

## Three new species of the spider family Linyphiidae from Australia (Araneae)

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### Abstract

Two new species of the genus *Dunedinia* Millidge are described: *D. occidentalis* sp.nov. from caves in Cape Range, Western Australia, and *D. opaca* sp.nov. from South Australia. *Chthiononetes* gen.nov. is erected for *C. tenuis* sp.nov., another linyphiid species from a cave in Cape Range.

### Introduction

Among the spiders collected from caves in Cape Range, Western Australia, by Dr. W.F. Humphreys and associates, were two members of the Linyphiidae, a spider family which is poorly represented in Australia, but much more numerous in New Zealand. One of the species requires erection of a new genus, while the other is a member of the New Zealand genus *Dunedinia* Millidge. A further *Dunedinia* species, from South Australia, is also described in this paper.

### Materials and Methods

All material is lodged in the Western Australian Museum, Perth and the South Australian Museum, Adelaide. The figures are drawn from alcohol-preserved specimens, and the palps figured are the right hand palps. All measurements are in mm.; scale lines on the figures are 0.1 mm.

### Systematics

#### Family Linyphiidae Blackwall

#### Genus *Dunedinia* Millidge

#### Remarks

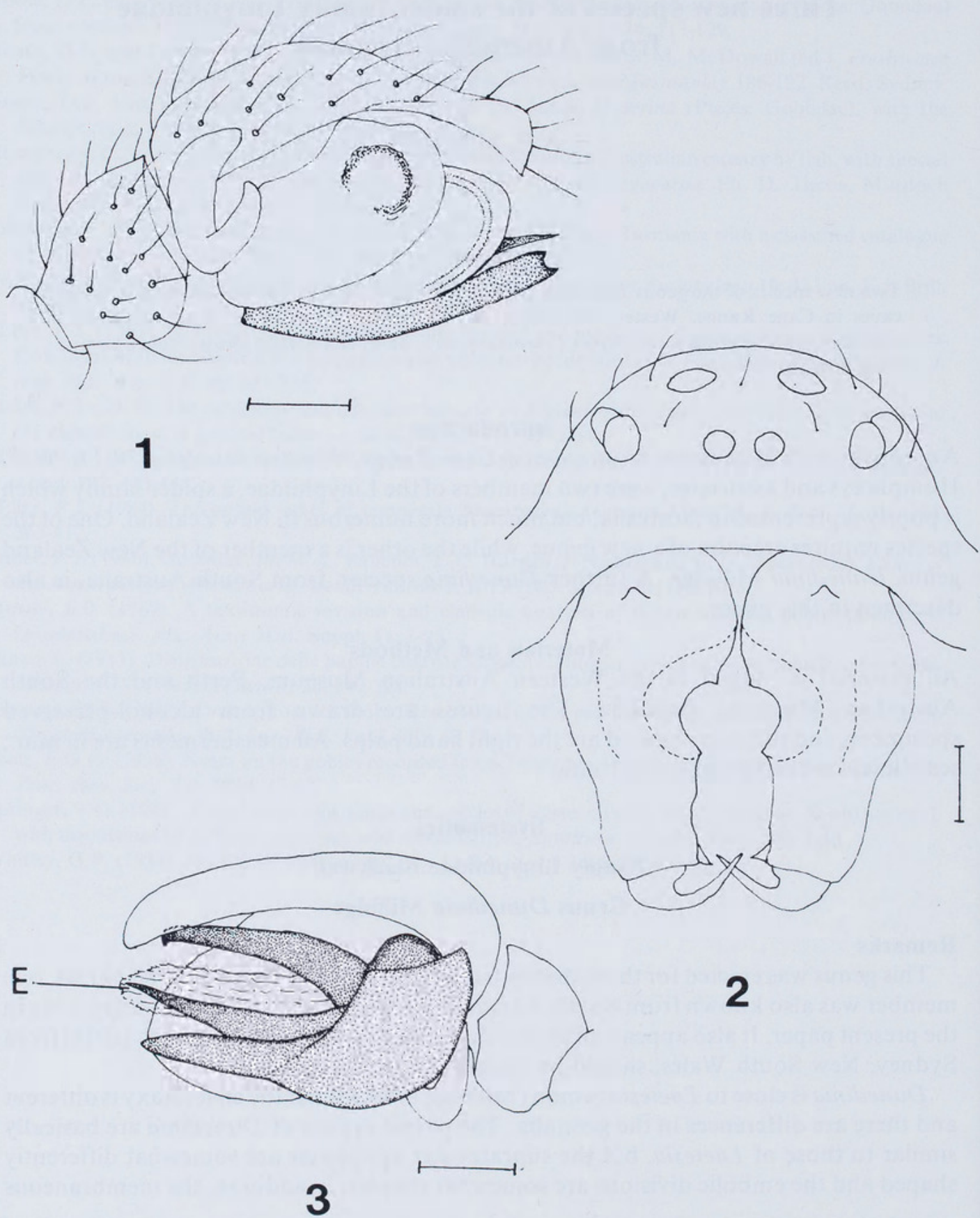
This genus was erected for three species from New Zealand (Millidge 1988:42) but one member was also known from South Australia, and this is described for the first time in the present paper. It also appears probable that *Laetesia forsteri* Wunderlich (1976) from Sydney, New South Wales, should be transferred to *Dunedinia*.

*Dunedinia* is close to *Laetesia* Simon (Millidge 1988:35) but the chaetotaxy is different and there are differences in the genitalia. The palpal organs of *Dunedinia* are basically similar to those of *Laetesia*, but the suprategular apophyses are somewhat differently shaped and the embolic divisions are somewhat simpler; in addition, the membraneous

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Figures 1-3 *Dunedinia occidentalis*, sp. nov., ♂. 1, palp, ectal. 2, chelicerae, anterior. 3, palp, mesal. E: embolus.



tegular apophysis present in *Laetesia* is absent in *Dunedinia*. The male chelicerae in *Dunedinia* are bowed as in *Dictyna*, whereas in *Laetesia* they are usually not (exception: *Laetesia minor* Millidge). Females of *Dunedinia* have the external genitalia very close to those of *Laetesia* in some species, but there are differences internally in the form of the spermathecae; in *Laetesia* the spermatheca has a tubular subsidiary chamber of the type common in members of the Linyphiinae (s. str.), while in *Dunedinia* this side chamber is absent. There was an error in the original generic description (Millidge 1988) where it was stated that *Dunedinia* resembled *Laetesia* in the presence of the side chamber; that this was not so was clearly shown by the figures given (Millidge 1988: figures 206, 207 cf. figures 187-189).

Of the two species dealt with in this paper, *D. opaca* is entirely typical of the genus, while *D. occidentalis* is somewhat abnormal in the detail of the embolic division of the palp.

### *Dunedinia occidentalis* sp. nov.

Figures 1-3

#### Holotype

Male from cave C.106, Cape Range, Western Australia (22°04'S, 114°01'E), 21 June 1989 (M.S. Harvey); deposited in Western Australian Museum, Perth (92/184).

#### Paratypes

None.

#### Etymology

Species name is Latin adjective meaning "western".

#### Diagnosis

The male is diagnosed by the bowed chelicerae (Figure 2) and by the palp (Figures 1,3); the suprategular apophysis is longer and less hooked than in other *Dunedinia* species, and the embolic division lacks the median apophysis normally present in members of the genus. The female is not known.

#### Description

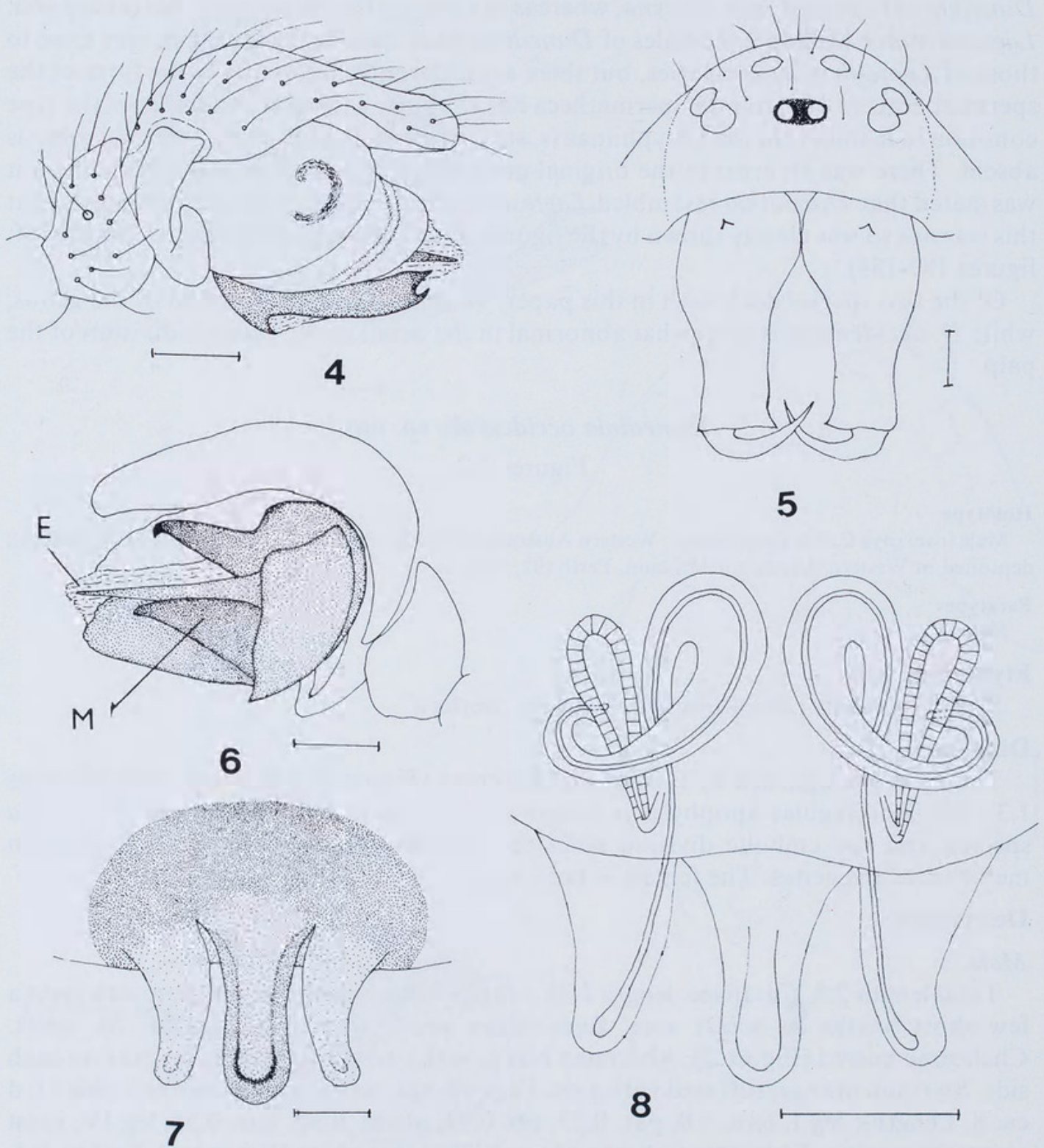
##### Male

Total length 2.5. Carapace, length 1.35, orange-brown, margins suffused with grey; a few short bristles in ocular area. Eyes rather small, with posteriors ca. 2d. apart. Chelicerae bowed (Figure 2). Abdomen black, with two elongated white spots on each side. Sternum orange, suffused with grey. Legs orange, moderately stout with tibia I/d ca. 8. Lengths: leg I: fem. 1.0, pat. 0.27, tib. 0.93, metat. 0.90, tars. 0.55; leg IV: most segments missing. Tibial spines short and weak, 2211 (but tibiae IV missing); Tml ca. 0.4. Leg lengths, spines and trichobothria normal for genus. Palp (Figures 1,3).

#### Distribution

Known only from one cave in Cape Range, Western Australia. It is perhaps not a true cave species, and possibly it will be found in the open in suitable (probably moist) situations.





**Figures 4-8** *Dunedinia opaca*, sp. nov. 4, male palp, ectal. 5, male chelicerae, anterior. 6, male palp, mesal. 7, female epigynum, ventral. 8, female epigynum, internal, dorsal. E: embolus. M: median apophysis of embolic division.



***Dunedinia opaca* sp. nov.**

Figures 4-8

**Holotype**

Male from low vegetation at edge of pond, Inman Valley, near Victor Harbor, South Australia, October 1981 (A.F. Millidge); deposited in South Australian Museum, Adelaide (SAM N1992676)

**Paratypes**

5 females, 2 subadult males, taken with the holotype; deposited in South Australian Museum (SAM N1992677-682) and Western Australian Museum (WAM 92/2126).

**Etymology**

Species name is Latin adjective meaning "dark, gloomy".

**Diagnosis**

This species is closely related to the New Zealand species *D. denticulata* Millidge. The female is diagnosed by the epigynum, which is very similar to that of *D. denticulata*, but has the lateral scapes more curved than in that species (Figure 7 cf. Millidge 1988, figure 203). The male is diagnosed by the palp, which differs from that of *D. denticulata* by the somewhat different shapes of the anterior ventral projection of the embolic plate and of the median apophysis (M, Figure 6, cf. Millidge 1988, figure 191). The male chelicerae are bowed.

**Description**

*Female*

Total length 2.2-2.3. Carapace, length 0.95-1.05, brown to dark brown, suffused anteriorly with black. Eyes of moderate size, with posteriors ca. 1 d. apart. Abdomen black, with dorsally four white spots (variable in size) anteriorly, and several white spots or a white stripe on sides. Sternum slightly rugose, orange suffused to variable degree with black. Legs orange-brown, with femora sometimes suffused basally with dark brown or black; fairly short and stout, with tibia I 1/d ca. 5.5. Lengths: leg I: fem. 0.73, pat. 0.28, tib. 0.69, metat. 0.57, tars. 0.50; leg IV: fem. 0.89, pat. 0.33, tib. 0.82, metat. 0.67, tars. 0.44. Tibial spines 2211; TmI 0.35-0.40, trichobothrium absent on metatarsus IV. Epigynum (Figures 7,8).

*Male*

Total length 2.3. Carapace length 1.25. Colour as female, except: white abdominal markings weaker, legs heavily suffused with dark brown on femora and tibiae. Eyes as female. Chelicerae bowed (Figure 5). Leg lengths: leg I: fem. 0.89, pat. 0.30, tib. 0.84, metat. 0.78, tars. 0.55; leg IV: fem. 1.0, pat. 0.30, tib. 0.93, matat. 0.82, tars. 0.50. Tibial spines (2211) short and weak; tibia I 1/d ca. 8. TmI ca. 0.35; trichobothrium absent on metatarsus IV. Palp (Figures 4,6).

**Distribution**

Known only from damp situation at type locality, South Australia.



**Genus *Chthiononetes* gen. nov.**

**Type species**

*Chthiononetes tenuis* sp. nov.

**Etymology**

From the Greek "chthionos", meaning "from the underworld", and "netes", a spinner; gender masculine.

**Diagnosis**

Females are diagnosed by the epigynal form (Figure 15), but particularly by the internal form (Figure 16) which distinguishes this genus from *Laetesia* and *Dunedinia*. Males are diagnosed by the bowed chelicerae (Figure 14), and particularly by the form of the palpal organ (Figures 9-12), which distinguishes this genus from *Laetesia* and *Dunedinia*. The cave habitat is also a diagnostic character.

**Description**

Specimens of the single species have a total length of 2.4-2.8. Carapace unmodified in both sexes, apart from some bristles in and around the ocular area (Figure 13); these bristles less developed in the female. Eyes rather small, with posteriors 1.5-2 d. apart. Male chelicerae bowed and with small basal pointed boss anteriorly (Figure 14); weak lateral files present in both sexes. Abdomen more or less unicolorous. Legs relatively long, with tibia I 1/d 13-14 in both sexes. Dorsal tibial spines are 2211, short and slender in female, very weak in male; femora and metatarsi spineless. Metatarsal trichobothria appear to be absent. Female palp clawless. Tracheal form simple, with 4 slender tubes confined to the abdomen. Epigynum with 3 short, very lightly sclerotized scapes posteriorly; the outlines of the internal structures visibly to a varying degree through the lightly sclerotized integument (Figure 15). Median scape with socket; lateral scapes so short as to be scarcely visible, hold the genital openings. Internally, spermathecae elongated, bent over at the anterior end, with tubular subsidiary chamber; seminal duct makes one turn around base of spermatheca and then takes looped course to genital opening (Figure 16). Male palpal tibia without apophyses; large paracymbium present (Figure 9). Suprategular apophysis large, hooked anteriorly (Figure 10), more or less identical with those of *Dunedinia*. The embolic division of the palpal organ is a broad plate (Figure 11), from the inner (lateral) side of which (Figure 12) arises the long, curved embolus (E) and a prominent sclerotized median apophysis (M).

**Included species**

Only the type species.

**Distribution**

Known only from caves in Cape Range, Western Australia.

**Taxonomic position**

*Laetesia*, *Dunedinia*, *Laperousea* Dalmas and *Chthiononetes* form a group of closely related genera which lies in the subfamily Linyphiinae s.str. (Millidge, 1984). *Chthiononetes* differs from the other 3 genera mainly in the characters of the male and female genitalia.



*Chthiononetes tenuis* sp. nov.

Figures 9-16

**Holotype**

Male from Cave C.106, Cape Range, Western Australia, 19 July 1987 (W.F. Humphreys); deposited in Western Australian Museum, Perth (WAM 92/179).

**Paratypes**

Cape Range. 1 ♀, Cave C.106, 24 September 1988 (W.F. Humphreys *et al.*) (WAM 92/180); 4 ♀, 1 ♂, 2 immature, Cave C.106, 21 June, 1989 (M. Harvey) (WAM 92/185-189); 1 ♀, 1 ♂, Cave C.324, 27 August, 1989 (M. East) (WAM 92/193-194); 1 ♀, 1 immature, Cave C.106, 24 September 1988 (J.M. Waldock) (WAM 92/185/83); 4 ♀, 2 ♂, Cave C.18, 26 June 1989 (B. Vine, M. Harvey, D. Brooks) (WAM 92/157-163); 1 ♂, Cave C.162, 21 June 1989 (W.F. Humphreys) (WAM 92/192); 6 ♀, 2 ♂, 3 immature, Cave C.106, 21 September 1983 (J.C. Lowry), "abundant, especially with flood debris" (WAM 92/164-178); 1 ♂, Cave C.106, 11 August 1988 (B. Vine, D. Brooks) (WAM 92/181); 2 ♀, Cave C.18, 13 August 1988 (W.F. Humphreys *et al.*) (WAM 92/155-156).

**Etymology**

A Latin adjective meaning "slender".

**Diagnosis**

The female is diagnosed by the epigynum (Figure 15), and particularly by the internal structure (Figure 16). The male is diagnosed by the bowed chelicerae (Figure 14) and by the palp (Figures 9-12), and particularly by the shape of the median apophysis of the embolic division. The cave habitat is also a diagnostic character.

**Description**

*Female*

Total length 2.45-2.8. Carapace, length 1.0-1.1, orange-brown to pale yellow, faintly suffused with grey on margins; a few short bristles in ocular area. Abdomen grey to grey-yellow or grey-brown. Sternum pale orange, suffused with grey on margins. Legs pale yellow to orange-brown, femora slightly darker. Leg lengths: leg I: fem. 1.29, pat. 0.29, tib. 1.27, metat. 1.22, tars. 0.67; leg IV: fem. 1.44, pat. 0.33, tib. 1.33, metat. 1.33, tars. 0.67. Metatarsi without trichobothria. Epigynum (Figures 15,16).

*Male*

Total length 2.4-2.8. Carapace length 1.05-1.35. Colour as female. Carapace with numerous strong bristles in and around ocular area (Figure 13). Chelicerae bowed (Figure 14). Leg lengths: leg I: fem. 1.11, pat. 0.27, tib. 1.11, metat. 0.98, tars. 0.67; leg IV: fem. 1.18, pat. 0.29, tib. 1.11, metat. 1.11, tars. 0.67. Metatarsi without trichobothria. Palp (Figures 9-12).

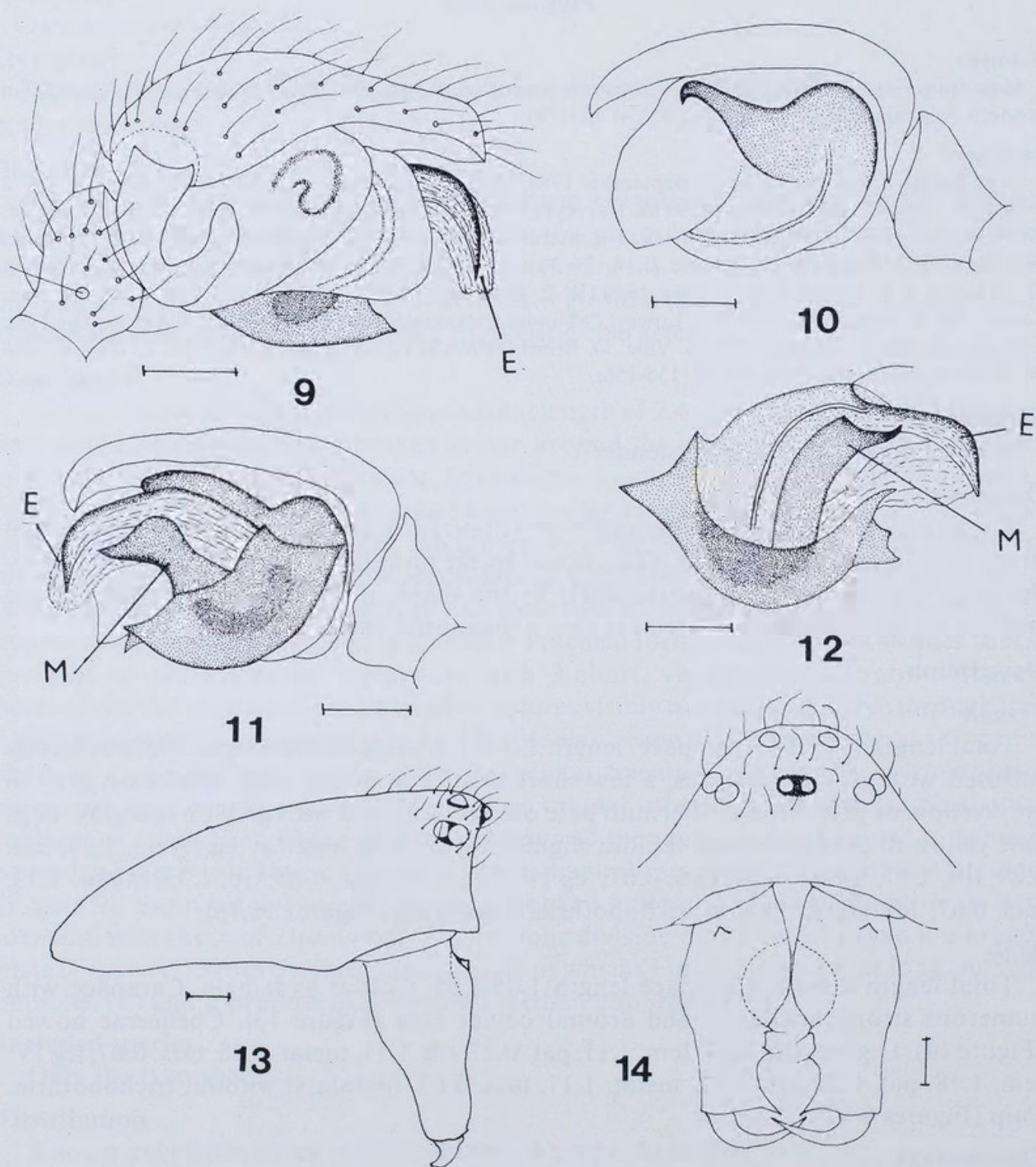
**Distribution**

Known only from caves in Cape Range, Western Australia.

**Acknowledgement**

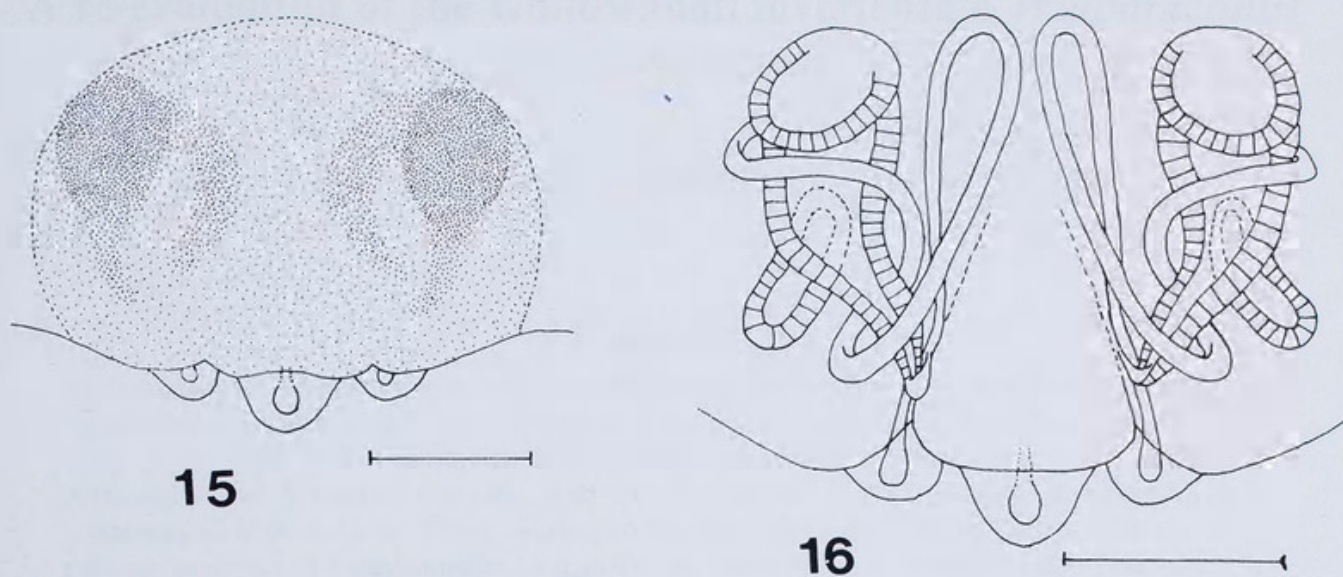
I am indebted to Mark Harvey for giving me the opportunity to study the Cape Range linyphiids.





**Figures 9-14** *Chthiononetes tenuis*, sp. nov., ♂. 9, palp, ectal. 10, palp, mesal, embolic division removed. 11, palp, mesal. 12, embolic division, inner (lateral) side. 13, carapace, lateral. 14, chelicerae, anterior. E: embolus. M: median apophysis of embolic division.





**Figures 15-16** *Chthiononetes tenuis*, sp. nov., ♀. 15, epigynum, ventral. 16, epigynum, internal, dorsal.

#### References

- Millidge, A.F. (1984). The taxonomy of the Linyphiidae, based chiefly on the epigynal and tracheal characters. *Bull. Br. arachnol. Soc.* **6**: 229-267.
- Millidge, A.F. (1988). Linyphiidae, pp. 35-67 *In* The spiders of New Zealand, Pt. VI. *Otago Mus. Bull.* **6**: 1-124.
- Wunderlich, J. (1976). Spinnen aus Australien. 2. Linyphiidae (Arachnida: Araneida). *Senck. biol.* **57**: 125-142.





Millidge, A. F. 1993. "Three New Species of the Spider Family Linyphiidae from Australia (Araneae)." *Records of the Western Australian Museum* 16(2), 211–219.

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