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Author(s): Suresh P. Benjamin, I. Sandunika Ileperuma Arachchi and Bhagya P. Herath

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## First record of *Platythomisus sudeepi* from Sri Lanka (Araneae: Thomisidae)

Suresh P. Benjamin

I. Sandunika Ileperuma Arachchi

National Institute of Fundamental Studies,  
Hantana Road,  
Kandy, Sri Lanka  
email: suresh.benjamin@gmail.com

Bhagya P. Herath

University of Peradeniya,  
Peradeniya, Sri Lanka

### Summary

*Platythomisus sudeepi* Biswas, 1977 is newly recorded in Sri Lanka from six localities, extending its current distribution in southern Asia. General and genital morphology of males and females are illustrated and described; the male is illustrated for the first time. Further, notes on stalking and egg sack construction behaviour are given.

### Introduction

The crab spider genus *Platythomisus* Doleschall, 1859 currently includes 13 species distributed in the Ethiopian and Oriental regions. Members of this genus were found to be abundant in Sri Lanka. However, usable descriptions are lacking and none of the males of any of the 13 known species have been illustrated. In southern Asia, a single species of *Platythomisus*, *P. sudeepi*, is known from three localities in India: Pollibeta, Coorg District, Karnataka (type locality; Biswas 1977); Castle rock, North Kanara, Karnataka (Bastawade, Kunte & Captain 2004); and Mannuthy, Thrissur, Kerala (Siliwal & Molur 2005). Recently, we collected both sexes of *P. sudeepi* from several localities in Sri Lanka, thus extending its current distribution in southern Asia. *Platythomisus* was previously unknown in the island. Most probably it occurs naturally in Sri Lanka. The aim of the present paper is to present the genital structures of both sexes of *P. sudeepi* based on material from Sri Lanka. Photographs of the spider in life and some notes of its behaviour are also provided.

### Material and methods

All the specimens were collected mainly by beating and hand collecting and were preserved in 70% ethanol. The collected specimens were examined using an Olympus SZX7 stereomicroscope. Drawings were done as described in Benjamin (2011). Live photographs were taken using Nikon DXM1200F camera (Nikon, Tokyo, Japan). All measurements are given in mm. Voucher specimens are deposited in the National Institute of Fundamental Studies (NIFS).

Abbreviations: ALE anterior lateral eyes, AME anterior median eyes, C conductor, CO copulatory opening, E embolus, ED ejaculatory duct, ITA intermediate tibial apophysis, PLE posterior lateral eyes, PME posterior

median eyes, RTA retrolateral tibial apophysis, VTA ventral tibial apophysis.

### Thomisidae Sundevall, 1833

#### *Platythomisus* Doleschall, 1859

**Diagnosis:** Forms part of the *Thomisus* clade (*sensu* Benjamin *et al.* 2008; Benjamin 2011). However, *Platythomisus* is distinguished by the following combination of characters from other genera of the clade: carapace and opisthosoma with dark patches (usually black) surrounded by bright colours (usually red or yellow). Proximal half of legs translucent, distal half black. Male palp with ventral and retrolateral tibial apophysis. Tegulum flat, disk-shaped. Retrolateral tibial apophysis bifurcate. Tegular ridge present. Epigynum with sclerotized margins, spermathecae oval in shape, well sclerotized. Spermathecae not divided into compartments.

#### *Platythomisus sudeepi* Biswas, 1977 (Figs. 1–4)

*Platythomisus sudeepi* Biswas, 1977: 332–334, figs. 1–3 (♀).  
Types not examined.

**Material examined:** SRI LANKA: 1♂, Western Province, Panadura, Mahabellana, along Bolgoda South lake, 6°41'40"N 79°58'06"E, 7 m a.s.l., S. P. Benjamin *et al.* leg., hand collecting, July 2008, (IFS\_Tho\_433); 1♂, Central Province, Kandy District, Kandy, Dunumadalawa, 07°17'00"N 80°37'49"E, 600 m a.s.l., S. P. Benjamin & P.M.H. Sandamali leg., hand collecting, 24 September 2009, (IFS\_Tho\_432); 1♀, Ranawana, Katugasthota, 07°30'42"N 80°61'69"E, 508 m a.s.l., B. P. K. Herath leg., hand collecting, 30 November 2014, (IFS\_Tho\_431); 1♀ (sub adult), Udawattakelle forest, 07°17'54"N 80°38'29"E, 580 m a.s.l., N. Athulorala *et al.* leg., beating, 11 May 2015, (IFS\_Tho\_073); 1♂, Gannoruwa forest, 07°17'16"N 80°35'47"E, 575 m a.s.l., N. Athukorala *et al.* leg., beating, 30 July 2016, (IFS\_Tho\_564); 1♀, Matale District, IFS Arboretum, 07°51'34"N 80°40'28"E, 180 m a.s.l., I. S. Ileperuma Arachchi leg., hand collecting, 20 January 2016, (IFS\_Tho\_096); 1♀, North Western Province, Kurunegala District, Kurunegala, Ethagala Range, 7°28'17"N 80°22'30"E, 190 m a.s.l., S. P. Benjamin, S. Batuwita & Z. Jaleel leg., hand collecting, 24 November 2009, (IFS\_Tho\_390).

**Diagnosis:** Can be separated from other congeners by the characteristic three black bands on the opisthosoma of female. Males can be separated by the digit like VTA and stout, bifurcate RTA. Females are separated by the oval epigynal hood.

**Description of male:** Total length 2.7–2.9; carapace length 1.5, width 1.2. Leg I: femur 1.8, patella 0.5, tibia 1.5, metatarsus 0.9, tarsus 0.7. Carapace outline rounded, slightly longer than wide, fully black coloured, no markings, eye sizes and distances: AME 0.11, ALE 0.16, PME 0.03, PLE 0.09, AME–AME 0.14, AME–ALE 0.07, PME–PME 0.27, PME–PLE 0.27. Chelicera, labium, and other dorsal



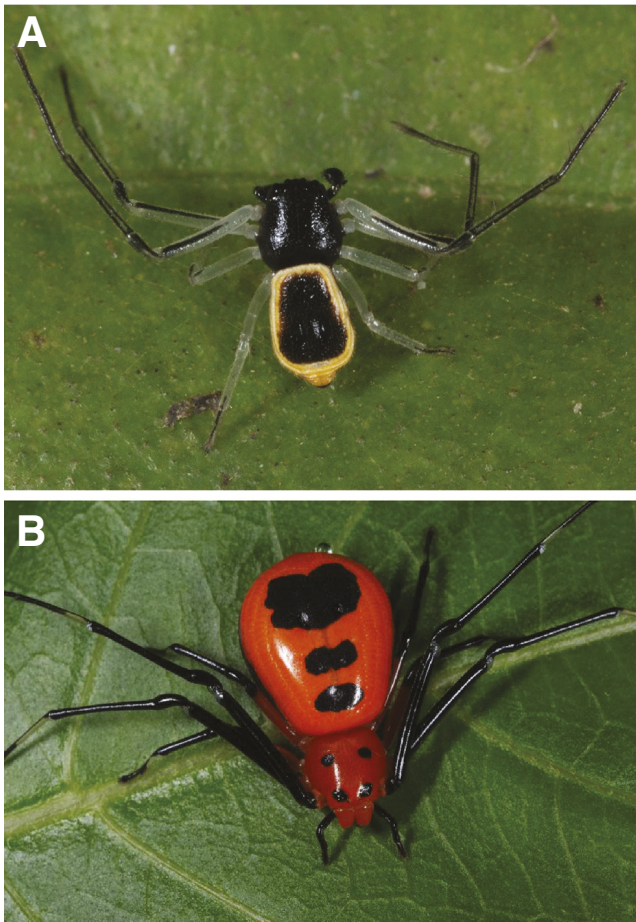


Fig. 1: *Platythomisus sudeepi* in life. **A** male; **B** female.

parts black in colour (Fig. 1A). Opisthosoma flattened, conical, tapering towards rear end, dorsally black coloured, surrounded by light yellow outer margin. Legs translucent except for tarsus, metatarsus, tibia, patella I–II, and tarsus III–IV, which are black (Fig. 1A). Femur I–II with black

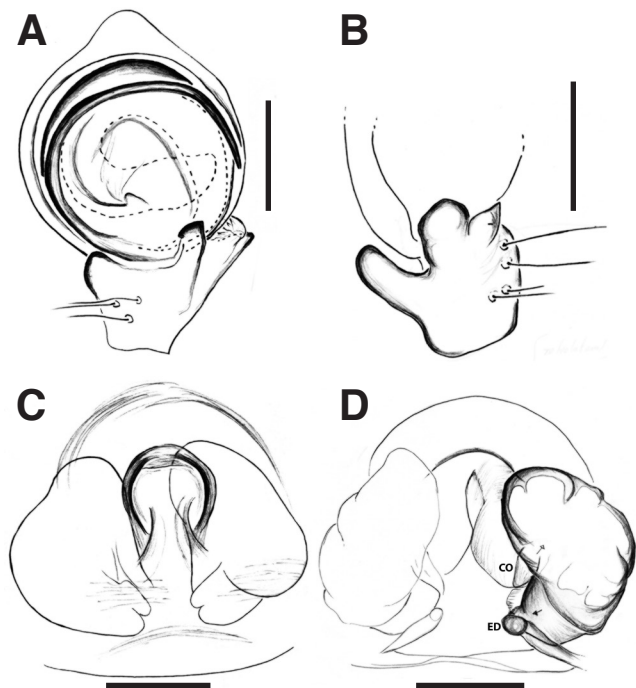


Fig. 2: Palp and epigynum of *Platythomisus sudeepi*. **A** palp, ventral view; **B** palp, retrolateral view; **C** epigynum, dorsal view; **D** epigynum, ventral view. Scale lines = 0.2 mm.

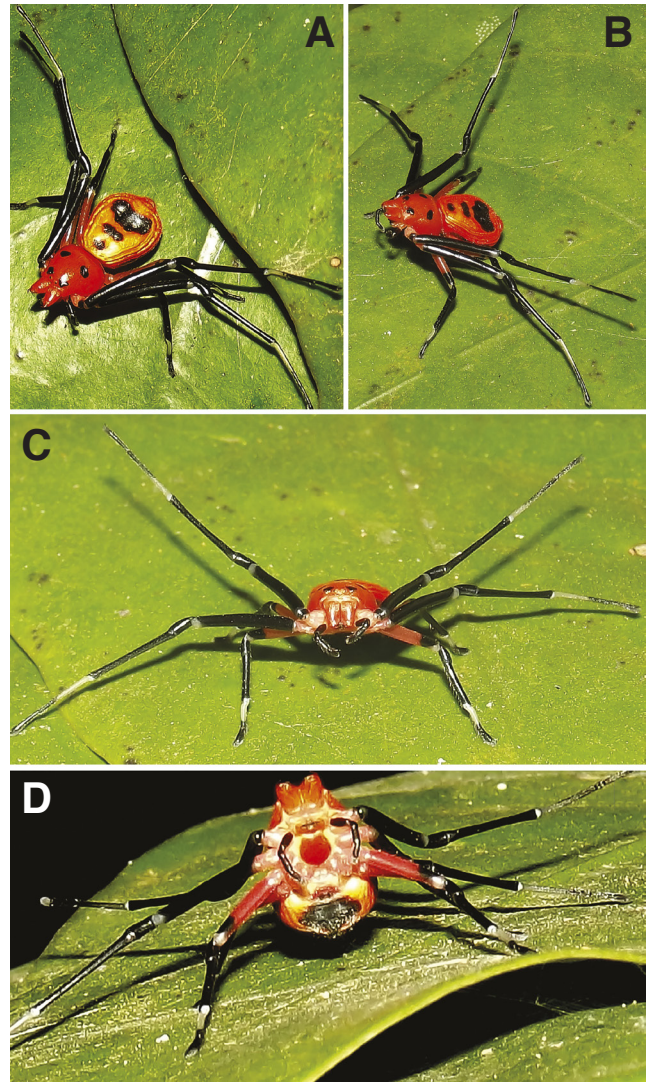


Fig. 3: Stalking behaviours of *Platythomisus sudeepi* (see text for details). **A** the spider extends its first pair of legs backwards, above the second pair of legs, holding them close to the opisthosoma; **B** first pair of legs is held 45° to the surface of the leaf; **C** same as B, frontal view; **D** the spider displays its bright coloured venter.

lines fading dorsally, running halfway towards patella (Fig. 1A). Leg formula 1234. Palp: black, VTA, ITA and RTA present, VTA short with distally blunt apex, ITA combined with RTA basally and little larger than RTA, RTA small and broad basally, pointed apex as in Fig. 2A–B.

*Description of female:* Total length 8.9–12.2; Carapace length 4.1, width 4.4, Leg I: femur 4.2, patella 0.9, tibia 3.3, metatarsus 3.1, tarsus 1.1. Carapace somewhat wider than long, narrower anteriorly, wider posteriorly, dark orange in colour with glossy appearance, four distinct black spots in two pairs, approximately equal in size. All eyes except AME located in anterior pair of black spots (Fig. 1B). Eye sizes: AME 0.12, ALE 0.16, PME 0.08, PLE 0.1, AME-AME 0.1, ALE-AME 0.3, PLE-PME 0.52. Chelicera, labium, gnathocoxae, and sternum orange in colour (Fig. 1B). Palps black (Fig. 1B). Trochanter, femur, patella, tibia, tarsi I–II, distal end of femur, patella, tibia, tarsi III–IV black in colour. Metatarsi I–IV translucent laterally and ventrally, shaded black dorsally. Opisthosoma conical, somewhat compressed laterally, less glossier than carapace, three



characteristic black transverse bands on opisthosoma; first two bands roughly equal in size, third band much larger and broader than first two. Two black bands extend towards spinnerets laterally, on each side, venter with large black spot. Epigynum with hood, copulatory ducts short, spermathecae kidney-shaped (Fig. 2C–D).

*Distribution:* India and Sri Lanka (new record).

### Observations on the behaviour of *Platythomisus sudeepi* female

A nest of a female *Platythomisus sudeepi* was observed in a shady and moist environment, about 1.5 m above ground on a nutmeg tree (*Myristica fragrans*, Myristicaceae). It was made by attaching two neighbouring leaves with white silk. The spider used an opening towards the apex of the two leaves as the entrance to the nest, even though the silk was arranged in a manner that the nest had openings from four directions.

The female spider was found to be nocturnal; it only came out of its retreat at dusk and would go inside at dawn. The day was spent inside the nest, mostly resting or sometimes feeding on captured prey. However, the spider was seen at the entrance of the retreat at dawn and dusk, with the carapace partly visible (Fig. 4B).

Several different stalking behaviours were performed by the spider at different locations on its retreat at night. The most common type of behaviour was observed close to the entrance of the retreat, where it extended its first pair of legs (L1) backwards, above the second pair of legs (L2) and held them close to the opisthosoma (Fig. 3A–B). The next, relatively less common, ambush behaviour was performed at the middle of the retreat, where the first pair of legs were held at approximately 45° to the surface of the leaf and extended the second pair of legs further from the opisthosoma, creating a crab-like appearance when viewed from in front (Fig. 3C).

The third, and relatively rare, ambush behaviour was also mostly observed in the middle of the retreat, where the female lowered her opisthosoma, extended the first pair of legs backwards, tucked closer to the opisthosoma, while the second pair of legs were kept extended further away from the body. This behaviour allowed the spider to display the brightly coloured venter of the body (Fig. 3D). Another relatively uncommon ambush behaviour was observed, in which the spider was found on the ventral side of the retreat, facing front (Fig. 4A). The spider was observed preying on a single species of praying mantis (*Haplopeza* sp.). Prey capture occurred once every 2–5 days. The spider moved into the retreat soon after capturing a prey item and fed on it for several hours. Other prey items, like moths, grasshoppers, and fruit flies, were offered but were not accepted.

The female spider did not feed for ten days prior to egg sac construction. The egg sac is circular in shape, made of white silk, and is constructed and attached to the underside of the retreat during the night (Fig. 4C). The silk arrangement of the newly laid egg sac was changed the following night with another layer arranged in an irregular pattern with an opening at one side (Fig.

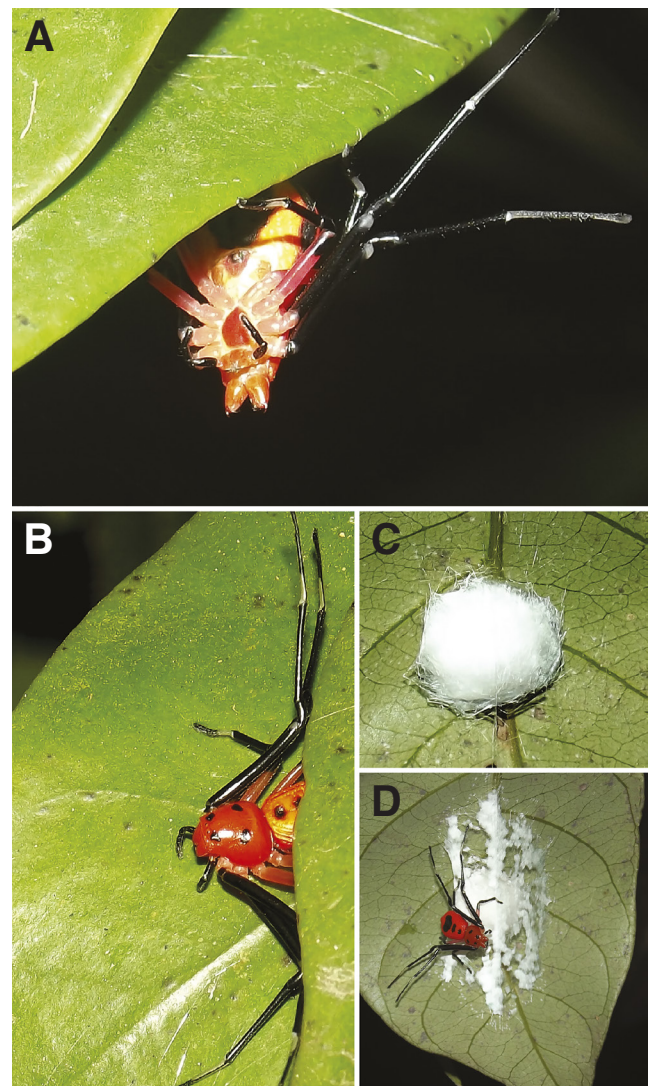


Fig. 4: *Platythomisus sudeepi* at her retreat and egg sac (see text for details). **A** the spider in ambush position on the ventral side of the retreat, facing front; **B** the spider at the entrance to the retreat; **C** the egg sac, circular in shape, made of white silk, attached to the underside of the retreat; **D** same as C, with additional layers of silk arranged in an irregular pattern with an opening towards the side.

4D). After egg laying, the female crab spider did not live inside its old retreat, and started to live under the egg sac. Even after egg laying, the female spider was nocturnal and came out of the egg sac only at night. Aggressive and defensive movements were observed using the front, long pair of legs when disturbed at night. The first three types of ambush behaviour were witnessed on and near the egg sac as well (Fig. 3A–D). The female spider took its prey, (*Haplopeza* sp.) under the egg sac and fed on it. The spider constantly added silk on to the egg sac. After 30 days, the eggs hatched. In the first few days, the spiderlings and the mother remained within the egg sac. Then the mother moved away from the egg sac and captured prey; taking the prey into the egg sac or sharing it with the spiderlings was not observed.

An attempt was made at rearing the spiderlings in small containers. It was unsuccessful because they did not feed on the *Drosophila* sp. offered as prey. The adult spider was observed for a few more days, during which time she changed her mostly nocturnal behaviour and became more active during the day.

## Discussion

All the specimens were collected by beating and hand collecting from vegetation 1–2 m in height and 7–600 m a.s.l. in secondary forests. Although we have not been able to examine the types or material from the type localities, we were able to identify unambiguously our female specimens, based on the descriptions above. However, this conclusion should be reassessed when males of *Platythomisus sudeepi* from the type locality are available.

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