

## *Epidius parvati* sp. n., a new species of the genus *Epidius* from Sri Lanka (Araneae: Thomisidae)

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### Summary

*Epidius parvati*, a new species of the crab spider genus *Epidius* Thorell, 1877 from Sri Lanka is described from both sexes. *Epidius* possesses characters unusual in the well-known Holarctic Thomisidae, e.g. a tegular structure that functions as a conductor. *Epidius* seems to be closely related to the genera *Cupa* Strand, 1906 (*sensu* Song & Kim, 1992) and *Sanmenia* Song & Kim, 1992. The genus *Epidius* is known from the Oriental and African regions.

### Introduction

The crab spider genus *Epidius*, established by Thorell (1877) for material collected in Celebes (Sulawesi), is one of the least known taxa of Thomisidae. These spiders occur in the tropics of the Old World and consist of 8 species and 1 subspecies (Roewer, 1955: 755–756), albeit of unclear taxonomic validity (P. T. Lehtinen, pers. comm.). No additional species have been described since 1943 (Brignoli, 1983; Platnick, 1989, 1993, 1997). The type species of this genus, *E. longipalpis* Thorell, 1877 was first mentioned for “Ins. Taprobane” (Sri Lanka) by Simon (1897). Recently new specimens of *Epidius* sp. were collected there on the boundaries of the Bellanwila-Attidiya marshes, Colombo, a wetland of regional importance (Bentham & Jeanes, 1993). They proved to be a new species, and are described here as *Epidius parvati* sp. n.

The genus *Epidius* possesses characters unusual for Thomisidae, e.g. a tegular structure that functions as a conductor and a single tibial apophysis. The detailed study of the male palp of *E. parvati* sp. n. is therefore of considerable interest.

### Methods

Structures were examined in temporary mounts embedded in glycerine. Vulvae were cleared with trypsin (0.1% trypsin, 0.1% CaCl<sub>2</sub>, in 0.05M tris-buffer, pH 7.6). All drawings were made with Nikon Labophot-2 and Nikon SMZ-U microscopes with drawing tube. Structures examined by SEM (ZEISS DSM 950) were cleaned ultrasonically and critical-point dried. Measurements are in mm.

Abbreviations: AMNH=American Museum of Natural History, New York; CAS=California Academy of Sciences, San Francisco; NMW=Naturhistorisches Museum, Wien; ZMUC=Zoological Museum, University of Copenhagen; ZMUT=Zoological

Museum, University of Turku. Standard abbreviations follow Schick (1965) and Ono (1988): ALE=anterior lateral eyes, AME=anterior median eyes, AME-ALE=distance between AME and ALE, AME-AME=distance between AME, MOA=median ocular area, MOA-L=length of MOA, MOA-WA=anterior width of MOA, MOA-WP=posterior width of MOA, PLE=posterior lateral eyes, PME=posterior median eyes, PME-PLE=distance between PME and PLE, PME-PME=distance between PME, RTA=retrolateral tibial apophysis of male palp, VTA=ventral tibial apophysis of male palp.

### *Epidius parvati* sp. n. (Figs. 1–23)

*Material examined:* Holotype ♂, Sri Lanka, Western Province, Colombo, Bellanwila-Attidiya (approximately 6°50'N, 79°54'E), mean elevation 0.6 m, 14 August 1996, deposited in AMNH. Paratypes, same locality: 2♂ 3♀, 22 February 1998; 1♀, 24 February 1998; 4♂ 3♀, 8 March 1998; 1♂ 3♀, 22 March 1998. All leg. S. P. Benjamin and D. A. Benjamin. Paratypes will be deposited in CAS, NMW, ZMUC, ZMUT and in the author's private collection.

All specimens were collected by beating shrubs and flowering plants up to a height of *c.* 1 m, along the Bolgoda canal outside the boundaries of the Bellanwila-Attidiya sanctuary. This protected area comprises shrubs and small trees scattered around shallow ponds, marshes and seasonally flooded grassland. This marshland is a residual fragment of the once extensive marsh around Colombo. Vegetation is considered characteristic for the wetlands of the region with a moderate level of salinity (Bentham & Jeanes, 1993).

*Etymology:* Noun in apposition. Named after the Hindu goddess Parvati.

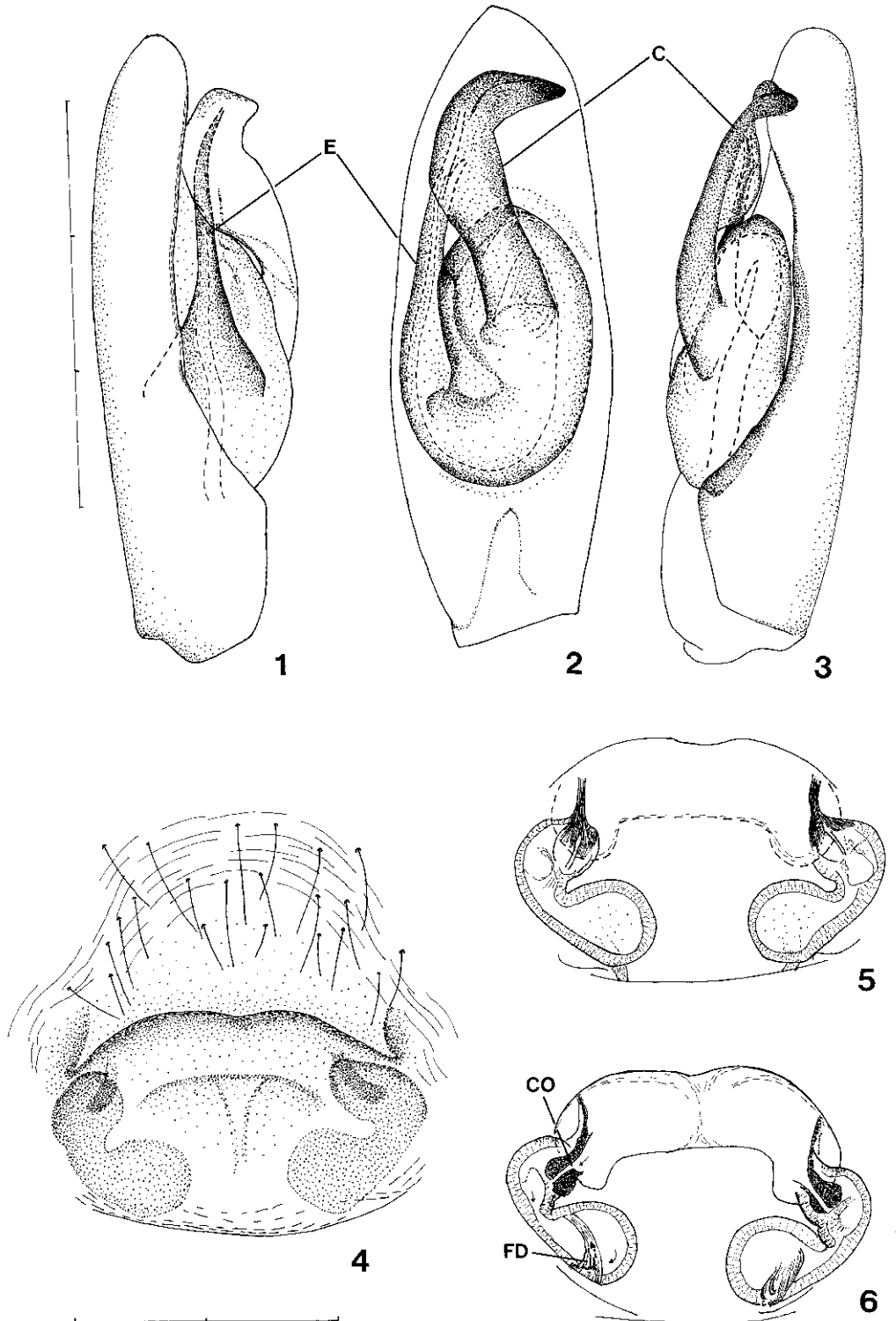
*Generic identification:* Taxonomic work on *Epidius* is limited. Apart from *E. binotatus* Simon, 1897, no other species have been studied in detail. Somatic and palpal characters given by various authors (Simon, 1897; Badcock, 1918; Lessert, 1930; Millot, 1941) agree well with the specimens from Bellanwila-Attidiya. In addition Millot (1941: fig. 30 A–E) gives illustrations of habitus, cheliceral dentition and palp for *E. binotatus* from West Africa, which enable correct generic placement. This is confirmed by illustrations and description of the palp of *E. longipalpis* in Badcock (1918). *Cupa gongi* Song & Kim, 1992 from China is very similar to *Epidius parvati* sp. n. in palpal and vulval structures but differs in details of the embolus and conductor (Song & Kim, 1992: figs. 6, 7; cf. Figs. 1–3, 10). In the genus *Sanmenia* Song & Kim, 1992, the palpal femur and tibia are not elongated.

*Diagnosis:* *E. parvati* sp. n. differs from *E. longipalpis* by the shape and length of the tegular apophysis. The embolus of *E. parvati* sp. n. is bifurcate, but much simpler than in *E. longipalpis*. In *E. longipalpis* the tip of the conductor is wider and rounder, and its furrow smoother than in *E. parvati* sp. n. (P. T. Lehtinen, pers. comm.).

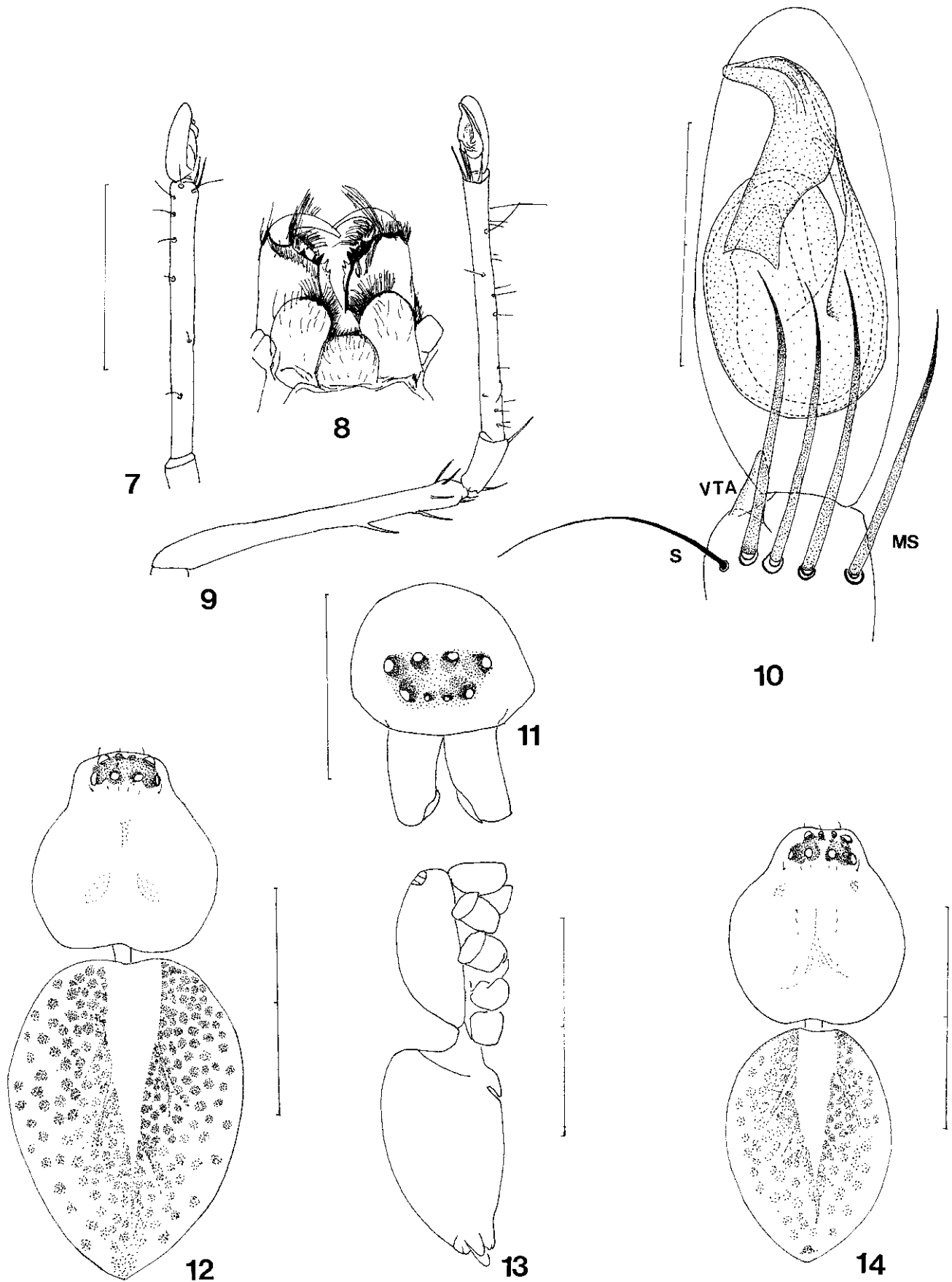
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*Description: Male:* Total length 3.9; prosoma length 1.7, width 1.6; opisthosoma length 2.1, width 1.5. Leg I: femur 3.0, patella 0.6, tibia 3.3, metatarsus 3.0, tarsus 1.0. Markings of specimen in alcohol: Fig. 14. Prosoma light yellow, without prominent markings or conspicuous setae. Opisthosoma light yellow, dorsally with inconspicuous white spots and occasionally brown spots, prominent setae absent. Living specimens: prosoma light green, opisthosoma darker with green-yellow

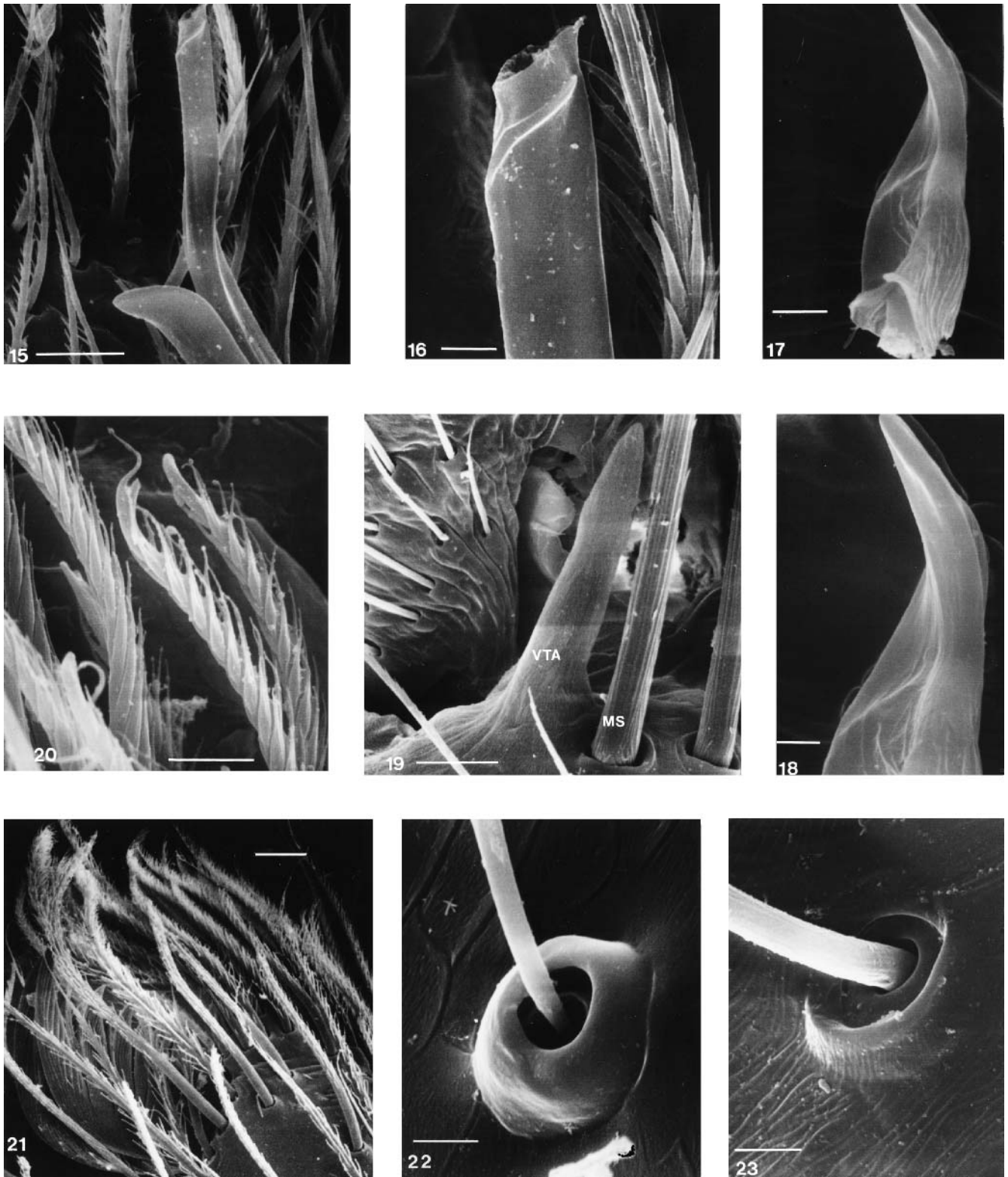
dorsal folium. Some individuals with irregular reddish brown markings on legs I and II. Prosoma with sparse hairs, head narrow, with setae, posterior row of eyes re-curved, wider than anterior row. Eyes without tubercles (Fig. 11), surrounded by dark rings.  $ALE \geq PLE > PME > AME$ ,  $AME-ALE$  0.05,  $AME-AME$  0.05,  $PME-PLE$  0.1,  $PME-PME$  0.1,  $MOA-L$  0.3,  $MOA-WA$  0.2,  $MOA-WP$  0.3. Chelicera with conspicuous fringe of hairs along promargin, with three and two teeth on



Figs. 1–6: *Epidius parvati* sp. n., male (1–3), female (4–6). **1** Left palp, mesal view; **2** Ditto, ventral view; **3** Ditto, ectal view; **4** Epigyne, ventral view; **5** Vulva, ventral view; **6** Ditto, dorsal view. Abbreviations: C=conductor, CO=copulatory opening, E=embolus, FD=fertilisation duct. Scale lines=0.1 mm (5, 6), 0.2 mm (4), 0.3 mm (1, 2, 3).



Figs. 7–14: *Epidius parvati* sp. n., male (7–11, 13–14), female (12). **7** Right palpal tibia, ectal view; **8** Chelicerae and labium, aboral view; **9** Right palp, mesal view; **10** Right palp with macrosetae, ventral view; **11** Ocular area, frontal view; **12** Female, habitus, dorsal view; **13** Male habitus, lateral view; **14** Ditto, dorsal view. Abbreviations: MS=macrosetae, S=long seta. Scale lines=0.2 mm (10), 1.0 mm (7, 8, 9, 11), 2.0 mm (12, 13, 14).



Figs. 15–23: *Epidius parvati* sp. n., SEM micrographs of right male palp (15–20, 22, 23) and leg I (21). **15** Embolus; **16** Ditto, detail; **17** Conductor; **18** Ditto, detail; **19** VTA (15–19 all ventral view); **20** Chemosensitive hairs on distal part of cymbium; **21** Tip of tarsus, with circular cross-section scopula hairs of leg I; **22** Trichobothrium base, palpal tibia; **23** Seta base, palpal tibia. Abbreviation: MS=macrosetae. Scale lines=0.02 mm (17, 19, 23), 0.01 mm (15, 18), 0.005 mm (20, 22), 0.002 mm (16, 21).

pro- and retromargin of fang furrow respectively (Fig. 8). Labium as in Fig. 8. Leg formula 1243, Femur I with 4 dorsal pairs of spines, 2 prolateral and 2 apical spines, tibia I with 4 pairs of dorsal and 3 prolateral spines, metatarsus I with dorsal pair and 2 prolateral spines. Scopula hairs as in Fig. 21.

*Palp* (Figs. 1–3, 7, 9, 10, 15–20): Femur and tibia characteristically elongated, femur as long as tibia, *c.* 1.6, with well developed spines (Figs. 7, 9). Patella dorsally with two spines. Anterior margin of tibia with 4 stiff ventral bristles, pointing forward, almost reaching base of tegular apophysis, and a long fine seta ectally

(Fig. 10). Pattern of trichobothria as in Figs. 7, 9. VTA transparent, hardly discernible (Figs. 10, 19), tutaculum absent, i.e. lateral margin of cymbium without a modification which guides the embolus. Bulbus ovoid, conductor with sharp end pointing ectally and distal furrow (Figs. 2, 3, 17, 18). Embolus bifurcate (Figs. 2, 10, 15).

*Female*: Total length 4.7; prosoma length 1.8, width 1.5; opisthosoma length 2.8, width 2.3. Leg I: femur 2.5, patella 0.7, tibia 2.6, metatarsus 2.0, tarsus 0.9. Coloration as in male (Fig. 12). Posterior eye row recurved, wider than anterior row. Eyes without tubercles. Leg spination as in male. ALE  $\geq$  PLE > PME > AME, AME-ALE 0.05, AME-AME 0.05, PME-PLE 0.1, PME-PME 0.1, MOA-L 0.3, MOA-WA 0.2, MOA-WP 0.3. *Epigynum and vulva* (Figs. 4–6): Epigynum without hood, with distinct sclerotised margin. Intromittent ducts running from lateral corners of epigynal margin posteriorly to sclerotised receptacula. Copulatory openings and fertilisation ducts as in Fig. 6.

*Distribution*: Known only from the type locality. The record of *E. longipalpis* mentioned for Sri Lanka by Simon (1897) might refer to *E. parvati* sp. n.

## Discussion

The family Thomisidae was characterised among others by Simon (1895, 1897), Schick (1965), Homann (1975) and Ono (1988), as summarised below. Leg formula 1243, legs I and II longer and stronger than legs III and IV, scopula hairs circular in cross-section. Lateral eyes with tubercles, large and much more developed than median eyes, all eyes apart from AME with tapetum. Colulus present. Male palpal tibia with VTA and RTA. Tutaculum present in many species. Bulbus subequal in length and width. Tegulum disc-shaped, with tegular ridge, without distal outgrowth accommodating the apical portion of the embolus (conductor). Embolus typically with sclerotised truncus and membranous pars pendula. Sperm duct follows a circular peripheral course through the tegulum.

However, *E. parvati* n. sp. differs from this diagnosis together with species of the genera *Cupa* Strand, 1906 (*sensu* Song & Kim, 1992) and *Sanmenia* Song & Kim, 1992 in the presence of a conductor. *Cupa gongi* Song & Kim, 1992 possesses palpal structures similar to *Epidius*, i.e. tibia with macrosetae on anterior/ventral margin, RTA and tutaculum absent, bulbus ovoid, conductor with sharply pointing tip. It might even be considered as a member of *Epidius*. Species of the genus *Sanmenia* possess two tibial apophyses, which are interpreted as RTA and VTA (Ono & Song, 1986: figs. 5–6; Ono, 1988; Song & Kim, 1992). The presence of macrosetae on the ventral margin of the palpal tibia and the presence of a conductor suggest a possible close relationship of the genera *Epidius*, *Cupa* and *Sanmenia*. These genera might represent the sister group of all other thomisids. As much taxonomic work in this family has been based on Holarctic species, tropical species might provide arguments not previously recognised.

A detailed study of Oriental Thomisidae, currently being conducted by Dr P. T. Lehtinen, will probably provide an alternative classification for this group (P. T. Lehtinen, pers. comm.).

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