented. Mid-dorsal cephalic setae do not reach fovea. Anterior strial setae absent basally. Anterolateral carapace angle with a few weak bristles. —*Eyes*. Central eye region raised. Eye group width 2.11. Diameters: AME 0.27, ALE 0.41, PLE 0.34, PME 0.23. Interdistances: AME–AME 0.36, AME–ALE 0.25, ALE–PLE 0.21, PLE–PME 0.17, PME–PME 0.96. Median ocular quadrangle length 0.70, anterior width 0.89, posterior width 1.43. —*Chelicerae*. Cheliceral groove margins diverge weakly distally. Groove length 2.65, middle width 0.54. Cheliceral teeth: 26 central, in single row occupying full length of groove; 13 prolateral; 11 retrolateral. Central tooth row length variable. —*Labium*. Wider than long, anterior margin slightly concave, sides rounded. Length 1.55, width 2.11. Cuspules occupying anterior two-thirds of labium. Labiosternal sigilla narrowed at midline. —*Sternum*. Ovoid. Length 5.10, width 4.01. Posterior sternal sigilla elongate, removed from margins: length 0.99, width 0.34. —*Palp*. Spination: tibia 0–1 (strong bristles present), tarsus 8. Trichobothria: tibia p6 r6, tarsus 8. Tarsal claw with 4 teeth. —*Legs*. 4123. Legs I, IV subequal.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	5.92	2.82	4.59	3.60	2.37	19.30
2	5.10	2.62	3.94	3.47	2.38	17.51
3	4.60	2.55	2.84	3.12	2.52	15.91
4	5.71	2.96	4.08	4.09	2.92	19.76

*Tibia I* width 1.29. Metatarsus I proximal width 0.95. Coxae I, II with a few basally thickened setae frontally. Tibia I, II with few to no spines. Tarsal claw teeth legs I, II: superior 7, 7; inferior 3, 3. Trichobothria legs I, II: tarsus 9, 10; metatarsus 14, 12; tibia p6 r6, p6 r5. —*Leg spination*. Leg I: femur 0, patella 0, tibia 0, metatarsus 5, tarsus 4. Leg II: femur 0, patella 0, tibia 0, metatarsus 7, tarsus 5. Leg III: femur 0, patella p7, tibia 9 (p5 r2), metatarsus 15 (p5 rd2), tarsus 12. Leg IV: femur 0, patella 0, tibia 0, metatarsus 10, tarsus 14. —*Abdomen*. Posterior lateral spinnerets stout,

apical segment short. Lengths. total 3.07; basal segment 1.43; middle 0.69; apical 0.95. Apical segment width 0.56. —*Genitalia*. Spermathecae very short and broad. Apical area narrower than expanded central region. Spermatheca length 0.82, width 0.68.

**Distribution**. Western side of Great Dividing Range in Southern New South Wales and northern Victoria (Fig. 63). This species is provisionally recorded from the Grampian Ranges on the basis of a single female from the Hall’s Gap area—male records are needed to confirm this.

**Comments**. In some males a few mid row or distal teeth may be missing, making keying such individuals difficult.

***Hadronyche jensena* n.sp.**

Figures 63–65; Table 19

**Etymology**. The species is named for my wife, Greta Jensen Gray.

**Types**. Holotype male: K11085 (MV), Woodside, Victoria, 38°32'S 146°53'E, 15 August 1966. Paratypes. Victoria. *Males*: K11086 (MV), Woodside, data as for holotype; K11087 (MV), Morwell, 38°14'S 146°24'E., 28 August 1967.

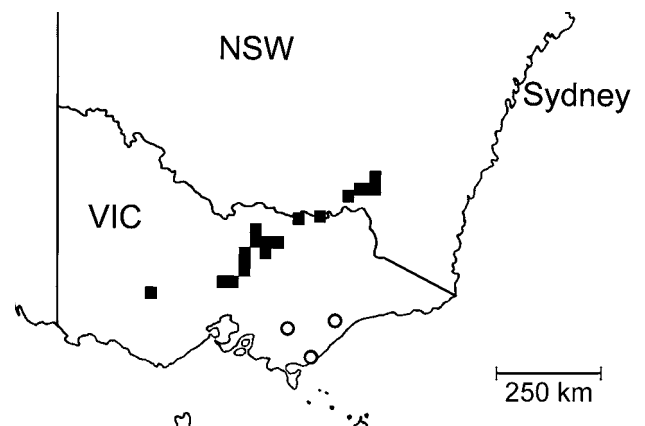


Figure 63. Collection records for *Hadronyche meridiana* (squares) and *H. jensena* (circles).

**Table 19.** Male morphological data—*Hadronyche jensenae* (n = 4).

character	range	mean	character	range	mean	character	ratio	SD
CL*	4.72–6.60	5.77	Mt1S	14–27 (p0)	19	CW/CL	0.99	0.029
CW	4.84–6.60	5.72	Ta1S	6–10	8	CH/CW	0.45	0.03
CH	2.0–3.16	2.60	Ti2S*	5–7 (p0)	6	CFW/CL	0.70	0.043
CFW	3.36–4.85	4.06	STC2teeth	10–11	11	CHGW/L	0.16	0.013
ChGL	1.66–2.18	1.94	BulbL	1.25–2.34	2.17	SW/SL	0.81	0.022
ChGW	0.27–0.34	0.31	EmblL	1.15–1.36	1.28	LL/LW*	0.79	0.075
ChGCT	15–19	17	BulbW	0.86–1.09	0.99	PLSAPW/L	0.47	0.055
LL	0.78–1.29	1.02	EmbmW	0.18–0.21	0.19	BulbW/Embl*	0.77	0.022
LW	1.06–1.43	1.28	PalpTibL	2.71–3.09	2.82	EmbmW/L	0.16	0.006
CUSP*	112–169	145	PalpTibW	1.26–1.52	1.40	PalpTibW/L*	0.50	0.003
SL	3.11–4.15	3.64	PalpTibS	1–2	2	BulbL/TibL*	0.77	0.053
SW	2.43–3.41	2.95	PalpPatS	1–3	2			
PLSAPW	0.29–0.35	0.34	PalpFemS	0–3	1			
PLSAPL	0.64–0.82	0.73						
Fe1S	2–5	4						
Pa1S*	0	0						

**Other material.** AMS KS112636, Vic. Dept. Agric., Bairnsdale (locality unknown), 20 June 1978.

**Diagnosis.** CL 4.72–6.60 (male). Small atracine spiders. Differ from other atracine species by having a short, broad embolus with distal part set at distinct angle to shaft (Fig. 65B,C).

**Male (holotype)** —*Size.* Carapace length 5.74, width 5.70. Abdomen length 6.5, width 4.7. —*Colour.* Basic colour

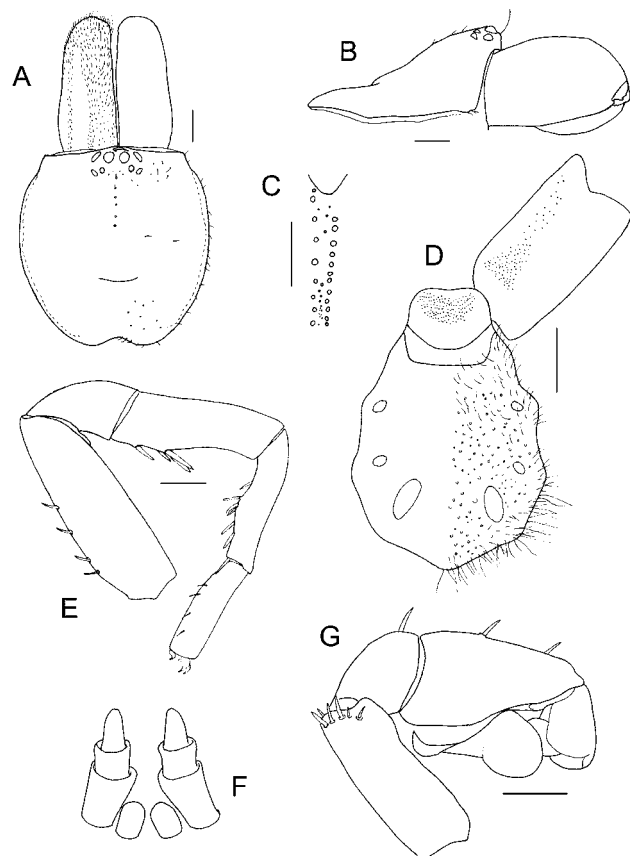


Figure 64. *Hadronyche jensenae*, male: (A) cephalothorax and chelicerae, dorsal; (B) cephalothorax and chelicerae, lateral; (C) cheliceral groove teeth; (D) sternum, labium and maxilla; (E) leg II, prolateral; (F) spinnerets; (G) palp, prolateral. Scale lines 1 mm.

pattern; abdomen partly discoloured or damaged in all specimens. —*Carapace.* About as wide as long, cephalic area moderately raised. Height 2.65; frontal width 4.21. Fovea procurved. Mid-dorsal cephalic setae few, do not reach fovea. Anterior strial setae absent. Anterolateral carapace angle with weak hairs only. —*Eyes.* Central eye region slightly raised. Eye group width 1.57. Median ocular quadrangle length 0.60, anterior width 0.74, posterior width 1.10. Diameters: AME 0.20; ALE 0.35; PLE 0.29; PME 0.23. —*Chelicerae.* Groove margins diverge weakly distally. Groove length 2.00, middle width 0.30. Cheliceral teeth. 15 central, occupying full length of groove; 9 prolateral; 12 retrolateral. —*Labium.* Much wider than long, rectangular, apically weakly indented. Length 0.92, width 1.25. Labiosternal sigilla broad. Cuspules c. 160, number moderate to low. —*Sternum.* Ovoid. Length 3.59, width 2.98. Posterior sternal sigilla ovoid to elongate; middle sigilla small. —*Palp.* Tegular area slightly wider than long. Embolus very short and broad, base strongly offset from tegulum. Distal part of embolus not twisted, but angled strongly at about 45° to shaft. Bulb length 2.23, width 1.01. Embolus length 1.31, midwidth 0.20. Tibia short, strongly incrassate proximally. Length of femur 2.71, patella 1.12, tibia 2.71. Width of tibia 2.01. Spination: femur 6; patella 1; tibia d2. Distal femur with spines, without sinuous bristles. —*Legs.* 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	5.34	2.52	3.94	3.46	2.38	17.64
2	4.79	2.30	3.74	3.19	2.38	16.40
3	4.08	2.14	2.89	3.03	2.24	14.38
4	5.17	2.28	4.08	3.90	2.82	18.25

*Tibia I* width 0.94. Femora I, II with dorsal spines. Metatarsus I slightly thickened in proximal half, spines strong, scattered. Tibia II without apophysis, ventral spines few, grouped proximally with c. two larger spines toward middle; distoventral tibia weakly concave. Metatarsus II weakly to moderately sinuous with small, apophysis mid-ventrally. Tarsi III, IV slightly swollen. Anterior coxal hairs unmodified. Tarsal and distal metatarsal scopulae: legs I, II weak; legs III, IV moderate. Tarsal claw teeth legs I, II: superior 11, 11; inferior 0, 0. Trichobothria legs I, II: tarsus 8, 7; metatarsus 6, 6; tibia p5 r5, p5 r5. —*Leg spination.* Leg I: femur d5, patella 0, tibia 18, metatarsus 19, tarsus 10. Leg

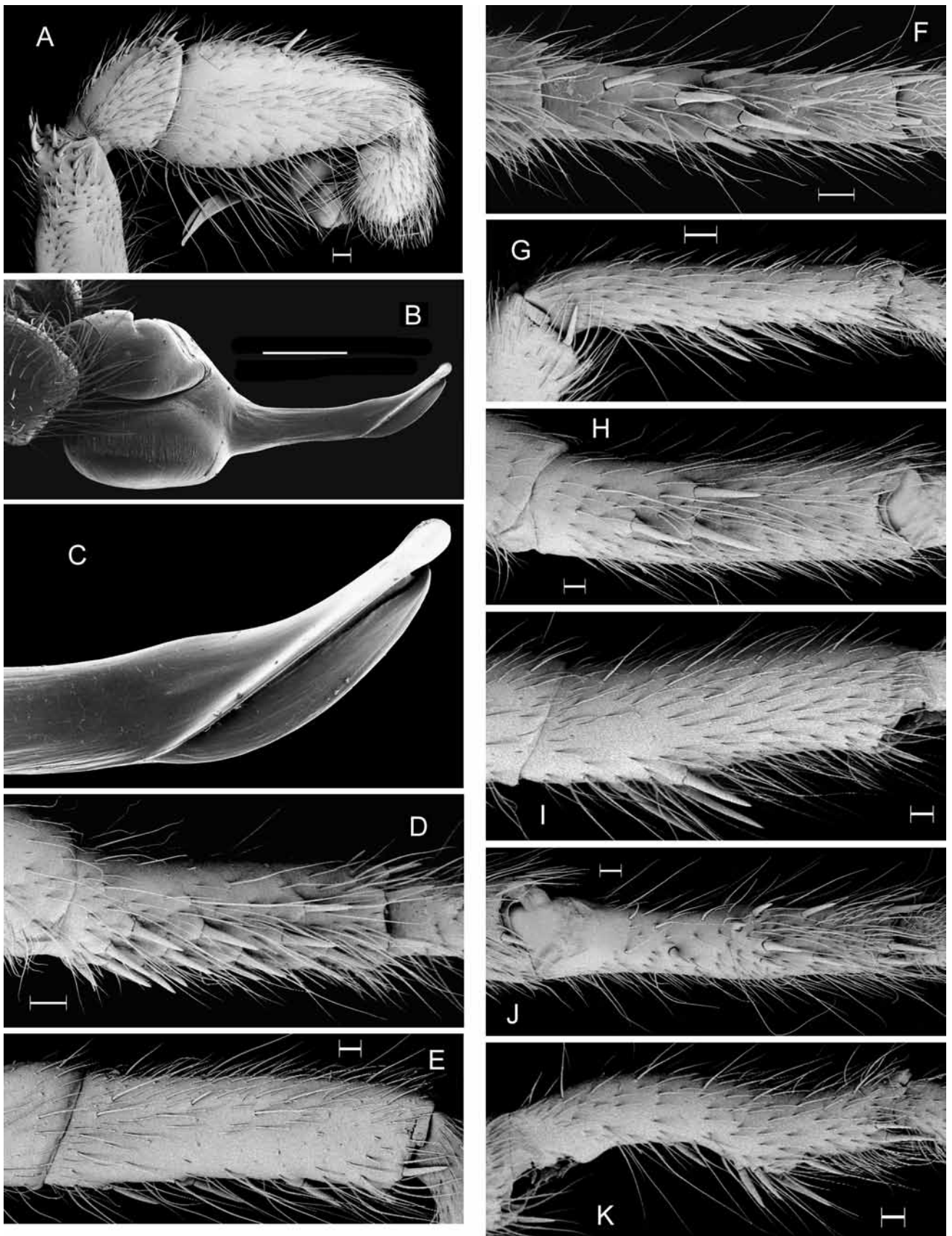


Figure 65. *Hadronyche jensena*, male (A,D–K, AMS KS112636; B,C, 11086 [MV]): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J,K) metatarsus II—J, ventral, K, prolateral. Scale lines: 0.2 mm, except B 0.5 mm and D,F,G 0.3 mm.

II: femur d4, patella 0, tibia 5, metatarsus 11, tarsus 9. Leg III: femur d1, patella pd10, tibia 10 (r2), metatarsus 17 (p5 r2), tarsus 8. Leg IV: femur d1–2 (strong bristles present), patella 0, tibia 3 (rd1), metatarsus 10, tarsus 11. —*Abdomen*. Bristles stronger anteriorly with a prominent frontal pair. Posterior lateral spinnerets with rather short apical segment. Lengths: total 1.90; basal segment 0.84; middle 0.42; apical 0.64. Apical segment width 0.34.

**Distribution.** Central Gippsland, Victoria (Fig. 63).

### *Hadronyche pulvinator* (Hickman)

Figures 66, 67

*Atrax pulvinator* Hickman, 1927: 70. Main, 1985: 41.

*Hadronyche pulvinator*.—Gray, 1988: 114 (Transferred from *Atrax*).

**Types.** Holotype female: QVM 1957–15–20 Type 17. The Cascades, Hobart, Tasmania, 42°54'S 147°17'E, V.V. Hickman.

**Diagnosis.** CL 6.15 (female). Small atracine spiders. Differs from *H. venenata* having central cheliceral teeth in a short, basal row (Fig. 66D), and relatively short labium and spinnerets (Fig. 66A,G).

**Redescription of holotype female.** *Size.* Carapace length 6.15, width 5.64. Abdomen length 10.20, width 8.50. —*Colour.* Basic colour pattern. —*Carapace.* Slightly longer than wide, strongly raised. Height 2.71. Frontal width 4.94. Cephalic length 4.69. Fovea procurved, anterior margin slightly indented. Mid-dorsal cephalic setae do not reach fovea. Anterior strial setae absent. Anterolateral carapace angle with a few very weak bristles. —*Eyes.* Central eye region very weakly raised. Eye group width 1.72. Diameters:

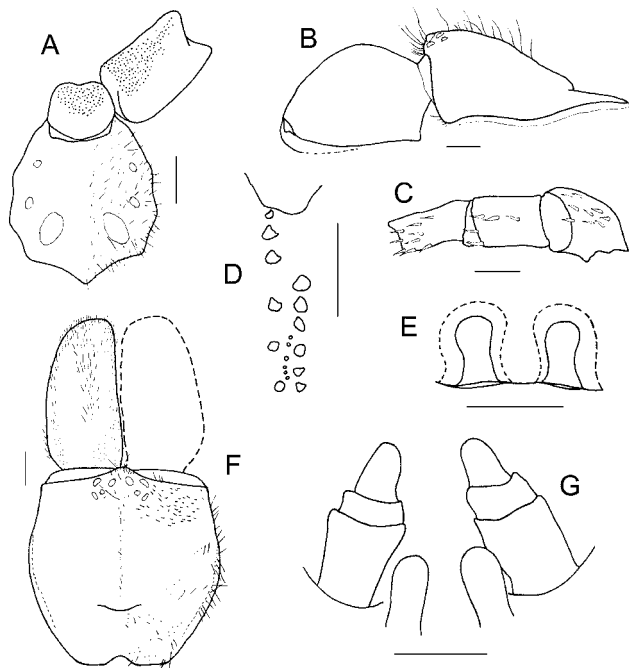


Figure 66. *Hadronyche pulvinator*, female: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) leg III, prolateral, patella, tibia, metatarsus; (D) cheliceral groove teeth; (E) spermathecae; (F) cephalothorax and chelicerae, dorsal; (G) spinnerets. Scale lines 1 mm.

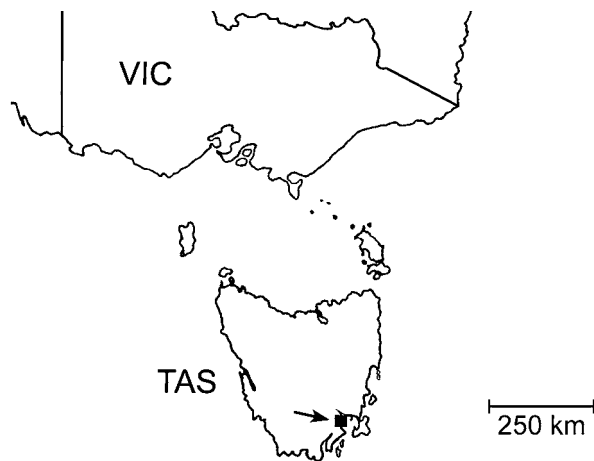


Figure 67. Collection records for *Hadronyche pulvinator*.

AME 0.20, ALE 0.34, PLE 0.25, PME 0.22. Interdistances: AME–AME 0.30, AME–ALE 0.17, ALE–PLE 0.20, PLE–PME 0.07, PME–PME 0.82. Median ocular quadrangle length 0.50, anterior width 0.70, posterior width 1.25. —*Chelicerae.* Paturon with a medial line of long, weak bristles, remaining anterodorsal bristles shorter. Groove narrow, margins diverge slightly distally. Groove length 1.91, middle width 0.50. Distal half of groove transversely ridged. Cheliceral teeth: 7 central, in basal third of groove; 6 prolateral; 6 retrolateral, absent from distal third of margin. —*Labium.* Wider than long. Length 1.22, width 1.48. Anterior margin indented apically, lateral margins rounded. Cuspules grouped antero-centrally. Labiosternal sigilla narrowed centrally. —*Sternum.* Broad, ventrally domed. Length 3.85, width 3.44. Posterior sigilla ovoid: length 0.76, width 0.44. —*Palp.* Spinination: tarsus 3. Trichobothria: tibia p4 r5, tarsus 4. Tarsal claw with 2–3 teeth. —*Legs.* 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	3.94	1.89	2.50	1.97	1.60	11.90
2	3.36	1.89	2.13	1.79	1.46	10.63
3	3.44	1.64	1.89	1.64	1.48	10.09
4	4.14	2.26	2.46	2.50	1.84	13.20

*Tibia I* width 1.10. Metatarsus I short, proximal width 0.83. Coxal hairs unmodified. Tibia I, II without spines. Tarsal claw teeth legs I, II: superior 5, 5; inferior 2, 1. Trichobothria legs I, II: tarsus 7, 6; metatarsus 7, 7; tibia p4 r5, p5 r4. —*Leg spinination.* Leg I: femur 0, patella 0, tibia 0 (2 bristles distally), metatarsus 3; tarsus 2. Leg II: femur 0, patella 0, tibia 0, metatarsus 3, tarsus 2. Leg III: femur 0, patella pd9, tibia 6 (p3 r1), metatarsus 12 (p6 r2), tarsus 5. Leg IV: femur 0, patella p1, tibia 2 (p1), metatarsus pv8, tarsus 6 —*Abdomen.* Sparse cover of fine hairs and bristles. Posterior lateral spinnerets with short apical segment. Lengths: total 1.87; basal segment 0.91, middle 0.36, apical 0.60. Apical segment width 0.34. —*Genitalia.* Spermathecae short, weakly bulbous apically. Length 0.68, width 0.41.

**Distribution.** Known only from the Cascades area, Hobart, Tasmania (Fig. 67).

**Comments.** This species is known only from the holotype female, collected more than 80 years ago. Sporadic collecting efforts at the type locality have failed to locate additional specimens, leading to real concern about the status of the species. Collecting activities have mostly been restricted to



visual (daytime) searching in bushland areas in the Cascades region, mainly targeting logs and rocks, often near creek banks. A regular program of short-term pitfall trapping and ground/litter slicing may be more successful in finding specimens of this elusive species. These techniques were used to good effect in trapping males and locating the in-litter burrows of females of *H. flindersi* in South Australia

***infensa* species group**

**Description** (Figs. 87–89, 91–93). Medium to large sized funnel web spiders. Male femora I, II without spines. Labium relatively long (LL/LW 0.85–0.96) (cf. short labium in *lamingtonensis* group species). Central cheliceral tooth row long (uniquely short, basal in *H. kaputarensis*). Tibia II without apophysis—either more or less sinuous (sometimes slightly thickened proximally) with ventral spines clustered in proximal half; or more cylindrical with clustered to scattered spines. Metatarsus II without apophysis, cylindrical to weakly sinuous, sometimes slightly swollen mid-ventrally. Male palp with few spines (tibia 0–3, patella 0–1, femur 0–2). Embolus with shaft broad or narrow, moderately curved and weakly to not tapered. Distal part of embolus weakly to strongly twisted (Figs. 77B, 81B)—twisting often extended back along shaft as a deep, longitudinal fold, well developed in species with wider, weakly tapered emboli (Fig. 86B,C). Ratio of bulb length to palpal tibia length 0.78–0.95 (i.e., usually greater than in *cerbera* group species). Posterior lateral spinnerets with moderately long apical segment (PLSAPW/L 0.32–0.37).

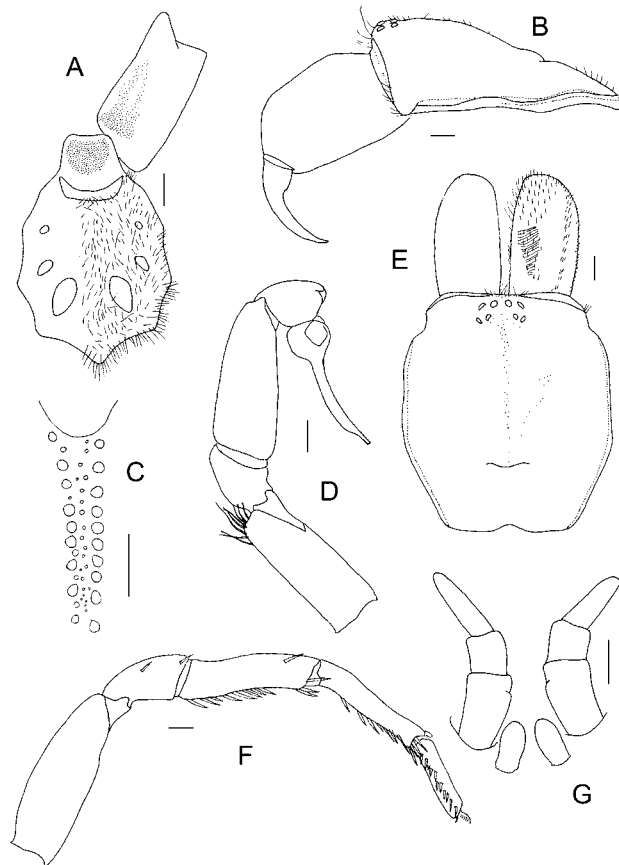


Figure 68. *Hadronyche infensa*, male: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) cheliceral groove teeth; (D) palp, prolateral; (E) cephalothorax and chelicerae, dorsal; (F) leg II, prolateral; (G) spinnerets. Scale lines 1 mm.

**Included species:** *H. infensa* (Hickman), *H. valida* (Rainbow & Pulleine), *H. orana* n.sp., *H. lynabrae* n.sp., *H. macquariensis* n.sp., *H. levittgreggae* n.sp., *H. kaputarensis* n.sp., *H. walkeri* n.sp.

**Distribution.** Coast and highlands from Hawkesbury River region of mid-eastern New South Wales to southeastern Queensland.

**Comments.** These species are distributed across a very dissected coastal and highland landscape and it is likely that many more species await recognition—for example males from the Barrington Tops and Mount Banda Banda regions probably represent new species.

***Hadronyche infensa* (Hickman)**

Figures 68–71; Tables 20, 34

*Atrax infensus* Hickman, 1964: 108. Main, 1985: 41.  
*Hadronyche infensa*.—Gray, 1988: 114 (transferred from *Atrax*).

**Types.** Holotype male: AMS KS953 (old catalogue number K68385). Toowoomba, Queensland, 27°33'S 151°57'E, P. Walker, 26 January 1963. Allotype female: AMS KS954 (old catalogue number K68386). Data as for holotype.

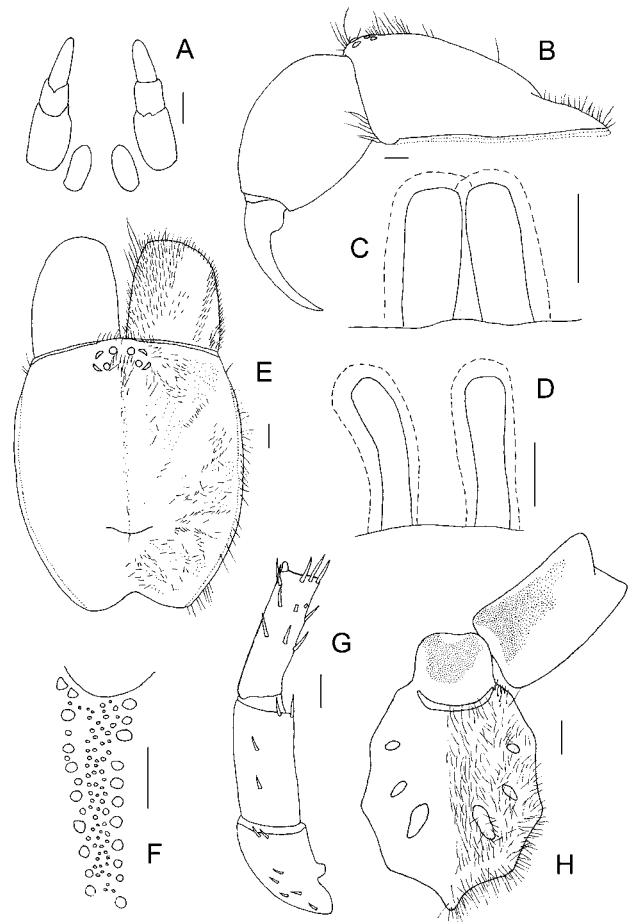


Figure 69. *Hadronyche infensa*, female: (A) spinnerets; (B) cephalothorax and chelicerae, lateral; (C and D) spermathecae variation; (E) cephalothorax and chelicerae, dorsal; (F) cheliceral groove teeth; (G) leg III, prolateral, patella, tibia, metatarsus; (H) sternum, labium and maxilla. Scale lines 1 mm.

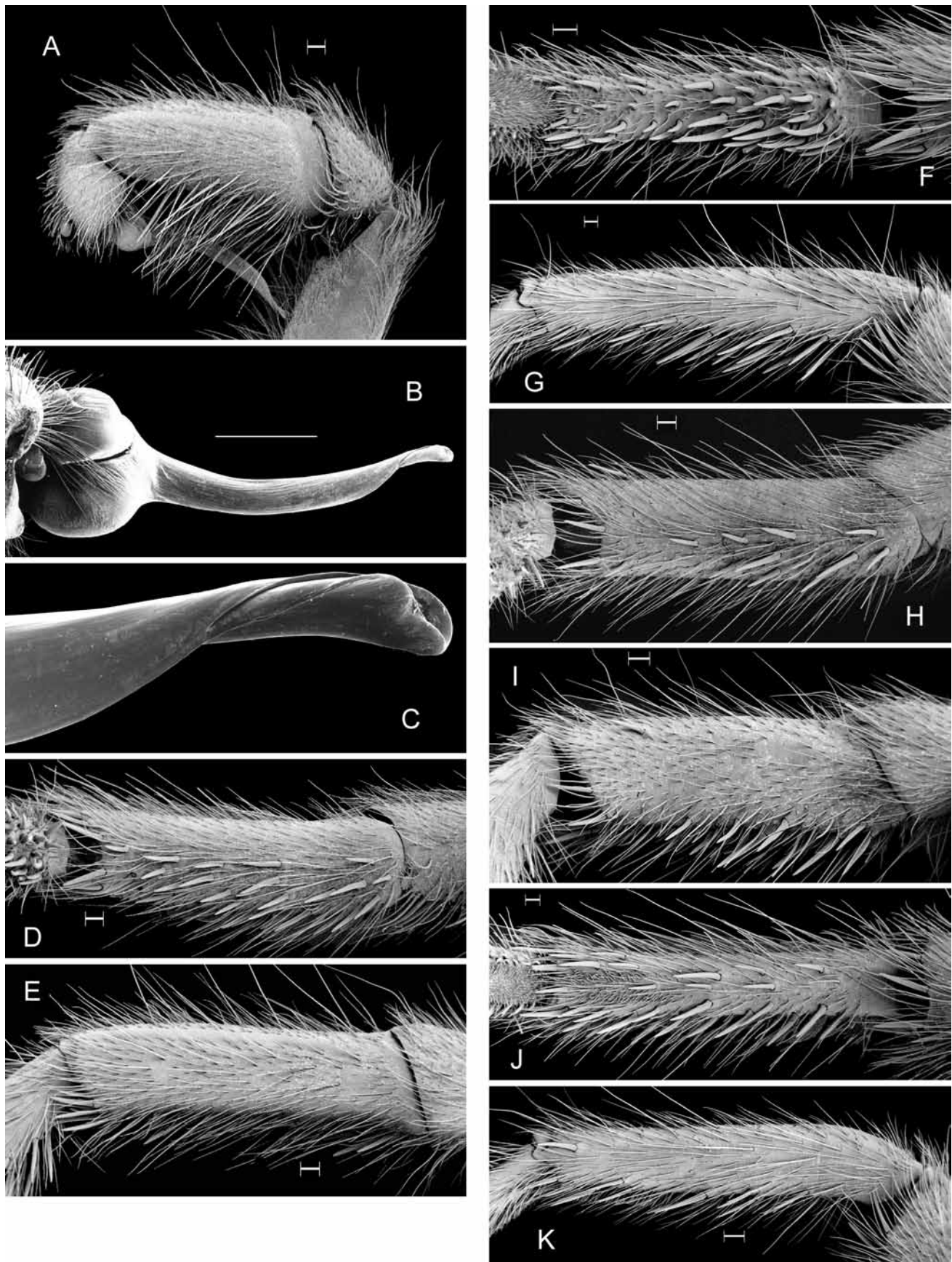


Figure 70. *Hadronyche infensa*, male (AMS KS4716, RHS except *B,C* LHS): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J,K) metatarsus II—J, ventral, K, prolateral. Scale lines: 0.3 mm, except *B* 1.0 mm and *G,J* 0.2 mm.

**Table 20.** Male morphological data—*Hadronyche infensa* (n = 13).

character	range	mean	character	range	mean	character	ratio	SD
CL	9.04–11.48	10.35	Mt1S	25–52	37	CW/CL	0.93	0.038
CW	8.70–10.58	9.58	Ta1S	24–51	36	CH/CW	0.42	0.031
CH	3.43–4.84	4.02	Ti2S	11–29 (p0–1)	17	CFW/CL	0.66	0.022
CFW	5.95–7.41	6.8	STC2teeth	11–13	12	CHGW/L	0.18	0.015
ChGL	2.58–3.38	2.73	BulbL	3.82–4.86	4.37	SW/SL	0.75	0.034
ChGW	0.46–0.60	0.52	Embl	2.82–3.58	3.15	LL/LW	0.93	0.04
ChGCT	8–26	15	BulbW	1.22–1.64	1.47	PLSAPW/L	0.30	0.035
LL	1.48–1.94	1.71	EmbmW	0.35–0.49	0.41	BulbW/Embl	0.47	0.049
LW	1.58–1.98	1.83	PalpTibL	4.41–5.78	5.00	EmbmW/L*	0.13	0.013
CUSP	320–494	383	PalpTibW	1.91–2.34	2.11	PalpTibW/L	0.42	0.029
SL	4.93–6.89	5.74	PalpTibS	0–1	<1	BulbL/TibL*	0.88	0.044
SW	3.76–5.00	4.49	PalpPatS	0	—			
PLSAPW	0.49–0.74	0.58	PalpFemS	0	—			
PLSAPL	1.69–2.24	1.78						
Fe1S	0							
Pa1S	0–5 (p0–1)	3						

**Other material examined. Queensland (males):** QMB S672, Bellthorpe West, 5 December 1979, G. Hodges; QMB S392, Royce Reserve, near Toowoomba, 24 October 1975–30 April 1976, G.B. & S.R. Monteith; AMS KS8790, Buderim, January 1982; QMB S147, Casey Creek via Imbil, 31 December 1974–27 March 1975, G.B. & S.R. Monteith; QMB S173, Cooran Plateau via Traveston, 31 December 1974–27 March 1975, G.B. & S.R. Monteith; QMB S396, Elginvale, 12 December 1976–26 March 1977, G.B. & S.R. Monteith; QMB S158, Flaxon, 30 November 1973, J.J. Roth; QMB S168, Gallangowan, 10 November 1974–29 December 1974, G.B. & S.R. Monteith; QMB S376, Mount Glorious, 7 March 1978, T. Hillier; QMB S165, Kingaroy, 23 November 1977, L. Briskey; QMB S673, Maleny, 4.x.1979, I. Joyce; QMB S152, Mount Nebo, 26 October 1972, D. Dale; QMB S171, Maleny, 23 November 1973, M. Erskine-Wyse; QMB S153, Mapleton, 2 December 1975, P. Allsop; QMB S395, Mistake Mountains, 10 October 1976–9 January 1977, G.B. & S.R. Monteith; QMB S160, Montville, 7 November 1977, J. Channon; QMB S670, Montville, 23 November 1979, D. Roberts; QMB S674, Nambour, 17 November 1979, R. Cook; QMB S379, Nambour, 16 November 1978, S. Martin; QMB S671, Mount Nebo, 22 December 1979, D. Webster; QMB S188, Mount Nebo, 28 April 1979, A. Rozetelds; QMB S170, Mount Tensionwoods, near Mount Glorious, 12 November 1975–27 January 1976, G.B. & S.R. Monteith; QMB S151, Toowoomba, 15 January 1952, T. Passlow; QMB S167, Upper Yarraman State Forest via Maidenwell, 17 July 1974–10 November 1974, G.B. & S.R. Monteith; AMS KS4716, Toowoomba, 27°36'S 151°57'E, 12 Jan 1980, P. Walker. **Queensland (females):** AMS KS13423, Cunninghams Gap; QMB S376, Mount Glorious, 7 March 1978, T. Hillier; QMB S374, Maleny; AMS KS990, Toowoomba, 20v.1972, J. Cann; AMS KS4596, Toowoomba, February 1979, P. Walker. **New South Wales (males):** Tenterfield, 29°03'S 152°01'E, (AMS); Tooloom, 28°37'S 152°25'E, (AMS).

**Diagnosis.** CL 9.04–11.48 (male). Differs from *H. walkeri* and *H. macquariensis* by embolus base strongly offset from tegulum (Fig. 70B) and greater length of bulb (BulbL/TibL 0.88) (Figs. 68D, 70A); differs from *H. levittgreggae*, *H. valida*, *H. orana* and *H. kaputarensis* by more slender embolus shaft (EmbmW/L 0.13) and from *H. lynabrae* by less pronounced distal embolic twisting (Fig. 70B,C).

**Redescription of holotype male.** *Size.* Carapace length 10.78, width 9.38. Abdomen length 9.86, width 7.48. — *Colour.* Basic colour pattern. Abdomen often with a small anterodorsal pale patch flanked by small sigilla. — *Carapace.* Longer than wide, cephalic area moderately raised. Height 4.18; frontal width 7.15. Fovea narrow, procurved. Mid-dorsal cephalic setae reach fovea. Anterior striae setae present. Anterolateral angle of carapace with numerous bristles. — *Eyes.* Central eye region weakly raised. Eye group width 2.31. Median ocular quadrangle length 0.88,

anterior width 0.97, posterior width 1.44. Diameters: AME 0.31, ALE 0.49, PLE 0.42, PME 0.24. — *Chelicerae.* Dorsal paturon with oblique ridges proximally. Cheliceral groove with margins diverging distally. Groove length 3.03, middle width 0.52. Cheliceral teeth: 22 central, occupying full length of groove; 14 prolateral; 10 retrolateral. — *Labium.* Wider than long, weakly indented apically. Length 1.67, width 1.97. Labiosternal sigilla broad, entire. Cuspules c. 379, number high. — *Sternum.* Ovoid. Length 6.15, width 4.83. Posterior sigilla long, ovoid. — *Palp.* Tegular area wider than long. Embolus moderately long and wide, base strongly offset from tegulum. Embolus moderately long and broad, shaft curved and hardly tapered; distal embolus moderately twisted with twisting extended back along shaft as a rolled margin. Bulb length 4.42, width 1.43. Embolus length 3.26, midwidth 0.38. Length of femur 4.62, patella 2.38, tibia 4.90. Width of tibia 1.94. Spines absent. Tibia with several strong ventral bristles. Several sinuous bristles on distal femur. — *Legs.* 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	8.87	4.39	6.66	5.78	3.60	29.30
2	8.08	3.91	6.46	6.10	3.63	28.08
3	7.04	3.57	5.17	5.81	3.52	25.11
4	8.33	4.15	6.50	6.57	4.28	29.83

*Tibia I* width 1.58. Femora I and II without spines. Metatarsus I slightly thickened proximally with larger ventral spines grouped in proximal half. Tibia II without apophysis, most ventral spines loosely grouped proximocentrally. Metatarsus II weakly sinuous proximally, otherwise unmodified. Coxae I and II with anteromedial setae weakly thickened, sparse. Scopulae: tarsi (legs I–IV), moderate to strong; distal metatarsi, absent to weak (legs I, II), moderate (legs III, IV). Tarsal claw teeth legs I, II; superior 14, 12; inferior 4, 3. Trichobothria legs I, II: tarsus 13, 12; metatarsus 17, 13; tibia p6 r7, p7 r8. — *Leg spination.* Leg I: femur 0, patella 0, tibia 33, metatarsus 38, tarsus 27. Leg II: femur 0, patella p2, tibia 19 (p1) metatarsus 24, tarsus 35. Leg III: femur 0, patella p5, tibia 12 (p2 r2), metatarsus 31, tarsus 33. Leg IV: femur 0, patella 0, tibia 10 (r1), metatarsus 22, tarsus 30. — *Abdomen.* Posterior lateral spinnerets with apical segment moderately long. Lengths: total 4.48; basal segment 1.70; middle 1.05; apical 1.73. Apical segment width 0.56.

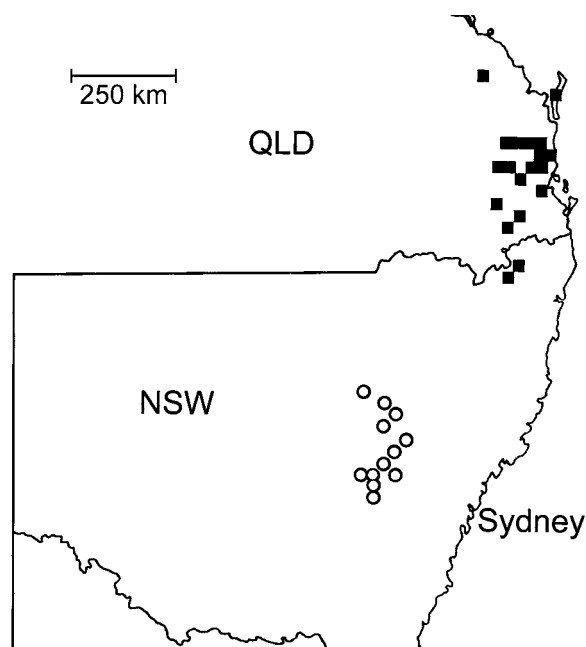


Figure 71. Collection records for *Hadronyche infensa* (squares) and *H. orana* (circles).

**Redescription of allotype female.** *Size.* Carapace length 11.63, width 10.27. Abdomen length 15.98, width 10.88. —*Colour.* Basic colour pattern. —*Carapace.* Longer than wide, strongly raised. Height 4.76; frontal width 8.77. Cephalic length 8.76. Fovea procurved, narrow. Mid-dorsal cephalic setae numerous, reach back to fovea. Anterior striae setae very few basally. Anterolateral carapace angle with several bristles. —*Eyes.* Eye region sessile or very slightly raised centrally. Eye group width 2.52. Diameters: AME 0.29, ALE 0.58, PLE 0.41, PME 0.26. Interdistances: AME–AME 0.46, AME–ALE 0.31, ALE–PLE 0.29, PLE–PME 0.10, PME–PME 1.22. Median ocular quadrangle length 0.97, anterior width 1.09, posterior width 1.70. —*Chelicerae.* Cheliceral groove moderately wide, margins diverging distally. Groove length 3.40, middle width 0.82. Cheliceral teeth: 67 central, in several rows, occupying full length of groove; 15 prolateral; 12 retrolateral. —*Labium.* Slightly wider than long. Length 2.31, width 2.52. Anterior margin weakly indented. Cuspules spread in broad v-shape over anterior three quarters of labium. —*Sternum.* Ovoid. Length 5.44, width 4.22. Posterior sigilla moderately small, elongate: length 0.68, width 0.27. —*Palp.* Spinination: tibia 4, tarsus 8. Trichobothria: tibia p8 r7, tarsus 7. Tarsal claw with 7 teeth. —*Legs.* 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	8.30	4.69	6.12	4.86	3.06	27.03
2	7.45	4.52	5.44	4.59	2.89	23.89
3	6.43	3.64	4.49	4.59	3.06	22.21
4	8.23	4.42	5.98	5.66	3.40	27.69

*Tibia I* width 2.07. Metatarsus I proximal width 1.43. Coxae I, II with basally thickened setae anteriorly. Tarsal claw teeth legs I, II: superior 10, 10; inferior 4, 4. Trichobothria legs I, II: tarsus 12, 12; metatarsus 16, 14; tibia p8 r7, p7 r7. —*Leg spinination.* Leg I: femur 0, patella 0, tibia 3, metatarsus 11, tarsus 7. Leg II: femur 0, patella p1, tibia 2, metatarsus 12, tarsus 9. Leg III: femur 0, patella p8, tibia 6 (p2 r1), metatarsus 18 (p6 rd2), tarsus 12. Leg IV: femur 0, patella 0,

tibia 4 (r1), metatarsus 15, tarsus 13. —*Abdomen.* Posterior lateral spinnerets with slender apical segment of moderate length. Lengths: total 4.28; basal segment 1.70, middle 0.88, apical 1.60. Apical segment width 0.65. —*Genitalia.* Spermathecae digitiform, usually elongate. Length 1.41, width 0.44.

**Distribution.** Southeastern Queensland to upper north-eastern New South Wales (Fig. 71).

### *Hadronyche orana* n.sp.

Figures 71–74; Tables 21, 34

**Etymology.** The specific epithet refers to the Orana region of New South Wales, part of the distribution of this species.

**Types.** Holotype male: AMS KS7811, Mt. Deba near Coolah, New South Wales, 31°52'S 149°39'E, 1 June 1981, P. Esdaile. Paratypes (AMS). New South Wales. *Males:* AMS KS5288, Hargraves, 32°44'S 149°27'E, 11 May 1980, N. Mattick; AMS KS967, Mandurama, 33°38'S 149°04'E, 20 June 1976, P. Bremner; AMS KS968, Molong, 33°05'S 148°51'E, 12 July 1969, R.H. Keeling; AMS KS5203, Mt. Deba, nr. Coolah, 31°52'S 149°39'E, 8 May 1980, S. Esdaile; AMS KS10974, “Stonehenge” on Cassilis Road, Mudgee area, 3 May 1983, E.H. Elward; AMS KS7563, Warrumbungle Mtns., 31°19'S 149°00'E, 10 November 1981, C. Martin. *Females:* AMS KS1071, “Hill Top” near Hargraves, 32°44'S 149°27'E, 30 June 1978, N. Mattick; AMS KS4053, Binnaway, 31°33'S 149°23'E, September 1979, R. England; AMS KS4476, Dunedoo area, 32°00'S 149°23'E, 15 January 1980; AMS KS3429, Hargraves, 32°44'S 149°27'E, 18 May 1979; AMS KS8593, Mudgee, 32°34'S 149°35'E, 4 January 1982, P. Schiemer; AMS KS977, Warrumbungle Mtns, 231°19'S 149°00'E, 3 April 1967; AMS KS5980, Munghorn Gap Nature Reserve, nr. Mudgee, 32°24'S 149°47'E, 21 August 1980, M. Gray & C. Horseman.

**Other material examined. New South Wales (males):** AMS KS8793, Borenore, nr. Orange, December 1981, G. Scarvell; AMS KS7691, Clergate, 15 May 1981; AMS KS964, Hargraves, 10 October 1977, J. Sibley; AMS KS2963, Hargraves, May 1979, Gillman; AMS KS965, Hargraves area, 22 October 1977, L.M. Mattick; AMS KS960, Mudgee, December 1977, M.P.P.B.; AMS KS961, Mudgee, 23 November 1973, M.P.P.B.; AMS KS10975, Mudgee, 5 May 1983; AMS KS976, “Tara”, Warrumbungle Mountains, 28 November 1977, E. Edmonson; AMS KS966, Orange district, AMS KS14262, Siding Springs in Warrumbungle Mountains, Apr 1984, D. Rowell. **New South Wales (females):** AMS KS8746, Hargraves, January 1982; AMS KS978, Warrumbungle Mountains; AMS KS6219, Munghorn Gap Nature Reserve, nr. Mudgee, 21 August 1980, M. Gray & C. Horseman.

**Diagnosis.** CL 7.76–9.72 (male). Differs from *H. levittgreggae* and *H. valida* by having few tibiae II ventral spines (3–7) (Fig. 74D,H); from *H. infensa*, *H. walkeri*, *H. macquariensis*, *H. lynabrae* by having a slender, weakly twisted embolic shaft (EmbmidW/L 0.06) (Fig. 74B,C); and from *H. kaputarensis* by having a long central cheliceral tooth row.

**Male (holotype)** —*Size.* Carapace length 7.76, width 7.41. Abdomen length 8.04, width 6.57. —*Colour.* Basic colour pattern. —*Carapace.* Slightly longer than wide, cephalic area moderately raised. Height 3.57. Frontal width 5.93. Fovea procurved, anterior margin indented. Mid-dorsal cephalic setae almost reach fovea. Anterior striae setae absent. Anterolateral carapace angle with a few bristles of moderate size. —*Eyes.* Central eye region slightly raised. Eye group width 2.16. Median ocular quadrangle length 0.78, anterior width 1.02, posterior width 1.48. Diameters; AME 0.30, ALE 0.51, PLE 0.36, PME 0.23. —*Chelicerae.* Cheliceral groove of medium width, margins diverging distally.

**Table 21.** Male morphological data—*Hadronyche orana* (n = 11).

character	range	mean	character	range	mean	character	ratio	SD
CL	7.76–9.72	8.77	Mt1S*	10–16	13	CW/CL	0.93	0.042
CW	7.41–8.87	8.14	Ta1S*	4–10	6	CH/CW	0.48	0.03
CH	3.32–4.48	3.88	Ti2S*	3–7	5	CFW/CL	0.70	0.031
CFW	5.59–6.87	6.13	STC2teeth	10–15	11	CHGW/L	0.21	0.036
ChGL	2.19–2.65	2.35	BulbL	3.21–3.77	3.48	SW/SL	0.81	0.04
ChGW	0.43–0.63	0.50	EmbL	2.19–2.63	2.39	LL/LW	0.90	0.065
ChGCT	11–26	19	BulbW	1.14–1.36	1.23	PLSAPW/L	0.35	0.025
LL	1.29–1.76	1.54	EmbmW	0.14–0.19	0.16	BulbW/EmbL	0.52	0.02
LW	1.60–1.90	1.71	PalpTibL	3.74–4.42	4.06	EmbmW/L*	0.06	0.009
CUSP	246–390	309	PalpTibW	1.59–1.90	1.76	PalpTibW/L	0.43	0.02
SL	4.83–5.74	5.28	PalpTibS	0–1	<1	BulbL/TibL	0.86	0.035
SW	3.96–4.86	4.28	PalpPatS	0	—			
PLSAPW	0.33–0.68	0.55	PalpFemS	0	—			
PLSAPL	1.44–1.86	1.63						
Fe1S	0	—						
Pa1S	0–1p	(<<1)						

Groove length 2.19, middle width 0.54. Cheliceral teeth: 18 central, occupying full length of groove; 8 prolateral; 9 retrolateral. —*Labium*. Wider than long, with long hairs laterally. Weakly indented apically. Length 1.32, width 1.60. Shallowly grooved behind cuspules. Labiosternal sigilla entire. Cuspules c. 309, number moderate to high. —*Sternum*. Ovoid. Length 5.00, width 4.02. Posterior sigilla ovoid, elongate. —*Palp*. Tegular area a little wider than long. Embolus shaft long, slender, weakly tapering distally, gently

curved. Distal embolus slender, only slightly twisted, flange elongate. Basal embolus strongly offset from tegulum. Bulb length 3.57, width 1.24. Embolus length 2.55, midwidth 0.17. Length of femur 4.04, patella 1.93, tibia 4.22. Width of tibia 1.77. Spination: spines absent; weak sinuous bristles on distal femur. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	7.01	3.35	5.19	4.98	3.13	23.66
2	6.44	3.20	4.90	5.00	3.24	22.58
3	5.63	2.75	4.02	5.16	3.62	21.88
4	7.22	3.18	5.36	6.55	4.22	26.53

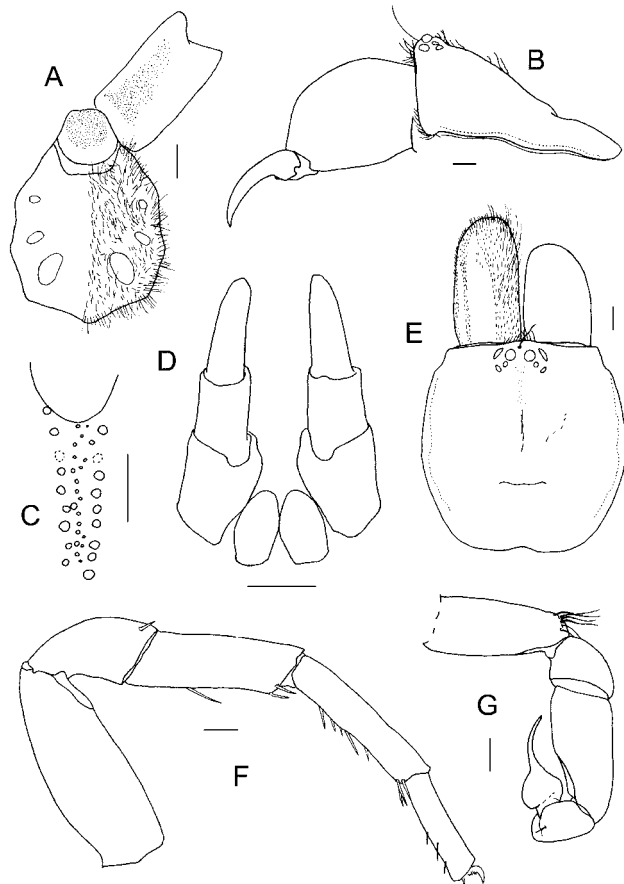


Figure 72. *Hadronyche orana*, male: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) cheliceral groove teeth; (D) spinnerets; (E) cephalothorax and jaw, dorsal; (F) leg II, prolateral; (G) palp, prolateral. Scale lines 1 mm.

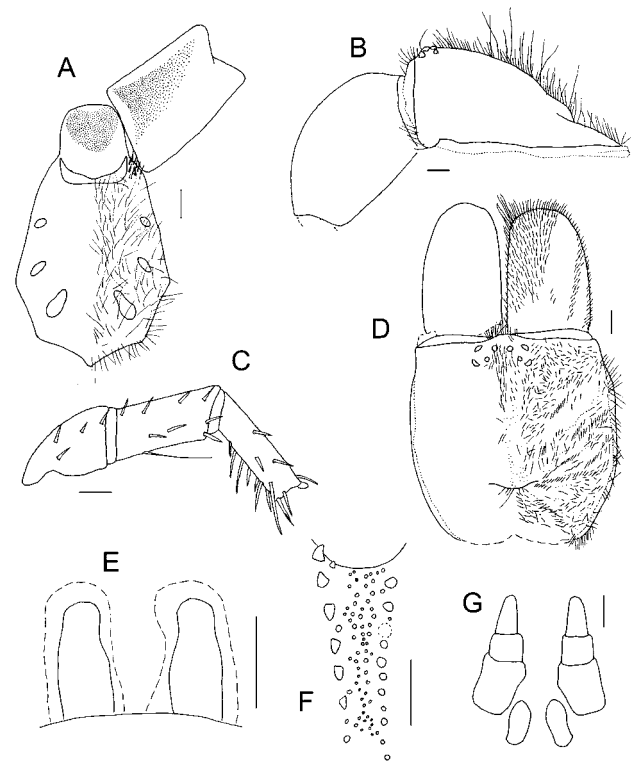


Figure 73. *Hadronyche orana*, female: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) leg III, prolateral, patella, tibia, metatarsus; (D) cephalothorax and chelicerae, dorsal; (E) spermathecae; (F) cheliceral groove teeth; (G) spinnerets. Scale lines 1 mm.

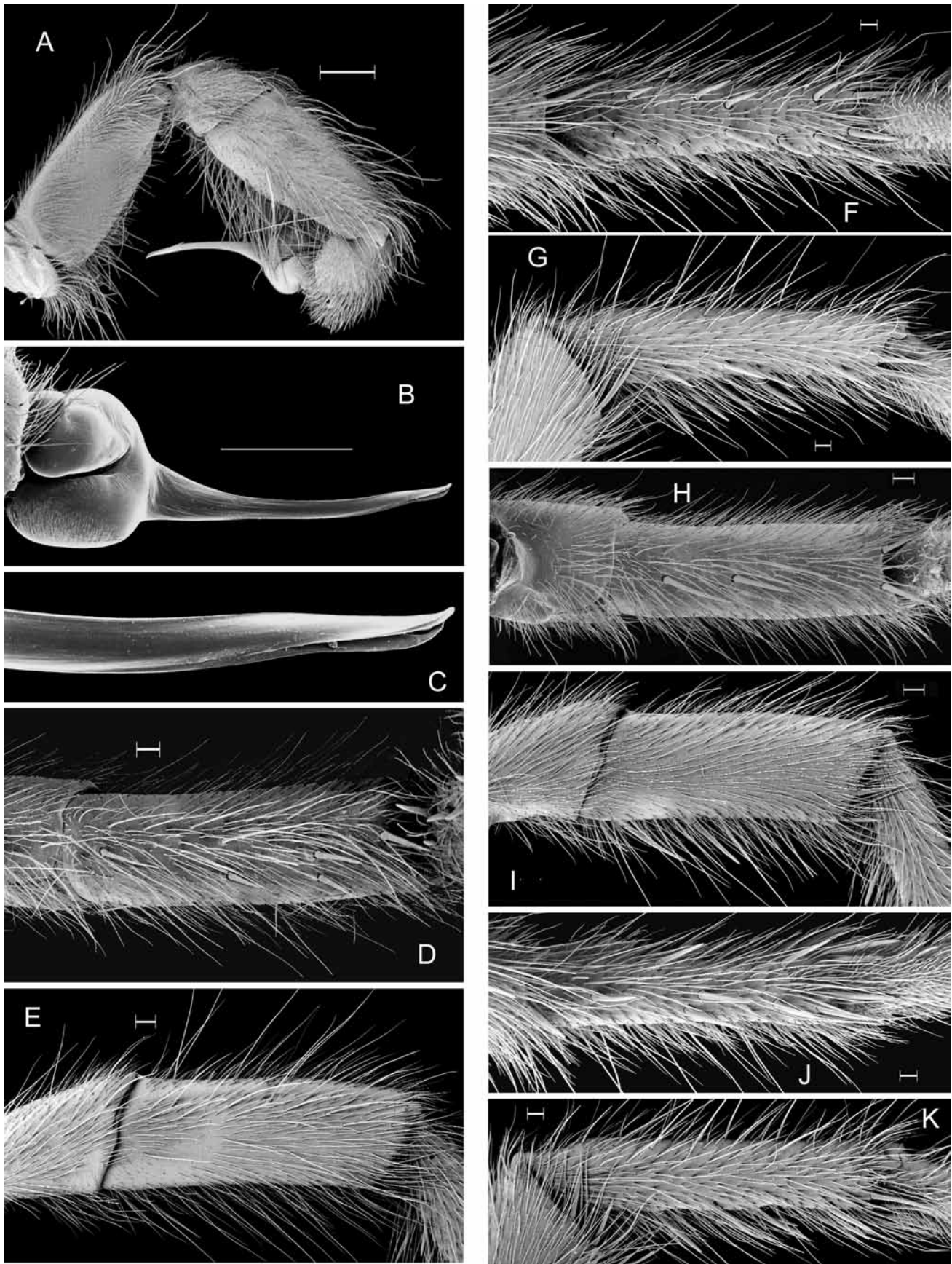


Figure 74. *Hadronyche orana*, male (A,D–K, AMS KS960; B,C, AMS KS5203): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J,K) metatarsus II—J, ventral, K, prolateral. Scale lines: 0.2 mm, except A,B 1.0 mm and D,E,H,I 0.3 mm.



*Tibia I* width 1.48. Femora I and II lacking dorsal spines. Metatarsus I slightly thickened proximally. *Tibia II* and metatarsus II unmodified. *Tibia I* and II with few ventral spines, scattered. Tarsus I, II with few spines. Anterior coxal hairs normal. Tarsal scopulae: legs I, II weak; legs III, IV moderate to strongly developed. Distal metatarsal scopulae: legs I, II absent; legs III, IV moderate. Tarsal claw teeth legs I, II: superior 10, 10; inferior 4, 4. Trichobothria legs I, II: tarsus 13, 11; metatarsus 15, 14; tibia p7 r7, p7 r7. —*Leg spination*. Leg I: femur 0, patella 0, tibia 6, metatarsus 13, tarsus 6. Leg II: femur 0, patella p1, tibia 3, metatarsus 11, tarsus 9. Leg III: femur 0, patella p3, tibia 10 (p1 r2), metatarsus 23, tarsus 15. Leg IV: femur 0, patella 0, tibia 4 (r2), metatarsus 19, tarsus 21. —*Abdomen*. Posterior lateral spinnerets with apical segment of moderate length. Lengths: total 4.65; basal segment 1.68, middle 1.35, apical 1.62. Apical segment width 0.59.

**Female** (paratype AMS KS2071) —*Size*. Carapace length 8.57, width 8.67. Abdomen length 14.21, width 11.22. —*Colour*. Basic colour pattern. —*Carapace*. About as long as wide, cephalic area strongly raised. Height 3.85; frontal width 7.99. Cephalic length 7.11. Fovea procurved. Mid-dorsal cephalic setae numerous, extend back to fovea. Anterior strial setae numerous. Strial, cephalic and marginal setae numerous. Anterolateral carapace angle with several weak bristles. —*Eyes*. Central eye region slightly raised. Eye group width 2.52. Diameters: AME 0.31, ALE 0.60, PLE 0.41, PME 0.31. Interdistances: AME–AME 0.44, AME–ALE 0.31, ALE–PLE 0.28, PLE–PME 0.16, PME–PME 1.09. Median ocular quadrangle length 0.80, anterior width 1.02, posterior width 1.67. —*Chelicerae*. Cheliceral groove margins diverge distally. Groove length 3.06, middle width 0.75. Cheliceral teeth: 64 central occupying full length of groove in 2–3 irregular rows; 11 prolateral; 10 retrolateral. —*Labium*. As long as wide, anterior margin not indented. Length 2.10, width 2.12. Cuspules occupying anterior half of labium. Labiosternal sigilla entire, narrowed centrally. —*Sternum*. Ovoid, strongly convex. Length 6.24, width 4.82. A few strong bristle-like setae grouped at anterolateral corners. Posterior sternal sigilla elongate: length 1.02, width 0.44. —*Palp*. Spination: tibia 5, tarsus 11. Trichobothria: tibia p7 r7, tarsus 14. Tarsal claws with 7 teeth. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	6.75	3.77	5.30	4.39	2.58	22.79
2	6.19	3.40	4.76	4.08	2.65	21.08
3	5.44	3.13	3.74	4.01	2.82	19.14
4	6.90	3.67	5.20	4.92	2.92	23.61

*Tibia I* width 1.60. Metatarsus I proximal width 1.05. Coxae I, II with thorn-like setae frontally. Tarsal claw teeth legs I, II: superior 10–11, 10; inferior 5, 4. Trichobothria legs I, II: tarsus 15, 14; metatarsus 15, 14; tibia p7 r7, p8 r8. —*Leg spination*. Leg I: femur 0, patella 0, tibia 4, metatarsus 12, tarsus 9. Leg II: femur 0, patella p1, tibia 4 (p1), metatarsus 13, tarsus 10. Leg III: femur 0, patella p6 r1, tibia 12 (p5 r2), metatarsus 23 (p3 r3), tarsus 14. Leg IV: femur 0, patella 0, tibia 5 (r1), metatarsus 18, tarsus 24. —*Abdomen*. Posterior lateral spinnerets with short apical segment. Lengths; total 3.74; basal segment 1.60, middle 0.95, apical 1.36. Apical segment width 0.82. —*Genitalia*. Spermathecae short, apical third narrower than basal two thirds. Length 1.02, width 0.48.

**Distribution**. Western Great Dividing Range from the Warrumbungles Range south to the Mudgee region, New South Wales (Fig. 71).

### *Hadronyche valida* (Rainbow & Pulleine)

Figures 75–78; Tables 22, 34

*Atrax valida* Rainbow & Pulleine, 1918: 165.

*Anepsiada ventricosa* Rainbow & Pulleine, 1918: 167.

Gray, 1984: 441 (inferred synonymy as juvenile of *Atrax validus*). First synonymized after Gray in Main, 1985: 42.

*Atrax validus*.—Main, 1985: 41

*Hadronyche valida*.—Gray, 1988: 114 (Transferred from *Atrax*).

**Types**. Holotype female: AMS KS955 (old catalogue number K40961). Tamborine Mountain, Queensland, 27°55'S 153°11'E, 5 October 1912. Paratype females: AMS KS956–9, data as above.

**Other material examined. Queensland (males)**: QMB S163, Binna Burra, Lamington Plateau, November 1973, R.J. Raven; QMB S157, Lamington Plateau, 13 April 1974, R.J. Raven; QMB S390, Lower Albert River, Lamington National Park, 1 November 1975–4 April 1976, G.B. & S.R. Monteith; AMS KS13629, Mount Tamborine, 5 December 1983; QMB S175, Eagle Heights, Mount Tamborine, 17 August 1973, G. Walker; QMB S176, Springbrook, October 1976, J. Mainwaring; QMB S381, Tamborine North, 26 March 1979, J. Aagaard; AMS KS988, Tyalgum, 7 January 1972, H.G. Suttolk; AMS KS989, Tumble Falls, January 1975, McGovern; QMB S164, Warrie National Park, Lamington Plateau, 15 November 1971, Balwin. **New South Wales (males)**: AMS KS13539, Huonbrook, 5 December 1983, G. Watson; AMS KS987, Jiggi, November 1962, F.J. Hartridge; QMB S183, Brindle Creek, nr. Wiangaree, 2 July 1975–15 November 1975, G.B. & S.R. Monteith; AMS KS13500, Coffee Camp, nr. Lismore, 9 December 1983, C. McQueen; QMB S393, Mount Clunie, nr. Woodenbong, 22 February 1976–8 May 1976, G.B. & S.R. Monteith; QMB S391, Mount Warning, 16 November 1975–7 March 1976, G.B. & S.R. Monteith; AMS KS4255, Lismore, 14 December 1979; AMS KS13407, Nimbin, 23 November 1983, A. Frame; AMS KS6824, Mullumbimby, 29 December 1980, W. Dawes; AMS KS2431, Murwillumbah, 11 January 1979, J. Morris; AMS KS22460, Murwillumbah, 28°20'S 153°24'E, 08 Dec 1989, A.W. Tucker.

**Diagnosis**. CL 8.73–10.61 (male). Differs from *H. infensa*, *H. walkeri*, *H. macquariensis* and *H. lynabrae* by having embolus moderately slender (EmbmidW/L 0.09), weakly curved and twisted (Fig. 77A,B,C); differs from *H. orana* and *H. levittgreggae* by more numerous spines on metatarsus I (23–46) and tibia II (13–25) (Table 22); and from *H. kaputarensis* by presence of long central cheliceral tooth row (Fig. 75G).

**Redescription of holotype female**. *Size*. Carapace length 10.40, width 9.28. Abdomen length 13.60, width 9.86. —*Colour*. Basic colour pattern. —*Carapace*. Longer than wide, cephalic area strongly raised. Height 4.83, frontal width 8.33. Cephalic length 7.82. Fovea strongly procurved. Mid-dorsal cephalic setae numerous, reach back to fovea. Anterior strial setae numerous. Strial and marginal setae numerous, weak. Anterolateral carapace angle with many weak bristles. —*Eyes*. Eye region slightly raised centrally. Eye group width 2.92. Diameters: AME 0.36, ALE 0.68, PLE 0.50, PME 0.31. Interdistances: AME–AME 0.42, AME–ALE 0.31, ALE–PLE 0.34, PLE–PME 0.17, PME–PME 1.29. Median ocular quadrangle length 0.95, anterior width 1.22, posterior width 1.93. —*Chelicerae*. Cheliceral groove margins diverge distally. Groove length 3.16, middle width 0.82. Cheliceral teeth: 43 central, in irregular double row occupying full

**Table 22.** Male morphological data—*Hadronyche valida* (n = 13).

character	range	mean	character	range	mean	character	ratio	SD
CL	8.73–10.61	9.60	Mt1S	31–56	45	CW/CL	0.91	0.031
CW	7.92–9.57	8.71	Ta1S	23–46	34	CH/CW	0.41	0.025
CH	3.13–3.94	3.58	Ti2S	13–25 (p0–2)	21	CFW/CL	0.64	0.034
CFW	5.61–7.00	6.08	STC2teeth	10–12	11	CHGW/L	0.19	0.013
ChGL	2.42–2.98	2.64	BulbL	3.59–4.25	4.00	SW/SL	0.76	0.043
ChGW	0.43–0.56	0.50	Embl	2.49–3.06	2.96	LL/LW	0.93	0.03
ChGCT	11–52	27	BulbW	1.16–1.43	1.26	PLSAPW/L	0.37	0.05
LL	1.36–1.72	1.56	EmbmW	0.20–0.30	0.26	BulbW/Embl	0.43	0.053
LW	1.53–1.84	1.67	PalpTibL	4.12–4.86	4.51	EmbmW/L*	0.09	0.014
CUSP	265–393	325	PalpTibW	1.79–2.13	1.94	PalpTibW/L	0.43	0.029
SL	5.30–6.39	5.58	PalpTibS	0–3	1	BulbL/TibL	0.89	0.035
SW	4.16–4.59	4.24	PalpPatS	0	—			
PLSAPW	0.43–0.72	0.59	PalpFemS	0	—			
PLSAPL	1.36–1.87	1.61						
Fe1S	0	—						
Pa1S	0–2 (p1)	1						

length of groove; 11 prolateral; 9 retrolateral. —*Labium*. Wider than long, anterior margin not indented. Length 2.07, width 2.58. Cuspules occupying anterior two thirds of labium. Labiosternal sigilla narrow, entire. —*Sternum*. Ovoid. Length 6.94, width 5.32. Posterior sternal sigilla elongate: length 1.50, width 0.54. —*Palp*. Spination: tibia 3 (bristle-like), tarsus 9. Trichobothria: tibia p8 r8, tarsus 13. Tarsal claw with 7 teeth. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	7.89	4.76	5.98	4.93	2.85	26.41
2	6.94	4.28	5.61	4.56	2.79	24.18
3	6.53	3.67	4.42	4.59	3.06	22.27
4	7.89	4.66	6.19	5.78	3.50	28.02

*Tibia I* width 2.01. Metatarsus I proximal width 1.41. Coxae I, II with basally thickened to thorn-like setae anteriorly.

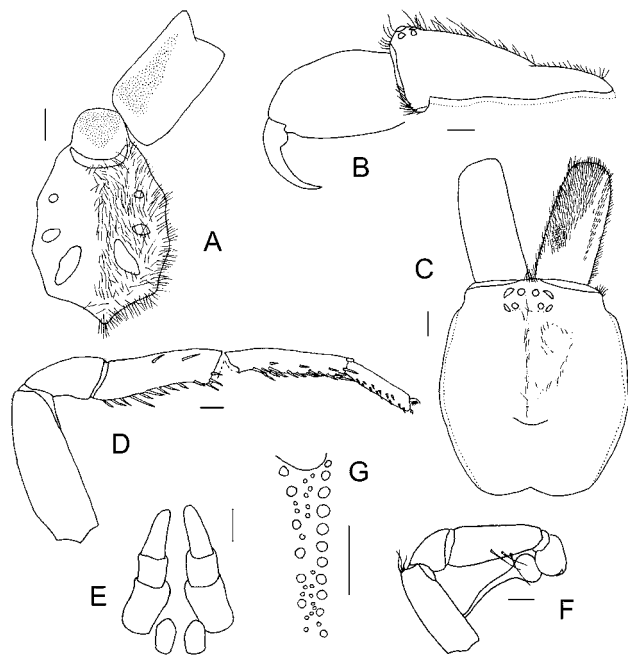


Figure 75. *Hadronyche valida*, male: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) cephalothorax and chelicerae, dorsal; (D) leg II, prolateral; (E) spinnerets; (F) palp, prolateral; (G) cheliceral groove teeth. Scale lines 1 mm.

Tarsal claw teeth legs I, II: superior 10, 9; inferior 4, 4. Trichobothria legs I, II: tarsus 12, 12; metatarsus 15, 12; tibia p8 r8, p8 r8. —*Leg spination*. Leg I: femur 0, patella 0, tibia 2, metatarsus 11, tarsus 10. Leg II: femur 0, patella 0, tibia 3, metatarsus 11, tarsus 7. Leg III: femur 0, patella p1, tibia 10 (p3 r3), metatarsus 19 (p2 r1), tarsus 14. Leg IV: femur 0, patella 0, tibia 4 (r2), metatarsus 15, tarsus 20. —*Abdomen*. Posterior lateral spinnerets with apical segment of moderate length. Lengths: total 3.80; basal segment 1.46, middle

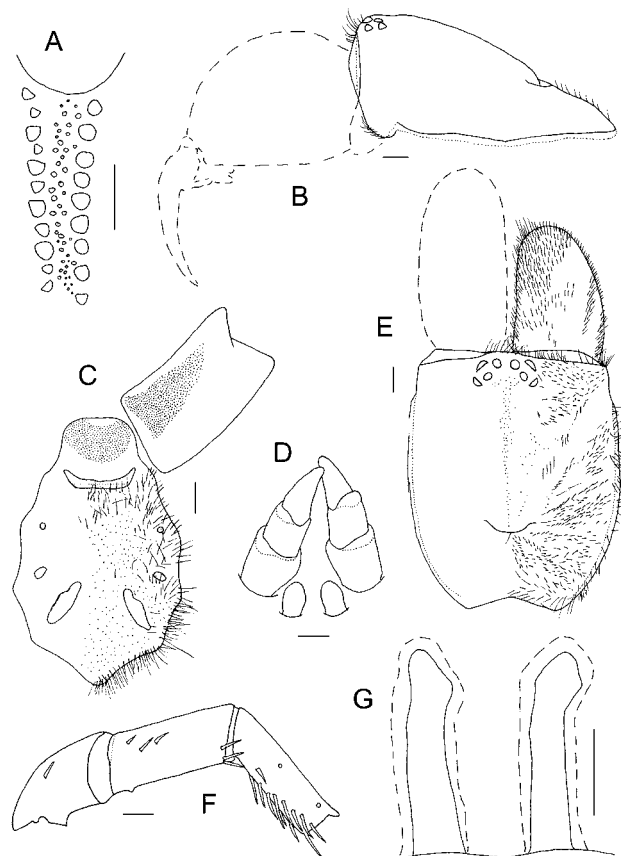


Figure 76. *Hadronyche valida*, female: (A) cheliceral groove teeth; (B) cephalothorax and chelicerae, lateral; (C) sternum, labium and maxilla; (D) spinnerets; (E) cephalothorax and chelicerae, dorsal; (F) leg III, prolateral, patella, tibia, metatarsus; (G) spermathecae. Scale lines 1 mm.

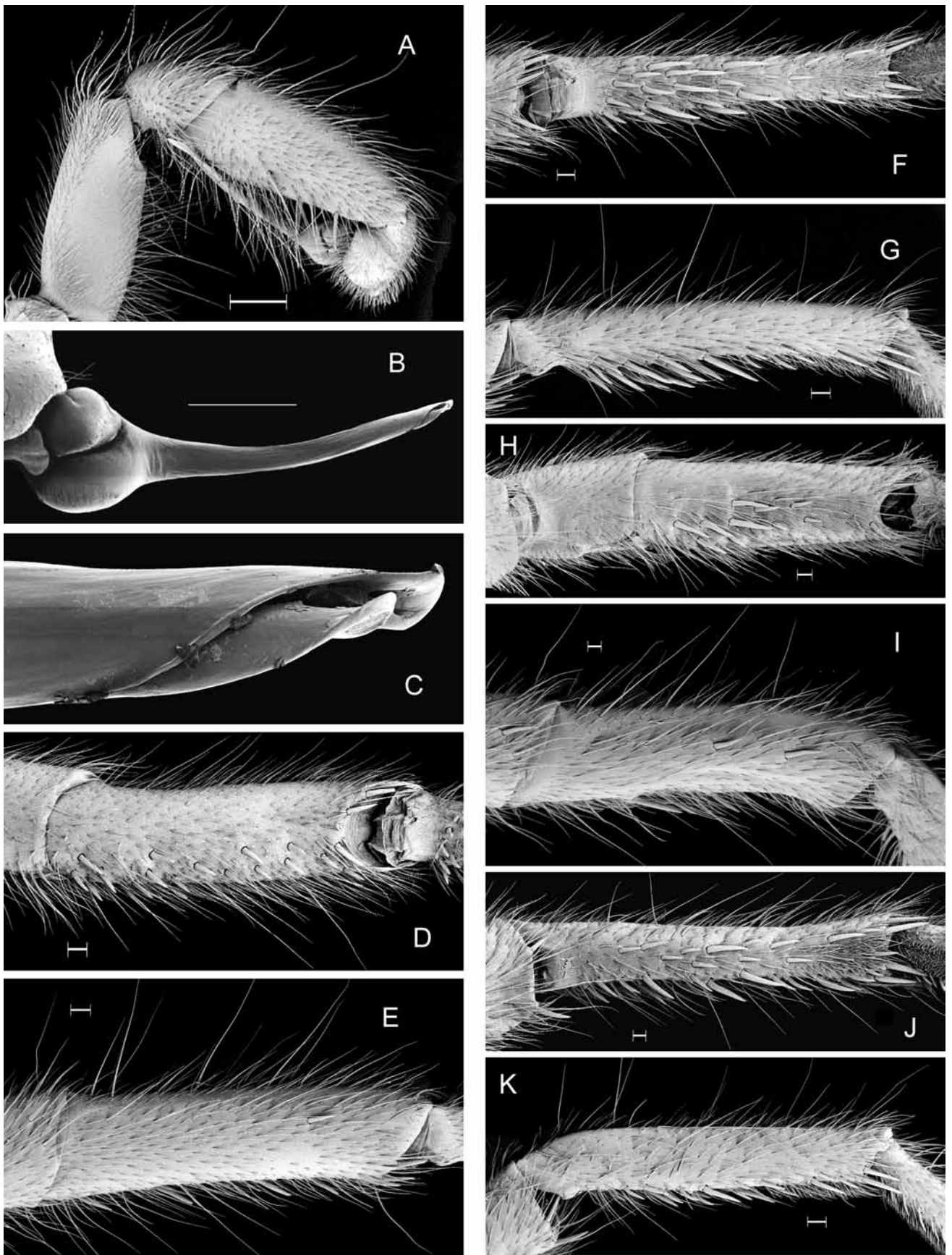


Figure 77. *Hadronyche valida*, male (A,D–K, AMS KS22460; B,C, AMS KS6824): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J,K) metatarsus II—J, ventral, K, prolateral. Scale lines: 0.3 mm, except A,B 1.0 mm and I,J 0.2 mm.

0.90, apical 1.43. Apical segment width 0.68. —*Genitalia*. Spermathecae digitiform, long and thin, straight except for apical region which may be angled slightly. Apical quarter of spermathecae slightly enlarged and set off from basal part by a weak constriction. Length 1.71, width 0.48.

**Male** (S175 (QMB), Eagle Heights, Mt. Tamborine, Queensland, 27°54'S 153°12'E, G. Walker, 17 August 1973). —*Size*. Carapace length 8.72, width 8.12. Abdomen length 9.35, width 7.13. —*Colour*. Basic colour pattern. —*Carapace*. Longer than wide, moderately raised. Height 3.61. Frontal width 5.70. Fovea procurved. Mid-dorsal cephalic setae reach fovea. Anterior striae setae numerous. Antero-lateral angle of carapace with numerous weak bristles. —*Eyes*. Sessile to slightly raised. Eye group width 2.17. Median ocular quadrangle length 0.86, anterior width 0.96, posterior width 1.38. Diameters: AME 0.33, ALE 0.52, PLE 0.37, PME 0.20. —*Chelicerae*. Dorsal paturon slightly ridged proximally. Cheliceral groove narrow, margins diverging distally. Groove length 2.42, middle width 0.50. Cheliceral teeth: 14 central, running full length of groove; 9 prolateral; 12 retrolateral. —*Labium*. Slightly wider than long. Length 1.60, width 1.69. Labiosternal sigilla normal, complete. Cuspules c. 336, number high. —*Sternum*. Ovoid. Length 5.40, width 4.16. Posterior sigilla large, elongate. —*Palp*. Tegular area wider than long. Embolus long and moderately slender, weakly curved but shaft hardly tapered. Distal embolus weakly to moderately twisted with twisting extended back along shaft as a shallow longitudinal fold. Basal embolus offset from tegulum. Bulb length 3.92, width 1.30. Embolus length 2.88, midwidth 0.27. Length of femur 4.19, patella 1.80, tibia 4.35. Width of tibia 1.80. Spination: tibia with 2–4 bristle-like spines. Sinuous bristles on distal femur weakly developed. —*Legs*. 4213. Legs I, II subequal.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	7.05	3.69	5.66	5.54	3.20	25.14
2	6.81	3.69	5.90	5.58	3.20	25.38
3	6.35	3.36	4.92	5.54	3.61	23.78
4	7.91	3.85	6.47	6.85	4.22	29.30

*Tibia I* width 1.48. All femora lack dorsal spines. Metatarsus I weakly thickened proximally, larger ventral spines grouped proximally. Tibia II without apophysis but slightly thickened proximally and weakly excavated distoventrally; spines scattered, largest grouped proximally. Metatarsus II slightly bent at base, no apophysis, spines scattered. Anterior coxal hairs fine, unmodified. Tarsal scopulae weak on legs I, II, strong on legs III, IV. Distal metatarsal scopulae absent to weak legs I, II; moderately strong legs III, IV. Tarsal claw teeth legs I, II: superior 11, 11; inferior 3, 3. Trichobothria legs I, II: tarsus 15, 11; metatarsus 12, 13; tibia p7 r7, p7 r6. —*Leg spination*. Leg I: femur 0, patella p1, tibia 32 (p1), metatarsus 56, tarsus 41. Leg II: femur 0, patella p0, tibia 23 (p2), metatarsus 41, tarsus 29. Leg III: femur 0, patella r1, tibia 13 (p3 r2), metatarsus 31, tarsus 27. Leg IV: femur 0, patella r1, tibia 11 (r4), metatarsus 20, tarsus 34 —*Abdomen*. Posterior lateral spinnerets: apical segment of moderate length. Lengths: total 3.91; basal segment 1.60; middle 0.75; apical 1.56. Apical segment width 0.70.

**Distribution**. Eastern Border Ranges area of northern New South Wales and southern Queensland (Fig. 78).

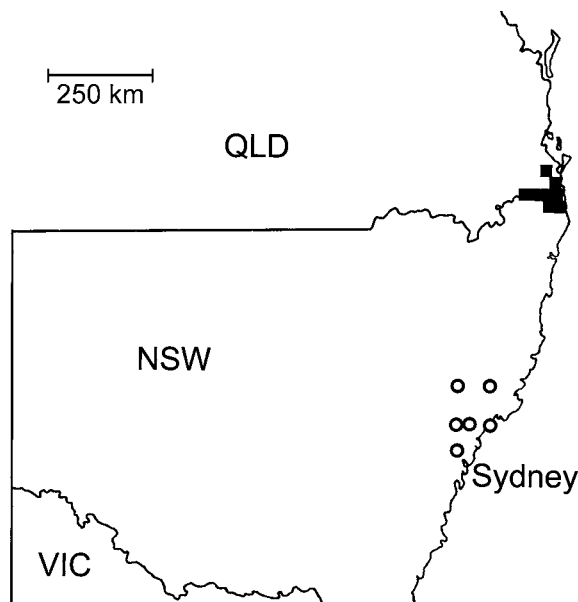


Figure 78. Collection records for *Hadronyche valida* (squares) and *H. lynabrae* (circles).

### *Hadronyche lynabrae* n.sp.

Figures 78–81; Tables 23, 34

**Etymology**. The species is named for Lyn Abra who sent many funnel-web and other spiders to the Australian Museum while working at the Australian Reptile Park.

**Types**. Holotype male: AMS KS8379, Wollombi near Maitland, New South Wales, 32°40'S 151°04'E, November 1981. Paratypes (all AM). New South Wales. *Males*: AMS KS13462, Dharug National Park, Mill Creek, 33°21'S 151°05'E, September 1983, G.P. Clancy; AMS KS16449, Dharug National Park, Mill Creek, August 1983, 33°21'S 151°05'E, G.P. Clancy; AMS KS5741, Morriset district, 33°06'S 151°30'E, 24 July 1980; AMS KS1065, Stratford, 32°06'S 151°56'E, 26 June 1956, L. Davenport; AMS KS1066, Newcastle, 32°55'S 151°47'E, 23 May 1955, J. Kennewell; AMS KS1064, Weston, 32°48'S 151°27'E, 7 November 1966. *Females*: AMS KS13463, Mill Creek, Dharug National Park, 33°21'S 151°05'E, August 1983, G.P. Clancy. AMS KS1063, Kurri Kurri, 32°48'S 151°29'E, September 1966, C. Dew.

**Diagnosis**. CL 7.68–8.20 (male). Differs from other *infensa* group species by presence of swollen (boat-shaped) tarsi III, IV and strong proximal curvature and distal twisting of embolus (Fig. 81B,C); differs from *lamingtonensis* group spp. by presence of full row of central cheliceral teeth (Fig. 79D) and longer PLS apical segment (Fig. 79C).

**Male** (holotype) —*Size*. Carapace length 7.73, width 7.46. Abdomen length 8.04, width 6.70. —*Colour*. Basic colour pattern. —*Carapace*. Slightly longer than wide, cephalic area moderately raised. Height 3.44. Frontal width 5.16. Fovea procurved. Mid-dorsal cephalic setae reach fovea. Anterior striae setae present. Anterolateral carapace angle with several weak bristles. —*Eyes*. Central eye region slightly raised. Eye group width 1.92. Median ocular quadrangle length 0.74, anterior width 0.96, posterior width 1.34. Diameters: AME 0.31, ALE 0.47, PLE 0.36, PME 0.26. —*Chelicerae*. Cheliceral groove of medium width, margins diverging distally. Groove length 2.72, middle width 0.42. Cheliceral teeth: 22 central occupying full length of groove; 11

**Table 23.** Male morphological data—*Hadronyche lynabrae* (n = 6).

character	range	mean	character	range	mean	character	ratio	SD
CL	7.68–8.20	7.79	Mt1S	13–29	22	CW/CL	0.94	0.038
CW	6.80–7.88	7.35	Ta1S	11–24	18	CH/CW	0.45	0.019
CH	3.06–3.44	3.29	Ti2S*	8–13	11	CFW/CL	0.70	0.04
CFW	5.10–6.12	5.45	STC2teeth	10–13	11	CHGW/L	0.16	0.013
ChGL	2.38–2.72	2.52	BulbL	3.13–3.28	3.20	SW/SL	0.76	0.029
ChGW	0.35–0.44	0.41	EmbL	2.28–2.38	2.32	LL/LW	0.87	0.049
ChGCT	18–23	21	BulbW	1.02–1.16	1.10	PLSAPW/L	0.36	0.035
LL	1.22–1.46	1.32	EmbmW	0.24–0.30	0.27	BulbW/EmbL	0.47	0.027
LW	1.33–1.63	1.52	PalpTibL	3.28–3.61	3.38	EmbmW/L	0.12	0.013
CUSP	250–333	283	PalpTibW	1.52–1.70	1.61	PalpTibW/L	0.48	0.015
SL	4.47–4.88	4.68	PalpTibS	0	—	BulbL/TibL*	0.95	0.013
SW	3.24–3.88	3.57	PalpPatS	0–1	1			
PLSAPW	0.36–0.73	0.48	PalpFemS	0–1	1			
PLSAPL	1.04–2.04	1.34						
Fe1S	0							
Pa1S	0–3 (p0–1)	1						

prolateral; 11 retrolateral. —*Labium*. A little wider than long, apical indentation weak to absent. Length 1.31, width 1.52. Labiosternal sigilla narrowed toward midline. Cuspules c. 316, number moderate-high. —*Sternum*. Ovoid. Length 4.76, width 3.62. Posterior sigilla long, ovoid. —*Palp*. Tegular area small, wider than long. Embolus moderately long; shaft broad and strongly curved proximally, hardly tapered. Distal shaft of embolus very strongly twisted (flange reflexed almost 180°) with twisting extended back along shaft as a deep longitudinal fold. Basal embolus strongly offset from tegulum. Bulb length 3.20, width 1.11. Embolus length 2.32, midwidth 0.29. Length of femur 3.49, patella 1.07, tibia 3.44. Width of tibia 1.64. Spination: femur 1, patella 1, tibia 0; spines bristle-like. Several strong sinuous bristles on distal femur. —*Legs*. 4123.

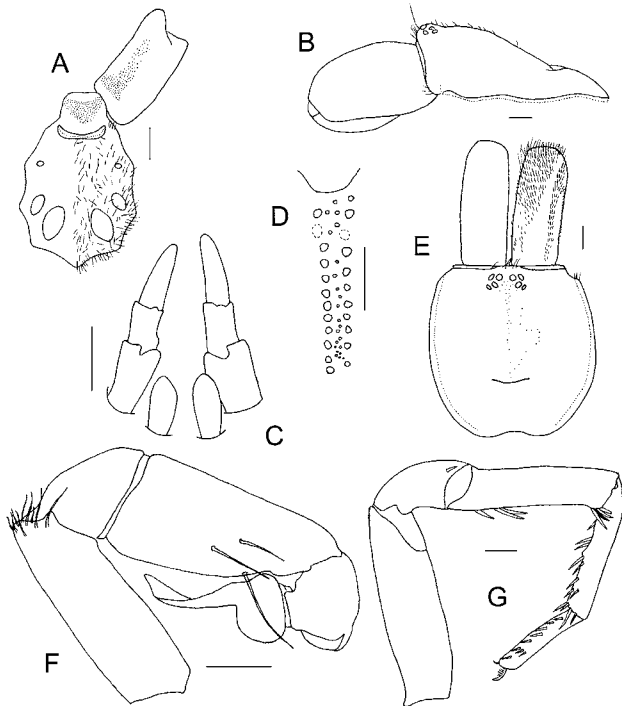


Figure 79. *Hadronyche lynabrae*, male: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) spinnerets; (D) cheliceral groove teeth; (E) cephalothorax and chelicerae, dorsal; (F) palp, prolateral; (G) leg II, prolateral. Scale lines 1 mm.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	6.81	3.57	5.33	5.06	2.98	23.75
2	6.36	3.36	5.17	4.82	3.03	22.74
3	5.86	2.65	3.67	4.54	3.45	20.17
4	7.04	3.02	5.09	5.83	4.02	25.00

*Tibia I* width 1.20. Femora I and II lack dorsal spines. Some anterior setae on coxae I, II thickened basally. Leg I unmodified. Tibia II without apophysis; ventral spines few, with 3–5 grouped proximally. Distoventral tibia slightly

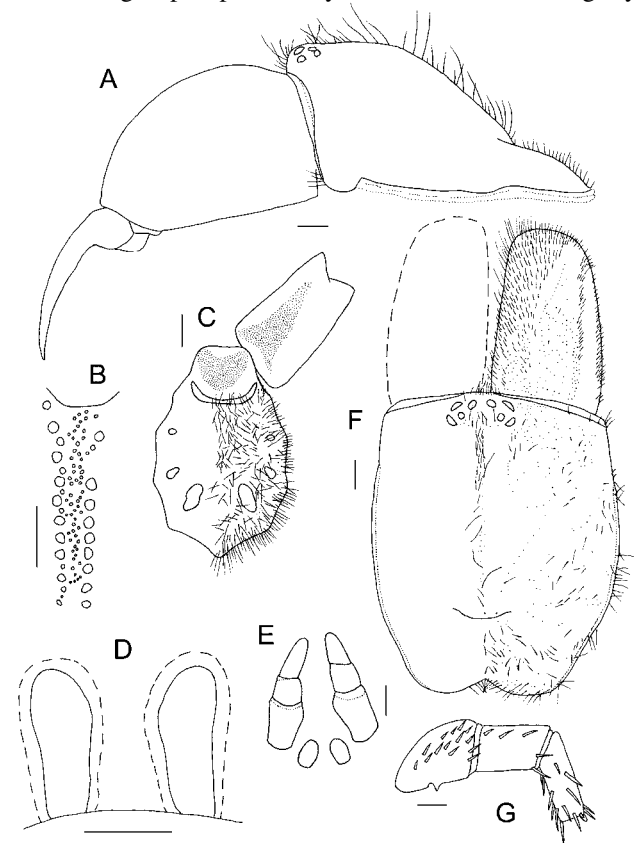


Figure 80. *Hadronyche lynabrae*, female: (A) cephalothorax and chelicerae, lateral; (B) cheliceral groove teeth; (C) sternum, labium and maxilla; (D) spermathecae; (E) spinnerets; (F) cephalothorax and chelicerae, dorsal; (G) leg III, prolateral, patella, tibia, metatarsus. Scale lines 1 mm.

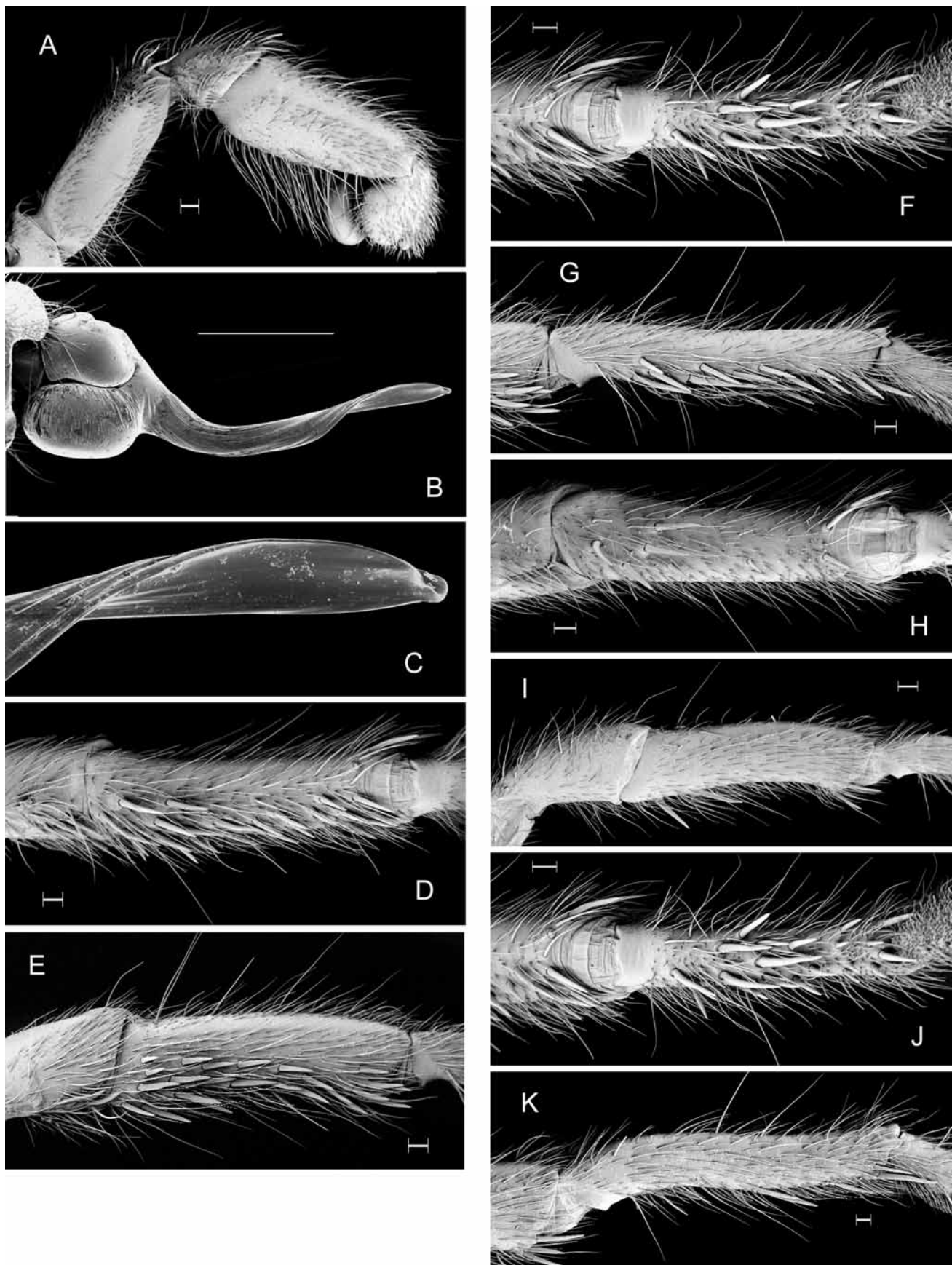


Figure 81. *Hadronyche lynabrae*, male (A, D–K, AMS KS52488; B, C, AMS KS1005): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D, E) distal patella and tibia I—D, ventral, E, prolateral; (F, G) metatarsus I—F, ventral, G, prolateral; (H, I) distal patella and tibia II—H, ventral, I, prolateral; (J, K) metatarsus II—J, ventral, K, prolateral. Scale lines: 0.3 mm, except B 1.0 mm and K 0.2 mm.



concave. Metatarsus II weakly sinuous to straight. Tarsi III, IV swollen (boat-shaped) and longer than tarsi I, II. Tarsal scopulae: leg I weak; legs II–IV moderate to strong. Distal metatarsal scopulae legs I–IV, absent to weak. Tarsal claw teeth legs I, II: superior 13, 13; inferior 1, 0. Trichobothria legs I, II: tarsus 10, 9; metatarsus 12, 11; tibia p7 r7, p6 r7. —*Leg spination*. Leg I: femur 0, patella 2 (p1 v1), tibia 23, metatarsus 29, tarsus 24. Leg II: femur 0, patella p1, tibia 13, metatarsus 23, tarsus 23. Leg III: femur 0, patella 15 (p14 r1), tibia 12 (p1 r2), metatarsus 23, tarsus 18. Leg IV: femur 0 (strong bristles), patella 0, tibia 9 (r2), metatarsus 14, tarsus 27. —*Abdomen*. Posterior lateral spinnerets with apical segment of moderate length. Lengths: total 2.90; basal segment 1.10; middle 0.60; apical 1.20. Apical segment width 0.36.

**Female** (paratype AMS KS13463) —*Size*. Carapace length 9.45, width 8.18. Abdomen length 13.60, width 10.20. —*Colour*. Basic colour pattern. —*Carapace*. Longer than wide, strongly raised. Height 4.49; frontal width 7.41. Cephalic length 7.28. Fovea procurved. Mid-dorsal cephalic setae reach fovea. Anterior strial setae present. Anterolateral carapace angle with few bristles. —*Eyes*. Central eye region slightly raised. Eye group width 2.18. Diameters: AME 0.27, ALE 0.47, PLE 0.37, PME 0.22. Interdistances: AME–AME 0.32, AME–ALE 0.37, ALE–PLE 0.27, PLE–PME 0.13, PME–PME 1.09. Median ocular quadrangle length 0.68, anterior width 0.86, posterior width 1.52. —*Chelicerae*. Cheliceral groove margins diverge weakly distally. Groove length 3.26, middle width 0.67. Cheliceral teeth: 58 central occupying full length of groove; 16 prolateral; 11 retrolateral. —*Labium*. Wider than long, apical indentation weak to absent. Length 1.73, width 2.13. Cuspules distributed in a broad V-shape over central labium. Labiosternal sigilla entire. —*Sternum*. Ovoid. Length 6.02, width 4.42. Posterior sternal sigilla ovoid to elongate; length 1.05, width 0.51. —*Palp*. Spination: tibia 2 (bristle-like), tarsus 5. Tarsal claw with 4 teeth. Trichobothria: tibia p6 r6, tarsus 10. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	6.56	3.88	4.59	3.67	2.11	20.81
2	5.64	3.62	3.94	3.23	2.14	18.57
3	4.96	2.89	3.06	3.11	2.65	16.67
4	6.44	3.57	4.28	4.42	3.16	21.87

*Tibia I* width 1.50. Metatarsus I proximal width 1.03. Coxa I with a few thorn shaped setae frontally. Legs I, II with few spines. Tarsal claw teeth legs I, II: superior 6, 6; inferior 2 (small), 0. Trichobothria legs I, II: tarsus 10, 10; metatarsus 12, 10; tibia p7 r7, p6 r7. —*Leg spination*. Leg I: femur 0, patella 0, tibia 0, metatarsus 5, tarsus 6. Leg II: femur 0, patella 0, tibia 0, metatarsus 5, tarsus 7. Leg III: femur 0, patella p14, tibia 8 (p3 r2), metatarsus 16 (p6 r2), tarsus 14. Leg IV: femur 0, patella 0, tibia 2, metatarsus 15, tarsus 29. —*Abdomen*. Posterior lateral spinnerets with apical segment of moderate length. Lengths: total 3.89; basal segment 1.70, middle 0.85, apical 1.33. Apical segment width 0.61. —*Genitalia*. Spermathecae widen markedly towards apices; narrow bases well separated by c. 1.5× spermatheca width. Spermatheca length 1.50, width 0.73.

**Distribution**. From the Hawkesbury River region near Sydney, north to the southeastern foothills of the Barrington Tops massif, New South Wales (Fig. 78).

### *Hadronyche kaputarensis* n.sp.

Figures 82, 83; Table 24

**Etymology**. The specific epithet is taken from Mount Kaputar, the type locality.

**Types**. Holotype male: AMS KS1378, Mount Kaputar National Park, New South Wales, 30°11'S 150°09'E, R. Cronin, November–December 1977.

**Diagnosis**. CL 9.72 (male). Differs from other *infensa* group species by having the central tooth row of cheliceral groove short and basal (Fig. 82D) and male femora I, II with a dorsal row of bristles (Fig. 82F).

**Male** (holotype) —*Size*. Carapace length 9.72, width 8.97. Abdomen length 10.40, width 7.96. —*Colour*. Basic colour pattern. —*Carapace*. Longer than wide, cephalic area moderately raised. Height 4.14, frontal width 6.49. Fovea procurved. Mid-dorsal cephalic setae stop short of fovea. Anterior strial setae absent. Anterolateral carapace angle with moderately strong bristles. —*Eyes*. Central eye region raised. Eye group width 2.12. Median ocular quadrangle length 0.76, anterior width 0.89, posterior width 1.43. Diameters: AME 0.23, ALE 0.39, PLE 0.22, PME 0.12. —*Chelicerae*. Cheliceral groove margins subparallel to slightly divergent distally. Groove length 2.99, middle width 0.48. Cheliceral teeth: 6 central, occupying proximal third of groove; 10 prolateral; 12 retrolateral. —*Labium*. Slightly wider than long, apically very weakly indented. Length 1.68, width 1.75.

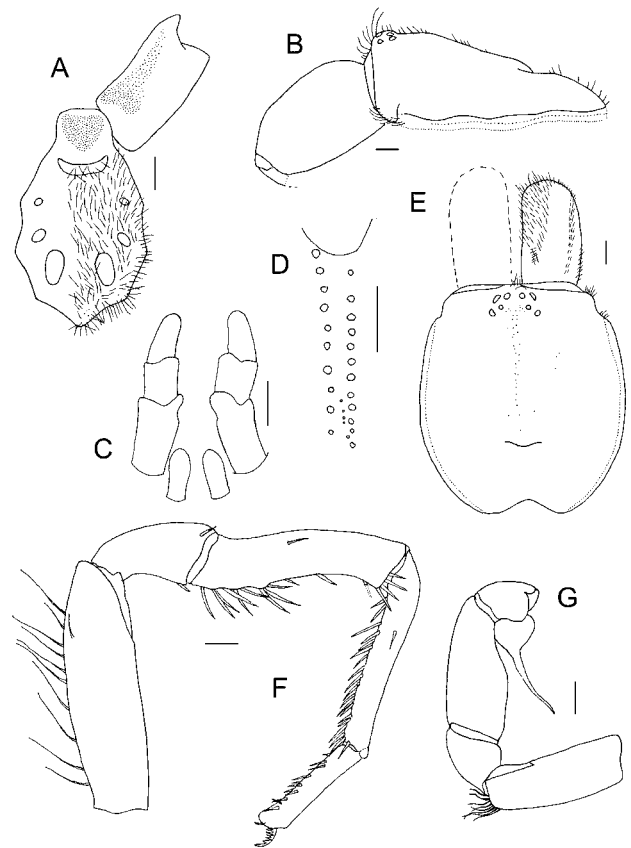


Figure 82. *Hadronyche kaputarensis*, male: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) spinnerets; (D) cheliceral groove teeth; (E) cephalothorax and chelicerae, dorsal; (F) leg II, prolateral; (G) palp, prolateral. Scale lines 1 mm.

**Table 24.** Male morphological data—*Hadronyche kaputarensis* (n = 1).

character	character	character	ratio
CL 9.72	Mt1S 40	CW/CL 0.92	
CW 8.97	Ta1S 21	CH/CW 0.46	
CH 4.14	Ti2S 35 (p1)	CFW/CL 0.67	
CFW 6.49	STC2teeth 14	CHGW/L 0.19	
ChGL 2.99	BulbL 3.42	SW/SL 0.71	
ChGW 0.48	Embl 2.53	LL/LW 0.96	
ChGCT* 7	BulbW 1.22	PLSAPW/L 0.34	
LL 1.68	EmbmW 0.19	BulbW/Embl 0.48	
LW 1.75	PalpTibL 4.49	EmbmW/L* 0.08	
CUSP 254	PalpTibW 1.87	PalpTibW/L 0.42	
SL 5.86	PalpTibS 0	BulbL/TibL 0.76	
SW 4.15	PalpPatS 0		
PLSAPW 0.57	PalpFemS 0		
PLSAPL 1.68			
Fe1S 0			
Pa1S 7 (p1)			

Labiosternal sigilla entire, broad. Cuspules c. 254, number moderate. —*Sternum*. Ovoid, long. Length 5.86, width 4.15. Posterior sigilla large, ovoid. —*Palp*. Tegular area wider than long. Embolus moderately long and slender, weakly offset from tegulum; shaft gently curved. Distal embolus weakly to moderately twisted. Bulb length 3.42, width 1.22. Embolus length 2.43, midwidth 0.19. Length of femur 4.53, patella 1.97, tibia 4.49. Width of tibia 1.87. Spinination: femur 0; patella 0; tibia 2–3 prolateral bristle-like spines. Distal femur with several strong, sinuous bristles. —*Legs*. 4123. Legs I and II subequal.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	8.32	3.94	6.97	6.43	3.64	29.30
2	8.02	3.88	6.97	6.46	3.74	29.07
3	6.97	3.20	5.47	6.10	3.96	25.70
4	8.64	3.40	7.14	7.73	4.41	31.32

*Tibia I* width 1.43. Femora I and II without dorsal spines, but with long dorsal bristles; 1–2 small prolateral dorsal or retrolateral spines may be present. Proximal metatarsus I weakly swollen, ventral spines largest proximally. Tibia and metatarsus I with numerous spines. Tibia II without apophysis; with numerous ventral spines, most grouped in

proximal half; ventral tibia gently concave. Metatarsus II weakly sinuous, ventral spines evenly distributed. Coxal setae unmodified. Tarsal scopulae: legs I, II weak; III, IV moderate-strong. Distal metatarsal scopulae: legs I, II absent; III, IV weak-moderate. Tarsal claw teeth legs I, II: superior 14, 14; inferior 2, 2. Trichobothria legs I, II: tarsus 11, 10; metatarsus 11, 11; tibia p5 r5, p6 r6. —*Leg spinination*. Leg I: femur p1–2, patella 7 (p1 v6), tibia 65 (p1), metatarsus 40, tarsus 21. Leg II: femur p1r1, patella 2 (p1), tibia 35 (p1), metatarsus 33, tarsus 24. Leg III: Femur 0 (long, strong bristle), patella p4, tibia 20 (p5 r5), metatarsus 33, tarsus 21. Leg IV: Femur 0 (long bristle), patella 0, tibia 11 (r3), metatarsus 25, tarsus 26. —*Abdomen*. Posterior lateral spinnerets with apical segment of moderate length. Lengths: total 4.23; basal segment 1.53; middle 1.02; apical 1.68. Apical segment width 0.57.

**Distribution.** Known only from the type locality (Fig. 83).

### *Hadronyche macquariensis* n.sp.

Figures 83–86; Tables 25, 34

**Etymology.** The specific epithet refers to the Port Macquarie region of New South Wales, where this species is common.

**Types.** Holotype male: AMS KS1315, Taree, New South Wales, 31°54'S 152°27'E, 31 January 1978. Paratypes (all AM). New South Wales. *Males*: AMS KS836, Bellingen, 30°26'S 152°54'E, 10 October 1948, G.H. Hewitt; AMS KS4515, Burgess Beach, near Forster, 32°11'S 152°32'E, 15 January 1980, G. Sanders; AMS KS832, Taree, 31°54'S 152°27'E, 21 February 1974; AMS KS838, Timmsvale, 30°12'S 152°52'E, February 1956, H.J. Stokes; AMS KS13531, Coffs Harbour, 30°18'S 153°07'E, 19 December 1983, C.S. Martin; AMS KS829, Pt. Macquarie, 31°25'S 152°55'E, 26 December 1960, D.H. Thomson. *Females*: AMS KS1165, Port Macquarie, 31°25'S 152°55'E, 28 April 1954, C.M. Edwards; AMS KS7565, Allyn River, 10 December 1980, G. Anderson; AMS KS13589, Coffs Harbour, 7 December 1983; AMS KS13351, Gloucester, 31°59'S 151°58'E, September 1983, A. D'Ombrain; AMS KS8775, Kerewong State Forest, nr. Taree, 31°35'S 152°33'E, 28 March 1982, H. Parnaby; AMS KS834, Pt. Macquarie, 31°25'S 152°55'E, February 1973; AMS KS3229, Taree, 31°54'S 152°27'E, 10 May 1975.

**Other material examined.** New South Wales (*males*): AMS KS840, Bellingen, G.H. Hewitt; AMS KS8794, Blackhead, February 1982; AMS KS10797, Bowraville, 28 February 1983, D. Channels; AMS KS833, Taree, 4 March 1972, K. Walters; AMS KS6457, Tullymorgan, December 1980, Ambulance Station; AMS KS6827, Wardell, 14 January 1981, M.

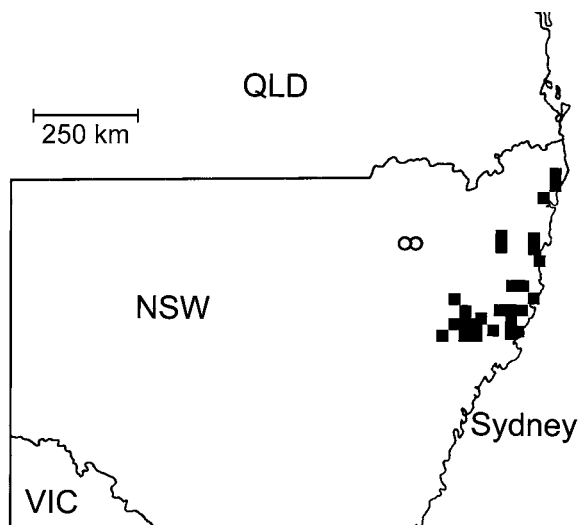


Figure 83. Collection records for *Hadronyche kaputarensis* (circles) and *H. macquariensis* (squares).

Kajewski; AMS KS13591, Woolgoola, near Red Rock, 5 December 1983, J.W. Kramer; AMS KS911, Chatsworth Island, near Grafton, 20 December 1975, A. Mills; AMS KS13590, Coffs Harbour, 7 December 1983; AMS KS14036, Coffs Harbour, 18 March 1984, C.S. Martin; AMS KS8743, Evans Head, 29 January 1982, V. Bridges; AMS KS10679, Forster, 25 January 1983, A. D'Ombrain; AMS KS839, Halliday's Point, near Manning, 25 February 1976, Manning Council; Boambee, October 1974 (ANIC); AMS KS912, Kororo, March 1965, D.M. Lee; AMS KS837, Kranbach, Wallamba River, 40 km from Taree, 22 March 1959, J. Bidner; AMS KS1111, Lorne State Forest, near Taree, 16 January 1978, D. Milledge; AMS KS1112, Lorne State Forest, near Taree, 17 January 1978, D. Milledge; AMS KS10680, Maclean, 31 December 1982; AMS KS10769, Maclean, 12 October 1982; AMS KS13530, Moonee Beach, near Coffs Harbour, 19 December 1983, C.S. Martini; AMS KS13532, Mullaway, near Coffs Harbour, 19 December 1983, C.S. Martin; AMS KS826, Port Macquarie, February 1976, A. Proudman; AMS KS827, Port Macquarie, 5 March 1976; AMS KS13814, Smiths Lake, near Myall Lakes, 16 January 1984, J. Rawle; AMS KS828, Taree, 18 March 1974. **New South Wales (females):** AMS KS5201, Nambucca Heads, 16 May 1980, S. Johnson; AMS KS841, Port Macquarie, February 1955, W. Cleland; AMS KS3227, Taree, 10 May 1975.

**Diagnosis.** CL 8.74–11.22 (male). Differs from *H. levittreggae*, *H. valida*, *H. orana* and *H. kaputarensis* by having a shorter, broader embolus (Embmid/W/L 0.16) (Fig. 86B); from *H. infensa* by weak offset of basal embolus from tegulum; from *H. walkeri* by ventral tibia II only weakly concave, and spines loosely grouped (Fig. 86H,I); from *H. lynabrae* by embolus less strongly twisted (Fig. 86B) and tarsus I more strongly spinose (30–63 spines).

**Male (holotype)** —*Size.* Carapace length 9.32, width 9.04. Abdomen length 11.42, width 8.30. —*Colour.* Basic colour pattern. —*Carapace.* Slightly longer than wide, cephalic area moderately raised. Height 3.57. Frontal width 6.07. Fovea procurved, rather narrow. Mid-dorsal cephalic setae numerous, reach fovea. Anterior striae setae present. Anterolateral carapace angle with numerous strong bristles.

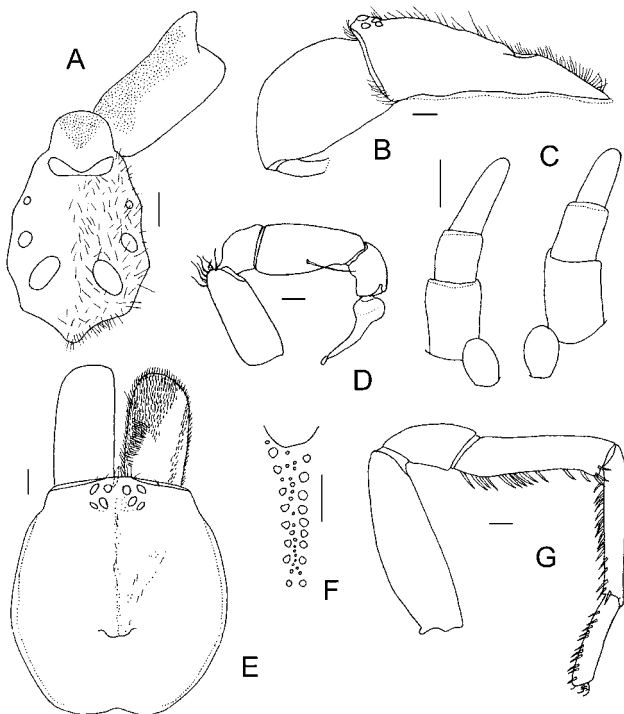


Figure 84. *Hadronyche macquariensis*, male: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) spinnerets; (D) palp, prolateral; (E) cephalothorax and chelicerae, dorsal; (F) cheliceral groove teeth; (G) leg II, prolateral. Scale lines 1 mm.

—*Eyes.* Central eye region raised. Eye group width 2.37. Median ocular quadrangle length 0.93, anterior width 1.16, posterior width 1.64. Diameters: AME 0.33, ALE 0.57, PLE 0.39, PME 0.30. —*Chelicerae.* Dorsal paturon obliquely ridged proximally. Cheliceral groove margins divergent. Groove length 2.93, middle width 0.53. Cheliceral teeth: 18 central, occupying full length of groove; 10 prolateral; 9 retrolateral. —*Labium.* Slightly wider than long, not or weakly apically indented. Length 1.68, width 1.74. Labiosternal sigilla narrowed toward midline. Cuspules c. 274, number moderate-high. —*Sternum.* Ovoid. Length 5.95, width 4.32. Posterior sigilla ovoid, long. —*Palp.* Tegular area wider than long. Embolus of moderate length, base weakly offset from tegulum. Embolus shaft curved, broad and blade-like, not tapered. Distal part of embolus strongly twisted and grooved, apical flange reflexed. Bulb length 3.90, width 1.37. Embolus length 2.80, midwidth 0.40. Length of femur 4.39, patella 1.76, tibia 4.67. Width of tibia 2.21. Spination: none, sinuous bristles on distal femur. —*Legs.* 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	8.45	3.85	7.01	6.94	3.80	30.05
2	7.85	4.02	6.97	6.40	3.77	29.01
3	7.41	3.37	5.78	6.83	4.08	27.47
4	8.77	3.77	7.07	8.09	4.49	32.19

*Tibia I* width 1.43. Femora I and II without spines. Leg I with numerous tibial and metatarsal ventral spines. Metatarsus I slightly thickened proximally, proximal ventral spines largest. Tibia II without apophysis, ventrally weakly concave; ventral spines loosely grouped proximocentrally, fewer spines distally. Metatarsus II unmodified. Coxal hairs unmodified. Tarsal scopulae: legs I, II weak; legs III, IV

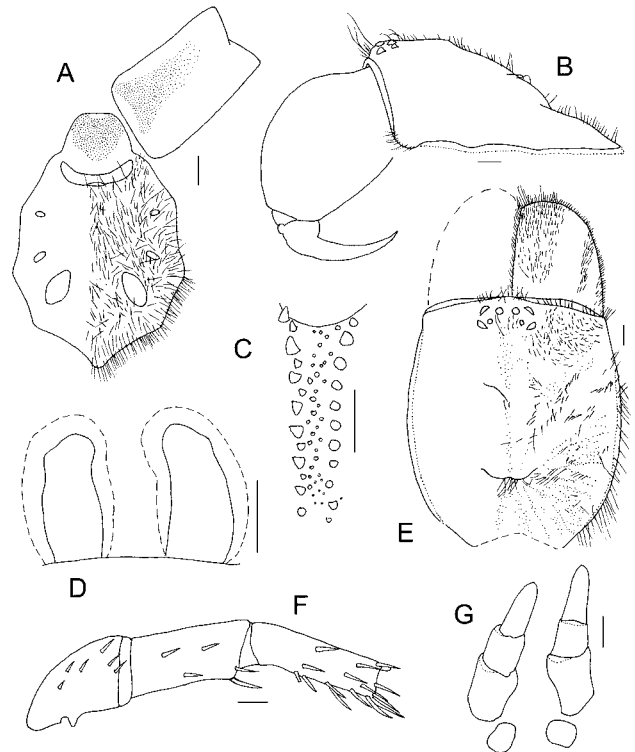


Figure 85. *Hadronyche macquariensis*, female: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) cheliceral groove teeth; (D) spermathecae; (E) cephalothorax and chelicerae, dorsal; (F) leg III, prolateral, patella, tibia, metatarsus; (G) spinnerets. Scale lines 1 mm.

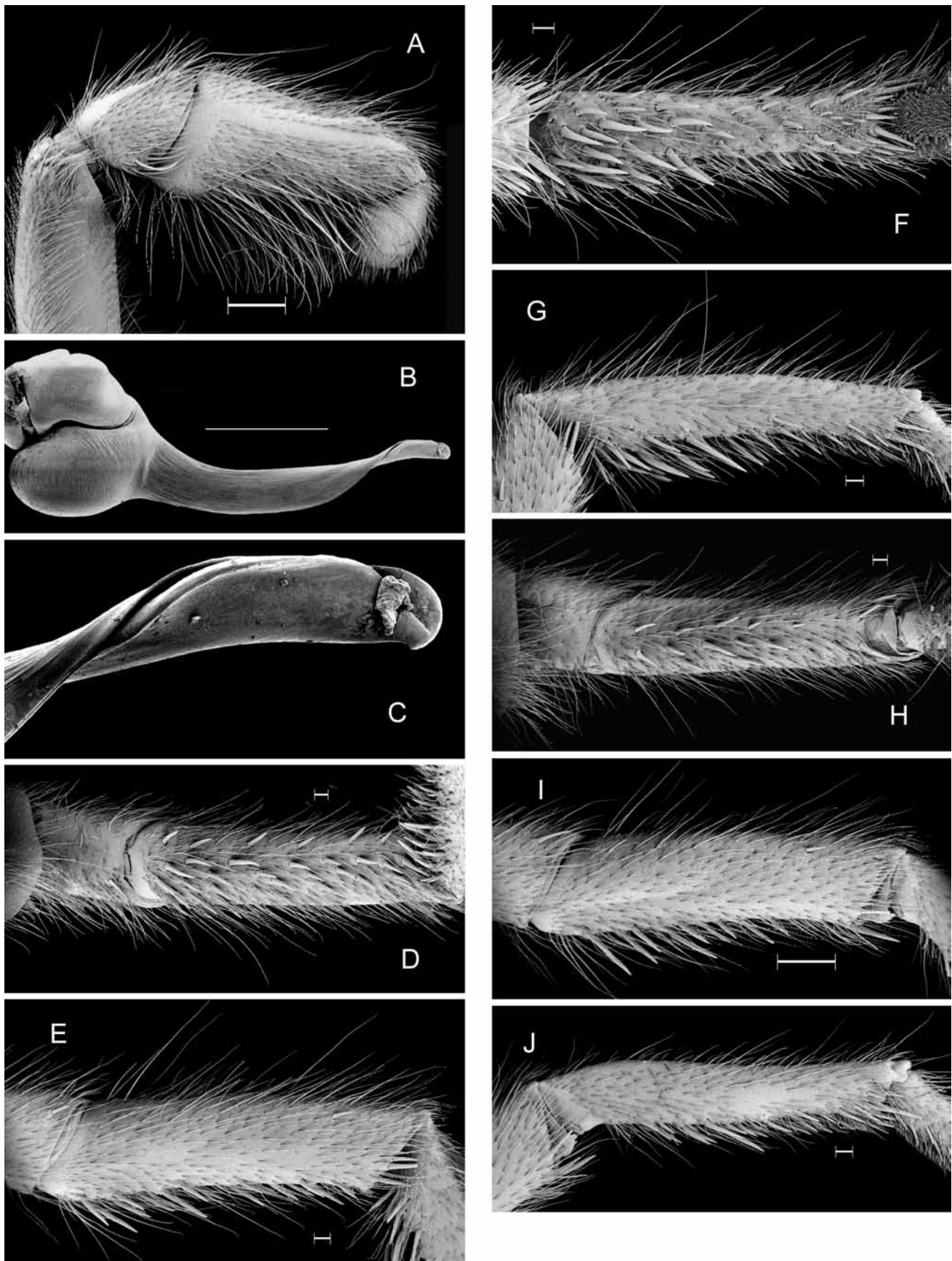


Figure 86. *Hadronyche macquariensis*, male (A,D–J, AMS KS10679; B,C, AMS KS4515): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J), metatarsus II, prolateral. Scale lines: 0.3 mm, except A,B,I 1.0 mm.

**Table 25.** Male morphological data—*Hadronyche macquariensis* (n = 15).

character	range	mean	character	range	mean	character	ratio	SD
CL	8.74–11.22	9.79	Mt1S	34–76	53	CW/CL	0.92	0.029
CW	8.15–10.09	9.05	Ta1S*	30–63	43	CH/CW	0.42	0.033
CH	3.28–4.51	3.79	Ti2S	7–38 (p0–1)	23	CFW/CL	0.64	0.037
CFW	5.10–6.83	5.99	STC2teeth	10–15	12	CHGW/L	0.18	0.02
ChGL	2.58–3.32	2.82	BulbL	3.26–4.16	3.64	SW/SL	0.77	0.04
ChGW	0.43–0.66	0.51	EmbL	2.21–2.80	2.54	LL/LW	0.93	0.038
ChGCT	18–34	25	BulbW	1.22–1.64	1.39	PLSAPW/L	0.32	0.052
LL	1.36–1.96	1.64	EmbmW	0.33–0.48	0.40	BulbW/EmbL	0.55	0.037
LW	1.60–2.06	1.76	PalpTibL	3.85–5.03	4.65	EmbmW/L*	0.16	0.014
CUSP	231–346	283	PalpTibW	1.93–2.42	2.16	PalpTibW/L	0.46	0.02
SL	5.20–6.33	5.77	PalpTibS	0–3	1.40	BulbL/TibL	0.78	0.035
SW	3.94–4.92	4.47	PalpPatS	0	—			
PLSAPW	0.48–0.88	0.60	PalpFemS	0–2	1			
PLSAPL	1.67–2.36	1.86						
Fe1S	0							
Pa1S	0–13	3						

moderate-strong. Distal metatarsal scopulae: legs I, II absent; legs III, IV moderate. Tarsal claw teeth legs I, II: superior 12, 11; inferior 3, 2. Trichobothria legs I, II: tarsus 14, 13; metatarsus 14, 14; tibia p9 r7, p8 r8. —*Leg spination*. Leg I: femur 0, patella 1, tibia 44, metatarsus 57, tarsus 41. Leg II: femur 0, patella 0, tibia 26, metatarsus 44, tarsus 49. Leg III: femur 0, patella 3, tibia 26, metatarsus 44, tarsus 49. Leg IV: femur 0, (long bristles present), patella 0, tibia 6 (r1), metatarsus 26, tarsus 47. —*Abdomen*. Posterior lateral spinnerets: apical segment moderately long. Lengths: total 5.08, basal segment 1.72; middle 1.15; apical 2.21. Apical segment width 0.71.

**Female** (paratype AMS KS1165) —*Size*. Carapace length 11.25, width 10.03. Abdomen length 14.80, width 11.80. —*Colour*. Basic colour pattern. —*Carapace*. Longer than wide, cephalic area strongly raised. Height 5.13; frontal width 8.64. Cephalic length 8.09. Fovea procurved, anterior margin indented. Mid-dorsal cephalic setae numerous, extend back to fovea. Anterior strial setae numerous. Strial and marginal setae numerous. Anterolateral carapace angle with many weak bristles. —*Eyes*. Eye region sessile to weakly raised centrally. Eye group width 2.75. Diameters: AME 0.39, ALE 0.62, PLE 0.54, PME 0.34. Interdistances: AME–AME 0.34, AME–ALE 0.27, ALE–PLE 0.20, PLE–PME 0.10, PME–PME 1.19. Median ocular quadrangle length 0.88, anterior width 1.10, posterior width 1.78. —*Chelicerae*. Cheliceral groove margins diverge distally. Groove length 3.26, middle width 0.80. Cheliceral teeth: 34 central occupying full length of groove in an irregular double row; 13 prolateral; 11 retrolateral. —*Labium*. Slightly wider than long, anterior margin very weakly indented. Length 2.07, width 2.28. Cuspules occupying anterior three quarters of labium. Labiosternal sigilla entire. —*Sternum*. Ovoid, moderately wide. Length 6.80, width 5.68. Posterior sternal sigilla ovoid: length 1.09, width 0.54. —*Palp*. Spination: tibia 4, tarsus 8. Trichobothria: tibia p6 r7, tarsus 10. Tarsal claws with 6 teeth. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	8.09	4.56	6.12	5.17	3.06	27.00
2	7.31	4.08	5.51	4.79	2.92	23.61
3	6.53	3.74	4.39	4.85	3.40	22.91
4	8.19	4.08	5.98	6.09	3.74	28.08

*Tibia I* width 2.14. Metatarsus I proximal width 1.43. Coxae I, II with setal bases slightly thickened, otherwise unmodified. Tarsal claw teeth legs I, II: superior 9, 9; inferior 3, 3. Trichobothria legs I, II: tarsus 12, 12; metatarsus 12, 12; tibia p8 r8, p9 r8. —*Leg spination*. Leg I: femur 0, patella 0, tibia 2, metatarsus 10, tarsus 6. Leg II: femur 0, patella p1, tibia 4 (p1), metatarsus 14, tarsus 9. Leg III: femur 4 (pd3, rd1) patella 7 (p6 r1), tibia 10 (p3 r2), metatarsus 20 (p6 r2), tarsus 14. Leg IV: femur 0, patella 0, tibia 8 (r2), metatarsus 21, tarsus 24 —*Abdomen*. Sparse cover of weak hairs and bristles. Posterior lateral spinnerets with apical segment of medium length. Lengths: total 4.86; basal segment 2.11, middle 0.88, apical 1.94. Apical segment width 0.82. —*Genitalia*. Spermathecae rather short, broad, separated basally by a spermathecal width. Length 1.43, width 0.75.

**Distribution.** Mid northeastern region of New South Wales (Fig. 83).

### *Hadronyche walkeri* n.sp.

Figures 87–90; Tables 26, 34

**Etymology.** The species is named for Mr Pat Walker, North Queensland Naturalist and Photographer.

**Types.** Holotype male: S389 (QMB). Devils Pinch, north of Armidale, New South Wales, 33°09'S 150°17'E, C. Anderson, 1 February 1979. Paratypes. New South Wales. *Males*: QMB S382 (QMB), Armidale, 30°30'S 151°39'E, 17 May 1979, K. McWilliam. Others all AM: AMS KS936, Ben Lomond, 30°00'S 151°39'E, February 1963, M. Trudgeon; AMS KS943, "Wongwibinda", 48km E. of Guyra, 30°12'S 151°40'E, December 1952, M. Wyndham; AMS KS944, Bullock Creek, Point. Lookout, New England National Park, 30°29'S 152°30'E, 25 November 1969, M. Gray; AMS KS4455, Walcha, 30°58'S 151°35'E, 11 January 1980, C. Easton; AMS KS44614, Guyra, 30°13'S 151°40'E, May 1971, D.I. Clay; AMS KS936, Ben Lomond Public School, 30°01'S 151°40'E, February 1963, M. Trudgeon. *Females*: AMS KS15750, Styx River near Jeogla, 30°35'S 152°08'E, 8 June 1979; AMS KS13805, Ulong, nr. Dorrigo, 30°13'S 152°53'E, January 1980, C. Martin; AMS KS7524, Lower Wattle Flat, Pt. Lookout, New England National Park, 30°29'S 152°30'E, 12 May 1981, G. Hunt; AMS KS14037, Dorrigo, 30°19'S 152°43'E, 18 March 1984, C. Martin.

**Other material examined.** New South Wales (*males*): AMS KS937, Ben Lomond, February 1963, M. Trudgeon; QMB S675, Black Mountain, 28 February 1977, Snell; AMS KS940, Glen Innes, February 1952, ? Every; QMB S384, 42 km E. of Guyra, January 1972; AMS KS945, Point. Lookout,

New England National Park, 26 November 1969, M. Gray; QMB S386, "Newholme", near Armidale, 2 February 1974, Jenkins. **New South Wales (females):** AMS KS13596, Dorrigo, 22 December 1983; AMS KS14384, Ulong, nr. Dorrigo, 26 April 1984; AMS KS7525-7, Lower Wattle Flat, Point Lookout area, New England National Park, 12 May 1981, G. Hunt; AMS KS14038, Dorrigo, 18 March 1984, C. Martin.

**Diagnosis.** CL 7.34–10.54 (male). Differs from *H. infensa* and *H. macquariensis* by tibia II ventrally sinuous/concave with strong ventral spines clustered proximocentrally (Figs. 87G; 89H,I); from *H. infensa* by basal embolus weakly offset from tegulum (Fig. 89B); from *H. lynabrae* by tarsi III, IV not swollen, and embolus less twisted; and from *H. valida*, *H. orana*, *H. kaputarensis* and *H. levittgreggae* by greater width of embolus (EmbmidW/L 0.14) (Fig. 89B).

**Male (holotype)** —*Size.* Carapace length 8.69, width 8.43. Abdomen length 8.84, width 6.80. —*Colour.* Basic colour pattern. Posterior abdominal chevrons often joined across abdomen. —*Carapace.* A little longer than wide, cephalic area moderately raised. Height 3.63. Frontal width 5.82. Fovea procurved. Mid-dorsal cephalic setae almost reach fovea. Anterior striae setae few to absent. Anterolateral carapace angle with a few strong bristles. —*Eyes.* Central eye region strongly raised. Eye group width 2.02. Median ocular quadrangle length 0.80, anterior width 0.92, posterior width 1.42. Diameters: AME 0.64, ALE 0.80, PLE 0.62, PME 0.50. —*Chelicerae.* Cheliceral groove margins divergent. Groove length 2.52, middle width 0.46. Cheliceral teeth: 32 central, occupying full length of groove; 13 prolateral; 12 retrolateral. —*Labium.* Slightly wider than long, weakly apically indented. Length 1.68, width 1.72. Labiosternal sigilla entire. Slight transverse groove behind cuspules. Cuspules c. 344, number high. —*Sternum.* Ovoid, long. Length 5.51, width 4.02. Posterior sigilla ovoid, elongate. —*Palp.* Tegular area wider than long. Embolus rather short,

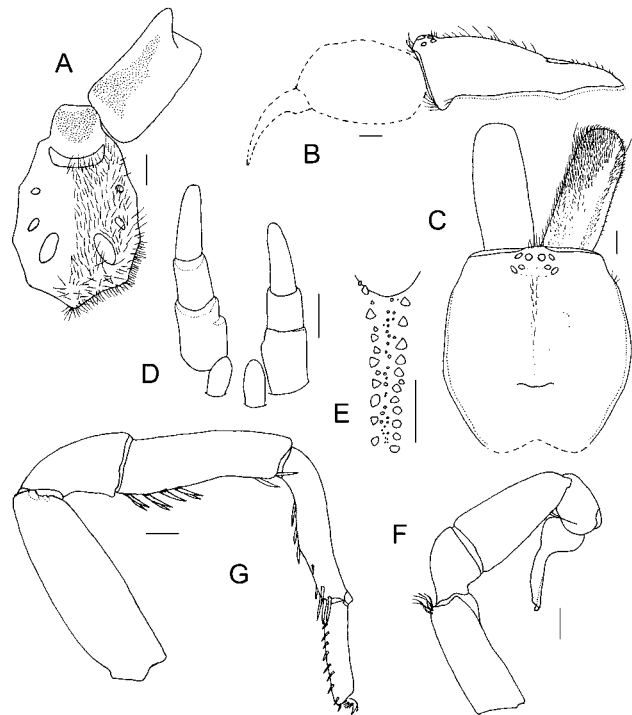


Figure 87. *Hadronyche walkeri*, male: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) cephalothorax and chelicerae, dorsal; (D) spinnerets; (E) cheliceral groove teeth; (F) palp, prolateral; (G) leg II, prolateral. Scale lines 1 mm.

not or very weakly offset from tegulum. Embolus shaft gently curved, broad, not tapered. Distal part of embolus moderately twisted with twisting extended back along shaft as a deep longitudinal fold; distal flange moderately reflexed. Bulb length 3.32, width 1.40. Embolus length 2.28, midwidth 0.39. Length of femur 4.10, patella 1.76, tibia 3.98. Width of tibia 2.08. Spination: tibia with 2 prolateral bristle like spines, absent elsewhere. Distal femur with several sinuous bristles. —*Legs.* 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	7.46	3.53	5.78	5.49	3.44	25.70
2	7.01	3.57	5.74	5.33	3.36	25.01
3	6.32	2.99	4.56	5.54	3.67	23.08
4	7.75	3.48	5.77	6.80	4.32	28.12

*Tibia I* width 1.52. Femora I and II without spines. Metatarsus I slightly thickened proximally, proximal ventral spines largest. Tibia II without apophysis, moderately sinuous (concave distoventrally), ventral spines rather large, grouped proximally. Distal tibia II concave ventrally, lacking spines (except apically). Metatarsus II weakly sinuous-straight, strong ventral spines centrally. Coxal hairs unmodified. Tarsal scopulae: leg I weak; legs II–IV moderate to strong. Distal metatarsal scopulae: leg I absent; legs II–IV weak to moderate. Tarsal claw teeth legs I, II: superior 12, 12; inferior 2, 2. Trichobothria legs I, II: tarsus 11, 9; metatarsus 15, 14; tibia p8 r7, p8 r8. —*Leg spination.* Leg I: femur 0, patella 5 (p1), tibia 34, metatarsus 25, tarsus 27. Leg II: femur 0, patella 0, tibia 13, metatarsus 23, tarsus 21. Leg III: femur 0, patella p6, tibia 9 (p2 r2), metatarsus 22, tarsus 22. Leg IV: femur 0 (long bristles present), patella 0, tibia 8

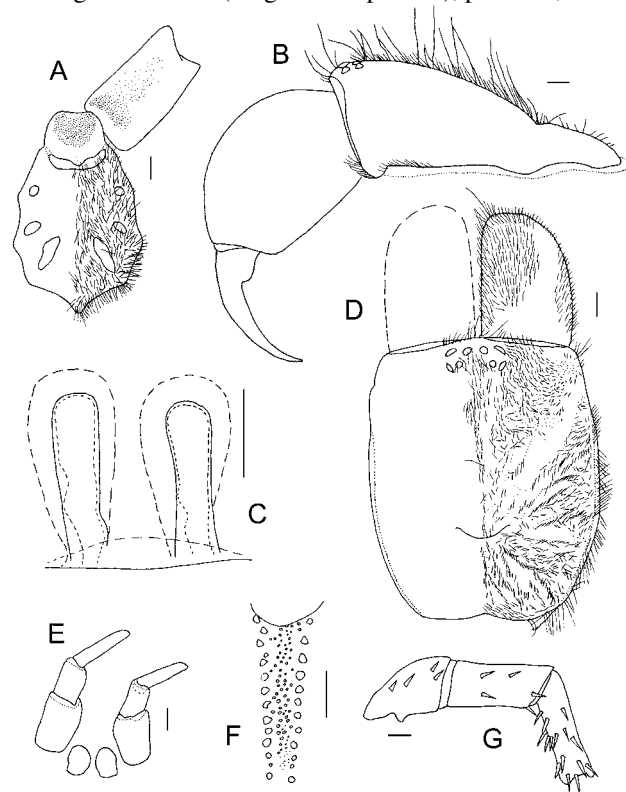


Figure 88. *Hadronyche walkeri*, female: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) spermathecae; (D) cephalothorax and chelicerae, dorsal; (E) spinnerets; (F) cheliceral groove teeth; (G) leg III, prolateral, patella, tibia, metatarsus. Scale lines 1 mm.



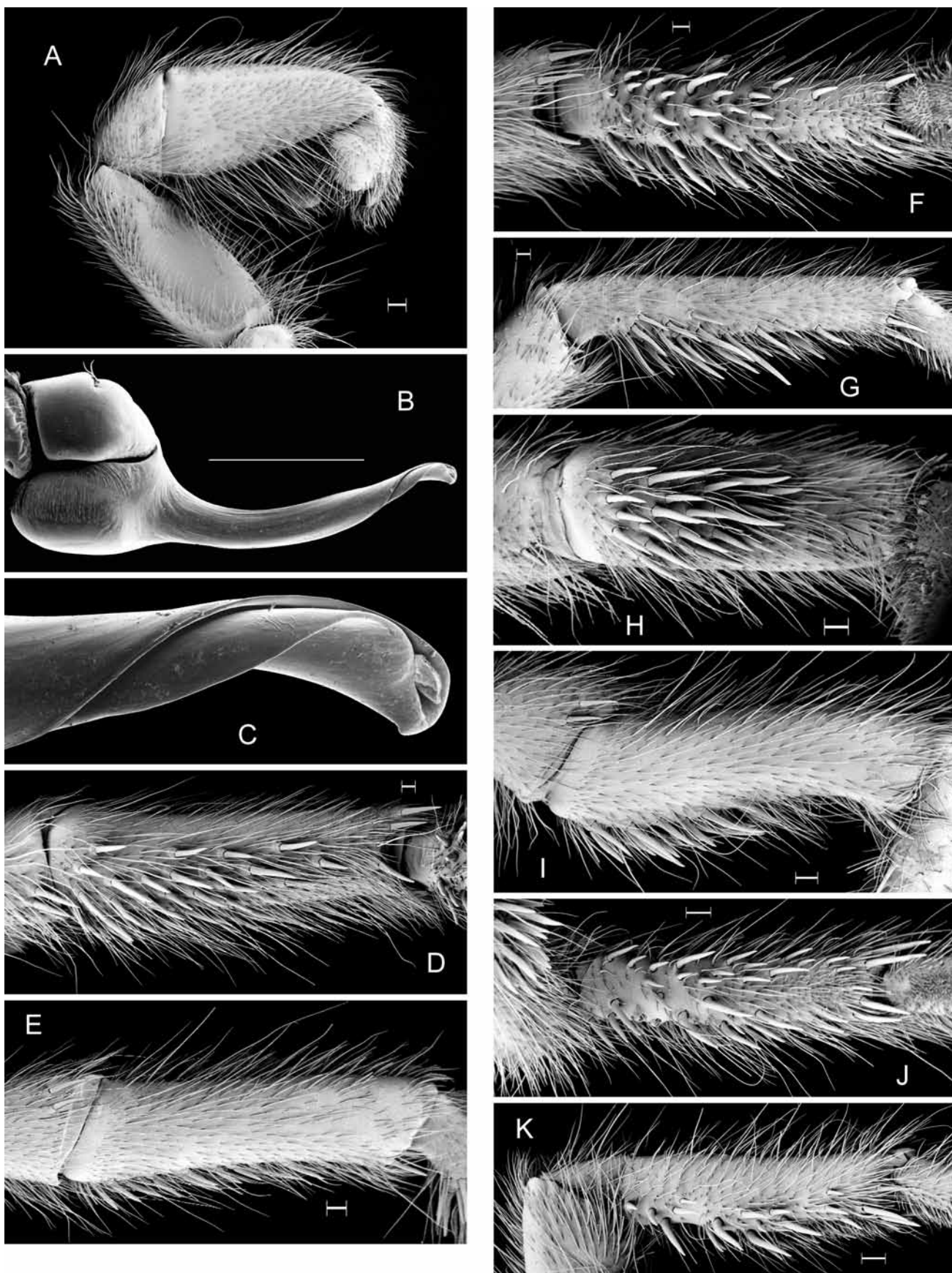


Figure 89. *Hadronyche walkeri*, male. (A,D–K, AMS KS44614; B,C, AMS KS936): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral (image foreshortened), I, prolateral; (J,K) metatarsus II—J, ventral, K, prolateral. Scale lines: 0.3 mm, except B 1.0 mm and D–G 0.2 mm.

**Table 26.** Male morphological data—*Hadronyche walkeri* (n = 11).

character	range	mean	character	range	mean	character	ratio	SD
CL	7.34–10.54	8.77	Mt1S	23–55	36	CW/CL	0.91	0.032
CW	6.60–9.28	8.01	Ta1S	8–38	21	CH/CW	0.41	0.031
CH	2.91–3.85	3.34	Ti2S	10–29	20	CFW/CW	0.65	0.034
CFW	5.50–6.31	5.65	STC2teeth	10–15	12	CHGW/L	0.17	0.027
ChGL	2.21–2.86	2.50	BulbL	2.63–3.40	3.02	SW/SL	0.77	0.025
ChGW	0.31–0.55	0.42	EmblL	1.76–2.40	2.05	LL/LW	0.92	0.053
ChGCT	5–46	23	BulbW	1.15–1.40	1.25	PLSAPW/L	0.35	0.034
LL	1.11–1.69	1.44	EmbmW	0.22–0.39	0.27	BulbW/Embl*	0.62	0.04
LW	1.31–1.72	1.56	PalpTibL	3.28–4.49	3.93	EmbmW/L*	0.14	0.02
CUSP	144–344	240	PalpTibW	1.72–2.11	1.94	PalpTibW/L	0.49	0.03
SL	4.26–5.83	5.17	PalpTibS	0–2	<1	BulbL/TibL	0.78	0.037
SW	3.37–4.49	4.02	PalpPatS	0	—			
PLSAPW	0.37–0.60	0.49	PalpFemS	0	—			
PLSAPL	1.07–1.70	1.41						
Fe1S	0	—						
Pa1S*	0–13 (p0–2)	6						

(r1), metatarsus 22, tarsus 27 —*Abdomen*. Posterior lateral spinnerets: apical segment moderately long. Lengths: total 4.44; basal segment 1.72, middle 1.04, apical 1.68. Apical segment width 0.60.

**Female** (paratype AMS KS15750) —*Size*. Carapace length 12.34, width 10.13. Abdomen length 15.30, width 11.70. —*Colour*. Basic colour pattern. —*Carapace*. Longer than wide, moderately raised. Height 5.24. Frontal width 8.84. Cephalic length 8.67. Fovea strongly procurved. Mid-dorsal cephalic setae numerous, reach fovea. Anterior strial setae numerous. Strial setae well developed. Anterolateral carapace angle with several moderately strong bristles. —*Eyes*. Eye region sessile to weakly raised centrally. Eye group width 2.70. Diameters: AME 0.34, ALE 0.54, PLE 0.55, PME 0.35. Interdistances: AME-AME 0.34, AME-ALE 0.29, ALE-PLE 0.24, PLE-PME 0.14, PME-PME 1.17. Median ocular quadrangle length 0.95, anterior width 1.05, posterior width 1.84. —*Chelicerae*. Cheliceral groove margins diverge distally. Groove length 3.58, middle width 0.82. Cheliceral teeth: 79 central, in two to three rows occupying full length of groove; 15 prolateral; 12 retrolateral. —*Labium*. Almost as long as wide, anterior margin broadly indented. Length 2.43, width 2.68. Cuspules occupying anterior half of labium. Labiosternal sigilla narrowed to divided in midline. —*Sternum*. Ovoid. Length 7.55, width 5.71. Posterior sigilla elongate: length 1.73, width 0.61. —*Palp*. Spination: tibia 6, tarsus 7. Trichobothria: tibia p8 r8, tarsus 14. Tarsal claws with 9 teeth. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	7.46	3.53	5.78	5.49	3.44	25.70
2	7.01	3.57	5.74	5.33	3.36	25.01
3	6.32	2.99	4.56	5.54	3.67	23.08
4	7.75	3.48	5.77	6.80	4.32	28.12

*Tibia I* width 2.04. Metatarsus I proximal width 1.43. Coxae I, II with frontal setae thickened basally. Tarsal claw teeth legs I, II: superior 12, 11; inferior 4, 4. Trichobothria legs I, II: tarsus 15, 16; metatarsus 20, 20; tibia p7 r8, p9 r10. —*Leg spination*. Leg I: femur 0, patella 0, tibia 4, metatarsus 14, tarsus 8. Leg II: femur 0, patella 0, tibia 7, metatarsus 16, tarsus 9. Leg III: femur 0, patella pd4, tibia 7 (p2 r2), metatarsus 25 (pd4 rd3) tarsus 18. Leg IV: femur 0, patella 0, tibia 6 (r2), metatarsus 18 (r1), tarsus 25. —*Abdomen*.

Posterior lateral spinnerets with long apical segment. Lengths: total 6.76; basal segment 2.62, middle 1.63, apical 2.53. Apical segment width 0.75. —*Genitalia*. Spermatheca straight, digitiform, rather long, distal third slightly enlarged; well separated (by about twice the width of a spermatheca). Spermatheca length 1.53, width 0.48.

**Distribution**. Great Dividing Range, New South Wales from the Armidale region east to the Dorrigo region.

**Comments**. Specimens from the Barrington region may belong to this species.

### *Hadronyche levittgreggae* n.sp.

Figures 90–93; Tables 27, 34

**Etymology**. The species is named in recognition of the late Vera Levitt-Gregg, former Associate of the Australian Museum, naturalist and funnel-web worker.

**Types**. Holotype male: AMS KS13528, Annangrove, New South Wales, 33°39'S 150°56'E, P.G. Nield, November 1978. Paratypes (all AM). New South Wales. *Males*: AMS KS2076, Fairs Creek, Cattai area, 33°33'S 150°55'E, 9 November 1978, R.H. Eastment; AMS KS1062, Dural, 33°40'S 151°01'E, 5 June 1977; AMS KS2066, Kellyville, 33°43'S 150°57'E, 6 November 1978, M.J. Fletcher; AMS KS1059, Kenthurst, 33°41'S

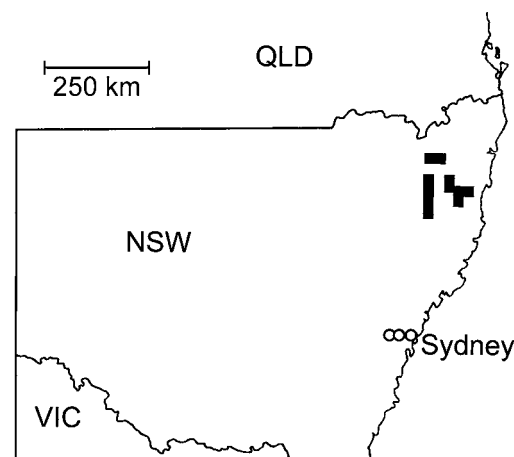


Figure 90. Collection records for *Hadronyche walkeri* (squares) and *H. levittgreggae* (circles).

**Table 27.** Male morphological data—*Hadronyche levittgreggae* (n = 11).

character	range	mean	character	range	mean	character	ratio	SD
CL	8.72–10.30	9.69	Mt1S	27–43 (p0–2)	34	CW/CL	0.95	0.027
CW	8.61–10.17	9.15	Ta1S	10–20	13	CH/CW	0.42	0.019
CH	3.57–4.06	3.86	Ti2S	19–46 (p0–2)	31	CFW/CL	0.69	0.023
CFW	5.99–7.14	6.67	STC2teeth	12–14	13	CHGW/L	0.20	0.017
ChGL	2.57–2.99	2.70	BulbL	4.62–5.44	4.86	SW/SL	0.72	0.031
ChGW	0.48–0.59	0.53	EmbL	3.53–4.15	3.80	LL/LW	0.96	0.04
ChGCT	15–27	22	BulbW	1.21–1.36	1.26	PLSAPW/L	0.37	0.043
LL	1.50–1.78	1.67	EmbmW	0.21–0.28	0.25	BulbW/EmbL*	0.34	0.021
LW	1.66–1.84	1.73	PalpTibL	4.51–5.66	5.26	EmbmW/L*	0.07	0.005
CUSP	210–345	285	PalpTibW	1.82–2.45	1.99	PalpTibW/L*	0.38	0.033
SL	5.49–6.41	5.92	PalpTibS*	2–3	2	BulbL/TibL	0.93	0.058
SW	3.77–4.59	4.30	PalpPatS	0	—			
PLSAPW	0.39–0.69	0.56	PalpFemS	0–1	<1			
PLSAPL	1.27–1.73	1.51						
Fe1S	0	0						
Pa1S	3–10 (p1–3)	6						

150°59'E, 12 November 1969, A. Adamson; AMS KS7336, Lower Portland, Hawkesbury River, 33°25'S 150°53'E, February 1980; AMS KS6274, Tennyson, nr. Windsor, 33°31'S 150°44'E, 8 August 1980, M. Gray & R. McDonald; AMS KS23457, Galston, 33°39'S 151°03'E, 07 Nov 1990, T. Dixen. *Females*: AMS KS1061, Annangrove, 33°39'S 150°56'E, R. Redfern, January 1976; AMS KS9036, Dural/Kenthurst area, 33°38'S 151°01'E, 6 May 1982, M. Gray; AMS KS6273, Tennyson, near. Windsor, 33°31'S 150°44'E, 8 August 1980, M. Gray & R. McDonald; AMS KS2964, Arcadia, 33°37'S 151°02'E, 10 May 1979, Sharples.

**Other material examined. New South Wales (males):** AMS KS1060, Kenthurst, 1969, A. Adamson; AMS KS6073, Kenthurst, 26 October 1980; AMS KS8378, Kenthurst, 3 November 1981, L. Taylor; AMS KS10795, Kenthurst, 7 December 1982, L. Millard.

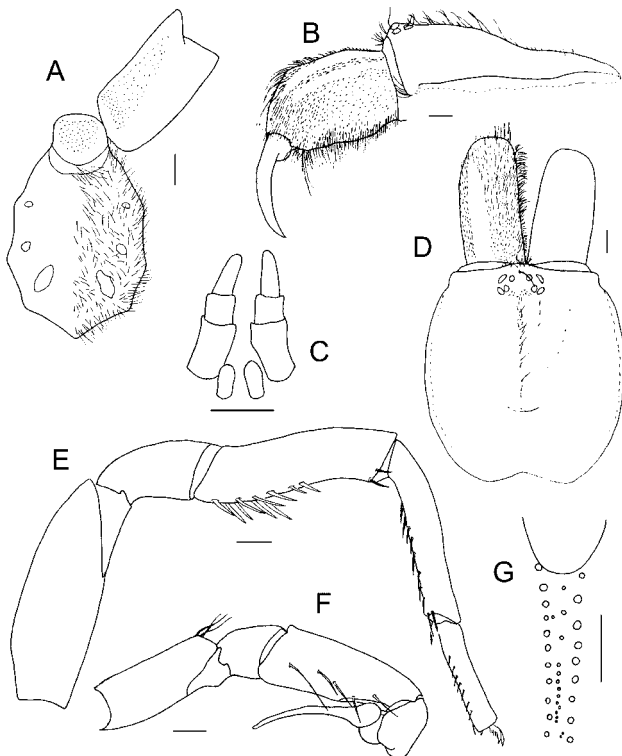


Figure 91. *Hadronyche levittgreggae*, male: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) spinnerets; (D) cephalothorax and chelicerae, dorsal; (E) leg II, prolateral; (F) palp, prolateral; (G) cheliceral groove teeth. Scale lines 1 mm.

**Diagnosis.** CL 8.72–10.30 (male) Differs from *H. infensa*, *H. lynabrae*, *H. macquariensis* and *H. walkeri* by relatively long, slender embolus (EmbmW/L 0.07); from *H. orana* by strongly spinose tibia II (19–46 spines) (Fig. 93H,D); from *H. valida* by longer, narrower embolus (EmbL 3.53–4.15) (Fig. 93B); and from *H. kaputarensis* by long central cheliceral tooth row.

**Male (holotype) —Size.** Carapace length 8.94, width 8.61. Abdomen length 8.85 width 6.97. —**Colour.** Basic colour pattern. —**Carapace.** Slightly longer than wide, moderately raised. Height 3.84. Frontal width 6.36. Fovea procurved, narrow. Mid-dorsal cephalic setae reach fovea. Anterior strial area with few setae. Anterolateral angle of carapace with weak bristles. —**Eyes.** Sessile to slightly raised. Eye group width 2.32. Median ocular quadrangle length 0.84, anterior

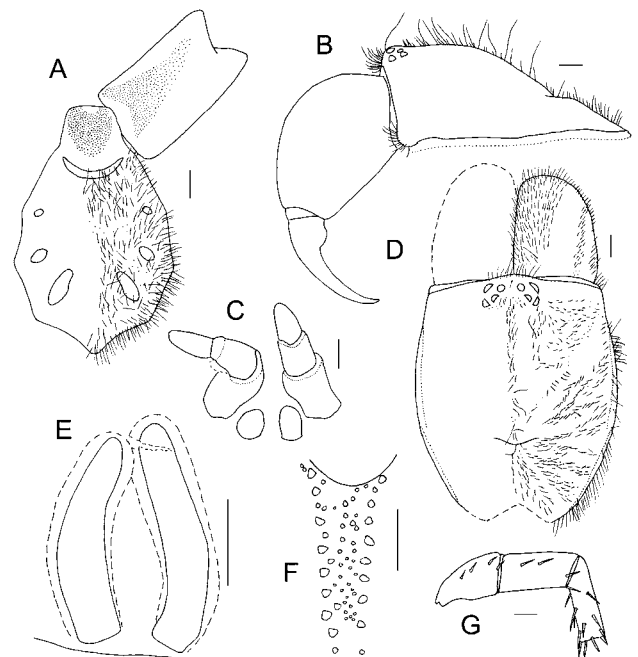


Figure 92. *Hadronyche levittgreggae*, female: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) spinnerets; (D) cephalothorax and chelicerae, dorsal; (E) spermathecae; (F) cheliceral groove teeth; (G) leg III, prolateral, patella, tibia, metatarsus. Scale lines 1 mm.

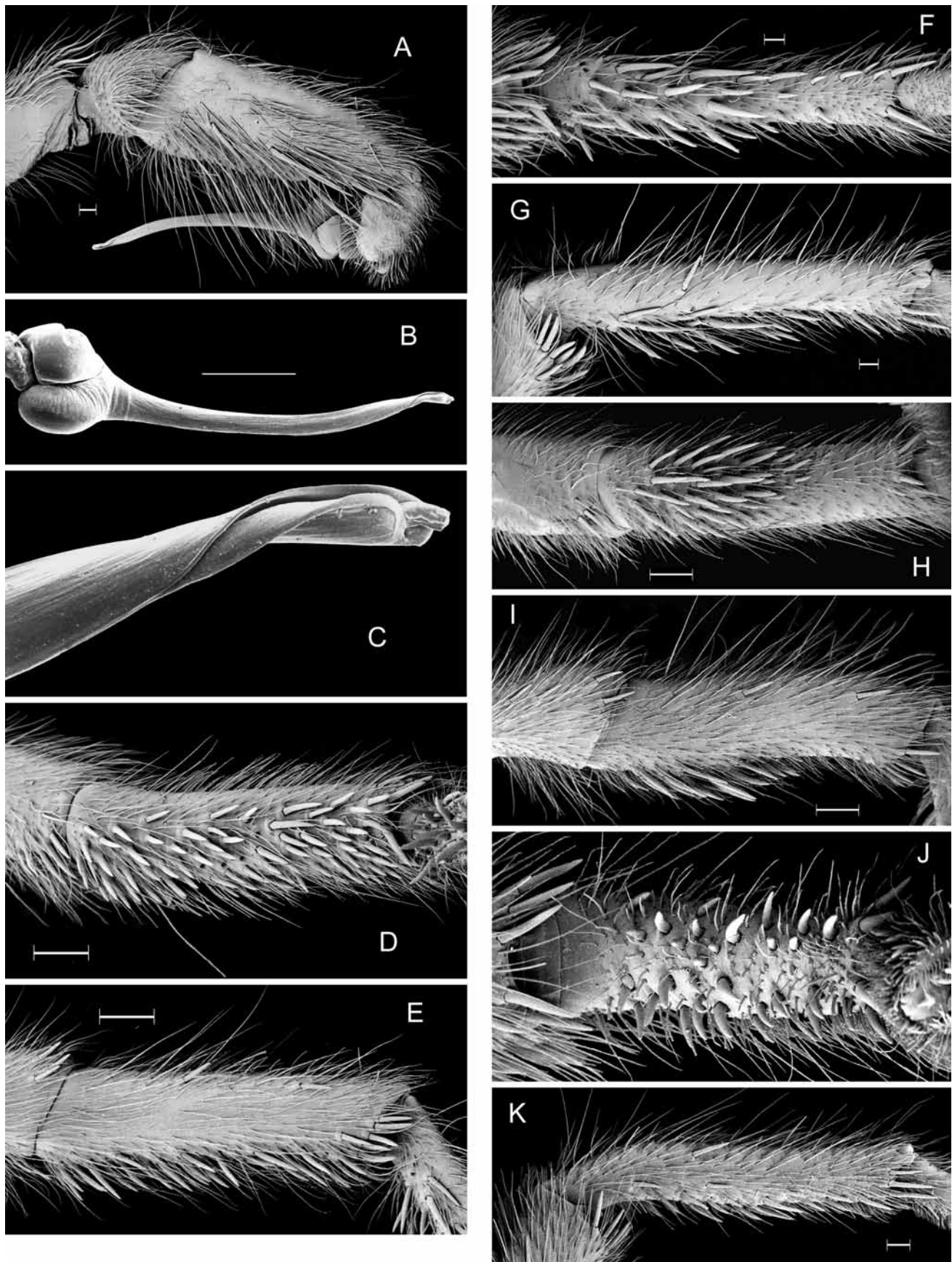


Figure 93. *Hadronyche levittreggae*, male (A,D–K, AMS KS23457; B,C, AMS KS2066): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D,E) distal patella and tibia I—D, ventral, E, prolateral; (F,G) metatarsus I—F, ventral, G, prolateral; (H,I) distal patella and tibia II—H, ventral, I, prolateral; (J,K) metatarsus II—J, ventral (image foreshortened), K, prolateral. Scale lines: 1.0 mm, except A,F,G 0.3 mm and K 0.2 mm.

width 1.07, posterior width 1.53. Diameters: AME 0.26, ALE 0.46, PLE 0.48, PME 0.25. —*Chelicerae*. Cheliceral groove margins weakly divergent. Groove length 2.57, middle width 0.51. Cheliceral teeth: 15 central, running full length of groove; 11 prolateral; 9 retrolateral. —*Labium*. Slightly wider than long. Length 1.50, width 1.70. Labiosternal sigilla entire. Cuspules c. 262, number moderate to high. —*Sternum*. Ovoid; length 5.67, width 4.19. Posterior sigilla ovoid, elongate. —*Palp*. Tegular area slightly wider than long. Embolus shaft long, slender and gently curved, with little distal taper. Distal embolus moderately twisted. Embolus base offset from tegulum. Bulb length 4.68, width 1.24. Embolus length 3.76, midwidth 0.21. Tibia long. Length of femur 4.00, patella 1.78, tibia 5.00. Width of tibia 1.86. Spination: tibia 3 (bristle-like). Sinuous bristles on distal femur. —*Legs*. 4123. Legs I, II subequal.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	7.30	3.40	6.27	5.78	3.44	26.19
2	6.90	3.75	6.38	5.79	3.44	26.04
3	6.11	3.28	5.17	5.56	3.90	24.02
4	7.38	3.57	6.56	6.89	4.43	28.83

*Tibia I* width 1.44. Femora I, II lack dorsal spines. Femora III, IV with long dorsal bristles. Metatarsus I slightly thickened proximally, larger ventral spines grouped proximally. Tibia II sinuous, weakly concave distoventrally, ventral spines grouped proximally. Metatarsus II slightly sinuous, apophysis absent. Coxal hairs normal. Tarsal scopulae: legs I, II weak; legs III, IV strong. Distal metatarsal scopulae weak. Tarsal claw teeth legs I, II: superior 14; inferior III, IV. Trichobothria legs I, II: tarsus 13, 12; metatarsus 15, 17; tibia p8 r7, p8 r7. —*Leg spination*. Leg I: femur 0, patella 7 (p1), tibia 65, metatarsus 30, tarsus 11. Leg II: femur 0, patella 1–2 (p0–1), tibia 28, metatarsus 21, tarsus 12. Leg III: femur 0, patella p5, tibia 7 (p2 r1), metatarsus 23, tarsus 17. Leg IV: femur 0, patella r1, tibia 4 (r1), metatarsus 16, tarsus 17. —*Abdomen*. Posterior lateral spinnerets with moderately long apical segment. Lengths: total 3.91; basal segment 1.64, middle 0.88, apical 1.39; apical width 0.58.

**Female** (paratype AMS KS1061) —*Size*. Carapace length 10.80, width 9.28. Abdomen length 11.42, width 8.74. —*Colour*. Basic colour pattern. —*Carapace*. Longer than wide, cephalic area strongly raised. Height 5.02, frontal width 8.01. Cephalic length 7.51. Fovea narrow, procurved. Mid-dorsal cephalic setae numerous, extend back to fovea. Anterior stria setae present. Anterolateral carapace angle with several weak bristles. —*Eyes*. Central eye region weakly raised. Eye group width 2.62. Diameters: AME 0.34, ALE 0.62, PLE 0.46, PME 0.29. Interdistances: AME–AME 0.55, AME–ALE 0.25, ALE–PLE 0.26, PLE–PME 0.15, PME–PME 1.32. Median ocular quadrangle length 0.80, anterior width 1.16, posterior width 1.85. —*Chelicerae*. Cheliceral groove wide, margins diverge distally. Groove length 2.94, middle width 0.85. Cheliceral teeth: 44 central occupying full length of groove in 2–3 irregular rows; 14 prolateral; 10 retrolateral. —*Labium*. Almost as long as wide, anterior margin not indented. Length 2.14, width 2.21. Cuspules occupying anterior three quarters of labium. Labiosternal sigilla narrow, entire. —*Sternum*. Ovoid. Length 8.02, width 5.20. Posterior sternal sigilla elongate: length 1.19, width 0.46. —*Palp*. Spination: tibia 2–3, tarsus 9. Trichobothria: tibia p7 r7, tarsus 20. Tarsal claws with 8 teeth. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	7.48	4.05	5.70	4.52	2.80	24.55
2	6.54	3.79	5.18	4.24	2.62	22.37
3	5.92	3.28	4.01	4.25	2.99	20.45
4	7.49	4.05	5.51	5.47	3.52	26.04

*Tibia I* width 1.90. Metatarsus I proximal width 1.21. Coxae I, II with basally thickened setae frontally. Tarsal claw teeth legs I, II: superior 9, 9; inferior 4, 4. Trichobothria legs I, II: tarsus 16, 13; metatarsus 20, 17; tibia p8 r8, p8 r7. —*Leg spination*. Leg I: femur 0, patella 0, tibia 1, metatarsus 10, tarsus 8. Leg II: femur 0, patella p1, tibia 1–2, metatarsus 12, tarsus 7. Leg III: femur 0, patella p4, tibia 6 (p2 r2), metatarsus 14 (p4 r1), tarsus 14. Leg IV: femur 0 patella 0, tibia 2 (r1), metatarsus 13, tarsus 16. —*Abdomen*. Posterior lateral spinnerets with moderately short apical segment. Lengths: total 4.50; basal segment 1.83, middle 1.29, apical 1.43. Apical segment width 0.76. —*Genitalia*. Spermathecae long and thin, digitiform, separated basally but gently curved so that apices are contiguous. Length 2.58, width 0.54.

**Distribution**. Hawkesbury River region, northwest of Sydney, New South Wales (Fig. 90).

### *lamingtonensis* species group

**Description**. (Figs. 3G, 94–102; Tables 28–31). Small to medium sized atracine spiders (CL 5.0–8.0). Males without leg II apophyses; femora I, II typically without dorsal spines (rarely a bristle-like spine on femur II). Middle haematodocha usually exposed between tegulum and subtegulum. Carapace broad, strongly raised (CW/CL 0.48–0.51). Cheliceral groove narrow, central teeth few, basal. Posterior lateral spinnerets with short apical segment (PLSAPW/L 0.53–0.63). Labium relatively short (LL/LW 0.74–0.83), cuspule number usually low (44–102), but moderate in *H. raveni* (mean = 213). Sternum moderately wide. Several species have swollen or “boat-shaped” tarsi III and IV. Palpal patella wider than femur; tibia without spines, rather short and basally broad.

**Included species**. *Hadronyche lamingtonensis* n.sp., *H. annachristiae* n.sp., *H. raveni* n.sp., *H. monteithi* n.sp., *H. anzses* Raven.

**Distribution**. Northeastern New South Wales to northeastern Queensland.

**Comments**. The morphology of the disjunct north Queensland species, *H. anzses*, clearly justifies its inclusion within this species group. Swollen (“boat-shaped”) tarsi III and IV are present in several species (*H. annachristiae*, *H. anzses*, *H. monteithi* and, more weakly, in *H. raveni*). This character provides an additional taxonomic link between *H. anzses* and its southern relatives. Two undescribed species are known from the Border Ranges region of NSW.

The *lamingtonensis* group species probably represent the remnants of a former more continuous distribution in the Tertiary rainforests of eastern Australia.

**Note on *Anepsiada ventricosa* (Rainbow & Pulleine)**, AMS KS9624, old catalogue number K40965. This species was described for a small female specimen from Cloncurry,



central Queensland (Rainbow & Pulleine, 1918). The label data was subsequently found to be in error, resulting in the correction of the locality to Mount Tamborine in the Border Ranges area of southeast Queensland. The species was proposed for synonymy as a juvenile of *Atrax valida* (Gray, 1984). However, a recent re-examination of the type indicates that it is a female, and suggests that it belongs to the *lamingtonensis* species group of *Hadronyche*. At present, no other female specimens of this species group are known and the type specimen is in poor condition. If these findings are confirmed by additional female material, the synonymy of this species with *A. valida* (after Gray, in Main, 1985), and its status, will need to be reviewed.

***Hadronyche raveni* n.sp.**

Figures 94–96; Table 28

**Etymology.** The species is named for Dr Robert Raven, Senior Curator of Arachnology at the Queensland Museum and a distinguished spider researcher.

**Types.** Holotype male: QMB S161 (QMB). Bouloumba Creek, Conondale Range, Queensland, 26°31'S 152°39'E, G.B. and S.R. Monteith, 29 November 1974–22 February 1975. Paratypes (QMB). Queensland. *Males*: QMB S179, 19 April–23 August 1975; QMB S180, 22 February–14 April 1975: other data as for holotype.

**Diagnosis.** CL 5.82–5.94 (male). Small atracine spiders. Differs from other *lamingtonensis* group species by having cheliceral groove margins diverging distally (Fig. 94C) and 2–4 times as many labial cusplets (202–224); from *H.*

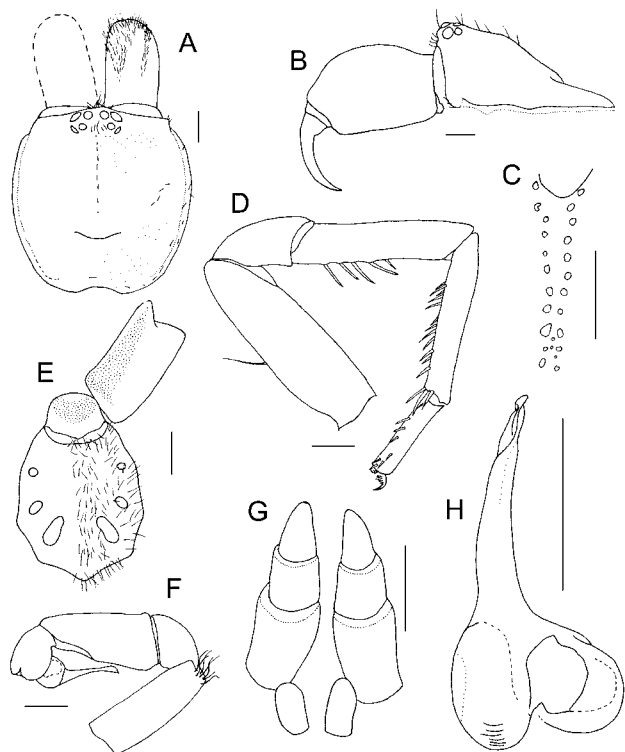


Figure 94. *Hadronyche raveni*, male: (A) cephalothorax and chelicerae, dorsal; (B) cephalothorax and chelicerae, lateral; (C) cheliceral groove teeth; (D) leg II, prolateral; (E) sternum, labium and maxilla; (F) palp, prolateral; (G) spinnerets; (H) palpal organ. Scale lines 1 mm.

*annachristiae* and *H. monteithi* by the short, broad embolus; from *H. lamingtonensis* by tibia II with few spines (2–6) (Fig. 95D); and from *H. anzses* by having a full prolateral row of cheliceral teeth.

**Male (holotype)** —*Size*. Carapace length 5.82, width 5.70. Abdomen length 5.90, width 4.29. —*Colour*. Basic colour pattern. —*Carapace*. Almost as wide as long, cephalic area strongly raised. Height 2.75. Frontal width 4.47. Fovea wide, procurved. Mid-dorsal cephalic setae do not reach fovea. Anterior striae absent. Anterolateral carapace angle with a few weak bristles. —*Eyes*. Central eye region slightly raised. Eye group width 1.71. Median ocular quadrangle length 0.70, anterior width 0.85, posterior width 1.22. Diameters: AME 0.28, ALE 0.42, PLE 0.32, PME 0.26.

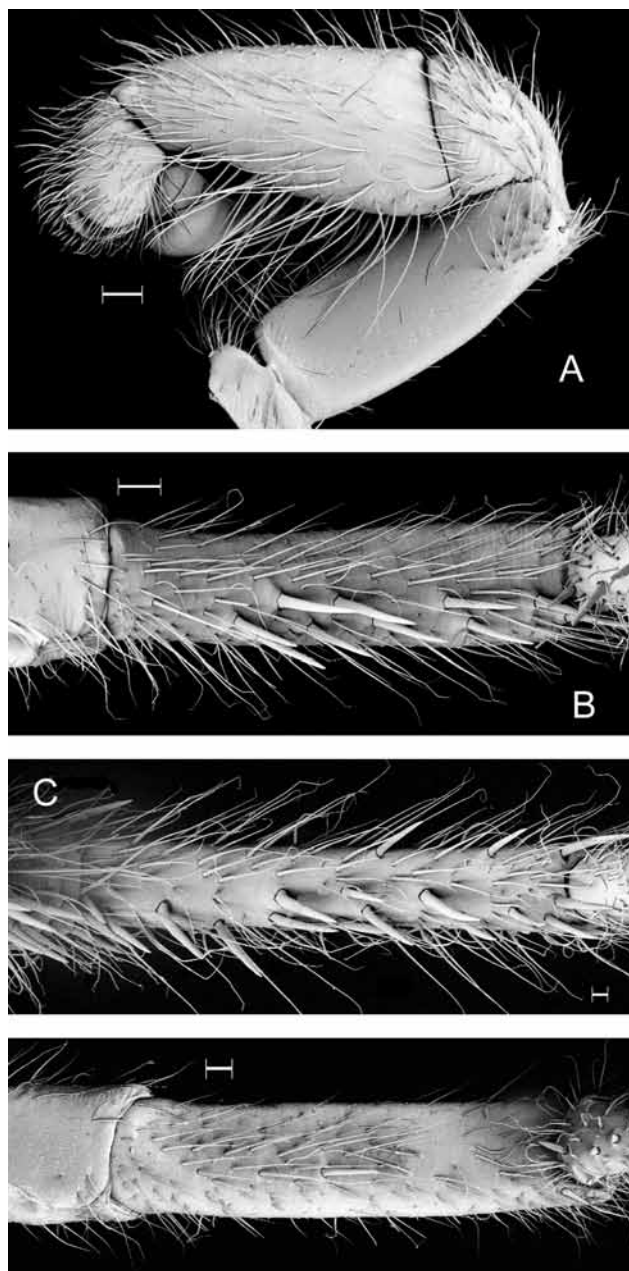


Figure 95. *Hadronyche raveni*, male (S179): (A) palp, prolateral; (B) distal patella and tibia I, ventral; (C) metatarsus I, ventral; (D) distal patella and tibia II, ventral. Scale lines: A, B, 0.3 mm, C 0.1 mm and D 0.2 mm.



**Table 28.** Male morphological data—*Hadronyche raveni* (n = 3).

character	range	mean	character	range	mean	character	ratio	SD
CL*	5.82–5.94	5.88	Mt1S	19–25	22	CW/CL	0.97	0.015
CW	5.62–5.74	5.69	Ta1S	10–15	13	CH/CW	0.49	0.012
CH	2.75–2.91	2.81	Ti2S*	2–6	4	CFW/CL	0.77	0.01
CFW	4.47–4.53	4.50	STC2teeth	9	9	CHGW/L	0.15	0.01
ChGL	1.80–1.93	1.87	BulbL	1.94–2.03	1.97	SW/SL	0.78	0.025
ChGW	0.27–0.30	0.28	EmbL	1.22–1.27	1.24	LL/LW	0.83	0.045
ChGCT	3–4	4	BulbW	0.88–0.98	0.92	PLSAPW/L*	0.63	0.038
LL	1.04–1.07	1.05	EmbmW	0.15–0.16	0.16	Bulb/EmbL*	0.74	0.026
LW	1.22–1.34	1.26	PalpTibL	2.76–2.93	2.85	EmbmW/L*	0.13	0.006
CUSP*	202–224	213	PalpTibW	1.32–1.38	1.34	PalpTibW/L	0.47	0.012
SL	3.61–3.88	3.75	PalpTibS	0	—	BulbL/TibL*	0.69	0.017
SW	2.92–2.97	2.94	PalpPatS	0	—			
PLSAPW	0.40–0.46	0.42	PalpFemS	0	—			
PLSAPL	0.64–0.68	0.65						
Fe1S	0							
Pa1S	0							

—*Chelicerae*. Groove narrow, margins diverging distally; length 1.90, middle width 0.27. Cheliceral teeth: 3 central, at base of groove; 11 prolateral; 11 retrolateral. —*Labium*. Wider than long, not apically indented, shallow groove behind cuspules. Length 1.04, width 1.24. Labiosternal sigilla slightly narrowed toward midline. Cuspules c. 202, number moderate. —*Sternum*. Ovoid. Length 3.76, width 2.92. Posterior sigilla narrow, elongate. —*Palp*. Tegular area wider than long. Middle haematodocha exposed. Embolus short, shaft of moderate width, weakly curved and tapered. Distal embolus weakly twisted. Embolus base weakly offset from tegulum. Bulb length 1.94, width 0.88. Embolus length 1.22, midwidth 0.15. Length of femur 2.76, patella 1.10, tibia 2.76. Width of tibia 1.32. Spination: spines absent. Sinuous bristles on distal femur. —*Legs*. 4213 or 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	5.08	2.13	4.10	3.81	2.38	17.50
2	5.00	2.46	4.26	3.99	2.46	18.17
3	4.25	2.06	3.18	3.52	2.35	15.36
4	5.36	2.22	4.62	4.56	2.55	19.31

*Tibia I* width 0.80. Femora I–III lacking dorsal spines. Leg I unmodified, tibial and metatarsal spines scattered. Leg II without apophysis, tibial spines few, grouped proximally. Anterior coxal hairs weak, unmodified. Scopulae leg I–IV: tarsus weak-moderate; metatarsus weak-absent. Tarsi III, IV weakly swollen, longer than tarsi I, II. Tarsal claw teeth legs I, II: superior 9, 9; inferior 3, 3. Trichobothria legs I, II: tarsus 10, 8; metatarsus 7, 6; tibia p4 r6, p5 r6. —*Leg spination*. Leg I: femur 0, patella 0, tibia 16, metatarsus 25, tarsus 14. Leg II: femur 0 (1 large bristle), patella 0, tibia 6, metatarsus 19, tarsus 25. Leg III: femur 0, patella 12 (p11 r1), tibia 8 (p3 r2), metatarsus 20, tarsus 27. Leg IV: femur 6 bristle-like spines, patella 0, tibia 0, metatarsus 16, tarsus 38. —*Abdomen*. Posterior lateral spinnerets with short apical segment. Lengths: total 2.21; basal segment 1.00; middle 0.56; apical 0.65. Apical segment width 0.40.

**Distribution.** Conondale Range, southeastern Queensland (Fig. 96).

**Comments.** This species has both the largest labium and the largest number of labial cuspules in the species group.

### *Hadronyche lamingtonensis* n.sp.

Figures 96–98; Table 29

**Etymology.** The specific epithet is taken from Lamington National Park, the type locality.

**Types.** Holotype male: QMB S394 (QMB). O'Reillys, Lamington National Park, Queensland, 28°14'S 153°08'E, G.B. and S.R. Monteith, 31 January–11 April 1976 (in pit fall trap). Paratypes (all QMB). Males: Queensland. QMB S159, Palm Grove, Tamborine Mtn., 27°55'S 153°10'E, 25 May–13 October 1975, G.B. & S.R. Monteith. New South Wales. QMB S166, Whian Whian State Forest, via Dunoon, 28°36'S 153°22'E, 26 December 1974–23 March 1975, G.B. & S.R. Monteith.

**Diagnosis.** CL 6.77–8.04 (male). Small to medium sized atracine spiders. Differs from *H. raveni* by having fewer labial cuspules (44–58) and tibia II more spinose (15–23) (Fig. 97F); from *H. annachristiae* and *H. monteithi* by the embolus being relatively short and weakly curved (Fig. 97); and from *H. anzsies* by male tarsi III, IV unmodified and full row of promarginal cheliceral teeth.

**Male (holotype) —Size.** Carapace length 7.86, width 7.75. Abdomen length 8.38, width 5.96. —*Colour*. Basic colour pattern. —*Carapace*. Slightly longer than wide, cephalic

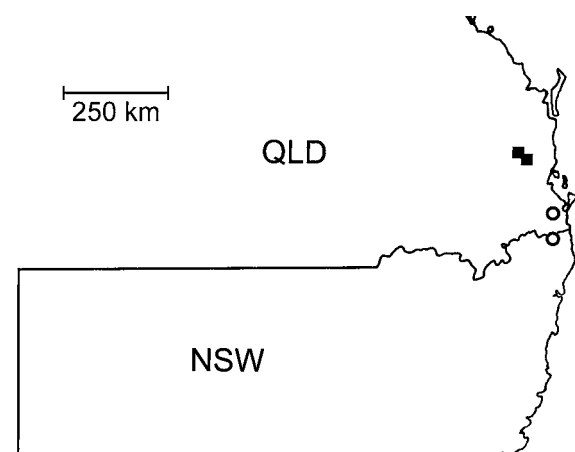


Figure 96. Collection records for *Hadronyche raveni* (squares) and *H. lamingtonensis* (circles).

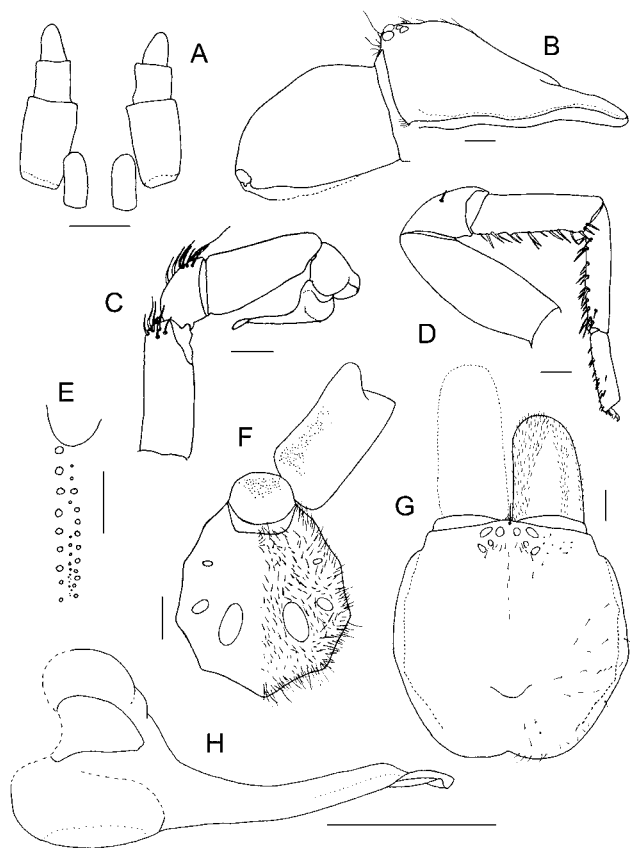


Figure 97. *Hadronyche lamingtonensis*, male: (A) spinnerets; (B) cephalothorax and chelicerae, lateral; (C) palp, prolateral; (D) leg II, prolateral; (E) cheliceral groove teeth; (F) sternum, labium and maxilla; (G) cephalothorax and chelicerae, dorsal; (H) palpal organ. Scale lines 1 mm.

area moderately raised. Height 3.49. Frontal width 5.41. Fovea strongly procurved. Mid-dorsal cephalic setae few, reaching only halfway to fovea. Anterior strial setae absent. Anterolateral angle of carapace with a few very weak hairs only. —*Eyes*. Sessile. Eye group width 1.97. Median ocular quadrangle length 0.65, anterior width 0.84, posterior width 1.39. Diameters: AME 0.30, ALE 0.41, PLE 0.37, PME 0.20. —*Chelicerae*. Anterodorsal paturon bristles short. Cheliceral groove narrow, margins parallel. Groove length 2.55, middle width 0.40. Cheliceral teeth: 13 central, confined mainly to basal half of groove (one distal tooth); 12 prolateral; 9 retrolateral. —*Labium*. Wider than long, not indented apically. Length 1.28, width 1.41. Labiosternal sigilla entire. Cuspules c. 58, small in size, number low. —*Sternum*. Very broad, subcircular. Length 4.55, width 4.02. Posterior sigilla large, broad, elongate, anterior margin almost at same level as anterior margin of middle sigilla. —*Palp*. Tegular area wider than long, middle haematodocha exposed. Embolus gently curved, medium length, shaft hardly tapering distally. Distal embolus twisted, flange partially reflexed. Embolus base weakly offset from tegulum. Bulb length 2.51, width 1.10. Embolus length 1.67, midwidth 0.17. Length of femur 3.32, patella 1.25, tibia 2.99. Width of tibia 1.38. Spination: femur 3, patella 2, tibia 0. Sinuous bristles on distal femur. —*Legs*. 4123.

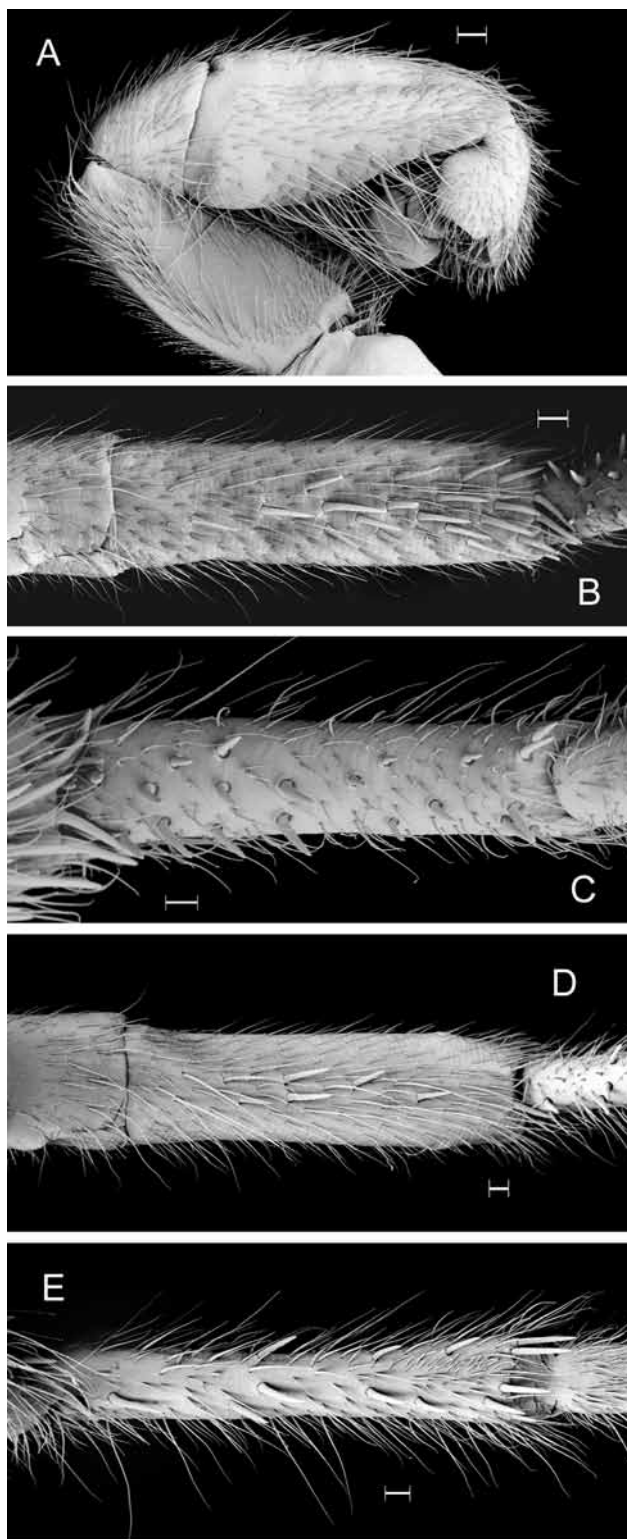


Figure 98. *Hadronyche lamingtonensis*, male (S1058): (A) Palp, prolateral; (B) distal patella and tibia I, ventral; (C) metatarsus I, ventral; (D) distal patella and tibia II, ventral. (E) metatarsus II, ventral. Scale lines: A,B 0.3 mm and C–E 0.2 mm.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	6.72	2.91	4.77	4.76	2.79	21.95
2	5.82	2.75	4.39	4.22	2.75	19.93
3	5.70	2.48	3.35	4.25	2.88	18.66
4	6.77	2.88	4.98	5.90	3.62	24.15

**Table 29.** Male morphological data—*Hadronyche lamingtonensis* (n = 3).

character	range	mean	character	range	mean	character	ratio	SD
CL	6.77–8.04	7.55	Mt1S	35–39 (p0–3)	37	CW/CL	0.95	0.036
CW	6.26–7.75	7.20	Ta1S	29–49	36	CH/CW	0.48	0.03
CH	3.20–3.65	3.44	Ti2S	15–23	19	CFW/CL	0.69	0.01
CFW	4.59–5.62	5.20	STC2teeth	7–8	8	CHGW/L	0.15	0.012
ChGL	2.28–2.68	2.50	BulbL	1.90–2.51	2.28	SW/SL	0.85	0.055
ChGW	0.32–0.40	0.36	EmbL	1.20–1.67	1.47	LL/LW	0.78	0.028
ChGCT	4–14	7	BulbW	0.73–1.10	0.92	PLSAPW/L	0.53	0.027
LL	1.00–1.28	1.16	EmbmW	0.12–0.17	0.14	BulbW/EmbL*	0.63	0.029
LW	1.32–1.50	1.41	PalpTibL	2.46–2.99	2.75	EmbmW/L	0.10	0.006
CUSP*	44–58	53	PalpTibW	1.19–1.40	1.32	PalpTibW/L	0.48	0.02
SL	3.94–4.69	4.39	PalpTibS	0	—	BulbL/TibL	0.83	0.051
SW	3.52–4.02	3.74	PalpPatS	0–3	2			
PLSAPW	0.33–0.42	0.38	PalpFemS	0–3	2			
PLSAPL	0.60–0.78	0.72						
Fe1S	0							
Pa1S	0–5 (p0–2)	3						

*Tibia I* width 1.23. Femora I and II typically without dorsal spines, but occasionally on femur II. Legs I, II unmodified, tibial and metatarsal ventral spines scattered. Patellae III, IV with many prolateral spines. Coxal hairs unmodified. Tarsi III, IV unmodified. Tarsal scopulae weak to moderately developed, distal metatarsal scopulae weak to absent. Tarsal claw teeth legs I, II: superior 10, 8; inferior 2, 1. Trichobothria legs I, II: tarsus 7, 6; metatarsus 9, 9; tibia p5 r5, p4 r4. — *Leg spination*. Leg I: femur 0, patella 4, tibia 29, metatarsus 36 (p3), tarsus 31. Leg II: femur 0, patella 3 (p1), tibia 23, metatarsus 51, tarsus 29. Leg III: femur 4, patella 34 (p29 r5), tibia 30 (p8 r5), metatarsus 38, tarsus 34. Leg IV: femur 10, patella 20 (p14 r6), tibia 22 (p4 r7), metatarsus 29, tarsus 46. Femoral spines mostly bristle-like, a few strong bristles on legs I, II. — *Abdomen*. Posterior lateral spinnerets with short apical segment. Lengths: total 2.84; basal segment 1.40; middle 0.66; apical 0.78. Apical segment width 0.39.

**Distribution.** Macpherson and Tweed Ranges in eastern Border Ranges of New South Wales and Queensland (Fig. 96).

### *Hadronyche annachristiae* n.sp.

Figures 99–101; Table 30

**Etymology.** The species is named for Anna-Christie Gray, my younger daughter.

**Types.** Holotype male: AMS KS5438, Kerewong State Forest, nr Lorne, 31°35'S 152°33'E, D. Milledge, 1980. Paratypes (AMS). New South Wales. Males: AMS KS1551, Kerewong State Forest, nr Taree, 31°35'S 152°33'E, 11 May–19 June 1978, D. Milledge; AMS KS5409, Kerewong State Forest, 31°35'S 152°33'E, 30 May–1 September 1979, D. Milledge; AMS KS10770, Kerewong State Forest, Wedding Cake Road, nr Taree, 31°35'S 152°33'E, 28 March 1982, H. Parnaby; AMS KS5637, Lorne State Forest, nr Taree, 31°33'S 152°37'E, 1 Sept–9 December 1979, D. Milledge; AMS KS5420, Lorne State Forest, nr Taree, 31°33'S 152°37'E, 30 May–1 September 1979, D. Milledge.

**Diagnosis.** CL 6.19–6.66 (male). Small atracine spiders with (“boat shaped”). Differs from *H. raveni* and *H. lamingtonensis* and by embolus long and curved with base strongly offset from tegulum (Fig. 100B) and presence of swollen tarsi III, IV (Fig. 3G); from *H. monteithi* by

tarsus more spinose (24–43); and from *H. anzses* by long promarginal cheliceral tooth row.

**Male (holotype)** — *Size*. Carapace length 6.52, width 6.41. Abdomen length 6.97, width 5.56. — *Colour*. Basic colour pattern. — *Carapace*. Slightly longer than wide, moderately raised. Height 3.12. Frontal width 4.85. Fovea strongly procurved. Mid-dorsal cephalic setae almost reach fovea. Anterior strial setae absent. Anterolateral angle of carapace with a few weak bristles. — *Eyes*. Sessile. Eye group width

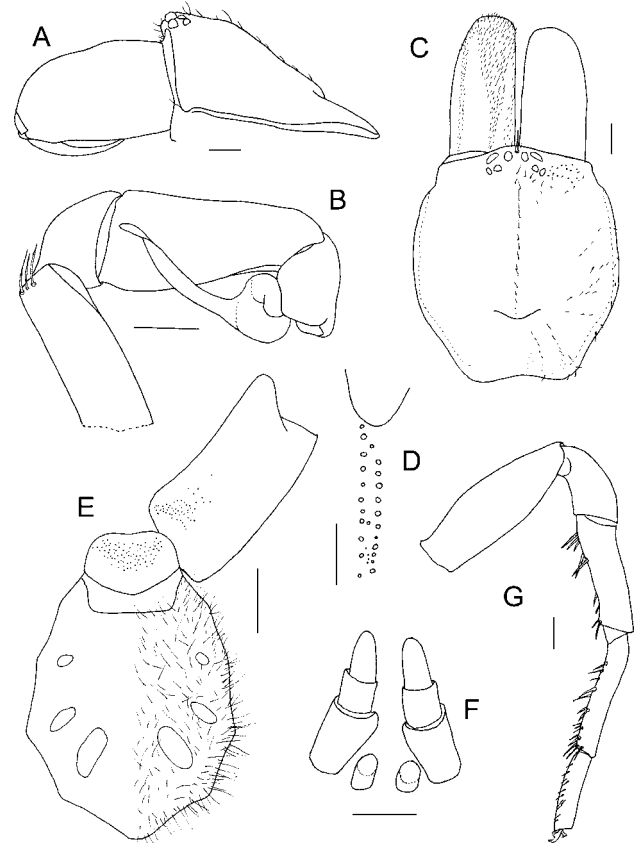


Figure 99. *Hadronyche annachristiae* Male. (A) cephalothorax and chelicerae, lateral; (B) palp, prolateral; (C) cephalothorax and chelicerae, dorsal; (D) cheliceral groove teeth; (E) sternum, labium and maxilla; (F) spinnerets; (G) leg II, prolateral. Scale lines 1 mm.

1.90. Median ocular quadrangle length 0.68, anterior width 0.85, posterior width 1.36. Diameters: AME 0.26, ALE 0.50, PLE 0.28, PME 0.25. —*Chelicerae*. Anterodorsal bristles on paturon rather short. Cheliceral groove narrow, margins parallel. Groove length 2.22, middle width 0.34. Cheliceral teeth: 4 central placed at base of groove (occasionally a few teeth apically); 10 prolateral; 10 retrolateral. —*Labium*. Wider than long with long anterior hairs. Length 1.06, width 1.42. Labiosternal sigilla broad, complete. Cuspules c. 83, number low. —*Sternum*. Ovoid. Length 4.08, width 3.21. Posterior sigilla large, elongate. —*Palp*. Tegular area much

wider than long, middle haematodocha exposed. Embolus moderately long, shaft hardly tapering distally, strongly curved. Distal embolus moderately twisted, flange partially reflexed. Embolus base strongly offset from tegulum. Bulb length 2.99, width 1.18. Embolus length 2.18, midwidth 0.16. Length of femur 2.84, patella 1.24, tibia 3.39. Width of tibia 1.54. Spination: none; sinuous bristles on distal femur. —*Legs*. 4123.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	5.79	2.67	4.06	4.22	2.34	19.08
2	5.29	2.67	3.87	3.98	2.50	18.31
3	5.02	2.35	3.25	3.69	3.02	17.33
4	5.93	2.68	4.56	4.96	3.52	21.65

*Tibia I* width 0.92. Femora I and II without dorsal spines. Legs I and II unmodified. Scattered ventral spines on metatarsus I and tibia II, with largest spines grouped proximally. Tarsi III, IV swollen and longer (boat-shaped) than tarsi I, II. Coxal hairs unmodified. Tarsal scopulae:

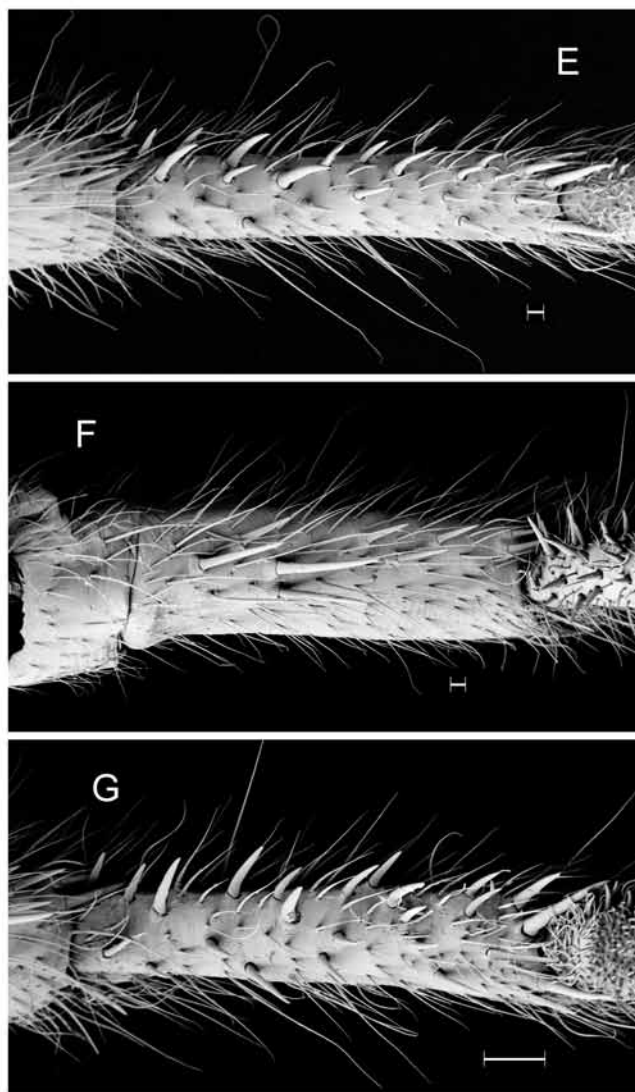
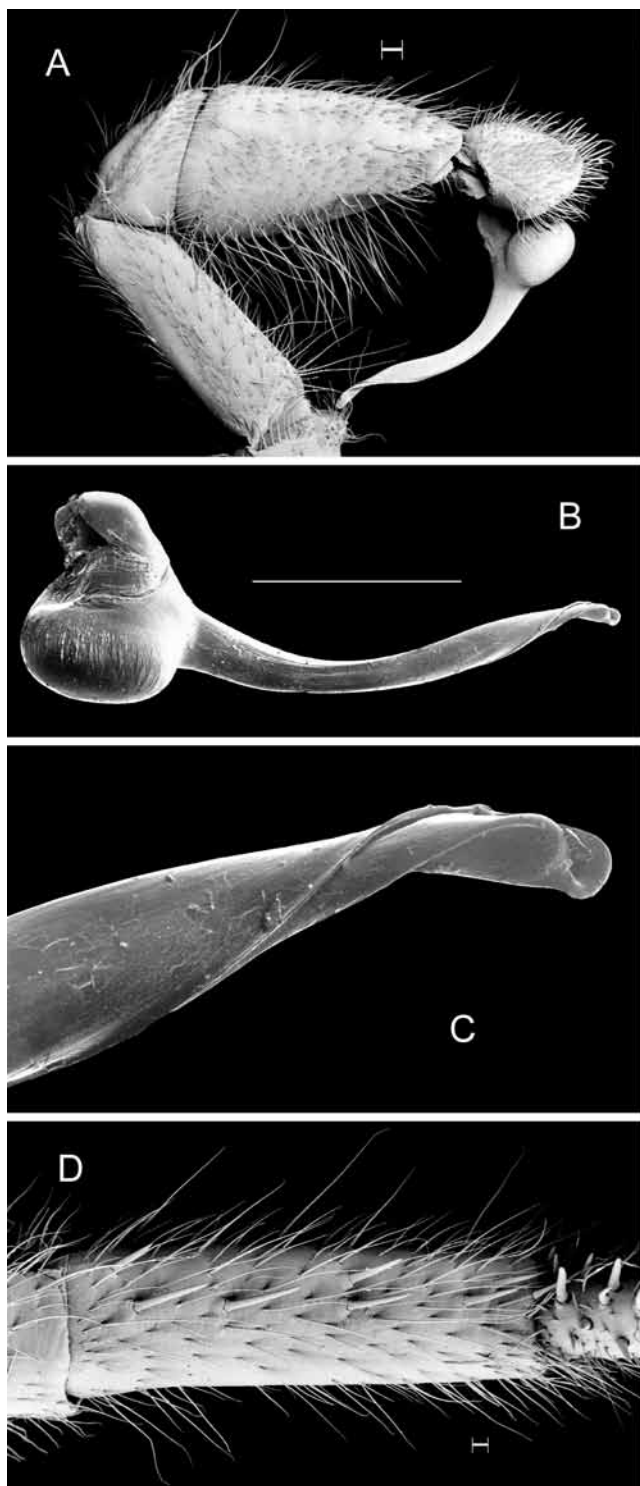


Figure 100. *Hadronyche annachristiae*, male (A,D–G, AMS KS5049; B,C, AMS KS5420): (A) palp, prolateral; (B) bulb; (C) embolus, distal; (D) distal patella and tibia I, ventral; (E) metatarsus I, ventral; (F) distal patella and tibia II, ventral. (G) metatarsus II, ventral. Scale lines: A 0.2 mm, B 1.0 mm, D–F 0.2 mm and G 0.3 mm.

**Table 30.** Male morphological data—*Hadronyche annachristiae* (n = 6).

character	range	mean	character	range	mean	character	ratio	SD
CL*	6.19–6.66	6.44	Mt1S	23–32	27	CW/CL	0.94	0.036
CW	5.85–6.41	6.06	Ta1S	24–43 (1–4 mv)	35	CH/CW	0.48	0.03
CH	2.87–3.12	2.93	Ti2S	9–16	12	CFW/CL	0.71	0.01
CFW	4.42–4.69	4.59	STC2teeth	8–10	8	CHGW/L	0.13	0.012
ChGL	2.11–2.63	2.26	BulbL	2.72–2.99	2.87	SW/SL	0.80	0.055
ChGW	0.27–0.34	0.29	EmbL	1.97–2.48	2.14	LL/LW	0.79	0.028
ChGCT	4–8	6	BulbW	1.01–1.18	1.07	PLSAPW/L	0.56	0.027
LL	0.96–1.16	1.05	EmbmidW	0.15–0.20	0.17	BulbW/EmbL*	0.50	0.029
LW	1.24–1.42	1.33	PalpTibL	3.01–3.39	3.14	EmbmidW/L*	0.08	0.006
CUSP	83–102	89	PalpTibW	1.39–1.54	1.49	PalpTibW/L	0.47	0.02
SL	3.63–4.08	3.84	PalpTibS	0	—	BulbL/TibL	0.91	0.051
SW	2.92–3.28	3.08	PalpPatS	0	—			
PLSAPW	0.36–0.41	0.38	PalpFemS	0–3	1			
PLSAPL	0.66–0.72	0.67						
Fe1S	0							
Pa1S*	0							

leg I weak; legs II–IV moderately to strongly developed. Distal metatarsal scopulae absent legs I–III, very weak leg IV. Tarsal spines numerous, a few small mid-ventral spines sometimes present. Tarsal claw teeth legs I, II: superior 8, 8; inferior 1, 1. Trichobothria legs I, II: tarsus 7, 7; metatarsus 7, 8; tibia p5 r5, p5 r5. —*Leg spination*. Leg I: femur 0, patella 0, tibia 12, metatarsus 32, tarsus 42. Leg II: femur 0, patella 0, tibia 16, metatarsus 35, tarsus 42. Leg III: femur 0, patella 31 (p30 r1), tibia 15 (p5 r3), metatarsus 25, tarsus 47. Leg IV: femur 1, patella p8, tibia 6 (p1), metatarsus 27, tarsus 88. —*Abdomen*. Posterior lateral spinnerets with short apical segment. Lengths; total 2.44; basal segment 1.14; middle 0.58; apical 0.72. Apical segment width 0.38.

**Distribution.** Known only from the Kerewong and Lorne State Forests near Comboyne, New South Wales (Fig. 101).

### *Hadronyche monteithi* n.sp.

Figures 101–102; Table 31

**Etymology.** The species is named for Dr Geoff Monteith, a collector of the type specimens and many other spider species.

**Types.** Holotype male: QMB S181 (QMB). The Head, via Killarney, Queensland, 28°20'S 152°18'E, G.B. and S.R. Monteith, 31 Mar–2 August 1975.

**Other material.** Queensland. Male: QMB S148, Bald Mountain, via Emuvalle, 28°14'S 152°25'E, G.B. and S.R. Monteith, 28 December 1974–30 March 1975.

**Diagnosis.** CL 5.00–5.19 (male). Small atracine spiders. Differs from *H. raveni* and *H. lamingtonensis* by having slender, curved embolus (Fig. 102D and tarsi III, IV swollen; from *H. annachristiae* by relatively few tarsus I spines (5–7); and from *H. anzses* by strongly curved embolus.

**Male** (holotype) —*Size*. Carapace length 5.00, width 4.70. Abdomen length 5.00 width 3.94. —*Colour*. Basic colour pattern. Small paler area on anterodorsal abdomen flanked

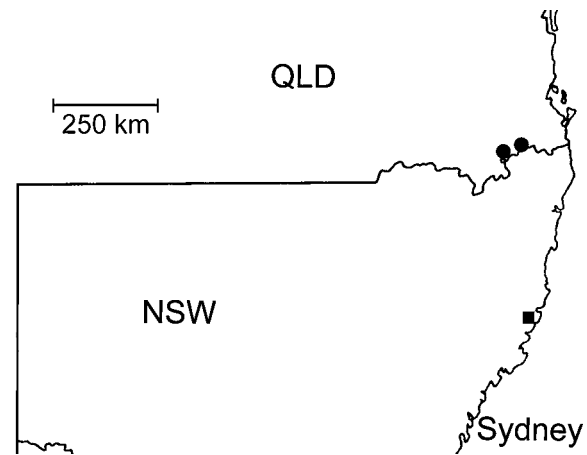


Figure 101. Collection records for *Hadronyche annachristiae* (squares) and *H. monteithi* (circles).

by a pair of sigilla. —*Carapace*. Slightly longer than wide, narrowing rapidly posteriorly, moderately raised. Height 2.54. Frontal width 3.57. Fovea strongly procurved. Mid-dorsal cephalic setae do not reach fovea. Anterior strial setae few or absent. Anterolateral angle of carapace with a few hairs only. —*Eyes*. Sessile. Eye group width 1.39. Median ocular quadrangle length 0.49, anterior width 0.68, posterior width 0.93. Diameters: AME 0.23, ALE 0.32, PLE 0.27, PME 0.18. —*Chelicerae*. Sparse-moderate anterodorsal cover of short bristles on paturon. Cheliceral groove very narrow, margins subparallel. Groove length 1.68, middle width 0.25. Cheliceral teeth: 2 central, in proximal end of groove; 6 prolateral; 9 retrolateral, absent from distal third of retromargin. —*Labium*. Wider than long. Length 0.78, width 1.05. Cuspules c. 68, number low. Labiosternal sigilla entire. —*Sternum*. Broad, ovoid. Length 2.99, width 2.58. Posterior sigilla large, ovoid. —*Palp*. Tegular area much wider than long, middle haematodocha exposed. Embolus shaft strongly curved, moderately long and slender but hardly tapered distally. Distal embolus twisted and set at obtuse angle to shaft. Embolus base weakly offset from tegulum. Bulb length 1.96, width 0.79. Embolus length 1.44, midwidth 0.10. Length of femur 2.20, patella 0.90, tibia 2.18. Width of tibia 1.07. Spination: femur 4 (bristle-like). —*Legs*. 4123.

**Table 31.** Male morphological data—*Hadronyche monteithi* (n = 2).

character	range	mean	character	range	mean	character	ratio
CL*	5.00–5.19	5.09	Mt1S	16–19	18	CW/CL	0.95
CW	4.70–5.02	4.86	Ta1S*	5–7	6	CH/CW	0.51
CH	2.44–2.54	2.49	Ti2S*	3–7	5	CFW/CL	0.72
CFW	3.57–3.81	3.69	STC2teeth	6–11	9	CHGW/L	0.15
ChGL	1.68–1.86	1.77	BulbL	1.96–1.97	1.97	SW/SL*	0.85
ChGW	0.25–0.30	0.27	EmblL	1.42–1.44	1.43	LL/LW	0.74
ChGCT*	3	3	BulbW	0.79–0.80	0.80	PLSAPW/L	0.60
LL	0.78–0.84	0.81	EmbmidW	0.10–0.11	0.11	BulbW/EmblL	0.55
LW	1.05–1.13	1.09	PalpTibL	2.18–2.40	2.29	EmbmidW/L*	0.07
CUSP	68–81	75	PalpTibW	1.07–1.54	1.30	PalpTibW/L*	0.56
SL	2.99–3.26	3.12	PalpTibS	0	—	BulbL/TibL	0.86
SW	2.58–2.72	2.65	PalpPatS	0	—		
PLSAPW	0.32–0.33	0.33	PalpFemS	2–4	3		
PLSAPL	0.44–0.68	0.56					
Fe1S	0						
Pa1S	0						

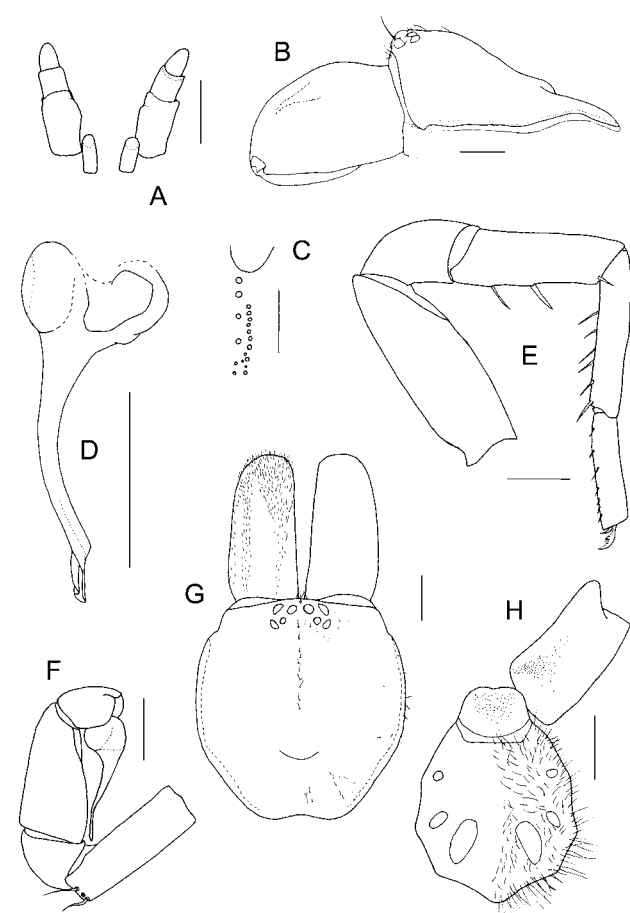


Figure 102. *Hadronyche monteithi*, male: (A) spinnerets; (B) cephalothorax and chelicerae, lateral; (C) cheliceral groove teeth; (D) palpal organ; (E) leg II, prolateral; (F) palp, prolateral; (G) cephalothorax and chelicerae, dorsal; (H) sternum, labium and maxilla. Scale lines 1 mm.

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
1	3.92	1.90	2.87	2.82	1.86	13.37
2	3.48	1.62	2.73	2.64	1.86	12.33
3	3.32	1.60	1.92	2.52	2.12	11.48
4	3.92	1.76	2.76	3.30	2.62	14.36

*Tibia I* width 0.74. Femora I and II without spines. Legs I and II unmodified, tibial spines few and metatarsal ventral spines scattered. Coxal hairs unmodified. Tarsi III, IV swollen, “boat-shaped”. Scopulae absent on distal metatarsi, weak to moderately developed on tarsi I–IV. Tarsal claw teeth legs I, II: superior 7, 6; inferior 0, 0. Trichobothria legs I, II: tarsus 5, 6: metatarsus 8, 6; tibia p4 r4, p4 r4. —*Leg spination*. Leg I: femur 0, patella 0, tibia 6, metatarsus 16, tarsus 7. Leg II: femur 0, patella 0, tibia 2–3 (ventral spines ± weak). Leg III. femur 1, patella 27 (p26 r1), tibia 11 (p6 r2) metatarsus 18 (pd6 rd4), tarsus 8. Leg IV: femur 1, patella p3, tibia 6 (p3 d1), metatarsus 16, tarsus 13. —*Abdomen*. Posterior lateral spinnerets with short apical segment. Lengths: total 1.76; basal segment 0.88, middle 0.44, apical 0.44. Apical segment width 0.32.

**Distribution.** Border Ranges in Killarney region, south-eastern Queensland (Fig. 101).

### *Hadronyche anzses* Raven

*Hadronyche anzses* Raven, 2000: 225

**Types.** Holotype male: QMB S18825. Mossman Bluff summit, 10Km west of Mosman, 16°26'54"S 145°16'59"E, N.E. Queensland, 20 December 1989–15 January 1990, G. Monteith, G. Thompson and ANZSES Expedition.

**Diagnosis.** CL 5.31 (male). Small atracine spiders. Differs from other *lamingtonensis* group species in having only a few basal teeth (3) on the cheliceral promargin (Raven, 2000, Fig. 1G) and metatarsus I with fewer spines (c. 10); and from *H. raveni* and *H. lamingtonensis* by tarsi III, IV swollen, “boat-shaped”.

**Distribution.** Known only from the type locality.



*adelaidensis* species group

**Description** (Figs. 103–104; Tables 32–33). Small atracinae (CL 5.4–6.9). Burrow entrance without triplines, with side-chamber closed by a trap-door. Carapace broad, strongly raised. Labium and sternum wide. Serrula absent. Cheliceral groove narrow with long central tooth row. STC teeth few (8–9). Male femora I, II with dorsal spines or bristles. Males without leg II apophyses; leg I modified (incrassate tibia and metatarsus) or unmodified. Male palpal tibia bulbous basally; patella wider than femur.

**Included species.** *Hadronyche adelaidensis* (Gray), *H. flindersi* (Gray), *H. eyrei* (Gray).

**Distribution.** Limited to the Gulf Ranges region of South Australia.

**Comments.** Burrows of adult and subadult spiders have a side chamber with a robust soil door and a simple collapsible, collar-like silk entrance opening in or under leaf litter in open forest and woodland habitats (Main, 1976; Gray, 1984). The burrows lack surface triplines. Interestingly, juveniles of *H. adelaidensis* make burrows that lack side chambers but have well-formed, flap-like surface trapdoors (Gray, 1984).

These spiders are separated from the main eastern distribution of the Atracinae by the dry shrublands/woodlands of the southern Murray Basin (Fig. 2). They may originally have been isolated as a western atracine population during a Tertiary marine incursion into the Murray Basin.

*Hadronyche flindersi* (Gray)

Figures 103–105; Table 32

*Atrax flindersi* Gray, 1984: 446.

*Hadronyche flindersi*.—Gray, 1988: 114.

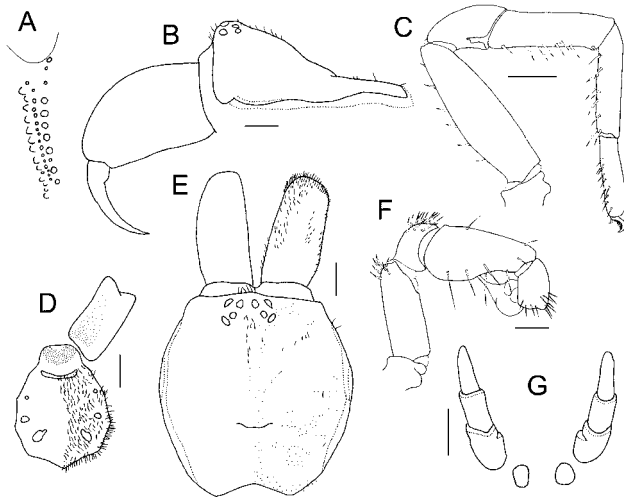


Figure 103. *Hadronyche flindersi*, male: (A) cheliceral groove teeth; (B) cephalothorax and chelicerae, lateral; (C) leg I, prolateral; (D) sternum, labium and maxilla; (E) cephalothorax and chelicerae, dorsal; (F) leg III, prolateral, patella, tibia, metatarsus; (G) palp, prolateral; (G) spinnerets. Scale lines 1 mm.

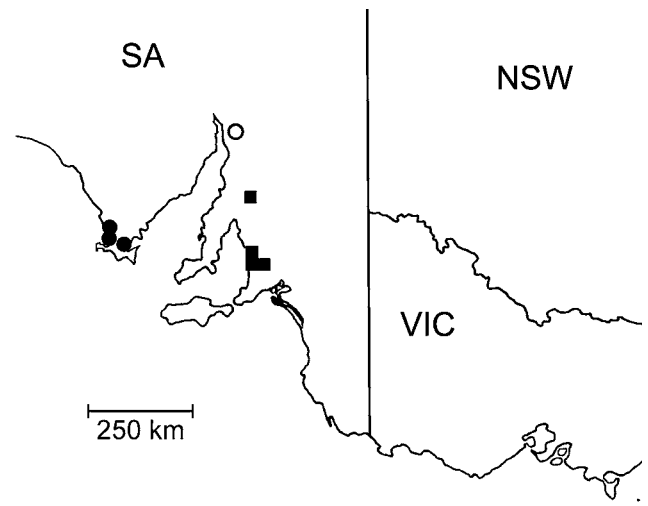


Figure 105. Collection records for *Atrax flindersi* (open circles), *A. adelaidensis* (black squares) and *A. eyrei* (closed circles).

**Types.** Holotype female: AMS KS983, Mt. Remarkable (lower slopes), 3km north of Melrose, Flinders Range, South Australia, 32°47'S 138°04'E, 23 April 1973, M. and G. Gray. Paratype male: AMS KS980, same data as holotype, 25 April 1973.

**Diagnosis.** CL 5.4–6.9 (male and female). Small atracine spiders. Males differ from *H. adelaidensis* by row of strong dorsal spines (8–9) on femur I; and tibia I, II with 6–9 spines. Male palp with straight, slender embolus, and 12–16 spines on patella. Male tarsi III, IV weakly swollen. Females with moderately slender spermathecae with a subapical constriction; few prolateral spines on tibia III (8–9).

**Distribution.** The southern end of the Flinders Ranges, South Australia (Fig. 105).

**Comments.** Female burrow with juvenile spiders in side passage closed by trapdoor in April, 1973.

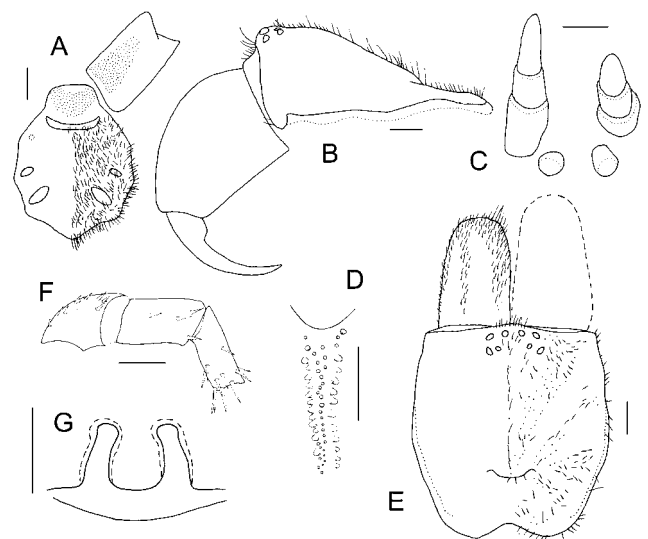


Figure 104. *Hadronyche flindersi*, female: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) spinnerets; (D) cheliceral groove teeth; (E) cephalothorax and chelicerae, dorsal; (F) leg III, prolateral, patella, tibia, metatarsus; (G) spermathecae. Scale lines 1 mm.

**Table 32.** Male morphological data—*Hadronyche flindersi* (n = 2).

character	range	mean	character	range	mean	character	ratio
CL*	5.44–5.86	5.65	Mt1S	15–18	17	CW/CL	0.98
CW	5.33–5.72	5.52	Ta1S	18–21	20	CH/CW	0.45
CH	2.38–2.62	2.50	Ti2S	9	9	CFW/CL	0.70
CFW	3.81–4.10	3.95	STC2teeth	8–9	9	CHGW/L	0.13
ChGL	1.74–1.86	1.80	BulbL	2.20–2.36	2.28	SW/SL	0.90
ChGW	0.24–0.25	0.25	EmblL	1.28–1.42	1.35	LL/LW	0.72
ChGCT	16–18	17	BulbW	1.02–1.04	1.03	PLSAPW/L	0.35
LL	0.90–1.00	0.95	EmbmidW	0.10–0.12	0.11	BulbW/EmblL	0.76
LW	1.31	1.31	PalpTibL	2.81–2.95	2.88	EmbmidW/L*	0.08
CUSP	171–185	178	PalpTibW	1.43–1.54	1.48	PalpTibW/L	0.51
SL	3.16–3.47	3.31	PalpTibS	2–3	3	BulbL/TibL	0.79
SW	2.92–3.10	3.01	PalpPatS*	14–15	15		
PLSAPW	0.36–0.38	0.37	PalpFemS	2–7	5		
PLSAPL	1.03–1.08	1.05					
Fe1S*	8–9	9					
Pa1S	0						

***Hadronyche adelaidensis* (Gray)**

Figures 105–107; Table 33

*Atrax adelaidensis*. Gray, 1984: 442.

*Hadronyche adelaidensis*.—Gray, 1988: 114.

**Types.** Holotype female: N1979146 (SAM). Hackney, Adelaide, South Australia, 34°54'S 138°37'E, 16 November 1973, J. Batt. Paratype male: N1979145 (SAM). St. Peters C.G.S. Adelaide, South Australia, 3 June 1971, D. Edwards.

**Diagnosis.** CL 5.5–6.8 (male and female). Small atracine spiders. Males differ from *H. flindersi* by presence of incrassate tibia I and metatarsus I, reduced spination on

tibia I, II (0–2), and absence of dorsal spines (bristles only) on femur I. Male palp with short, broad embolus. Females are distinguished by strongly dilated spermathecae; and numerous prolateral spines on patella III (18–26).

**Distribution.** Mount Lofty Ranges and the Adelaide region, South Australia (Fig. 105).

**Comments.** Williams & Goode (1978) found evidence that the Miocene Murray River in South Australia may have run west into the Spencer Gulf south of Port Pirie, before its flow was diverted southward near Morgan. The progenitor populations of *H. adelaidensis* and *H. flindersi* may have speciated on either side of a barrier formed by the ancient Murray River in South Australia.

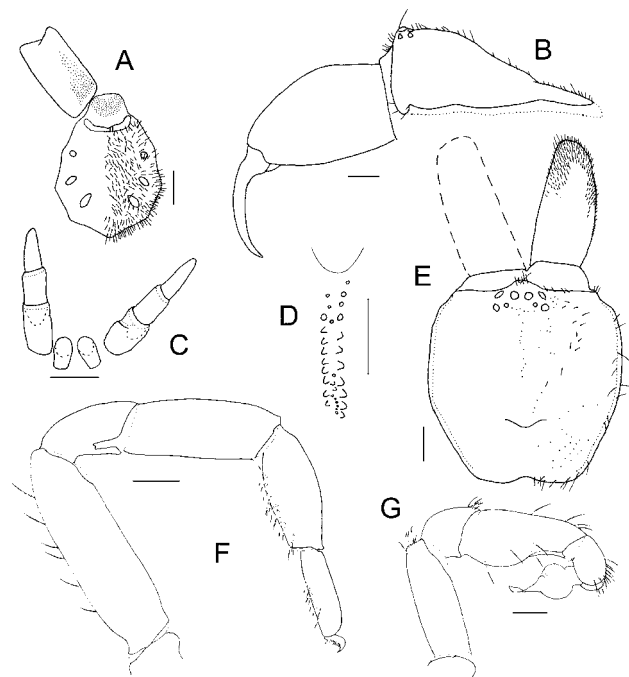


Figure 106. *Hadronyche adelaidensis*, male: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) spinnerets; (D) cheliceral groove teeth; (E) cephalothorax and chelicerae, dorsal; (F) leg I, prolateral; (G) palp, prolateral. Scale lines 1 mm.

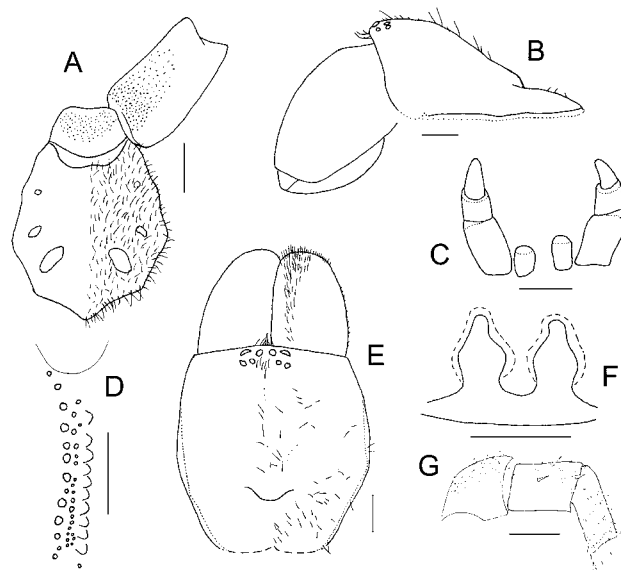


Figure 107. *Hadronyche adelaidensis*, female: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) spinnerets; (D) cheliceral groove teeth; (E) cephalothorax and chelicerae, dorsal; (F) spermathecae; (G) leg III, prolateral, patella, tibia, metatarsus. Scale lines 1 mm.

**Table 33.** Male morphological data—*Hadronyche adelaidensis* (n = 3).

character	range	mean	character	range	mean	character	ratio	SD
CL*	5.55–6.40	6.04	Mt1S	19–31	25	CW/CL	0.93	0.064
CW	5.30–6.15	5.63	Ta1S	12–20	16	CH/CW	0.47	0.046
CH	2.57–2.75	2.65	Ti2S*	1–2	1	CFW/CL	0.74	0.017
CFW	4.21–4.67	4.45	STC2teeth	8	8	CHGW/L	0.10	0.006
ChGL	2.07–2.39	2.22	BulbL	2.10–2.26	2.18	SW/SL	0.89	0.02
ChGW	0.22–0.24	0.22	EmbL	1.24–1.36	1.30	LL/LW	0.76	0.021
ChGCT	10–12	11	BulbW	1.02–1.06	1.04	PLSAPW/L	0.40	0.015
LL	1.00–1.06	1.03	EmbmidW	0.22–0.24	0.23	BulbW/EmbL	0.80	0.05
LW	1.30–1.44	1.37	PalpTibL	2.95–3.14	3.03	EmbmidW/L*	0.18	0.006
CUSP	181–230	207	PalpTibW	1.48–1.60	1.54	PalpTibW/L	0.51	0.006
SL	3.45–3.73	3.59	PalpTibS	0	—	BulbL/TibL	0.72	0.01
SW	3.14–3.26	3.20	PalpPatS	0	—			
PLSAPW	0.36–0.38	0.37	PalpFemS	0–1	1			
PLSAPL	0.92–0.94	0.93						
Fe1S	0*							
Pa1S	0							

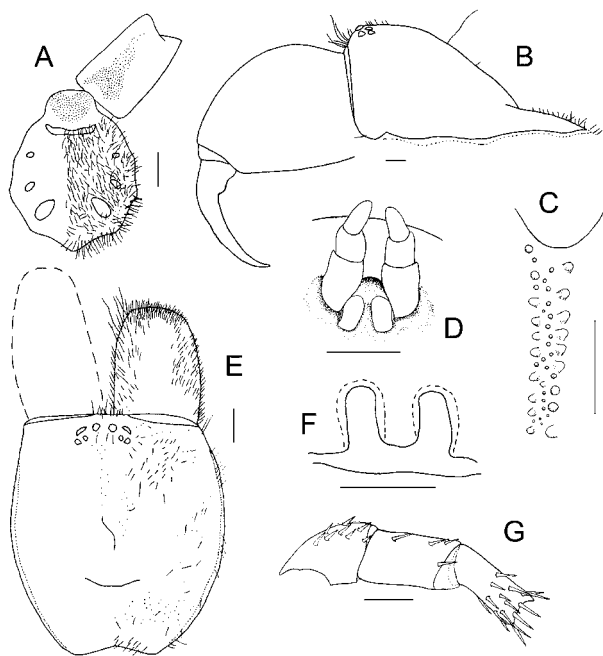


Figure 108. *Hadronyche eyrei*, female: (A) sternum, labium and maxilla; (B) cephalothorax and chelicerae, lateral; (C) cheliceral groove teeth; (D) spinnerets; (E) cephalothorax and chelicerae, dorsal; (F) spermathecae; (G) leg III, prolateral, patella, tibia, metatarsus. Scale lines 1 mm.

### *Hadronyche eyrei* (Gray)

Figures 105, 108

*Atrax eyrei*. Gray, 1984: 444.

*Hadronyche eyrei*.—Gray, 1988: 114.

**Types.** Holotype female: AMS KS4509, 6.5km south of Coult, Eyre Peninsula, South Australia, 34°23'S 135°28'E, 18 December 1952, B.Y. Main.

**Diagnosis.** CL 6.6 (female). Small atracine spiders. Differs from other *adelaidensis* group species by its rather uniform maroon-brown abdominal pigmentation (much lighter laterally and ventrally in other species). Prolateral patella with 5–10 spines. Spermathecae unmodified, sac-like.

**Distribution.** Southern Eyre Peninsula, South Australia (Fig. 105).

**Comments.** This species represents the known western extent of the atracine spiders in Australia.

**ACKNOWLEDGMENTS.** The late Vera Levitt-Gregg was a Sydney naturalist and Australian Museum Associate, whose knowledge and enthusiasm initiated my interest in these highly venomous spiders. My thanks to Dr Robert Raven for his useful comments on the manuscript. Curatorial staff at the Queensland Museum, Museum Victoria, the Tasmanian Museum and Art Gallery, the Launceston Museum and Art Gallery and the South Australian Museum assisted with the loan of material. Field work was supported by a grant from the Australian Biological Research Study—thanks to Harry Parnaby for his field assistance. Funding from the Australian Museum assisted with mapping and SEM editing work by Vicky Tzsumiz. Sue Lindsay took the SEM pictures and Kate Attwood kindly assisted with re-arrangement of drawings. Thanks to my wife, Greta Jensen Gray, who assisted in so many ways, including data compilation, field work and coffee.

**Table 34.** Female morphological data for *Atrax*, *Illawarra* and *Hadronyche* species; means within parentheses, ratios within square brackets, measurements in mm; n = 6 for each species except *H. emmalizae* and *H. lynabrae* n = 3. Abbreviations: *CL*, carapace length; *CW*, carapace width; *CH*, carapace height; *SL*, sternum length; *SW*, sternum width; *LL*, labium length; *LW*, labium width; *ChGL*, cheliceral groove length; *ChGW*, cheliceral groove width; *PLSAPL*, posterior lateral spinneret apical segment length; *PLSAPW*, posterior lateral spinneret apical segment width; *TiIS*, tibia I spine number; *Pa3proS*, patella III prolateral dorsal spine number.

species	<i>A. robustus</i>	<i>A. yorkmainorum</i>	<i>A. sutherlandi</i>	<i>I. wisharti</i>	<i>H. cerebera</i>	<i>H. versuta</i>
CL	9.69–13.89 (12.45)	7.39–9.18 (8.23)	7.72–10.20 (8.53)	7.98–9.94 (8.90)	6.67–10.72 (9.30)	8.78–11.18 (9.60)
CW	7.96–11.99 (10.30)	6.41–8.42 (7.35)	6.20–8.31 (7.10)	6.72–8.40 (7.65)	6.42–9.93 (8.64)	8.42–11.20 (9.20)
CH	2.72–5.70 (4.38)	2.76–3.86 (3.31)	2.65–4.30 (3.31)	2.87–3.93 (3.41)	3.59–5.24 (4.61)	4.06–5.83 (5.02)
SL	5.72–8.20 (6.97)	4.19–5.23 (4.81)	4.05–6.12 (5.04)	4.29–5.70 (4.84)	4.81–7.32 (6.39)	5.92–8.46 (6.81)
SW	4.41–6.30 (5.25)	3.79–4.34 (3.91)	3.24–4.19 (3.75)	3.70–4.91 (4.35)	3.55–5.50 (4.84)	4.69–5.74 (5.08)
LL	1.81–2.49 (2.15)	1.18–1.73 (1.44)	1.17–1.60 (1.38)	1.28–1.55 (1.41)	1.55–2.44 (2.18)	2.11–2.90 (2.34)
LW	2.10–3.03 (2.62)	1.69–2.10 (1.82)	1.57–2.28 (1.85)	1.56–1.95 (1.77)	1.57–2.24 (2.08)	2.08–2.88 (2.26)
ChGL	3.13–4.45 (3.74)	2.33–3.08 (2.64)	1.97–3.26 (2.70)	1.70–2.96 (2.46)	2.10–3.90 (2.94)	2.54–3.60 (2.92)
ChGW	0.42–0.66 (0.60)	0.35–0.62 (0.44)	0.28–0.47 (0.39)	0.32–0.46 (0.37)	0.54–1.02 (0.77)	0.69–1.06 (0.82)
PLSAPL	2.11–3.26 (2.57)	0.77–1.78 (1.43)	1.39–2.35 (1.72)	0.44–1.14 (0.86)	0.93–1.90 (1.41)	0.92–1.54 (1.34)
PLSAPW	0.66–0.96 (0.81)	0.45–0.66 (0.55)	0.51–0.63 (0.55)	0.35–0.58 (0.48)	0.56–0.80 (0.71)	0.69–0.94 (0.79)
TiIS	2–3 (3)	2–5 (3)	2–3 (2)	0 (0)	0–3 (2)	4–7 (5)
Pa3proS	2–3 (2)	1–5 (3)	3–5 (4)	3–7 (5)	3–12 (6)	3–9 (6)
CW/CL	[0.83]	[0.89]	[0.83]	[0.86]	[0.93]	[0.96]
CH/CW	[0.42]	[0.45]	[0.47]	[0.44]	[0.53]	[0.55]
SW/SL	[0.75]	[0.81]	[0.74]	[0.90]	[0.76]	[0.74]
LL/LW	[0.82]	[0.79]	[0.75]	[0.79]	[1.05]	[0.97]
ChGW/L	[0.16]	[0.17]	[0.14]	[0.15]	[0.26]	[0.28]
PLSAPW/L	[0.31]	[0.38]	[0.32]	[0.56]	[0.50]	[0.59]

species	<i>H. emmalizae</i>	<i>H. formidabilis</i>	<i>H. alpina</i>	<i>H. venenata</i>	<i>H. marracoonda</i>	<i>H. mascordi</i>
CL	8.50–11.25 (10.28)	11.55–14.84 (13.00)	7.87–10.55 (9.18)	6.96–9.72 (8.27)	10.15–11.71 (10.98)	6.42–8.66 (7.27)
CW	7.86–10.90 (9.78)	9.14–12.71 (11.19)	7.01–9.35 (8.36)	6.71–8.93 (7.63)	8.65–10.07 (9.43)	6.29–7.31 (6.80)
CH	4.47–6.62 (5.55)	4.57–6.75 (5.77)	3.68–5.50 (4.67)	3.03–4.57 (3.92)	4.13–5.37 (4.69)	2.69–4.03 (3.55)
SL	5.87–7.72 (7.07)	6.56–9.17 (8.18)	4.70–6.90 (6.01)	4.80–7.10 (5.77)	6.27–7.86 (7.19)	4.18–5.46 (4.73)
SW	4.73–6.51 (5.81)	5.40–6.88 (6.26)	3.90–5.24 (4.70)	3.54–4.83 (4.16)	5.02–5.90 (5.55)	3.16–3.93 (3.55)
LL	1.70–2.55 (2.33)	2.07–3.08 (2.65)	1.65–2.36 (1.95)	1.47–2.34 (1.78)	2.23–2.99 (2.58)	1.09–1.41 (1.23)
LW	2.16–2.62 (2.40)	2.08–2.95 (2.65)	1.72–2.41 (2.14)	1.60–2.37 (1.88)	2.29–2.72 (2.56)	1.47–2.16 (1.70)
ChGL	3.00–3.65 (3.44)	3.41–4.85 (4.27)	2.59–3.93 (3.27)	2.20–2.99 (2.58)	3.24–3.56 (3.40)	2.04–2.33 (2.21)
ChGW	0.68–1.11 (0.96)	0.60–1.06 (0.85)	0.52–0.92 (0.72)	0.40–0.62 (0.51)	0.85–0.93 (0.90)	0.63–0.79 (0.69)
PLSAPL	1.17–2.42 (1.81)	1.76–2.75 (2.08)	0.93–1.72 (1.33)	1.00–1.72 (1.33)	1.55–2.07 (1.77)	0.69–1.18 (0.91)
PLSAPW	0.62–1.17 (0.90)	0.67–0.94 (0.79)	0.42–0.69 (0.60)	0.52–0.68 (0.63)	0.79–1.22 (0.97)	0.52–0.73 (0.59)
TiIS	0–4 (2)	0–1 (<1)	1–4 (2)	0–2 (2)	3–5 (4)	1–2 (1)
Pa3proS	4–9 (7)	5–13 (8)	4–11 (8)	2–5 (4)	5–6 (5)	3–9 (5)
CW/CL	[0.95]	[0.86]	[0.91]	[0.92]	[0.86]	[0.93]
CH/CW	[0.57]	[0.52]	[0.56]	[0.51]	[0.50]	[0.52]
SW/SL	[0.82]	[0.76]	[0.78]	[0.72]	[0.77]	[0.75]
LL/LW	[0.97]	[1.00]	[0.91]	[0.95]	[1.00]	[0.72]
ChGW/L	[0.28]	[0.20]	[0.22]	[0.20]	[0.26]	[0.31]
PLSAPW/L	[0.50]	[0.38]	[0.45]	[0.47]	[0.55]	[0.65]

Table 34 (continued).

species	<i>H. nimoola</i>	<i>H. modesta</i>	<i>H. meridiana</i>	<i>H. infensa</i>	<i>H. orana</i>	<i>H. valida</i>
CL	5.88–9.24 (8.00)	6.68–8.12 (7.29)	5.90–7.86 (6.84)	9.56–12.97 (11.18)	7.93–10.74 (9.16)	7.96–12.05 (9.89)
CW	5.76–8.65 (7.78)	5.97–8.19 (6.95)	6.29–7.39 (6.77)	9.42–10.73 (10.05)	8.15–9.17 (8.76)	7.19–10.40 (8.69)
CH	3.08–5.44 (4.76)	3.16–4.43 (3.72)	3.55–4.43 (3.97)	4.76–6.42 (5.49)	3.85–5.37 (4.82)	3.84–6.18 (4.80)
SL	3.80–5.78 (4.99)	4.22–5.65 (4.95)	4.21–5.21 (4.77)	5.44–7.58 (6.69)	5.48–6.71 (6.31)	5.21–7.68 (6.42)
SW	3.34–5.08 (4.46)	3.45–4.64 (4.13)	3.52–4.06 (3.78)	4.22–5.95 (5.22)	4.68–5.54 (5.12)	4.11–5.76 (4.91)
LL	1.11–2.10 (1.66)	1.24–1.70 (1.47)	1.44–1.57 (1.51)	2.08–2.49 (2.22)	1.81–2.33 (2.03)	1.38–2.21 (1.84)
LW	1.24–2.46 (1.67)	1.59–2.10 (1.85)	1.70–2.11 (1.87)	2.04–2.59 (2.34)	1.87–2.23 (2.08)	1.69–2.58 (2.16)
ChGL	1.59–2.83 (2.43)	2.10–3.01 (2.62)	2.29–2.83 (2.56)	3.16–3.80 (3.39)	2.72–3.06 (2.86)	2.49–3.39 (2.89)
ChGW	0.46–0.79 (0.69)	0.38–0.68 (0.56)	0.45–0.54 (0.51)	0.67–0.90 (0.79)	0.72–1.01 (0.86)	0.60–0.85 (0.74)
PLSAPL	0.67–1.29 (1.06)	0.69–1.06 (0.92)	0.67–1.14 (0.92)	1.31–2.12 (1.74)	1.36–1.83 (1.57)	1.43–2.21 (1.61)
PLSAPW	0.42–0.92 (0.67)	0.31–0.56 (0.50)	0.41–0.58 (0.51)	0.52–0.99 (0.73)	0.67–0.82 (0.75)	0.55–0.69 (0.65)
ThIS	0–1 (<1)	0–3 (1)	0–4 (2)	1–4 (3)	0–5 (2)	2–4 (3)
Pa3proS	14–27 (21)	4–19 (11)	4–8 (6)	4–8 (6)	3–6 (5)	1–7 (5)
CW/CL	[0.97]	[0.95]	[0.99]	[0.90]	[0.96]	[0.88]
CH/CW	[0.61]	[0.53]	[0.59]	[0.55]	[0.55]	[0.55]
SW/SL	[0.89]	[0.83]	[0.79]	[0.78]	[0.81]	[0.76]
LL/LW	[0.99]	[0.79]	[0.81]	[0.95]	[0.98]	[0.85]
ChGW/L	[0.28]	[0.21]	[0.20]	[0.23]	[0.30]	[0.26]
PLSAPW/L	[0.63]	[0.54]	[0.55]	[0.42]	[0.48]	[0.40]

species	<i>H. lynabrae</i>	<i>H. macquariensis</i>	<i>H. walkeri</i>	<i>H. levittreggae</i>
CL	8.52–9.45 (8.95)	7.86–14.48 (10.97)	8.65–12.42 (10.96)	7.21–11.16 (9.56)
CW	7.90–8.41 (8.16)	7.28–10.35 (9.34)	8.24–10.80 (9.37)	5.90–10.28 (8.34)
CH	4.47–4.54 (4.52)	3.67–5.19 (4.49)	3.47–5.74 (4.88)	3.42–5.83 (4.55)
SL	5.48–6.30 (5.93)	5.11–7.48 (6.49)	5.74–7.72 (6.72)	4.30–8.02 (6.28)
SW	4.32–4.56 (4.43)	4.23–5.86 (5.27)	4.11–5.87 (5.18)	3.30–5.74 (4.66)
LL	1.73–1.95 (1.83)	1.57–2.45 (2.01)	1.64–2.55 (2.14)	1.41–2.29 (1.92)
LW	1.94–2.23 (2.10)	1.79–2.69 (2.21)	1.70–2.90 (2.27)	1.45–2.36 (1.98)
ChGL	3.04–3.28 (3.19)	2.74–3.90 (3.33)	2.72–4.06 (3.32)	2.16–3.26 (2.78)
ChGW	0.66–0.73 (0.69)	0.66–0.80 (0.75)	0.63–0.92 (0.80)	0.46–0.85 (0.70)
PLSAPL	1.33–1.85 (1.54)	1.44–2.36 (1.89)	1.49–2.53 (1.98)	1.11–1.43 (1.28)
PLSAPW	0.61–0.68 (0.64)	0.51–1.02 (0.81)	0.59–0.90 (0.76)	0.59–0.76 (0.67)
ThIS	0–1 (<1)	1–3 (2)	0–4 (2)	1–2 (2)
Pa3proS	12–17 (14)	6–11 (7)	4–7 (6)	4–8 (6)
CW/CL	[0.91]	[0.85]	[0.85]	[0.87]
CH/CW	[0.55]	[0.48]	[0.52]	[0.55]
SW/SL	[0.75]	[0.81]	[0.77]	[0.74]
LL/LW	[0.87]	[0.91]	[0.94]	[0.97]
ChGW/L	[0.23]	[0.22]	[0.24]	[0.25]
PLSAPW/L	[0.42]	[0.43]	[0.38]	[0.52]

## References

- Ausserer, A., 1871. Beiträge zur Kenntniss der Arachniden-Familie der Territelariae Thorell—(Mygalidae). *Verhandlungen zoologisch-botanischen Gesellschaft in Wien* 21: 117–224.
- Ausserer, A., 1875. Zweiter Beitrag zur Kenntniss der Arachniden-Familie der Territelariae Thorell (Mygalidae). *Verhandlungen zoologisch-botanischen Gesellschaft in Wien* 25: 125–206.
- Beavis, A.S., & D.M. Rowell, 2006. Phylogeography of two Australian funnel-web spiders (Araneae: Mygalomorphae: Hexathelidae) in Tallaganda State Forest, New South Wales. In *Insect Biodiversity and Dead Wood: Proceedings of a Symposium for the 22nd International Congress of Entomology. General Technical Report SRS-93*, ed. Simon J. Grove and James L. Hanula. Asheville, NC: US Department of Agriculture Forest Service, Southern Research Station. 110p.
- Bonnet, P., 1955. *Bibliographia araneorum*. Toulouse, 2(1): 1–918.
- Bonnet, P., 1957. *Bibliographia araneorum*. Toulouse, 2(3): 1927–3026.
- Bonnet, P., 1958. *Bibliographia araneorum*. Toulouse, 2(4): 3027–4230.
- Bradley, R.A., 1993. Seasonal activity patterns in Sydney funnel-web spiders, *Atrax* spp. (Araneae: Hexathelidae). *Bulletin of the British Arachnological Society* 9(6): 189–197.
- Brignoli, P.M., 1983. *A Catalogue of the Araneae Described Between 1940 and 1981*. Manchester University Press, 755 pp.
- Bücherl, W., 1971. Spiders. In *Venomous Animals and their Venoms*. Academic Press, New York, 3: 197–277.
- Cambridge, O.P., 1877. On some new genera and species of Araneidea. *Annals of the Magazine of natural History* 4(19): 26–39.
- Cooley, A., 1989. An apparent case of character displacement in sympatric populations of atracine spiders of the genera *Atrax* and *Hadronyche*. Honours thesis, Australian National University.
- Coyle, F., 1986. Courtship, mating and the function of male-specific leg structures in the mygalomorph spider genus *Euagrus* (Araneae, Dipluridae). *Proceedings of the IX International Congress of Arachnology, Panama*. Pp. 33–38.
- Goloboff, P.A., 1993. A reanalysis of mygalomorph spider families (Araneae). *American Museum Novitates* 3056: 1–32.
- Gray, M.R., 1978. *Venoms of Dipluridae, A. Systematics and Distribution*. In *Arthropod Venoms*, ed. S. Bettini, pp. 121–126. Berlin: Springer-Verlag.
- Gray, M.R., 1981. Getting to know funnel-web spiders. *Australian Natural History* 20: 265–270.
- Gray, M.R., 1984. The taxonomy of the *Atrax adelaidensis* species-group (Macrothelinae: Mygalomorphae) with notes on burrowing behaviour. *Records of the South Australian Museum* 18: 441–452.
- Gray, M.R., 1986. A systematic study of the funnel-web spiders (Mygalomorphae: Hexathelidae: Atracinae). PhD thesis. Macquarie University.
- Gray, M.R., 1987. Distribution of the funnel-web spiders. In *Toxic Plants and Animals: A Guide for Australia*, ed. J. Covacevich, P. Davie & J. Pearn, pp. 312–321. Brisbane: Queensland Museum.
- Gray, M.R., 1988. Aspects of the systematics of the Australian funnel-web spiders (Araneae: Hexathelidae: Atracinae) based upon morphological and electrophoretic data. *Australian entomological Society miscellaneous Publication* 5: 113–125.
- Hedin, M., & J.E. Bond, 2006. Molecular phylogenetics of the spider infraorder Mygalomorphae using nuclear rRNA genes (18S and 28S): Conflict and agreement with the current system of classification. *Molecular Phylogenetics and Evolution* 41: 454–471.  
<http://dx.doi.org/10.1016/j.ympev.2006.05.017>
- Hickman, V.V., 1927. Studies in Tasmanian spiders. Part I. *Papers and Proceedings of the Royal Society of Tasmania* 1926: 52–86.
- Hickman, V.V., 1964. On *Atrax infensus* sp. n. (Araneida: Dipluridae) its habits and a method of trapping the males. *Papers and Proceedings of the Royal Society of Tasmania* 98: 107–112.
- Hickman, V.V., 1967. *Some Common Spiders of Tasmania*. Tasmanian Museum and Art Gallery, 112 pp.
- Hogg, H.R., 1901. On Australian and New Zealand spiders of the suborder Mygalomorphae. *Proceedings of the zoological Society of London* 1901: 218–279.
- Hogg, H.R., 1902. On some additions to the Australian spiders of the suborder Mygalomorphae. *Proceedings of the zoological Society of London* 1902: 121–142.
- Karsch, F., 1878. Exotisch-araneologisches. *Zeitschrift für die gesamten Naturwissenschaften* 51: 332–333.
- Koch, L., 1873. *Die Arachniden Australiens*. Nürnberg 1: 369–472.
- Levitt, V., 1961. The funnel web spider in captivity. *Proceedings of the Royal Zoological Society (NSW)* 1958: 80–84.
- Main, B.Y., 1967. *Spiders of Australia*. Jacaranda Press, 125 pp.
- Main, B.Y., 1976. *Spiders*. Collins, Sydney, 296 pp.
- Main, B.Y., 1982. Some zoogeographic considerations of families of spiders occurring in New Guinea. In *Biogeography and Ecology in New Guinea*, ed. J.L. Gressitt, pp. 583–602. The Hague: Junk.
- Main, B.Y., 1985. Arachnida : Mygalomorphae. In *Zoological Catalogue of Australia* 3: 1–183.
- Mascord, R.E., 1980. *Spiders of Australia: A Field Guide*. Sydney: A. H. and A. W. Reid.
- McKeown, K.C., 1963. *Australian Spiders*. Sydney: Sirius Books: Angus and Robertson.
- Musgrave, A., 1927. Some poisonous Australian Spiders. *Records of the Australian Museum* 16: 33–46.  
<http://dx.doi.org/10.3853/j.0067-1975.16.1927.777>
- Musgrave, A., 1948. A catalogue of the spiders of Tasmania. *Records of the Queen Victoria Museum* 2: 75–91.
- Nishikawa, Y., 1976. Notes on the venomous spiders (funnel-web spider and red-back spider) in Australia. *Otemon Bulletin for Australian Studies* 2: 176–193.
- Platnick, N.I., 2010. The world spider catalogue, version 9.5. American Museum of Natural History, online at:  
<http://research.amnh.org/entomology/spiders/catalogue/index.html>
- Rainbow, W.J., 1911. A census of Australian Araneidae. *Records of the Australian Museum* 9: 107–319.  
<http://dx.doi.org/10.3853/j.0067-1975.9.1911.928>
- Rainbow, W.J., 1913. Arachnida from the Solomon Islands. *Records of the Australian Museum* 10: 1–16.  
<http://dx.doi.org/10.3853/j.0067-1975.10.1913.893>
- Rainbow, W.J., 1914. Studies in the Australian Araneidae. No. 6. The Terretelariae. *Records of the Australian Museum* 10: 187–270.  
<http://dx.doi.org/10.3853/j.0067-1975.10.1914.901>
- Rainbow, W.J., 1920. Trap-door spiders of the “Chevert” Expedition. *Records of the Australian Museum* 13: 77–85.  
<http://dx.doi.org/10.3853/j.0067-1975.13.1920.857>
- Rainbow, W.J., & R.H. Pülleine, 1918. Australian trap-door spiders. *Records of the Australian Museum* 12: 81–169.  
<http://dx.doi.org/10.3853/j.0067-1975.12.1918.882>
- Raven, R.J., 1980. The evolution and biogeography of the mygalomorph spider family Hexathelidae (Araneae, Chelicerata). *Journal of Arachnology* 8: 251–266.
- Raven, R.J., 1985. The spider infraorder Mygalomorphae (Araneae): Cladistics and systematics. *Bulletin of the American Museum of natural History* 182: 1–180.
- Raven, R.J., 2000. A new species of funnel-web spider (*Hadronyche*, Hexathelidae, Mygalomorphae) from north Queensland. *Memoirs of the Queensland Museum* 46: 225–230.
- Roewer, C.F., 1942. *Katalog der Araneae* 1: 1–1040. Bremen.
- Simon, E., 1891. Etudes arachnologiques. 23e Mémoire. XXXVIII. Descriptions d'espèces et de genres nouveaux de la famille des Aviculariidae. *Annales Société entomologique de France* 60: 300–312.



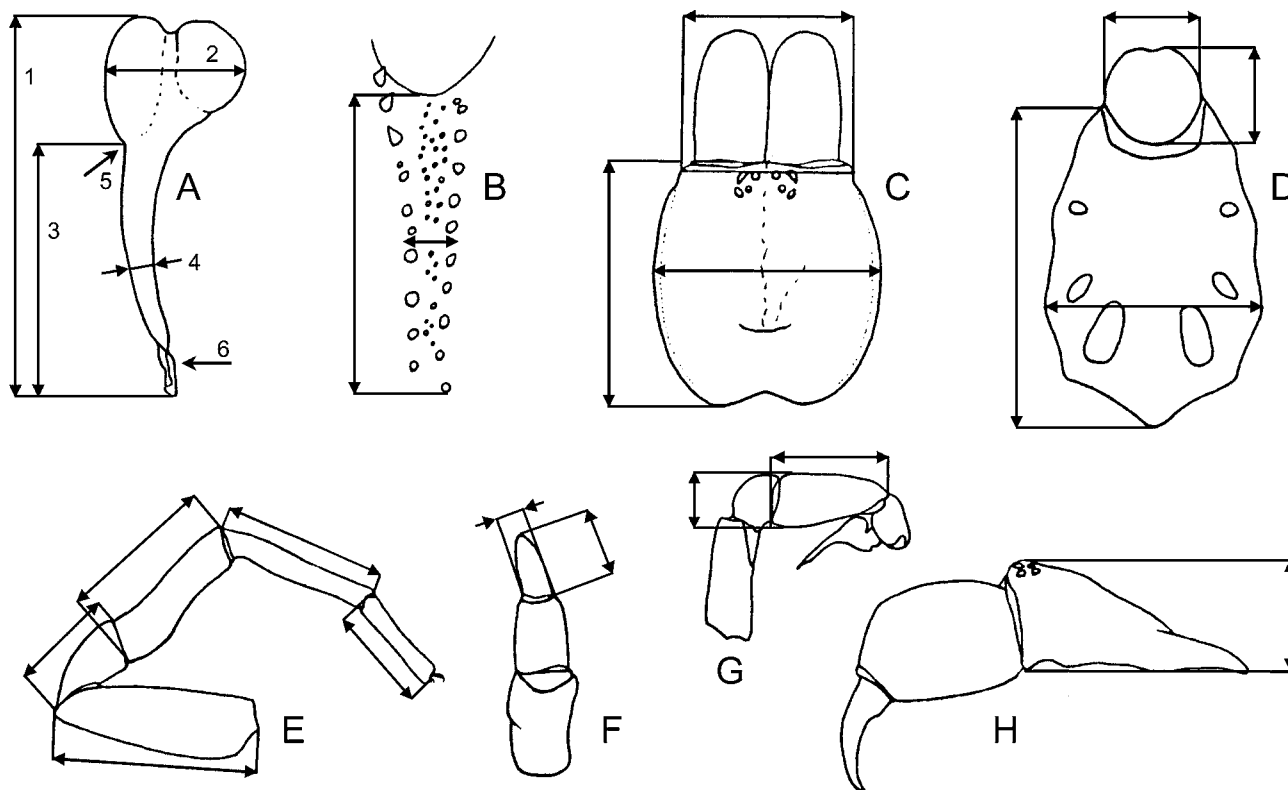
- Simon, E., 1892. *Histoire naturelle des araignées*. 1: 1–256. Paris.
- Simon, E., 1903. *Histoire naturelle des araignées*. 2: 669–1080. Paris.
- Snazel, R., & R. Allison, 1989. The genus *Macrothele* Ausserer (Araneae, Hexathelidae) in Europe. *Bulletin of the British arachnological Society* 8(3): 65–72.
- Sutherland, S.K., & J. Tibballs, 2001. *Australian Animal Toxins*. Oxford University Press, 856 pp.
- Walker, P., 1982. The tree funnel-web spider, *Atrax formidabilis*. *Australian Arachnology* 7: 4–5
- Wilson, D.T.R., 2001. The identification and characterisation of Australian funnel-web spider venom. PhD thesis. University of Queensland.
- Wishart, G., 1993. The biology of spiders and phenology of wandering males in a forest remnant. *Memoirs of the Queensland Museum* 33(2): 675–680.
- Woodman, J.D., J.E. Ashe & D.M. Rowell, 2006. Population structure in a funnelweb spider (Hexathelidae: *Hadronyche*) along a forested rainfall gradient. *Journal of Zoology* 268 (4): 325–333.  
<http://dx.doi.org/10.1111/j.1469-7998.2005.00012.x>

Manuscript submitted 23 September 2009, revised 12 August 2010, and accepted 25 August 2010.

## Appendix 1

### Morphological characters and measurement points

- A Palpal organ. (1) Bulb length—tegulum+embolus. (2) Bulb width—across tegulum and subtegulum. (3) Embolus length. (4) Embolus mid-width. (5) Offset of basal embolus from tegulum. (6) Twisted and “flanged” distal part of embolus.
- B Cheliceral tooth row: length and mid-width.
- C Carapace, dorsal: length, width and clypeal frontal width.
- D Labium: length, width. Sternum: length, width. (Note: the presence of setae on the posterior labium helps differentiate it from the smooth hairless cuticle of the labiosternal sigillum)
- E Leg segment lengths: femur, patella, tibia, metatarsus, tarsus.
- F Posterior lateral spinnerets, apical segment: length and mid-width.
- G Male palpal tibia: length, width.
- H Carapace, lateral: height.



## Appendix 2

List of atracine spider species, with numbers previously allocated to new species. Undescribed species dealt with in Gray (1986, 1987, 1988) were identified by species numbers. These numbers are given below with the corresponding new species names allocated here. Note that number 5 in the *Hadronyche* species number list is intentionally omitted.

species names	species number
<i>Atrax robustus</i> O.P.-Cambridge, 1877	
<i>Atrax sutherlandi</i> n.sp. ....	<i>Atrax</i> sp.1
<i>Atrax yorkmainorum</i> n.sp. ....	<i>Atrax</i> sp.2
<i>Hadronyche adelaidensis</i> (Gray, 1984)	
<i>Hadronyche anzses</i> Raven, 2000	
<i>Hadronyche cerbera</i> L. Koch, 1873	
<i>Hadronyche eyrei</i> (Gray, 1984)	
<i>Hadronyche formidabilis</i> (Rainbow, 1914)	
<i>Hadronyche flindersi</i> (Gray, 1984)	
<i>Hadronyche infensa</i> (Hickman, 1964)	
<i>Hadronyche meridiana</i> Hogg, 1902	
<i>Hadronyche modesta</i> (Simon, 1891)	
<i>Hadronyche pulvinator</i> (Hickman, 1927)	
<i>Hadronyche valida</i> (Rainbow & Pulleine, 1918)	
<i>Hadronyche venenata</i> (Hickman, 1927)	
<i>Hadronyche versuta</i> (Rainbow, 1914)	
<i>Hadronyche emmalizae</i> n.sp. ....	<i>Hadronyche</i> sp. 1
<i>Hadronyche alpina</i> n.sp. ....	<i>Hadronyche</i> sp. 2
<i>Hadronyche marracoonda</i> n.sp. ....	<i>Hadronyche</i> sp. 3
<i>Hadronyche monaro</i> n.sp. ....	<i>Hadronyche</i> sp. 4
<i>Hadronyche tambo</i> n.sp. ....	<i>Hadronyche</i> sp. 6
<i>Hadronyche nimoola</i> n.sp. ....	<i>Hadronyche</i> sp. 7
<i>Hadronyche mascordi</i> n.sp. ....	<i>Hadronyche</i> sp. 8
<i>Hadronyche jensenae</i> n.sp. ....	<i>Hadronyche</i> sp. 9
<i>Hadronyche orana</i> n.sp. ....	<i>Hadronyche</i> sp. 10
<i>Hadronyche lynabrae</i> n.sp. ....	<i>Hadronyche</i> sp. 11
<i>Hadronyche kaputarensis</i> n.sp. ....	<i>Hadronyche</i> sp. 12
<i>Hadronyche levittgreggae</i> n.sp. ....	<i>Hadronyche</i> sp. 13
<i>Hadronyche macquariensis</i> n.sp. ....	<i>Hadronyche</i> sp. 14
<i>Hadronyche walkeri</i> n.sp. ....	<i>Hadronyche</i> sp. 15
<i>Hadronyche raveni</i> n.sp. ....	<i>Hadronyche</i> sp. 16
<i>Hadronyche lamingtonensis</i> n.sp. ....	<i>Hadronyche</i> sp. 17
<i>Hadronyche annachristiae</i> n.sp. ....	<i>Hadronyche</i> sp. 18
<i>Hadronyche monteithi</i> n.sp. ....	<i>Hadronyche</i> sp. 19
<i>Illawarra wisharti</i> n.sp. ....	<i>Hadronyche</i> sp. 20