

## Salticidae (Arachnida: Araneae) from the Oriental, Australian and Pacific Regions, XV. New Species of Astieae from Australia

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**ABSTRACT.** Eight new species of Astieae spiders are described: *Arasia mullion*, *Helpis abnormis*, *H. kenilworthi*, *H. risdonica*, *H. tasmanica*, *Sondra bickeli*, *S. brindleyi* and *S. samambrayi*. *Arasia aurea* (Koch) is transferred to the genus *Sondra*. Remarks on relationships of Astieae are provided and distributional maps of studied species are given.

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The group Astieae was proposed by Simon (1901) for nine Old and New World genera. The most comprehensive study of the group was provided by Wanless (1988). He described as new the genera *Jacksonoides*, *Sondra* and *Tauala* and excluded *Charippus* Thorell, *Lagnus* Koch, *Aruana* Strand, *Agelista* Simon, *Anaurus* Simon, *Lapsias* Koch and *Titanattus* Peckham & Peckham from Simon's list. Wanless also suggested that *Adoxotoma*, described by Simon (1909) in Astieae, should be excluded. My studies indicate that the genus should be retained within the group (Żabka, 2001).

More recently, two additional papers dealt with the Astieae (Żabka, 1995; Gardzińska, 1996), the former describing *Megaloastia* from Western Australia, and the latter dealing with new species of *Arasia*, *Helpis* and *Tauala*. Currently Astieae comprises the following genera: *Astia*, *Arasia*, *Helpis*, *Adoxotoma*, *Jacksonoides*, *Megaloastia*, *Sondra* and *Tauala*. The first three of which are found in Australia, on adjacent islands (Patoleta & Żabka, 1999), and in New Guinea; *Helpis* is found also in New Zealand (Żabka, in prep.). The other genera are recorded from Australia only.

Whether the group, as it is now formed, is monophyletic or not is a matter for future study. At least *Astia*, *Arasia*, *Helpis*, *Adoxotoma* and *Megaloastia* seem closely related,

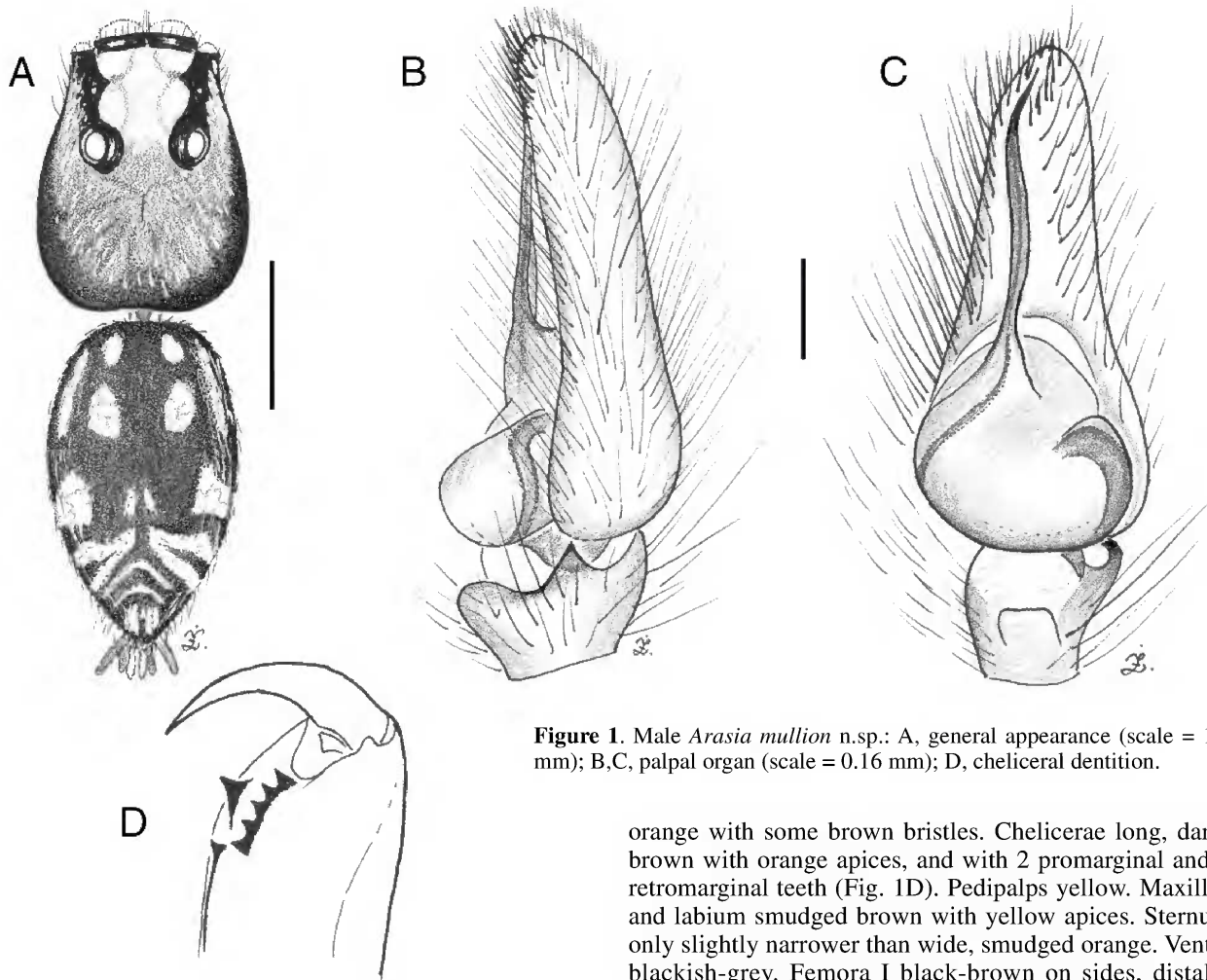
sharing similar body form, cheliceral dentition and genitalic structure. *Tauala* and *Sondra* differ in cephalothorax proportions (EFL:CL, CL:CW) and carapace form (box-rather than pear-shaped) whereas *Jacksonoides* has some genitalic similarities to *Aruana* (see Wanless, 1988).

Except for *Adoxotoma*, the cheliceral dentition is of the pluridentati pattern and is generally quite consistent within the Astieae. In *Adoxotoma* an intermediate pluri-fissidentati stage is present (Żabka, 2001).

### Material and methods

The material is deposited in the Australian Museum, Sydney (AMS); specimens were collected during biological surveys conducted by the Museum. Specimens have been examined using methods described previously (Żabka, 1991a).

Abbreviations used are: AEW, anterior eyes width; AL, abdomen length; AMS, Australian Museum, Sydney; BB, B. Baehr; CL, cephalothorax length; CW, cephalothorax width; EFL, eye field length; GC, G. Cassis; GM, G. Milledge; *j*, (or, when more than one, *jj*) unsexed juvenile specimens; MG, M. Gray; MŻ, M. Żabka; NSW, New South Wales; PEW, posterior eyes width.



**Figure 1.** Male *Arasia mullion* n.sp.: A, general appearance (scale = 1.4 mm); B,C, palpal organ (scale = 0.16 mm); D, cheliceral dentition.

**Genus *Arasia* Simon, 1901**

**Type species** *Astia mollicoma* L. Koch, 1880, p. 1158.

***Arasia mullion* n.sp.**

Fig. 1

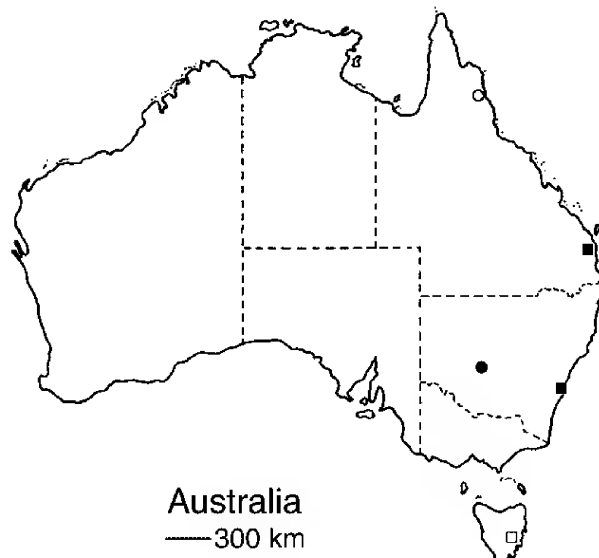
**Type material.** HOLOTYPE Australia: New South Wales: ♂, Mullion State Forest, N of Orange, 33°11'S 145°08'E, under bark, 18 Oct 1999, M. Gray & G. Milledge, AMS KS59179.

**Diagnosis.** Abdominal pattern more contrasting than in other species of the genus, palpal tibia with ventral apophysis.

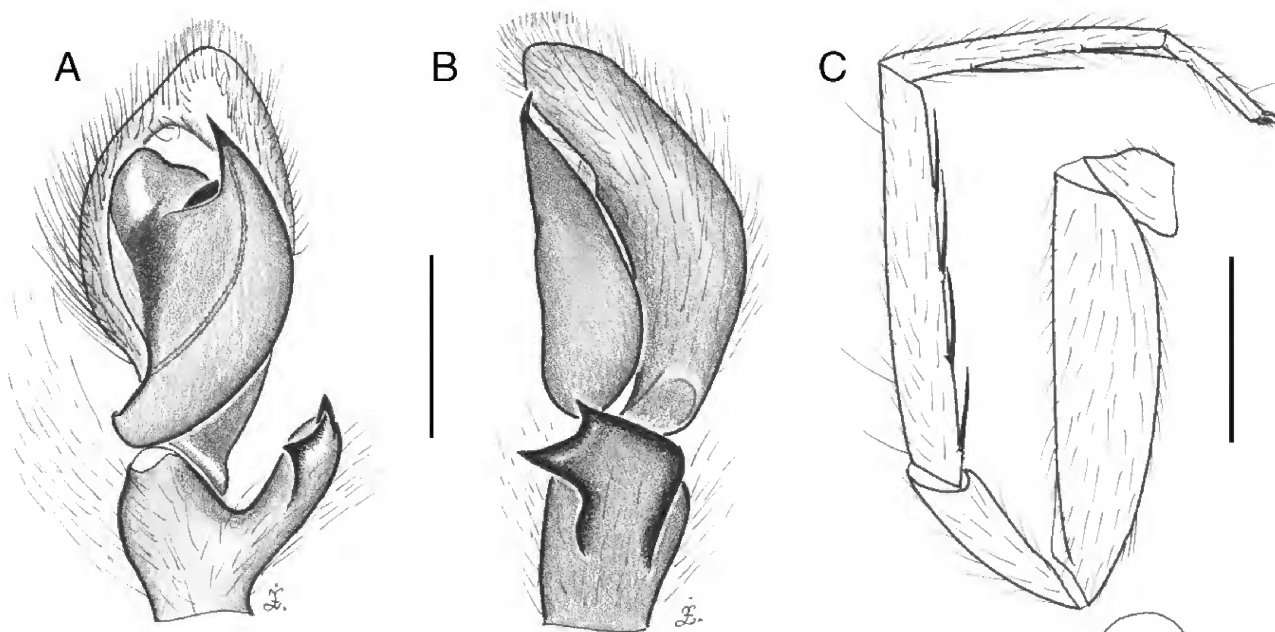
**Description**

**Male** (Fig. 1A). Cephalothorax pear-shaped, covered with rather numerous white adpressed hairs—especially on sides and with scattered brown bristles. Eye field contrasting orange, AME area dark-brown, other eyes surrounded with black. Thorax orange-brown anteriorly with radial darker markings and darkening towards lower margins. Abdomen dark-grey with light pattern made of guanine crystals. Hairs few, white—especially on sides, and brown. Spinnerets rather long, smudged light-brown. Clypeus narrow, dark-

orange with some brown bristles. Chelicerae long, dark-brown with orange apices, and with 2 promarginal and 5 retromarginal teeth (Fig. 1D). Pedipalps yellow. Maxillae and labium smudged brown with yellow apices. Sternum only slightly narrower than wide, smudged orange. Venter blackish-grey. Femora I black-brown on sides, distally slightly lighter, dorsally and ventrally light-brown. Patellae I with dark sides, distally and dorsoventrally yellow, tibiae similar in colour, with 5–6 prolateral and 5 retrolateral



**Figure 2.** Distributions of *Arasia mullion* ●, *Helpis abnormis* ○, *Helpis kenilworthi* ■, and *Helpis risdonica* □.



**Figure 3.** Male *Helpis abnormis* n.sp.: A,B, palpal organ (scale = 0.41 mm); C, leg I (scale = 1.40 mm); D, cheliceral dentition; E, cephalothorax (scale = 0.70 mm).

spines. Metatarsi I with 2 pairs of long spines, yellow proximally and distally, the rest brown. Tarsi I yellow. Other legs more delicate and generally lighter, with dark patches on sides of femora, patellae and tibiae. Legs I densely covered with brown hairs, especially on tibiae and metatarsi. Following legs less clothed, hairs lighter. Palpal organ (Fig. 1B,C) elongated, with ribbon-like, long embolus and distinctive ventral apophysis. Dimensions: CL 2.54, EFL 1.04, AEW 1.50, PEW 1.30, CW 2.18, AL 2.91.

**Distribution** (Fig. 2). Known only from Mullion State Forest (NSW).

**Remarks.** Only three species of *Arasia* are known: *A. mollicoma* (Koch), *A. eucalypti* Gardzińska and the present species, all of them are tree-trunk dwellers in open sclerophyll forests. *Arasia aurea* (Koch) listed by Wanless (1988) is excluded from *Adoxotoma* and transferred to the genus *Sondra* (see below).

### Genus *Helpis* Simon, 1901

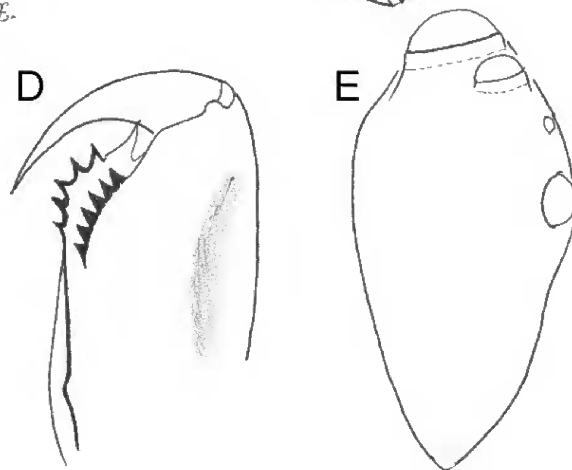
**Type species** *Astia minitabunda* L. Koch, 1880, p. 1160.

#### *Helpis abnormis* n.sp.

Fig. 3

**Type material.** HOLOTYPE Australia: Queensland: ♂, Mt Lewis Rd, 11.3 km by road E of Mossman–Mt Molloy Rd, 16°35'31"S 145°16'15"E, rainforest, 20 Apr 1998, G. Milledge, AMS KS38811.

**Diagnosis.** Differs from other species of *Helpis* by very distinctive palpal organ structure, longer and thinner legs.

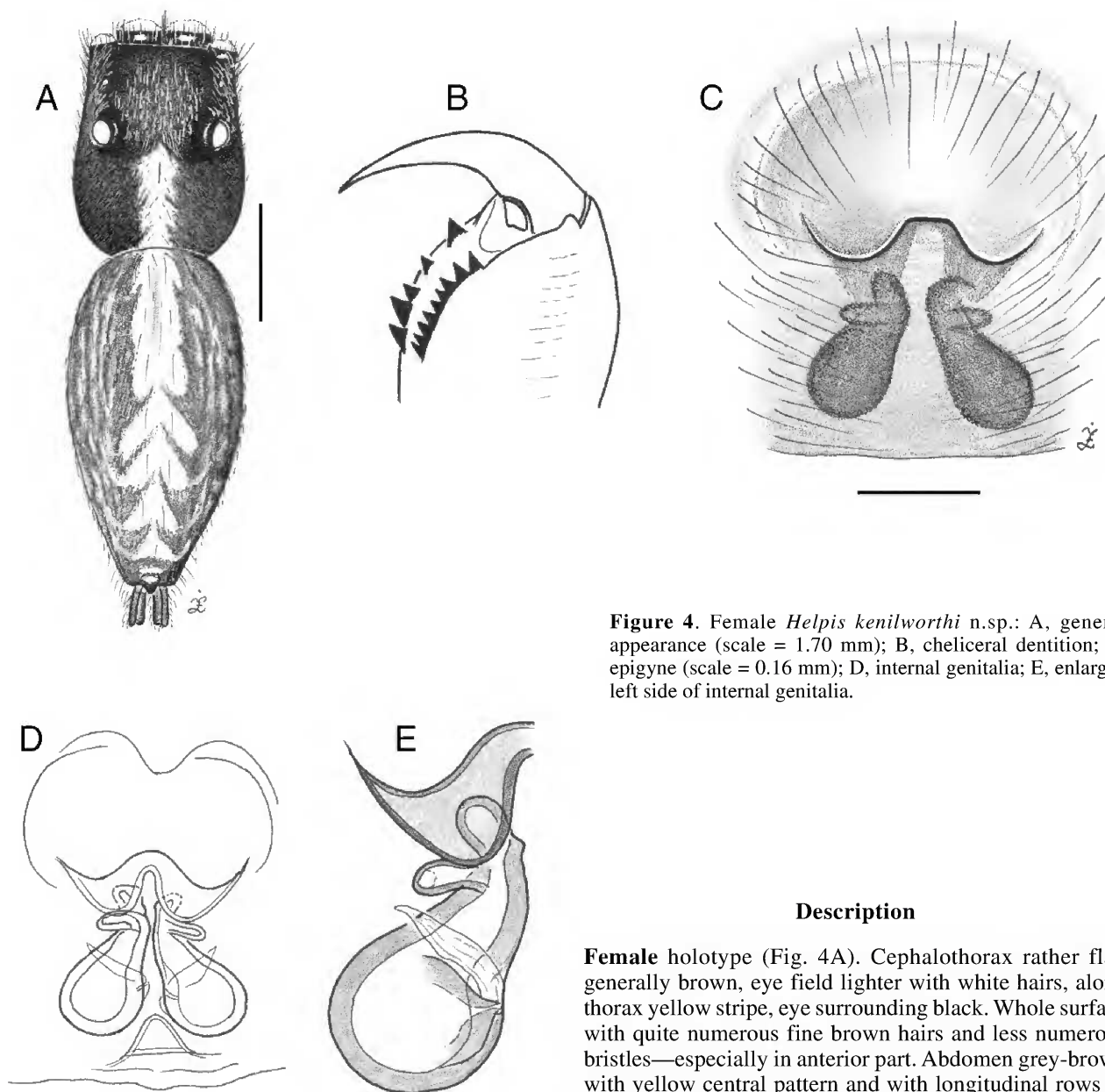


### Description

**Male.** Cephalothorax (Fig. 3E) brown, eye field and median thorax slightly lighter. Fovea region, sides and anterior part of eye field with clusters of white hairs. Brown bristles sparse, more numerous anteriorly. Abdomen macerated. Clypeus brown with sparse white and a few darker hairs. Chelicerae brown with lighter apices, promargin with 5, retromargin with 6 teeth (Fig. 3D). Maxillae and labium brown with lighter apices. Sternum smudged orange. Legs I long and slender (Fig. 3C), tarsi yellow, other podomeres brown, tibiae with 4 and metatarsi with 2 pairs of ventrolateral spines. Other legs similar in colour but more greyish, proximal parts of femora lighter dorsally and ventrally, following podomeres with darker and lighter bands around them. Palpal organ (Fig. 3A,B). Tibial apophysis massive, curved ventrally, furcate at the top. Tegulum with posterior lobe and thin seminal duct across it. Embolus dagger-like. Dimensions: CL 2.39, EFL 1.04, AEW 1.66, PEW 1.40, CW 1.92, AL 2.96.

**Distribution** (Fig. 2). Known only from type-locality.

**Etymology.** For abnormal palpal organ structure.



*Helpis kenilworthi* n.sp.

Fig. 4

**Type material.** HOLOTYPE Australia: Queensland: ♀, Kenilworth State Forest, Sunday Creel Rd, junction with Higher Creek Rd, 26°41'54"S 152°33'05"E, wet sclerophyll forest, 7 May 1998, G. Milledge, AMS KS56429. PARATYPES Australia: Queensland: ♀, Kenilworth SF, Sunday Creek Rd, 9.8 km W of Charlie Moreland Park, wet sclerophyll forest, 26°40'11"S 152°36'35"E, 6 May 1998, GM, AMS KS52186. New South Wales: ♀, Macquarie Pass NP, 34°S 150°39'E, wet sclerophyll forest, under fibre bark, 12 Sep 1999, BB, MŽ, AMS KS67503; 2 ♀, Sydney, Royal NP, 34°8'S 151°39'E, under bark, 24 Mar 1988, MŽ, AMS KS67504.

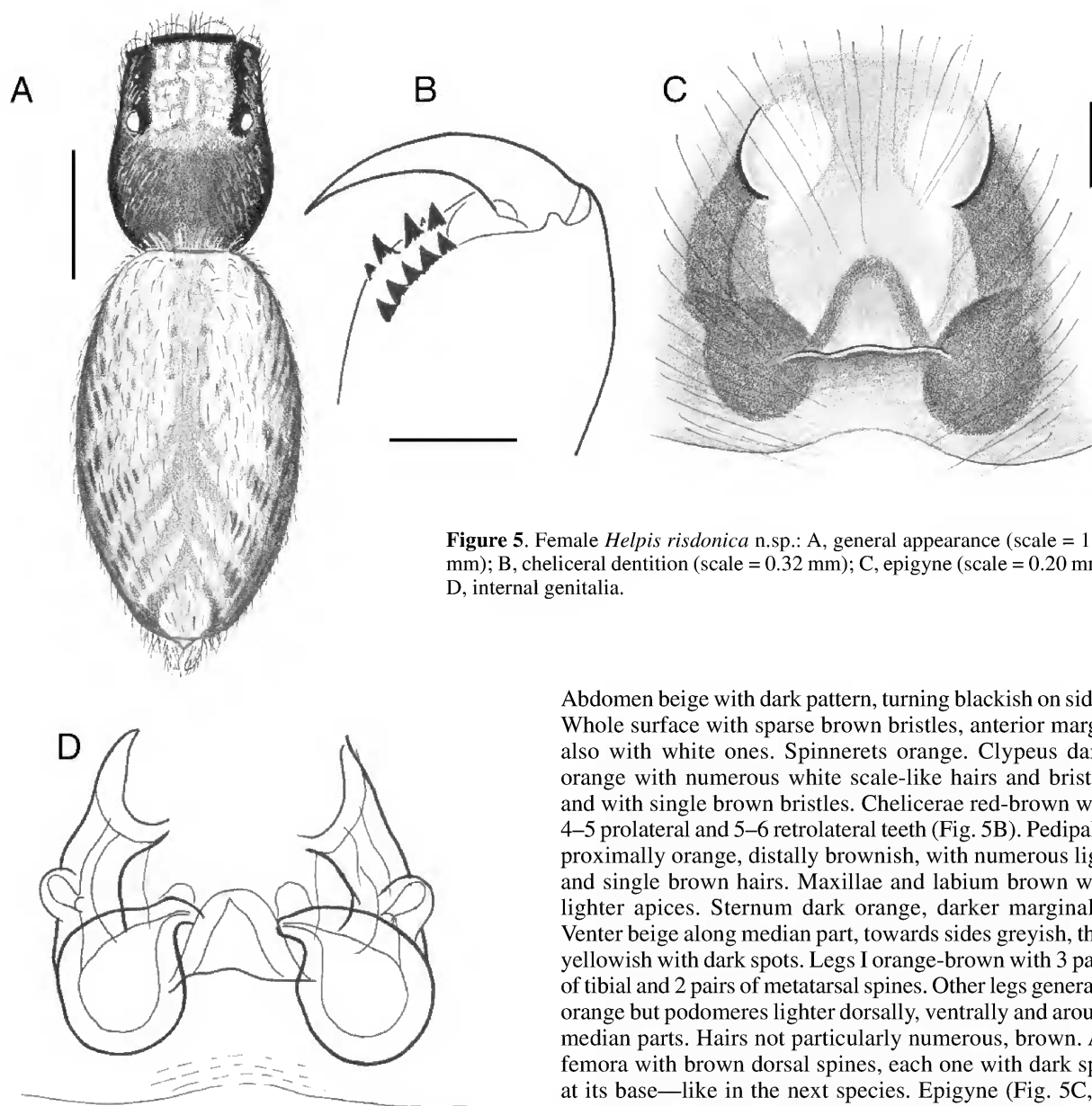
**Diagnosis.** Differs from other species by missing posterior abdominal light patch. Genitalia without long insemination ducts.

**Figure 4.** Female *Helpis kenilworthi* n.sp.: A, general appearance (scale = 1.70 mm); B, cheliceral dentition; C, epigyne (scale = 0.16 mm); D, internal genitalia; E, enlarged left side of internal genitalia.

### Description

**Female holotype** (Fig. 4A). Cephalothorax rather flat, generally brown, eye field lighter with white hairs, along thorax yellow stripe, eye surrounding black. Whole surface with quite numerous fine brown hairs and less numerous bristles—especially in anterior part. Abdomen grey-brown with yellow central pattern and with longitudinal rows of light spots laterally. Spinnerets long, smudged orange. Hairs sparse—brownish. Clypeus brown with some brown bristles. Chelicerae dark-brown, lighter apically with 5 promarginal and 9 retromarginal teeth (Fig. 4B). Pedipalps orange, clothed with light, grey and brown hairs and with a dorsal tarsal spine. Maxillae and labium elongate, the former twice as long as the latter, both brown with lighter apices. Sternum smudged orange. Venter yellow. Femora and tarsi I yellow, other podomeres honey-orange, tibiae with 4 proventral and 3–4 retroventral spines, metatarsi with 2 pairs of spines. Other legs yellow-orange. Legs not particularly hairy, brownish. Epigyne (Fig. 4C–E) very distinctive with anterior pocket-like cavities leading to short insemination ducts accompanied by accessory glands. Spermathecae pear-shaped. Posteriorly single central pocket visible after epigyne is cleared. Dimensions: CL 3.12, EFL 1.30, AEW 2.02, PEW 1.82, CW 2.39, AL 4.68.

**Distribution** (Fig. 2). Known from single localities in Queensland and New South Wales where it has been found on tree trunks in wet sclerophyll forests.



**Figure 5.** Female *Helpis risdonica* n.sp.: A, general appearance (scale = 1.80 mm); B, cheliceral dentition (scale = 0.32 mm); C, epigyne (scale = 0.20 mm); D, internal genitalia.

***Helpis risdonica* n.sp.**

Fig. 5

**Type material.** HOLOTYPE Australia: Tasmania: ♀, Risdon, 42°49'S 147°21'E, 23 Aug 1947, Hickman, AMS KS30949. PARATYPE Australia: Tasmania: ♀, same data as holotype, AMS KS67499.

**Diagnosis.** The species has a very distinctive light colour pattern and epigyne.

**Description**

**Female holotype** (Fig. 5A). Eye field with orange contrasting spots, eye surrounding black. Thorax brown, darkening towards lower margin, white fine quite numerous—especially on sides. Whole cephalothorax with scattered brown bristles—more numerous anteriorly.

Abdomen beige with dark pattern, turning blackish on sides. Whole surface with sparse brown bristles, anterior margin also with white ones. Spinnerets orange. Clypeus dark-orange with numerous white scale-like hairs and bristles and with single brown bristles. Chelicerae red-brown with 4–5 prolateral and 5–6 retrolateral teeth (Fig. 5B). Pedipalps proximally orange, distally brownish, with numerous light and single brown hairs. Maxillae and labium brown with lighter apices. Sternum dark orange, darker marginally. Venter beige along median part, towards sides greyish, then yellowish with dark spots. Legs I orange-brown with 3 pairs of tibial and 2 pairs of metatarsal spines. Other legs generally orange but podomeres lighter dorsally, ventrally and around median parts. Hairs not particularly numerous, brown. All femora with brown dorsal spines, each one with dark spot at its base—like in the next species. Epigyne (Fig. 5C,D) distinctive, copulatory openings well separated from each other, insemination ducts wide, accompanied by accessory glands. Central pocket more anteriorly than in other species. Dimensions: CL 2.86, EFL 1.24, AEW 1.76, PEW 1.66, CW 2.23, AL 5.30.

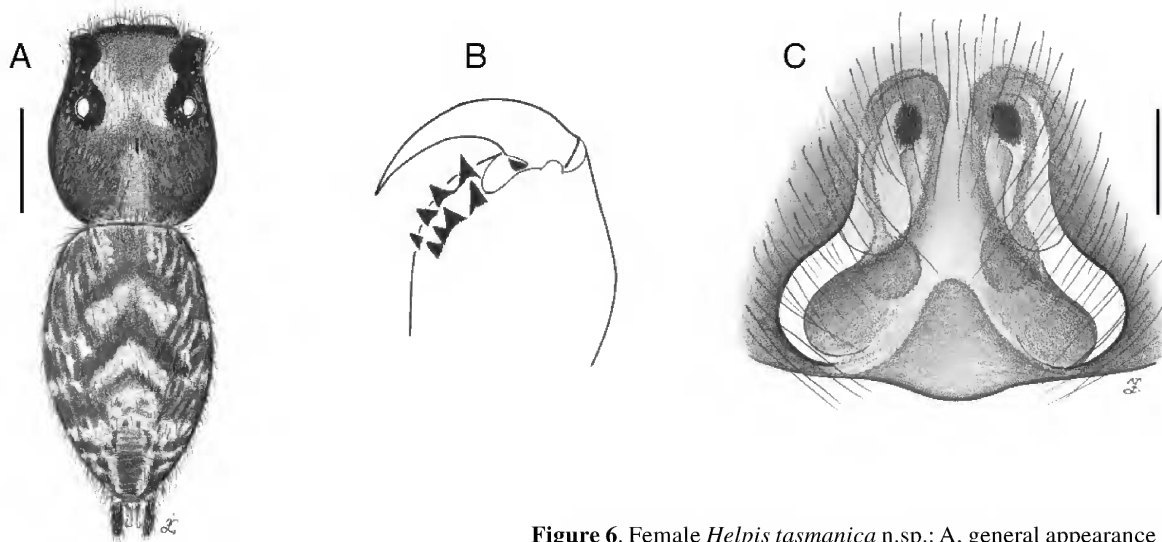
**Distribution** (Fig. 2). Known only from type-locality.

***Helpis tasmanica* n.sp.**

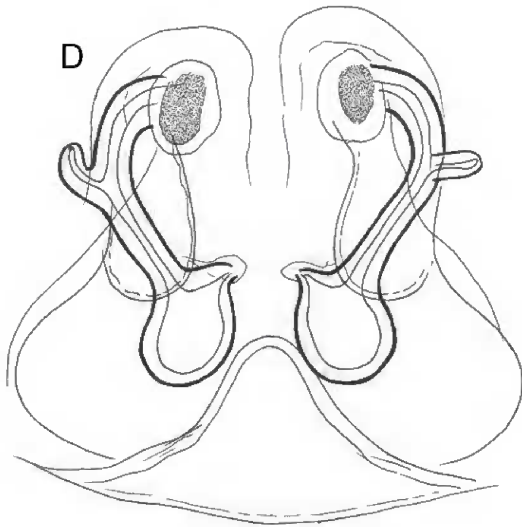
Fig. 6

**Type material.** HOLOTYPE Australia: Tasmania: ♀, Cummings Range, 41°41'S 145°43'E, under flat rocks on summit, 30 Jan 1930, W. Hickman, AMS KS30940. PARATYPES: Australia, Tasmania: ♀, same data as holotype, AMS KS67500; ♀, Mt Wellington, 42°54'S 147°14'E, near summit, 27 Oct 1990, M. Gray, C. Horseman, J. Thompson, AMS KS34436.

**Diagnosis.** Closely related to *H. gracilis* Gardzińska (Gardzińska, 1996) but body much darker, cheliceral



**Figure 6.** Female *Helpis tasmanica* n.sp.: A, general appearance (scale = 1.40 mm); B, cheliceral dentition; C, epigyne; D, internal genitalia (scale = 0.16 mm).



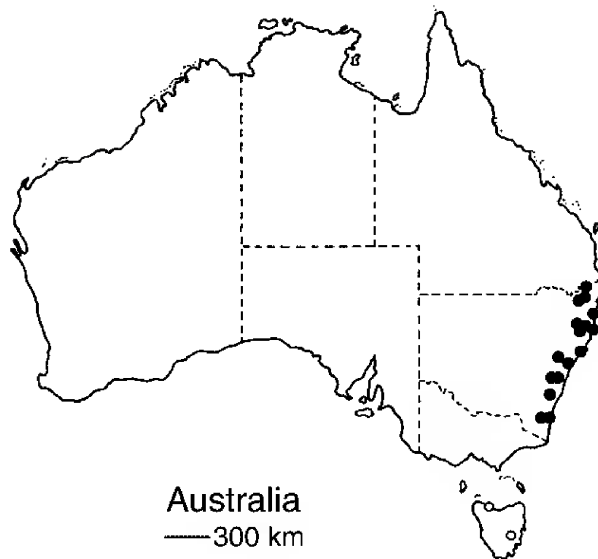
laterally with longitudinal light pattern. Dorsal and ventral parts of femora I yellowish, sides brown, other podomeres lighter—especially joint areas, tarsi orange. Tibiae and metatarsi I with 3 and 2 pairs of spines, respectively. Other legs brown, femora with light dorsal and ventral sides and orange bands around other podomeres. All legs with contrasting dark spots around the bases of femoral spines. Epigyne (Fig. 6C,D) with a distinctive bell-like posterior pocket and with two lateral grooves leading to anterior copulatory openings. Insemination ducts long, curved, rather narrow, spermathecae oval. Dimensions: CL 2.70, EFL 1.14, AEW 1.82, PEW 1.61, AW 2.23, AL 3.64.

**Distribution** (Fig. 7). Known only from localities in Tasmania.

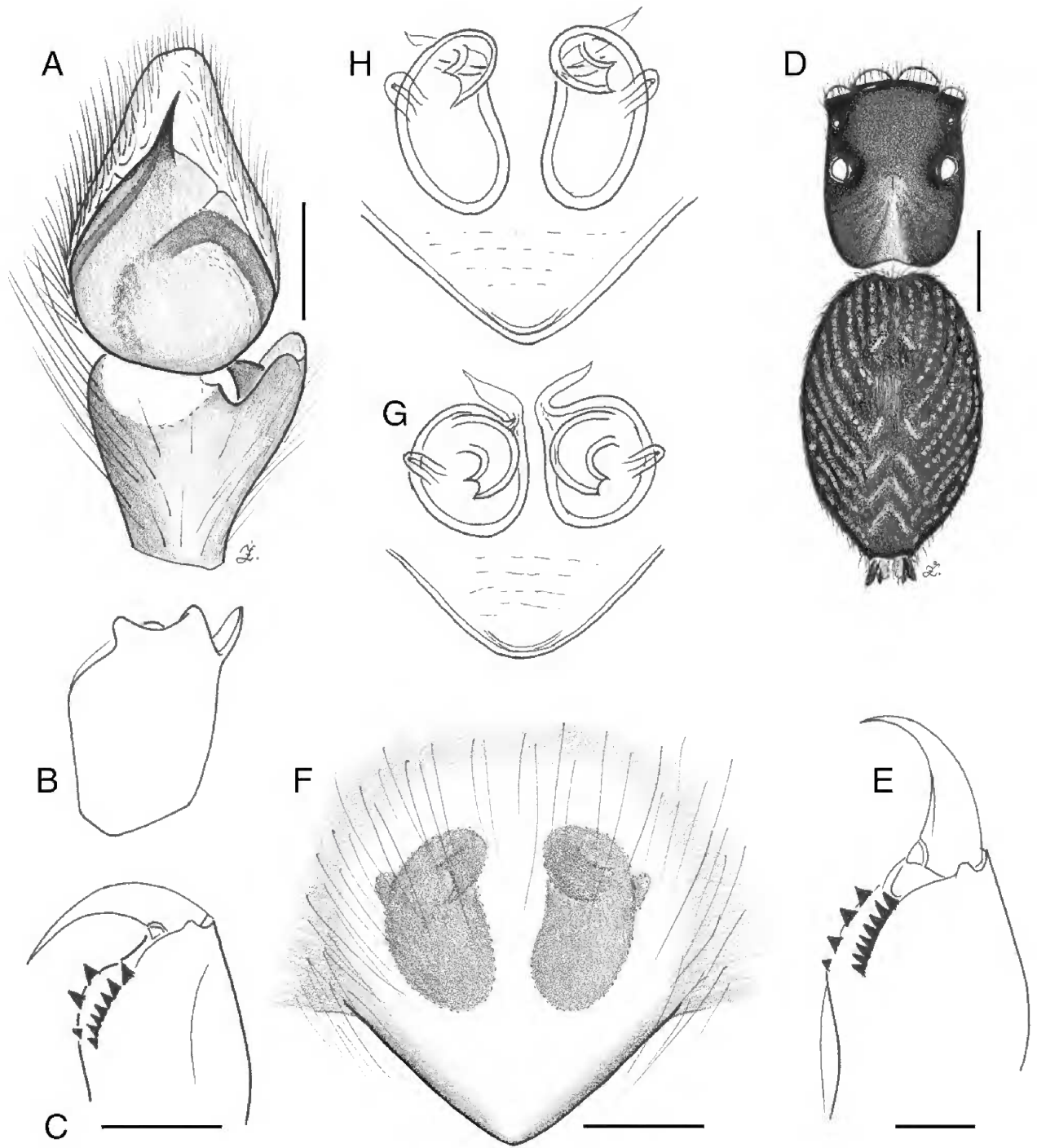
dentition different and abdomen with contrasting light pattern. In comparison to *H. minitabunda* Simon (Wanless, 1988) the accessory glands are located more proximally.

**Description**

**Female holotype** (Fig. 6A). Eye field anteriorly light brown, posteriorly with orange butterfly-shape patch, eye surrounding black with dark, rather long hairs. Abdomen brownish to dark-grey with light pattern of yellowish and white guanine spots. Hairiness moderately numerous, brown, anterior margin also with white hairs. Anterior and median spinnerets yellowish-grey, posterior ones brownish-grey. Clypeus orange with numerous yellowish and white hairs, longer of them overhanging towards chelicerae. Chelicerae red-brown with 4 teeth on both margins (Fig. 6B). Pedipalps brown, lighter distally with a flag of light hairs. Maxillae and labium brown with lighter apices. Sternum smudgy orange. Venter brownish to dark-grey,



**Figure 7.** Distribution of *Helpis tasmanica* ○, and *Sondra aurea* ●.



**Figure 8.** Male and female *Sondra aurea* (L. Koch): A, palpal organ (scale = 0.16 mm); B, retrolateral tibia; C, male cheliceral dentition (scale = 0.26 mm); D, female general appearance (scale = 0.87 mm); E, female cheliceral dentition (scale = 0.17 mm); F, epigyne (scale = 0.08 mm); G, internal genitalia posterior view; H, internal genitalia ventral view.

***Sondra aurea* (L. Koch, 1880), n.comb.**

Fig. 8

*Astia aurea* L. Koch, 1880: 1167.

*Astia aurea*.—Simon, 1901: 436. Rainbow, 1911: 279. Roewer, 1954: 968. Bonnet, 1955: 768. Prószyński, 1971: 379.

*Arasia aurea*.—Wanless, 1988: 118. Żabka, 1991b: 59. Platnick, 1993: 736.

**Material examined.** Australia: New South Wales: 2♂, SW branch of Kunderang Stn Creek, 30°48'32"S 152°06'44"E, 18 Feb 1993, MG, GC,

AMS KS40576; ♂, Grey Gums Forest Rd, Bulga SF, 1.1 km from Doyles River Rd, 31°33'35"S 152°14'36"E, pitfall traps, 18 Feb 1993, MG, GC, AMS KS42764; 3♂, Carrai SF, Copper Rd, 1 km from Carrai Rd, 30°57'44"S 152°23'E, pitfall traps, 9 Apr 1993, MG, GC, AMS KS42165; 8♂, 2♀, 2jj, Bulga SF, Wild Cattle Ck, 400 m NE of Spur Track, 31°36'24"S 152°07'45"E, pitfall traps, 18 Feb 1993, MG, GC, AMS KS42263; ♂, Boorook SF, Conlongan Rd, 1 km NW of Boorook Ck junction, midway between Boorook Ck and Gilcurry Ck., 28°51'24"S 152°11'27"E, pitfall traps, 18 Feb 1993, MG, GC, AMS KS38315; ♀, Ballengarra SF, Ballengarra Ck, crossing on Gregs Rd, 31°13'56"S 152°45'23"E, pitfall traps, 18 Feb 1993, MG, GC, AMS KS42078; ♂, Conglomerate SF, Old Growth Rd, 2.85 km from E end and 1.15 km from W end off Sherwood Rd, 30°06'49"S 153°03'51"E, pitfall traps, 18

Feb 1993, MG, GC, AMS KS42793; ♂, Bulga SF, 600 m N of Homewoods Rd, 2.8 km W of Knodingbul Rd, 31°37'03"S 152°07'44"E, 18 Feb 1993, MG, GC, AMS KS42731; ♂, Kunderang Trail, 1.85 km from homestead 50 m S of Wonga Gully, 30°48'56"S 152°07'44"E, pitfall traps, 18 Feb 1993, MG, GC, AMS KS40239; ♂, Beauray SF, N along Wallaby Ck Rd, 28°24'47"S 152°27'39"E, pitfall traps, 18 Feb 1993, MG, GC, AMS KS37885; ♂, Richmond Range SF, Goanna Ck Rd, 28°36'12"S 152°41'09"E, pitfall traps, 18 Feb 1993, MG, GC, AMS KS37785; ♂, ♀, Spirabo SF, very end of Wattle Ck Rd, on ridge overlooking Wattle Ck Gorge to the NE, 880 m, 29°18'35"S 152°11'33"E, 18 Feb 1993, MG, GC, AMS KS38286; ♂, Chichester SF, Allyn River Forest Rd, 32°09'06"S 151°28'53"E, pitfall traps, 18 Feb 1993, MG, GC, AMS KS38904; 3♂, 240 m E of junction of Kunderang East and Kunderang West Rds, pitfall traps, 30°48'53"S 152°02'09"E, 18 Feb 1993, MG, GC, AMS KS41403; ♀, Spirabo SF, Wattle Ck Rd, 1.6 km S of right angle bend to SE Trib. Ck flowing into middle Ck, 600 m above drop to gorge, 29°18'38"S 152°10'49"E, 18 Feb 1993, MG, GC, AMS KS38199; ♂, Turross River Rd, Bodalla SF, site 2, 36°11'16"S 149°56'16"E, 10 Mar 1999, L. Wilkie, R. Harris, H. Smith, AMS KS58776; ♂, Reservoir Link Rd, Bodalla SF, site 2, 36°7'15"S 150°24'9"E, 9 Mar 1999, L. Wilkie, R. Harris, H. Smith, AMS KS58778; ♂, Coomerang Rd, Dampier SF, site 1, 36°6'46"E 149°59'13"E, 10 Mar 1999, L. Wilkie, R. Harris, H. Smith, AMS KS58777; ♂, Murramarang NP, North Head Rd, site 1, 35°42'32"S 150°16'15"E, 17 Mar 1999, L. Wilkie, R. Harris, H. Smith, AMS KS58773; ♂, Richmond Beach Rd, Murramarang NP, site 1, 35°40'55"S 150°16'55"E, 17 Mar 1999, L. Wilkie, R. Harris, H. Smith, AMS KS58772; ♂, Kuring-gai Chase NP, near Terry Hills, dry sclerophyll, 33°37'S 151°17'E, 18 Aug 1992, D. Bickel, AMS KS56373; ♂, Buckenbowra Rd, 2 km W of Mogo, 35°47'27"S 150°6'36"E, 8 Mar 1999, J. Tarnawski, S. Lassau, AMS KS56367; ♀, Beecroft, 33°45'S 151°4'E, 20 Sep 1993, J. Noble, AMS KS58541; ♂, Booti Booti NP, 32°16'15"S 152°31'42"E, 29 Mar 1997, L. Wilkie, AMS KS58923; 4♀, Paynes Crossing "Wirraminna" via Wollombi, handsorting, 32°55'S 151°E, litter from forest beside Werong Ck near homestead, 27 May 1990, G.S. Hunt, C. Horseman, AMS KS23068; ♂, Bungonia Caves area near Information Centre, 34°48'2"S 150°0'57"E, 7 Jun 1990, G.S. Hunt, C. Horseman, AMS KS23052; ♀, Wattagan Mts, Mt Kyall beside Bakers Rd, 32°52'S 151°25'E, handsorting, dense forest, 7 May 1990, G.S. Hunt, C. Horseman, AMS KS23673; 2♂, 33°45'S 150°37'E, 33°45'S 150°37'E, B. Blaxland, 11 Apr 1997, AMS KS56392, KS56392; ♂, Beecroft, 33°45'S 151°4'E, 31 May 1995, J. Noble, AMS KS56516; ♂, Beecroft, 33°45'S 151°4'E, 5 Apr 1995, J. Noble, AMS KS56521; ♀, Hazelbrook, Winbourne Rd, site M6, 33°43'20"S 150°27'35"E, 3 Oct 1996, AMS KS51995; ♀, Mt Myall Wattagan Mts, dense forest beside Bakers Rd, 32°58'S 151°25'E, 7 May 1990, G.S. Hunt, C. Horseman, AMS KS23471; ♀, Tea Tree Hollow, Wirrimbirra Sanctuary nr Bargo, 34°16'S 150°34'E, under dense clumps of reeds (swampy), 17 Aug 1969, G.S. Hunt, AMS KS50154; ♀, Beecroft, 32°33'45"S 151°04'E, 3 Jul 1992, J. Noble, AMS KS46032; ♂, Wild Cattle Ck SF, 30°17'S 152°41'E, wet sclerophyll, 30 May 1993, V.W.H. Lorimer, AMS KS45818; ♂, Jamieson Pk, Narrabeen, 33°43'S 151°18'E, site 5, *Casuarina glauca*, open forest, pitfall traps, 19 Mar 1996, MG, H. Smith, AMS KS49748; ♀, Narrabeen, Jamieson Pk, site 3, 33°43'S 151°18'E, open forest, *Eucalyptus botryoides*, *Allocasuarina torulosa*, pitfall traps, 13 Mar 1996, MG, H.M. Smith, AMS KS49622; ♂, Wild Cattle Ck SF, 30°13'S 152°44'E, 30 May 1993, V.W.H. Lorimer, AMS KS45812; ♀, Beecroft, 33°45'S 151°4'E, 5 Oct 1997, J. Noble, AMS KS51663.

**Diagnosis.** Epigyne with large caudal lobe, spermathecae ampullate, accompanied by accessory glands. Tegulum without lamella as in some *Sondra* species.

### Re-description

**Male.** Cephalothorax generally brown, fovea area and median part of thorax lighter, eye surrounding black. Hairs sparse, greyish and brown. Abdomen elongate, dark-grey with lighter pattern of lines of small spots. Hairs sparse, greyish and brown. Anterior and posterior spinnerets dark, median yellowish. Clypeus dark-brown with single light hairs and brown bristles. Chelicerae brown, promargin with 3, retromargin with 7 teeth (Fig. 8C). Pedipalps dark-brown, cymbium distally yellowish. Maxillae brown with orange

apices. Labium smudgy brown with yellowish apex. Sternum brown, venter dark-grey. Legs I dark-brown, proximal patellae and tarsi yellowish, ventral femora orange, patellae and tibiae with ventral fringes of dark grey-brown hairs, tibiae with 3 and metatarsi with 2 pairs of ventrolateral spines. Legs II and III lighter, generally brown with darker sides and lighter ventrally and dorsally. Legs IV with orange and brownish bands around patellae and tibiae, metatarsi and tarsi smudged orange, the rest brownish. Palpal organ (Fig. 8A,B) with pear-shaped bulbus, embolus dagger-like, tibial apophyses massive and complicated in *Sondra*-like manner. Dimensions: CL 1.85, EFL 0.92, AEW 1.53, PEW 1.42, AW 1.49, AL 1.92.

**Female** (Fig. 8D). Cephalothorax short, rather robust with distinctive thoracic slope. Eye field brown, eyes with black surrounds. Thorax with dark-orange median stripe, the rest brown, darker towards lower margin, with radial lines from fovea area towards margins. Carapace not particularly hairy, grey and brownish, longer anteriorly. Abdomen elongate, dark-grey with lighter pattern of lines of small spots. Hairs sparse, greyish and brown. Anterior and posterior spinnerets dark, median yellowish. Clypeus brown with sparse brownish and greyish hairs. Chelicerae smudged orange, distally lighter, promargin with 4, retromargin with 8 teeth (Fig. 8E). Pedipalps smudged brown, dorsal femora and distal parts of podomeres lighter, hairs greyish. Maxillae smudged orange, labium smudged brown, both with lighter apices, the first elongate. Sternum smudged orange-brown. Venter dark-grey with longitudinal rows of light spots. Legs orange-brown, not particularly hairy. Legs I with 3 and 2 pairs of spines on tibiae and metatarsi, respectively. Legs II with similar spines. Epigyne (Fig. 8F–H) with posterior lobe—typical for *Sondra*, insemination ducts short, spermathecae bean-shape accompanied with accessory glands. Dimensions: CL 2.07, EFL 1.07, AEW 1.64, PEW 1.53, CW 1.67, AL 3.03.

**Distribution** (Fig. 7). The species is common in eastern Australia and is found in rainforest leaf litter.

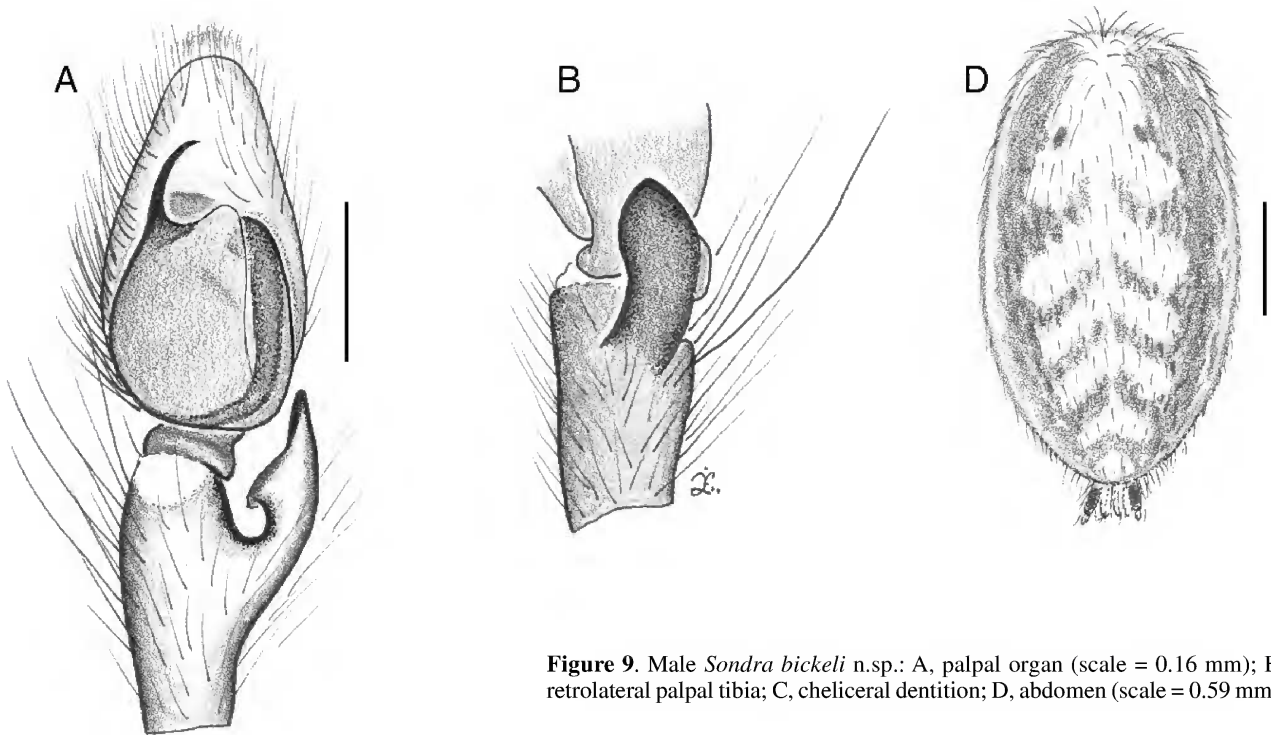
**Remarks.** Wanless (1988) classified the species within *Arasia*. It has, however, typical characteristics of *Sondra*: cephalothorax is box-shaped rather than pear-shaped as in *Arasia*, the epigyne lacks long insemination ducts, the embolus is short and the tibial apophyses is massive and complicated like in some *Sondra* species. The species should be classified within the *Sondra nepenthicola* species group (Wanless, 1988).

### *Sondra bickeli* n.sp.

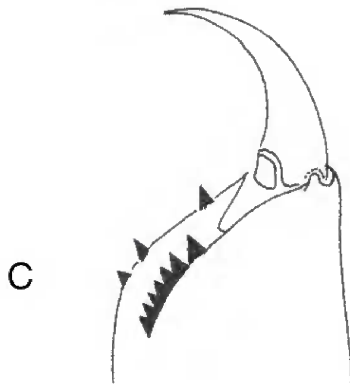
Fig. 9

**Type material.** HOLOTYPE Australia: New South Wales: ♂, Wilson River Reserve, 31°12'S 152°28'E, 240 m, yellow pans swampy sidecreek, 16–19 Nov 1998, D. Bickel, AMS KS56556. PARATYPES Australia: New South Wales: ♂, same data as holotype, AMS KS67501; 3♂, Banda Road, about 4.5 km E of Hastings Forest Highway, 31°09'S 152°25'E, Mount Boss SF, 1100 m, MG, GC, 4 Feb–9 Apr 1993, AMS KS43110; ♂, Styx R SF, Cliffs Trail, 2.8 km from Oxley Rd, bottom end of Cliffs Trail, 1130 m, 30°33'28"S 152°21'16"E, 18 Feb 1993, MG, GC, AMS KS37665.





**Figure 9.** Male *Sondra bickeli* n.sp.: A, palpal organ (scale = 0.16 mm); B, retrolateral palpal tibia; C, cheliceral dentition; D, abdomen (scale = 0.59 mm).



joint area. Palpal organ (Fig. 9A,B) similar to some representatives of *Sondra nepenthicola* species group (Wanless, 1988). Embolus curved, tegular lamella rather small, tibial apophysis massive, set in the median part of tibia, with internal and dorsal outgrowths. Dimensions: CL 2.03, EFL 1.07, AEW 1.64, PEW 1.50, CW 1.71, AL 2.07.

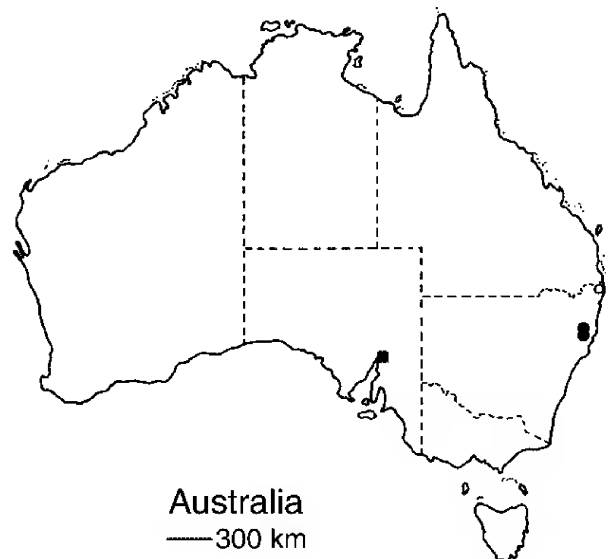
**Distribution** (Fig. 10). Known only from scattered localities in New South Wales.

**Etymology.** Named after Dr Dan Bickel, Australian

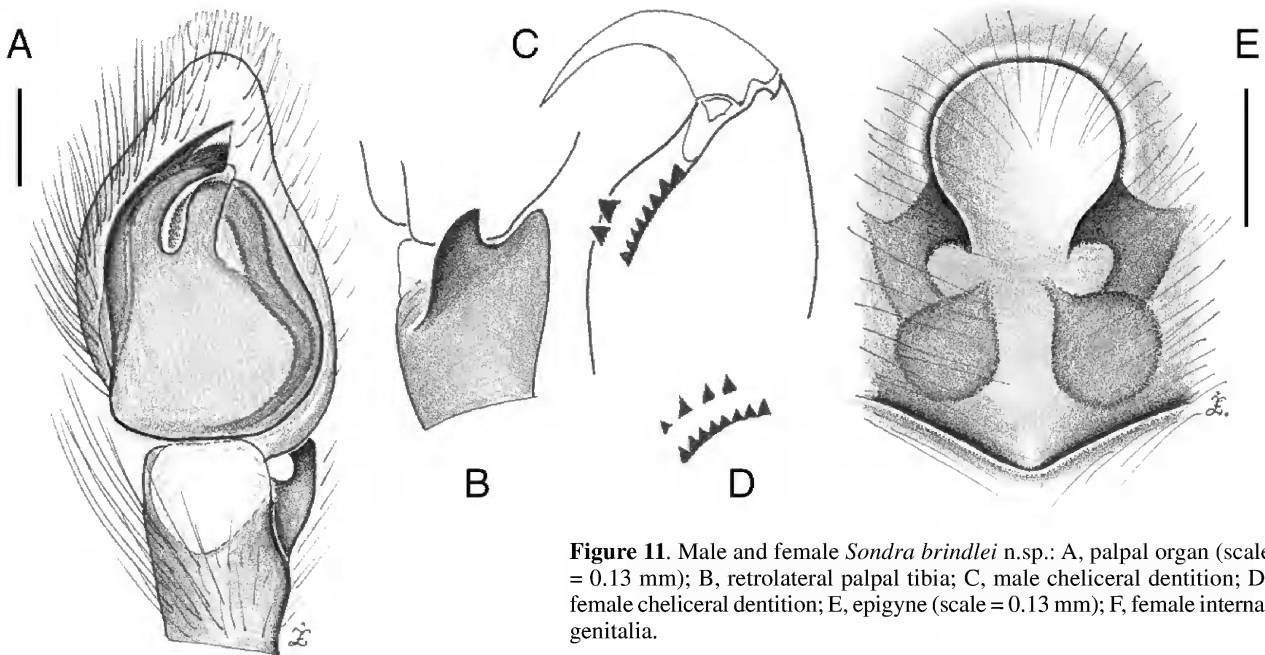
**Diagnosis.** By the distinctive shapes of the embolus, tegular lamella and tibial apophysis.

**Description**

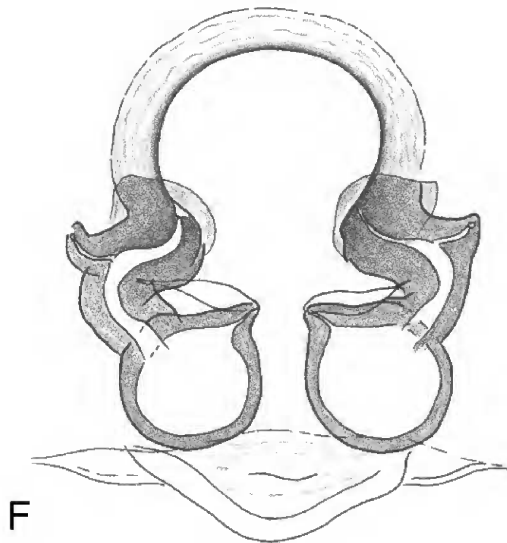
**Male holotype.** Eye field orange, eye surrounding black, except for AME, which is dark brown. Thorax smudged orange, darkening towards lower margin, with yellow median stripe. Abdomen (macerated) greyish brown with beige pattern (Fig. 9D). Spinnerets dark. Hairs cover on body sparse, light and brown. Clypeus orange, fringed with scale-like white yellow hairs. Chelicerae orange, with 3 promarginal and 7 retromarginal teeth (Fig. 9C). Pedipalps smudged orange. Maxillae and labium dark orange with lighter apices. Sternum yellow with darker margin. Venter beige. Legs I grey brown on sides, dorsal and ventral parts greyish orange, tarsi yellow. Distal femora, patellae and tibiae fringed with brown hairs, otherwise hairs not distinctive. Other legs gradually lighter. Legs IV with only traces of dark colour on sides of femora, patella, tibia and



**Figure 10.** Distribution of *Sondra bickeli* ●, *Sondra brindleyi* ○, and *Sondra samambrayi* ■.



**Figure 11.** Male and female *Sondra brindlei* n.sp.: A, palpal organ (scale = 0.13 mm); B, retrolateral palpal tibia; C, male cheliceral dentition; D, female cheliceral dentition; E, epigyne (scale = 0.13 mm); F, female internal genitalia.



Museum entomologist, and collector of some of the material studied.

***Sondra brindlei* n.sp.**

Fig. 11

**Type material.** HOLOTYPE Australia: New South Wales: ♂, Brindle Creek crossing with Brindle Creek Rd, 28°22'S 153°04'E, 4 Feb–9 Apr 1993, M. Gray & G. Cassis, AMS KS37705. PARATYPES Australia: New South Wales: ♀, same data as holotype, AMS KS67502; ♂, 3 ♀, 1j, Brindle Creek Road, 10 km E of Antarctic Beech picnic area, 28°22'S 153°05'E, Border Ranges Nation, 1040 m, 4 Feb–9 Apr 1993, MG, GC, AMS KS38105.

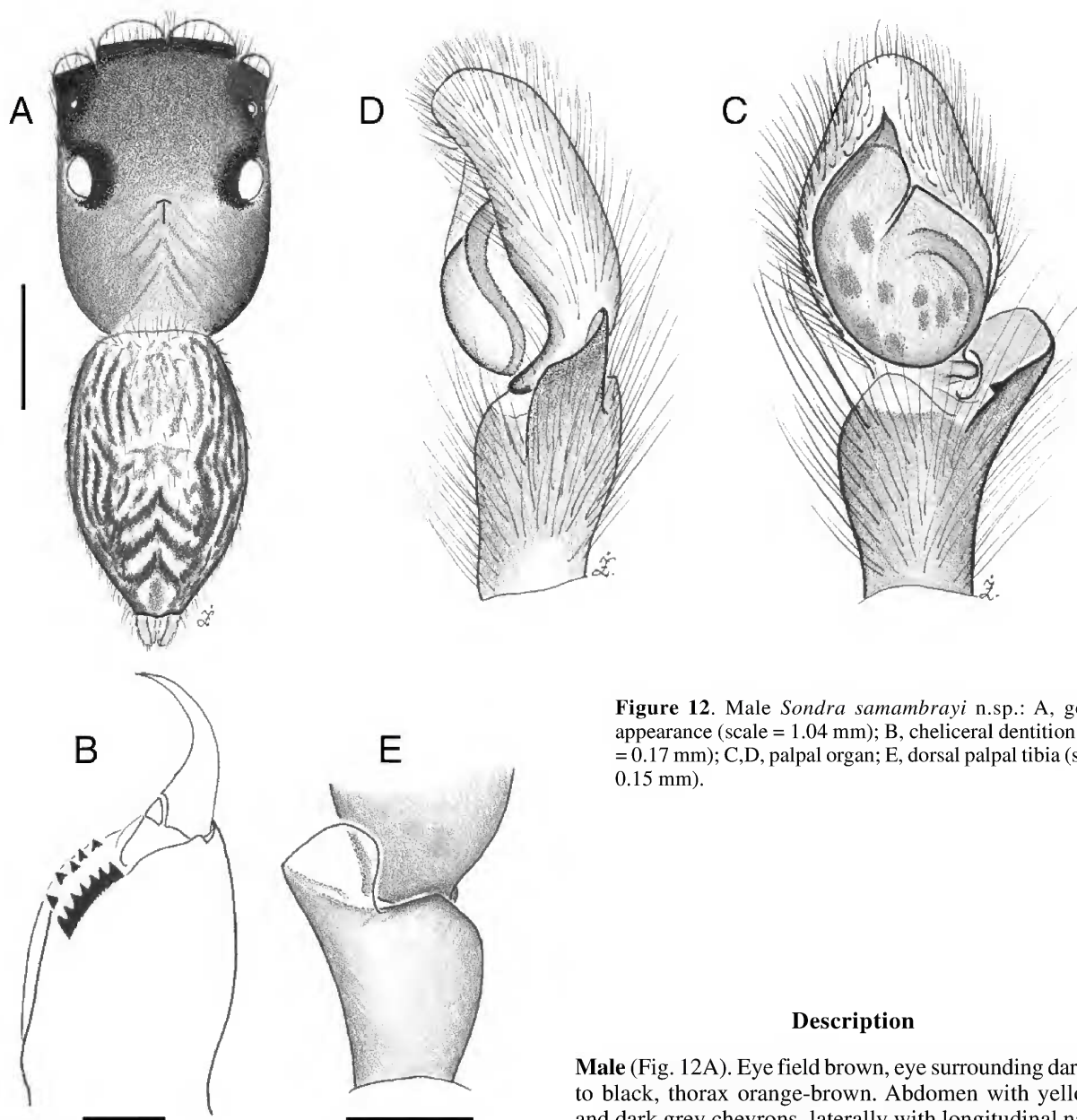
**Diagnosis.** Differs from the closely related species *S. raveni* Wanless (Wanless, 1988) by having a more rectangular posterior part of the tegulum, different tibial apophysis and

different cheliceral dentition. The epigyne has a rounded anterior depression and copulatory openings are located more posteriorly.

**Description**

**Male holotype.** Eye field dark brown with 2 darker patches, eye surrounding black. Thorax brown with longitudinal orange stripe. Hairs fine, light and brown, rather sparse. Abdomen dark-grey with lighter herring-bone pattern. Median spinnerets yellowish, other dark-grey. Clypeus dark-brown, edged with fine single brown hairs. Chelicerae robust, brown, lighter apically with 2 promarginal and 8 retromarginal teeth (Fig. 11C). Pedipalps orange. Maxillae and labium brownish, lighter apically. Sternum yellowish, turning greyish towards margins. Venter dark-grey with 3 longitudinal rows of light spots. Legs I rather stout, femora smudged brown, further podomeres slightly lighter—all lighter on dorsal and ventral sides, tarsi yellow, tibiae with 3 and metatarsi with 2 pairs of spines. Other legs more delicate, femora smudged grey on sides, lighter dorsally and ventrally, further podomeres with brown and orange bands, tarsi yellowish. Hairs on legs not distinctive, fine, light and brown. Palpal organ (Fig. 11A,B) with large, lobe-like tegular lamella, embolus wide, tibial apophysis hooked. Dimensions: CL 1.99, EFL 0.92, AEW 1.46, PEW 1.35, CW 1.50, AL 1.89.

**Female paratype.** Cephalothorax lighter than in male: eye field smudged orange, eye surrounding black, fovea region and sides orange, thorax smudged orange-brown with darker radial markings. Abdomen (macerated) similar to that in male. Clypeus orange with 3 distinctive brown bristles. Chelicerae, pedipalps, maxillae, labium and sternum orange, the latter greyish towards margins. Promargin of chelicerae with 4 and retromargin with 8 teeth (Fig. 11D). Legs I orange, armed as in male. Other legs with orange and greyish bands around podomeres. Epigyne (Fig. 11E,F) with anterior round depression, insemination ducts wide, thick-walled, with accessory glands, spermathecae oval, fertilisation ducts



**Figure 12.** Male *Sondra samambrayi* n.sp.: A, general appearance (scale = 1.04 mm); B, cheliceral dentition (scale = 0.17 mm); C,D, palpal organ; E, dorsal palpal tibia (scale = 0.15 mm).

**Description**

**Male** (Fig. 12A). Eye field brown, eye surrounding darker—to black, thorax orange-brown. Abdomen with yellowish and dark grey chevrons, laterally with longitudinal narrow light and dark lines. Spinnerets yellowish. Hairs few, pale and brownish. Clypeus light-brown, densely fringed with whitish hairs and with single brownish bristles. Chelicerae dark-orange, with 5 promarginal and 7 retromarginal teeth (Fig. 12B), frontal surfaces of chelicerae covered with white hairs. Pedipalps yellow at the base, remainder smudged orange. Maxillae and labium dark-orange, the former twice as long as the latter. Sternum yellow, darkening marginally. Venter with light and dark-grey longitudinal stripes. Legs I massive, generally brown, only proximal podomeres and tarsi yellow, dorsal femora, ventral patellae, dorsal and ventral tibiae fringed with dense brown hairs, tibiae with 3 and metatarsi with 2 pairs of spines. Legs II slender and lighter, dorsally and centrally yellowish, sides and joint area greyish-brown, ventral patellae and tibiae with dense hairs. Other legs similar to legs II though slightly lighter in colour, not very hairy. Palpal organ (Fig. 12C–E) with distinctive spatulate tibial apophysis. Tegular lamella missing, tegulum oval, embolus rather short. Dimensions: CL 2.50, EFL 1.14, AEW 1.92, PEW 1.78, CW 2.00, AL 2.42.

short. Dimensions: CL 1.96, EFL 0.92, AEW 1.50, PEW 1.35, CW 1.57, AL 2.32.

**Distribution** (Fig. 10). Known only from localities in New South Wales.

***Sondra samambrayi* n.sp.**

Fig. 12

**Type material.** HOLOTYPE Australia: South Australia: ♂, Mambray Ck, 32°50'S 137°59'E, in logs and litter, 30 Apr 1973, M. Gray, AMS KS50905.

**Diagnosis.** Embolus short, cymbium with retrolateral outgrowth, tibial apophysis is massive and spatulate with small conical outgrowth.

**Distribution** (Fig. 10). Known only from type-locality.

**Etymology.** The specific epithet is based on the place-names of the type-locality: South Australia and Mombay Creek.

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