


Distributional and taxonomic notes on the crab spider genus *Talaus* Simon, 1886 with description of a new species (Araneae: Thomisidae)

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Abstract

Taxonomic notes on the crab spider genus *Talaus* Simon, 1886 are provided. One new species, *T. beccarii* **sp. nov.** is described. Further four species are redescribed: *T. nanus* Thorell, 1890, *T. triangulifer* Simon, 1886, *T. oblitus* O. Pickard-Cambridge, 1899 and *T. opportunus* (O. Pickard-Cambridge, 1873). *Talaus* now contains 13 species.

Key words: systematics, biodiversity, Arachnida, India, Ceylon

Introduction

The crab spider genus *Talaus* Simon, 1886 currently contains 12 valid species (WSC 2020). In his monograph on spiders, ‘Histoire Naturelle des Araignées’, Simon (1895) placed *Talaus* in the group Talacae (tribe Talaini in Ono 1988). *Talaus* has been included in recent molecular analyses of crab spider interrelationships (Benjamin *et al.* 2008; Wheeler *et al.* 2017). Benjamin *et al.* (2008) recovered *Talaus* as part of a clade of derived thomisids, informally named ‘the *Thomisus* clade’ in this paper. Similarly, in Wheeler *et al.* (2017) *Talaus* is part of the informal clade ‘*Thomisus* group’. The monophyly of this genus has never been questioned.

All *Talaus* are small to medium sized (1.9 to 9.0 mm) litter or canopy dwellers. However, they are not uncommon. The aim of this paper is to review several poorly known species of this genus based on museum material from tropical Asia. Both *T. oblitus* O. Pickard-Cambridge, 1899 and *T. opportunus* (O. Pickard-Cambridge, 1873) have never been collected or studied since their original descriptions. This is the seventh contribution of a series based partly on collections made by Christa Deeelman-Reinhold and co-workers of spiders living in the forest canopy of Southeast Asia (Benjamin 2013, 2014, 2016, 2017a, 2017b, Benjamin & Clayton 2016).

Material and methods

Types and other specimens were borrowed and examined from the following institutions: BMNH—The Natural History Museum, London. MCSN—Museo Civico di Storia Naturale “Giacomo Doria”, Genova. MNHN—Muséum National d’Histoire Naturelle, Paris. OUMNH—The Hope Entomological Collections, Oxford University Museum of Natural History, Oxford. SMF—Research Institute and Natural Museum Senckenberg, Frankfurt am Main. RMNH—The National Museum of Natural History, Naturalis, Leiden. ZFMK—Zoological Research Museum Alexander Koenig, Bonn. General methodology follows (Benjamin 2011). Specimens used for habitus illustrations were placed in 70% ethanol and photographed with a Zeiss AxioCam HRC camera mounted on a dissecting microscope (Zeiss Discovery V20) with top illumination and a magnification of up to 150x. Images were edited using Zeiss ZEN Pro software package. Left male palp structures are depicted unless otherwise stated. All measurements are in millimetres. A Carl Zeiss Gemini FE-SEM housed at Zoological Research Museum Alexander Koenig (ZFMK) was used to study and photograph morphological features; relevant methodology is given in detail in Benjamin (2011). Coordinates are given only where known, in the format given in the labels.

Abbreviations of morphological structures: AER—anterior row of eyes, ALE—anterior lateral eyes, AME—anterior median eyes, C—conductor, CD—copulatory duct, CF—cymbial flange, CO—copulatory opening, DTA—dorsal tibial apophysis, E—embolus, EH—epigynal hood, MA—median apophysis, MTr—macro-trichobothrium on palpal tibia, PER—posterior row of eyes, PLE—posterior lateral eyes, PME—posterior median eyes, RTA—retrolateral/apical tibial apophysis, S—spermatheca, STD—sperm duct; connects to embolus, TR—tegular ridge, VTA—ventral tibial apophysis.

Taxonomy

Family: Thomisidae Sundevall, 1833

Genus: *Talaus* Simon, 1886

Type species: *Talaus triangulifer* Simon, 1886.

Diagnosis. Small to medium sized spiders, 1.9 to 9.0 mm. Leg formula 2143, Femur 1 with prolateral spines, femora 1 and 3 with dorsal spines. Male palp with RTA and VTA and in some species with DTA. Embolus spiniform, short to long (1x the circumference of tegulum), with broad-base and stout in some species. Epigynum slightly sclerotized, median septum lacking, CD short, tubular to irregular in shape, spermathecae rounded to irregular in shape. For a detailed diagnosis see Zhu & Ono (2007).

Species composition. The World Spider Catalog (WSC 2020) lists twelve species: *T. dulongjiang* Tang, Yin, Ubick & Peng, 2008, *T. elegans* Thorell, 1890, *T. limbatus* Simon, 1895, *T. nanus* Thorell, 1890, *T. niger* Tang, Yin, Ubick & Peng, 2008, *T. oblitus* O. Pickard-Cambridge, 1899, *T. opportunus* (O. Pickard-Cambridge, 1873), *T. samchi* Ono, 2001, *T. semicastaneus* Simon, 1909, *T. sulcus* Tang & Li, 2010, *T. triangulifer* Simon, 1886 and *T. xiphosus* Zhu & Ono, 2007. The 13th species, *Talaus beccarii* sp. nov. is described in this paper.

Distribution. South-East Asia (Bhutan, China, India, Indonesia, Myanmar, Sri Lanka and Vietnam). *T. limbatus* from South Africa is probably misplaced in this genus.

Talaus beccarii sp. nov.

(Figs 1A–F)

Type material. Holotype: male, **MALAYSIA: Sabah:** North Borneo, Kinabalu National Park, Poring hot springs, 6°2'N 116°50'E, 500–700 m, primary forest, canopy fogging *Aglaia* sp. (Meliaceae), 27 March 1998, leg. A. Floren (RMNH.ARA.17837).

Other material examined. MALAYSIA: Sabah: 1♀, Kinabalu National Park, park headquarters, 6°04'N 116°33'E, 1550 m, primary rainforest, general hand collecting, 29 June 1979, leg. P. R. and C. L. Deeleman (RMNH.ARA.17836).

Diagnosis. Easily distinguishable from congeners by the curved embolus (winding 0.25 times around tegulum) and shape of RTA and VTA (short, stout, truncate). Females can be distinguished by the comparatively small epigynal hood, and irregularly shaped CD and S (Figs 1D, E).

Etymology. Named for Odoardo Beccari (16 November 1843–25 October 1920), an Italian naturalist and collector of many spiders from South East Asia described by Teodor Thorell (3 May 1830–22 December 1901).

Description. Male: Total length: 8.2; prosoma length: 2.4, width: 2.4. Leg I: femur 3.0, patella 1.0, tibia 2.4, metatarsus 1.8, tarsus 1.4. Prosoma rectangular. Prosoma, chelicera, endites, labium, sternum reddish brown. ALE, PLE on tubercles, not connected to each other. ALE>PLE>AME>PME, MOA wider than long. Palp as in Figs 1A–B.

Female: Total length: 9.2; prosoma length: 4.4, width: 4.0. Leg I: femur 3.0, patella 1.0, tibia 2.2, metatarsus 2.0, tarsus 1.4. In general similar to male except for slightly larger size and lighter colour. Epigynum and vulva as in Figs 1D–E.

Distribution. Known only from Kinabalu National Park (Malaysia, Borneo).

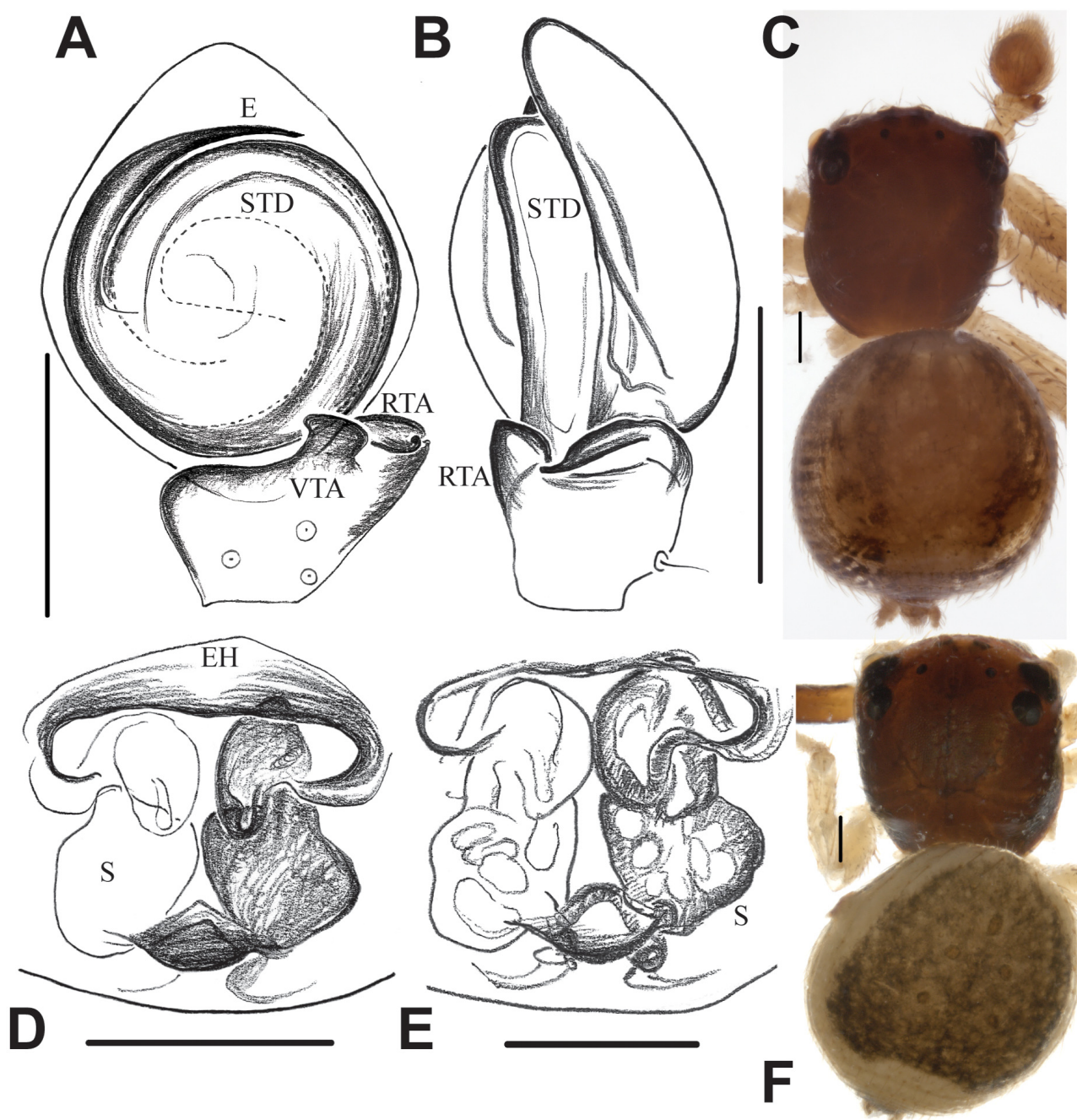


FIGURE 1 A–F. *Talaus beccarii* **sp. nov.** A–C male (RMNH.ARA.17837); D–F female (RMNH.ARA.17836) from Malaysia, Borneo, Kinabalu NP. A palp, ventral; B same, retrolateral; C holotype, habitus dorsal; D epigynum, ventral; E vulva, ventral; F female, habitus dorsal. Scale lines = 0.1 mm (C, E), 0.2 mm (A, B), 1.0 mm (C, F).

***Talaus nanus* Thorell, 1890**

Figs 2A, B, G, K, 3A–E, 4A–D

Talaus nanus Thorell, 1890: 15. Thorell 1895: 312.

Microcyllus nanus (Thorell). Thorell 1892: 121.

Type material. Holotype: 1 immature female, **INDONESIA:** Java, no exact locality data available, leg. Beccari (MCSN, examined).

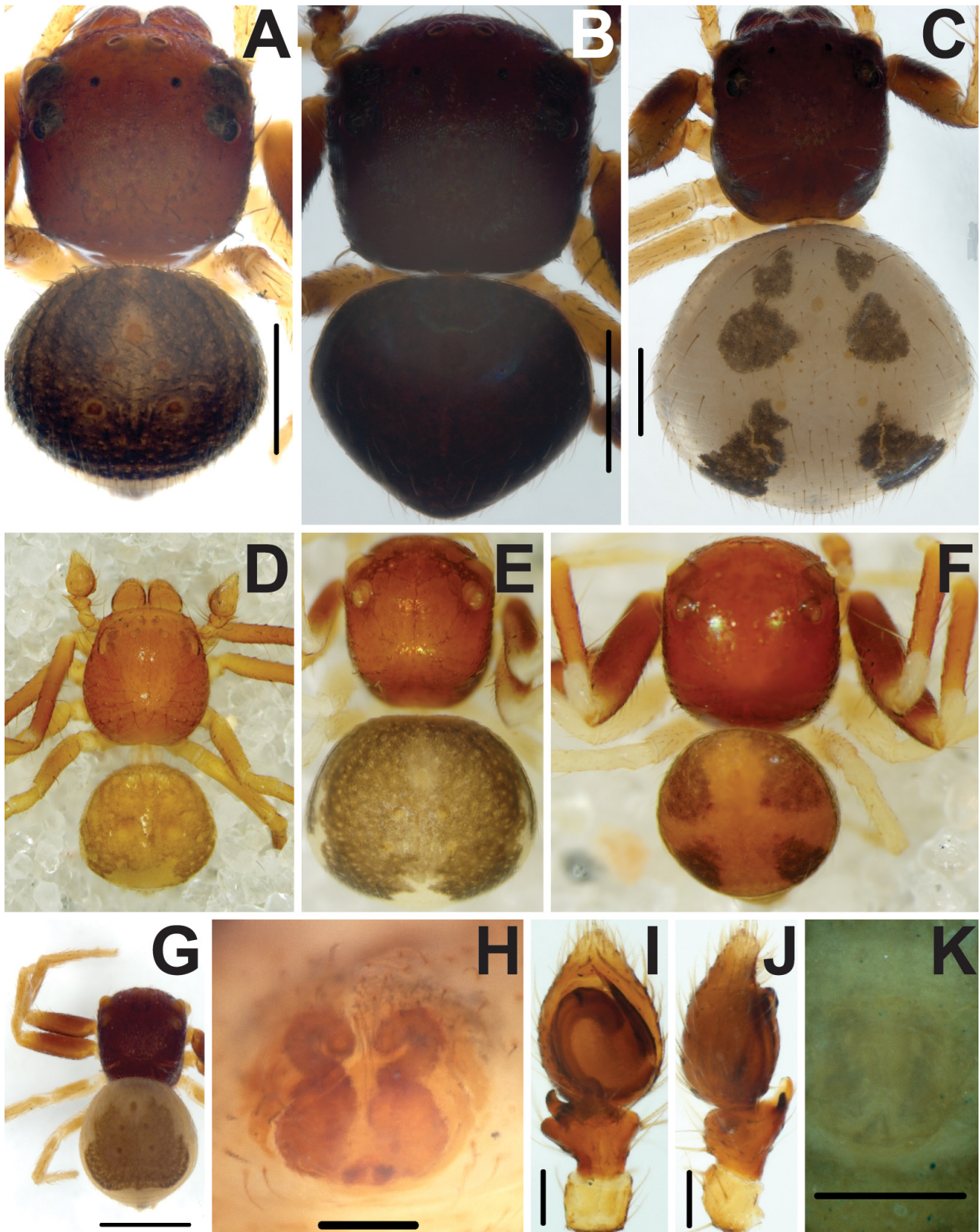


FIGURE 2 A–K. A–B, G, K *Talaus nanus* (G, K immature female from MCSN); C, H–J *T. triangulifer* from Indonesia, Kalimantan (RMNH.ARA.17832); D *T. oblitus* male from Sri Lanka (OUMNH b1242 t.8); E, F *T. opportunus* syntypes from Sri Lanka (OUMNH b1239). A, C, E, G female, habitus dorsal; B, D, F male, habitus dorsal; H epigynum, ventral; I, J right male palp (I ventral, J retrolateral); K epigynal area of immature female. Scale lines = 0.1 mm (H, K), 0.2 mm (I, J), 0.5 mm (A–C), 1.0 mm (G).

Other material examined. MALAYSIA: Sabah: 1♂ (opisthosoma missing), North of Tamparuli, 50–100 m, roadside shrub, general beating shrubs, 01 July 1979, G. Perrault (RMNH.ARA.17842); 1♂ 3♀, West Sabah, road Tuaran-Ranau, 900 m, degraded forest, general collecting, 30 June 1979, P. R. & C. L. Deeleman (RMNH.ARA.17843); 1♂, West Sabah, 5° 59' N 116° 42' E, Kinabalu National Park, Poring, 5–700 m, primary forest, loc 1, night fogging canopy, *Aporosa* sp. (Euphorbiaceae), tree DA8, 26–27 February 1996, A. Floren (RMNH.ARA.17840); 20♂ (3 damaged) 14♀, West Sabah, 6° 06' N 116° 50' E, Sorinsim, 5yr old adjacent secondary forest, loc 19 SW1, 500–700 m, canopy fogging, *Melochia umbellata* (Stercul.), tree 1 fog 1, 16 February 1997, A. Floren (RMNH.ARA.17839); 9♂ 4♀, same locality, loc 25 SW1, tree 4 fog 1, 18 February 1997, leg. A. Floren (RMNH.ARA.17841); 51♂ 20♂, same locality, loc 29 SW1, tree 5 fog 6, 10 March 1997, leg. A. Floren (RMNH.ARA.17845); 7♂ 4♀, same locality, loc 35 SW1, 500–700m, tree 11 fog 1, 16 February to 12 March 1997, leg. A. Floren (RMNH.ARA.17846). **Sarawak:** 1♀, Matang Reserve, Mount Serapi, 350 m, primary forest, general beating shrub, 11 January 1984, P. R. & C. L. Deeleman (RMNH.ARA.17838). **Pahang:** 1♂, Cameron Highlands National Park, general beating shrub, 5 June 1979, G. Perrault (RMNH.ARA.17844).

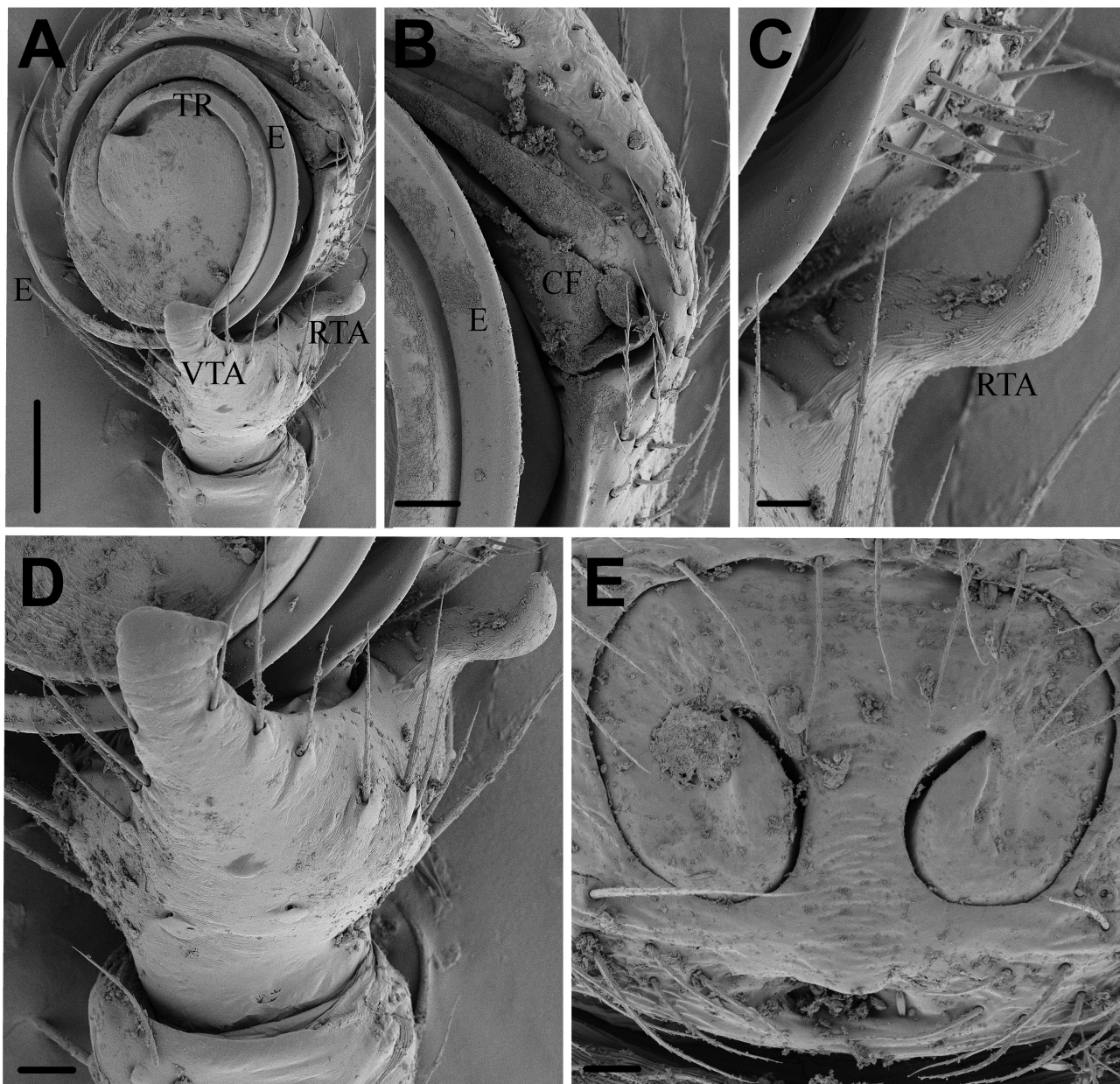


FIGURE 3 A–E. Scanning electron micrographs of *Talaus nanus* from Indonesia, Kalimantan (RMNH.ARA.17839). A left male palp, ventral/retrolateral view; B cymbium modification of unknown function; C RTA, ventral; D tibial apophyses, ventral; E epigynum, ventral. Scale bars = 20 µm (B–E), 100 µm (A).

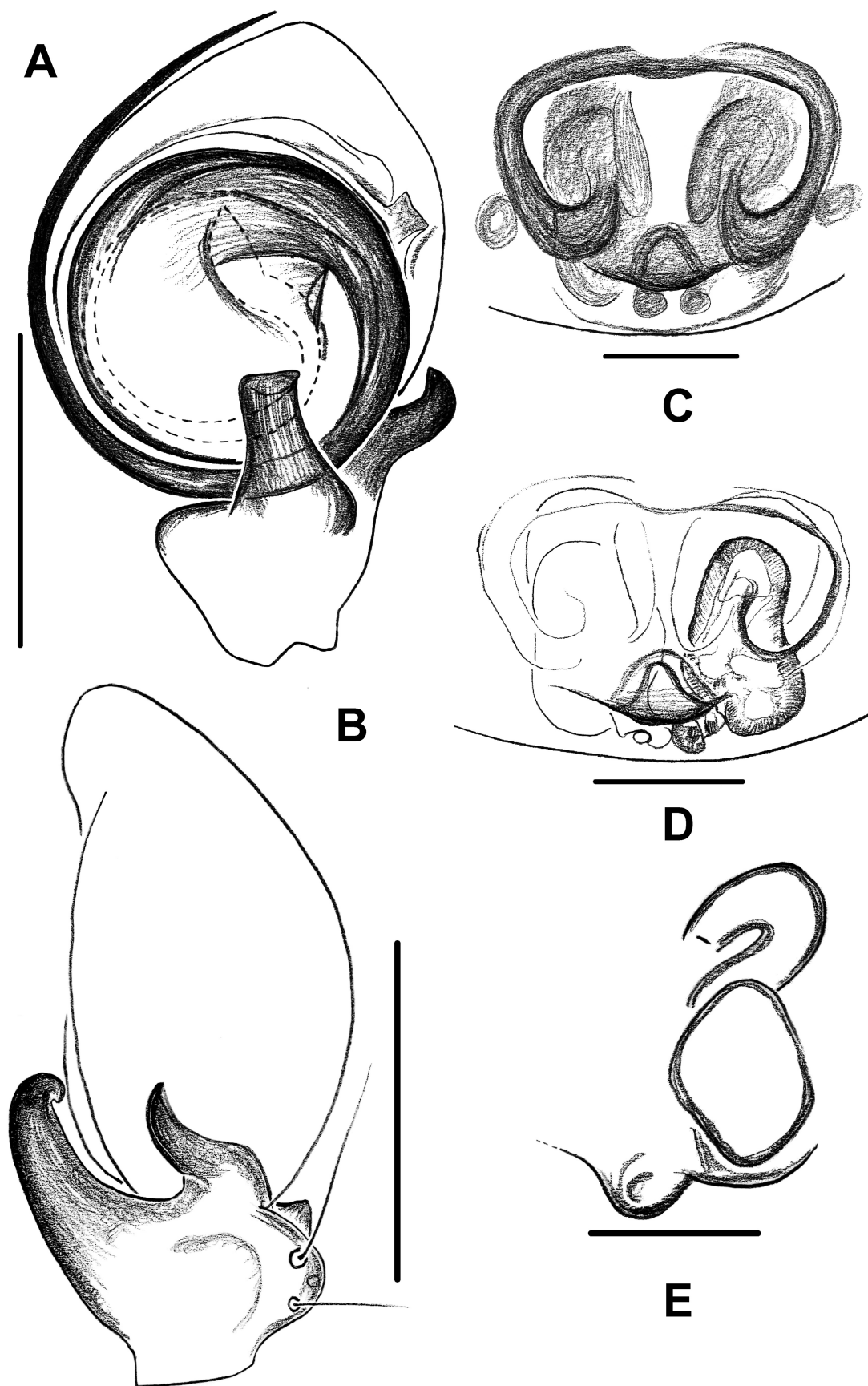


FIGURE 4 A–E. A–D *Talaus nanus* from Indonesia, Kalimantan (RMNH.ARA.17839); E *T. triangulifer* from Indonesia, Kalimantan (RMNH.ARA.17832). A left palp, ventral; B same, retrolateral; C, E epigynum, ventral; D vulva, ventral. Scale lines = 0.2 mm (A, B), 0.1 mm (C–E).

Diagnosis. This species is similar to *T. beccarii* **sp. nov.**, but is distinguished by the hook-shaped VTA and RTA, presence of a cymbial flange in about 2 o'clock position and filiform embolus winding once around tegulum. Females may be distinguished from congeners by the kidney-shaped S and relatively shorter C-shaped CD (Figs 4A–D).

Description. *Male* (RMNH.ARA.17839): Total length: 7.0; prosoma length: 3.6, width: 3.6. Leg I: femur 2.2, patella 1.0, tibia 2.0, metatarsus 1.8, tarsus 1.4. Prosoma red-brown, without markings. ALE, PLE on tubercles, not connected to each other. ALE>PLE>AME>PME, MOA wider than long, distance between AMEs one diameter of AME. Distance between PME more than 4x AME. One small cheliceral tooth. First two legs darker than the rest. No markings on opisthosoma except for the rounded muscle spots. Palp as in Figs 3A–D, 4A–B. Tibia with ventral, retrolateral and dorsal apophyses: ventral apophysis well developed, longer, apically hooked; retrolateral apophysis curved; dorsal apophysis least developed, denticulate. Bulb rounded, embolus long and filiform, winding once around tegulum.

Female (RMNH.ARA.17839): Total length: 9.0; prosoma length: 4.0, width: 3.8. Leg I: femur 2.6, patella 1.2, tibia 2.0, metatarsus 1.4; tarsus 1.6. In general, similar to male except for slightly lighter colour. Epigynum and vulva as in Figs 3E, 4C–D.

Remarks. The examined material generally fits the descriptions of Thorell (1890, 1892). However, since no material from the terra typica has been examined, the distribution of this species needs to be assessed in future studies.

Distribution. Indonesia (Java), Malaysia (Pahang, North Borneo, Sarawak) and Myanmar.

***Talaus oblitus* O. Pickard-Cambridge, 1899**

Figs 2D, 5A–B

Talaus oblitus O. Pickard-Cambridge, 1899: 526, pl. 30, fig. 8.

Type material. **Holotype:** male, **SRI LANKA**, no more locality data given, leg. G. H. K. Thwaites (OUMNH b1242 t.8, examined).

Diagnosis. Easily distinguishable from congeners by the filiform embolus winding 2/3 around tegulum, the short, hooked VTA (lateral view) and the enlarged, truncated RTA.

Other material examined. **SRI LANKA:** **Central province:** 1♂, Kandy District, Peradeniya Botanical Gardens, 460 m, 7° 17' 57"N 80° 38' 29"E, 29 December 2011, litter, Yuri Marusik (ZFMK, IFS_Tho_129,); 1♂, same locality, Hantana, 07° 14' 57" N 80° 36' 50" E, 18 December 2012, beating, N. Athukorala et al. (ZFMK, IFS_Tho_178,).

Description. *Male* (from Peradeniya Botanical Gardens): Total length: 2.5; prosoma length: 1.2, width: 1.1. Leg I: femur 1.2, patella 0.4, tibia 1.1, metatarsus 1.0, tarsus 0.6. Prosoma reddish brown, with some long setae (prominent along the posterior margin), surface without markings. ALE, PLE on tubercles, not connected to each other. ALE>PLE>AME=PME, MOA wider than long, distance between AMEs three diameter of AME. Distance between PME more than 4x AME. Opisthosoma yellow-brown, with uniformly distributed black flakes. Palp as in Figs 5A–B, filiform embolus, large, truncate RTA.

Female: Unknown.

Distribution. Sri Lanka.

***Talaus opportunus* (O. Pickard-Cambridge, 1873)**

(Figs 2E, F, 6A–D)

Thomisus opportunus O. Pickard-Cambridge, 1873: 120, plate. 13, fig. 5.

Talaus opportunus (O. Pickard-Cambridge). Simon 1895: 997, fig. 1061; Simon, 1906: 288; Murphy and Murphy 2000: 457, fig 27

Type material. **Syntypes:** 1♂ and 4♀, **SRI LANKA**, no more locality data given (OUMNH b1239, examined).

Diagnosis. This species is similar to *T. triangulifer*, but is distinguished by the shorter, broad-based E and the

VTA and RTA which are equal in length. Females may be distinguished from congeners by the oval S, relatively longer C shaped CD (Figs 6C, D).

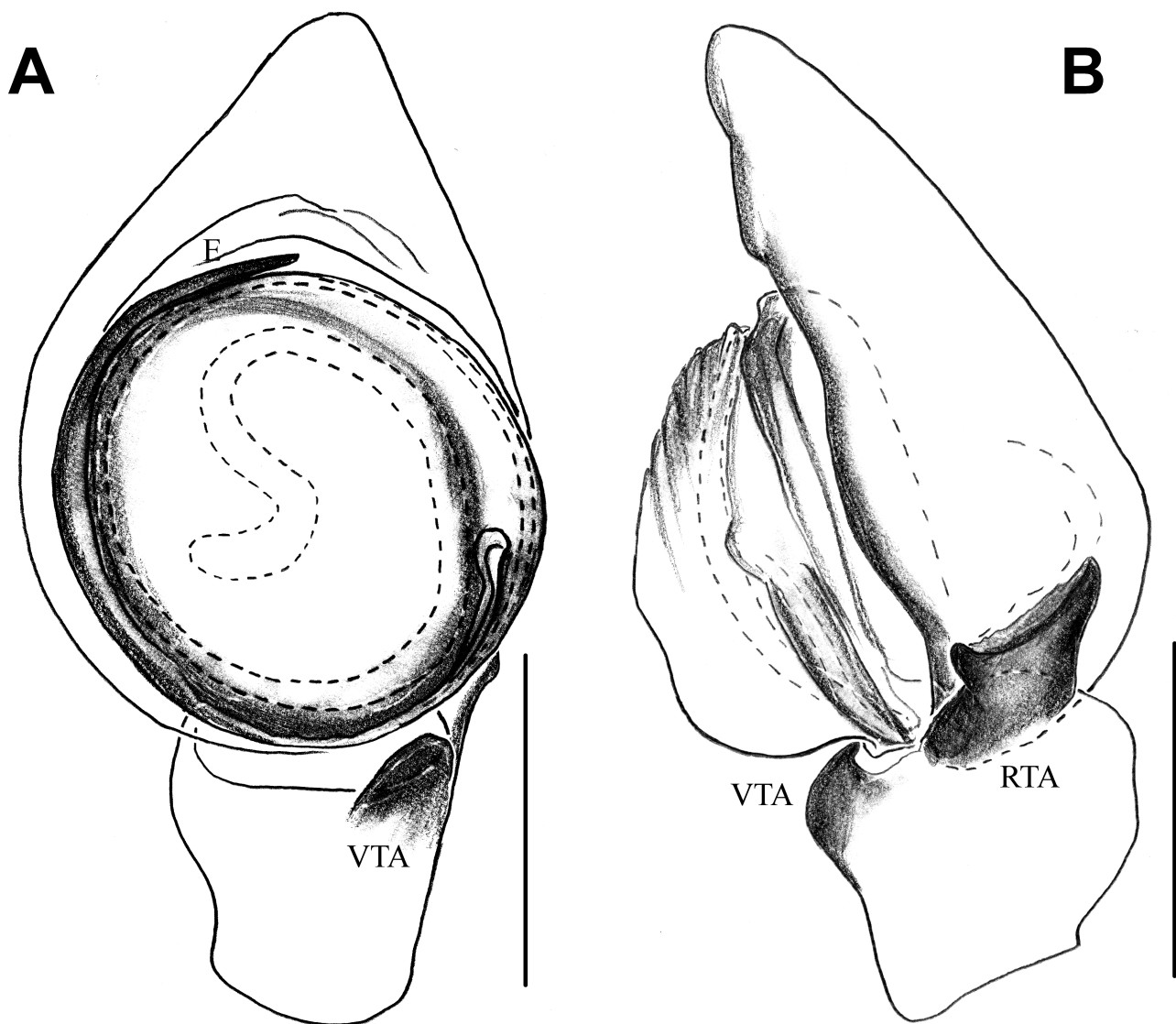


FIGURE 5 A, B. *Talaus oblitus* from Sri Lanka (OUMNH b1242 t.8). A left palp, ventral; B same, retrolateral. Scale lines = 0.2 mm.

Description. *Male:* Prosoma reddish brown, with some long setae, surface with markings. ALE, PLE on tubercles, not connected to each other. ALE>PLE>AME>PME, MOA wider than long, distance between AMEs one diameter of AME. Distance between PME more than 4x AME. Palp: Tibia with VTA large, apically hook-shaped; RTA digitiform and well sclerotised. Bulb kidney-shaped, embolus broad-based, stout, apically pointed (Figs 6A–B).

Female: In general, similar to male except for slightly lighter colour, dark spots of the opisthosoma (Fig 7). Epigynum and vulva as in Figs 6C–D.

Distribution. Sri Lanka.

Remarks. According to Pickard-Cambridge (1873) the original series consisted of 2 males and 4 females. However, only one male and 4 females were found in OUMNH. Series label and first description gives the locality as Ceylon (now Sri Lanka). The record of this species from India by Simon (1906) cannot be confirmed. Roewer (1955) and WSC (2020), both list the type locality as India.

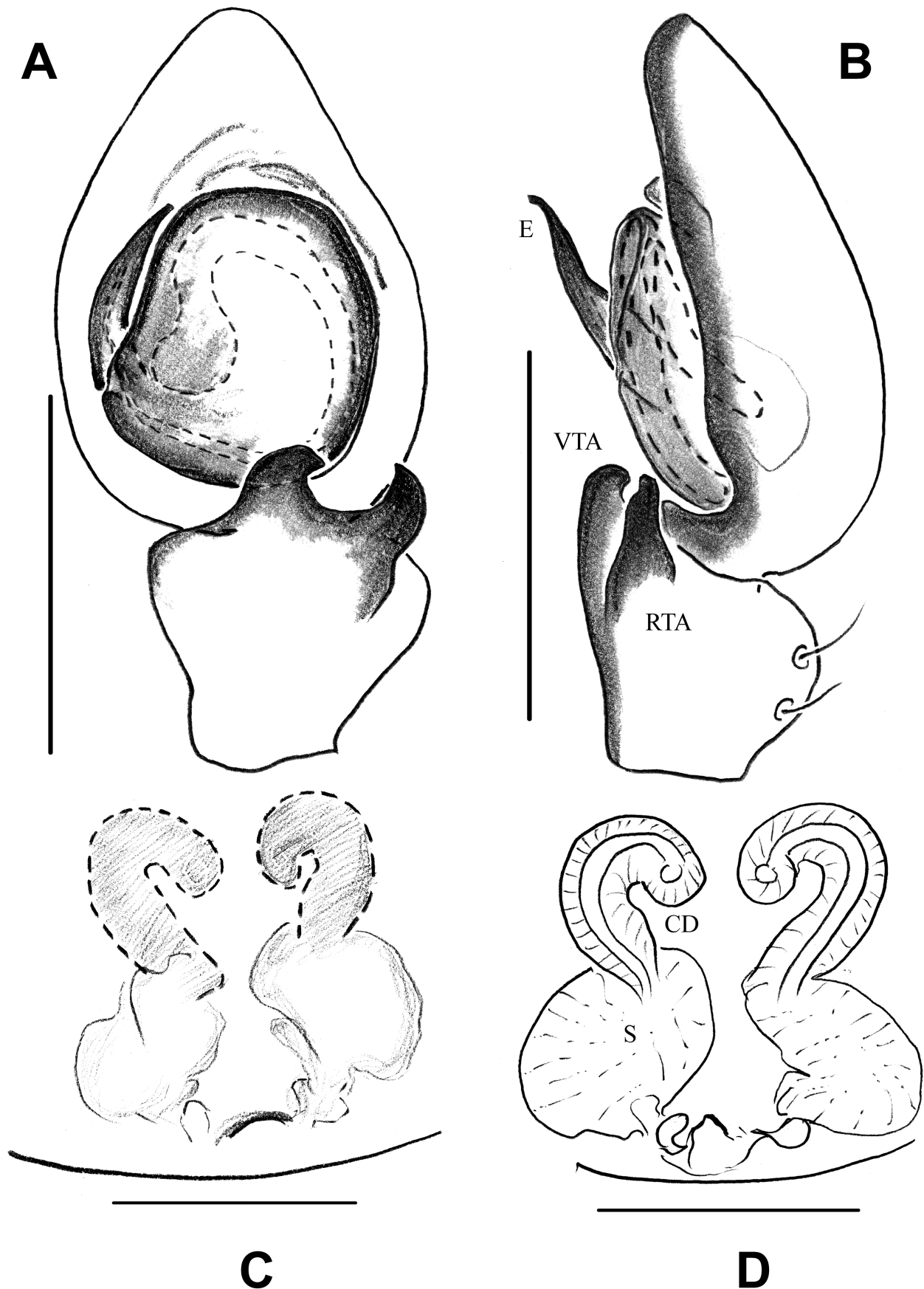


FIGURE 6 A–D. *Talaus opportunus* syntype from Sri Lanka (OUMNH b1239). A left palp, ventral; B same, retrolateral; C epigynum, ventral; D) vulva, ventral view. Scale lines = 0.2 mm (A, B), 0.1 mm (C, D).

***Talaus triangulifer* Simon, 1886**

(Figs 2C, H–J, 4E, 7A–B)

Talaus triangulifer Simon, 1886: 172.

Type material: Holotype: female, **INDONESIA**, Sumatra, no more locality data given (MNHN 8289, examined by C. L. Deeleman; see remarks below).

Other material examined. INDONESIA: East Kalimantan: 4♂, 1♀, Sepaku (40 km N of Balikpapan), degraded remains of stand of primary rainforest, general hand collecting, 16 July 1979, P. R. & C. L. Deeleman (RMNH.ARA.17832). **West Sumatra:** 1♀, Mt. Singalang, Anai, 480–520 m, general foliage, 22 June 1994, S. Djijosudharmo (RMNH.ARA.17834). **MALAYSIA: Sabah:** 1♀, Sorsinsim, 6° 06'N 116° 50'E, 5 year old adjacent secondary forest loc 21, canopy fogging *Melochia umbellata* (Stercul.), 19 February 1997, 500–700 m, A. Floren (RMNH.ARA.17835); 1♀, 5° 26'N 116° 08'E, Crocker Range, 20 year old isolated secondary forest, CR.II.5, canopy fogging, *Melanolepis glandulosa* (Euphorbiaceae), 18 February 2001, A. Floren (RMNH.ARA.17833).

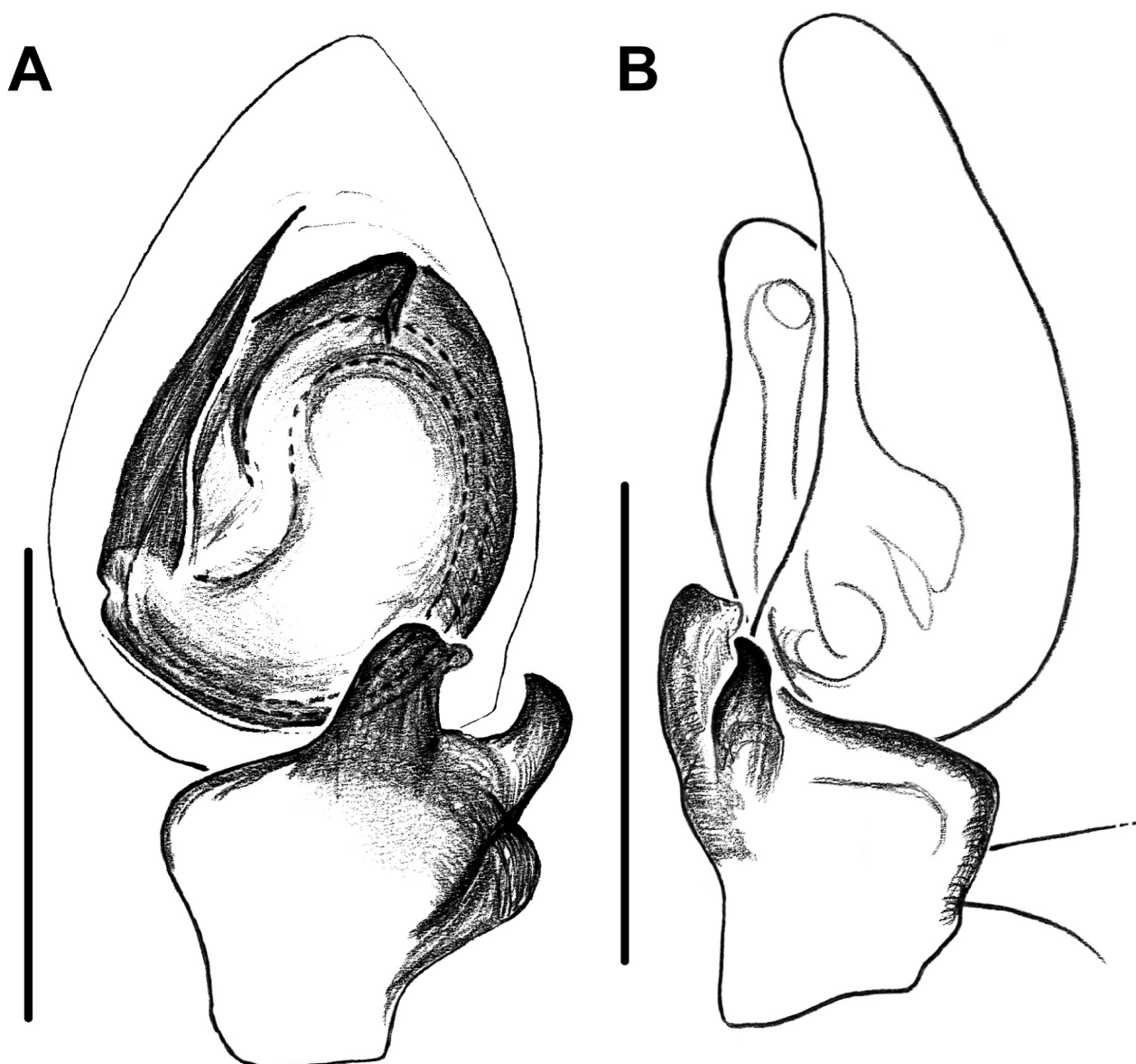


FIGURE 7 A, B. *Talaus triangulifer* (RMNH.ARA.17832). A right palp (flipped horizontally), ventral; B same, retrolateral. Scale lines = 0.2 mm.

Diagnosis. This species is very similar to *T. xiphosus*, which was described by Zhu and Ono (2007). A much larger series of specimens are required to review the specific differences, if any. Males of this species are also simi-

lar to those of *T. opportunus*, but are distinguished by the oval tegulum, the longer, broad-based E and configuration of the tibial apophyses. Females may be distinguished from congeners by the oval S, relatively long C shaped CD (Fig. 4E).

Description. *Male* (RMNH.ARA.17832): Total length: 8.0; prosoma length: 4.6, width: 3.8. Leg I: femur 3.0, patella 1.0, tibia 2.8, metatarsus 2.4, tarsus 1.8. Prosoma reddish brown, with some long setae, surface with markings. ALE, PLE on tubercles, not connected to each other. ALE>PLE>AME>PME, MOA wider than long, distance between AMEs one diameter of AME. Distance between PME more than 4x AME. Palp: VTA large, apically hook-shaped; RTA digitiform and well sclerotised. Bulb oval, embolus broad-based, stout, apically pointed (Figs 2I–J, 7A–B).

Female RMNH.ARA.17832: Total length: 10.2; prosoma length: 4.6, width: 4.0. Leg I: femur 3.4, patella 1.0, tibia 3.0, metatarsus 2.4, tarsus 1.8. In general, similar to male except for slightly lighter colour, dark spots of the opisthosoma (Fig. 2C). Epigynum and vulva as in Figs 2H, 4C.

Distribution. Known from Indonesia (East Kalimantan) and Malaysia (Sabah).

Remarks. The type specimen was examined and drawn by C. L. Deeleman. These drawings were compared with the examined material. The type locality is Sumatra, probably it is Mt Singalang (C. L. Deeleman, pers. comm.). Material from that locality has been examined for this study. The perceived differences in length and curvature of the CD between *T. xiphosus* and *T. triangulifer* mentioned in Zhu & Ono (2007) are minor and thus, these species might turn out to be synonyms. Additionally, *T. elegans* Thorell, 1890 might also turn out to be a junior synonym of *T. triangulifer*. The sketches of the female type done by C. L. Deeleman during a visit to MCSN in 1987 indicate slight differences from *T. triangulifer*. Unfortunately, I have been unable to examine the type as it has been misplaced since (M. Tavano, MCSN, pers. comm.).

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