

# Salticidae (Arachnida : Araneae) of the Oriental, Australian and Pacific regions, XIII: the genus *Sandalodes* Keyserling

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**Abstract.** The genus *Sandalodes* Keyserling, 1883 is revised to include four species from Australia and Papua New Guinea: *S. bipenicillatus* (Keyserling), *S. joannae*, sp. nov., *S. scopifer* (Karsch) and *S. superbus* (Karsch). *Sandalodes albobarbatus* (Keyserling) is synonymised with *S. scopifer* (Karsch). *Alcmena superba* Karsch, 1878 is included in *Sandalodes*. The Australian species, *S. albovittatus* (Keyserling, 1883) and *S. calvus* Simon, 1902, together with all of the non-Australian species hitherto listed in *Sandalodes*, are excluded. These species were misplaced in *Sandalodes*. The genus *Karschiolina* Brignoli, 1985 is synonymised with *Sandalodes*. Remarks on relationships, biology and distribution of *Sandalodes* are given.

## Introduction

The nomenclatural history of *Sandalodes* has been long and rather complicated. It began in 1878 when Karsch described the genus *Ligurinus* for *L. scopifer*. The generic name, however, being preoccupied, was replaced with *Karschiola* by Strand (1932). Unfortunately, the latter was also preoccupied and was replaced with *Karschiolina* by Brignoli (1985)—with *Ligurinus scopifer* still as a type species, as proposed by Karsch. Here, finally, the story seems to have found a happy end. The study of the relevant type specimens has proved that *Karschiolina scopifera* (Karsch) is congeneric with *Sandalodes bipenicillatus* (Keyserling), thus all the generic names proposed by Karsch, Strand and Brignoli are here placed as synonyms of *Sandalodes*.

*Sandalodes* itself was erected by Keyserling in 1883 for *Mopsus bipenicillatus*. During subsequent years, however, it has become a ‘dump taxon’ with 21 species described from Australia, India, Celebes, Polynesia, Marquesas and Hawaii (Keyserling 1882; Simon 1885, 1900, 1902; Merian 1911; Berland 1933, 1934; Bonnet 1958). A study of the type material of all *Sandalodes* species listed by Bonnet (1958) showed that 19 of these species were misplaced in *Sandalodes*. These are not covered here, being the subject of separate study (J. Prószyński in preparation).

## Material and methods

The present study is based on fresh and type material from the collections listed below. To verify the current list of species, all available material of ‘*Sandalodes*’ from the Pacific area was studied from the collections of the Museum National d’Histoire Naturelle, Paris, the Natural History Museum, London, and the Museum of Comparative Zoology, Harvard University. Methods of specimen examination are as described earlier (Zabka 1991b). Measurements (in mm) are given as means of

five randomly selected individuals of each sex, unless indicated otherwise. Details of morphology and terminology are presented in Fig. 1.

## Collections studied

AM	Australian Museum, Sydney
CBM	Private collection of Dr Barbara Baehr, München
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts
MNHN	Museum National d’Histoire Naturelle, Paris
BMNH	The Natural History Museum, London
QM	Queensland Museum, Brisbane
WAM	Western Australian Museum, Perth
ZMB	Museum für Naturkunde der Humboldt Universität, Berlin
ZMH	Zoologisches Institut und Zoologisches Museum, Universität Hamburg

## Other abbreviations

AEW, anterior eyes width; AL, abdomen length; CH, cephalothorax height; CL, cephalothorax length; CW, cephalothorax width; EFL, eye field length; NSW, New South Wales; NT, Northern Territory; PEW, posterior eyes width; PNG, Papua New Guinea; Q, Queensland; Tas., Tasmania; WA, Western Australia.

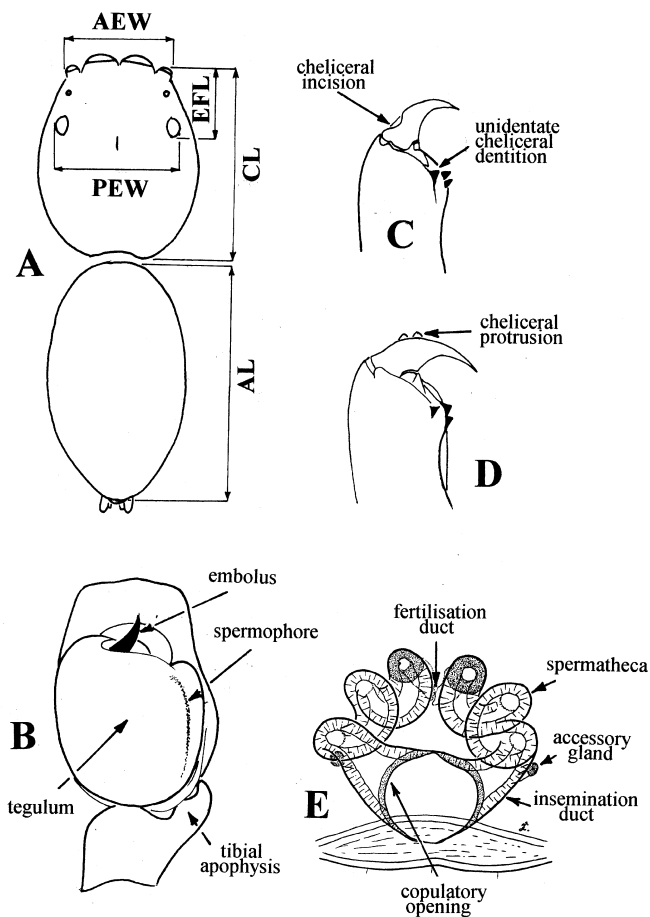
## Genus *Sandalodes* Keyserling

*Sandalodes* Keyserling, 1883: 1476. – Simon, 1903: 703; Roewer, 1954: 1066; Bonnet, 1958: 3929; Davies & Zabka, 1989: 252; Zabka, 1991a: 51; Platnick, 1993: 806, 1997: 932.

*Ligurinus* Karsch, 1878: 27 [preoccupied]. – Bonnet, 1957: 2480; Prószyński 1984: 160.

*Karschiola* Strand, 1932: 140 [preoccupied]. – Roewer, 1954: 1057. *Karschiolina* Brignoli, 1885: 380, syn. nov. – Platnick, 1989: 584, 1993: 732.

Type species of *Sandalodes*: *Mopsus bipenicillatus* Keyserling, 1883, by subsequent designation.



**Fig. 1.** Morphological characters of *Sandalodes*: A, general appearance; B, palpal organ; C, D, chelicerae; E, female internal genitalia.

#### Generic diagnosis (Fig. 1)

Large and robust spiders, ranging up to 15 mm in body length and showing wide range of dimensions. Male cephalothorax usually with a fringe or crest of dense protruding hairs resembling an extravagant punk-like haircut.

Eye field occupies about 40% of total cephalothorax length. Chelicerae of unidentate pattern, with one posterior and two anterior teeth. In males, cheliceral fangs with more or less distinctive protrusions or incisions. Abdomen dark, elongate, with central light pattern. Legs long and strong, covered with hairs (more numerous on ventral femora, patellae and tibiae). Tibiae and metatarsi with three (sometimes four) and two pairs of ventral spines, respectively. First legs the longest. Palpal organ massive, bulb bag-like, spermophore not meandering, embolus rather short, tibial apophysis single. Epigyne strongly sclerotised, with one or two oval or round depressions, insemination ducts thick-walled, sclerotised, coiled, spermathecae small.

#### Relationships

*Mopsus* Karsch, 1878 and *Mopsolodes* Zabka, 1991 are the closest relatives of *Sandalodes* (Zabka 1991a, 1991c). All three genera share similarities in male palps but differ in body ratios, hairiness, chelicerae and female genitalia (Fig. 2, Table 1).

*Mopsus* is known for its body shape, extravagant colours and hairiness. It differs from *Sandalodes* in having a much higher and wider cephalothorax and relatively shorter eye field. Also, the epigyne and internal genitalia are weakly sclerotised. Simon (1903) included both genera in separate groups: Thyeneae and Hylleae, respectively, but this was based on species that, in fact, comprised species unrelated with *Sandalodes sensu stricto*.

*Mopsolodes* seems closer to *Sandalodes* (Zabka 1991c). The general appearance, leg structure and palpal organ (especially the shape of tibial apophysis and embolus) are similar to *S. bipenicillatus* (Keyserling) but also to some *Mopsus*. However, the epigyne and female internal genitalia are quite different. The insemination ducts are very long and membranous, like those of the Oriental *Telamonia* Thorell, 1887 (Zabka 1985) and spermathecae are thick-walled and multichambered.

Within the genus *Sandalodes*, *S. bipenicillatus* is the most divergent species and shares some characteristics with *Mopsus*

**Table 1.** Comparison between character states of *Mopsus*, *Mosolodes* and *Sandalodes*

+, character state present; -, character state missing; ±, character state may be present or absent

Character state	<i>Mopsus</i>	<i>Mopsolodes</i>	<i>Sandalodes</i>
Ratio CH:CL	0.63	0.46	0.37–0.50
Ratio EFL:CL	0.35	0.49	0.40–0.50
Ratio PEW:CL	0.50–0.60	0.74	0.73–0.80
Male cephalothorax with a fringe	+	-	±
First tibia with four pairs of ventral spines	+	± ♀	±
First tibia with three pairs of ventral spines	-	± ♂	±
Male cheliceral spur with protrusion (incision)	+	-	+
Embolus thin and long, 'wavy'	+	+	-
Embolus massive or needle-like	-	-	+
Spermathecae long, multichambered	-	+	-

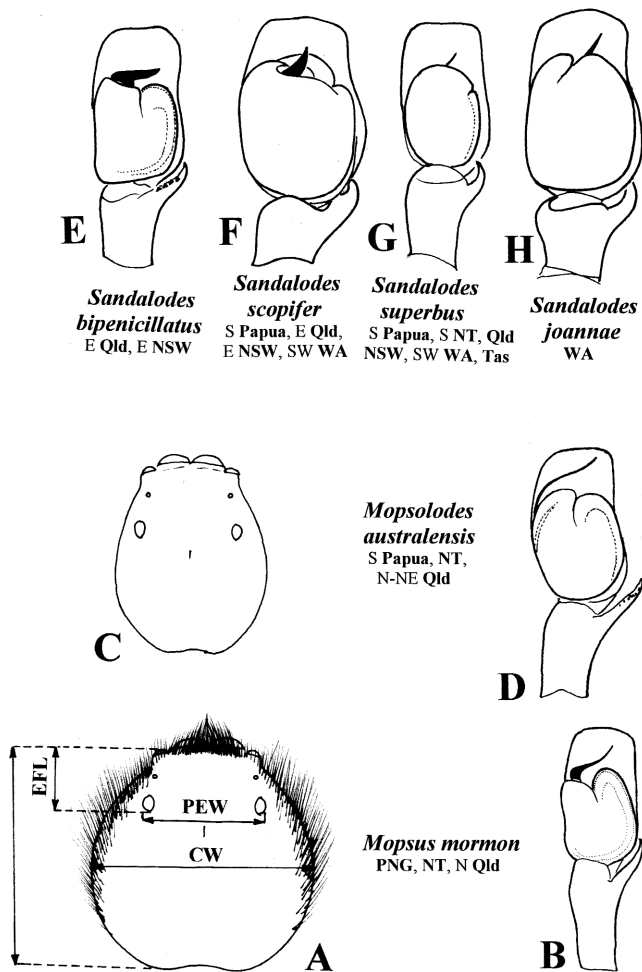


Fig. 2. Comparison of selected character states of *Mopsus*, *Mopsolodes* and *Sandalodes* (see text): A, B, *Mopsus mormon*; C, D, *Mopsolodes australensis*; E, *Sandalodes bipenicillatus*; F, *Sandalodes scopifer*; G, *Sandalodes superbus*; H, *Sandalodes joannae*.

and *Mopsolodes*, especially its relatively slender body, long embolus and laterally bent tibial apophysis (Fig. 2). Also, instead of the two epigynal depressions present in all other species (and *Mopsolodes* and *Mopsus*), it has a single oval hollow. *Sandalodes scopifer* has a more massive body and shorter embolus, while *S. superbus* (Karsch) and *S. joannae*, sp. nov. have the smallest tibial apophyses and the shortest needle-like emboli. *Sandalodes superbus* is the most robust of all species considered.

The body shapes and colours of *Sandalodes* and its relatives seem to be well adapted to the habitat they live in: all are rather well camouflaged. In case of *Sandalodes*, the appearance of particular species (especially the females) seems to be related to the bark structure and trunk colour of the trees they inhabit.

The morphological character states of *Sandalodes* (except perhaps for *S. bipenicillatus*) are rather uniform, which makes

both phylogenetic and biogeographical considerations difficult and speculative. The distributional pattern, which seems to support the relationships based on morphology, may well be found less supportive when new records are available.

#### Distribution

*Sandalodes* occurs all over Australia and in southern Papua New Guinea (Figs 5, 8, 11 and 14), though the current data on its distribution probably reflects the result of collecting activity rather than real geographical ranges. To my knowledge, and despite much research on the salticids of neighbouring regions, no species has ever been recorded in any other area.

*Sandalodes bipenicillatus* has a limited distribution pattern in eastern parts of Queensland and New South Wales. *Sandalodes scopifer* has a much wider range, although apparently disjunct rather than continuous: from southern Papua New Guinea through eastern Queensland and New South Wales to Western Australia. *Sandalodes superbus* is known from many localities all over the continent and in southern Papua New Guinea, whereas *S. joannae* only occurs in limited localities in Western Australia.

Beadle (1981), and many other authors, hypothesise that the genus *Eucalyptus* is derived from rainforest ancestor(s) and began to differentiate and expand at the rainforest margins during the middle and late Tertiary as a result of an increase in aridity and nutrient deficiency. If this hypothesis is correct, the evolution of *Sandalodes* and its distribution may have followed a similar pattern in similar circumstances. Thus, northeastern Australia would be the area of the origin of the genus and its relatives: *Mopsus* is primarily adapted to rainforest habitats and *Mopsolodes* and *Sandalodes* are open forest dwellers.

#### Included species

- S. bipenicillatus* (Keyserling, 1882)
- S. scopifer* (Karsch, 1878)
- S. superbus* (Karsch, 1878), comb. nov.
- S. joannae*, sp. nov.

#### *Sandalodes bipenicillatus* (Keyserling)

(Figs 3–5)

*Mopsus bipenicillatus* Keyserling, 1882: 1330.

*Sandalodes bipenicillatus*. – Keyserling, 1883: 1476; Davies & Zabka, 1989: 250, 252; Zabka 1991a: 51.

#### Material examined

**Paratype. New South Wales:** *Mopsus bipenicillatus* Keyserling, 1882, ♂, Sydney, Mus. Godeffroy, Nr. 8639 (ZMH).

**Other material examined. Queensland:** ♂, Gayndah (BMNH 1891/454); ♂, 2 km NW Rokeby NP, 2.v.1993, B. and M. Baehr (CBM); ♀, Fraser I, Orchid Beach, P. Lawless, 20–21.viii.1997 (QM S.38887); ♀, Brisbane, Gold Ck Reservoir, closed forest, 8.iv.1981, V. E. Davies, R. Raven (QM S.20928); ♀, Brisbane, Mt Coot-tha, from

vegetation, 15.viii.1987, M. Żabka (QM S.50956); ♂, Rochedale SF, 20.ix.1979, 23.xi.1979, R. Raven, V. E. Davies (QM S.20950); ♀, 3 juv., same data (QM S.20942); ♂, Mt Garnet, N. Clyde Coleman, 24.ii.1972 (QM S50957); ♂, Caboolture, 28.i.1988 (QM S.3173); ♂, The Crater Rewan, iv.1984, A. Rozefelds (QM S.20952); ♀, 3 juv., 40 Mile Scrub, SW Mt Garnet, 10–14.iv.1978, V. E. Davies, R. Raven (QM S.20939). **New South Wales:** ♂, Munmorah Rec. Res. NP, on foliage, 8.ii.1988, M. Gray (AM KS55353); 2♂, 6♀, 1 juv., Gosford, trunks of *H. gibbosa*, 4.vi.1981, S. Negar (AM KS55352); ♀, Mittagong, husks of *Hevea variacea*, 2.vi.1981 (AM KS55354); ♂, Royal NP, 15.xii.1966, R. Mascord (AM KS18977); ♀, Kempsey Smith Rd, Maria SF, in web, foliage, 23.iv.1974, M. Gray (AM KS19209); ♂, 10 SW Woodenbong, 29.i.1982, B. and M. Baehr (CBM).

### Diagnosis

Males lighter in colour and less robust than other species. Cephalothorax with two tufts of protruding hairs, tibial apophysis laterally curved, serrated, embolus the longest of all species in the genus. Female abdomen with distinctive lateral light patches similar to *L. scopifer*, but epigyne with a single central depression (not double as in all other species) and without posterior incision.

### Description

#### Male

Cephalothorax (Fig. 3A) brown, foveal region and sides with numerous white hairs. Anteriorly protruding lateral tufts of dark hairs forming 'horns'. Abdomen (Fig. 3A) slender, beige-brown, centrally lighter and laterally with darker markings. Sides with light spots. Spinnerets brownish. Clypeus brown with central white hairs. Chelicerae (Fig. 3D), labium and maxillae brown, the latter with light tips. Sternum dark brown. Venter centrally grey with two longitudinal light bands. Legs brown. Palpal organ (Fig. 3B, C, E, F) with long embolus, serrated and laterally bent tibial apophysis.

**Measurements.** CL 4.10, EFL 1.67, AEW 2.35, PEW 2.50. AL 4.86, L1 12.26, L2 6.99, L3 7.60, L4 8.20.

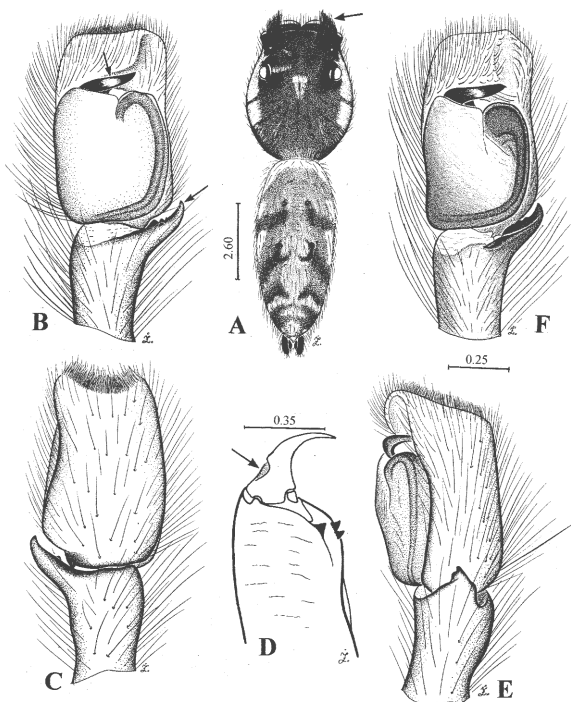
#### Female

Cephalothorax (Fig. 4A) similar to male but with no hairy 'horns'. Abdomen (Fig. 4A) dark grey-brown, covered with dark hairs, with central light stripe and anterior light margin. Spinnerets dark brownish. Sides with light spots. Clypeus, chelicerae, labium and maxillae brown, the latter with light tips. Pedipalps light brown, sternum dark brown. Venter centrally dark grey with two light stripes. Anterior legs brown, other legs gradually lighter, with darker and lighter bands. Epigyne (Fig. 4B, D) with a single central depression, internal genitalia (Fig. 4C, E) with distinctive accessory glands.

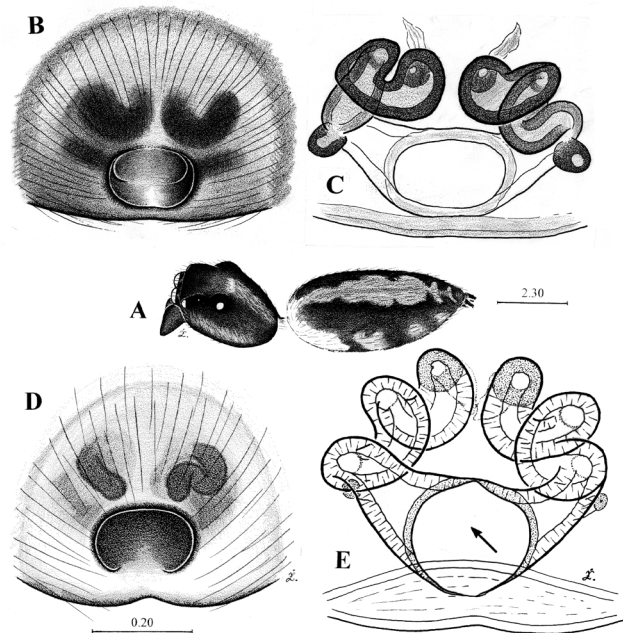
**Measurements.** CL 3.34, EFL 1.36, AEW 2.12, PEW 2.34. AL 4.56, L1 7.44, L2 5.16, L3 5.92, L4 6.61.

### Distribution

Found in eastern parts of Queensland and New South Wales (Fig. 5).



**Fig. 3.** Male of *Sandalodes bipenicillatus* (Keyserling): A, general appearance; B, C, E, F, palpal organ; D, chelicera. B–E, syntypes from Sydney. Arrows indicate diagnostic character states.



**Fig. 4.** Female of *Sandalodes bipenicillatus* (Keyserling): A, general appearance; B, D, epigyne; C, E, female internal genitalia. Arrows indicate diagnostic character states.

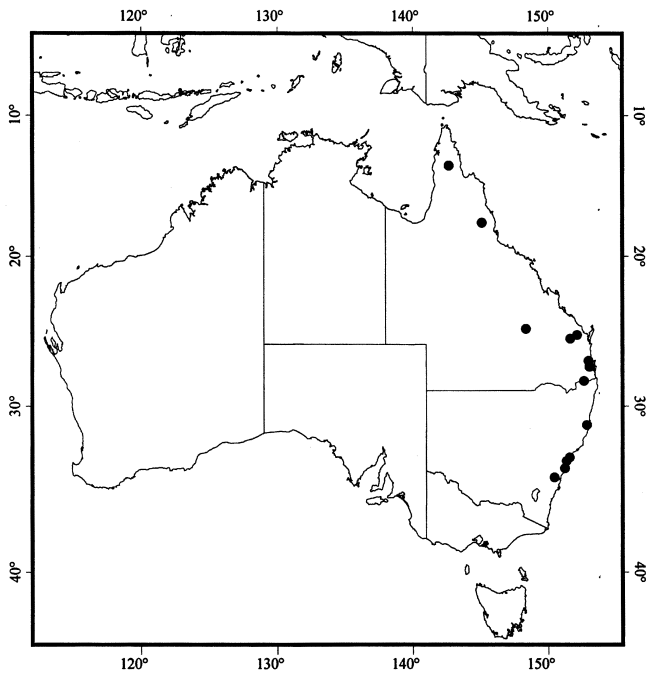


Fig. 5. Distribution of *Sandalodes bipenicillatus* (Keyserling).

#### Remarks

In the original description of *Mopsus bipenicillatus*, Keyserling (1882) studied a single male specimen from Gympie Spring, not from Sydney. The collection site cited on the label of the paratype in the Hamburg collection is Sydney.

#### *Sandalodes scopifer* (Karsch)

(Figs 6–8)

*Ligurinus scopifer* Karsch, 1878: 27. – Prószyński, 1984: 160.

*Mopsus albobarbatatus* Keyserling, 1882: 1333.

*Sandalodes albobarbatatus*. – Keyserling, 1883: 1476; Simon, 1903: 689, 690, 700; Mascord, 1970: 26, 27.

*Sandalodes scopifer*. – Zabka, 1991a: 51.

#### Material examined

**Holotype.** *Ligurinus scopifer* Karsch, 1878, ♂, Sydney, Daemel (ZMB 1671).

**Type.** *Sandalodes albobarbatatus* (Keyserling), ♀, Peak Downs (BMNH 1891/455).

**Other material examined.** **Papua New Guinea:** ♀, National Capital District, Waigani, under *Eucalyptus* bark, 12.vii.1988, D. J. Court, M. Zabka (AM KS19454). **Queensland:** ♂, Lake Broadwater, 28.vii.1982, M. Bennie (QM S.20931); ♀, same data, 24.xi.1984 (QM S.20929); ♀, Carnarvon, tube web under stone, 9.v.1966, V. E. Davies (QM S.20948); ♂, Mt Maroon, near Rathdowney, 27.i.1973, M. Baehr; ♂, Louisa Ck, Nogoia R. Junction, Salvator Rosa NP, 15.ix.1984, M. Bennie (QM S.20935); ♂, Eureka Ck, 11.ii.1972, N. Clyde Coleman (QM S.20956); ♂, Upper Palen Ck, near Mt Lindsay, iv.1979, G. May (QM S.20951); 2♂, Bunya (QM S.20946); ♂, ♀, Morayfield, 1.ii.1988, D. Bligh (QM S.3174); ♂,

Kroombit Tops, (Northern Escarp.), 45 km SSW Calliope, open forest, 9–19.xii. V. E. Davies, J. Gallon (QM S.20949); ♀, Black Duck Ck, W Brisbane, 24.i.1973, R. T. McKay, V. E. Davies (QM S.20944); ♀, Stony Ck, W Woodford, 5.v.1984, R. Leggatt (QM S.20930); ♂, Mt Garnet, 24.ii.1972, N. Clyde Coleman (QM S.50958); ♂, Split Rock, 13 km SE Laura, rocks with open woodland, 24.v.1993, B. and M. Baehr (CBM). **New South Wales:** ♀, Binnaway, mud wasp nest (*S. formosum*), 8.i.1975, A. Q. Smith (AM KS22249); ♀, 3 juv., Ourimbah, 6.xii.1911, H. Burrel (AM KS30655); ♂, 25 km S Tenterfield, 1000 m., 26.i.1982 (AM KS55355); ♂, ♀, Ourimbah, H. Burrel, 6.xii.1911 (AM KS22248); ♂, Kyogle, 18.i.1990, C. Maddox (AM KS23368); ♂, Moree, 4.i.1959, K. Muffet (AM KS17869); ♂, juv., Flats Ck, 24.i.1968, A. Speechley (AM KS22250). **Western Australia:** ♀, Stirling Range, Moingup Spring, 17.i.1970, P. G. and G. W. Kendrick (WAM 88/38).

#### Diagnosis

Abdomen with two pairs of lateral light spots. Unlike in *S. joannae* and *S. superbus*, tibial apophysis not hook-like, embolus more massive. Epigyne with posterior incision.

#### Description

##### Male

Cephalothorax (Fig. 6A–C) dark brown with anterior fringe of black hairs. Sides and foveal region with numerous white adpressed hairs. Abdomen (Fig. 6C) dark grey-brown with dis-

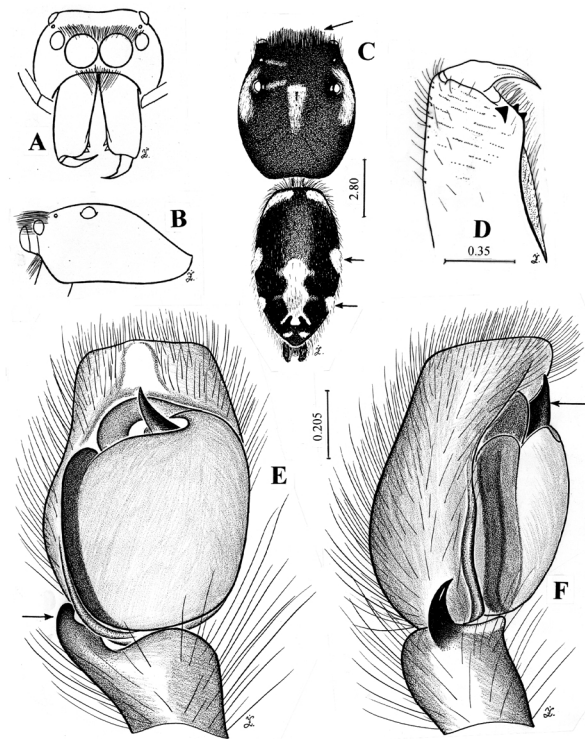


Fig. 6. Male of *Sandalodes scopifer* (Karsch): A, frontal aspect; B, lateral cephalothorax; C, general appearance; D, chelicera; E, F, palpal organ. E, F, holotype from Sydney. Arrows indicate diagnostic character states.

tinctive pattern. Spinnerets dark brown. Clypeus dark brown with central white hairs. Chelicerae (Fig. 6D) and maxillae dark brown, the latter with light tips. Labium darker, sternum brown, venter blackish-brown with two lines of lighter spots. Legs dark brown. Palpal organ (Fig. 6E, F) with tibial apophysis bent towards the cymbium and dagger-like embolus.

*Measurements.* CL 3.95, EFL 1.52, AEW 2.43, PEW 2.43, AL 5.47, L1 9.88, L2 7.29, L3 7.14, L4 8.05.

#### Female

Cephalothorax (Fig. 7A) dark brown, area surrounding eye black, thorax with central stripe of white hairs, similar lighter hairs on sides. Abdomen (Fig. 6A) dark, with two pairs of lateral light spots, light median stripe and similar anterior margin. Clypeus dark brown with strong brown and more delicate light hairs. Chelicerae dark brown. Pedipalps slightly lighter with brown hairs. Maxillae and labium dark brown, the first with light tips. Sternum brown, venter dark grey with two light longitudinal stripes. First legs brown, others lighter. Epigyne with posterior incision and two depressions.

*Measurements.* CL 4.02, EFL 1.59, AEW 2.28, PEW 2.50, AL 5.47, L1 8.20, L2 6.38, L3 6.68, L4 7.60.

#### Distribution

Widely distributed all over Australia, found also in savannahs of southern Papua New Guinea (Fig. 8).

#### Remarks

The status of the *Sandalodes albobarbatulus* (Keyserling) specimen in the collection of the BMNH is not specified. It is probably a syntype.

### *Sandalodes superbus* (Karsch), comb. nov.

(Figs 9–11)

*Almena superba* Karsch, 1878: 29.

*Acompse ludicrus* Keyserling, 1882: 1326.

*Bavia ludicra*. – Rainbow, 1911: 281.

*Sandalodes scopifer*. – Zabka, 1991a: 52.

#### Material examined

*Holotype.* *Almena superba* Karsch, 1878, ♀, Australia, Daemel (ZMB 1601).

*Syntype.* *Acompse ludicrus* Keyserling, 1882, Gayndah, Mus. Godeffroy Nr. 7693 (ZMH).

*Type.* *Acompse ludicrus* Keyserling, ♀, 1882 (BMNH 1891/456).

*Other material examined.* **Papua New Guinea:** 2♀, Central Province, Sirinumu Dam, under *Eucalyptus* bark, 1.v.1988, D. Court (QM S.50959). **Northern Territory:** ♀, Ormiston Gorge, 140 km W Alice Springs, 20.ix.1975, M. Baehr (CBM). **Queensland:** ♂, Lakefield NP, Laura R., 28 km N Laura, 28–30.v.1993, B. and M. Baehr, CMB; ♂, Mt Molloy, 22.v.1993, B. and M. Baehr (CBM); ♀, Edmonton, 2.ix.1969, N. Clyde Coleman (AM KS21064); ♀, Cairns, 21.vi.1969, N. Clyde Coleman (AM KS21065); ♀, Kroombit Tops, 23.ii.1982, R. Raven (QM S.20954); ♂, Brisbane, Roedean St., 25.ii.1979, V. E. Davies (QM S.20927); ♀, same locality, 1.iv.1979,

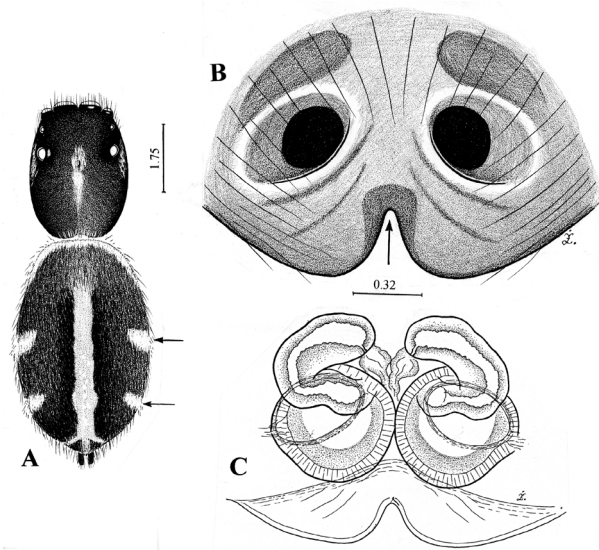


Fig. 7. Female of *Sandalodes scopifer* (Karsch): A, general appearance; B, C, epigyne and internal genitalia. Arrows indicate diagnostic character states.

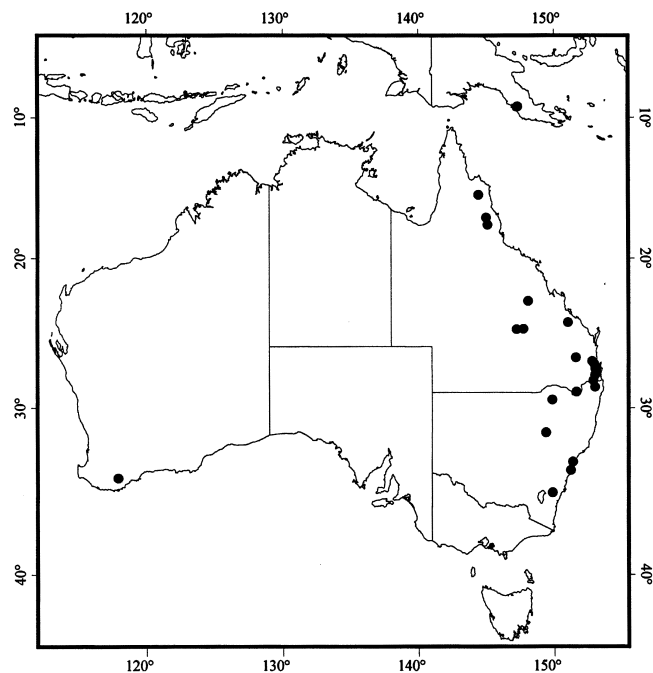


Fig. 8. Distribution of *Sandalodes scopifer* (Karsch).

V. E. Davies (QM S.20940); ♀, 3 km W Emu Park, *Eucalyptus*, 20.ii.1990, B. and M. Baehr (CBM); 2♂, ♀, Mareeba, 28.viii.1976, R. Mascord (AM KS21066); ♂, Mareeba, 1.iii.1970, N. Clyde Coleman (AM KS18965); ♂, 2♀, 1 juv., Brisbane, Mt Coot-tha, 11.xi.1983, R. R. Jackson (QM S.20941); ♂, 2♀, 5 juv., Lake Broadwater, 28.viii.1982, M. Bennie (QM S.50960); ♀, Kennedy River, 15 km NW Fairview, 29.vi.1993, B. and M. Baehr (CBM); ♀, Tinaroo, 15.xi.1971, N. Clyde Coleman (QM S.20945); ♀, Lakefield

NP, 75 km N of Laura, 15–28.vi.1980, G. Monteith (QM S.20936); ♂, Brisbane, McDowall State School, 19.iii.1980, K. Osborne (QM S.20938); ♂, Mt Garnet, 23.ii.1972, N. Clyde Coleman (AM KS18311); ♂, ♀, 2 juv., same data, 24.ii.1972 (QM S.20943); ♀, Einasleigh R., Carpentaria Downs, 12–13.vi.1993, B. and M. Baehr (CBM); ♂, 1 juv., Mt Moffatt, Dargonelly Rock Hotels, 20–27.ix.1986, M. Bennie (QM S.15975); ♂, Cooktown, iii.1985, D. Bell (QM S.20955); ♂, 2♀, Rockhampton, 12.viii.1971, N. Clyde Coleman (QM S.20937); ♀, Bluff Downs, 60 km NW Charters Towers, 1.v.1974, M. Archer, A. Elliot (QM S.20932); ♀, Cooloola, R. R. Jackson, 10.ix.1983 (QM S.20934); ♀, Bulburin SF, camp site, 17–24.iii.1975, J. C., R. M., V. E. Davies (QM S.20933); ♀, Kumberilla, W Dalby, ii.1979, T. Adams (QM S.20947); ♀, Ravenshoe, 15.vii.1976, P. Filewood (QM S.20953); ♀, Mt Walker Ck, 14 km S Ipswich, *Eucalyptus*, 22.xi.1990, M. Baehr (CBM). **New South Wales:** ♀, Sydney, 25.iv.1984, G. Bowman (AM KS14377); ♂, Dubbo, 30.vii.1966, C. E. Chadwick (AM KS18286); ♀, Bargo, 11.ii.1966, C. E. Chadwick (AM KS18942); ♀, Brooklana, E Dorrigo, vi.1929, W. Heron (AK KS18239); ♀, Kyogle, ex mud cell of *Sceliphron* wasp, 16.xi.1983 (AK KS14388); ♀, Northbridge, A. Turnidge, 8.v.1950 (AM KS22253); ♀, Jenolan Caves, 1901, V. Wiburd (AM KS21072); ♀, Narabeen (AM KS22252); ♀, 110 km S Singleton, *Eucalyptus* trunk, 17.x.1987, M. Zabka (AM KS55356); ♂, 68 km. SW of Narrandera, Newell Hwy, under bark of *Eucalyptus* sp., M. Kotzman (WAM 93/1662); ♂, 4♀, 2 juv., Munmorah, 100 km N Sydney, under bark, 31.x.1987, M. Zabka (AM KS55357); ♀, 2 juv. same locality, 8.ii.1988, M. Zabka (AM KS55358); ♂, near Gosford, Mooney Ck, 22.i.1967, R. Mascord (AM KS21068); 2♂, Fairfield, 9.vii.1966, M. Nikitin (AM KS21070); 2♀, Fairfield, 23.vii.1966, R. Mascord (AM KS21071); 4♀, E Kurrajong, 23.vii.1966, R. Mascord (AM KS21069); ♀, Linfield, 16.x.1966, D. Doolan, AM KS18982; ♀, Waterfall, 28.ix.1977, R. Mascord (AM KS21067); ♂, 2♀, 1 juv., Seven Mile Beach, near Gerringong, under *Eucalyptus* bark, 6.iii.1988, M. Zabka, AM KS55359. **Tasmania:** ♀, Trevallyn, Launceston, in rolled bark suspended in trees, 4.ix.1929, V. V. H. (AM KS21073); ♀, Midway Point, SE Tasmania, in kitchen, .ix.1984, T. Beattie (TMH T1935); ♂, locality (?), ii.1966, D. Jennings (TMH T530); ♂, Claremont, in crack between bricks, 5.ii.1977, J. Salisbury (TMH T1174). **Western Australia:** ♀, Cocanarup Timber Reserve, salmon gum woodland, 1.xii.1993, G. Harold (WAM 94/1510); ♂, Helena-Aurora Ranges, lower camp, 20.ii.1996, A. Chapman via R. P. McMillan (WAM 98/1942); ♀, Greenmount, vi.1978–1979, G. Lowe (WAM 93/1656); ♀, Darlington, 1983–1986, G. H. Lowe (WAM 93/1654); ♀, Darlington, iv.1977/1978, G. H. Lowe (WAM 93/1653); ♀, 10 km from Ravensthorpe, 13.xi.1987, M. Baehr (CBM); ♀, 4 km W Jarrahdale, 16.xi.1987, M. Baehr (CBM); ♀, Goongarrie, on log at fire camp, GGR5, Mallee/Triodia. W. F. Humphreys *et al.* (WAM 93/1655).

### Diagnosis

The largest and most robust species of *Sandalodes*. Male cheliceral spurs with distinctive protrusions, palpal organ similar to *L. joannae*, but bulb narrower, without anterior furrow, embolus shorter, very delicate, needle-like. Female abdomen with light central stripe and light marginal band, epigyne with two depressions.

### Description

#### Male

Cephalothorax (Fig. 9A) with anterior fringe of blackish hairs, massive, dark chestnut brown, area surrounding eye black with clusters of white hairs, the latter also around

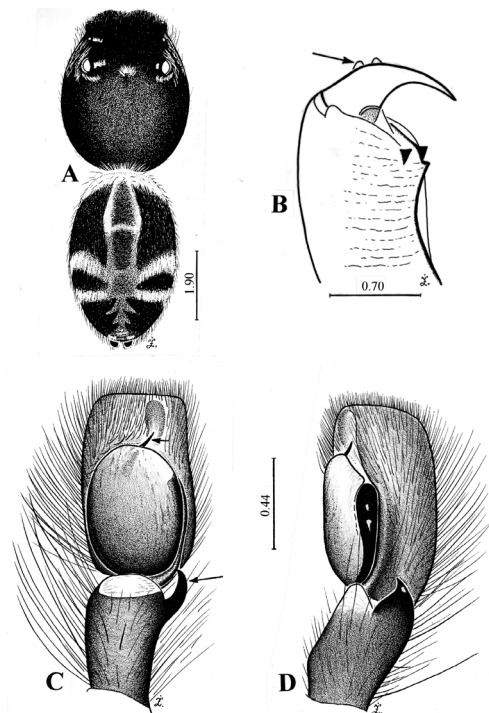


Fig. 9. Male of *Sandalodes superbis* (Karsch): A, general appearance; B, chelicera; C, D, palpal organ. Arrows indicate diagnostic character states.

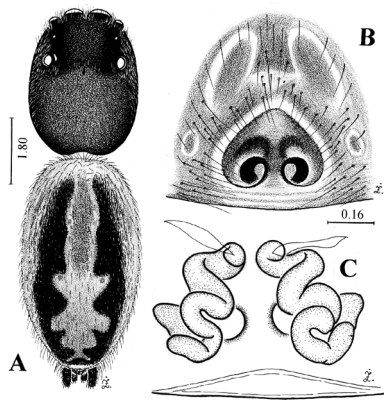
fovea. Abdomen (Fig. 9A) beige-brown to dark brown, sometimes with anterior central scutum, medially lighter, with light anterior margin and transverse stripes posteriorly. Spinnerets light to dark brown. Clypeus dark brown with short white hairs along its margin. Chelicerae (Fig. 9B), pedipalps, labium and maxillae dark brown, the latter with light tips. Sternum brown, venter centrally beige-brown, laterally lighter. First legs dark brown, remaining legs gradually lighter, to brown. Palpal organ (Fig. 9C, D) with hook-like tibial apophysis and very short and thin embolus.

**Measurements.** CL 4.86, EFL 1.59, AEW 2.58, PEW 2.81, AL 5.62, L1 12.76, L2 9.12, L3 8.05, L4 9.57.

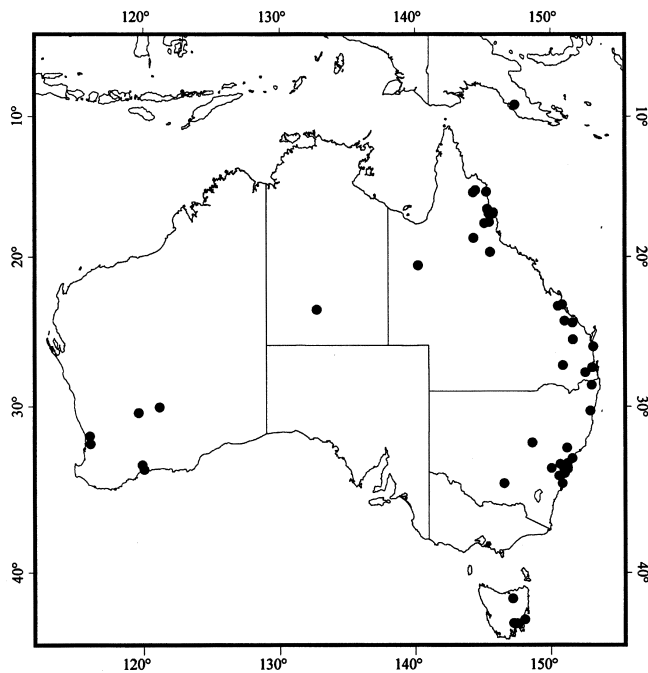
#### Female

Cephalothorax (Fig. 10A) similar to male but white hair more numerous, especially on sides. Abdomen (Fig. 10A) with light central pattern and light marginal band, rest covered with blackish hairs. Spinnerets brown. Clypeus brown with long white hairs. Chelicerae, labium and maxillae brown, the latter with yellowish tips. Pedipalps and sternum slightly lighter. Venter greyish beige centrally, the rest beige. First legs brown, others slightly lighter. Epigyne (Fig. 10B) shows wide variability, with two distinctive copulatory openings.

**Measurements.** CL 4.86 (4.25), EFL 1.74 (1.52), AEW 2.58 (2.35), PEW 2.81 (2.43), AL 5.62 (5.32), L1 9.42, L2 7.60, L3 7.75, L4 9.12.



**Fig. 10.** Female of *Sandalodes superbus* (Karsch): A, general appearance; B, C, epigyne and internal genitalia.



**Fig. 11.** Distribution of *Sandalodes superbus* (Karsch).

#### Distribution

Widely distributed species recorded from mainland Australia (except South Australia and Victoria), Tasmania and southern Papua New Guinea (Fig. 11).

#### Remarks

The species, being large and massive, can deliver a painful bite but without further consequences—at least from author's own experience.

The specimen of *Acompsa ludicrus* (BMNH 1891/456) is of uncertain status and does not have locality data.

#### *Sandalodes joannae*, sp. nov.

(Figs 12–14)

#### Material examined

*Holotype*. Western Australia: ♂, Trayning, xii.1988–i.1989, A. Dugand (WAM 93/1659).

*Allotype*. Western Australia: ♀, Darlington, iii.1975, G. H. Lowe (WAM 93/1652).

*Paratypes*. Western Australia: ♂, ♀, Kathleen Valley, 1965, T. Moriarty (WAM 93/1657–8); ♀, Moora, open forest, under *Eucalyptus* bark, 19.ix.1988, M. Zabka, WAM 88/2381; ♂, Nullarbor Plain, Nurina Cave, 6N46, on surface, AM KS17137.

#### Diagnosis

Abdominal pattern very distinctive. Male cephalothorax with no fringe or crest of dense hairs. Palpal organ very similar to *L. superbus* but more massive, bulb relatively wider with anterior furrow. Epigyne with two lateral dark spots extending from the copulatory openings.

#### Description

##### Male holotype

Cephalothorax (Fig. 12A) dark brown, area surrounding eye black, ocular and foveal regions with numerous white hairs. Abdomen (Fig. 12A) dark grey-brown with two pairs of anterior light spots and V-shaped markings posteriorly. Anterior margin lighter, laterally two pairs of lighter indistinctive spots. Spinnerets almost black. Clypeus, chelicerae (Fig. 12B) and maxillae brown, the latter with yellowish tips. Labium brown, sternum lighter, venter brownish-grey. Legs I dark brown, lighter distally, other legs light brown with darker bands. Palpal organ (Fig. 12C, D) with tegular furrow (see arrows).

*Measurements*. CL 3.10, EFL 1.40, AEW 2.20, PEW 2.20, AL 4.00.

##### Female allotype

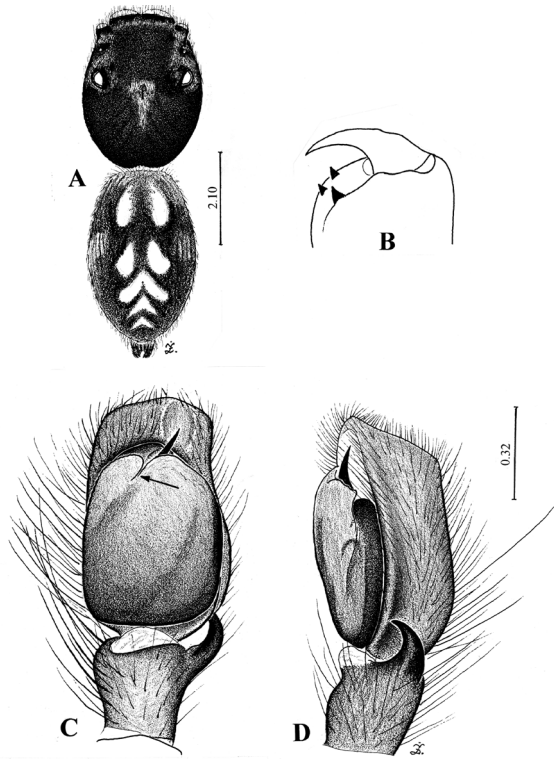
Eye field almost black, thorax chestnut brown with longitudinal lighter stripe. Whole surface covered with black protruding bristles and white adpressed delicate hairs. Abdomen (Fig. 13A) with central yellowish pattern surrounded by dark brown area covered with hairs. Sides with two pairs of lighter indistinctive spots and longitudinal rows of dark and light narrow stripes. Spinnerets dirty orange. Clypeus and chelicerae chestnut brown, covered with delicate light hairs. Pedipalps light brown. Maxillae and labium dark brown with lighter tips. Sternum light brown. Venter dark grey with two lighter stripes. Legs brown, strong, with light and brown hairs. Epigyne (Fig. 13B–D) with strongly translucent section of internal genitalia (see arrows).

*Measurements*. CL 4.90, EFL 1.80, AEW 2.80, PEW 3.10, AL 7.30.

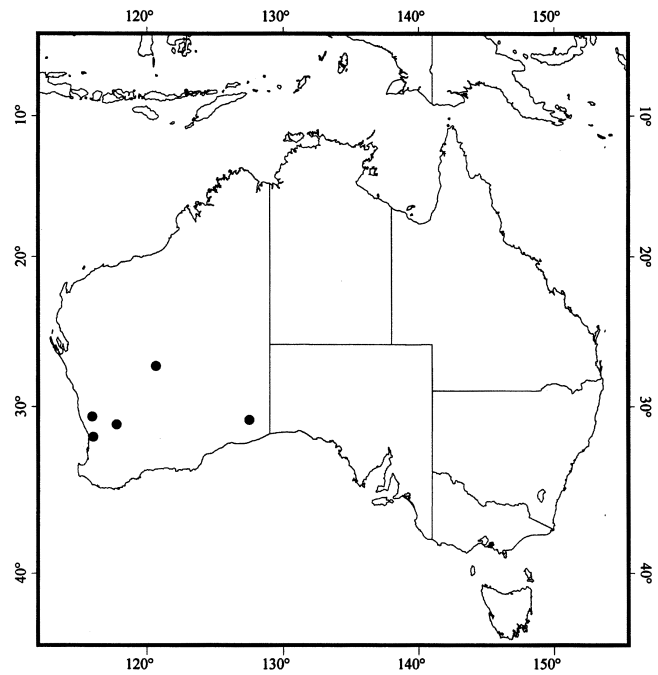
#### Distribution

The species is known from limited localities in Western Australia (Fig. 14).

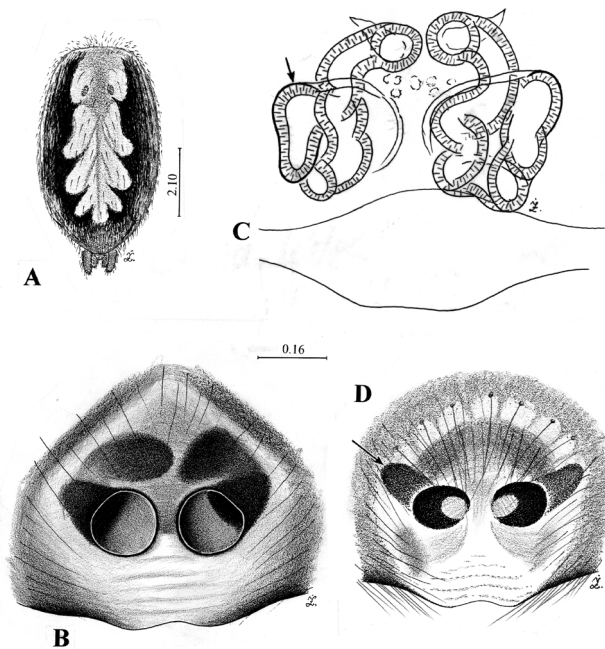




**Fig. 12.** Male of *Sandalodes joannae*, sp. nov.: A, general appearance; B, chelicera; C, D, palpal organ. Holotype from Trayning.



**Fig. 14.** Distribution of *Sandalodes joannae*, sp. nov.



**Fig. 13.** Female of *Sandalodes joannae*, sp. nov.: A, abdomen; B, C, D, epigyne and internal genitalia. A–C, allotype from Darlington; D, paratype from Moora. Arrows indicate diagnostic character states.

*Etymology*

This species is named for Joanna—a friend of mine.

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