

The male of *Marengo nitida* with the description of *M. rattotensis* new species from Sri Lanka (Araneae: Salticidae)

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Abstract

Systematics of *Marengo nitida* Simon, 1900 is discussed and *M. rattotensis* new species is described. The female of *M. nitida* is described for the first time. *M. rattotensis* is diagnosed by the unique shape of its retrolateral tibial apophysis. *M. nitida* can be separated from other *Marengo* spp. by the rounded shape of its opisthosoma, and males by the characteristic retrolateral tibial apophysis. The genus *Marengo* now contains six species with most of them known only from Sri Lanka.

Key words: Ballinae, biodiversity, jumping spiders, *Marengo*, Sri Lanka

Introduction

The case of *Marengo nitida* Simon, 1900 is a fascinating example of how the comparative study of newly collected material and museum holdings facilitates species hypotheses testing. *Marengo nitida* was first described and illustrated based on a single male specimen. Its only illustration, a rare case of an illustration by E. Simon, shows a spider that has a rounded opisthosoma (Simon 1901: fig 574a). Since the initial description of *M. nitida* two revisionary studies of the genus *Marengo* were undertaken (Wanless 1978; Benjamin 2004). However, as new specimens were never found, both authors were compelled to rely on original specimen for the redescription of *M. nitida*. The lack of new evidence in the form of new material to test the species hypothesis led to the justified questioning of its validity (Wanless 1978). However, Benjamin (2004) reexamined the original type specimen of *M. nitida* and new material of its sister species *M. crassipes* G. & E. Peckham, 1892 collected from the type locality and concluded the validity of *M. nitida*.

Recent examination of collections of the National Museum of Natural History, Smithsonian Institution, revealed a small collection of *M. nitida* from a location previously

not sampled. Detailed examination of these specimens corroborates the species hypothesis of *M. nitida*. This study describes the female of *M. nitida* for the first time together with a new species, *M. rattotensis* from the central highlands of Sri Lanka.

Methods

Methodology follows Benjamin (2004). Specimens used for habitus illustrations were placed on washed sand in 70% ethanol and photographed using a dissecting microscope (Leica MZAPO) with top illumination and a magnification of up to 50x. Digital images were taken with a Nikon DXM1200F camera. Images were edited using an Auto-Montage software package. A LEO 1430VP scanning electron microscope was also used to study and photograph morphological features (methodology follows Benjamin, 2004). Left structures (e.g. palps, legs, etc.) are depicted unless otherwise stated. Hairs and macrosetae are usually not depicted in the final palp drawings. All measurements are given in millimeters and were made with a compound microscope (Leica MZAPO) equipped with a 10x ocular and an ocular micrometer scale. Museum abbreviations are given in the acknowledgements. Abbreviations used in the text and figures are given below.

AME anterior median eyes
PLE posterior lateral eyes
RTA retrolateral tibial apophysis

Marengo G. & E. Peckham, 1892

Marengo G. & E. Peckham, 1892: 66. Simon, 1900: 400–401. Simon, 1901: 488, 502. Sherriffs, 1931: 538–539. Wanless, 1978: 231–296. Zabka, 1999. Benjamin, 2004: 66–76.

Type species. *Marengo crassipes*, Peckham & Peckham, 1892, by original designation.

Diagnosis. Distinguished from *Ballus*, *Baviola*, *Colaxes*, *Cynapes* and *Sadies* by the presence of leaf-like tibial setae (Benjamin, 2004: figs 61a, 63e, f, 64c, d, 68e, g; character 33). Distinguished from all other Ballinae, except for *Philates chelifer* (Simon, 1900), by the absence of gland of copulatory atrium (Benjamin, 2004: figs 62a–d, 66c, d, 67c, 68c, d; character 16). Separated from *P. chelifer* by the presence of an enlarged femur I (Fig 4A; Benjamin, 2004: figs 61a, 65a, d, 68a, g; character 30). A detailed diagnosis is provided in Benjamin (2004).

Description. See Benjamin (2004) and Wanless (1978) for detailed description of *Marengo* and related genera.

Composition. Six species, *Marengo crassipes*, *M. deelemanae* Benjamin, 2004, *M. rattotensis* **new species**, *M. inornata* Simon, 1900, *M. nitida*, *M. striatipes* Simon, 1900.

Distribution. India (Kerala), Sri Lanka (Colombo, Kandy, Talawakele, Knuckles Range, Galle), Thailand (Pran buri).

***Marengo nitida* Simon, 1900**

Figs 1A, B, E, 2A–E, 3A–E, 4A–C

M. nitida Simon, 1900: 401 (♂ lectotype from Sri Lanka, Southern province, Galle, MNHN 20415, examined).

M. nitida Simon, 1901: 488, figs 574–576.

M. crassipes Wanless, 1978: 266 (ad part.)

M. nitida Benjamin, 2004: 71–73.

Diagnosis. The males of *Marengo nitida* are distinguished from that of *M. crassipes* and *M. rattotensis* by the thick, stout RTA (Figs 2A, B; Benjamin, 2004: fig 65C). Further, males and females of *M. nitida* can be separated from all other *Marengo* spp. by the round opisthosoma. Separated from *M. rattotensis* by the gradually sloping posterior border of the prosoma (Figs 1E–F). Distinguished from *M. striatipes* by the flat prosoma and enlarged femur I (Benjamin, 2004: fig 67A; Wanless, 1978: figs 5a, b).

Description. *Male.* Total length: 2.8; prosoma length: 1.6, width: 1.0. Legs I: femur 0.6, patella 0.3, tibia 0.8, metatarsus 0.5, tarsus 0.2. Markings as in Fig 1B. The male specimens examined were darker than *M. crassipes*, but are much lighter than males of *M. rattotensis*. Prosoma dark brown, sides darker, with dark patches in front just behind the AME and white patches just below the PLE (Fig 1B). Opisthosoma relatively rounded, red brown, no visible markings. Legs I–IV laterally with dark markings. Eyes in three rows, first recurved, second and third straight and surrounded by dark rings (Fig 1B). Chelicera, labium and dorsal parts lighter in colour. Leg formula 1432. Tibia I with 2/2/0/2 spines, metatarsus I with 2/1 spines. Palp: tibia short, RTA short, stout (Figs 2A, B, 3B, D, C). Cymbium oval, tip excavated (Fig 3D), bulb bilobed, embolus short, coils 1.5 times (Figs 2A, B, 3A–C).

Female. Total length: 3.0; prosoma length: 1.5, width: 0.6. Legs I: femur 0.5, patella 0.2, tibia 0.5, metatarsus 0.3, tarsus 0.2. Markings as in Fig 1A. Prosoma dark brown, sides darker, with dark patches in front just behind the AME and white patches just below the PLE (Fig 1A). Opisthosoma round, light brown, dorsally with very characteristic markings. Legs I–IV laterally with dark markings. Eyes in three rows, first recurved, second and third straight and surrounded by dark rings (Fig 1A). Chelicera, labium and dorsal parts lighter in colour. Leg formula 1432. Tibia I with 2/2/0/2 spines, metatarsus I with 2/1 spines. Epigynum and vulva as in Figs 2C–E.

Remarks. Simon (1900) gives the type locality as Kandy but the museum labels give the type locality as Galle (original labels give no details of the exact locality). Simon (1901: fig 574a) illustrates a specimen that has a rounded opisthosoma similar to the material from Galle and material examined for this study. I have no doubt that the current specimens examined by me are conspecific with type material.

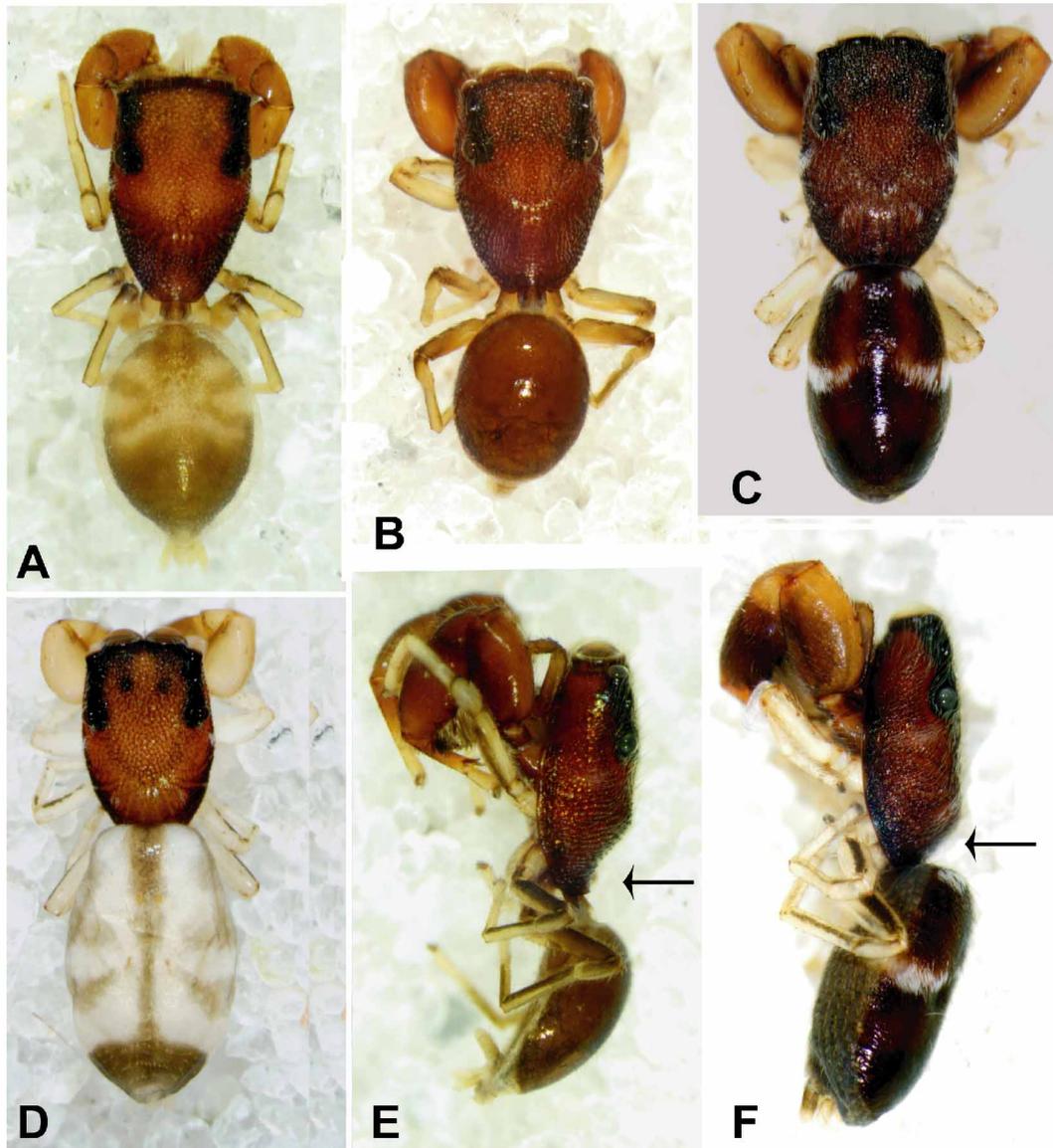


FIGURE 1. Photographs of *Marengo nitida* (A, B, E) and *M. rattotensis* sp. n. (C, D, F). A, D, female and B, C, male dorsal view. E, F, male lateral view. Note shape of prosoma; compare Figs E and F.

Distribution. Known only from lowland rainforest in Sri Lanka.

Other material examined. SRI LANKA: Ratnapura district, Gilimale, Induruwa Jungle, 25 February 1979, leg. KV Krombein, PB Karunaratne, T Wijesinghe, S Siriwardana, T Gunaawardana, 1♀; same locality, 13–15 March 1979, leg. KV Krombein, T Wijesinghe, S Siriwardana, L Jayawickrama, 1♂; Kegalle district, Kitulgala, Makande mukalara, 3–4 February 1979, leg. KV Krombein, 1♂ 1♀. All specimens have been deposited in the USNM.

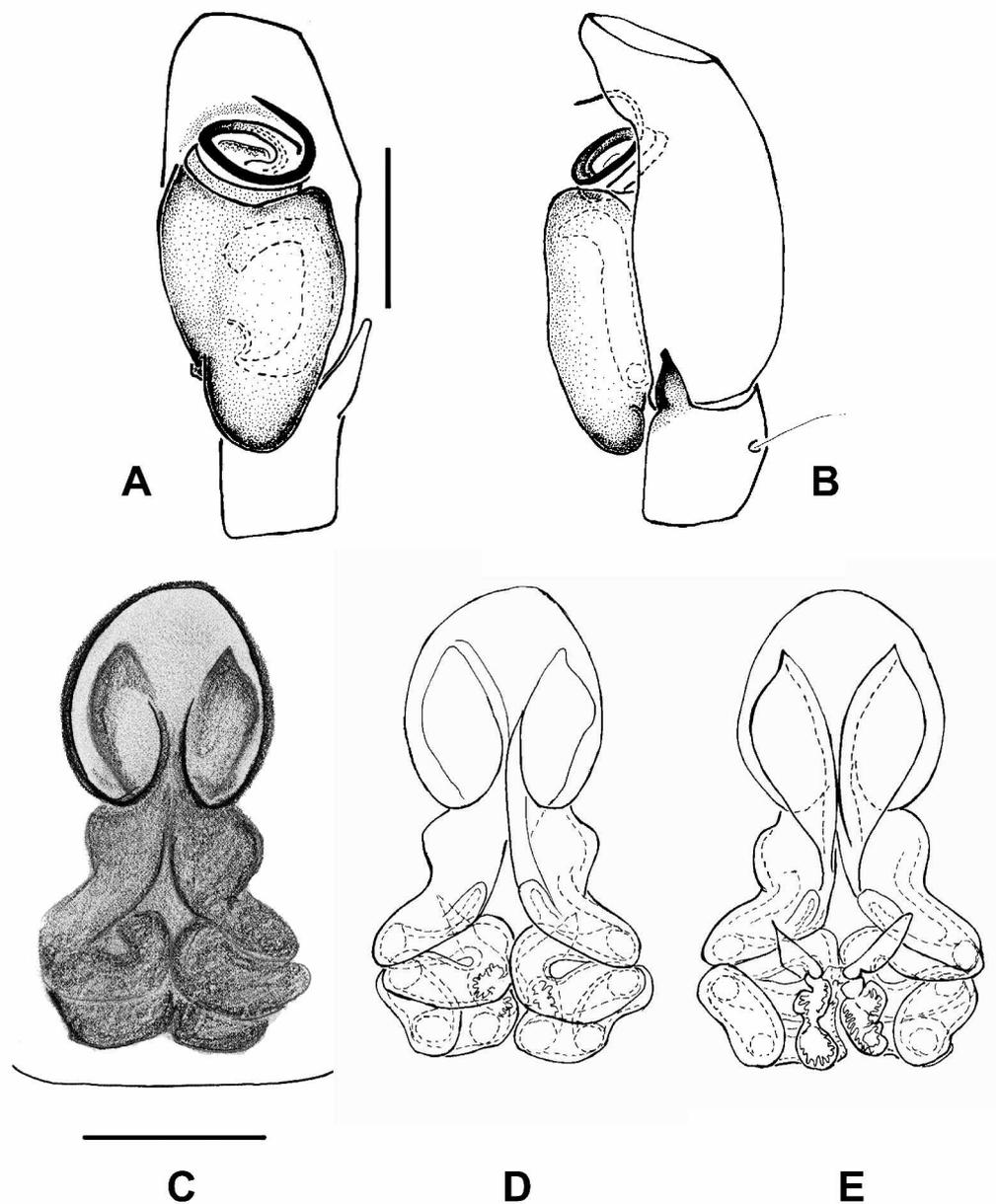


FIGURE 2. *Marengo nitida*. A, ventral view and B, retrolateral view of male palp. C, D, epigynum ventral view and E, Epigynum dorsal view. Scale bar = 0.2 mm.

***Marengo rattotensis*, new species**

Figs 1C, D, F, 5A–E, 6A–F, 7A–F

Type material. Holotype: ♂, SRI LANKA, Central province, Rattota, Knuckles Range, along Rattota-Illukkumbura road, 3–4 June 2003, leg. SP Benjamin. Deposited in MHNG.

Paratypes: 2♂ 2♀, label data as above. Deposited in MHNG.

Etymology. Named after the type locality.

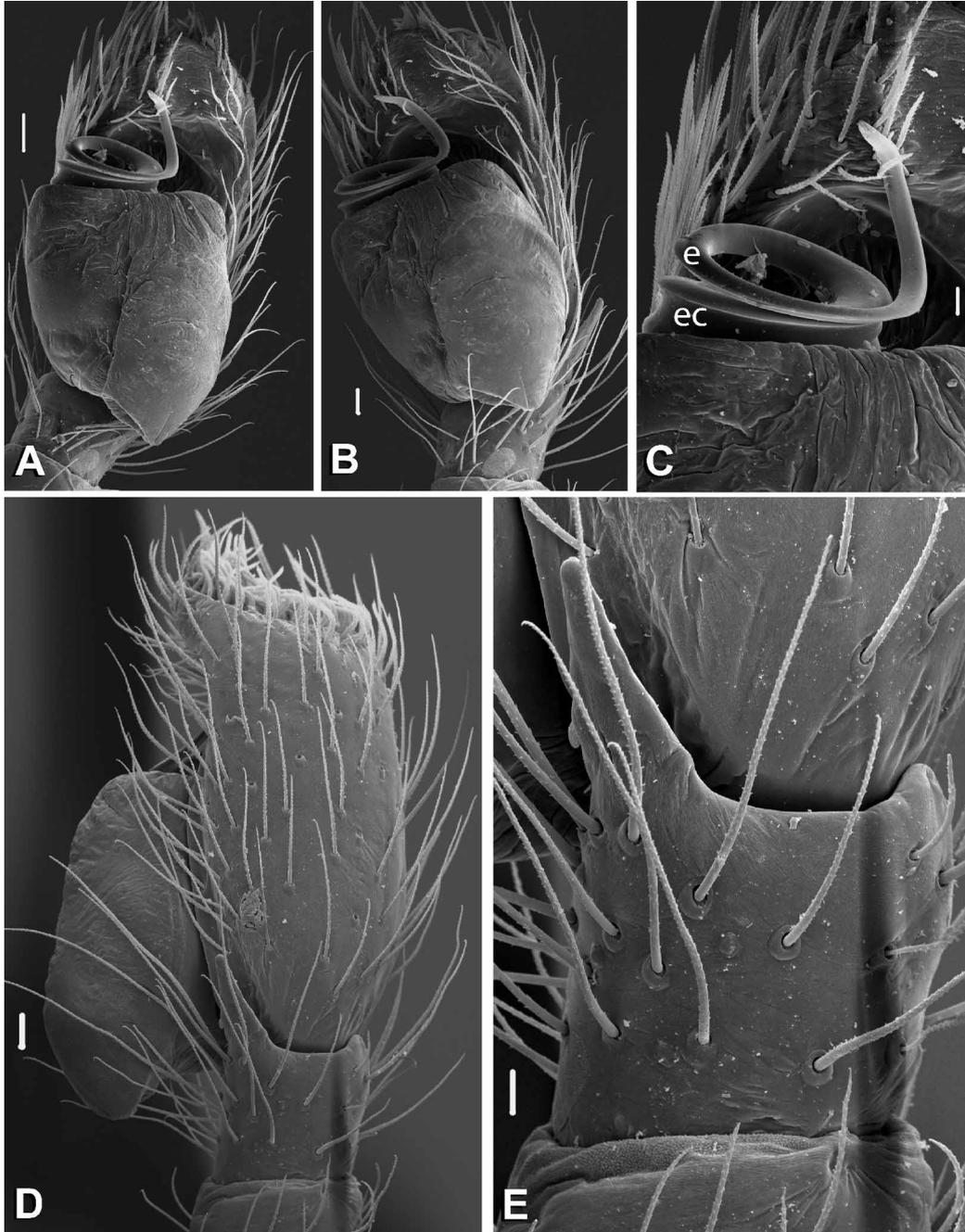


FIGURE 3. SEM, *Marengo nitida* (USNM). A, B, male palp, ventral view. C, embolus, ventral view. D, male palp, retrolateral view. E, tibia, retrolateral view. Scale bars = 10 µm (E, C); 20 µm (B, D); 30 µm (A). e = embolus, ec = embolic coil.

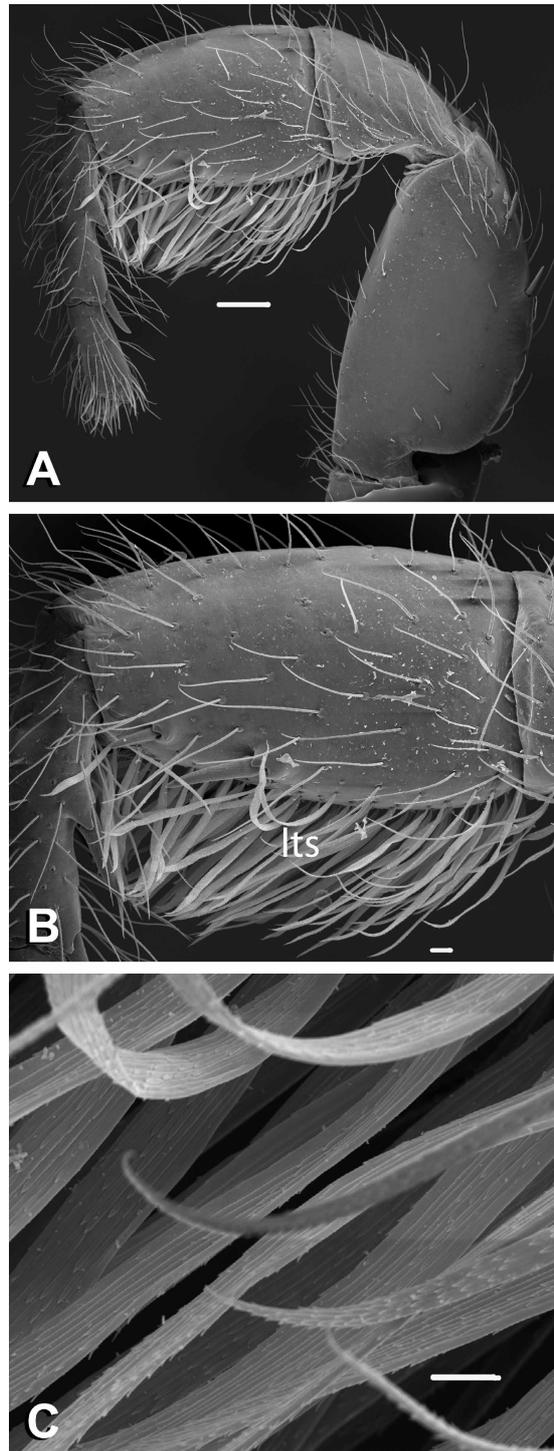


FIGURE 4. SEM, *Marengo nitida* (USNM). A, left leg I, retrolateral view. B, tibia detail, retrolateral view. C, detail of B. Scale bars = 10 μm (C); 20 μm (B); 100 μm (A). lts = leaf like tibial setae.

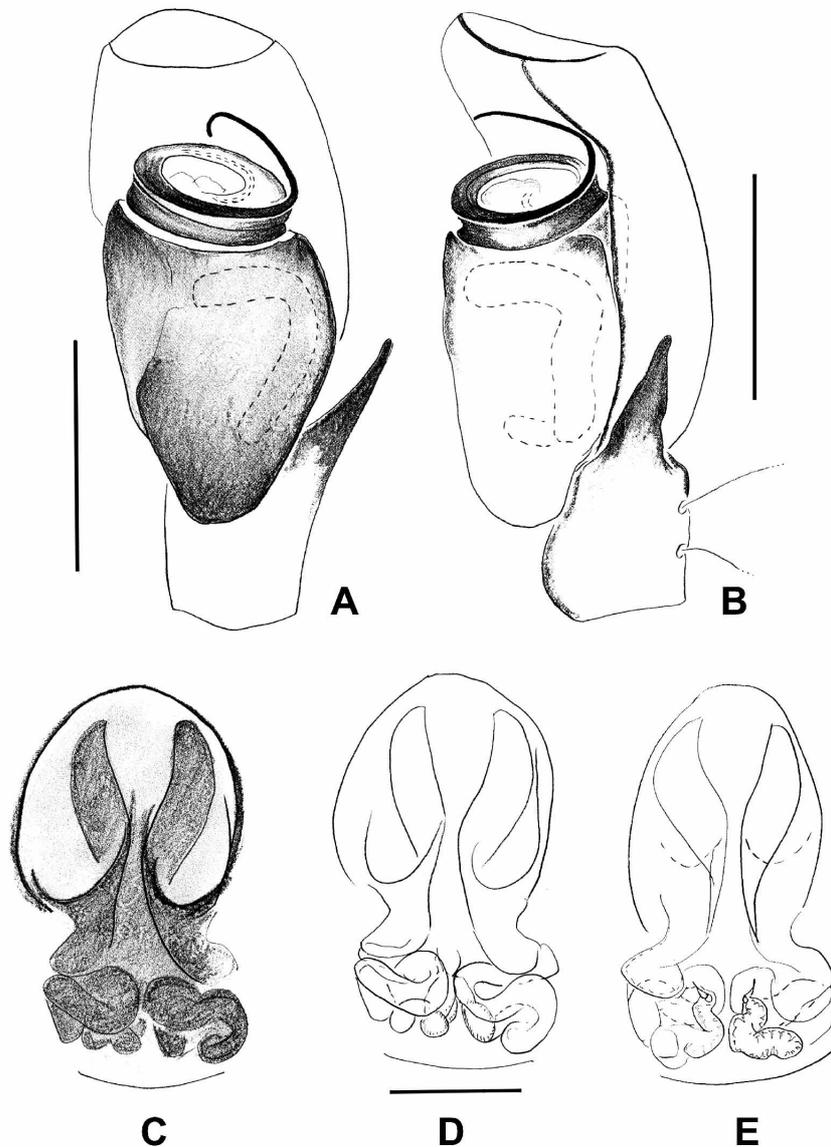


FIGURE 5. *Marengo rattotensis* sp. n. A, ventral view and B, retrolateral view of male palp. C, D, epigynum ventral view and E, Epigynum dorsal view. Scale bars = 0.1 mm (C, D); 0.2 mm (A, B).

Diagnosis. The males of *Marengo rattotensis* can be distinguished from all other *Marengo* spp. by the RTA, which is rather backward tilted (Figs 5A, B, 7C, E). Further, they can be separated by the very characteristic opisthosomal markings. Females are separated by marking of the opisthosoma (Fig 1D).

Description. Male. Total length: 3.5; prosoma length: 1.7, width: 1.2. Legs I: femur 1.0, patella 0.4, tibia 0.8, metatarsus 0.6, tarsus 0.3. Markings as in Fig 1C. The male specimens examined were darker than *M. crassipes* and *M. nitida*. Prosoma dark brown, sides darker, with dark patches in front just behind the AME and white patches just below

the PLE (Fig 1C). Opisthosoma oval, elongated, dark red/brown, dorsally with conspicuous white markings as in Fig 1C, laterally lighter as in Fig 1F. Legs I–IV laterally with dark markings. Eyes in three rows, first recurved, second and third straight and surrounded by dark rings (Fig 1C). Chelicera, labium and dorsal parts lighter in colour. Leg formula 1432. Tibia I with 2/2/0/2 spines, metatarsus I with 2/1 spines. Palp: tibia short, RTA short, stout (Figs 3A, B). Cymbium oval, tip excavated, bulb bilobed, embolus short, coils 1.5 times (Figs 5A–F).

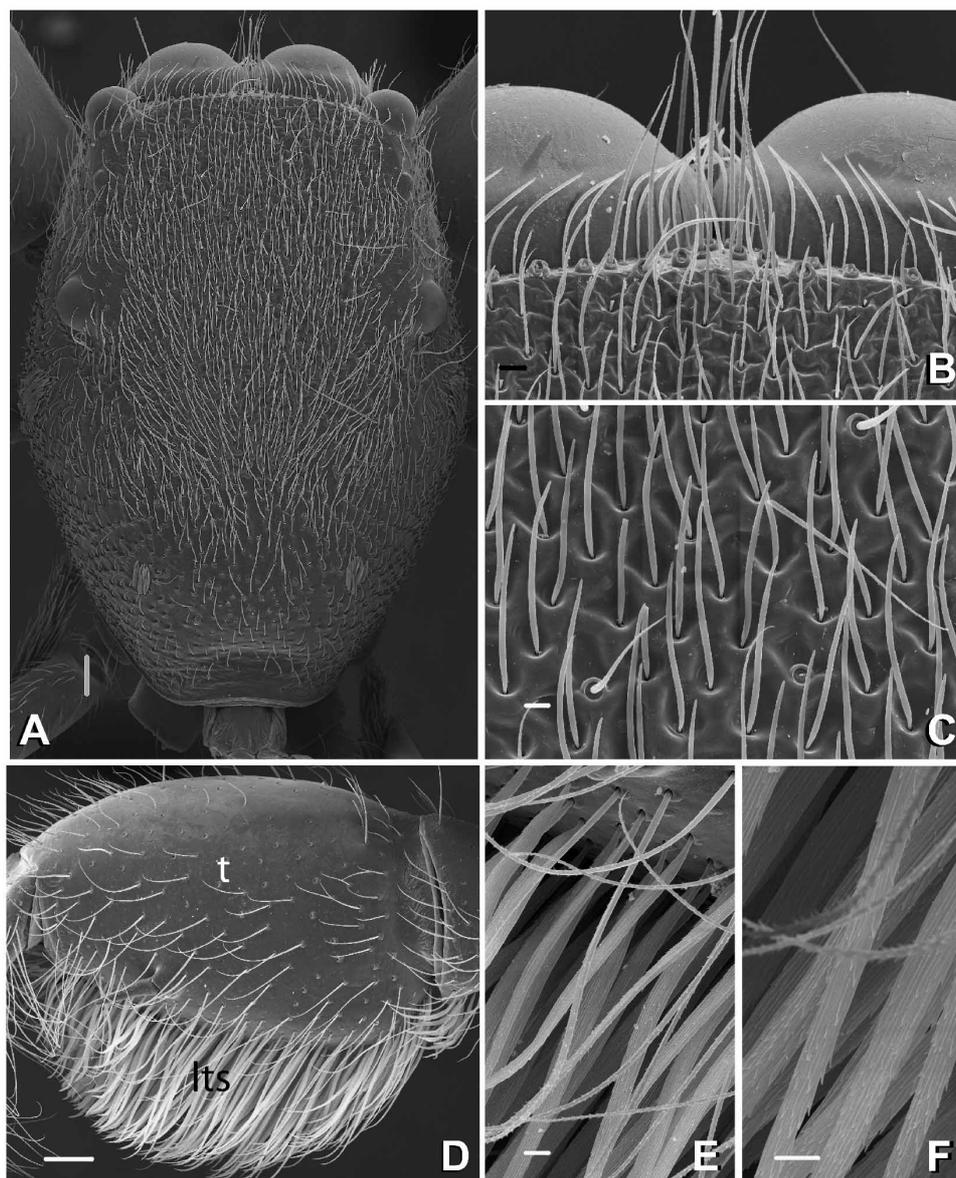


FIGURE 6. SEM, *Marengo rattotensis* sp. n. (MHNG). A, prosoma, dorsal view. B, C, detail of A. D, tibia of left leg I, note leaf-like tibial setae. E, F, detail of D. Scale bars = 10 μ m (C, E, F); 20 μ m (B); 100 μ m (A, D). lts = leaf like tibial setae, t = tibia.

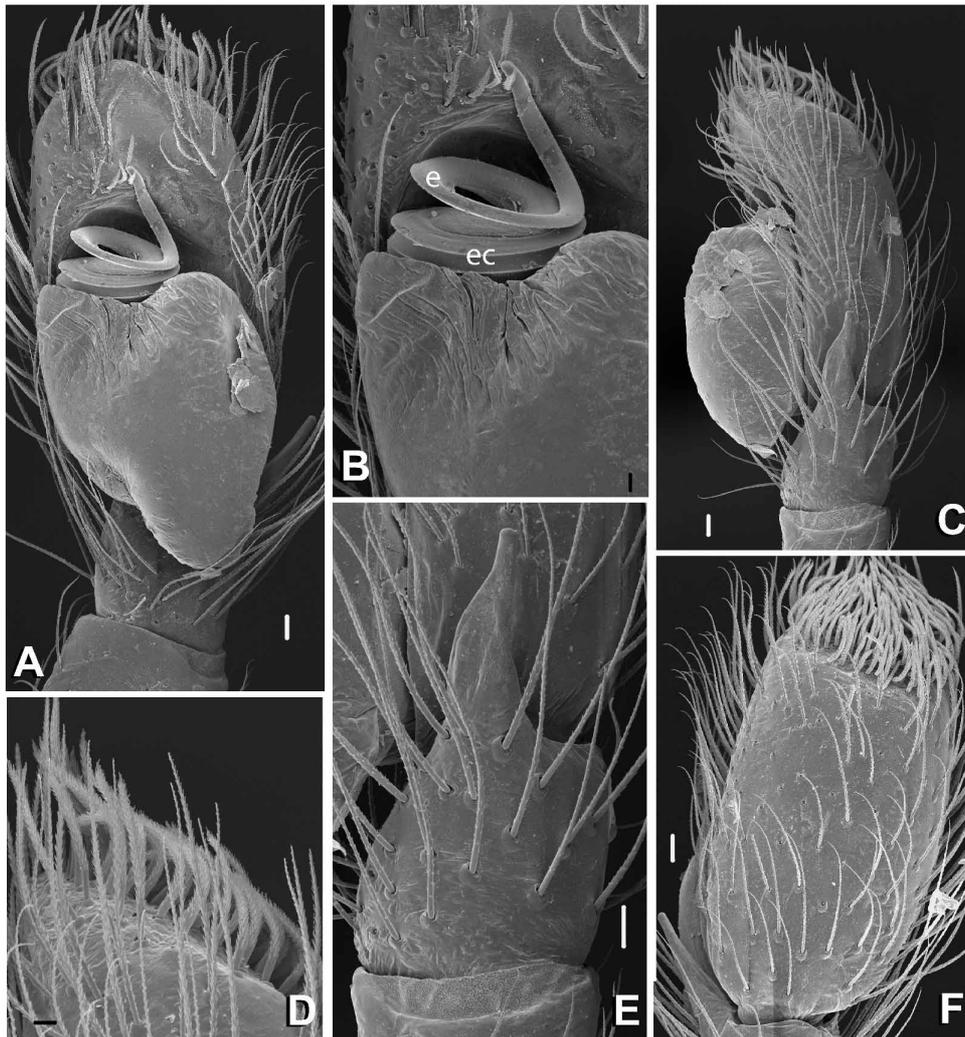


FIGURE 7. SEM, *Marengo rattotensis* sp. n (MHNG). A, male palp, ventral view. B, embolic coil and embolus. C, male palp, retrolateral view. D, distal portion of cymbium. E, rta. F, cymbium retro-dorsal view. Scale bars = 10 μ m (B, C, D); 20 μ m (A, E, F). e = embolus, ec = embolic coil.

Female. Total length: 3.2; prosoma length: 1.5, width: 0.9. Legs I: femur 0.6, patella 0.3, tibia 0.5, metatarsus 0.3, tarsus 0.2. Markings as in Fig 1A. Prosoma dark brown, sides darker, with dark patches in front just behind the AME and white patches just below the PLE (Fig 1D). Opisthosoma round, light brown, dorsally with very characteristic markings. Legs I–IV laterally with dark markings. Eyes in three rows, first recurved, second and third straight and surrounded by dark rings (Fig 1D). Chelicera, labium and dorsal parts lighter in colour. Leg formula 1432. Tibia I with 2/2/0/2 spines, metatarsus I with 2/1 spines. Epigynum and vulva as in Figs 5C–E.

Distribution. Known only from the Knuckles Range in Sri Lanka.

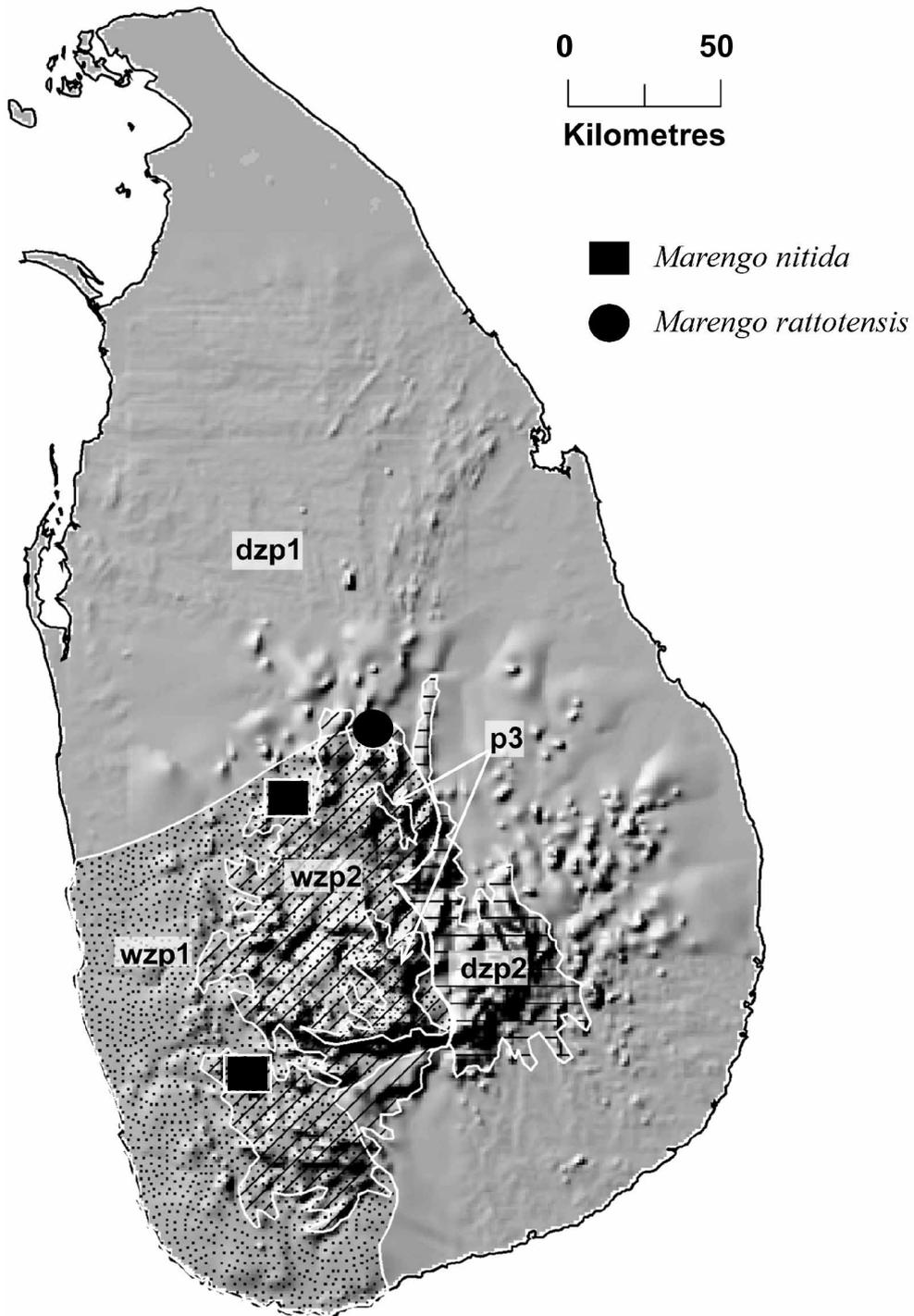


FIGURE 8. Distribution of *Marengo nitida* and *Marengo rattotensis* **sp. n.** in Sri Lanka. Classification of biogeographic zones are based on Senanayake *et al.* (1977). Abbreviations: dzp1, dry zone of peneplane1; dzp2, dry zone of peneplane2; wzp1, wet zone of peneplane1; wzp2, wet zone of peneplane2; P3, peneplain3.

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