A New Spider Species of the Genus Stenaelurillus Simon, 1886 (Araneae: Salticidae: Aelurillinae) from India

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Abstract: A new jumping spider species of the genus Stenaelurillus Simon, 1886, S. jagannathae sp. nov. is described from Delhi, India. A detailed taxonomic description of both the sexes is provided here along with the natural history information. Also keys for Stenaelurillus species of Asia is provided in this paper.

Keywords: New species, Stenaelurillus jagannathae, India, Asia, keys

1. Introduction

The spider family Salticidae Blackwall, 1841 is the most diverse family of spiders and represented by 198 species of 66 genera in India out of 587 genera and 5821 species in the world (World Spider Catalog, 2015). The salticid genus Stenaelurillus Simon, 1886, belongs to subfamily Aelurillinae and considered a senior synonym of Philotheroides Strand, 1934 (Prószyński, 1984). At present it includes 34 species from all over the world, of these only 7 species are known from Asia and rest from Africa, with none common to both. In India only three species of this genus are found, viz., S. lesserti Reimoser, 1934, S. sarojinae Caleb and Mathai, 2014 and S. albus Sebastian et al. 2015 (Wesołowska, 2013; World Spider Catalog, 2015). Here, we describe Stenaelurillus jagannathae sp. nov. from Delhi, India as new to science. A detailed taxonomic description of both the sexes is provided here along with the natural history information. Also keys for the Asian species of the genus Stenaelurillus is provided in this paper.

2. Material and Methods

The specimens were collected by hand picking method and preserved in 70% ethyl alcohol with little glycerine. Measurements of body parts were taken with a Mitutoyo™ Vernier Caliper. Leg measurements were taken dorsally for the left side. All measurements are in millimetres. Genitalia were dissected and cleared in concentrated lactic acid in 100°C water bath for 15-20 minutes. All illustrations were prepared with the help of a drawing tube attached to an Olympus SZX10 stereomicroscope. All specimens are deposited at Indraprastha University Museum (IPUM), New Delhi, India.

Abbreviations: AL - abdomen length, AW - abdomen width, CL - cephalothorax length, CW - cephalothorax width, AME - anterior median eyes, ALE - anterior lateral eyes, PME - posterior median eyes, PLE - posterior lateral eyes, ALS - anterior lateral spinneret, PMS - posterior median spinneret, PLS - posterior lateral spinneret, d - dorsal, fe - femur, mt - metatarsus, pa - patella, p - prolateral, r - retrolateral, ti - tibia, tr - tarsus, v - ventral.

Taxonomy
Salticidae Blackwall, 1841
Aelurillinae Simon, 1901
Stenaelurillus Simon, 1886

Type species. Stenaelurillus nigricaudus Simon, 1886; by original designation.

Diagnosis. Medium sized spiders with long spinnerets. Two white longitudinal stripes on carapace and strong bristles on the ocular area. Male palp with a simple, short, not coiled and visible embolus. Tegulum with characteristic retrobasal process and with a tegular apophysis distinctly placed to the embolus (Wesołowska and Cumming, 1999; Szűts and Scharff, 2005).

Stenaelurillus jagannathae Das, Malik and Vidhel sp. nov.

Type specimens
Holotype: Male (IPU-Arach-123): India, Asola Bhatti Wildlife Sanctuary (28º28'34''N; 77º13'48''E), Delhi, Coll. B. P. Vidhel, 23.04.2015, by hand; Allotype: Female (IPU-Arach-121): India, Asola Bhatti Wildlife Sanctuary, Delhi, Coll. B. P. Vidhel, 23.04.2015, by hand; Paratypes: 1 male (IPU-Arach-124) and 1 female (IPU-Arach-122), same data as holotype.

Etymology The specific epithet is a noun taken in apposition to Lord Jagannath due to superficial resemblance of posteroanterior view of dorsal abdomen of this new species to face of Lord Jagannath.

Diagnosis. The male of new species resembles S. triguttatus having three round spots on abdomen, chelicerae unidentate, palpal tibia without ventral outgrowth, cymbium dorsally convex,
tegulum without anterior pilose transversal rim, terminal tegular apophysis narrow with curved tip and embolus prolateral on ventral view, but distinctly differs from *S. triguttatus* having tibial apophysis with pointed appendix on tip (no pointed appendix in case of *S. triguttatus*), embolus clearly visible and sperm duct curved anteriorly on retrolateral view (in case of *S. triguttatus* embolus is hidden and sperm duct straight on retrolateral view). The female of new species resembles *S. lesserti* having three round spots on abdomen and closely aligned copulatory openings, but it differs from *S. lesserti* by unidentate chelicerae on both margins (promargin of chelicerae bidentate and retromargin unidentate in case of *S. lesserti*), relative position of copulatory openings (in case of *S. Jagannathae* it is well above on epigastric furrow, but in *S. lesserti* it is at epigastric furrow), having a distinct atrium (atrium invisible in case of *S. lesserti*), wall of copulatory openings are joined by a median, strongly sclerotized, elongated and nearly triangular plate (absent in case of *S. lesserti*), and in shape of spermathecae (it is oval in case of *S. Jagannathae* vs. bean-shaped in case of *S. lesserti*).

3. Description

**Holotype Male** (IPU-Arach-123; Figs 1, 3-6, 9-11; Table 1), TL 3.75, CL 2.00, CW 1.50, AL 1.75, AW 1.00.

Colour in life: Carapace black with two longitudinal white bands that starts from the cephalic area in front of the rear eyes and run converging backwardly to meet at their ends to form ‘V’ shape, the front clypeus and eye region with forwarding projecting strong white and brown bristles which is a continuation with yellowish white border on the lateral margins. Abdomen covered with strong black bristles in front, dorsally black with three white spots forming a central triangle, the triangle is bounded by a thick white transverse band followed by a small median brownish patch above and three white transverse lines below just before spinnerets, sides of abdomen with yellowish white border. Maxillae and labium pale yellow with brownish base. Sternum yellowish white covered with white bristles. Ventral abdomen light brown with scattered dark blotches and dark hairs. Chelicerae dark brown, palp and all legs dusty white, palpal and leg IV with black rings, tip of all legs black. Spinnerets brown.

Colour in alcohol: Cephalothorax dark dorsally, maxillae and labium yellowish white with brownish base, sternum yellowish white. Abdomen dark dorsally and yellowish white ventrally. Chelicerae orange in colour, palpal and all legs segments yellow with dark patches, all leg tips dark. Spinnerets yellowish brown.

Cephalothorax: Moderately high, oblong shaped, slightly broader posteriorly. Eye diameters and inter distances: AME 0.20, ALE 0.08, PME 0.06, PLE 0.14, AME-AME 0.60, PME-PME 1.20, PLE-PLE 1.15, AME-ALE 0.10, ALE-PME 0.50, PME-PLE 0.26. Clypeus height at AMEs 0.25. Chelicera vertical, unidentate. Sternum oval, 0.50 long, 0.25 wide. Labium and maxillae as long as wide, maxillae apically scopulate.

Abdomen: ‘U shaped’, spinnerets long and without colulus, three pairs, cylindrical, PMS smallest, ALS and PLS similar in size.

Lega: Leg formula 3412 (Table 1); spines, I: fe, d=1, p=2, r=3; ti, p=2, r=2; mt, p=1, r=1; tr, p=1, r=1; II: fe, d=2, p=2, r=2; pa, d=1; ti, p=2, r=2; mt, p=1, r=1; III: fe, d=3, p=2, r=2; pa, p=2, r=2; ti, d=1, p=2, r=2; mt, d=2, p=2, r=2; tr, d=2, IV: fe, d=1, p=2, r=2; pa, d=1, p=1, r=2; ti, d=2, p=2, r=2; mt, d=2, p=1, r=2.

Palp: Palpal tibia with retrolateral tibial apophysis that with a wide base having a pointed appendix on it, cymbium dorsally convex, terminal tegular apophysis narrow with curved tip and embolus prolateral on ventral view, embolus clearly visible and sperm duct curved anteriorly on retrolateral view.

**Allotype Female** (IPU-Arach-121; Figs 2, 7, 8, 12, 13; Table 2), TL 6.50, CL 3.00, CW 2.50, AL 3.50, AW 2.25.

Colour in life: Carapace black with a transverse white band joining anterior lateral eyes from which emerge two longitudinal white bands that run converging backwardly to form ‘U’ shape without meeting with each other at their ends, clypeus and eye region with forwarding projecting strong white and brown bristles that is a continuation with yellowish white border on the lateral margins. Abdomen covered with strong black bristles in front, dorsally black with three white spots forming a triangle at centre. The triangle is bounded by two white transverse bands in front, the second band is wavy having a brownish median triangular spot behind. In between this brownish triangular spot and posterior median white spot of central triangle, two converging brownish longitudinal lines extend. The central triangle is followed by three white transverse lines behind just before spinnerets. Sides of abdomen with yellowish white border. Maxillae and labium pale yellow with brownish base. Sternum yellowish white covered with white bristles. Ventral abdomen light brown with scattered dark blotches and dark hairs. Chelicerae dark brown, palp and all legs dusty white, palp and leg IV with black rings, tip of all legs black. Spinnerets brown.

Colour in alcohol: Cephalothorax dark dorsally, maxillae and labium yellowish white with brownish base, sternum yellowish white. Abdomen dark dorsally and yellowish white ventrally. Chelicerae orange in colour, palpal and all legs segments yellow with dark patches, all leg tips dark. Spinnerets yellowish brown.

Cephalothorax: Moderately high, oblong shaped, slightly broader posteriorly. Eye diameters and inter distances, AME 0.25, ALE 0.12, PME 0.06, PLE 0.12, AME–AME 0.50, PME–PME 1.50, PLE-PLE 1.25, AME-ALE 0.70, ALE-PME 0.35, PME-PLE 0.25. Clypeus height at AMEs 0.30. Chelicerae vertical, unidentate. Sternum oval, 1.00 long, 0.60 wide. Labium and maxillae as long as wide, maxillae apically scopulate.

Abdomen: ‘U shaped’, spinnerets long and without colulus, three pairs, cylindrical, PMS smallest, ALS and PLS similar in size.
Legs: Leg formula 3412 (Table 2), spines I: fe, d=3, p=2, r=2; ti, p=3, r=3; mt, p=2, r=2, tr, p=1, r=1; II: fe, d=2, p=2, r=3; pa, d=2; ti, p=2, r=2; mt, p=2, r=2, III: fe, d=3, p=2, r=3; pa, p=2, r=2; ti, d=3, p=2, r=3; mt, d=2, p=3, r=3; tr, d=2, IV: fe, d=2, p=2, r=2; pa, d=1, p=1, r=2; ti, d=3, p=3, r=2; mt, d=3, p=2, r=3, PALP: fe, d=2, r=2, p=2; ti, p=2, r=2; mt, p=2, r=2.

Epigyne: Ventrally, with short copulatory ducts that open well above the epigastric furrow into a distinct atrium, copulatory openings wide with weakly sclerotized wall, closely aligned, joined by a median, strongly sclerotized, elongated and nearly triangular plate and with clearly visible mating plugs; dorsally, oval spermathecae with fertilization ducts.

Paratypes: Male (IPU-Arach-124), TL 3.15, CL 2.00, CW 1.50, AL 1.15, AW 1.00. Morphology same to male holotype except minor difference in colour pattern of carapace and abdomen; Carapace black with two longitudinal white bands that starts from the cephalic area in front of the rear eyes and run converging backwardly to form 'U' shape without meeting at their ends, dorsal abdomen without a small median brown patch between thick white transverse band and central triangle of white spots. Female (IPU-Arach-122). TL 6.25, CL 3.0, CW 2.00, AL 3.25, AW 2.00. Morphologically same to female allotype.

Natural History
The species is very common in leaf litters of semi-arid woody forest habitat of Asola Bhatti Wildlife Sanctuary, Delhi, India from where it was collected and the area lies at the foot hills of Aravalli. The species is active predator and both male and female are active throughout the day.

Key to Stenaelurillus species from Asia
Wesołowska (2013) has been provided key to five 
Stenaelurillus species known from Asia till 2013. Subsequently two new species are added to this genus from India (Caleb and Mathai, 2015; Caleb et al. 2015; Sebastian et al. 2015). With present discovery of S. jagannathae sp. nov. from India, the Stenaelurillus species from Asia goes to a total eight species. Here, we are updating key to Stenaelurillus species known from Asia till date after Wesołowska (2013).

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References


| Table 1: Morphometry of legs of male Stenaelurillus jagannathae sp. nov. (IPU-Arach-123 & 124) |
|----------|----------|----------|----------|----------|----------|
|          | Leg I    | Leg II   | Leg III  | Leg IV   | Palp     |
| Femur    | 1.00-1.15| 1.00     | 1.25-1.50| 1.15-1.25| 0.60-0.70|
| Patella   | 0.25-0.5 | 0.25     | 0.35-0.50| 0.25-0.5 | 0.20-0.25|
| Tibia     | 0.45-1.00| 0.45-0.75| 1.00     | 1.00     | 0.15-0.25|
| Metatarsus| 0.50     | 0.250.50 | 1.00     | 1.00     | -         |
| Tarsus    | 0.25-0.50| 0.45-0.50| 0.60-0.75| 0.50-0.75| -         |
| Total     | 2.85-3.25| 2.40-3.00| 4.20-4.75| 3.90-4.50| 0.95-1.20|

| Table 2: Morphometry of legs of female Stenaelurillus jagannathae sp. nov. (IPU-Arach-121 & 122) |
|----------|----------|----------|----------|----------|----------|
|          | Leg I    | Leg II   | Leg III  | Leg IV   | Palp     |
| Femur    | 1.00-1.25| 1.00     | 2.00     | 1.25-1.50| 0.6-0.8  |
| Patella   | 0.25-0.50| 0.25-0.50| 0.50-0.75| 0.75     | 0.12     |
| Tibia     | 0.75     | 0.5-0.75  | 1.25     | 1.00     | 0.35-0.40|
| Metatarsus| 0.50     | 0.50     | 1.25     | 1.25     | 0.6      |
| Tarsus    | 0.50     | 0.50     | 0.75     | 0.75     | -        |
| Total     | 3.00-3.50| 2.75-3.25| 5.75-6.00| 5.00-5.25| 1.67-1.92|

Figure 1 & 2: Stenaelurillus jagannathae sp. nov. 1. Dorsal view of male habitus; 2. Dorsal view of female habitus.
Figure 3-8: *Stenaelurillus jagannathae* sp. nov. 3. Male palp, ventral view; 4. Prolateral view; 5. Retrolateral view; 6. Dorsal view; 7. Female epigyne, ventral view; 8. Dorsal view

Figure 9-13: *Stenaelurillus jagannathae* sp. nov. 9. Male palp, ventral view; 10. Prolateral view; 11. Retrolateral view; 12. Female epigyne, ventral view; 13. Dorsal view. Scale, 9-11=0.3mm; 12 & 13=0.1mm.