

# Description and biogeographic implications of a new species of the *Chenistonia maculata* group from south-western Western Australia and rediagnosis of *Chenistonia* (Araneae: Mygalomorphae: Nemesiidae)

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**ABSTRACT** – The new species *Chenistonia boranup* is described from south-western Western Australia. This is the first record of the *C. maculata* species group from the western part of the continent. *Chenistonia* Hogg is rediagnosed and comments given on other species attributed here to the genus.

**KEYWORDS:** taxonomy, morphology, karri forest, Gondwanan relics

## INTRODUCTION

The nemesiid spider genus *Chenistonia* Hogg, 1901 was synonymised with *Aname* Koch, 1873 by Raven (1981) but regarded as a valid genus by Main (1982a, 1985a,b, 1986, 1994) and elsewhere in ecological papers (Curry et al., 1985; Main, 1982b, 1987a,b, 1991, 1993a,b, 1996a,b, 1997; Main et al., 2000). Raven (1984, 1985) continued to consider *Chenistonia* as synonymous with *Aname* until acknowledging it later as a valid genus for which he gave a revised diagnosis (Raven, 2000). In the meantime, he recognised a group of species, some of which he newly described (Raven 1984), as having affinity with *Aname maculata* (Hogg, 1901) (the type species of *Chenistonia*) as the *maculata* group within *Aname*. In reinstating *Chenistonia*, Raven (2000) included only those species formerly attributed to the *maculata* group (e.g., *A. caeruleomontana* Raven, 1984, *A. hickmani* Raven, 1984, *Chenistonia maculata*, *A. montana* Raven, 1984 and *Chenistonia trevallynia* Hickman, 1926) in the genus, and retained other species previously attributed to *Chenistonia* in *Aname*. Raven (2000) retained *A. tropica* in *Aname* but made no mention of *A. earthwatchorum* although he had previously (Raven 1984) figured maxillae with a broad distribution of cuspules suggesting an affinity with *Aname* rather than *Chenistonia*.

*Chenistonia* is herein rediagnosed and distinguished from *Aname*, some of those species formerly included in *Aname* by Raven (2000) but which fit the new definition of *Chenistonia* are formally transferred accordingly and a new species of the *maculata* group from south-western

Australia is described and its biogeographic status indicated. For comparison, figures of the male of the type species are presented. The taxonomic position of *Chenistonia trevallynia* is also discussed.

## MATERIAL AND METHODS

The material examined for this study is stored in 75% ethanol and lodged in the Museum of Natural History, London (BMNH) and the Western Australian Museum, Perth (WAM). A ZEISS citoval stereomicroscope was used during the study of the new species, and all measurements are in millimetres. The tibial index = 100 x dorsal proximal width of patella/length of tibia + patella (Petrunkevitch 1942).

The following abbreviations are used for the spination of the legs: v, ventral; d, dorsal; pv, prolatero-ventral; pd, prolatero-dorsal; rv, retrolatero-ventral; rd, retrolatero-dorsal.

## SYSTEMATICS

### Family Nemesiidae Simon, 1889

#### *Chenistonia* Hogg, 1901

*Chenistonia* Hogg, 1901: 261; Main, 1985a: 31; Raven, 2000: 572 (other catalogue citations not listed here).

*Proshermacha* Simon, 1908: 363; Main, 1982a: 84 (first synonymised with *Chenistonia*).

## TYPE SPECIES

*Chenistonia*: *Chenistonia maculata* Hogg, 1901, by original designation.

*Proshermacha*: *Proshermacha subarmata* Simon 1908, by subsequent designation (Rainbow 1912).

## DIAGNOSIS

*Chenistonia* differs from *Aname* primarily in the distribution of the maxillary cuspules which are generally in a narrow band less than a third the length of the ventral surface of the maxilla; an exception may be *Chenistonia earthwatchorum* (see Raven 1984 figures 23 and 26); and in the male by the elongate, ventrally depressed palpal tarsus (Figures 6, 10), the pear shaped bulb (Figures 6, 10) and usually the absence of a retro-ventral bare area on the palpal tibia (Figure 6, 10).

## DESCRIPTION

Small to large, dark brown to black spiders, males sometimes with fuscous hairs on carapace. Carapace with low caput and not markedly rounded margins; fovea straight (Figure 1). Sternum cordate, posterior sigilla marginal, usually small and round or oval (Figures 3, 11). Cuspules on maxillae forming a narrow band (Figure 3), covering less than a third length of ventral surface of maxilla. Maxillary serrula present or absent. Leg tarsi without spines, palp tarsus of females and immature spiders usually with a basal pair of spines. Tarsus of male palp elongate, ventrally depressed and with bulb attached distally (Figures 5, 6, 7, 10); when at rest the bulb fits into this depression. Bulb elongate, usually pear shaped (attached by broad end) and with embolus arising terminally (Figures 5, 6, 7, 9, 10). Embolus short or long (in which case aligned with axis of bulb and not reflexed). Palpal tibia of male without a bare or depressed retro-ventral area but in those species which have a long embolus there may be a narrow, longitudinal bare line dividing the hairs or bristles and which accommodates the embolus when not extended. Tibia I in male with a spur bearing a heavy spine, often with an additional spine at base of spur (as in Figure 12).

## REMARKS

Raven (2000) recognised *Chenistonia* as distinct from *Aname* with which he had previously regarded it as synonymous (Raven, 1981, p. 328; Raven 1985, p.87), although Main (1964, 1985 and elsewhere) had considered it as a valid genus. Raven's principal defining characters of *Chenistonia* were: in the male the elongate, ventrally excavate slender palpal tarsus; a distally attached pear shaped bulb with a short embolus (and thus not reflexed); and the first metatarsus with only a small (if present) basal process opposite the tibial spur. Further he noted in both sexes the small marginal sternal sigilla.

The genus is here rediagnosed taking into account several characters not mentioned by Raven (2000) in

his diagnosis: most notably that it is into the ventral depression on the male palpal tarsus that the bulb fits when resting; the absence of a bare, often depressed, ventral patch on the male palp tibia (characteristic of most *Aname* species and into which the bulb fits when resting); and a narrow band of cuspules on the maxilla. I also recognise that many species of *Chenistonia*, albeit as yet undescribed, but which agree with the features noted above have a long embolus. Associated with this feature there is often an elongate, narrow bare strip on the retro/ventral aspect of the palpal tibia (where the embolus aligns when at rest).

The genus shares with the Teylini sensu Main, (1985b, 2004), the narrow band of maxillary cuspules but the Teylini genera have a relatively broader sternum and carapace, the latter with rounded sides, features not generally noted. The male of *Chenistonia* is distinguished by the pear shaped bulb with the embolus arising terminally (not equatorially as is usual in *Teyl*) and further (except for *Teyloides*) in the presence of a tibial spur on the first leg of the male.

*Additional taxonomic comments*

A *maculata* group of species is here recognised in which males have a short embolus as in the type species of the genus (see Figures 9, 10). This group thus includes those species included by Raven (2000) (according to his understanding of the genus) in *Chenistonia* except for *C. trevallynia* the generic position of which Raven questioned. The status of *C. trevallynia* will be discussed elsewhere (Main, unpublished data) along with that of certain other species transferred from *Chenistonia* to *Aname* by Raven (2000). Descriptions of several additional new species from south-western Western Australia will likewise be given elsewhere (Main, unpublished data).

SPECIES HERE ATTRIBUTED TO *CHENISTONIA**Species with short embolus*

*Chenistonia maculata* Hogg, 1901, from Victoria

*Chenistonia caeruleomontana* (Raven, 1984), from New South Wales

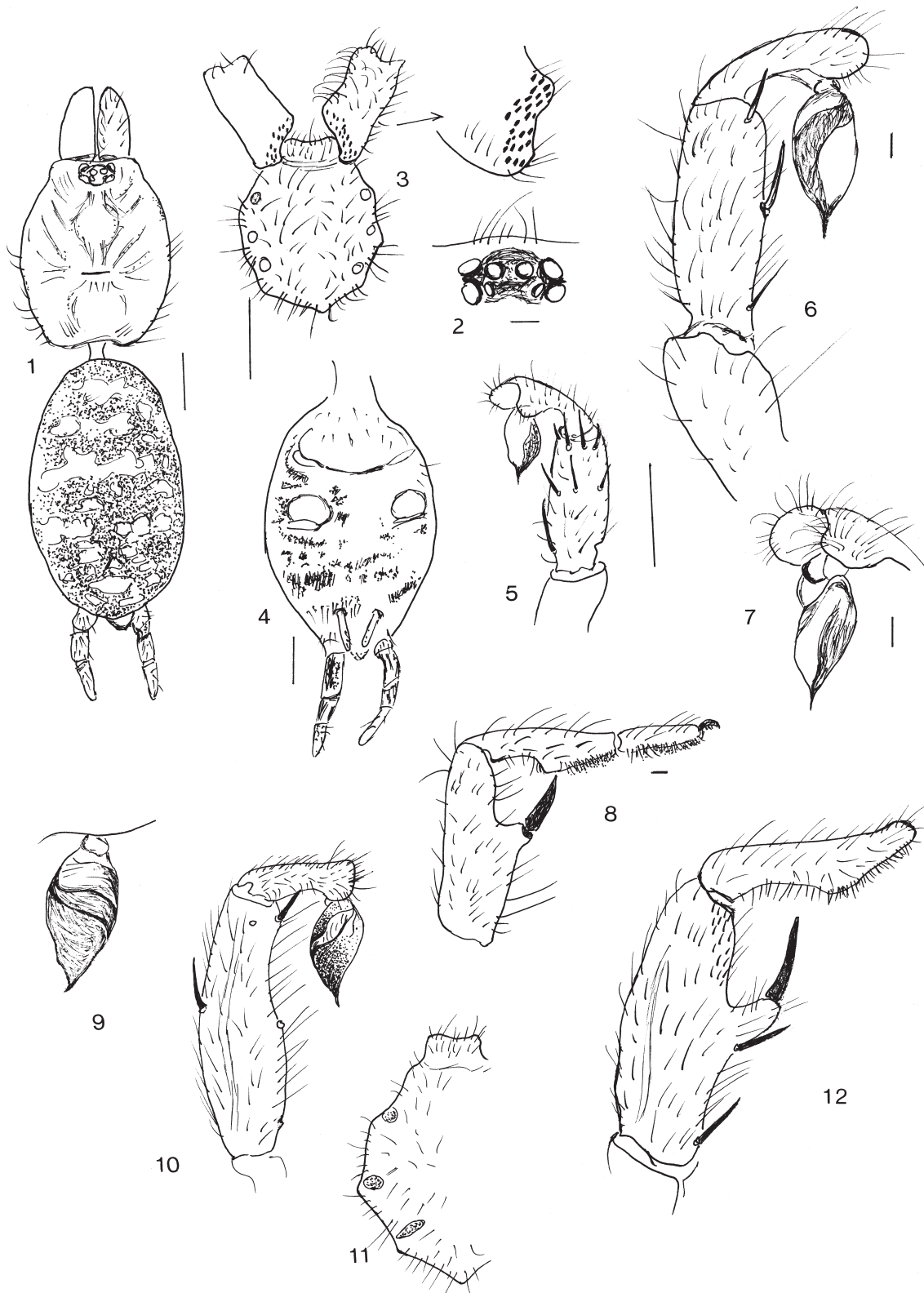
*Chenistonia hickmani* (Raven, 1984), from New South Wales

*Chenistonia montana* (Raven, 1984), from New South Wales

?*Chenistonia earthwatchorum* (Raven, 1984), from Northern Queensland

*Chenistonia boranup* sp. nov., from Western Australia.

*Chenistonia trevallynia* was retained by Raven (2000) in *Chenistonia*, but Raven (2000) also noted the anomalous short male palpal tarsus. The species is probably misplaced here. An undescribed 'sister' species occurs in south-western Western Australia, based upon a specimen in WAM (Main, unpublished data).



**FIGURES 1–12** 1–8, *Chenistonia boranup* sp. nov., holotype male (WAM 92/97): 1, carapace and abdomen, dorsal; 2, eyes; 3, labium, sternum, maxillae and enlarged coxal area; 4, abdomen, ventral; 5, 6, 7 right pedipalp, 5, prolateral view, tarsus and bulb and tibia; 6, retrolateral view tarsus and bulb and tibia; 7, prolateral view tarsus tip and bulb; 8, right leg 1, retrolateral view. 9–12, *Chenistonia maculata* Hogg, syntype male (BMNH): 9, bulb of right pedipalp, prolateral; 10, right pedipalp, retrolateral; 11, sternum and labium; 12, right leg 1, retrolateral view of tibia and metatarsus. Scale for Figures 1–8 = 1.0 mm (approximate), and Figures 9–12 not to scale.

*Species with long embolus*

*Chenistonina cuspidata* Main, 1954, from the Recherche Archipelago, Western Australia. Males of this species are known from south coastal mainland east of Esperance, but have not yet been formally described. There are also several other undescribed species in south-west Western Australia (Main, unpublished data). Although many males with a long embolus have been attributed to *C. tepperi* Hogg, 1902, by Main (1964 and elsewhere), this is possibly an error and the status of *C. tepperi* is currently under review (Main, unpublished data).

***Chenistonina boranup* sp. nov.**

urn:lsid:zoobank.org:act:6432F0B9-9C58-49AD-9C35-18D3683006F9

Figures 1–8, 13–19

## MATERIAL EXAMINED

*Holotype*

**Australia: Western Australia:** ♂, Boranup National Park, in karri (*Eucalyptus diversicolor* F. Mueller) forest, 21 August 1990, P.R. Davis and M. Widmar (WAM 92/97).

## DIAGNOSIS

The male differs from those of other species of the *Chenistonina maculata* group as follows: from *C. hickmani* by the absence of tarsal spines; from *C. caeruleomontana* by the needle-pointed embolus (flattened in *caeruleomontana*) (see Raven 1984, key and figure 37); and from all other species named by Raven (1984) by the absence of spines on tibia I of males apart from the median spur (Figure 8); from *C. maculata* by the slightly elongate, straight and needlelike embolus whereas in *C. maculata* the embolus tip is slightly curved, and tibia I in *C. maculata* has a group of very short fine bristles retrolaterally between the spur and the distal end [see Figure 12 and faintly indicated in Raven (1981, Figure 11)], and the sternal posterior sigilla are more pronouncedly ovoid in *C. maculata*; also *C. maculata* is larger, with a carapace length of 5.5 mm (male syntype).

## DESCRIPTION

**Colour:** generally dark brown, abdomen dorsally with pale mottled pattern on dark brown background, ventrally pale with few dark brown blotches.

**Carapace:** length/width 3.6/2.9 mm, caput width 1.5. Fovea short, straight. Eye group length/width 0.4/0.8. Carapace lateral margins with few long, posterior bristles and lateral group of bristles in mid-region, sparse hairs on posterior region. Maxillary cuspules in a narrow band.

**Sternum:** length/width 1.8/1.7, sigilla spherical, labium 0.3 long.

**Chelicerae:** without rastellum; ventral groove (right

side) promargin with 7 retrolateral teeth, at least 10 small granules between proximal second and third teeth; left side with 8 retrolateral teeth and 15 small granules.

**Abdomen:** dorsally with sparse fine bristles. Spinnerets: posterior median pair 0.5 mm long; posterior lateral pair with basal segment 0.8 long, median 0.5, terminal segment 0.8 mm.

**Legs:** moderately hirsute. Spination: all tarsi without spines. Leg I (Figure 8), femur pd 1 apical, d 4 in median line. Leg II, metatarsus v 2–2–2, pd 1 median, tibia v 1–1–2, pv 1 apical, pd 2, patella pd 1 apical, femur pd 1 apical, d median line 2 + 2 bristles. Leg III, metatarsus v 2–2–2, rv 1 apical, d 2–2–2, tibia v 2–2–2, pv 1 apical, rv 1 apical, d 1–1, pd 2, rd 2, patella pd 2, rd 2, femur d 3 (median), pd 3, rd 2. Leg IV, metatarsus v 2–1–2–2, d 2–1–2, pd 3, rv 1 apical, rd 2, tibia v 2–2–2, d 1–1 (median), pd 3, rd 2, p 3, pv 1 (apical), rv 1 apical. patella rd 1 (+ 2 rd bristles). Scopula complete on tarsi I and II (but divided by line of bristles), sparse and only prolateroventral on III and IV; on metatarsi, only on distal half of I and II. Tarsal claws: uniform double combs of about 10 teeth on paired claws; median claw of legs III and IV long, without teeth. Trichobothria: not abundant on tarsi. Sensory ventral hairs with right angled alignment on metatarsi II, III and IV and tibiae I–IV.

Tibia I with large spur in mid-ventral region; upper angle of spur 0.9 mm from distal end of tibia, 1.2 mm from proximal end of tibia to base of spine, spine 0.8 mm long, upper base of spine 0.1 mm from upper junction of spur (Figure 8) Metatarsus I ventrally incrassate opposite tibial spur (Figure 8).

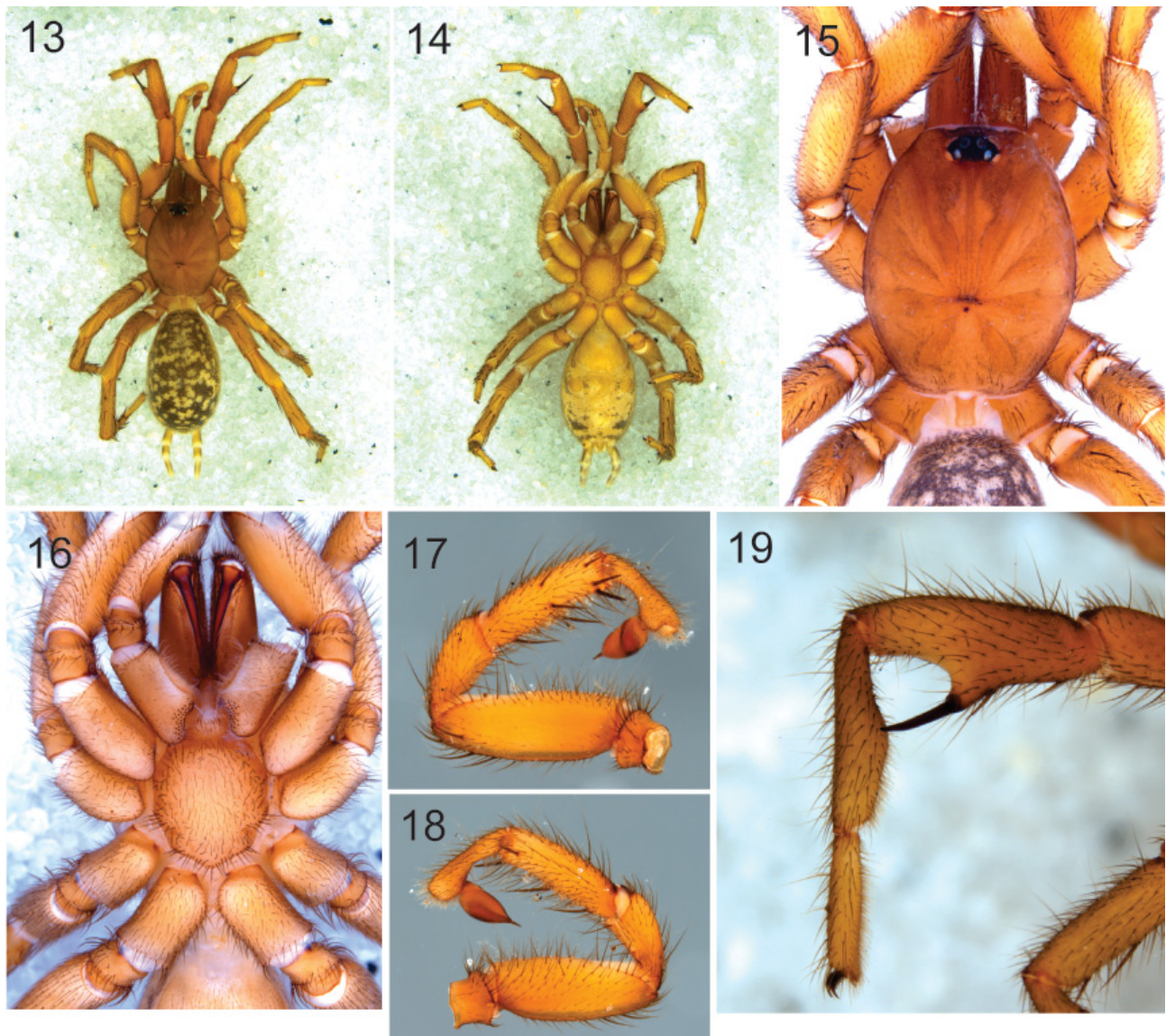
**Palp:** tarsus (Figures 5, 6, 7) with deep ventral excavation which accommodates the bulb when not extended; tarsus without spines. Bulb pear shaped (0.75 mm long) with small, pointed process (embolus) 0.15 mm in same axis as the elongate bulb; basal segment 0.1 mm. Tibia spination (see Figures 5, 6) v 1–2–2, pd 1–1, rv 1 apical.

**Measurements:** palp: femur 2.0, patella 1.2, tibia 1.4, tarsus 1.0, total 5.6. Leg I, femur 2.7, patella 1.3, tibia 2.1, metatarsus 2.0, tarsus 1.3, total 9.4. Leg II, femur 2.4, patella 1.5, tibia 1.6, metatarsus 1.7, tarsus 1.2, total 8.4. Leg III, femur 2.2, patella 1.4, tibia 1.3, metatarsus 1.6, tarsus 1.2, total 7.7. Leg IV, femur 2.8, patella 1.6, tibia 2.2, metatarsus 3.0, tarsus 1.4, total 11.0. Width patella IV at knee, 0.5, tibial index =13.1.

## NATURAL HISTORY

Collectors of the type specimen of *C. boranup* noted that it was collected in karri (*Eucalyptus diversicolor* F. Mueller) forest. While I acknowledge here that many of the small female and immature specimens collected in the karri forest, particularly specimens from silk tubes in logs and litter are possibly of this new species, until similar specimens are collected contiguously or at least in propinquity with males it is currently expedient not to attribute such specimens to the new species. Raven (1984) noted that the *maculata* group of species have been found only 'in perennially cool buffered forests'.





FIGURES 13–18 *Chenistonia boranup* sp. nov., holotype male (WAM 92/97): 13, dorsal view; 14, ventral view; 15, dorsal view of carapace; 16, ventral view of sternal area, note maxillae and cuspules; 17, left palp prolateral; 18, left palp retrolateral; 19, left leg I retrolateral tibia, metatarsus and tarsus.

#### Distribution

All previously named species have come from Victoria (*C. maculata*), and New South Wales and Queensland. The new species *C. boranup* is here regarded as relictual from a former southern Gondwanan distribution presumably fragmented due to periods of dryer climate and reduced forest habitat.

#### ACKNOWLEDGMENTS

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Natural History (now The Natural History Museum), London for access to the collections on my various visits, firstly in 1958 when I examined and prepared figures of the male syntype specimen of the generic type species *Chenistonia maculata*.

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