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The Sternodidae (Araneae: Araneomorpha), a new family of spiders from eastern Australia

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Summary

The Sternodidae (new family) is defined by the presence of a pair of sulci in the carapace border between the palp and leg I, and by the form of the male palpal organ. The phylogenetic relationships of this family are discussed. The type species, *Sternodes foraminatus* Butler, is redescribed, and *Perissopmeros* Butler is synonymised with *Sternodes* Butler. Six new species are described, four of *Sternodes* (*S. mullawerringi, S. arkana, S. grayi, S. quinguni*), and two of the closely related genus *Carathea,* new genus (*C. parawea* and *C. miyali*).

Introduction

Butler (1929) described *Sternodes foraminatus* from Whittlesea, Victoria, and placed it in the Hermippinae (then included in the Palpimanidae). Since 1929 there have been no further records of *S. foraminatus*, although undescribed related species have recently been collected in eastern Australia. Butler (1932) also described *Perissopmeros castaneous* from Mt Kosciusko, New South Wales, which he placed in the Zodariinae. Although the holotype of *P. castaneous* is now lost, comparison of Butler's description and illustration with specimens of *Sternodes* indicates they are congeneric and *Perissopmeros* is a junior synonym of *Sternodes*.

Butler's *Sternodes* species were collected by hand, while the species newly described here were collected in pitfall-traps or in leaf litter. My attempts to hand-collect *Sternodes* have been unsuccessful and little is known about their biology, other than their occurrence in wet sclerophyll and montane forest in south-eastern Australia (Fig. 18). Two more undescribed *Sternodes* species are also known, one from the Budawang Ranges in south-eastern New South Wales, and the other from the Bulburin State Forest in south-eastern Queensland, but these are not described here due to the unavailability of sufficient material.

Relationships: Butler had some difficulty in classifying *Sternodes,* judging from his contradictory interpretations of its characters. The present study shows that *Sternodes* lacks the synapomorphies of the Palpimanidae, and the presence of a serrula on the endites prevents its inclusion in the Zodariidae (Fig. 4; Forster & Platnick, 1984; Roth, 1984). Moreover, it also lacks any of the character sets currently used to define araneomorph spider families (see description). As a method of identifying phylogenetic relationships the following discussion examines characters which could be synapomorphies linking *Sternodes* to a sister group (Hennig, 1966).

After the generalised characters which *Sternodes* shares with many diverse spiders are disregarded, few points of similarity with particular taxa remain. In common with some spiders, *Sternodes* has a pair of sulci on the carapace (Figs. 1, 2). Similar structures also occur in *Argyrodes* (Theridiidae — Legendre & Lopez, 1974), some Linyphiidae (Blest & Taylor, 1977; Blest, 1979), *Yoroa* (Hadrotarsidae — Baert, 1984), and an undescribed genus of the Cyatholipidae (R. Moran, manuscript in preparation). Gland cells have been found connected to the sulci in the first two taxa, and there is evidence of an associated secretory function. It is not known if similar gland cells accompany the sulci in *Sternodes*, although the presence of pore-like openings and the remains of an apparent secretory product in the lumen supports this possibility (Fig. 2). While all five groups also share the absence of tarsal trichobothria, only *Sternodes*, the Linyphiidae and the Cyatholipidae have a rebordered labium. Female *Sternodes* also have spirally coiled ducts in the internal genitalia, a character found in some Linyphiidae and suggested by Millidge to be plesiomorphic for that family (Millidge, 1984). Spirally coiled ducts also occur in a number of other spider taxa, although the close resemblance between those of *Sternodes, Promynoglenes* and some *Mynoglenes* is striking (Figs. 34-39; Blest, 1979: figs. 398-400, 417-422, 478-481).

Sternodes shares with the Malkarinae, *Orsinome* species (Metidae) and some Nesticidae, the presence of a basal flange on the conductor which supports the embolus (Figs. 7-10; Davies, 1980; Lehtinen & Saaristo, 1980; personal examination of *Orsinome* species). These species are not known to be closely related and the homology of this structure is uncertain. The flange on the conductor of *Sternodes* is a more elaborate structure than in the above species, and also resembles palpal sclerites found in other spiders (e.g. the large embolus-enfolding conductor of *Promynoglenes* (Blest, 1979)). An analogous embolus-supporting structure (the radix) occurs in some Theridiidae (*Enoplognatha, Ancocoelus*), but this is thought to have originated from the median apophysis, and is a separate sclerite from the conductor (Levi, 1961, 1962). As in *Sternodes*, a number of Theridiidae also have a small ectal paracymbium, but this is less complex and has a different functional relationship to the palpal sclerites (see description; Levi, 1961).

The relevance of all these characters to the relationships of *Sternodes* can only be fully assessed when their respective levels of generality within the phylogeny of Araneomorphae have been determined. The congruence of carapace sulci, coiled genitalic ducts, absence of tarsal trichobothria, and a rebordered labium may indicate a sister-group relationship with the Linyphiidae. However, this relationship implies that carapace sulci are plesiomorphic for the Linyphiidae (and have been lost in linyphiid species without this character), a hypothesis that has not been proposed by workers familiar with that family. Until further evidence is available, the relationships of *Sternodes* to other taxa remain unresolved. *Sternodes* can only be placed in any of the known spider families by accepting the *ad hoc* hypothesis that it has lost the particular autapomorphies (where defined) of that group. This conclusion is not supported by the evidence considered

here. *Sternodes* (and a related genus) appear to be unique among spiders in having a pair of sulci on the carapace border between the palp and leg I, and in the structure of the male palpal organ (Figs. 1, 2, 7-10, 15). I propose that these characters define a new family of spiders, the Sternodidae (fam. nov.).

Abbreviations: ACT = Australian Capital Territory; NSW = New South Wales; ANIC = Australian National Insect Collection, Division of Entomology, CSIRO, Canberra; AM = Australian Museum, Sydney; NMV = Museum of Victoria, Abbotsford; carapace height is measured from the front edge of the carapace to the top of the ocular turret/'horns'; Ratio = appendage length/carapace length; J = juveniles; eye sizes are relative dimensions only; all other abbreviations are standard for araneology.

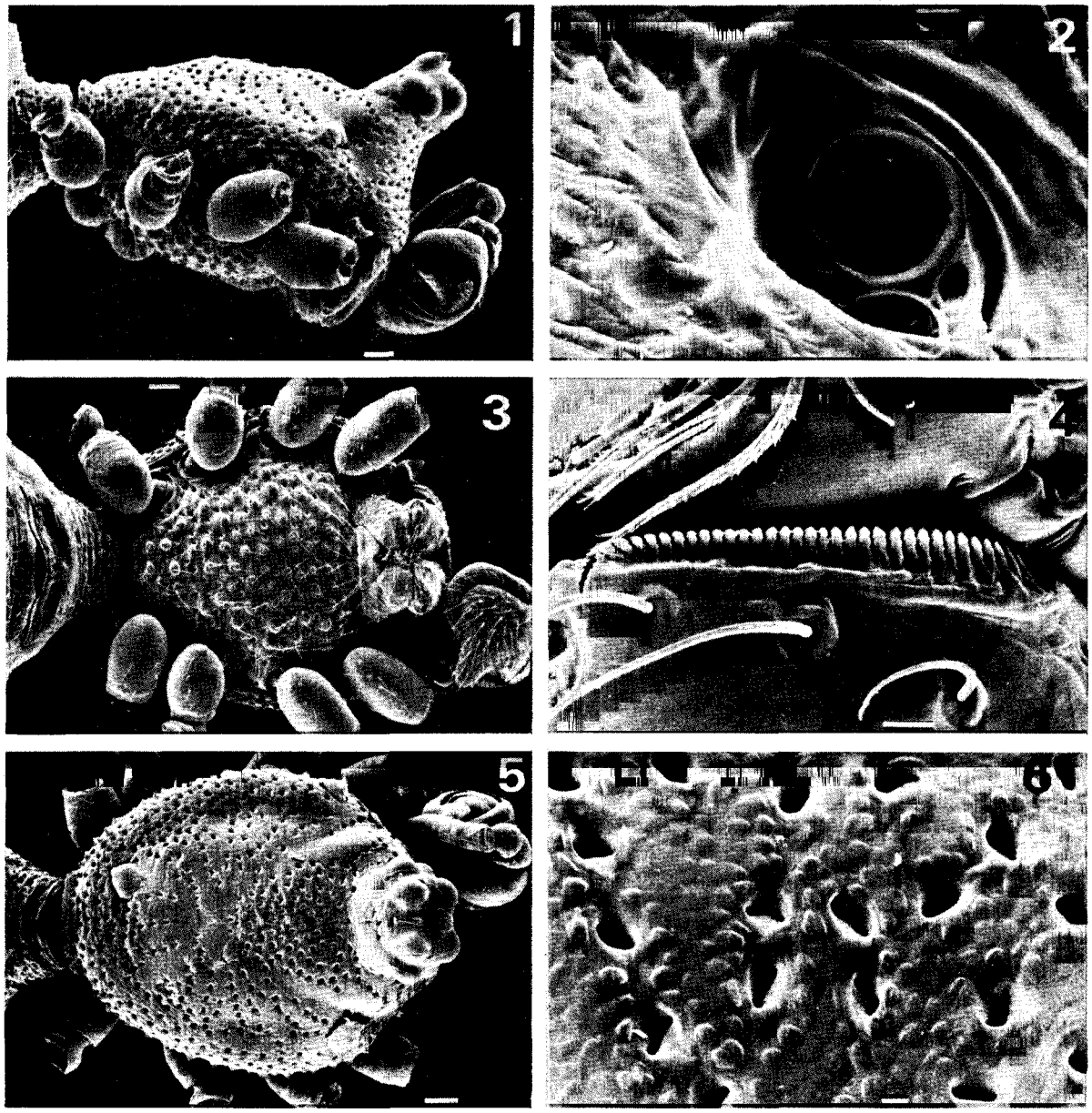
Family Sternodidae, new family

Type genus: Sternodes Butler, 1929.

Diagnosis: The Sternodidae are distinct from all other spider families in having a pair of sulci on the carapace border between the palp and leg I, and the male palpal characters of a crook-shaped, mid-ectal paracymbium and a greatly enlarged basal flange from the conductor which wraps around the bulb and encloses the embolus (Figs. 1, 2, 7-10, 15).

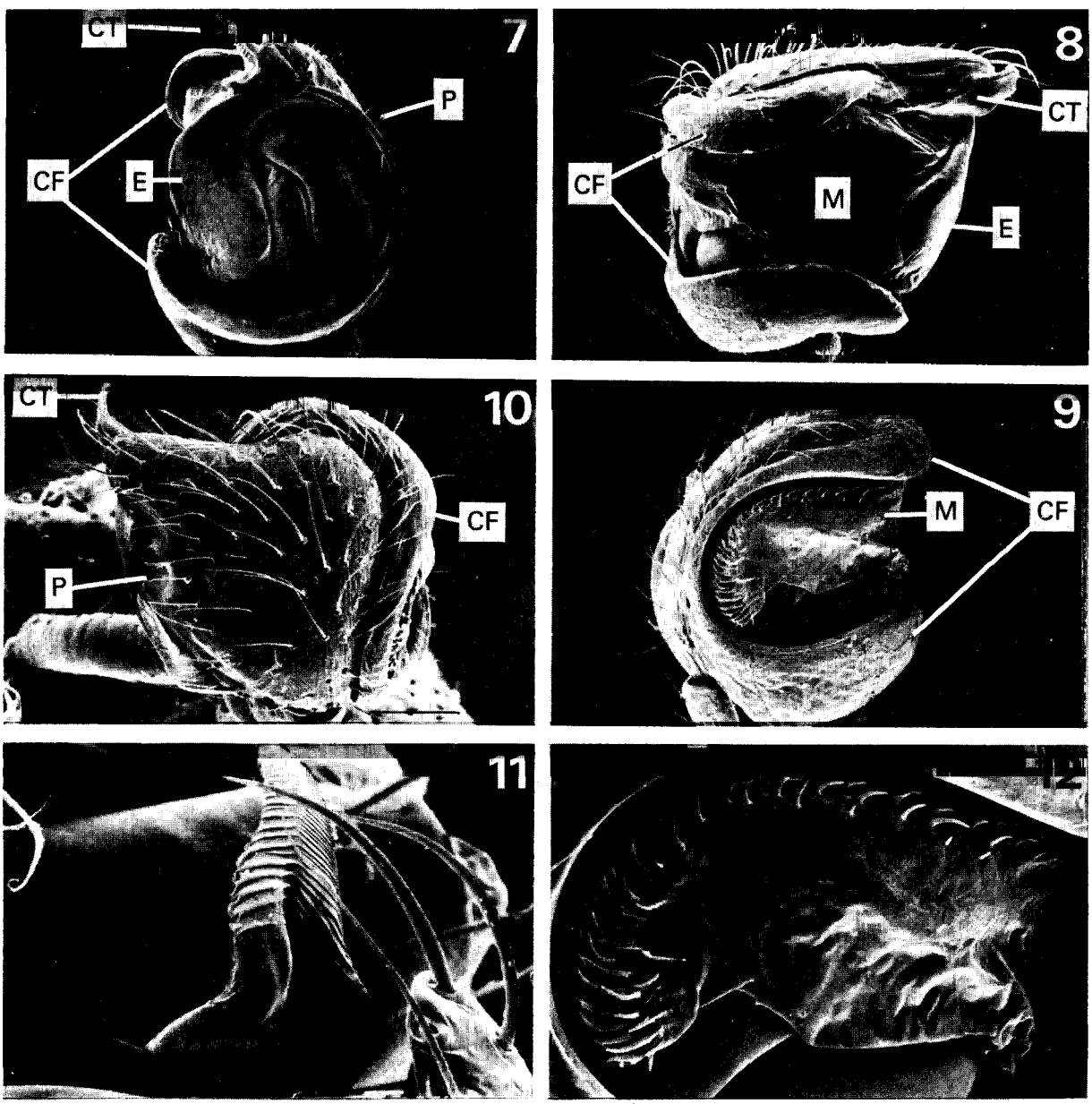
Description: Small, sclerotised, entelegyne, araneomorph spiders with medium to long, spineless legs. All known Sternodidae are very similar in colour and morphology. Colour of cuticle (in alcohol) red to orange, although Butler describes newly collected specimens of *Sternodes* as "a rich brown". Darker areas on cuticle surface, and dorsal abdominal plate sometimes with a dark median longitudinal pattern. AME dark, other eyes white.

Carapace longer than wide, sub-oval from above and with fovea represented only by a longitudinal dark line (Fig. 5). Caput elevated, projecting forwards (Fig. 1).



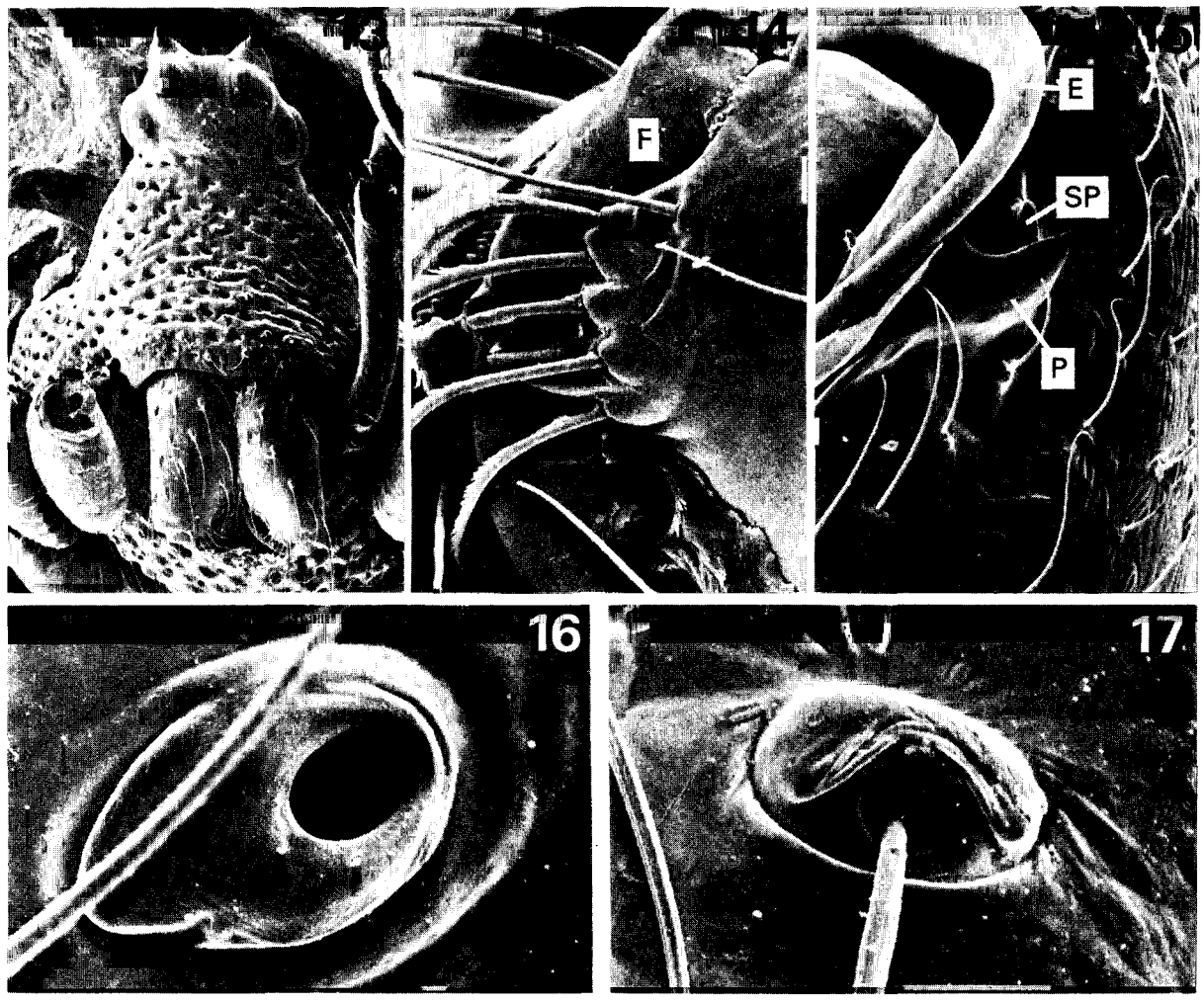
Figs. 1-6: *Sternodes mullawerringi*, sp.nov., male, scanning electron micrographs. **1** Prosoma, lateral view; **2** Sulcus; **3** Prosoma, ventral view; **4** Serrula; **5** Prosoma, dorsal view; **6** Alveolations. Scale lines: Figs. 1, 3, 5 = 0.1 mm; 2, 4, 6 = 0.01 mm.

Clypeus high, concave. Thoracic region sloping to rear. Carapace above pedicel with a broad ridge. Cuticle surface with small tubercles and deep, straight to crescent-shaped alveolations (Fig. 6). Larger tubercles patterned on carapace and around edge. A pair of oval sulci set in carapace border between coxae of palp and leg I. Sulci with pore-like openings at back of cavity (Fig. 2). Eye group on distinct turret (Figs. 1, 13). Eyes sub-equal in size and closely spaced. From above, front row procurved, rear row recurved. AME circular and directed forwards and above, separated by slightly less than diameter of one AME. Other eyes irregularly shaped. Laterals contiguous and on side of turret. PME about 1 AME apart and same distance from AME. Clypeus 4 to 5 times diameter of AME. MOQ slightly broader than long. Sternum longer than wide, widest between coxae II and narrowest between coxae IV (Fig. 3). Truncate anteriorly and narrowed posteriorly. Sternum completely enclosing coxae and meeting in a line with carapace edge. Surface with tubercles and alveolations. Plagula wide and well sclerotised. Endites broad in front with scopula on inner edges. Serrula of 30-35 teeth with crimped edges (Fig. 4). Labium triangular and broad, fused to sternum in adults, and thickened anteriorly. Paturons vertical, slim, without stridulatory ridges, and with one or two promarginal and two to four retromarginal teeth (Fig. 13). Promargin with a small seta-bearing apophysis (Fig. 14). Fang slim and curved. Leg coxae on sclerotised extensions (Fig. 3). Legs medium to long with either I or IV longest. Leg cuticle surface coarsely reticulate. Spines and scopulae absent, with setae on small tubercles. Tarsal organ capsulate and near distal ends of tarsi I and II and proximal ends of tarsi III and IV (Fig. 16). Tarsi without trichobothria. Bothria domed (Fig. 17). Each metatarsus with a single distal



Figs. 7-12: *Sternodes mullawerringi*, sp. nov., male, scanning electron micrographs. **7** Palpal organ, ectal view; **8** Ditto, ventral view; **9** Ditto, mesal view; **10** Ditto, dorsal view; **11** Conductor tip; **12** Palpal organ membrane. CF = conductor flange, CT = conductor tip, E = embolus, M = membrane, P = Paracymbium. Scale lines: Figs. 7-10 = 0.1 mm; 11-12 = 0.01 mm.

trichobothrium. Tibial trichobothrial pattern: legs I and II, proximal: one prolateral; distal: two retrolateral; leg III, proximal: two prolateral; distal: two retrolateral; leg IV, proximal: two to three prolateral, two retrolateral. Three tarsal claws, medians without teeth, laterals with 8-12 teeth on tarsi I and II, three to five teeth on tarsi III and IV. Female palpal claw long and slim. Three trichobothria on palpal tibia. Female palpal tarsus and tibia with long setae. Abdomen with ridged and indented epigastric plate surrounding pedicel (Fig. 40). Anterior end of plate extended and tube-like, with concentric ridges. Epigastric furrow, genital openings and lung book spiracles open through this plate. Lung books appear as dark oval areas in paler cuticle. Three pairs of spinnerets, with anterior pair largest, two-segmented and conical. Other spinnerets small with posteriors two-segmented, and medians single-segmented and attenuated. Colulus large and well sclerotised. Spinnerets surrounded by a sclerotised ring through which opens the posterior tracheal spiracle. Males with oval dorsal abdominal plate covering anterior three-quarters of abdomen (Figs. 19, 25). Integument between abdominal plates studded with small setae-bearing sclerites, and large sclerites which form lateral rows in males of most species. Internally, lung books thin, with few leaves. Tracheal system haplotracheate (as defined by Millidge, 1984), with outer branches longest. Female epigyne simple with a single opening, or a pair of openings (Figs. 44, 45). From the bursae copulatrix a pair of coiled ducts travel forwards and convergently, widening distally to form the receptacula. A pair of broad vessels then travel back (surrounded by the coiled ducts) to a pair of vesicles, from which the narrow fertilisation ducts lead to the epigastric furrow (Figs. 34-39; see also Blest, 1979). Male palpal organ with crook-shaped paracymbial process on ectal cymbial border (Fig. 15). A second smaller paracymbial process occurs distal to this structure. Distal end of embolus long, thin and sinuous. Conductor with greatly enlarged basal flange which encloses most of embolus and wraps around bulb (Figs. 7-10). Distal tip of conductor translucent and encloses embolus tip. Lateral edges of conductor tip with numerous ridges (Fig. 11). A large membranous flange arises from base of embolus and also wraps around bulb. Distal end of this process with numerous small projections (Fig. 12). In unexpanded palp paracymbium supports basal section of distal part of embolus (Fig. 15), while in expanded palp distal tip of conductor fits into crook of paracymbium.



Figs. 11-17: *Sternodes mullawerringi*, sp. nov., male, scanning electron micrographs. **13** Prosoma, anterior view; **14** Promarginal cheliceral apophysis; **15** Paracymbium and embolus; **16** Tarsal organ (cymbium); **17** Bothrium (cymbium). E = embolus, F = fang, P = paracymbium, SP = secondary paracymbium. Scale lines: Fig. 13 = 0.1 mm; 14, 15, 17 = 0.01 mm; 16 = 0.001 mm.

Genus *Sternodes* Butler

Sternodes Butler, 1929: 50 (type species by original designation *Sternodes foraminatus*).

Perissopmeros Butler, 1932: 116, **new synonymy.**

Diagnosis: The presence of a pair of horn-like processes supporting the PME is diagnostic.

Description: PME long and tear-drop shaped and set on posterior face of a pair of horn-like processes (Figs. 1, 13). Legs long and thin, with leg I longest. Tarsal organs relatively small. Female internal genitalia heavily sclerotised, compact and relatively small. Distal tip of conductor spatulate.

Sternodes foraminatus Butler (Figs. 19, 27, 40)

Sternodes foraminatus Butler, 1929: 51, pl. 1, figs. 9-12 (♂ holotype from Whittlesea, Victoria, Australia, in NMV).

Diagnosis: The distal tip of conductor and pattern of sclerites on the male abdomen are diagnostic.

Male: Carapace, length 1.35, width 1.00, height 0.75; abdomen, length 1.50, width 1.15. Legs:

	Fe	Pa	Ti	Mt	Ta	Total	Ratio
I	1.20	0.40	1.08	0.88	0.56	4.12	3.1
II	1.16	0.38	0.92	0.70	—	—	—
III	0.80	0.36	0.68	0.64	0.44	2.92	2.2
IV	1.14	0.34	0.96	0.80	0.52	3.76	2.8
Palp	0.38	0.15	0.17	—	0.38	1.08	0.8

Eyes: AME 5, ALE 4, PME 5.5, PLE 5.5; clypeus 22, AME-AME 3, ALE-ALE 11, AME-PME 4, PME-PLE 3, PLE-PLE 15; MOQ front width 13, back width 12, length 12. Two retrolateral cheliceral teeth. Abdomen with single row of lateral sclerites (Fig. 19). Distal tip of conductor rounded and single lobed (Fig. 27). Only the holotype is known.

Distribution: Known only from the type locality.

Sternodes castaneous (Butler), new combination (Figs. 20, 28, 34, 45)

Perissopmeros castaneous Butler, 1932: 116, pl. 2, figs. 18-23 (♂ holotype from Mt Kosciusko, New South Wales, now lost). Bonnet (1958) - corrected the spelling of *Perissopmeros castaneous* to *Perissopmerus castaneus*, but these are unjustified emendations, according to ICZN Article 33(b)(iii).

Butler (1932) illustrated the characteristic pitted carapace and body shape of *Sternodes* when describing *P. castaneous*. Recent collecting has revealed a distinct *Sternodes* species in the Mt Kosciusko region and in the absence of type specimens I have assumed this species to be *P. castaneous*.

Diagnosis: The distal tip of the conductor, female internal genitalia and pattern of sclerites on the male abdomen are diagnostic.

Male: Carapace, length 1.20, width 0.97, height 0.69; abdomen, length 1.40, width 1.10. Legs:

	Fe	Pa	Ti	Mt	Ta	Total	Ratio
I	1.35	0.37	1.20	0.98	0.57	4.47	3.7
II	1.20	0.37	1.08	0.87	0.55	4.07	3.4
III	0.95	0.42	0.78	0.70	0.50	3.35	2.8
IV	1.22	0.33	1.05	0.95	0.57	4.12	3.4
Palp	0.45	0.15	0.15	—	0.42	1.17	1.0

Eyes: AME 4, ALE 3.5, PME 3.5, PLE 4; clypeus 18,

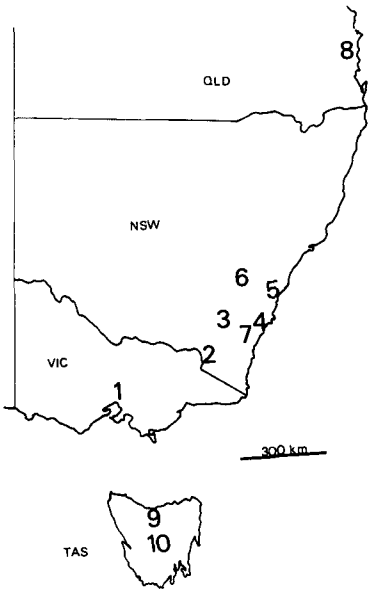


Fig. 18: Map of south-eastern Australia showing distribution of Sternodidae. **1** *S. foraminatus;* **2** *S. castaneous;* **3** *S. mullawerringi;* **4** *S. quinguni;* **5** *S. grayi;* **6** *S. arkana;* **7** Budawang Ranges *Sternodes* species; **8** Bulburin Forest *Sternodes* species; **9** *C. parawea;* **10** *C. miyali.*

AME 3, ALE-ALE 9, AME-PME 4, PME-PLE 2, PLE-PLE 11; MOQ front width 9.5, back width 10, length 8. Three retromarginal cheliceral teeth. Abdomen with three rows of lateral sclerites (Fig. 20). Distal tip of conductor single with a rounded point (Fig. 28).

Female: Carapace, length 1.45, width 1.10, height 0.67; abdomen, length 2.15, width 1.90.

	Fe	Pa	Ti	Mt	Ta	Total	Ratio
Leg I	1.65	0.42	1.48	1.17	0.60	5.32	3.7

Epigyne with a pair of openings (Fig. 45). Internal genitalia compact, with 5-6 coils (Fig. 34).

Material examined: Australia: New South Wales: Mt South Ramshead, 36°31'S 148°15'E, 1850 m, pitfall trap in montane forest, K. Green, deposited ANIC, Feb. 1981, 2♂; Mar. 1981, 1♂, 1♀; May 1981, 1♀; Dec. 1981, 1♀; Jan. 1982, 1♂, 1♀; Feb. 1982, 2♀; Apr. 1982, 1♀; Jan. 1983, 3J.

Distribution: Known only from Mt South Ramshead and Mt Kosciusko, NSW.

Sternodes mullawerringi, new species (Figs. 1-15, 22, 30, 36, 44)

Types: Holotype ♂, Blundells Creek, 3 km east of Piccadilly Circus, 32°22'S 148°50'E, 850 m, Brindabella Range, ACT, March 1984, T. Weir, J. Lawrence and M. Johnson, in gutter trap, deposited ANIC (type reg. no. 10029). Paratypes, same data as above, except as noted: Feb. 1984, 2♂, 1♀; June 1984, 1♂. Lees Creek, 35°21'S 148°51'E, Brindabella Range, ACT, C. Dickman, in pitfall trap, deposited ANIC: 25 Jan. 1979, J; 28 Feb 1980, 1♂, 1♀, 4J; 26 April 1980, 1♂, 1♀.

Etymology: The specific name is derived from an Australian aboriginal word for a mountain spirit.

Diagnosis: The distal tip of the conductor, single female epigynal opening, female internal genitalia and pattern of sclerites on the male abdomen are diagnostic.

Male holotype: Carapace, length 1.35, width 1.00, height 0.75; abdomen, length 1.50, width 1.15. Legs:

	Fe	Pa	Ti	Mt	Ta	Total	Ratio
I	1.47	0.40	1.28	0.97	0.58	4.70	3.5
II	1.32	0.38	1.12	0.93	0.55	4.30	3.2
III	1.00	0.36	0.78	0.72	0.48	3.34	2.5
IV	1.29	0.36	1.08	0.92	0.58	4.23	3.1
Palp	0.45	0.37	0.43	—	0.40	1.65	1.2

Eyes: AME 4, ALE 3.5, PME 4, PLE 4; clypeus 19, AME-AME 3.5, ALE-ALE 9, AME-PME 3.5, PME-PLE 2, PLE-PLE 11.5; MOQ front width 10.5, back width 10, length 9. Two retromarginal cheliceral teeth. Abdomen with single row of lateral sclerites (Fig. 22). Conductor tip leaf-shaped and pointed (Fig. 30).

Female paratype: Carapace, length 1.52, width 1.12, height 0.80; abdomen, length 1.32, width 1.22.

	Fe	Pa	Ti	Mt	Ta	Total	Ratio
Leg I	1.75	0.42	1.60	1.28	0.70	5.75	3.8

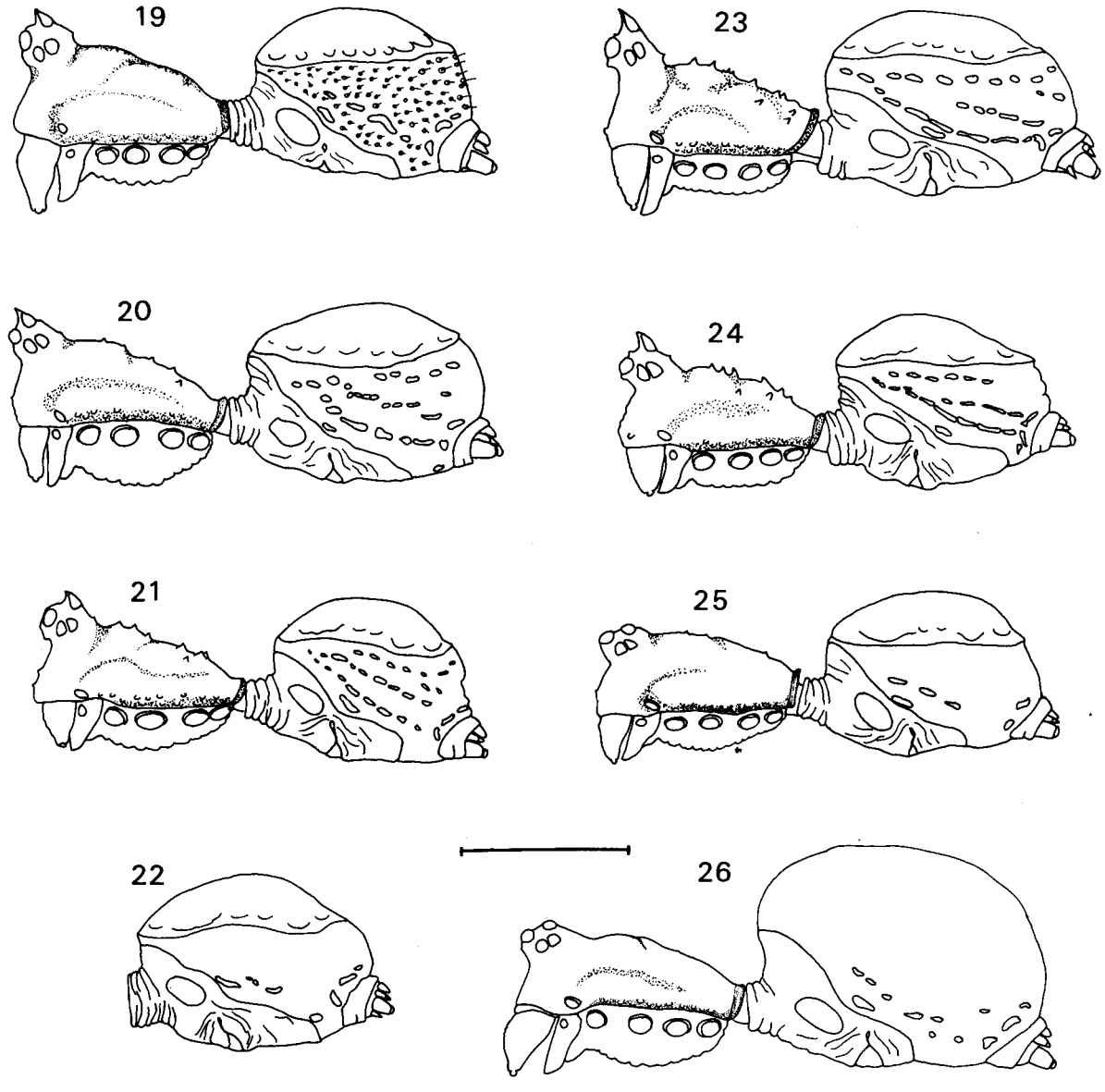
Epigyne with a single opening and domed anteriorly (Fig. 44). Internal genitalia relatively broad with five spiral coils (Fig. 36).

Distribution: Known only from two localities in the Brindabella Ranges.

***Sternodes arkana*, new species** (Figs. 21, 29, 36, 41)

Types: Holotype ♂, 33°30'S 150°23'E, Mt Wilson, NSW, 24 Sept. 1979, M. R. Gray, in pitfall trap, deposited AM (reg. no. KS3892). Paratypes, same data as above, except as noted: 28 June 1978, 1♀ (KS1546); 19 Oct. 1978, 1J (KS2000); 15 Nov. 1978, 1J (KS2063); 11 Dec. 1978, 1J (KS2163); 12 Jan. 1979, 1♂ (KS2347); 4 Apr. 1979, 1♂ (KS2839); 5 July 1979, 1J (KS3140); 23 Nov. 1983, 1♂ (KS13512).

Etymology: The specific name is derived from an Australian aboriginal word for a curved stick (referring



Figs. 19-26: Sternodidae, holotypes, lateral view of body. **19** *S. foraminatus*, ♂; **20** *S. castaneous*, ♂; **21** *S. arkana*, ♂; **22** *S. mullawerringi*, (abdomen only), ♂; **23** *S. quinguni*, ♂; **24** *S. grayi*, ♂; **25** *C. parawea*, ♂; **26** *C. miyali*, ♀. Scale line = 1.00 mm.

to metatarsus I).

Diagnosis: The curved metatarsus I, abdominal sclerotisation, tip of the conductor and female internal genitalia are diagnostic.

Male holotype: Carapace length 1.22, width 0.70, height 0.70; abdomen, length 1.45, width 1.05. Legs:

	Fe	Pa	Ti	Mt	Ta	Total	Ratio
I	1.30	0.47	1.10	0.83	0.60	4.30	3.5
II	1.03	0.35	0.97	0.77	0.55	3.67	3.0
III	0.85	0.30	0.65	0.68	0.45	2.93	2.4
IV	1.05	0.30	0.92	0.85	0.55	3.67	3.0
Palp	0.42	0.15	0.15	—	0.45	1.17	1.0

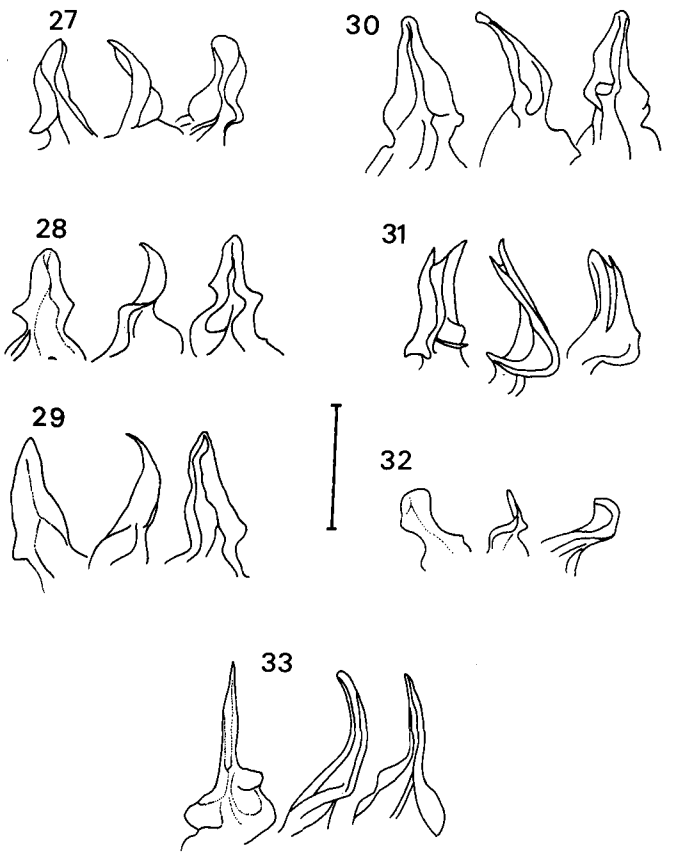
Eyes: AME 4, ALE 4, PME 4, PLE 4; clypeus 17.5, AME-AME 3.5, ALE-ALE 9, AME-PME 4, PME-PLE 2, PLE-PLE 12; MOQ front width 10.5, back width 10, length 9. Four retrolateral cheliceral teeth. Metatarsus I curved retrolaterally (Fig. 41). Abdomen with three rows of lateral sclerites (Fig. 21). Conductor tip leaf-shaped and pointed (Fig. 29).

Female paratype: Carapace, length 1.25, width 0.95, height 0.65; abdomen, length 1.65, width 1.25.

	Fe	Pa	Ti	Mt	Ta	Total	Ratio
Leg I	1.45	0.38	1.27	0.97	0.63	4.70	3.8

Epigyne with a pair of openings and domed anteriorly. Internal genitalia with four spirally coiled ducts (Fig. 35).

Distribution: Known only from the type locality.



Figs. 27-33: Sternodidae, holotype males, distal tip of conductor. **27** *S. foraminatus;* **28** *S. castaneous;* **29** *S. arkana;* **30** *S. mullawerringi;* **31** *S. quinguni;* **32** *S. grayi;* **33** *C. parawea.* Left to right; dorsal, lateral, ventral. Scale line = 0.125 mm.

***Sternodes grayi*, new species** (Figs. 24, 32, 37)

Types: Holotype ♂, 34°24'S, 150°51'E, Fauna Reserve, Mt Keira, NSW, 7 Sept. 1978, M. R. Gray, in pitfall trap, deposited AM (reg. no. KS2257). Paratypes, same data as above, except as noted: 20 Mar. 1978, 1♀ (KS3647); 18 May 1978, 1♀ (KS1411); 7 Sept. 1978, 1♂, 1J (KS1754); 2 Nov. 1978, 1J (KS2011); 23 Nov. 1978, 1♂ (KS2095); 20 Dec. 1978, 1♀ (KS2182); 17 Jan. 1979, 1♀ (KS2402); 4 Feb. 1979, 1♂, 1♀ (KS2521); 14 Mar. 1979, 1♂ (KS2774); 14 Jun. 1979, 1J (KS3097).

Etymology: The specific name is a patronym in honour of the collector of the type specimens.

Diagnosis: The form of the tip of the conductor and the female internal genitalia, and the pattern of sclerites on the lateral side of the abdomen are diagnostic.

Male holotype: Carapace, length 1.17, width 0.95, height 0.72; abdomen, length 1.35, width 1.05. Legs:

	Fe	Pa	Ti	Mt	Ta	Total	Ratio
I	1.42	0.38	1.32	1.08	0.57	4.77	4.1
II	1.25	0.38	1.10	0.95	0.57	4.25	3.6
III	0.95	0.35	0.78	0.77	0.42	3.27	2.8
IV	1.22	0.33	1.05	1.03	0.57	4.20	3.6
Palp	0.37	0.15	0.18	—	0.40	1.10	0.9

Eyes: AME 4, ALE 3.5, PME 4, PLE 4; clypeus 18.5, AME-AME 3.5, ALE-ALE 10, AME-PME 3.5, PME-PLE 3, PLE-PLE 11.5; MOQ front width 11, back width 10, length 9.5. Three retrolateral cheliceral teeth. Carapace tubercles strongly developed (Fig. 24). Leg I relatively long. Abdomen with three rows of lateral sclerites (Fig. 24). Tip of conductor blunt and rounded (Fig. 32).

Female paratype: Carapace, length 1.30, width 1.00, height 0.72; abdomen, length 1.65, width 1.22

	Fe	Pa	Ti	Mt	Ta	Total	Ratio
Leg I	1.57	0.40	1.48	1.22	0.55	5.22	4.02

Epigyne with a pair of openings. Internal genitalia with six spiral coils (Fig. 37).

Distribution: Known only from the type locality.

***Sternodes quinguni*, new species** (Figs. 23, 31, 42, 43)

Types: Holotype ♂, 35°37'S 150°16'E, Kiola State Forest, 16 km N. of Bateman's Bay, NSW, 2 Nov. 1978, M. R. Gray, in pitfall trap, deposited AM (reg. no. 2916). Paratype, same data as above, except as noted: 23 April 1979, J (KS2027).

Etymology: The specific name is derived from an Australian aboriginal word for devil.

Diagnosis: The tip of the conductor and the pattern of sclerites on the lateral side of the abdomen are diagnostic.

Male holotype: Carapace, length 1.27, width 1.03, height 0.76; abdomen, length 1.60, width 1.17. Legs:

	Fe	Pa	Ti	Mt	Ta	Total	Ratio
I	1.50	0.40	1.22	1.00	0.58	4.70	3.7
II	1.37	0.40	1.13	0.95	0.55	4.40	3.4
III	0.97	0.35	0.75	0.75	0.43	3.25	2.6
IV	1.35	0.35	1.10	1.00	0.57	4.37	3.4
Palp	0.37	0.18	0.15	—	0.45	1.15	0.9

Eyes: AME 4, ALE 4, PME (long axis) 6, PLE 4; clypeus 20, AME-AME 3, ALE-ALE 8, AME-PME 4, PME-PLE 2.5, PLE-PLE 12, MOQ front width 11, back width 12, length 10. Three retromarginal cheliceral teeth. Carapace 'horns' relatively long and pointed (Fig. 43). PME similarly elongate and drop-shaped. Carapace tubercles well developed. Posterior ridge of carapace around pedicel with tiny pectinations (Fig. 42). Abdomen with three rows of lateral sclerites (Fig. 23). Tip of conductor bifurcate (Fig. 31).

Female: Unknown.

Distribution: Known only from the type locality.

Genus *Carathea*, new genus

Type species: Carathea parawea, new species.

Etymology: The generic name is derived from an Australian aboriginal word for sister.

Diagnosis: The absence of carapace 'horns', large, lightly sclerotised and less compact female internal genitalia, and spine-like distal tip of the conductor are diagnostic.

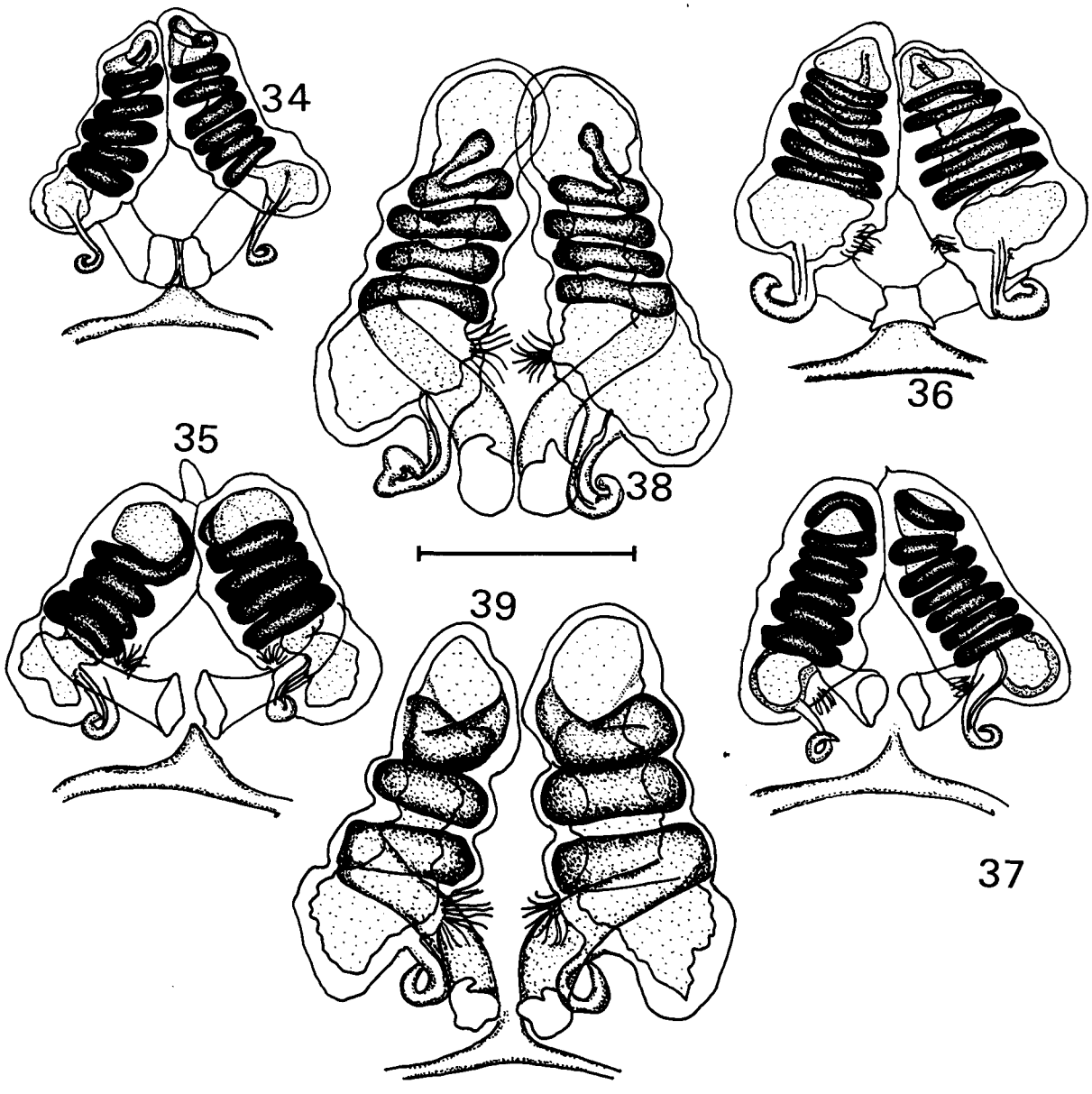
Description: Carathea differs from *Sternodes* in the following characters: Anterior end of carapace not as elevated and without horn-like processes (Fig. 48). PME sub-oval and flat on carapace surface. Legs not as long and leg I shorter than leg IV. Tarsal organs relatively large. Only one promarginal (near fang tip) and three retromarginal cheliceral teeth. Abdomen less sclerotised with at most only one lateral row of sclerites. Female internal genitalia large and lightly sclerotised with only three or four coils. Tip of conductor long and thin.

***Carathea parawea*, new species** (Figs. 25, 33, 38)

Types: Holotype ♂, 41°18'S 145°36'E, Saxons Road, near Parawee, Tasmania, 17 Jan. 1983, I. Naumann and J. Cardale, in leaf litter berlesate, deposited ANIC (type reg. no. 10030). Paratype, same data as above, ♀.

Etymology: The specific name is a noun in apposition taken from the type locality.

Diagnosis: The slightly higher clypeus, longer legs,



Figs. 34-39: Sternodidae, female internal genitalia. **34** *S. castaneous;* **35** *S. arkana;* **36** *S. mullawerringi;* **37** *S. grayi;* **38** *C. parawea;* **39** *C. miyali.* Scale line = 0.16 mm.

reduced abdominal sclerotisation and presence of four spiral ducts in the female genitalia are diagnostic.

Male holotype: Carapace, length 1.27, width 0.95, height 0.55; abdomen, length 1.52, width 1.12. Legs:

	Fe	Pa	Ti	Mt	Ta	Total	Ratio
I	1.20	0.38	1.00	0.77	0.50	3.85	3.0
II	1.00	0.35	0.85	0.70	0.50	3.40	2.7
III	0.85	0.35	0.67	0.60	0.45	2.92	2.3
IV	1.17	0.38	1.05	0.90	0.60	4.10	3.2
Palp	0.40	0.18	0.17	—	0.48	1.23	1.0

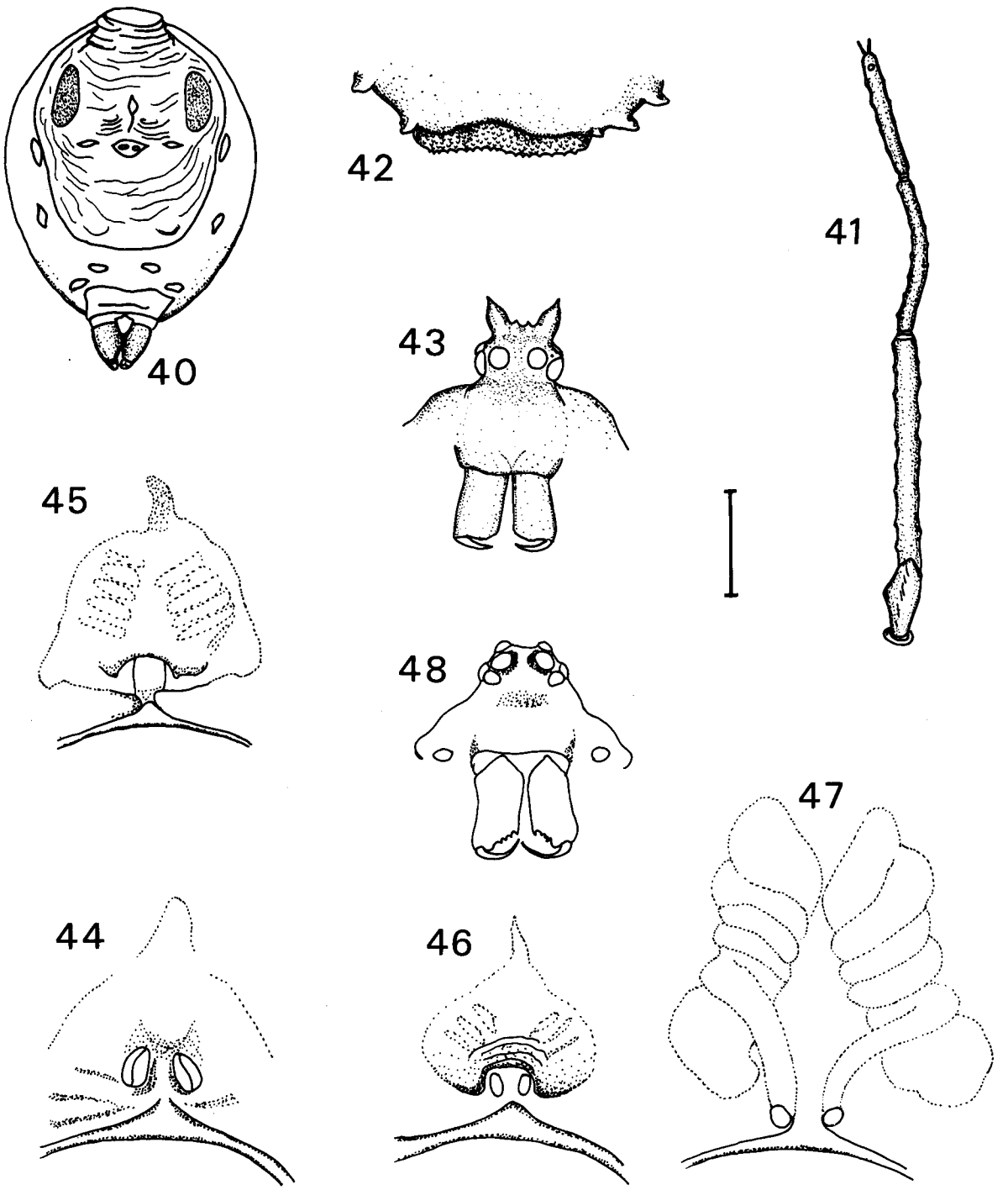
Eyes: AME 4, ALE 3.5, PME 3.5, PLE 3.5; clypeus 17, AME-AME 3.5, ALE-ALE 9, AME-PME 2.5, PME-PLE 2, PLE-PLE 11; MOQ front width 10, back width 8, length 9. Abdomen with one lateral row of sclerites (Fig. 25). Distal tip of conductor long and slim (Fig. 33).

Female paratype: Carapace, length 1.30, width 1.00, height 0.57; abdomen, length 1.42, width 1.00.

	Fe	Pa	Ti	Mt	Ta	Total	Ratio
Leg I	1.25	0.40	1.02	0.80	0.48	3.95	3.0

Epigyne with a pair of openings. Internal genitalia with four spiral coils (Fig. 38).

Distribution: Known only from the type locality.



Figs. 40-48: Sternodidae. **40** *S. foraminatus*, ♂ holotype, abdomen, ventral view; **41** *S. arkana*, ♂ holotype, leg I, curved metatarsus; **42** *S. quinguni*, rear of carapace, pectinations on border; **43** *S. quinguni*, face; **44** *S. mullawerringi*, ♀ paratype, epigyne; **45** *S. castaneous*, ♀ paratype, epigyne; **46** *S. arkana*, ♀ paratype, epigyne; **47** *C. parawea*, ♀ paratype, epigyne; **48** *C. miyali*, ♀ holotype, face. Scale line: Figs. 40, 43, 48 = 0.5 mm; 41 = 1.0 mm; 42 = 0.25 mm; 44-47 = 0.125 mm.

***Carathea miyali*, new species** (Figs. 26, 39, 47, 48).

Type: Holotype ♀, 42°10'S 146°06'E, Derwent Bridge, Tasmania, 21 Jan. 1983, I. Naumann and J. Cardale, in leaf litter berlesate, deposited ANIC (type reg. no. 10031). Only the holotype is known.

Etymology: The specific name is derived from an Australian aboriginal word for stranger.

Diagnosis: The slightly shorter legs, greater abdominal sclerotisation and presence of only three spiral coils in the female internal genitalia are diagnostic.

Female: Carapace, length 1.35, width 1.00, height 0.60; abdomen, length 1.80, width 1.32. Legs:

	Fe	Pa	Ti	Mt	Ta	Total	Ratio
I	1.22	0.40	1.03	0.75	0.45	3.85	2.8
II	1.10	0.40	0.87	0.68	0.42	3.47	2.6
III	0.92	0.38	0.70	0.62	0.45	3.07	2.3
IV	1.17	0.38	1.05	0.95	0.60	4.15	3.1
Palp	0.40	0.17	0.20	—	0.45	1.22	0.9

Eyes: AME 4, ALE 3.5, PME 3, PLE 3.5; clypeus 13.5, AME-AME 3, ALE-ALE 8, AME-PME 2, PME-PLE 2, PLE-PLE 10.5; MOQ front width 8.5, back width 7.5, length 8. Abdomen with a single row of lateral sclerites (Fig. 26). Epigyne with a pair of openings. Internal genitalia with three spiral coils (Fig. 39).

Distribution: Known only from the type locality.

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