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A REVISION OF THE SPIDER GENUS *CHALCOLECTA* SIMON, 1884 (ARANEAE: SALTICIDAE)

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Abstract.— The genus *Chalcolecta* Simon is revised to include 3 species: *C. bitaeniata* Simon, 1884, *C. dimidiata* Simon, 1884 and *C. prensitans* (Thorell, 1881). Each species is diagnosed, described and illustrated, also identification key and distributional map are provided. *C. rapax* (Thorell, 1881) is synonymised with *C. prensitans* (Thorell, 1881). *C. amplectens* (Doleschall, 1859) and *C. zostifera* (Doleschall, 1859) are considered *nomina dubia*. The genus is closely related to *Diolenius* Thorell, 1870 and *Ohilimia* Strand, 1911 and its range is restricted to rain forests of Cape York Peninsula (NE Australia), New Guinea and The Moluccas (Halmahera).

Key words.— Araneae, Salticidae, *Chalcolecta*, taxonomy, New Guinea, The Moluccas, Australia.

Introduction

The genus *Chalcolecta* was erected by Simon (1884) for *C. dimidiata* and *C. bitaeniata*, the former being a type species. In 1892 Thorell included *Salticus amplectens* Doleschall, 1859 and *S. zostifer* Doleschall, 1859. In 1901 Simon added *Marptusa prensitans* Thorell, 1881 and *M. rapax* Thorell, 1881.

Before this project started, Prószyński (2003) listed 6 species in *Chalcolecta*. Platnick (2005) however, listed only 4 species, because the type specimens of both Doleschall's species have been lost. The aim of this work is to redefine the genus and provide complete data on its species, relationships and distribution.

Material and methods

The specimens were provided by the following institutions:

BNHM – Natural History Museum, London (Dr. P.D. Hillyard, Ms J. Margerison),
IZPAN – Muzeum i Instytut Zoologii Polskiej Akademii Nauk, Warszawa (Dr. J. Szwedo),
MCSNG – Museo Civico di Storia Naturale "Giacomo Doria", Genova (Dr. G. Doria),
QMB – Queensland Museum, Brisbane (Dr. R. Raven).

The drawings were made using grid system. Measurements of types and size ranges of studied specimens are in mm. Dissected epigynes and male palps (if necessary) were cleared in lactic acid.

Abbreviation used: AEW – anterior eyes width, ag – accessory gland, AL – abdomen length, ALE – anterior lateral eyes, AME – anterior median eyes, AW – abdomen width, CH – cephalothorax height, CL – cephalothorax length, co – copulatory openings, CW – cephalothorax width, e – embolus, EFL – eye field length, m – metatarsus, PEW – posterior eyes width, PLE – posterior lateral eyes, PME – posterior median eyes, s – spermatheca, sr – seminal reservoir, ta – tibial apophysis, t – tibia, w – wing-shaped lateral margins of epigyne.

Chalcolecta Simon, 1884

Chalcolecta Simon 1884: 230–231; Simon 1901: 478–481; Peckham and Peckham 1886: 265, 273; Thorell 1892: 473; Waterhouse 1902: 69; Petrunkevitch 1928: 186; Neave 1939: 663; Roewer 1954: 987; Bonnet 1956: 1033; Brignoli 1983: 626; Platnick 1989: 547, 1993: 730, 2005: <http://research.amnh.org/entomology/spiders/catalog/SALTICIDAE.html>; Prószyński 1990: 79–80, 2003: <http://www.miiz.waw.pl/salticid/ main.htm>.

Type species. *Chalcolecta dimidiata* Simon, 1884, by original designation.

Diagnosis. Posterior eyes on protuberances. First legs the longest and more robust than the others, held in mantis-like manner. Trochanters in males somewhat elongate, shorter than coxae. Tibiae longer than femora, not swollen, with 9–14 pairs of ventral spines. Metatarsi I slender, in females always with 3 pairs of long ventral spines, in males without ventral spines but with two oblong, sclerotized ridges. Clypeus very narrow. Chelicerae of fissident pattern, flat-fronted, with promarginal serrula in males. Conformation of genitalia as figured (Figs 1–3).

Description. Spiders from 5 to 8 mm long. Cephalothorax relatively low, with gentle posterior slope, not much longer than broad, wider than abdomen, dorsal surface without papillae or granulation. Fovea moderately short, sometimes indistinct. Eyes in three rows, anterior row wider than posterior one, eye field takes less than 50% of CL length. Clypeus very narrow (7–10% of AME diameter), with few fine, whitish hairs. Chelicerae of fissident pattern, flat-fronted, with sclerotized lateral margins, transverse furrows on anterior surface and with promarginal serrula in males (see arrows on Figs 23, 32). Maxillae parallel or divergent, otherwise not distinctive. Labium subtriangular, longer than broad. Sternum scutiform. Pedicel moderately long, visible in dorsal view. Abdomen slightly flattened, elongate ovoid or cylindrical, covered with thin brown hairs, pattern of oblong or transverse stripes or spots more or less distinctive. In males dorsal and ventral indistinct scuta present. Posterior spinnerets longer than medians and anteriors. Leg formula: I, IV, III, II. Trochanters I in males somewhat elongate, but shorter than coxae, tibiae I much longer than femora (26–29% of legs I), not swollen with two rows of ventral spines (9+9 plus). Metatarsi I slightly laterally flattened, in females armed with two rows of long ventral spines (3+3); in males ventral spines lacking, but two ventral sclerotized ridges present. Female pedipalps not distinctive, without apical claws. Cymbium of male palps unmodified, bulbus triangular in ventral view, embolus pointed, laterally set, partly hidden behind tegulum. Translucent part of seminal reservoir not meandering. Tibial apophysis rather slender, directed ventrally and slightly hooked towards the cymbium. Epigyne with sclerotized, wing-shaped lateral margins. Copulatory openings located anteriorly. Insemination ducts narrow or moderately narrow, with distal chambers more or less distinct, sclerotized and accompanied with accessory glands. Each insemination duct adjoining two-chambered spermathecae by narrow channel.

Distribution and affinities. The range of *Chalcolecta* (Fig. 60) is restricted to rain forests of Cape York Peninsula (NE Australia), New Guinea and The Moluccas (Halmahera). The entire area has common geological and climatic history. Current distribution of the genus seems to be a consequence of past land bridges and current floristic and climatic similarities.

Chalcolecta is closely related to *Diolenius* Thorell, 1870 and *Ohilimia* Strand, 1911. All three genera share the following synapomorphies: legs I longest and more robust than the others, trochanters I elongate, PME and PLE on marked tubercles, embolus partly hidden behind tegulum, tibial apophysis hooked towards cymbium, epigyne with strong sclerotized lateral margins, insemination ducts with terminal chambers accompanied with accessory glands and connected with spermathecae by narrow channels.

The relationships between genera of Dioleninae and distributional history will be presented in separate paper (Gardzińska in prep.), however a key to the related genera is given below.

Key to *Chalcolecta* and the related genera

1. Trochanters I longer than coxae I. Tibiae I usually shorter than femora I and ventrally fringed with flattened setae (excl. *D. angustipes* and *D. albopiceus*). Metatarsi I in both sexes with ventral spines. Dorsal surface of cephalothorax granulated or papillate. Fovea missing. **2**
–. Trochanters I shorter than coxa I. Tibiae I always longer than femora, without ventral fringe. Metatarsi I in males with no ventral spines. Dorsal surface of cephalothorax smooth, without granulation or papillae. Fovea present . . . . . ***Chalcolecta*** Simon, 1884
2. Bulbus triangular. Tibial apophysis of palpal organ with basal flange. Metatarsi I with 5–7 pairs of ventral spines . . . . . ***Diolenius*** Thorell, 1870
–. Bulbus nearly oval, with ventral convexity. Tibial apophysis without basal flange. Metatarsi I with 3 pairs of ventral spines . . . . . ***Ohilimia*** Strand, 1911

Key to the species of *Chalcolecta*

1. Males **2**
–. Females **3**
2. Abdomen elongate ovoid, with broad, transverse light area and whitish tip. Palpal tibia, measured with no apophysis, elongate (about 80% of cymbium). Translucent part of seminal reservoir straight . . . . . ***Chalcolecta dimidiata*** Simon (Figs 12–19)
–. Abdomen cylindrical, colour pattern different (Figs 20, 29, 36). Palpal tibia relatively shorter (about 60% of cymbium). Translucent part of seminal reservoir bent . . . . . ***Chalcolecta prensitans*** (Thorell) (Figs 1–2, 20–42, 51–56)
3. Abdomen with light and dark longitudinal stripes and a transverse posterior dark stripe. Insemination ducts subparallel to each other, distally more sclerotised with distinct distal chambers. Proximal spermathecal chambers close together . . . . . ***Chalcolecta bitaeniata*** Simon (Figs 4–11)

–. Abdominal pattern different (Fig. 43). Insemination ducts not parallel, distal chambers indistinct. Proximal spermathecal chambers well separated . . . . . ***Chalcolecta prensitans*** (Thorell) (Figs 43–50, 57– 59)

List of the species of *Chalcolecta*

1. *C. bitaeniata* Simon, 1884
2. *C. dimidiata* Simon, 1884
3. *C. prensitans* (Thorell, 1881)

C. rapax (Thorell, 1881) = *C. prensitans* (Thorell, 1881) **syn. nov.**
C. amplectens (Doleschall, 1859) *nomen dubium*
C. zostifera (Doleschall, 1859) *nomen dubium*

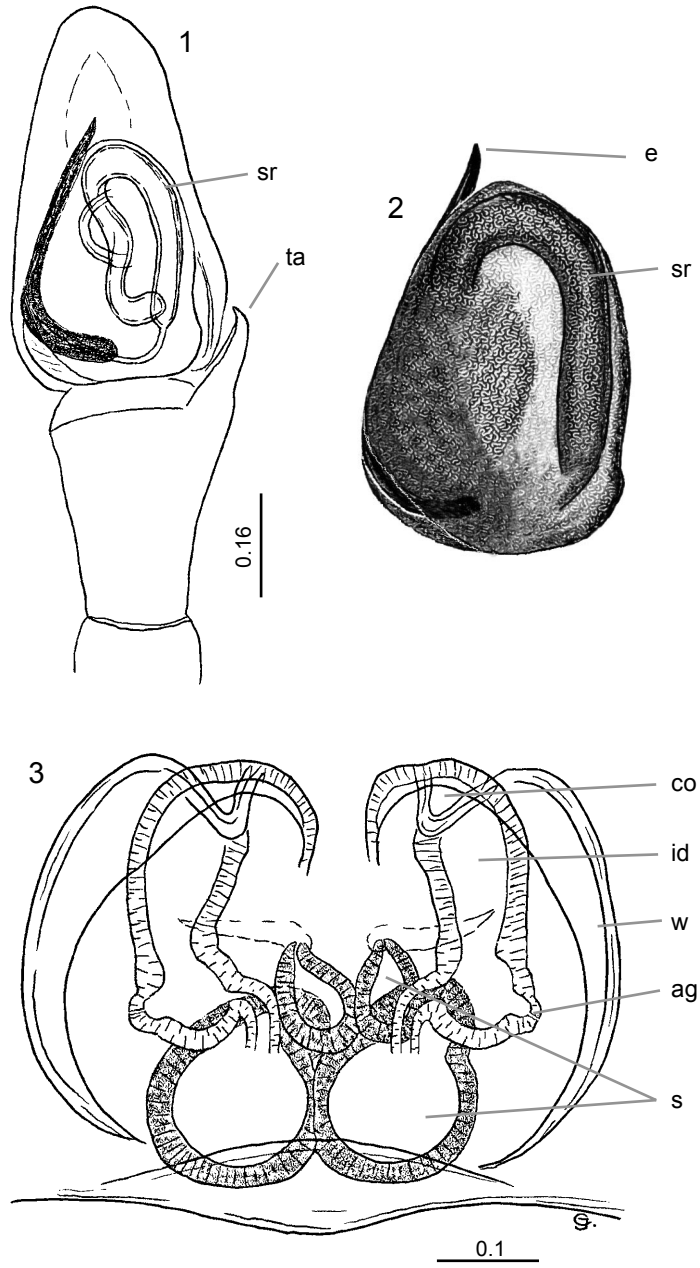
Chalcolecta bitaeniata Simon, 1884
(Figs 3, 4–11)

Chalcolecta bitaeniata Simon 1884: 231; Simon 1901: 479; Peckham and Peckham 1886: 273; Pocock 1897: 627; Merian 1911: 306; Roewer 1954: 987; Bonnet 1956: 1033; Prószyński 1987: 10, 1990: 79, 2003: <http://www.miiz.waw.pl/salticid/main.htm>; Platnick 1989: 547, 2005: <http://research.amnh.org/ entomology/spiders/catalog/SALTICIDAE.html>.

Material. The Moluccas: Halmahera: Edkor: 1F (MNHN 6842, lectotype), 2F, 1 juv. (MNHN 6842, paralectotypes), coll. E. Simon; Todahe: 1F (BMNH 1897.11.1.139), leg. W. Kükenthal.

Diagnosis. Spiders 7.10–7.80 mm long. Abdomen with longitudinal light and dark stripes and a transverse posterior dark stripe. Insemination ducts subparallel to each other, with distinct distal chambers. Proximal spermathecal chambers large, rounded and close together, distal ones much smaller.

Description. Female lectotype (Figs 3, 4–11). Cephalothorax pale brown. Ocular area black, except of brown AME. Clypeus very narrow (7% of AME diameter), pale brown, chelicerae and maxillae of similar colour, labium yellow tipped. Sternum yellow. Abdomen yellowish, with scattered short brown hairs and colour pattern as in Figs 4–5. Venter whitish, with longitudinal darker stripe. Posterior spinnerets dark grey, anteriors and medians paler. Epigyne (Figs 3, 10–11). Insemination ducts with distinct distal chambers accompanied with accessory glands and with narrow channel connecting them with rounded proximal spermathecal chambers. Pedipalps yellowish. Legs I orange, with brownish metatarsi and yellow tarsi. Other legs yellow, with brownish markings.



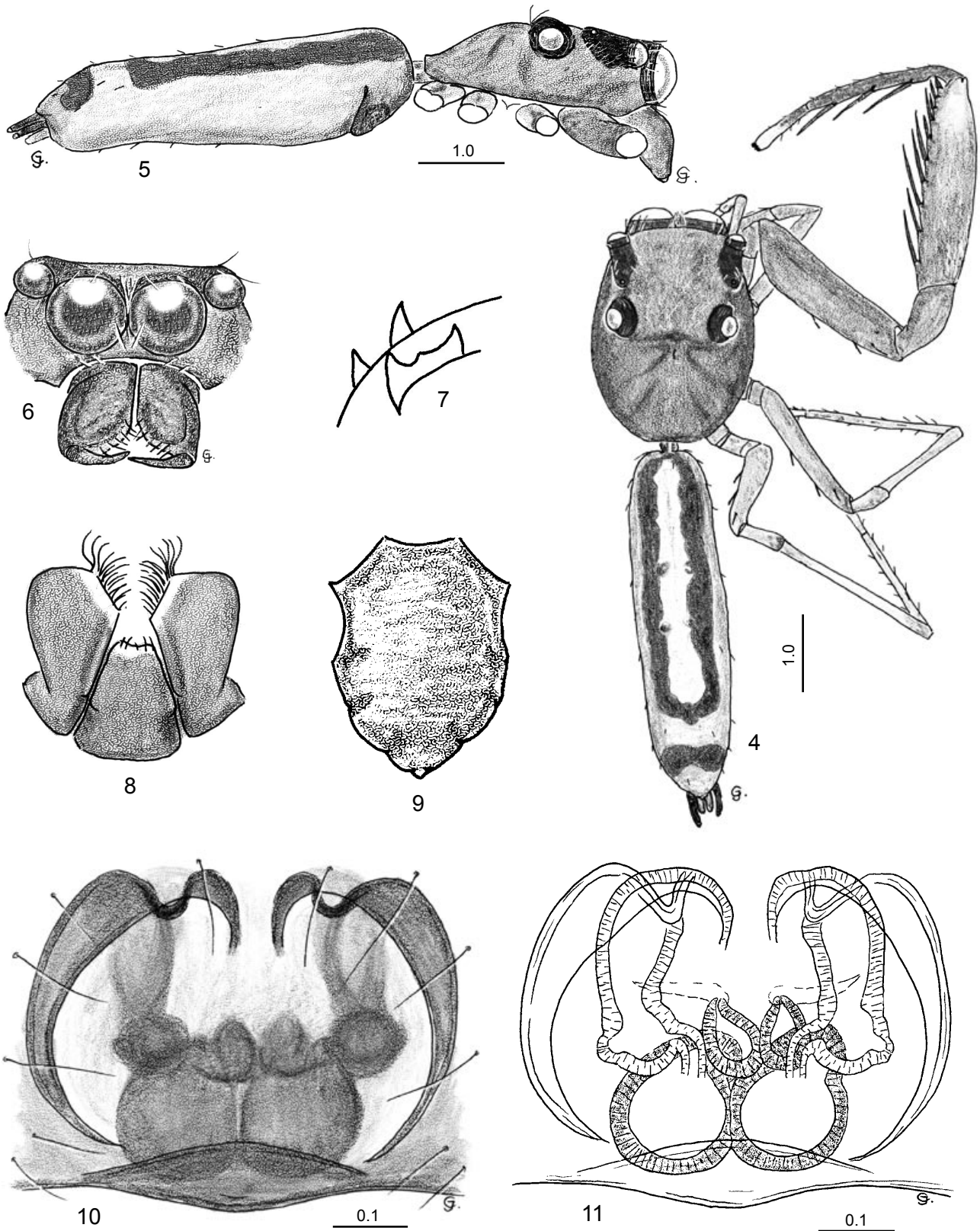
Figures 1–3. Characters of copulatory organs of the *Chalcolecta*: (1) internal structures of palpal organ (*C. prensitans*); (2) bulbus; (3) internal structures of epigyne (*C. bitaeniata*).

Tibiae I elongate (longer than femora I), equipped with two rows of numerous ventral spines. Metatarsi I with long ventral spines. Leg I spination: t: 10–13+10–3, m: 3+3. Dimensions: CL 2.78; CW 2.05; CH 0.95; AEW 1.83; PEW 1.75; EFL 1.30; AL 4.35; AW 1.30; L1 13.20.

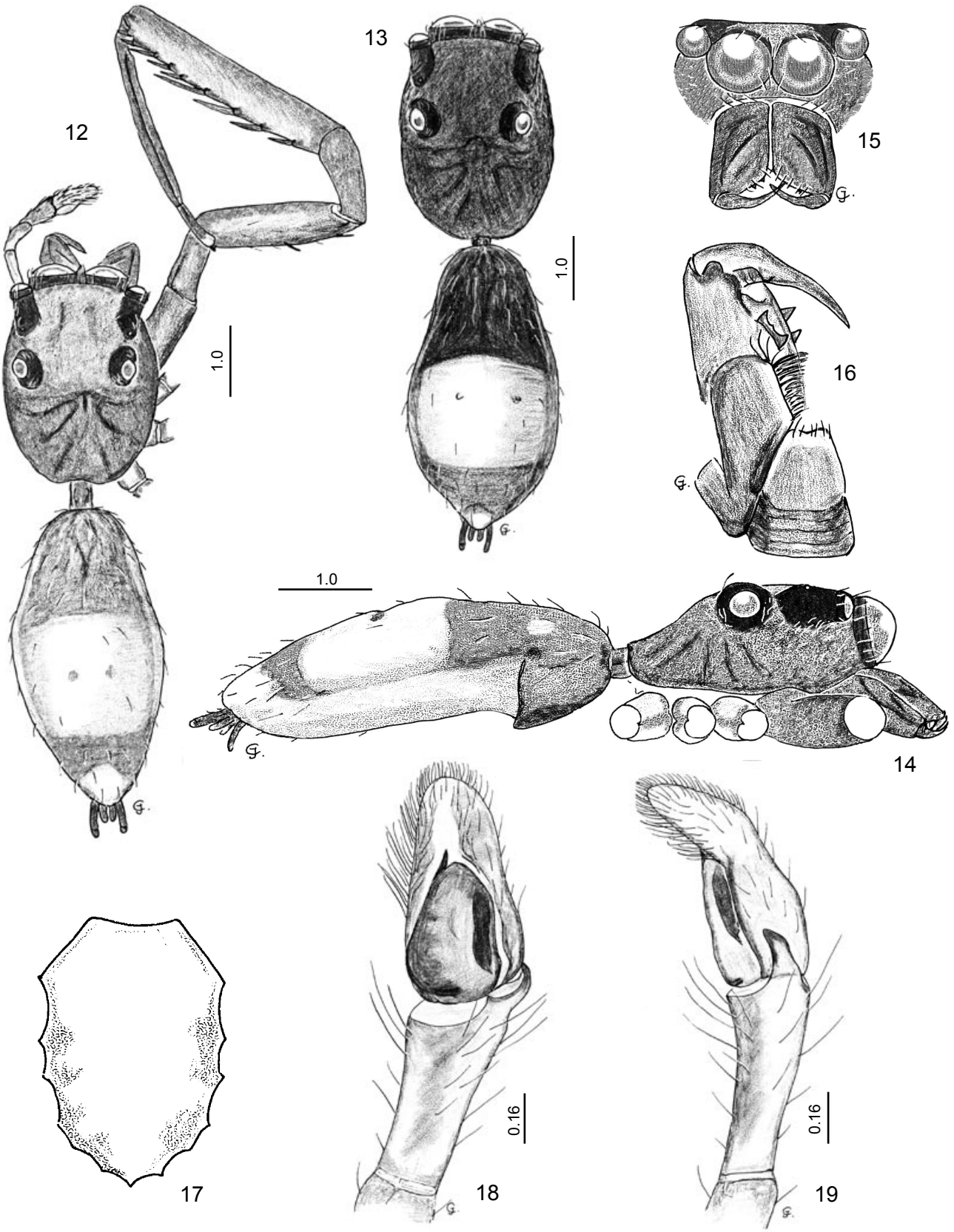
Size variation (n=4): CL 2.78–3.00; CW 2.05–2.25; CH 0.95–1.10; AEW 1.83–1.95; PEW 1.75–1.95; EFL 1.30–1,45; AL 4.30–4.85; AW 1.18–1.55; L1 11.60–13.20.

Male unknown.

Distribution. The Moluccas: Halmahera (Fig. 60).



Figures 4–11. *Chalcolecta bitaeniata* Simon, female lectotype from Halmahera (The Moluccas): (4) general appearance; (5) lateral view; (6) anterior view; (7) cheliceral teeth; (8) maxillae and labium; (9) sternum; (10) epigyne; (11) its internal structures.



Figures 12–19. *Chalcolecta dimidiata* Simon, male lectotype from Halmahera (The Moluccas): (12,13) general appearance (different specimens); (14) lateral view; (15) anterior view; (16) chelicera, maxilla and labium; (17) sternum; (18,19) palpal organ.

Remarks. The male specimen of *C. bitaeniata* described by Merian (1911) from Celebes has been lost and the species is still known from existing female specimens. It seems to be clesely realted to C. dimidiata occured in Halmahera as well. Despite similarities in distribution, we consider C. bitaeniata and C. dimidiata two species because of diffrens in colour pattern.

Chalcolecta dimidiata Simon, 1884
(Figs 12–19)

Chalcolecta dimidiata Simon 1884: 230; Simon 1901: 481; Petrunkevitch 1928: 186; Roewer 1954: 987; Bonnet 1956: 1033; Prószyński 1984: 15, 33; 1987: 10; 1990: 79–80; 2003: <http:www.miiz.waw.pl/salticid/main. htm>; Platnick 1989: 547, 2005: <http://research.amnh.org/ entomolgy/spiders/catalog/SALITICIDAE.html>.

Material. The Moluccas: Halmahera: Edkor: 1M (MNHN 6374, lectotype), 2M, 1 juv. (MNHN 6374, paralectotypes), coll. E. Simon.

Diagnosis. Spiders 6.40–7.85 mm long. Abdomen with broad, light transverse area and whitish tip. Translucent part of seminal reservoir straight. Palpal tibia elongate, about 80% of cymbium (measured without apophysis).

Description. Male lectotype (Figs 12–19). Cephalothorax brown. Ocular area black, with sparse whitish fine hairs. Clypeus very narrow (about 9% of AME diameter), pale brown. Chelicerae projected forwards, flat-fronted, with sclerotized lateral margins, transverse furrows on anterior surface and promarginal serrula. Chelicerae and labium light brown, maxillae paler. Sternum pale orange. Abdomen ovoid, somewhat flattened, grey, with dorsal and ventral scuta. Colour pattern as in diagnosis. Venter yellowish. Spinnerets dark grey. Pedipalps slender, pale brown (Figs 18–19). Bulbus triangular in ventral view. Embolus pointed, laterally set, partly hidden behind tegulum. Translucent part of seminal reservoir not meandering, straight. Tibial apophysis slender, slightly hooked towards cymbium. Legs I pale brown with dark metatarsi, other legs yellow-orange, with brownish markings. Tibiae I longer than femora I, with two rows of numerous ventral spines. Metatarsi I without ventral spines, but with sclerotized ventral ridges. Leg I spination: t: 9–12+12–14, m: no spines. Dimensions: CL 3.00; CW 2.30; CH 1.20; AEW 2.05; PEW 1.85; EFL 1.40; AL 4.58; AW 2.33; L1 16.60.

Size variation (n=3): CL 2.65–3.25; CW 1.95–2.45; CH 1.05–1.33; AEW 1.75–2.15; PEW 1.65–2.00; EFL 1.25–1.50; AL 3.75–4.60; AW 1.95–2.50; L1 13.43–16.60.

Female unknown.

Distribution. The Moluccas: Halmahera (Fig. 60).

Chalcolecta prensitans (Thorell, 1881)
(Figs 1–2, 20–59)

Marptusa prensitans Thorell 1881: 432.

Chalcolecta prensitans: Simon 1901: 479; Roewer 1954: 987; Bonnet 1956: 1033; Prószyński 1990: 79–80; 2003: <http://www.miiz.waw.pl/salticid/main.htm>; Platnick, 2005: <http://research.amnh.org/entomology/spiders/catalog/SALTICIDAE.html>.

Marptusa rapax Thorell 1881: 432.

Chalcolecta rapax: Simon 1901: 479, **syn. nov.**; Roewer 1954: 987; Bonnet 1956: 1033; Prószyński 1990: 80, 2003: <http://www.miiz.waw.pl/salticid/main.htm>; Platnick 2005: <http://research.amnh.org/entomology/spiders/catalog/SALTICIDAE.html>.

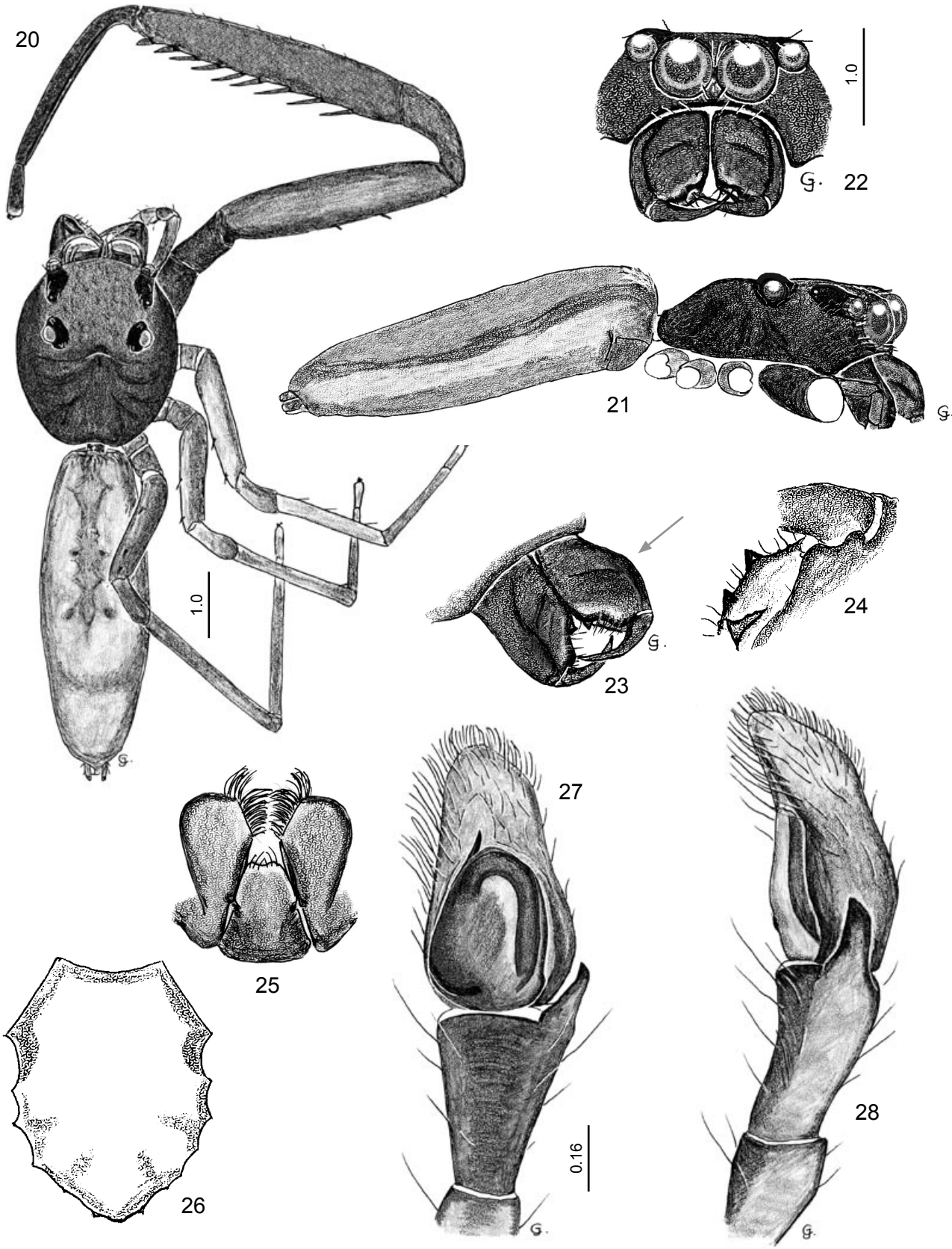
Material. New Guinea: Katau: 1M (MCSNG, holotype), 1872, leg. L. M. D'Albertis; Etna Bay: 1M (IZPAN, 04/5), W. Kulczyński; Fly River: 1F (MCSNG), *Chalcolecta rapax*, holotype), 1872, leg. L. M. D'Albertis. Australia: Cape York Peninsula: 2M, 1 juv. (QMB S69070), Iron Range CY, 1–9.06.1971, G.B. Monteith; 1M (QMB S69071), 12°43' S 143°18' E, 11 km NE of Mt Tozer, Iron Range Nat. Park, Qld, 11.07.1986, D.C.F. Rentz, pyrethrum fog; 1M, 1F (QMB S60671), Lockerbie Scrub CY N.Q., 14–18.04.1973, G.B. Monteith.

Diagnosis. Spiders 5.20–8 mm long. Abdominal pattern as in Figs 20, 29, 36, 43. In comparison to *C. dimidiata* translucent part of seminal reservoir bent. Unlike in *C. bitaeniata* insemination ducts very narrow, elongate, not parallel, with indistinct distal chambers; proximal spermathecae rounded and well separated, distal ones elongate.

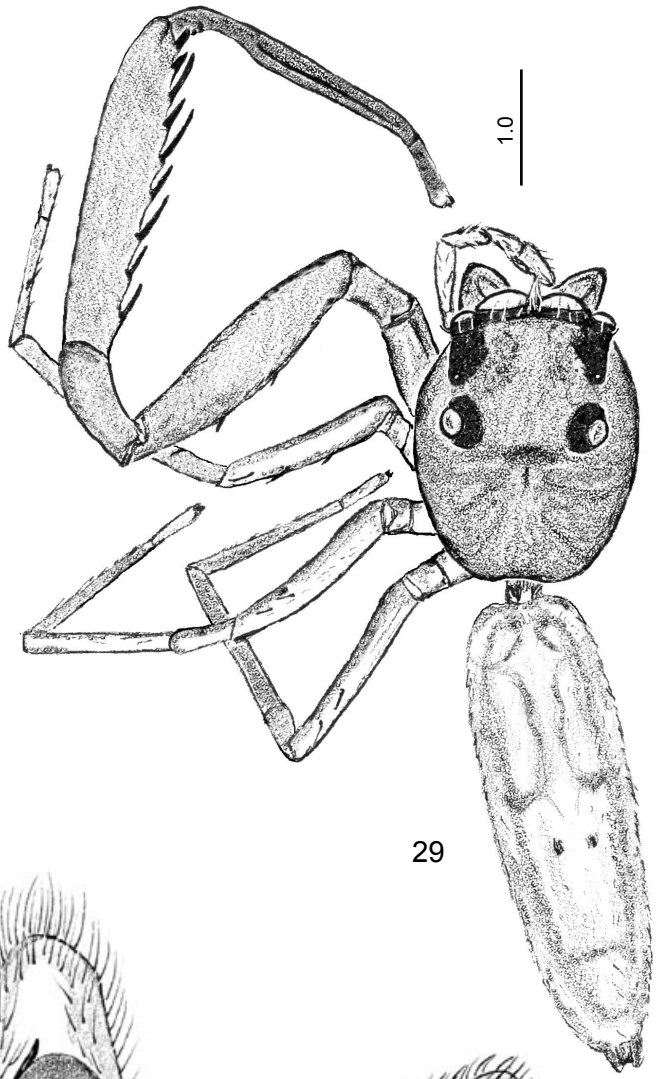
Description. Male holotype (Figs 20–28). Cephalothorax dark brown. Ocular area black. Clypeus brown, covered with sparse whitish hairs. Chelicerae projected forwards, flat-fronted, with sclerotized lateral margins, transverse furrows on anterior surface and promarginal serrula (as in Fig. 32). Maxillae and labium light brown; sternum orange with somewhat darker margins. Abdomen greyish-orange, sparsely covered with fine, brown hairs, with a pattern of indistinct transverse darker stripes on orange scutum. Venter paler, with yellow scutum and central greyish longitudinal stripe. Spinnerets dark grey. Pedipalps slender, pale brown (Figs 27–28). Bulbus triangular in ventral view. Embolus pointed, laterally set, partly hidden behind tegulum. Translucent part of seminal reservoir not meandering, bent in the anterior part of bulbus. Tibial apophysis slender and slightly hooked towards cymbium. Legs I brown with almost black metatarsi, others yellow-orange, with brownish markings. Tibiae I longer than femora I, with two rows of numerous ventral spines. Metatarsi I without ventral spines, but with sclerotized ventral edges. Leg I spination: t: 9 + 9, m: no spines. Dimensions: CL 2.95; CW 2.45; CH 1.05; AEW 1.73; PEW 1.68; EFL 1.20; AL 4.93; AW 1.68; L1 15.95.

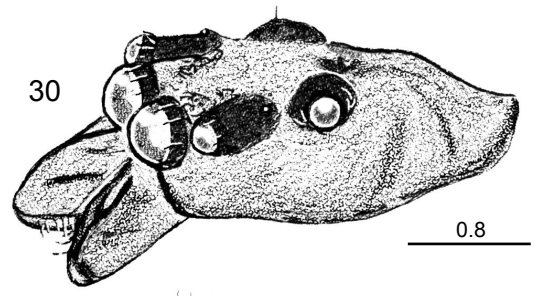
Size variation (n=5): CL 2.10–2.95; CW 1.70–2.50; CH 0.70–1.05; AEW 1.35–1.73; PEW 1.30–1.68; EFL 0.95–1.20; AL 3.10–4.93; AW 0.95–1.68; L1 10.35–15.95.

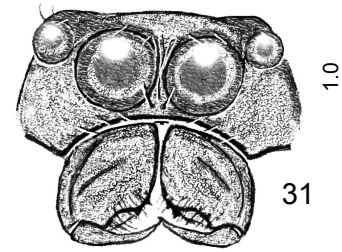
Female (Figs 43–50). Cephalothorax pale brown. Ocular area almost black, with sparse fine, whitish hairs. Clypeus pale brown. Chelicerae orange, flat-fronted, rather small. Maxillae and labium pale orange. Sternum

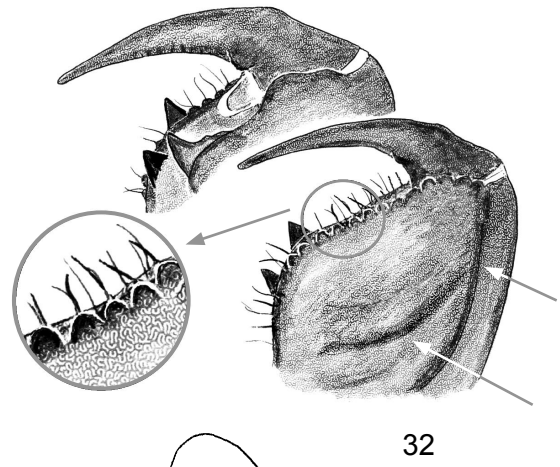


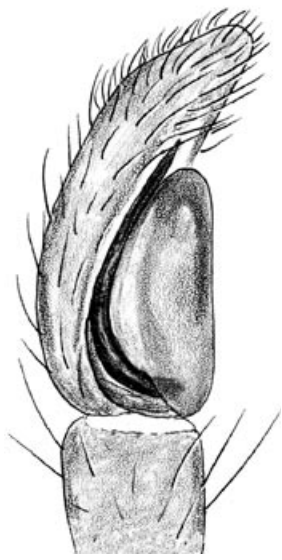
Figures 20–28. *Chalcolecta prensitans* (Thorell), male holotype from New Guinea (Katau): (20) general appearance; (21) lateral view; (22) anterior view; (23) chelicerae; (24) cheliceral teeth; (25) maxillae and labium; (26) sternum; (27, 28) palpal organ.

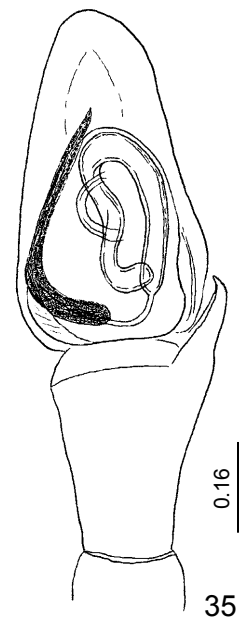




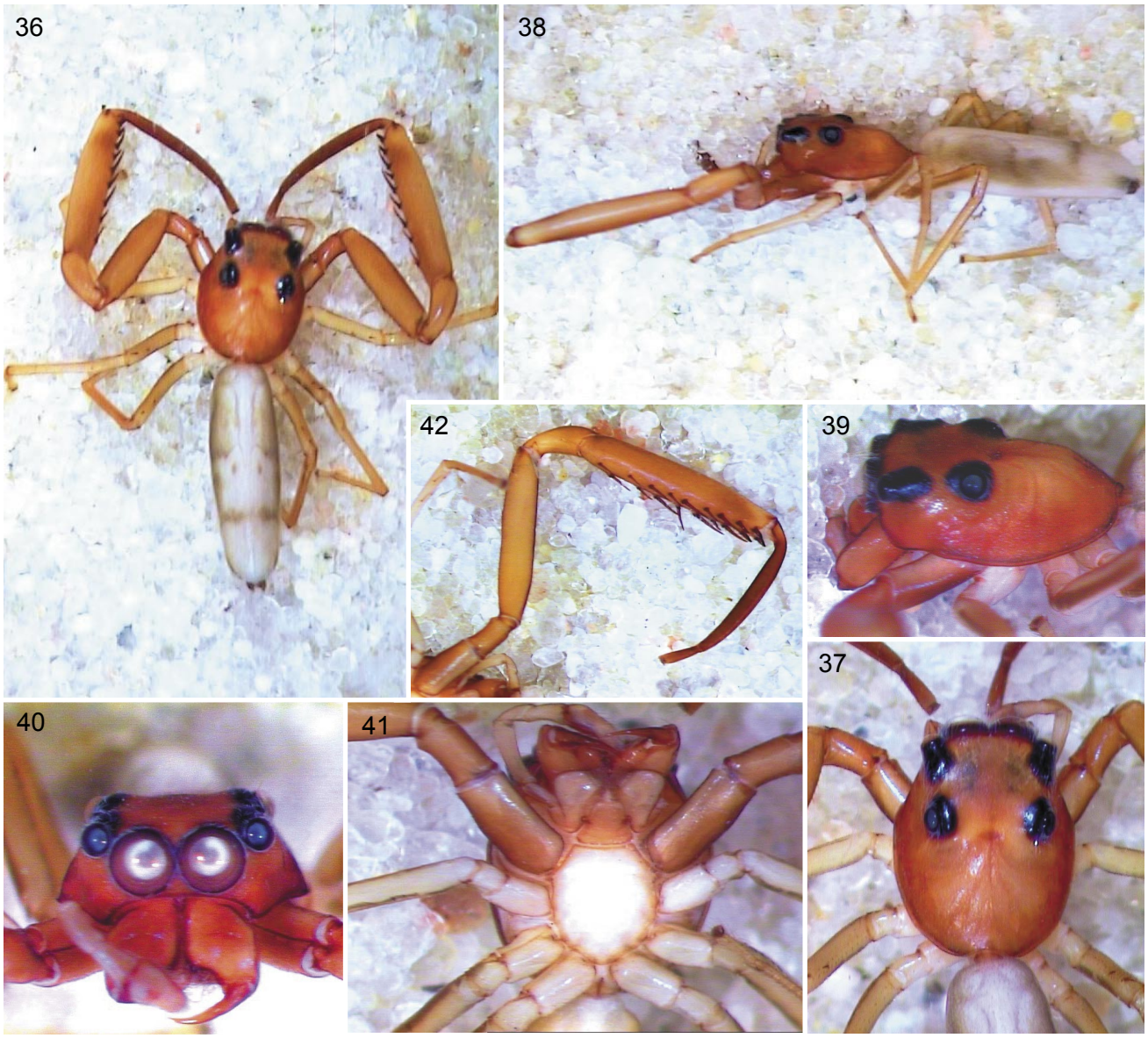








Figures 29–35. *Chalcolecta prensitans* (Thorell), male from Australia (Iron Range): (29) general appearance; (30) dorso-lateral view of cephalothorax; (31) anterior view; (32) chelicera and serrula; (33–35) palpal organ with its internal structures.



Figures 36–42. *Chalcolecta prensitans* (Thorell), male from Australia (Iron Range): (36, 37) dorsal view; (38) lateral view; (39) dorso-lateral view of cephalothorax; (40) anterior view; (41) ventral view of cephalothorax; (42) leg I.

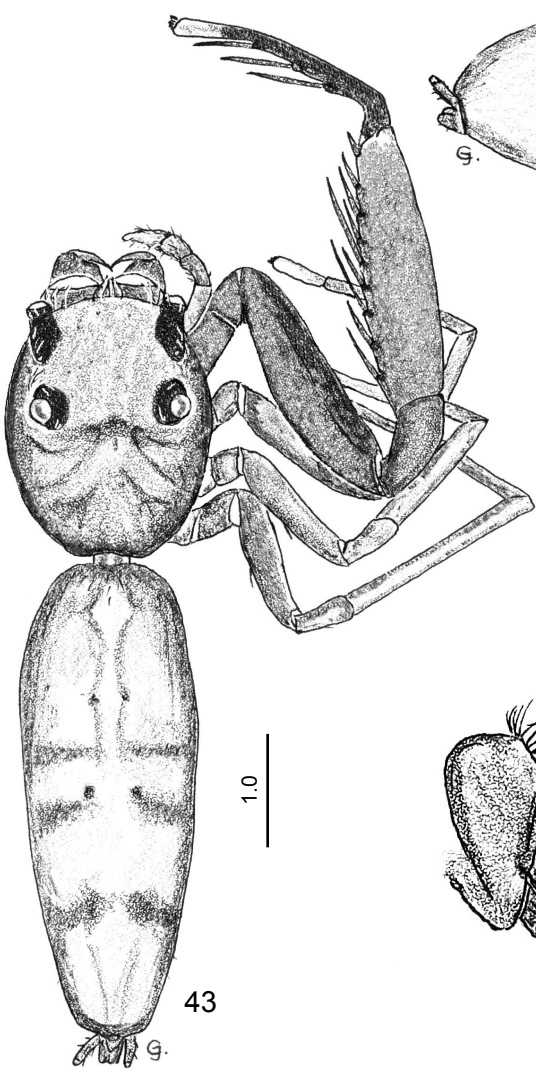
yellow. Abdomen elongate, yellowish, with indistinct colour pattern (Fig. 43). Venter whitish, with longitudinal darker central stripe. Spinnerets dark grey. Epigyne (Figs 49–50): insemination ducts elongate and narrow, with indistinct distal chambers accompanied with accessory glands. Proximal spermathecal chamber enlarged, well separated, distal ones close together and elongate. Pedipalps yellowish. Legs I pale brownish, with dark metatarsi and yellow tips of tarsi. Other legs orange, with brownish markings. Metatarsi I with long ventral spines. Leg I spination: t: 9+9, m: 3+3. Dimensions: CL 1.95; CW 1.50; CH 0.55; AEW 1.40; PEW 1.35; EFL 0.90; AL 4.25; AW 1.60; L1 9.38.

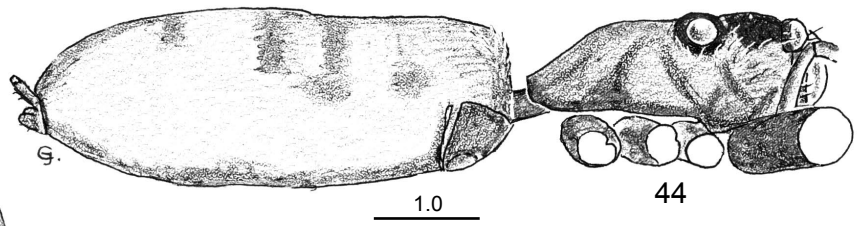
Size variation (n=2): CL 1.95–2.2; CW 1.45–1.50; CH 0.55–0.60; AEW 1.35–1.40; PEW 1.30–1.35; EFL 0.90–0.95; AL 3.10–4.25; AW 1.20–1.60; L1 7.30–9.38.

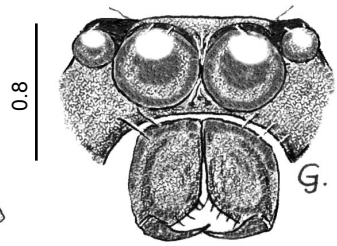
Colour variation. Cephalothorax from orange (Figs 29–31, 36–40, 43–45) with translucent guanine to dark brown (Figs 20–22). Abdomen from yellowish to orange-grey.

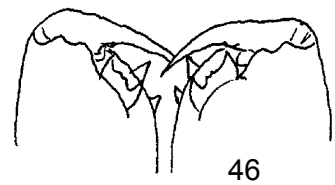
Distribution. New Guinea: Western Irian, Papua (Western Province); Australia: Cape York Peninsula (NE Queensland) (Fig. 60).

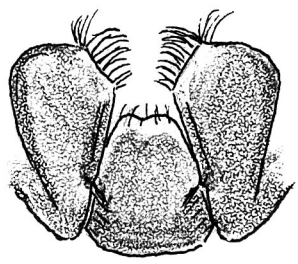
Remarks. *C. prensitans* (Thorell) and *C. rapax* (Thorell) were originally described from male and female, respectively. In this study they appeared to represent *C. prensitans*.

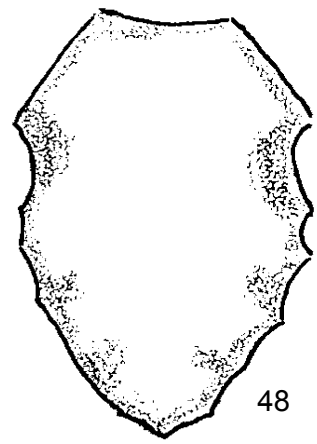


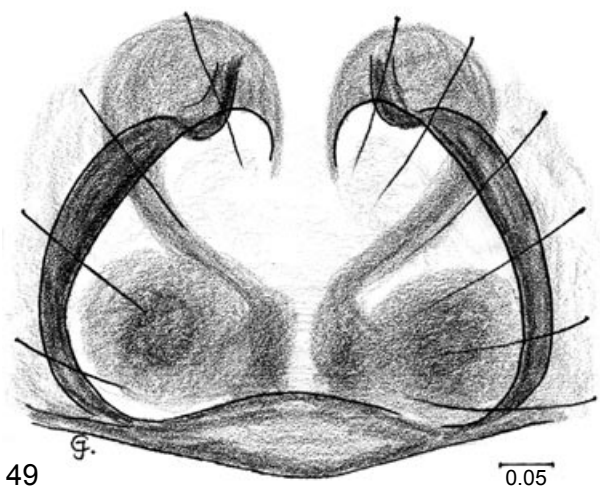


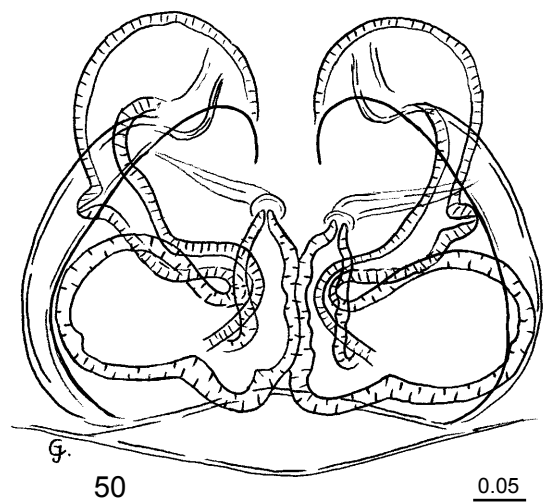




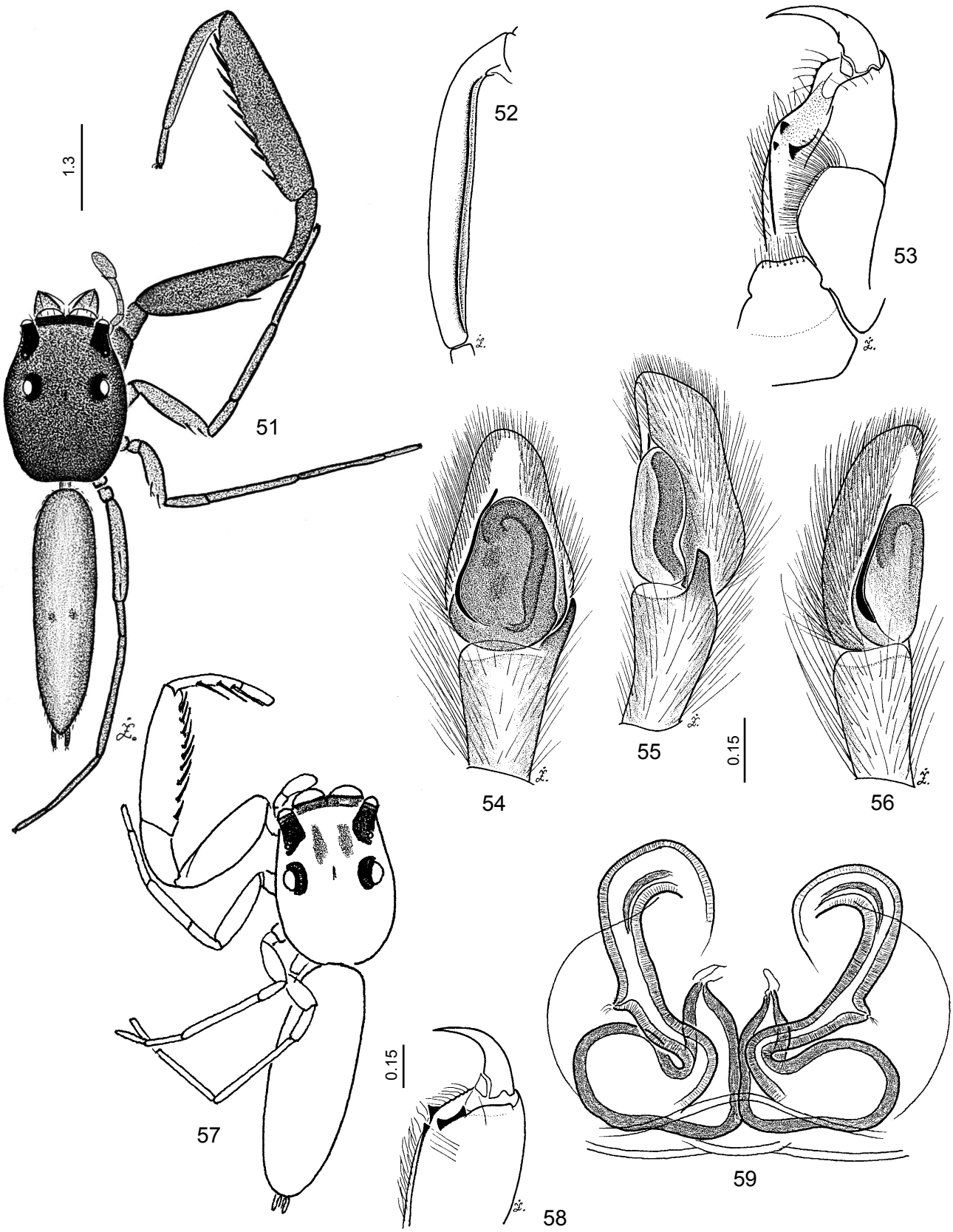








Figures 43–50. *Chalcolecta prensitans* (Thorell), female from New Guinea (Fly River): (43) general appearance; (44) lateral view; (45) anterior view; (46) cheliceral teeth; (47) maxillae and labium; (48) sternum; (49) epigyne; (50) its internal structures.



Figures 51–59. *Chalcolecta prensitans* (Thorell), male and female from Australia (Lockerbie Scrub): (51–56) male; (57–59) female (by M. Żabka).

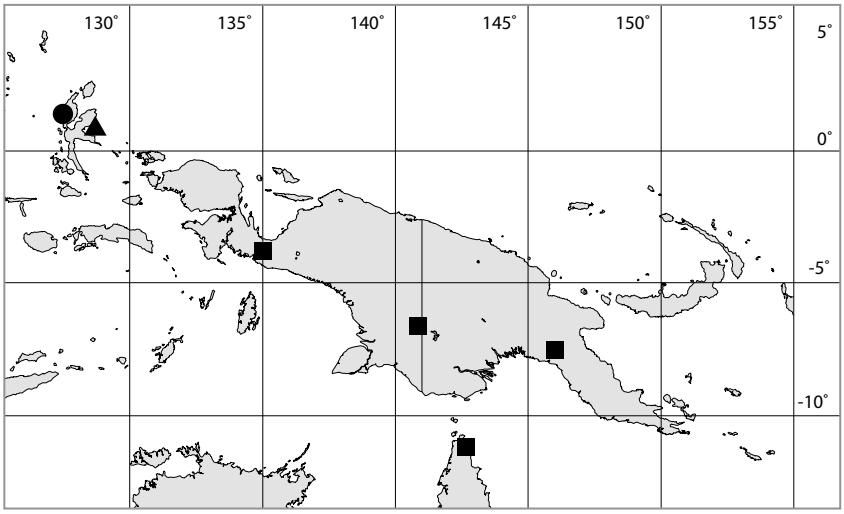


Figure 60. Geographical distribution of the genus *Chalcolecta*.
● *Chacolecta bitaeniata,* ■ *Chalcolecta prensitans,* ▲ *Chalcolecta dimidiata.*

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