

## SALTICIDAE (ARACHNIDA: ARANEAE) OF ORIENTAL, AUSTRALIAN AND PACIFIC REGIONS, X. GENUS *SIMAETHA* THORELL

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### ABSTRACT

The spider genus *Simaetha* is revised. Eleven species are diagnosed, described and figured. Six of these are new: *S. almadenensis*, *S. atypica*, *S. broomei*, *S. colemani*, *S. knowlesi* and *S. papuana*. *Dendryphantes laticeps* Strand is synonymised with *S. tenuior* (Keyserling). *Simaetha* seems to form a monophyletic group with the genera *Simaethula*, *Kinhia*, *Ligurra*, *Heratemis*, *Porius* and *Sertinius*. The distribution of the genus is considered endemic to Australia and some adjacent islands, with single species reaching, for example, Papua New Guinea and Aru Is. A key to the species is provided and distributional data are given.

### INTRODUCTION

Since their original description only single species of *Simaetha* have been subjected to study. Diagnostic characters of the genus were given by Davies and Żabka (1989), the morphology of two species was illustrated by Prószyński (1983, 1984) and some behavioural aspects of *S. paetula* and *S. thoracica* were presented by Jackson (1985).

The genus was proposed by Thorell (1881) for *S. thoracica* Thorell. Four further species were described by Keyserling (1882) in the genus *Eulabes* – all of them transferred to *Simaetha* by Simon (1903). *S. chelicera* described by Szombathy (1915) is a synonym of *S. tenuidens* (Keyserling). One species of *Simaetha*, classified as *Dendryphantes laticeps* Strand, 1911, now appears a synonym of *S. robustior* (Keyserling). Few other species listed by Bonnet (1958) in the genus *Simaetha* are not congeneric and have been excluded.

### MATERIALS AND METHODS

The study is based on type specimens and on new material deposited in the museums listed below. The methods of specimen examination follow that used in my previous papers (e.g. Żabka, 1990). The details of terminology are presented in Figure 1 and the abbreviations are explained in the text. All measurements are in mm; the first figure refers to the type specimen, while those in brackets give the range for the specimens studied. The main diagnostic characters are marked with arrows.

Collections studied: Australian Museum, Sydney (AM); Museo Civico di Storia Naturale, Genova (MCSN); Queensland Museum, Brisbane (QM); Senckenberg-Museum, Frankfurt a.M. (SMF); Western Australian Museum, Perth (WAM); Zoologisches Institut und Zoologisches Museum, Universität Hamburg (ZMH).

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Abbreviations used: aat – additional anterior cheliceral tooth, AEW – anterior eyes width, ag – accessory gland, AL – abdominal length, apt – additional posterior cheliceral tooth, as – abdominal scutum, ca – cymbial apophysis, CL – cephalothorax length, co – copulatory opening, CW – cephalothorax width, dr – epigynal diagonal ridges, ds – distal spermatheca, e – embolus, EFL – eye field length, ep – epigynal pocket, f – fovea, fd – fertilization duct, fp – frontal cheliceral protrusion, ic – intermediate canal, id – insemination duct, PEW – posterior eyes width, ps – proximal spermatheca, rft – retromarginal fissidentate tooth, rut – retromarginal unidentate tooth, s – spermatheca, sp – sternal protuberance, sr – seminal reservoir, stg – subtegulum, ta – retrolateral tibial apophysis, tg – tegulum.

### Genus *Simaetha* Thorell

*Simaetha* Thorell, 1881: 520.

*Eulabes* Keyserling, 1882: 1387.

*Dendryphantès* C. L. Koch, 1837: 31 (in part).

#### Type species

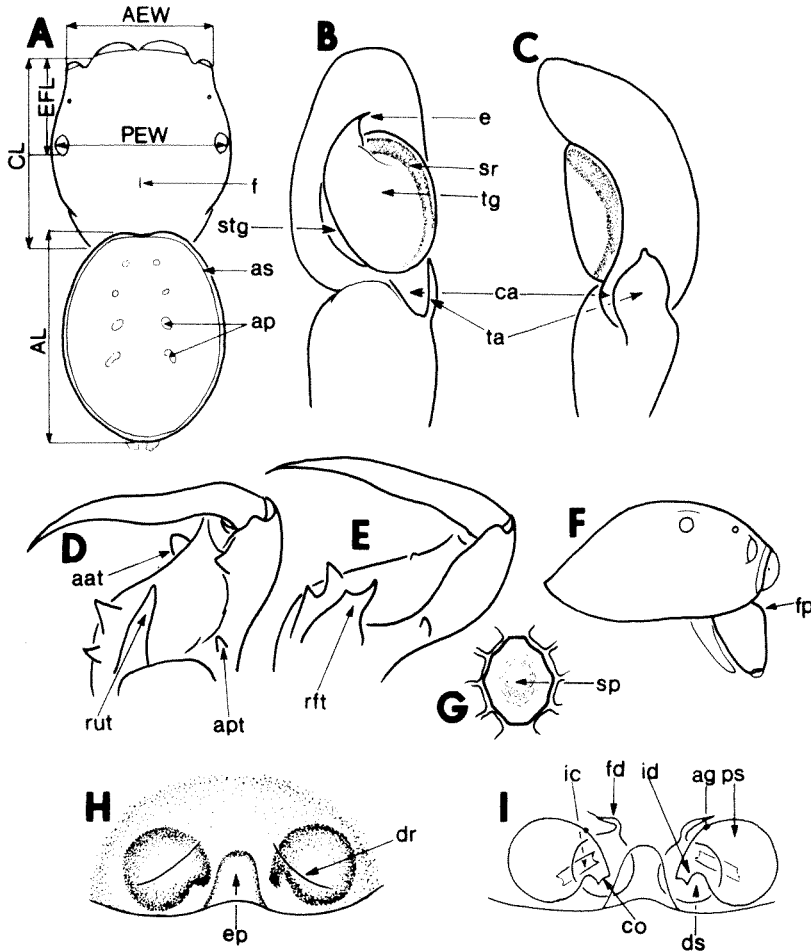
*Simaetha thoracica* Thorell, 1881, by subsequent designation.

#### Diagnosis

The genus differs from *Simaethula*, the only Australian relative, in the following characters: body dimensions larger, eye field relatively shorter, sternum with distinctive protuberance, epigyne with pocket and palpal tibia with retrolateral apophysis.

#### Description (Figure 1)

A robust spider, 3.80 – 8.70 mm in body length. Cephalothorax usually wide, compressed dorso-ventrally. Thoracic slope distinctive, cephalic slope gentle, fovea (f) located posteriorly. Posterior lateral eyes located at about the middle of the cephalothorax, much wider apart than anterior lateral eyes. In some species, the eye field has a small prominence. Abdomen egg-shaped, with distinctive apodemes (ap), in males usually with a scutum (as). Chelicerae more or less vertical, massive, with frontal protrusion (fp). Female chelicerae with fissidentate tooth, males with large retromarginal unident (rut) or fissident (rft) tooth. Chelicerae of some species with either an additional anterior (aat) tooth or a posterior (apt) tooth. Sternum with a distinctive protuberance (sp). First legs much heavier and longer than the remaining legs – especially in males. Spines of different length, sometimes very small. Leg formula I-II-IV-III (males) and I-IV-II-III (females). Cymbium with an apophysis (ca); retrolateral tibial apophysis (ta) single, varying in shape. Tegulum (tg) oval; seminal reservoir (sr) not meandering; in most species the subtegulum (stg) protrudes prolaterally from beneath the tegular margin. Embolus (e) straight or curved, never coiled. Palps of both sexes clothed in long hairs forming lateral fringes. Epigyne with a large central pocket (ep), in a few species with diagonal ridges (dr). Spermathecae consist of two thick-walled oval chambers; proximal chamber (ps) larger than distal one (ds). Intermediate canal (ic) more or less visible. Insemination ducts (id) usually very short – except for *S. paetula*. Accessory glands (ag) invisible or weakly indicated. The males are darker than the females, their abdominal apodemes are more distinctive and first legs much longer. The males with shiny metallic green, blue and red polish, whilst the females with lighter markings.



**Figure 1** Diagnostic characters of *Simaetha* (abbreviations explained in the text). A – dorsal body and measurements taken. B – ventral aspect of male palpal organ. C – retrolateral aspect of male palpal organ. D – chelicera with unidentate tooth, E – chelicera with fissidentate tooth. F – lateral aspect of cephalothorax. G – sternum with its protrusion. H – epigyne. I – internal genitalia of female.

### Remarks on relationships and distribution

Simon (1903) placed the genus *Simaetha* in Simaetheae – together with some other fissidentate genera. Of these *Simaetha*, *Simaethula*, *Ligurra*, *Heratemis*, *Stertinius* as well as *Porius* (until now in the Balleae) and the recently described *Kinhia* all have similar body form, genitalic structure and cheliceral dentition (Peng and Yin 1991; Prószyński 1983, 1984, 1987; Żabka, 1985) and seem to form a monophyletic group. All its representatives are characterized by the presence of a cymbial apophysis, an oval tegulum, a central epigynal pocket (except for *Simaethula*) and two-chambered spermathecae. A few other genera,

particularly *Rhene*, *Dendryphantes*, *Irura*, *Homalattus* and *Bianor*, show some similarities in general appearance, while *Iona* shows similarities in the genitalia; all of these are phylogenetically distant.

The genera of Simaetheae have an Oriental and Australian distribution; *Simaetha* and *Simaethula* seem to be endemic to Australia and some adjacent islands (Aru, New Guinea). Other genera occur in southeast Asia but have not been recorded on Australia's mainland.

Of all the species, *S. tenuidens*, *S. paetula* and *S. tenuior* have the widest distribution, being mostly found in Queensland but also in Western Australia and Papua New Guinea; the latter species also occurs on offshore islands and in human habitations. *S. robustior* has been recorded from tropical Queensland, Aru Is. and Papua New Guinea and seems to have a northern (tropical) distribution. The remaining species are known from single localities in the Northern Territory, Queensland, New South Wales, Western Australia and Papua New Guinea.

### Biology

The representatives of *Simaetha* are found on herbs, small trees and grass. Some specimens of *S. tenuior* and *S. tenuidens* have been collected in the nests of *Scelephron formosum* (Hymenoptera: Sphecidae), whilst others (*S. paetula* and *S. thoracica*) cohabit within colonies of *Badumna candida* (Araneae: Desidae) or (as in one case of juvenile *S. paetula*) with *Cyrtophora* sp. (Araneae: Araneidae), where they build their own nests within the nest of the host (Jackson 1985). Representatives of *Simaetha* build large prey-catching webs or display kleptoparasitic behaviour, gleaning insects from the nests of the other spiders with whom they cohabit. The occurrence of *S. tenuior* in human habitations suggests its synanthropic biology. Many other aspects of the biology of *Simaetha*, including courtship, mating behaviour and phylogenetic interpretation, are discussed by Jackson (1985).

### Key to the species of *Simaetha*

#### Males

1. Cheliceral retromarginal tooth bifurcate (fissidentate) ..... 2  
Cheliceral tooth pointed (unidentate) ..... 3
2. Chelicerae with additional posterior tooth; subtegulum distinctive ..... 4  
Additional tooth lacking ..... 5
3. Chelicerae with additional posterior tooth; abdomen dark, with light anterior margin;  
tibial apophysis large, spatulate ..... *S. tenuidens* (Keyserling)  
Additional tooth lacking, abdominal pattern variable; tibial apophysis not spatulate ..... 6
4. Tibial apophysis short; abdominal scutum distinctive ..... *S. thoracica* Thorell  
Tibial apophysis long; abdomen with three longitudinal, dorsal stripes, without scutum ...  
..... *S. papuana* sp. nov.
5. Spinnerets rather long; scutum weakly indicated; subtegulum strongly protrusive, colour  
pattern distinctive; palpal tibia with long feather-like hairs on prolateral surface .....  
..... *S. atypica* sp. nov.

- Spinnerets short; scutum distinctive; subtegulum weakly protrusive; body colour almost uniform ..... *S. almadenensis* sp. nov.
6. Massive spider; abdomen with light contrasting stripe; subtegulum strongly protrusive; embolus curved ..... *S. robustior* (Keyserling)  
Not as above ..... 7
7. Tibial apophysis laterally bent; embolus straight ..... 8  
Embolus curved; chelicerae with characteristic teeth ..... *S. knowlesi* sp. nov.
8. Embolus relatively long; subtegulum invisible ..... *S. paetula* (Keyserling)  
Embolus shorter; subtegulum visible ..... *S. tenuior* (Keyserling)

### Females

1. Epigynal pocket well marked, large, about the size of the proximal spermathecae ..... 2  
Epigyne different ..... 4
2. Large spider with a contrasting broad, light abdominal stripe, and a bell-shaped central epigynal pocket ..... *S. robustior* (Keyserling)  
Contrasting stripe lacking or, if present, epigynal pocket located anteriorly ..... 3
3. Spider dark; epigynal pocket located centrally, cone-shaped ..... *S. knowlesi* sp. nov.  
Abdomen with light pattern; spinnerets relatively long; epigynal pocket located anteriorly ..... *S. atypica* sp. nov.
4. Epigynal pocket distinctive but relatively small, close to the epigastric furrow; spinnerets short ..... 5  
Epigynal pocket indistinct, more visible only after maceration ..... 6
5. Proximal spermathecae more than three times larger than the distal ones; cephalothorax less robust than in the other species ..... *S. broomei* sp. nov.  
Proximal spermathecae small; epigyne with more or less marked diagonal ridges ..... *S. tenuior* (Keyserling)
6. Abdomen dark, with light frontal band; spermathecae widely spaced ..... *S. tenuidens* (Keyserling)  
Abdomen with light pattern ..... 7
7. Copulatory openings large, cup-like, insemination ducts long ..... *S. paetula* (Keyserling)  
Copulatory openings small, insemination ducts short ..... 8
8. Insemination ducts very short; accessory glands weakly indicated but visible; intermediate canal distinctive ..... *S. thoracica* Thorell  
Insemination ducts slightly longer; accessory glands invisible; intermediate canal very short ..... *S. colemani* sp. nov.

**TAXONOMIC SURVEY**

***Simaetha thoracica* Thorell**

Figures 2-4, Map 1

*Simaetha thoracica* Thorell, 1881: 521.

*Eulabes fissidens* Keyserling, 1882: 1391.

**Holotype of *Simaetha thoracica***

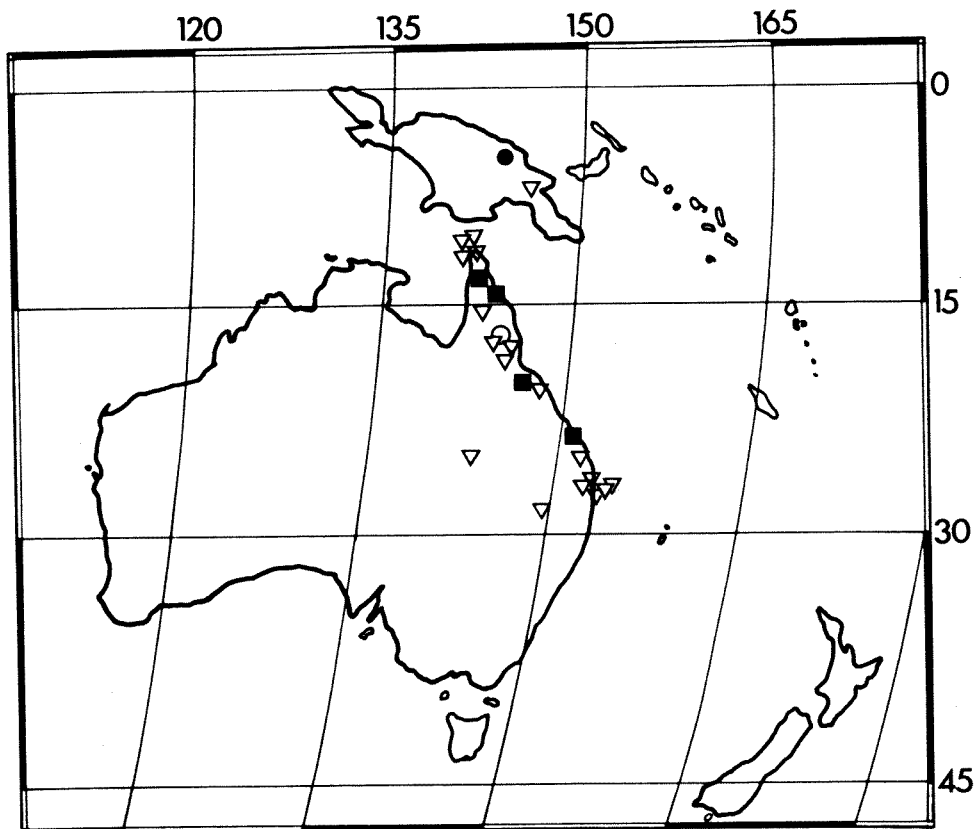
♀, Cape York, Somerset, Queensland, Australia 1875, L.M. d'Albertis (MCSN).

**Syntypes of *Eulabes fissidens***

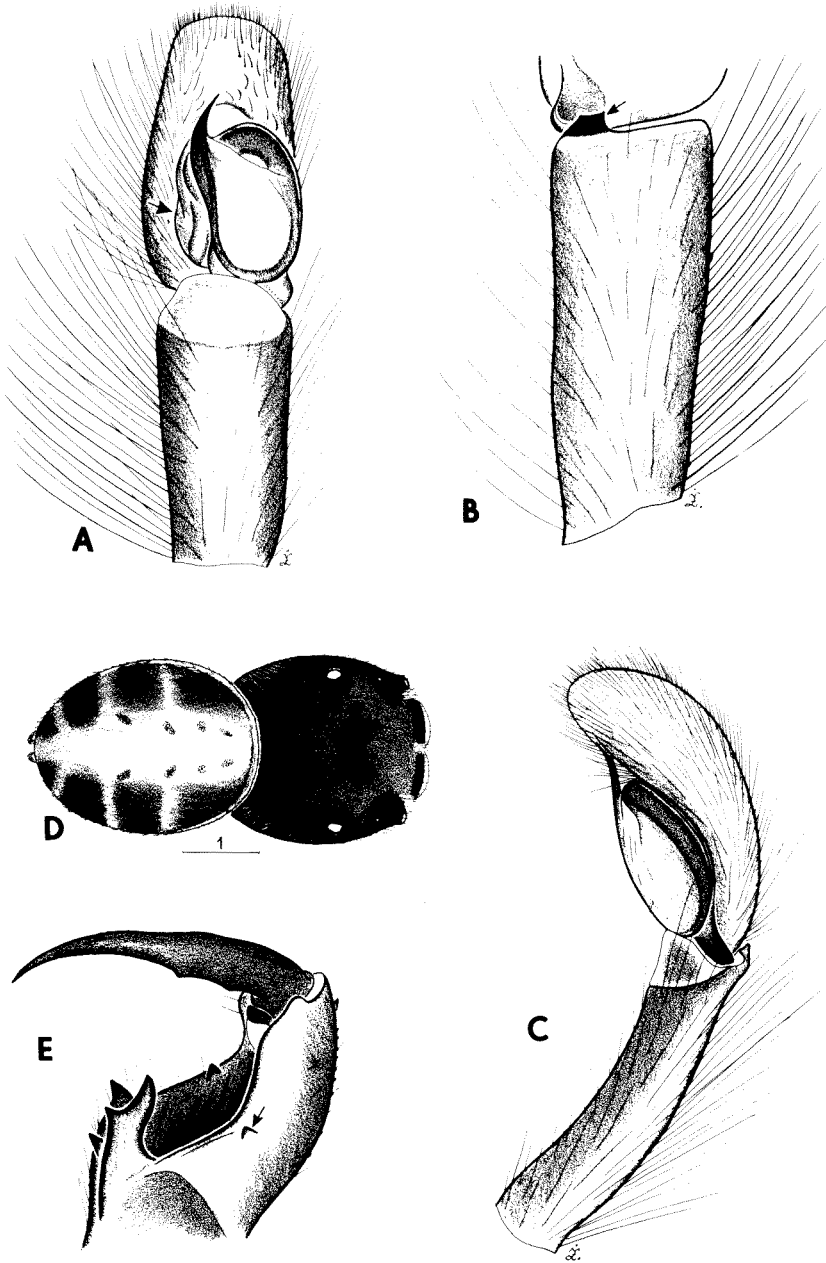
1♂, 1♀, Rockhampton, Queensland, Australia (ZMH, Mus. Godeffroy Nr. 7689).

**Other material examined**

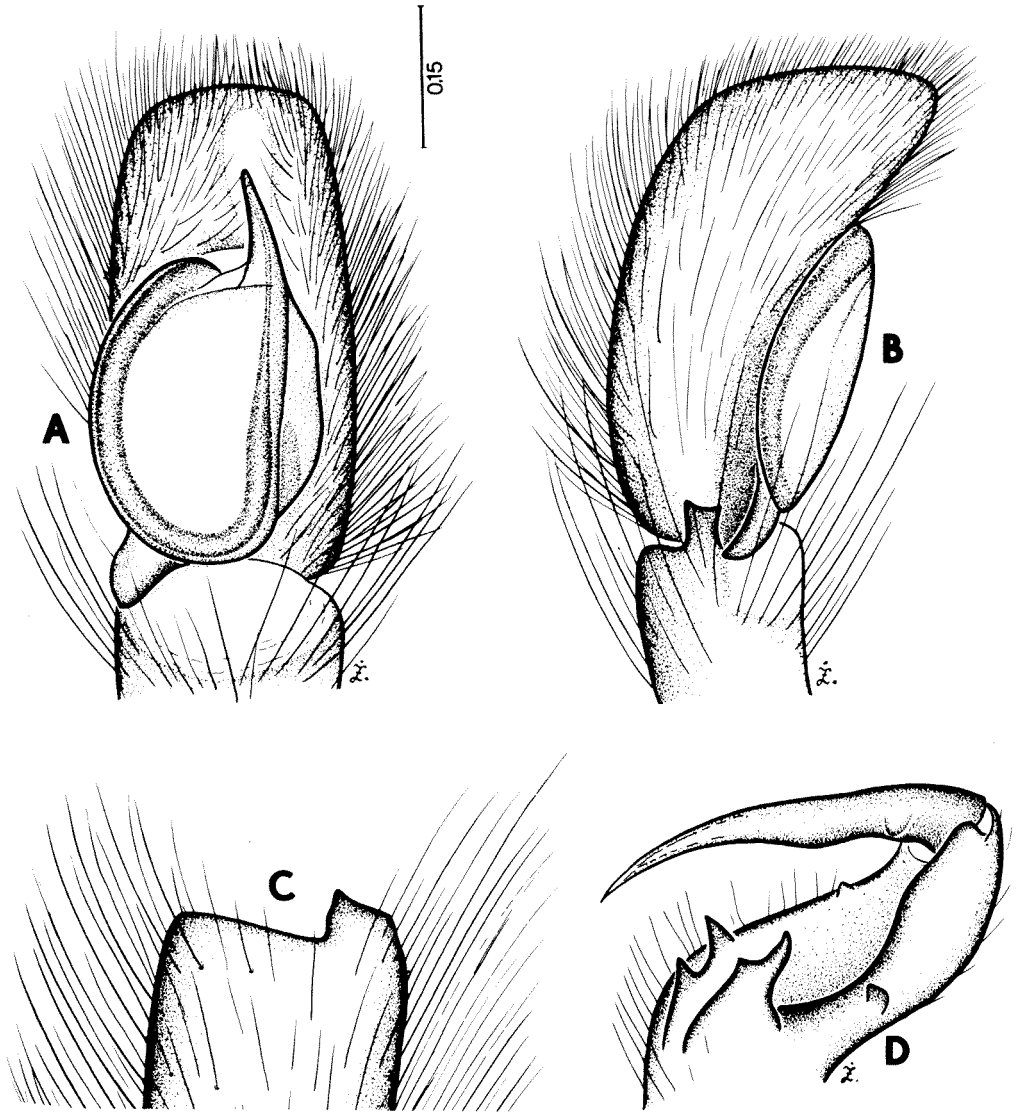
**Australia: Queensland:** 5♂, 3♀, 16 juv., Homevale, 1-7 April 1975, V. Davies, R. Raven (QM S4627). 1♂, Brandy Ck, camp site, 21-26 April 1975 (QM S4667). 1♂, 2♀, 4 juv., Rundle Ra, semi-evergreen vine thicket, 24-31 March 1975, V. Davies, R. Kohout (QM S4626). 1♀, from River 39 miles S Coen, 4 June 1973, V. Davies (QM S4664). **Western Australia:** 1♀, NW Australia, 1920 (AM KS22068).



**Map 1** Distribution of four species of *Simaetha* – *S. thoracica* (■); *S. colemani* (○); *S. tenuidens* (▽); *S. papuana* (●).



**Figure 2** ♂ *Simaetha thoracica* Thorell, 1881. A–C – palpal organ: ventral, retrodorsal and retrolateral aspects. D – general appearance. E – chelicera.



**Figure 3** ♂ *Simaetha thoracica* Thorell, 1881. A-B – palp organ: ventral and retrolateral aspects. C – palp organ: retrodorsal tibia. D – chelicera. (Syntype from Rockhampton).

### Diagnosis

Males similar to *S. atypica* but larger, abdominal pattern different, spinnerets shorter, subtegulum more protrusive, tibial apophysis smaller. Male chelicerae with a small posterior tooth. In comparison with *S. colemani* the insemination ducts are shorter, the intermediate canals are more distinct and the accessory glands are visible.



### Description

Male (Figure 2D). Eye field orange to brown with two darker spots and with black eye surrounds. Anterior eyes fringed with short white hairs. Thorax brown, clothed in light scattered hairs, lower margins darker. Abdominal scutum orange to brown, darkening posteriorly, sides light-grey or dirty-grey, centrally a light longitudinal stripe and transverse stripes. Apodemes distinct, spinnerets dirty-brown. Clypeus brown with light-grey, yellowish and brownish hairs. Chelicerae (Figure 2E, 3D) brown, fissidentate tooth large, anterior and

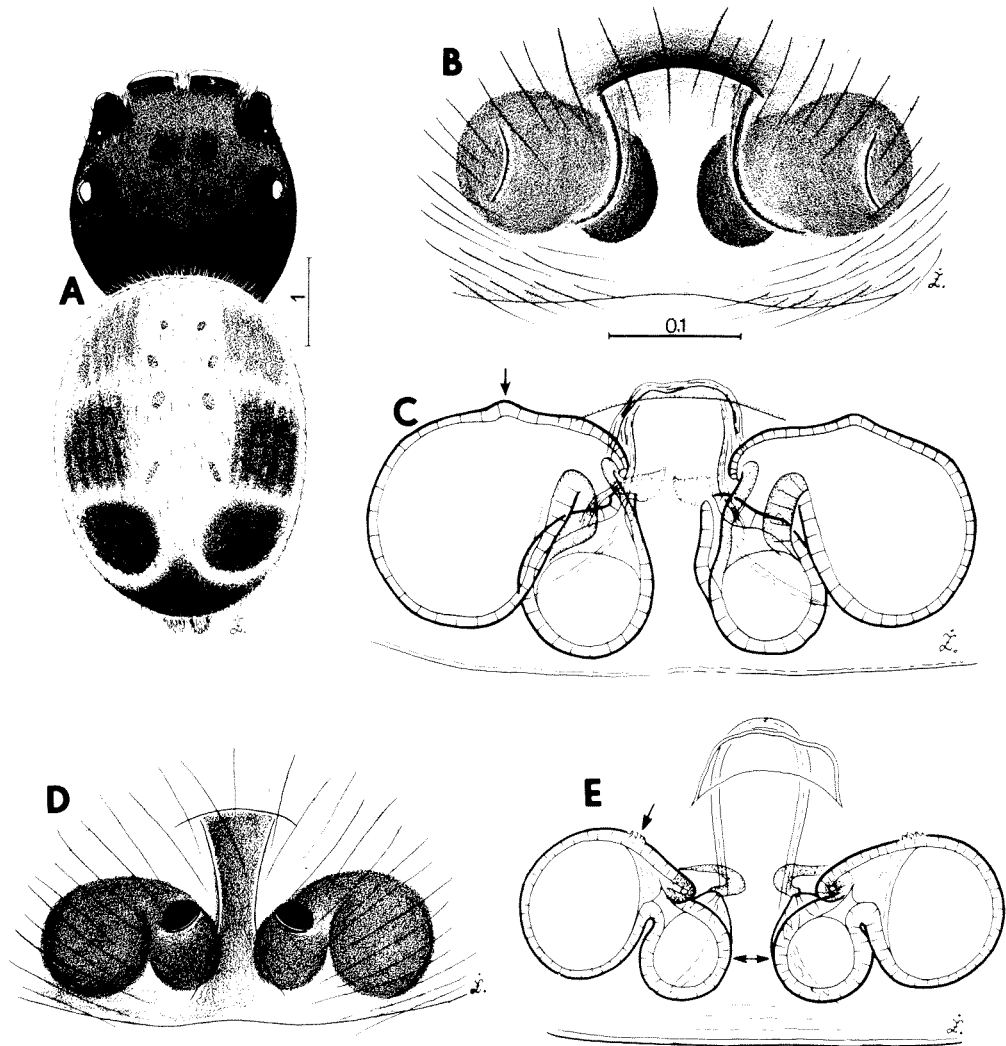


Figure 4 ♀ *Simaetha thoracica* Thorell, 1881. A – general appearance. B–E – epigyne and internal genitalia. (D–E – holotype).

posterior margins with smaller teeth. Maxillae and labium dark-brown with lighter scopular margins, sternum dark-brown, venter dirty-grey. Legs brown, prolateral sides darker – especially on femora I and II.

Palpal organ (Figure 2A-C, 3A-C): embolus relatively long, subtegulum and cymbial apophysis strongly developed, tibial apophysis short, truncate at the top.

#### Dimensions

CL 2.82 (2.50-3.30), EFL 1.20 (1.20-1.40), AEW 1.86 (1.70-1.95), PEW 2.22 (2.10-2.45), AL 3.36 (2.80-3.75).

Female (Figure 4A) similar to the male, abdominal stripe more distinctive, spinnerets orange to brown. Clypeus, chelicerae, maxillae, labium and sternum as in male, pedipalps brown, venter beige. Legs brown.

Epigyne (Figure 4B-E) with a longitudinal central depression leading to a large anterior pocket. Insemination ducts very short, intermediate canal distinctive.

#### Dimensions

CL 2.76 (2.20-2.85), EFL 1.26 (1.15-1.26), AEW 1.86 (1.65-1.90), PEW 2.34 (2.05-2.35), AL 3.36 (3.00-4.40).

### *Simaetha papuana* sp. nov.

Figure 5, Map 1

#### Holotype

♂, p. Amanab, W. Sepik, Papua New Guinea, sugar cane shoot, 16 November 1985, W. Ismay (AM KS30813).

#### Diagnosis

In comparison with other species, the cephalothorax has a lateral fringe of white hairs, the abdomen lacks a scutum and has longitudinal stripes, the cheliceral fang is noticeably bent.

#### Description

Male (Figure 5A). Eye field brownish with darker eye surrounds. Thorax orange-brown. Sides of cephalothorax fringed with white hairs. Abdomen without a scutum, orange with three longitudinal dark stripes. Spinnerets yellowish, posterior ones with darker tips. Clypeus orange-brown with white hairs. Chelicerae (Figure 5B) orange with a fissidentate retromarginal tooth, fang long and noticeably bent. Maxillae, labium and sternum honey-orange with grey coating, maxillae long. Venter dark-grey with rows of light spots. Legs I very long, honey-orange, dorsally darker – especially on femora. Other legs short and delicate, yellowish with grey femoral bands and darker joint-areas. Leg formula I, IV, II, III.

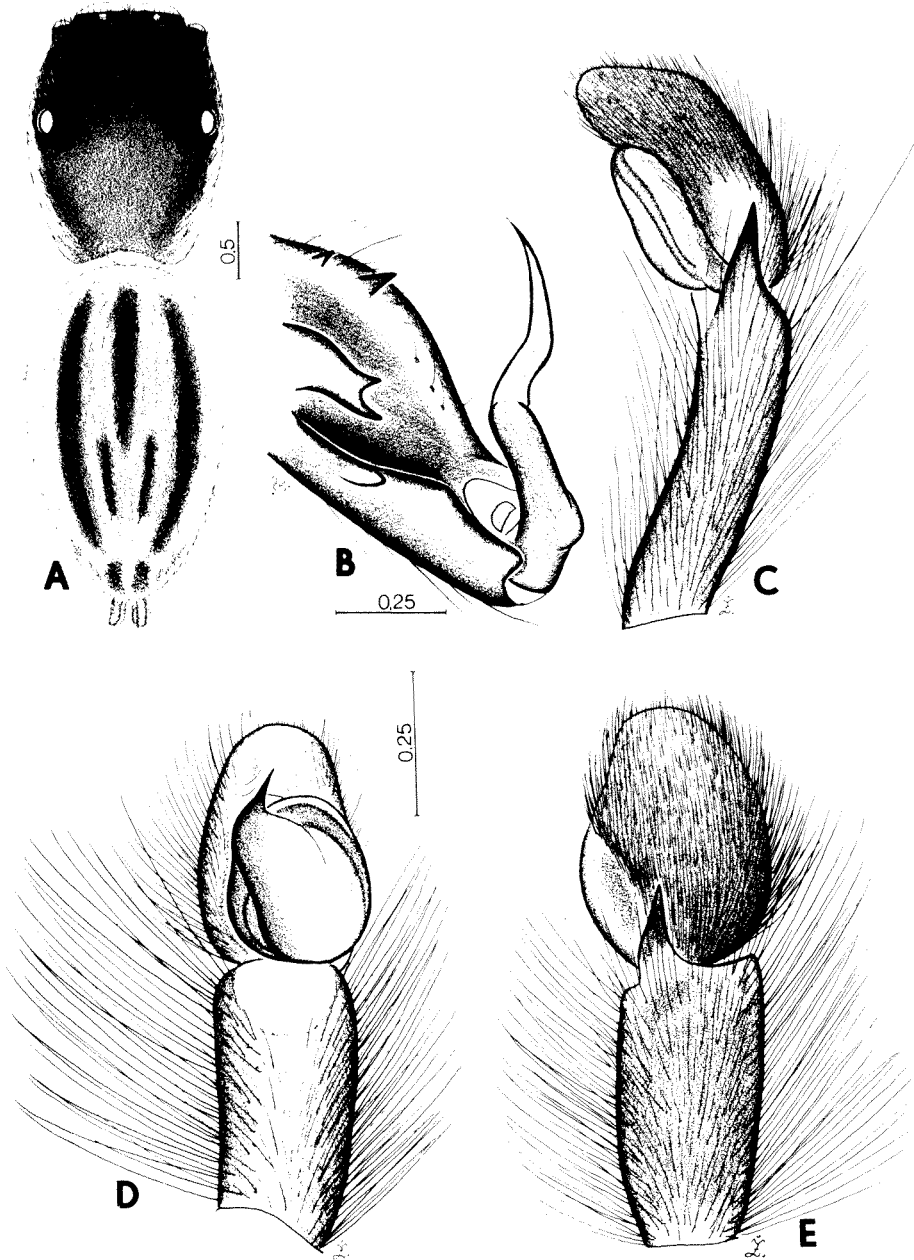
Palpal organ as illustrated on Figure 5C-E.

#### Dimensions

CL 2.25, EFL 1.00, AEW 1.45, PEW 1.70, AL 3.30.

#### Remarks

The placement of this species in *Simaetha* is tentative. It possesses several atypical features, notably the leg formula, colour pattern and absence of a cymbial apophysis and abdominal scutum.



**Figure 5** ♂ *Simaetha papuana* sp. nov. A – general appearance. B – chelicera. C–E – palpal organ: retrolateral, ventral and dorsolateral aspects.

*Simaetha colemani* sp. nov.

Figure 6, Map 1

**Holotype**

♀, Kuranda, Queensland, Australia, 25 March 1972, N. C. Coleman (QM S4654).

**Diagnosis**

In comparison with the similar *S. thoracica*, the insemination ducts are slightly longer, the intermediate canals are shorter, the accessory glands are not visible, the body size is much smaller and the abdominal pattern is different.

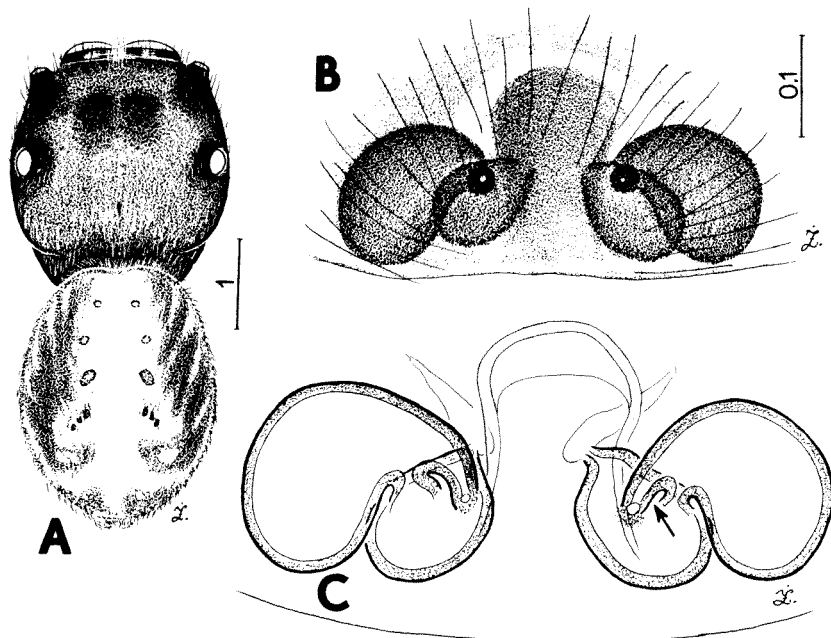
**Description**

Female (Figure 6A). Cephalothorax covered with white and dark-orange hairs. Eye field orange with two dark spots, eye surrounds darker. Thorax orange to brown. Abdomen brownish-grey with lighter central stripe. Spinnerets greyish. Clypeus and chelicerae orange. Pedipalps yellowish with brownish hairs. Maxillae and labium brown, chewing margins lighter, sternum dirty-orangish, venter light-beige. Legs I orange, remaining legs yellowish with grey joint-areas.

Epigyne (Figure 6B-C) similar to that of *S. thoracica* but epigynal pocket is weakly indicated, also the insemination ducts are slightly longer.

**Dimensions**

CL 2.40, EFL 1.25, AEW 1.90, PEW 2.30, AL 2.75.



**Figure 6** ♀ *Simaetha colemani* sp. nov. A – general appearance. B–C – epigyne and internal genitalia.

## Etymology

The specific name is proposed in honour of N. C. Coleman, Australian naturalist and collector of the material studied.

## *Simaetha tenuidens* (Keyserling)

Figures 7-8, Map 1

*Eulabes tenuidens* Keyserling, 1882: 1393.

*Simaetha tenuidens*: Simon, 1903: 833; Prószyński, 1987: 167.

*Simaetha chelicera* Szombathy, 1915: 482; Prószyński, 1983: 296.

## Syntypes of *Eulabes tenuidens*

1♂, 2♀, Gayndah, Peak Downs, Queensland, Australia (ZMH, Mus. Godeffroy Nr. 7690).

## Other material examined

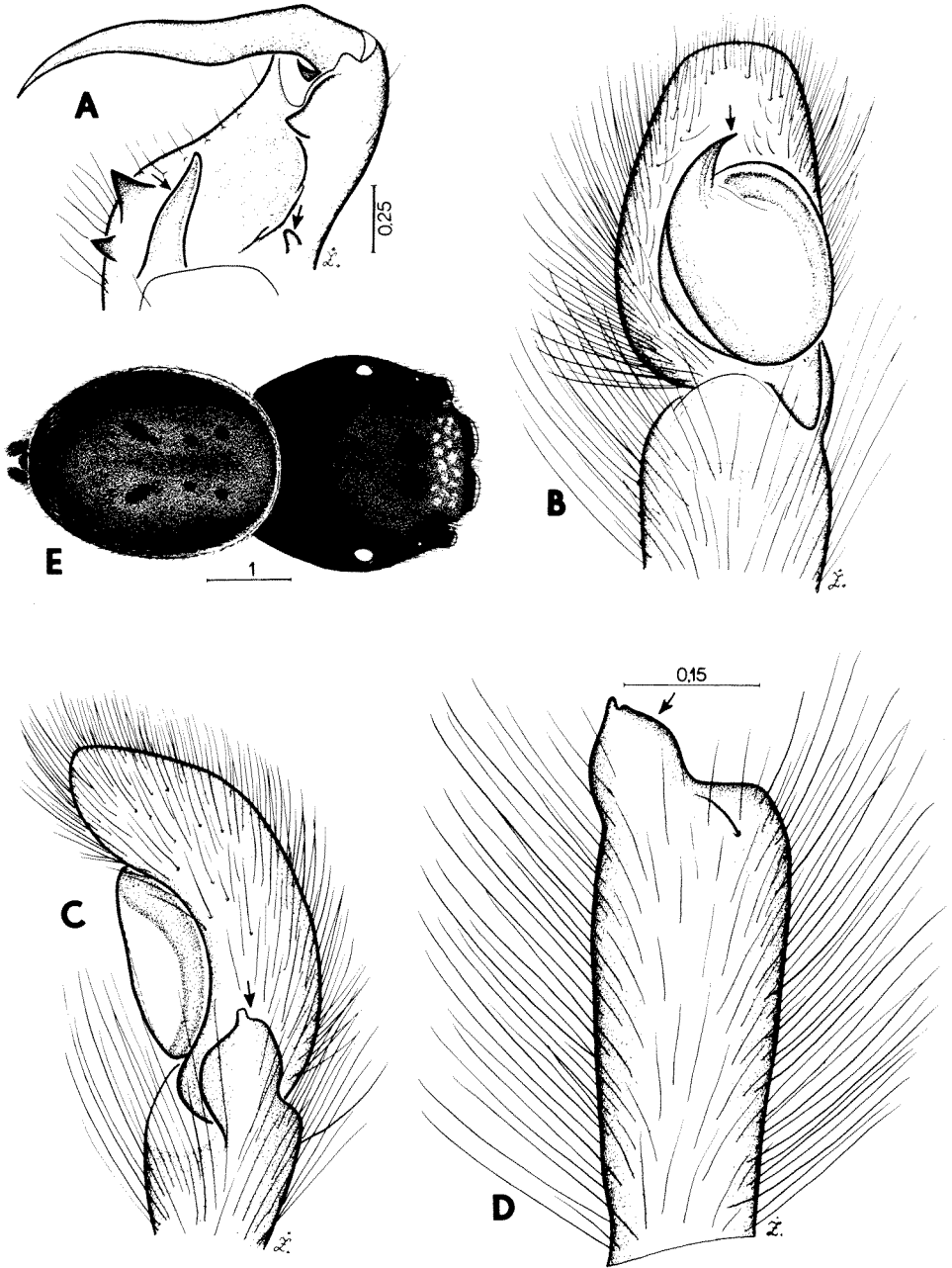
**Australia: Queensland:** 1♀, Acacia Ridge, mud wasp nest, 24 January 1971, E. C. Dahms (QM S4628). 1♂, 1♀, Cape York, Sanamere Swamp, N Jardine River, 3 September 1985, M. Bennie (QM S3608). 1♀, Cape York, Jardine River, 26 August 1985, M. Bennie (QM S3612). 1♀, Mareeba, 1 March 1970, N. C. Coleman (AM KS18968). 1♀, same locality, 22 July 1969 (AM KS22141). 3♂, 1 juv., Brisbane, Fig Tree Pocket, Roedean Street, in house, in wasps' nest, 11 February 1974, 28 April 1974, 25 July 1987, V. Davies (QM S4631, S4636, S4634). 1♀, Brisbane, Ferny Grove, 14 December 1982, R. R. Jackson (QM S4638). 3♂, 5♀, 3 juv., Brisbane, Rochedale State Forest, sweeping, 7 December 1979, 14-16 February 1980, 7 October 1980, V. Davies, R. Raven (QM S4646, S4642, S4643). 1♂, Brisbane, Mt Coot-tha, grass under open tree canopy, R. Monroe, July 1971 (QM S4681). 1♀, same locality, sweeping herbs, 2 August 1987, M. Żabka (AM KS30814). 1♂, Eureka Creek, 11 February 1972, N. C. Coleman (QM S4650). 1♂, 7 km NE Musgrave Station, 3 June 1973, V. Davies (QM S4675). 1♀, Lake Broadwater, bulloak, 26 December 1986, M. Bennie (QM S4632). 2♂, 5♀, Atherton Tableland, Mareeba, in webs, 21 January 1981, December 1982, R. R. Jackson (QM S4684, S4668). 1♂, 1♀, 2 juv., Torres Strait, NW side of Friday Is., in burnt low bushes behind dune, 7 December 1986, J. Gallon (QM S3626). 1♀, Torres Strait, Horn Is., beating, 2-8 December 1986, J. Gallon (QM S3618). 1♀, Altonvale Station, W Westmar, 10 January 1979, V. Davies, T. Adams, R. Raven (QM S4651). 1♀, Tinaroo, 15 November 1971, N. C. Coleman (QM S4662). 1♀, Bamaga, around motel, 8-11 December 1986, J. Gallon (QM S3619). 1♀, Brisbane, Fig Tree Pocket, 21 January 1973, V. Davies (QM S4688). 1♀, 2 juv., Mt Garnet, 24 July 1987, N. C. Coleman (QM S3614). 1♂, 5♀, Davies Ck., summer 1971-72, N. C. Coleman (QM S4676). 1♂, 1♀, Moreton Is., in leaves, 29 November 1978, T. Tabble, V. Davies (QM S4629). 1♀, Moreton Is., Blue Lagoon, 26 April 1981, G. Anderson (QM S4633). 3♀, Molloy Road, 18 February 1972, N. C. Coleman (QM S4678). 1♂, Belmont, 30 August 1966, R. Mascord (AM KS18974). **Papua New Guinea:** 1♀, Morobe Prov., Wau Ecology Institute, 6 July 1988, D. J. Court, M. Żabka (AM KS30815).

## Diagnosis

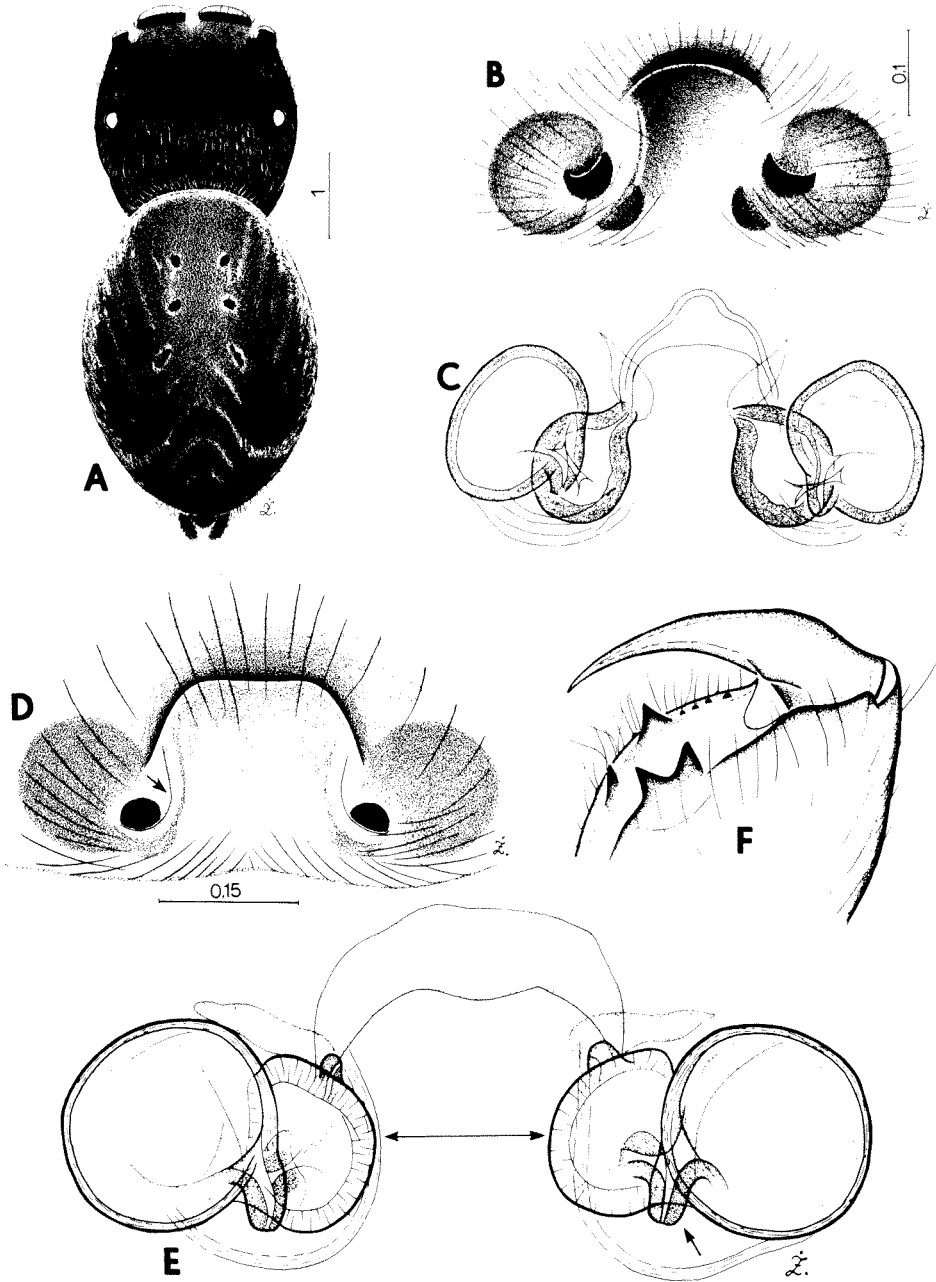
Both sexes are dark. Palpal organ is similar to that of *S. robustior* but the tibial apophysis is larger, spatular instead of conical, the male chelicerae with large unidentate tooth and with additional posterior tooth. The central depression of the epigyne is much wider than in the other species, the spermathecae widely separated and the copulatory openings close to the epigastric furrow.

## Description

Male (Figure 7E). Eye field orange to brown with two darker patches and some light pigmented spots, eye surrounds darker. Thorax orange-brown to dark-brown. Hairs sparse, anterior eyes surrounded with tufts of white hairs. Abdominal scutum orange to brown, darkening laterally, sides grey. Spinnerets brown. Clypeus orange-brown. Chelicerae (Figure



**Figure 7** ♂ *Simaetha tenuidens* (Keyserling, 1882). A – chelicera. B–C – palpal organ: ventral and retrolateral aspects. D – palpal organ: dorsolateral tibia. E – general appearance. (A–D – syntype).



**Figure 8** ♀ *Simaetha tenuidens* (Keyserling, 1882). A – general appearance. B–E – epigyne and internal genitalia. F – chelicera. (D–F – syntype).

7A) with long fang, retromargin with long unidentate tooth, posterior surface with additional small tooth. Maxillae and labium brown to dark-brown, scopular margins lighter. Sternum brown to dark-brown. Venter beige, darkening posteriorly and laterally. Legs I orange to dark-brown, darker prolaterally. Remaining legs gradually lighter, darker around the joints.

Palpal organ (Figure 7B-D). Tegulum oval, subtegulum rather small, embolus curved, cymbial and tibial apophyses large, the latter spatular.

#### Dimensions

CL 2.94 (2.25-3.40), EFL 1.26 (0.95-1.70), AEW 2.10 (1.65-2.40), PEW 2.40 (1.90-2.90), AL 3.24 (2.30-4.30).

Female (Figure 8A). Cephalothorax reddish- to black-brown, eye field with a darker spot, eye surrounds black with white and scattered brown hairs. Posterior and lateral cephalothorax clothed in numerous white hairs. Abdomen brown-grey to almost black, with a slightly lighter median and lateral pattern of whitish hairs and spots. Spinnerets grey-brown. Clypeus red-brown to dark-brown, densely clothed in white hairs. Chelicerae (Figure 8F), maxillae, labium, sternum and legs light- to black-brown, the last with scattered white and longer brown hairs. Pedipalps brown clothed in numerous white and brown hairs. Venter beige to greyish-brown, marginally darker.

Epigyne (Figure 8B-E) externally resembling the two previous species. Anterior epigynal pocket vast and shallow, spermathecae widely separated, insemination ducts distinctive.

#### Dimensions

CL 3.00 (2.30-3.20), EFL 1.44 (1.05-1.50), AEW 2.22 (1.70-2.30), PEW 2.64 (2.00-2.70), AL 4.20 (2.70-4.50).

### *Simaetha robustior* (Keyserling)

Figures 9-10, Map 2

*Eulabes robustior* Keyserling, 1882: 1396.

*Simaetha robustior*: Simon, 1903: 838.

*Dendryphantes laticeps* Strand, 1911: 193, syn. n.

#### Holotype and paratype of *Eulabes robustior*

1♂, 1 juv., Port Mackay, Queensland (ZMH, Mus. Godeffroy Nr. 7688).

#### Holotype of *Dendryphantes laticeps*

1♂, Popdjetur, Terangan, Aru Island, 10 February 1908 (SMF 2452).

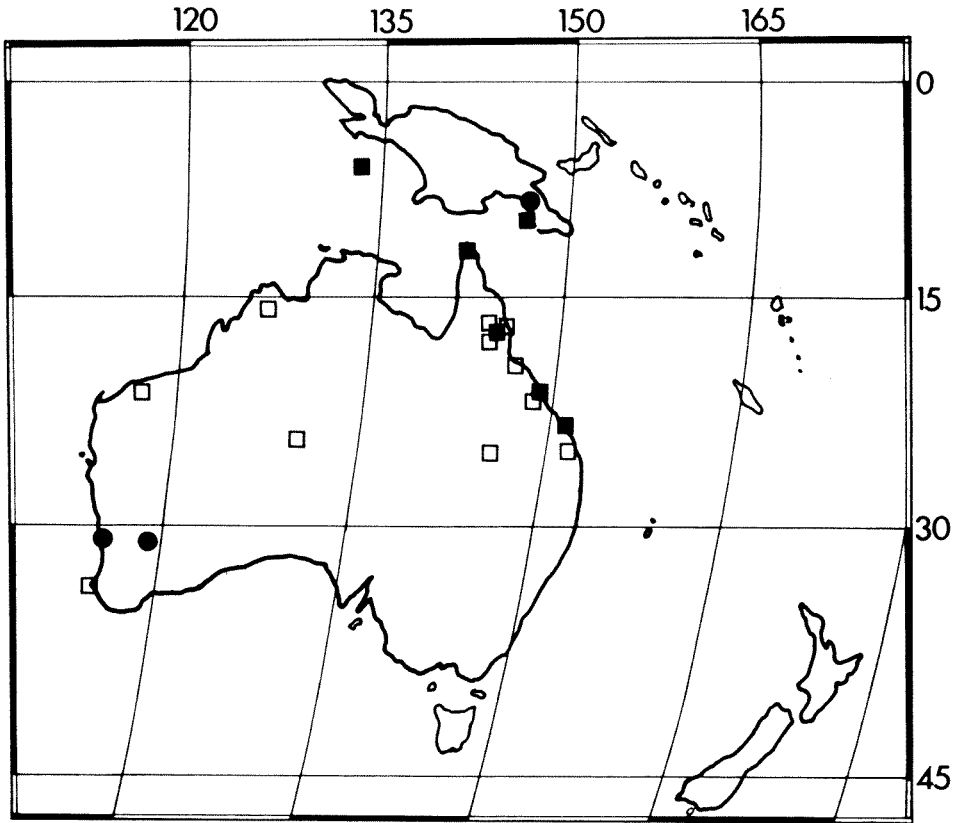
#### Other material examined

**Australia: Queensland:** 1♀, 1 juv., Cape York, Lockerbie, general and beating, 9 December 1986, J. Gallon (QM S3625), 1♂, same data, 25-27 April 1974, G. B. Monteith (QM S3610). 2♂, 2♀, Mt Molloy, P. & F. Little, 1974 (QM S4655). 1♂, Rockhampton, 20 February 1974, G. May (QM S3611). 1♀, Spean Ck. near Mt Molloy, 3-10 November 1975 (QM S4653). 1♂, Mareeba, 15 February 1970, N. C. Coleman (AM KS22267). **Papua New Guinea:** 1♂, Boroko, National Capital District, garden vegetation, 20 October 1985, 1 March 1987, D. J. Court (AM KS30816). 1♀, same data (AM KS30817).

#### Diagnosis

Both sexes relatively large and robust, with a contrasting abdominal stripe. Embolus and tegulum similar to that of *S. tenuidens* but the tibial apophysis is of a different shape.





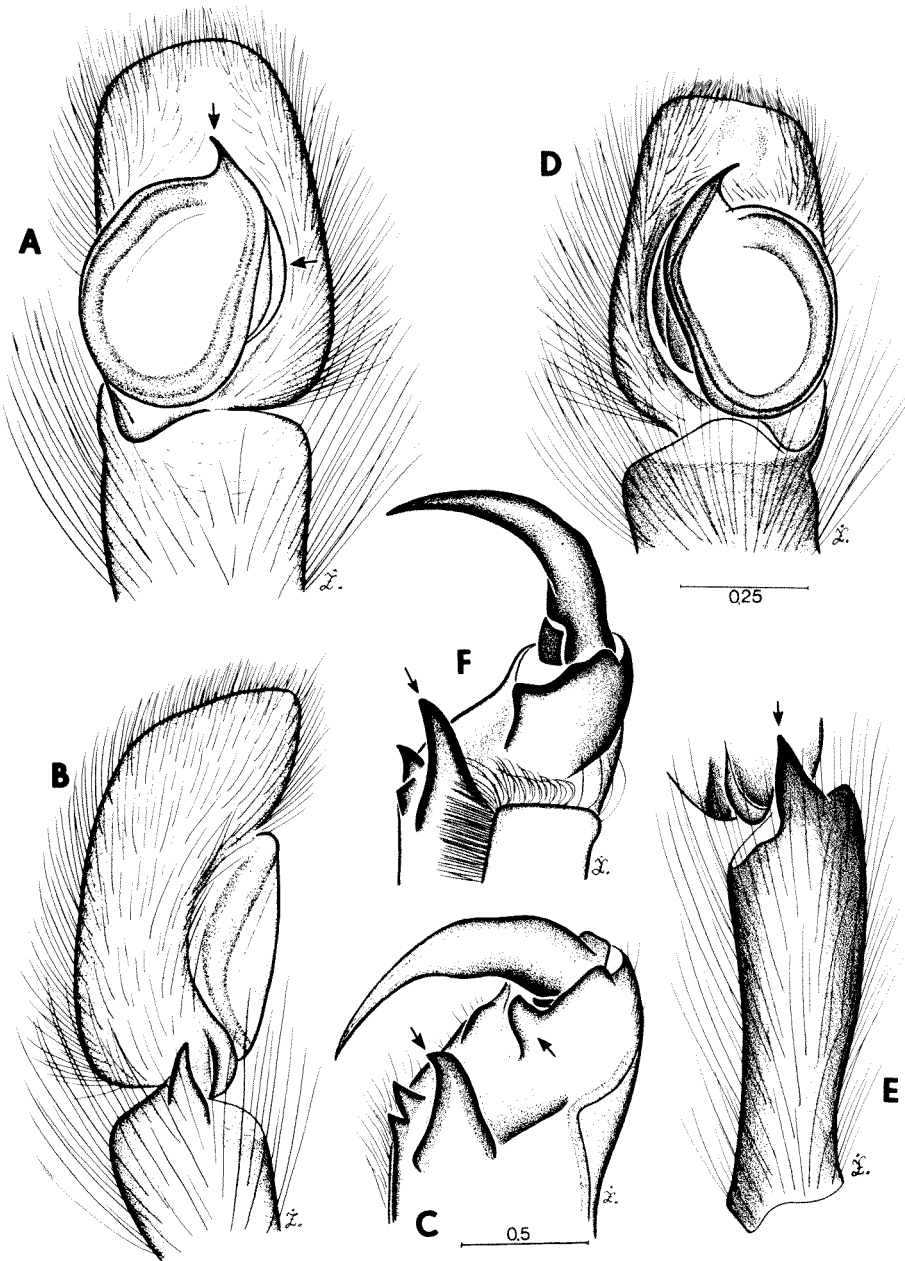
**Map 2** Distribution of three species of *Simaetha* – *S. robustior* (■); *S. paetula* (□); *S. knowlesi* (●).

Cheliceral posterior tooth is lacking unlike *S. tenuidens*. Central epigynal pocket large, bell-shaped. Insemination ducts distinctive.

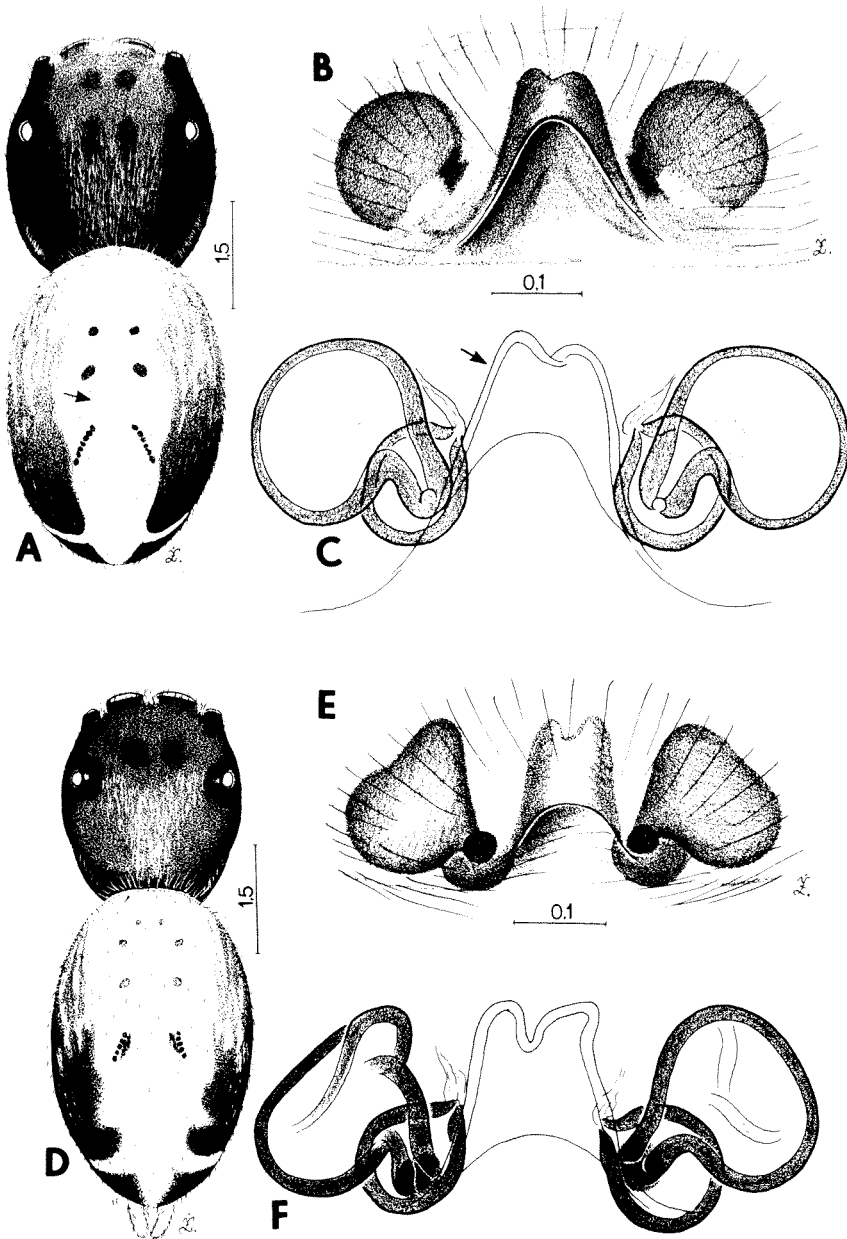
### Description

**Male.** Eye field orange-brown to brown, centrally darker, thorax brown. Whole surface and especially the eye surrounds and the lower cephalothorax margin clothed in white, orange and brown hairs. Abdominal scutum less distinctive than in the other species, anterior part light, yellowish, posteriorly central light stripe edged by brown or grey-brown area, whole surface covered with white, grey and brown hairs. Spinnerets orange-grey-brown. Clypeus red-brown with scattered grey and brown hairs. Chelicerae (Figure 9C, F) robust, retromarginal tooth unident. Maxillae and labium brown to dark-brown, scopular margins lighter. Sternum brown, venter beige to grey. Legs I massive and long, brown, prolateral femora darker. Remaining legs shorter and lighter.

Palpal organ (Figure 9B, E) massive, clothed in numerous orange and brown hairs. Embolus relatively short and curved, tibial apophysis cone-shaped, cymbial apophysis large.



**Figure 9** ♂ *Simaetha robustior* (Keyserling, 1882). A–B, D–E – palpal organ: ventral and retrolateral aspects. C, F – chelicerae. (A–C – holotype of *Eulabes robustior*, D–F – holotype of *Dendryphantes laticeps*).



**Figure 10** ♀ *Simaetha robustior* (Keyserling, 1882). A, D – general appearance. B–C, E–F – epigyne and internal genitalia.

### Dimensions

CL 3.90 (3.20-3.90), EFL 1.60 (1.40-1.60), AEW 2.50 (2.30-2.50), PEW 3.00 (2.65-3.00), AL 4.70 (4.00-4.70).

Female (Figure 10A, D). Colour pattern and hairiness almost identical to that of the male.

Epigyne (Figure 10B-C, E-F) with large, bell-shaped central pocket. Insemination ducts distinctive, intermediate canals not visible.

### Dimensions

CL 3.10-3.50, EFL 1.40-1.50, AEW 2.20-2.40, PEW 2.70-2.85, AL 4.00-5.20.

### *Simaetha knowlesi* sp. nov.

Figures 11-12, Map 2

### Holotype

1♂, Miling, Western Australia, Australia, 13 December 1974, A. Page (WAM 91/588).

### Paratypes

**Australia: Western Australia:** 1♀, allotype, 23 km S Bungalbin Hill, on *Eremophila* flowers, 18 November 1990, D. Knowles (WAM 91/580). **Papua New Guinea:** 1♂, paratype, Laloki, Central Prov., ex *Citrus*, 3 December 1979, L. S. Mitkita (AM KS30818).

### Diagnosis

In comparison with the related *Simaetha robustior* the abdominal light stripe is lacking, the subtegulum is smaller and the chelicerae have an additional anterior tooth. Epigynal pocket cone- rather than bell-shaped.

### Description

Male (Figure 11C). Cephalothorax brown, darker on the eye field and around the eyes, clothed in numerous light hairs. Abdominal scutum greyish-brown with traces of lighter spots. Spinnerets brown. Clypeus orange, fringed with white hairs. Chelicerae (Figure 11D) brown with additional anterior tooth, maxillae, labium and sternum brown, venter grey-beige. Legs I long, dark-brown, remaining legs lighter.

Palpal organ (Figure 11A-B) similar to that of *S. robustior* but subtegulum is much smaller.

### Dimensions

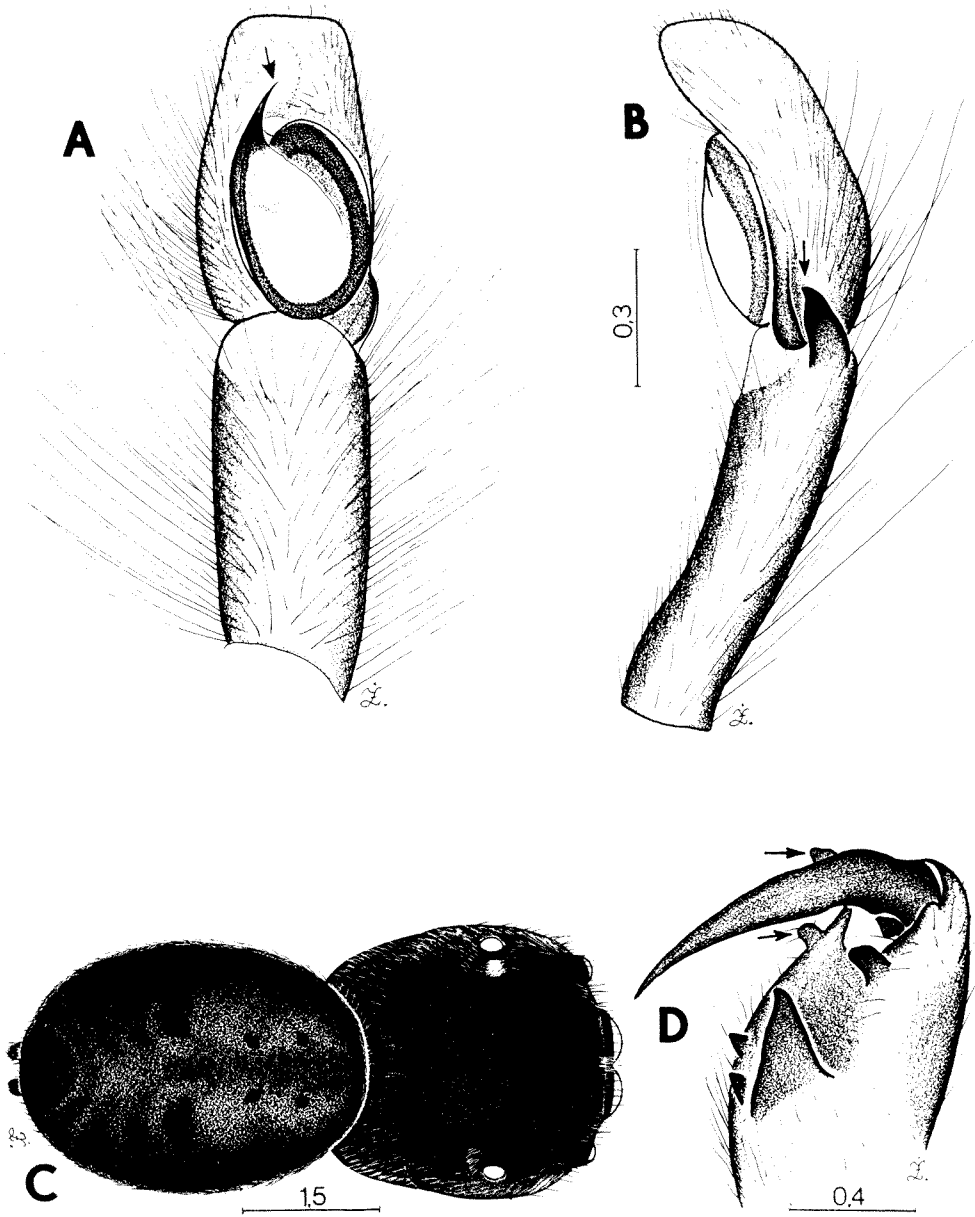
CL 3.20, EFL 1.40, AEW 2.20, PEW 2.70, AL 3.80.

Female (Figure 12A) robust and dark. Cephalothorax dark-brown, darker on eye field and black around eyes, clothed in numerous light-grey hairs. In the vicinity of the eyes dark-brown bristles are also present. Abdomen dark-grey, spinnerets dark-brown. Clypeus orange, fringed with numerous white hairs. Chelicerae, maxillae, labium and brown, sternum slightly lighter, venter greyish-brown. Legs I massive and long, dark-brown, remaining legs lighter – especially dorso-ventrally and distally.

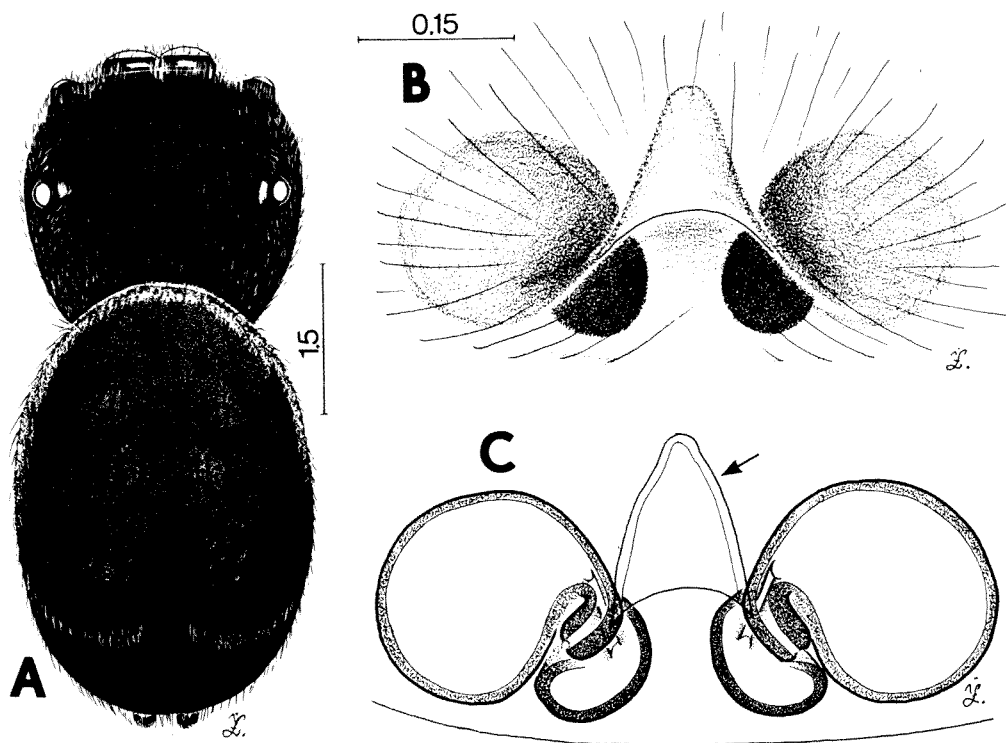
Epigyne (Figure 12B-C) similar to that of *Simaetha robustior* but the central pocket cone- rather than bell-shaped.

### Dimensions

CL 3.33, EFL 1.70, AEW 2.60, PEW 3.10, AL 5.00.



**Figure 11** ♂ *Simaetha knowlesi* sp. nov. A-B – palpal organ: ventral and retrolateral aspects. C – general appearance. D – chelicera.



**Figure 12** ♀ *Simaetha knowlesi* sp. nov. A – general appearance. B–C – epigyne and internal genitalia.

### Etymology

The specific name is proposed in honour of Mr David Knowles (Trigg, Western Australia), Australian naturalist and photographer, collector of many rare species of Salticidae.

### *Simaetha paetula* (Keyserling)

Figures 13-14, Map 2

*Eulabes paetulus* Keyserling, 1882: 1388.

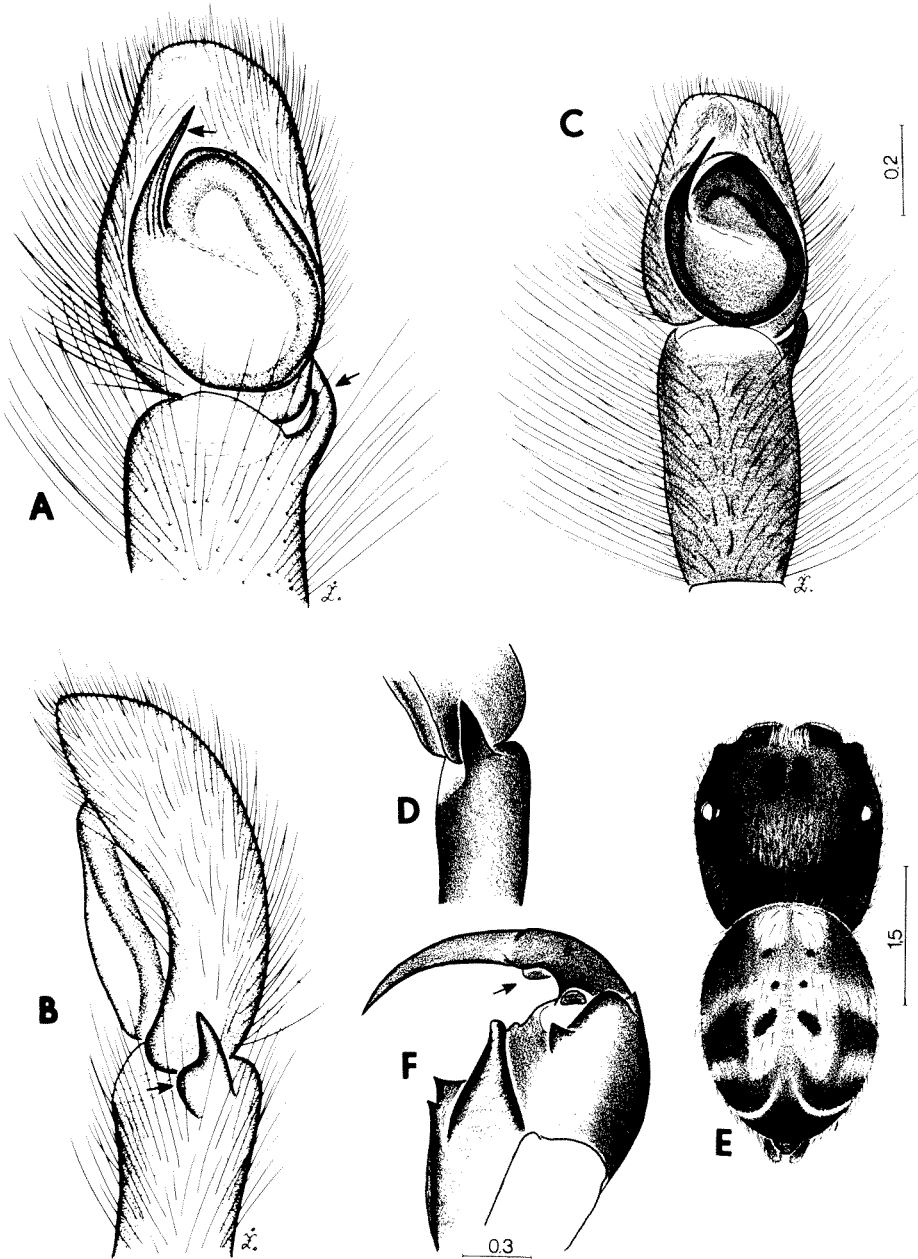
*Simaetha paetula*: Simon, 1903: 832.

### Syntypes

1♂, 1♀, Port Mackay, Queensland, Australia (ZMH, Mus. Godeffroy Nr. 8336).

### Other material examined

**Australia: Queensland:** 1♂, 3♀, Molloy Road, 18 February 1972, N. C. Coleman (QM S4618). 4♂, 4♀, Davies Ck., summer 1971-72, N. C. Coleman (QM S4621). 1♀, Townsville, webs nest, 26 January 1981, R. R. Jackson (QM S4624). 3♂, 2♀, Clifton Beach, summer 1971-72, N. C. Coleman (QM S4620). 1♀, Koah Road, 2 April 1972, N. C. Coleman (QM S4622). 5♂, 3♀, 1 juv., Mt Garnet, 24 February 1974, N. C. Coleman (QM S4623). 1♀, 1 juv., Gin Gin, 8 August 71, N. C. Coleman (QM S4617). 1♂, 3 juv., Oak Forest, summer 1972, N.



**Figure 13** ♂ *Simaetha paetula* (Keyserling, 1882). A–D – palpal organ: ventral and retrolateral aspects. E – general appearance. F – chelicera. (A–B – syntype).

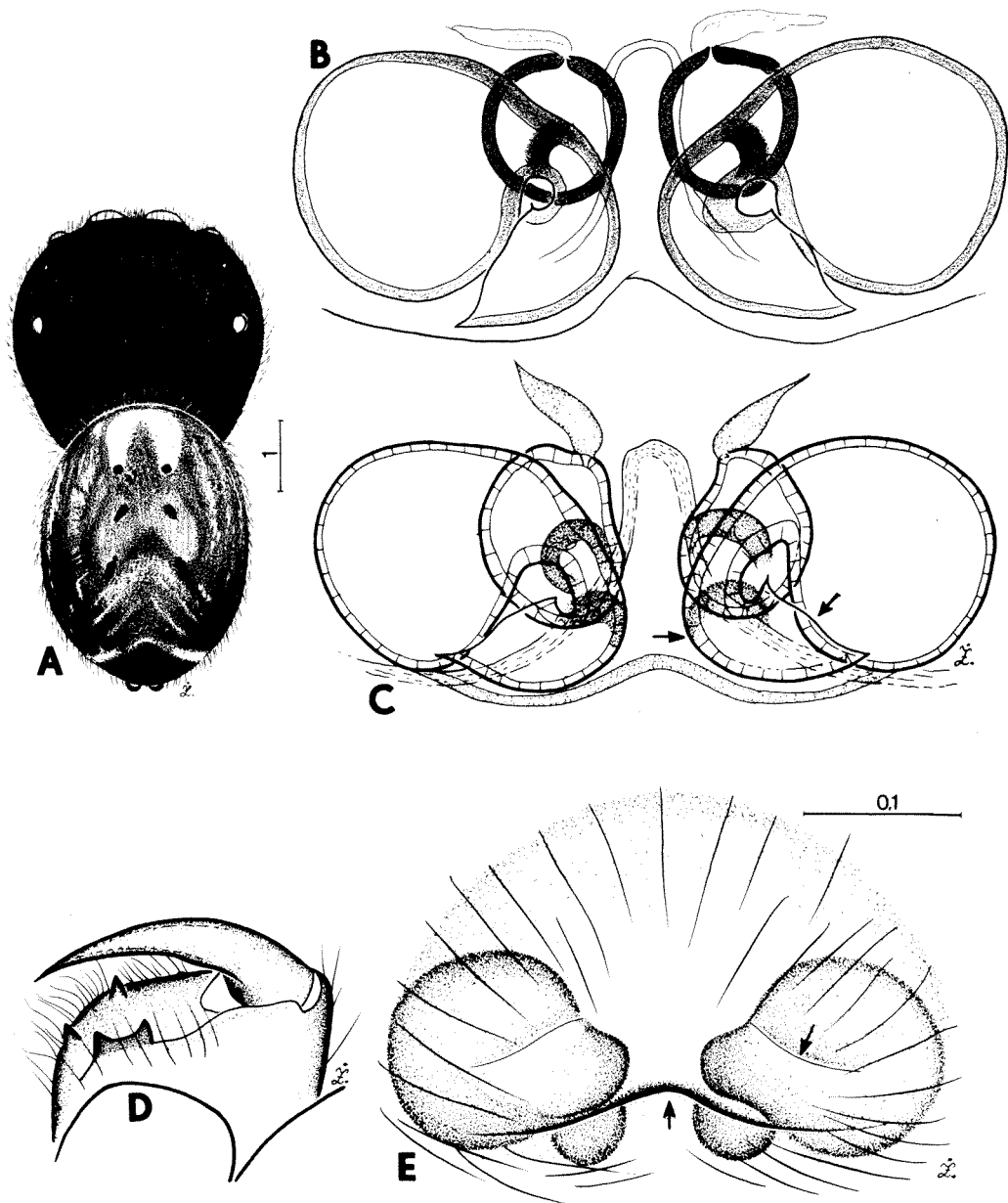


Figure 14 ♀ *Simaetha paetula* (Keyserling, 1882). A – general appearance. B–C, E – epigyne and internal genitalia. D – chelicera. (C–E – syntype).



C. Coleman (QM S4625). 1♀, 1 juv., Trinity Beach, summer 1971-72. N. C. Coleman (QM S4619). 1♀, Christies, Majors Ck., rainforest, general collection, 19 July 1986. J. Rienks, Cole (QM S3613). 1♀, Cairns, 13 June 1969. N. C. Coleman (AM KS18953). 1♀, Mareeba, 1951. J. G. Brooks (AM KS17899). 1♂, same locality, 15 February 1970. N. C. Coleman (AM KS22266). 1♀, North Camp Beagle, 45 km N Arakum, March 1982 (AM KS9062). **Western Australia:** 1♀, Drysdale River Station, wood house, 21 July 1990. A. F. Longbottom (WAM 91/582). 1♂, 4 km SW of Giles Ck. crossing, 17-18 January 1990. M. S. Harvey, T. F. Houston (WAM 91/584). 1♀, Dampier, mangroves, 24 May 1990. A. F. Longbottom (WAM 91/581). 1♀, 4 km E of Gallows Beach, in garden of 'Ironstone' house, 3 June 1986. J. Waldock (WAM 91/583). **Papua New Guinea:** 1♀, 1 juv., Izzy Dizzy, Morobe Prov., under bark of *Araucaria cunninghamii*, 24 September 1970. B. Gray (AM KS13274).

### Diagnosis

Abdominal pattern similar to that of *S. thoracica* but the females are more robust. The embolus is longer than in the other species and the subtegulum is not visible. The epigyne has large, cup-like copulatory openings and the insemination ducts are definitely the longest of all the species.

### Description

Male (Figure 13E). Cephalothorax robust and hairy, thoracic part light- to dark-brown, eye field lighter with two darker spots and darker eye surrounds. Hairs numerous: short white and longer brown, the first forming tufts between the anterior median eyes. Abdominal scutum light- to dark-brown, posteriorly and laterally darker, with lighter central pattern. Spinnerets dark-orange to brown. Clypeus orange- brown with sparse orange and brown hairs. Chelicerae (Figure 13F) brown, their armament similar to that of *S. robustior* (Keyserling), cheliceral fang with anterior outgrowth. Maxillae and labium orange-brown to dark-brown, scopular margins lighter. Sternum brown, venter grey-orange to grey. Legs I long and massive, brown, darker on prolateral surfaces (femora), remaining legs slightly lighter – especially their distal segments.

Palpal organ (Figure 13B, D) brown with numerous brownish hairs. Embolus relatively long and straight, subtegulum invisible, cymbial apophysis small, tibial apophysis laterally curved.

### Dimensions

CL 2.76 (1.90-3.50), EFL 1.32 (1.10-1.50), AEW 2.04 (1.40-2.30), PEW 2.46 (1.60-2.80), AL 3.06 (2.10-3.90).

Female (Figure 14A). The shape and colouration of the cephalothorax as in the male. Abdomen lighter than in the male, light-brown to dark-grey-brown, central pattern and sides lighter. Spinnerets yellowish to grey-brown. Clypeus dark-orange to brown, fringed with long white hairs. Chelicerae, maxillae and labium orange to brown, sternum darker. Pedipalps orange, fringed with numerous white and dark hairs. Venter yellow-beige to grey. Legs I orange to brown, remaining legs yellow to orange, lighter distally, segments darker around the joints.

Epigyne (Figure 14B-C, E) with creviced copulatory openings, insemination ducts long, central pocket visible only after maceration.

### Dimensions

CL 3.06 (2.70-3.10), EFL 1.32 (1.20-1.40), AEW 2.04 (2.00-2.10), PEW 2.58 (2.40-2.70), AL 4.58 (4.00-4.40).

*Simaetha tenuior* (Keyserling)

Figures 15-17, Map 3

*Eulabes tenuior* Keyserling, 1882: 1399.

*Simaetha tenuior*: Simon, 1903: 833.

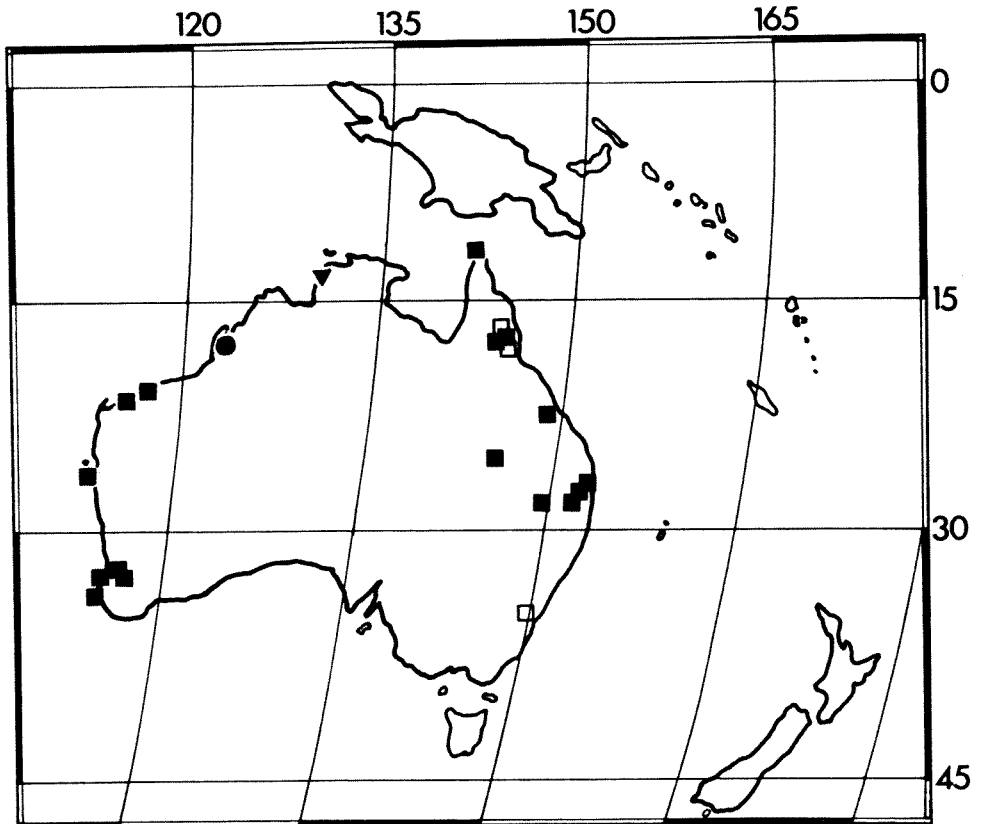
*Simaethula tenuior*: Rainbow, 1911: 312.

**Syntypes**

2♂, Peak Downs, Queensland, Australia (ZMH, Mus. Godeffroy Nr 7687).

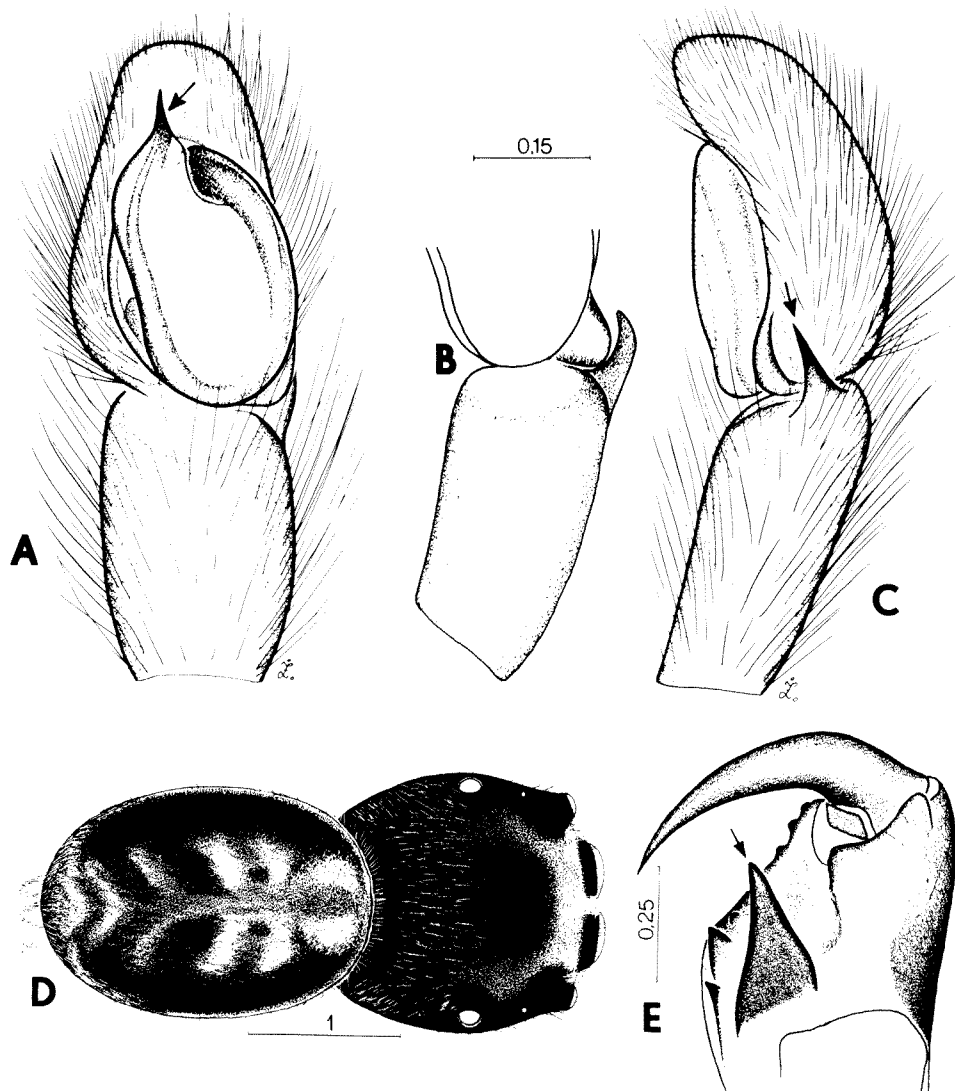
**Other material examined**

**Australia: Queensland:** 1♀, Cape York, Sanamere Swamp near Jardine River, general collection, 3 September 1985, M. Bennie (QM S6917). 1♂, Camira, 4 December 1987, R. Raven (QM S2457). 1♀, Boobbin Head, 19 March 1970, A. B. Rose (AM KS30819). 1♂, Lake Broadwater via Dalby, sweeping, 22 February 1985, M. Bennie, V. Davies (QM S4649). 2♀, 1 juv., Brisbane (QM 4682). 2♂, 1 juv., Brisbane, Fig Tree Pocket, Roedean Street, 30 November 1977, 22 November 1980, V. Davies (QM S4677, S4637). 1♀, 4 juv., Mulgowie, 25 March 1981, M. D. Grant (QM S4630). 1♀, Oak Forest, summer 1972, N. C. Coleman (QM S6914). 1♂, Acacia Ridge, from wasp (*Scelephron formosum*, Sphecidae) nest, 10 December 1973, T. Dahms (QM S3615). 1♂, Altonvale



**Map 3** Distribution of four species of *Simaetha* – *S. tenuior* (■); *S. almadensis* (□); *S. atypica* (▼); *S. broomei* (●).

Stn., Horn, W Westmar, 10 January 1979, V. Davies, T. Adams, R. Raven (QM S6911). 2♂, Mt Molloy Road, 18 February 1972, N. C. Coleman (QM S6912). 1♀, same locality, September 1974, P. & F. Little (QM S6913). 1♂, 20 m E of Emerald, 6 April 1971, R. Monroe (QM S4689). 1♂, Koah Road, 2 April, N. C. Coleman (QM S4656). 1♂, Lake Broadwater, grass, 21 December, M. Bennie (QM S4635). 1♂, 1 juv., Laidley Ck., 28 September – 13 October 1981, M. Grant (QM S4657). **Western Australia:** 5♂, 12♀, 43 juv., Barrow Is., sweeping *Olearia axilaris*, *Acacia victoria*, *Acacia coriacea*, mixed shrubs, mangrove, 4-20 February 1977 (QM



**Figure 15** ♂ *Simaetha tenuior* (Keyserling, 1882). A-C – palpal organ: ventral, ventrolateral and retrolateral aspects. D – general appearance. E – chelicera. (A-C, E – syntype).

S3630, S4686, S4673, S4683, S3629, S4685). 1♂, *Parmelia*, on *Philodendron* leaf, 26 February 1987 (WAM 88/2152). 1♂, *Parmelia* near Kwinana, 6 April – 1 May 1989, A. E. de Jong (WAM 91/590). 1♂, Yangebup, 11 April 1985, D. Mead-Hunter (WAM 91/594). 1♂, Perth, WA Museum building, S. Slack-Smith, 11 April 1990 (WAM 91/591). 1♀, Karratha, NW of airport, mangrove, curled leaves with Clubionidae, 26 May 1990, A. F. Logbottom (WAM 91/586). **Papua New Guinea:** 1♂, Wau, Morobe Prov., 22 September 1970 (AM KS13252). 1♀, same data (AM KS13253). 1♂, Bulolo, Morobe Prov., 18 September 1970 (AM KS13237). 1♀, Izzy Dizzy, Morobe Prov., 24 September 1970 (AM KS13279).

### Diagnosis

A relatively small spider. In comparison with the other species the embolus is straight and short and the tibial apophysis is set more dorsally. The epigyne has diagonal ridges (crevices), the pocket is distinctive and close to the epigastric furrow, insemination ducts are short.

### Description

Male (Figure 15D). Cephalothorax orange to dark-brown, lighter anteriorly. Central eye field and eye surrounds black. Whole surface covered with white and less numerous brown

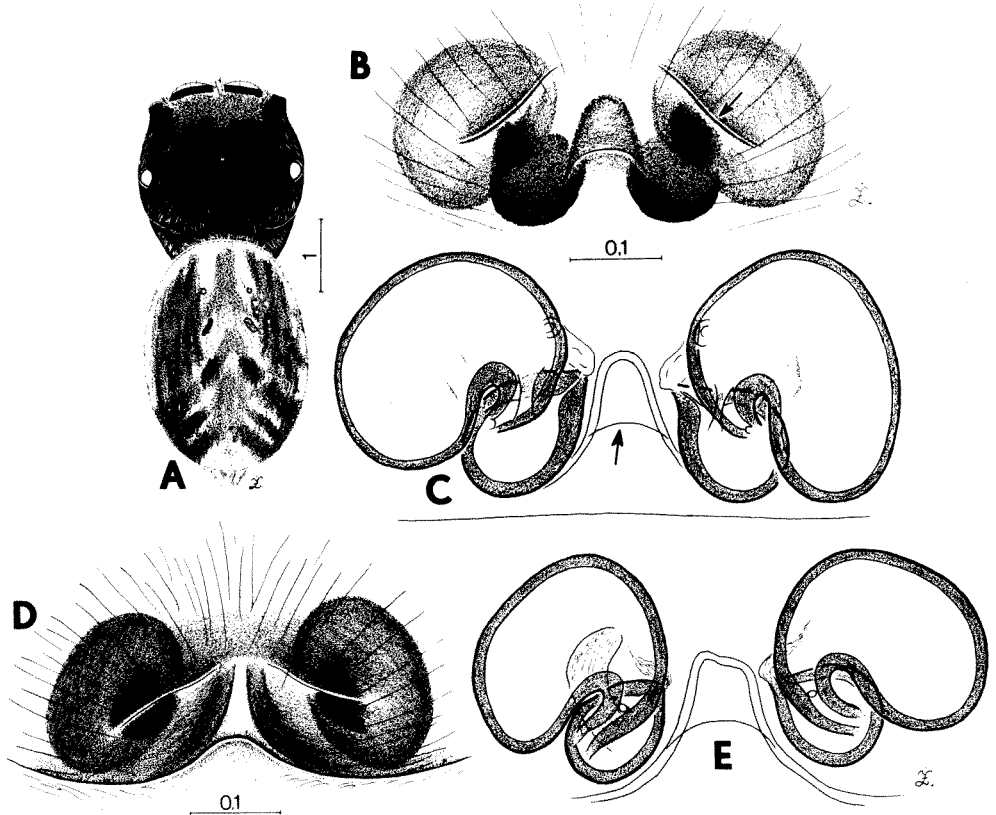
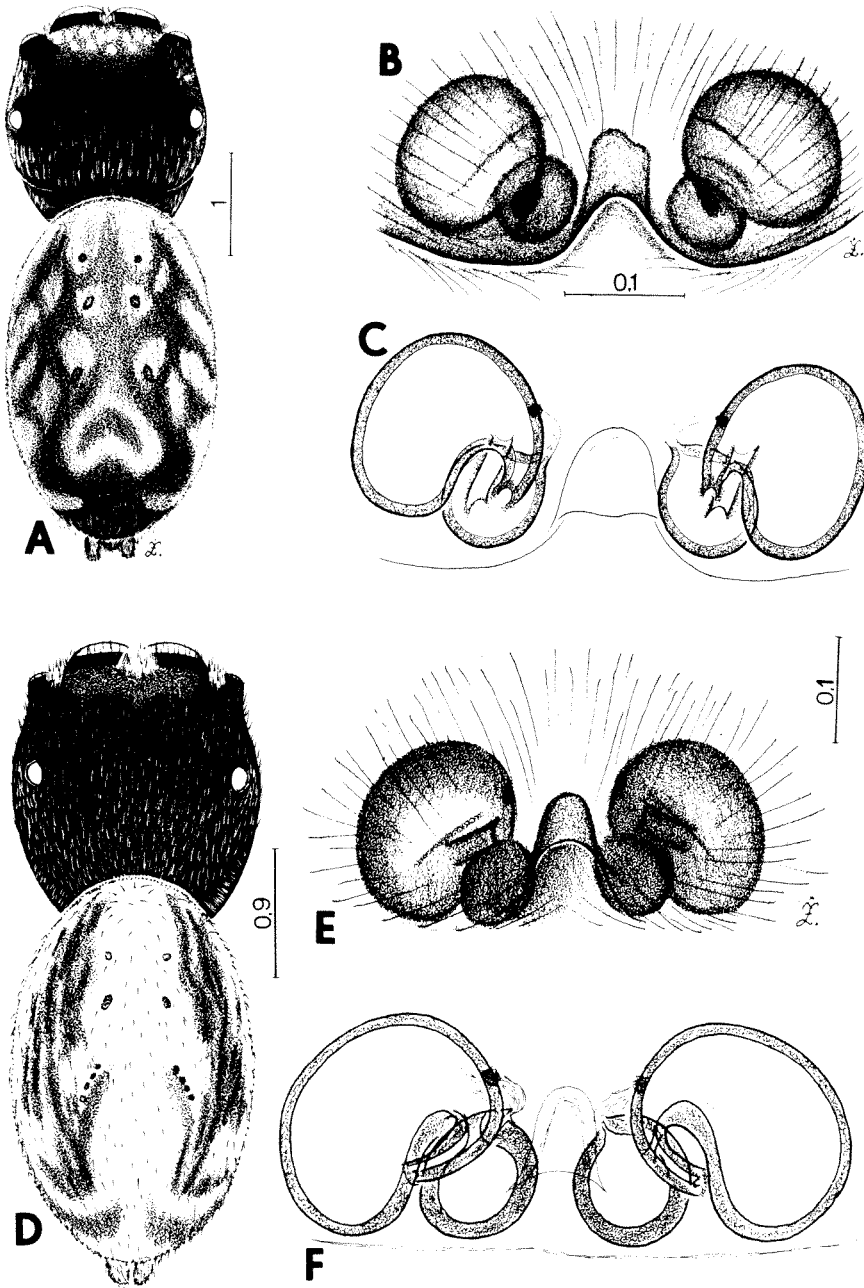


Figure 16 ♀ *Simaetha tenuior* (Keyserling, 1882). A – general appearance. B–E – variability of epigyne and internal genitalia.



**Figure 17** ♀ *Simaetha tenuior* (Keyserling, 1882). A, D – variability of general appearance. B–C, E–F – variability of epigyne and internal genitalia.

hairs. Abdominal scutum dirty-orange to grey-brown, darkening laterally and posteriorly, with more or less visible central pattern and with light sides. Spinnerets orange to brown. Clypeus brown, fringed with white hairs. Chelicerae (Figure 15E) orange to brown, distally lighter, with retromarginal single tooth, cheliceral fang with anterior outgrowth. Maxillae, labium and sternum brown, the first with light scopular margins. Venter orange to grey-brown with longitudinal rows of lighter spots. Legs I much longer than the others, rather slender, orange to dark-brown with darker femora. Remaining legs lighter with darker joint-areas.

Palpal organ (Figure 15A-C) with straight embolus, tibial apophysis curved and set more dorsally than in the other species.

#### Dimensions

CL 2.30 (1.75-2.30), EFL 1.00 (0.90-1.10), AEW 1.70 (1.45-1.70), PEW 1.90 (1.65-1.90), AL 2.65 (2.05-3.00).

Female (Figure 16A, 17A, D). Cephalothorax orange to brown with darker cephalic spots and dark eye surrounds. Whole surface clothed with numerous white and less numerous brown hairs. Abdomen grey-brown, centrally lighter, posteriorly darker, with mosaic of lighter spots and stripes. Spinnerets light-grey to grey-brown. Clypeus orange to brown, covered with white hairs. Chelicerae, maxillae and labium orange to brown. Pedipalps yellow to brown with numerous white and single brown hairs. Sternum yellow to brown. Venter light-grey to beige-brown. Legs I yellow-orange to dark-brown, femora darker, remaining legs lighter with darker terminal areas.

Epigyne (Figure 16B-E, 17B-C, E-F) with transverse ridges, pocket located posteriorly.

#### Dimensions

CL 1.65-2.50, EFL 0.85-1.15, AEW 1.20-1.85, PEW 1.20-2.10, AL 2.00-3.30.

### *Simaetha broomei* sp. nov.

Figure 18, Map 3

#### Holotype

♀, 206 km E of Broome, Western Australia, Australia, 24 August 1987, A. E. de Jong (WAM 91/579).

#### Diagnosis

Proximal spermathecae relatively larger than in the other species, cephalothorax not flattened, "normal".

#### Description

Female (Figure 18A). Cephalothorax brown, anteriorly lighter, eye surrounds black. Anterior thorax and sides covered with white hairs. Around eyes white and longer, light-brown hairs. Abdomen macerated (colour pattern reconstructed), grey-brown with traces of a lighter central stripe. Spinnerets light-brown. Clypeus brown with single white hairs, chelicerae brown, maxillae and labium dark-brown, the latter with lighter tips. Sternum beige. Legs I brown with darker femora, remaining legs lighter, dirty-orange with darker joint-areas.

Epigyne (Figure 18B-C) similar to that of *S. tenuior* but proximal spermathecae relatively larger.

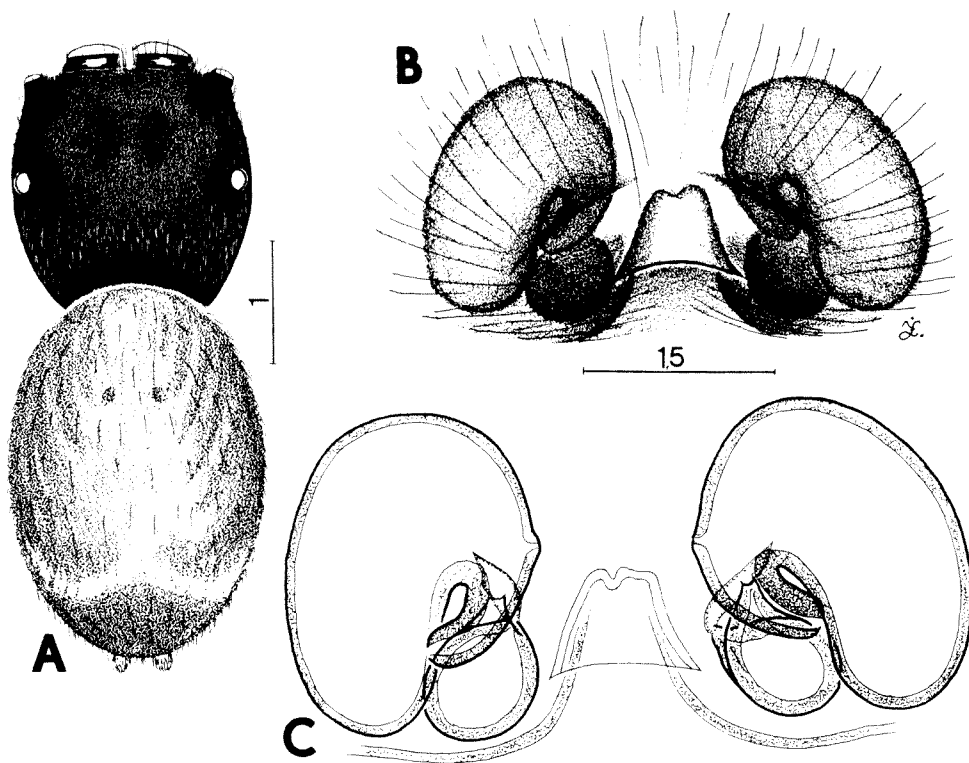


Figure 18 ♀ *Simaetha broomei* sp. nov. A – general appearance. B–C – epigyne and internal genitalia.

#### Dimensions

CL 2.15, EFL 0.95, AEW 1.60, PEW 1.80, AL 3.00.

#### Etymology

The name is derived from type locality.

#### *Simaetha almadenensis* sp. nov.

Figure 19, Map 3

#### Holotype

♂, Almaden, Chillagoe Distr., Queensland, Australia, 1928, W. D. Campbell (AM KS9036).

#### Paratypes

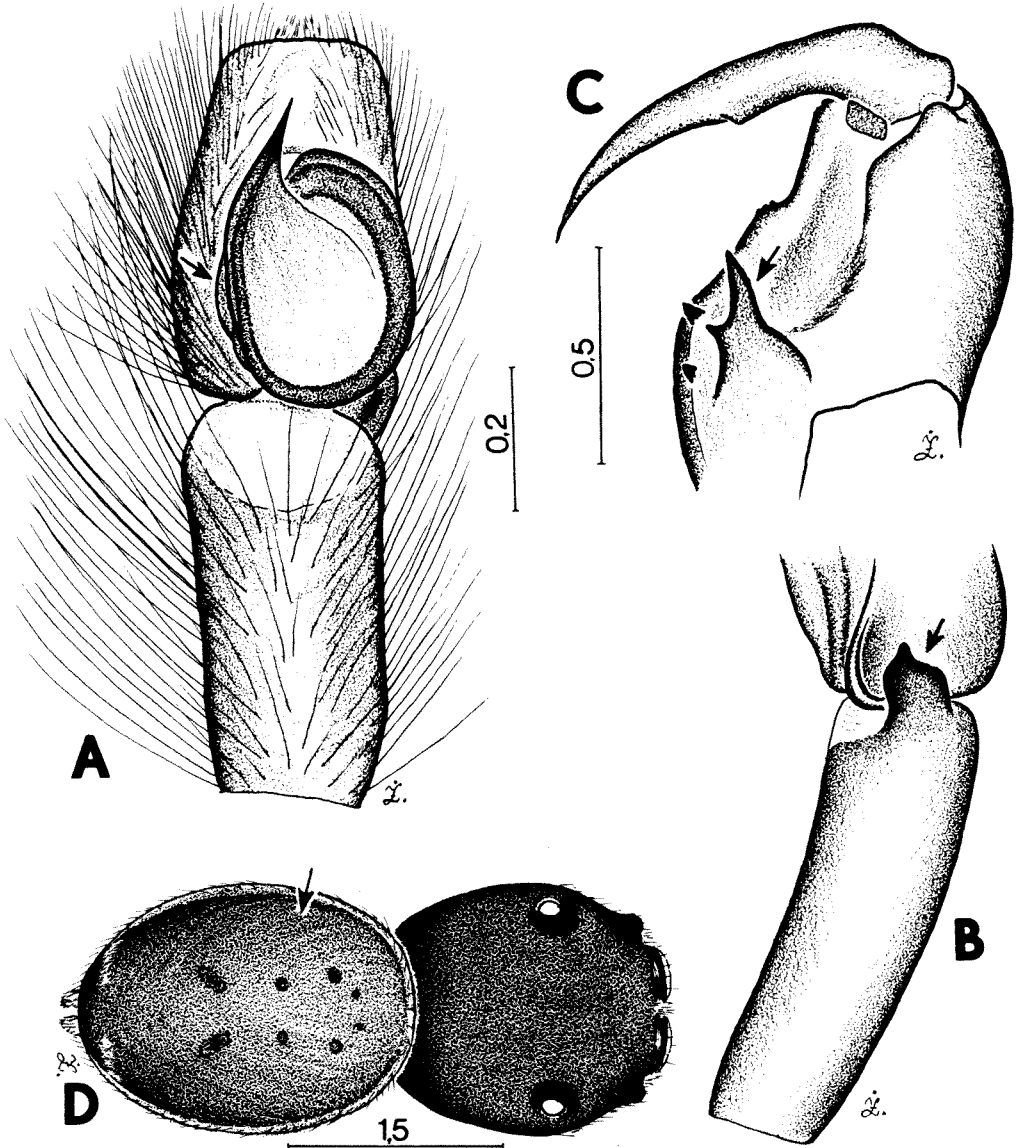
**Australia: Queensland:** 1♂, Eureka Ck, 11 February 1972, N. C. Coleman (QM S4616). **New South Wales:** 1♂, paratype, Tuross, 17-22 January 1936, K. C. McKeown (AM KS30820).

#### Diagnosis

A relatively small spider. Genitalia and cheliceral dentition similar to that of *S. atypica* but the body is almost uniform in colour and the spinnerets are much shorter.

**Description**

Male (Figure 19D). Cephalothorax brown, eye surrounds darker with scattered whitish hairs, similar hairs along lower margin. Abdominal scutum light-brown, darkening posteriorly and laterally, colour pattern very delicate. Sides light-grey, spinnerets greyish-brown. Clypeus



**Figure 19** ♂ *Simaetha almadenensis* sp. nov. A–B – palpal organ: ventral and retrolateral aspects. C – chelicera. D – general appearance.



orange-brown, with very short scale-like hairs centrally. Chelicerae (Figure 19C) light-brown with a fissidentate retromarginal tooth. Maxillae and labium dark-brown with lighter scopular margins. Sternum orange-brown, venter beige. Legs I brown, remaining legs lighter and more delicate.

Palpal organ (Figure 19A-B). Embolus straight, subtegulum and cymbial apophysis relatively small, tibial apophysis spatular.

### Dimensions

CL 2.70 (2.10-2.70), EFL 1.20 (0.90-1.20), AEW 1.90 (1.60-1.90), PEW 2.22 (1.80-2.22), AL 3.50 (2.15-3.50).

### Etymology

The name is derived from type locality.

### *Simaetha atypica* sp. nov.

Figures 20-21, Map 3

### Holotype

♂, S Alligator Inn, Northern Territory, Australia, 7-9 July 1979, rainforest, G. B. Monteith, D. Cook (QM S4666).

### Paratype

Australia: Northern Territory: 1♀, allotype, Peter Bridge Is., 28 June 1969, H. Heatwole (QM S6915).

### Diagnosis

Spinnerets longer than in the other species, subtegulum more distinctive than in the closely related *S. almadenensis*, epigynal pocket located anteriorly.

### Description

Male (Figure 20A). Cephalothorax orange-brown, lighter along the thorax and on the eye field, darker around eyes and towards lower margins. Hairs sparse, white and brownish. Abdominal scutum scarcely marked, centrally dirty-orange, posteriorly and laterally turning grey, anteriorly surrounded by a light band. Spinnerets rather long, greyish with lighter tips. Clypeus orange-brown with scarce yellowish hairs. Chelicerae (Figure 20D) orange with retromarginal fissidentate tooth. Maxillae and labium long, dark-brown, scopular margins orange. Sternum orange with dark-grey bump, venter light. Legs I dirty-orange with darker joint-areas, remaining legs lighter.

Palpal organ (Figure 20B-C) is similar to that of *S. almadenensis* but embolus shorter and the subtegulum more distinctive.

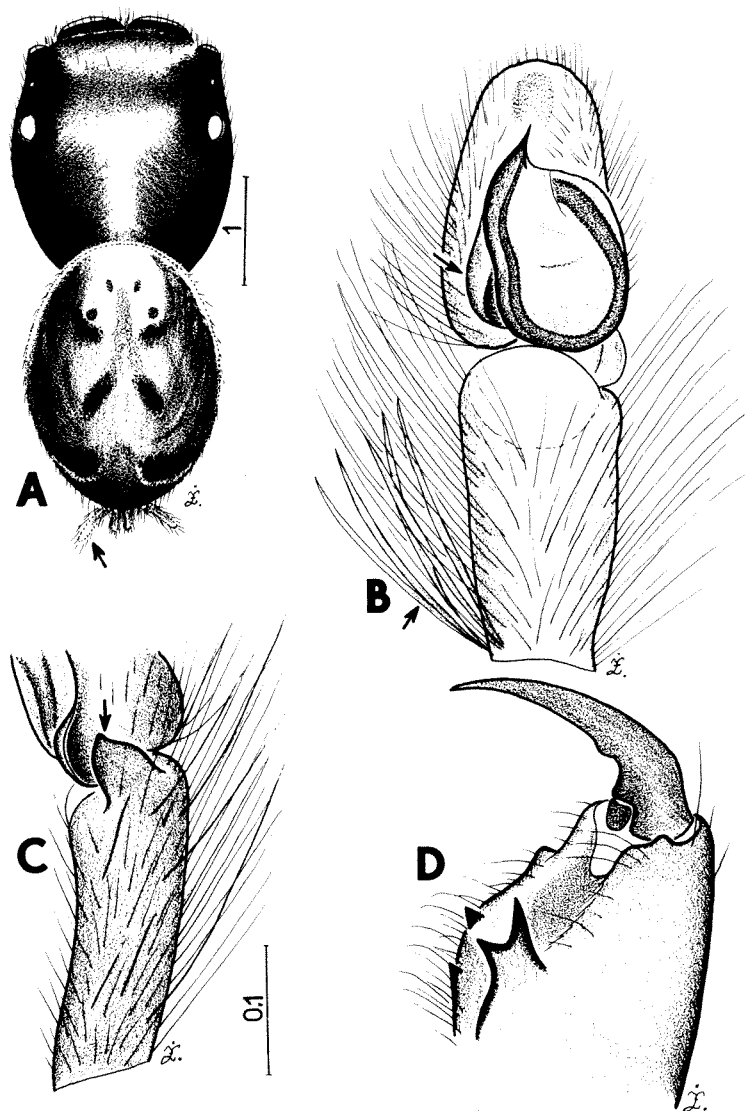
### Dimensions

CL 2.05, EFL 1.00, AEW 1.70, PEW 1.90, AL 2.50.

Female (Figure 21A). Cephalothorax generally brown with black eye surrounds and a darker spot on the eye field. Whole surface, especially thorax covered with white and less numerous brown hairs. Abdomen with a light central stripe and with a mosaic of light and grey-brown irregular spots and stripes. Spinnerets longer than in the other species, greyish. Clypeus brown, fringed with long white hairs, around anterior median eyes tufts of white short setae. Chelicerae, maxillae and labium brown, the last with lighter scopular margins.

Pedipalps lighter with numerous light and dark hairs. Sternum brown, darker centrally, venter grey. Legs I light-brown, remaining legs lighter with grey joint-areas.

Epigyne (Figure 21B-C) similar to that of the other species but with pocket located anteriorly.



**Figure 20** ♂ *Simaetha atypica* sp. nov. A – general appearance. B–C – palpal organ: ventral and retrolateral aspects. D – chelicera.

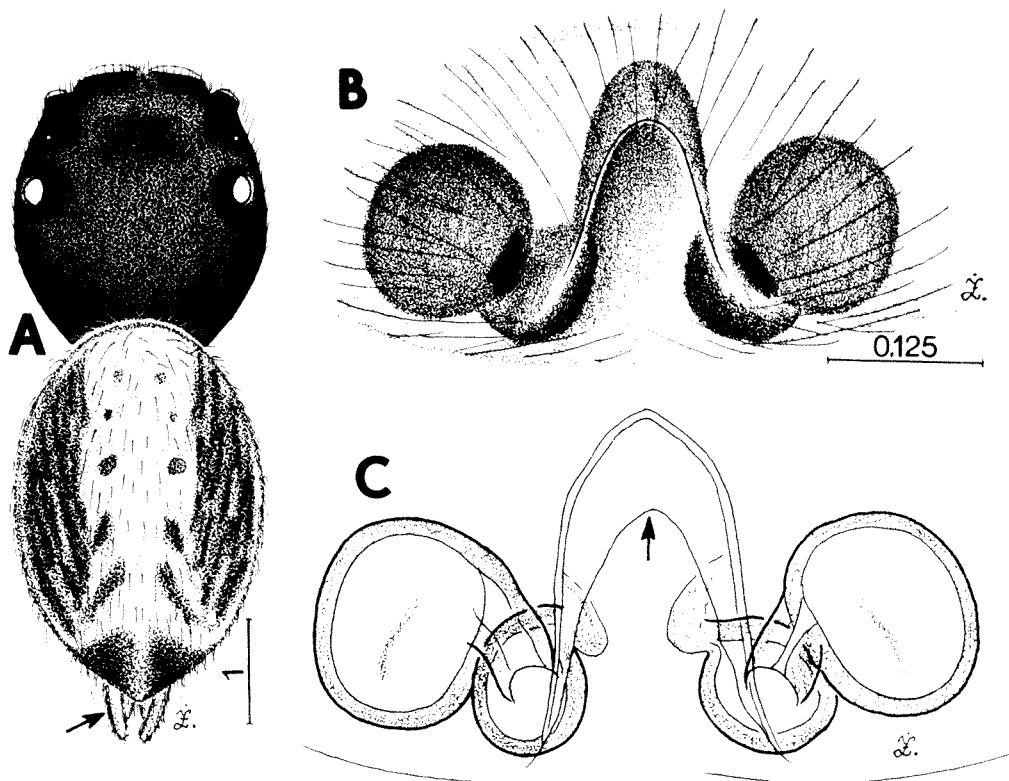


Figure 21 ♀ *Simaetha atypica* sp. nov. A – general appearance. B–C – epigyne and internal genitalia.

#### Dimensions

CL 2.50, EFL 1.10, AEW 1.65, PEW 2.20, AL 3.40.

#### Etymology

The species has (atypically) long spinnerets.

#### ACKNOWLEDGEMENTS

I wish to thank Dr G. Rack (Hamburg), Dr J. Heurtault (Paris), Dr M. Gray, Miss C. Horseman (Sydney), Dr R. Raven, Dr V. Davies, Miss J. Gallon, Mr. P. Lawless (Brisbane), Dr M. Harvey, Miss J. Waldock (Perth), Dr M. Grasshoff (Frankfurt), Dr G. Arbocco and Dr G. Doria (Genova) who provided specimens for study. Prof. Dr O. Kraus (Hamburg), Dr M. Gray, Dr R. Raven, Miss J. Waldock and Dr G. Doria are specially acknowledged for their help and hospitality during my research visits in their institutions. Special thanks are due to Mr. D. Court for his help and hospitality while collecting in Papua New Guinea. Prof. Dr J. Prószyński, Drs Frances and John Murphy and two anonymous referees provided useful

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