

New data on the spider genus *Steriphopus*, with description of a new species from India (Araneae: Palpimanidae)

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ABSTRACT

The Paleotropical spider genus *Steriphopus* Simon, 1887, previously known from Sri Lanka, Myanmar and Seychelles, is recorded from India for the first time. In view of new data, the genus is rediagnosed and redescribed, and its diagnostic characters are reconsidered. A poorly known Seychelles species, *S. lacertosus* Simon, 1898, is redescribed from the conspecific female and depicted for the first time. The newly discovered Indian representative, *S. benjamini* n. sp., is diagnosed, depicted and described based on the holotype female and a few additional subadult specimens. The two species distinguish from each other, as well as from other congeners, in either their eye pattern or the structure of the endogyne.

KEYWORDS: Biodiversity, Aranei, Chediminae, spiders, taxonomy, Asia, India, Himachal Pradesh.

INTRODUCTION

The current study is a second separate survey dealing with *Steriphopus* Simon, a small chedimine genus which is currently known to have a mosaic distribution in the Paleotropical realm (WSC 2023). The first study (Marusik & Zonstein 2018) was chiefly aimed to rediagnose and delimit the genus to allocate it within the Chediminae, and to redescribe *S. macleayi* (O. Pickard-Cambridge, 1873) based on the available material. Over the time elapsed, the composition of the genus has been somewhat changed. *Fernandezina gyrongensis* Hu & Li, 1987 from Tibet, evidently misplaced in this South American genus and tentatively allocated to *Steriphopus* by Zonstein and Marusik (2013), has been recently transferred to the genus *Tibetima* Lin & Li, 2020 as *T. gyrongensis* (Lin & Li, 2020). Two other species of *Steriphopus*, *S. crassipalpis* Thorell, 1895 and *S. lacertosus* Simon, 1898, remain known only from their poor original descriptions lacking figures.

While studying the palpimanid specimens stored at the Zoological Museum of Moscow University, Russia (ZMMU) and at the Zoological Museum, University

of Turku, Finland (ZMUT), we recognized a few specimens belonging to two different species of *Steriphopus*, from Seychelles, and India, respectively. The former, represented by a single female, was identified as *S. lacertosus*, while the Indian congener was found to be an undescribed species. It should be noted, that *Steriphopus*, previously known from Sri Lanka, Myanmar and Seychelles, is herein recorded from India for the first time. The aim of this study is to rediagnose and redescribe *S. lacertosus* from the available material, to fully describe the new species and to reconsider the distribution and some diagnostic characters of the genus in view of the newly received data.

MATERIAL AND METHODS

The spiders were photographed with a Canon EOS 7D camera attached to an Olympus SZX16 stereomicroscope at the ZMUT. Digital images were stacked using Helicon Focus 7.0 software. The separated endogynes were cleared in a 10 % KOH/water solution until dissolution of the soft tissues. Lengths of leg segments were measured on the dorsal segment side. All measurements are given in millimetres.

The following abbreviations are used: *Eyes*: ALE – anterior lateral, AME – anterior median, PLE – posterior lateral, PME – posterior median. *Abdominal scuta*: Ds – dot-like; Es – epigastral; Ss – stripe-like; Us – unpaired. *Copulatory organs*: At – atrium; Ft – fine threads; Gg – grape-shaped gland; Gs – globular structure; Sg – stalk of Gg. *Other abbreviations*: L/W – length/width ratio.

TAXONOMY

Family Palpimanidae Thorell, 1870

Subfamily Chediminae Simon, 1893

Genus *Steriphopus* Simon, 1887

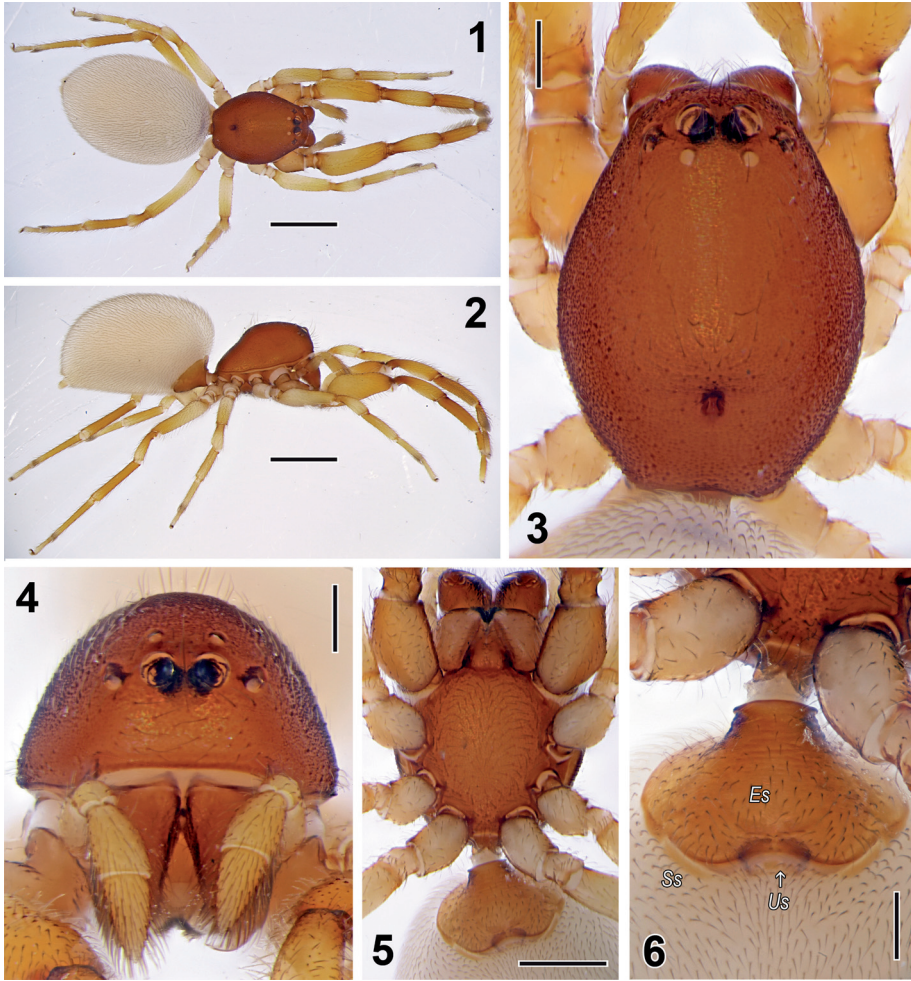
Pachypus O. Pickard-Cambridge, 1873: 115 (preocc.).

Steriphopus Simon, 1887: 274 (nom. n.), Simon 1893: 404; Marusik & Zonstein 2018: 491.

Type species: *Pachypus macleayi* O. Pickard-Cambridge, 1873, by monotypy.

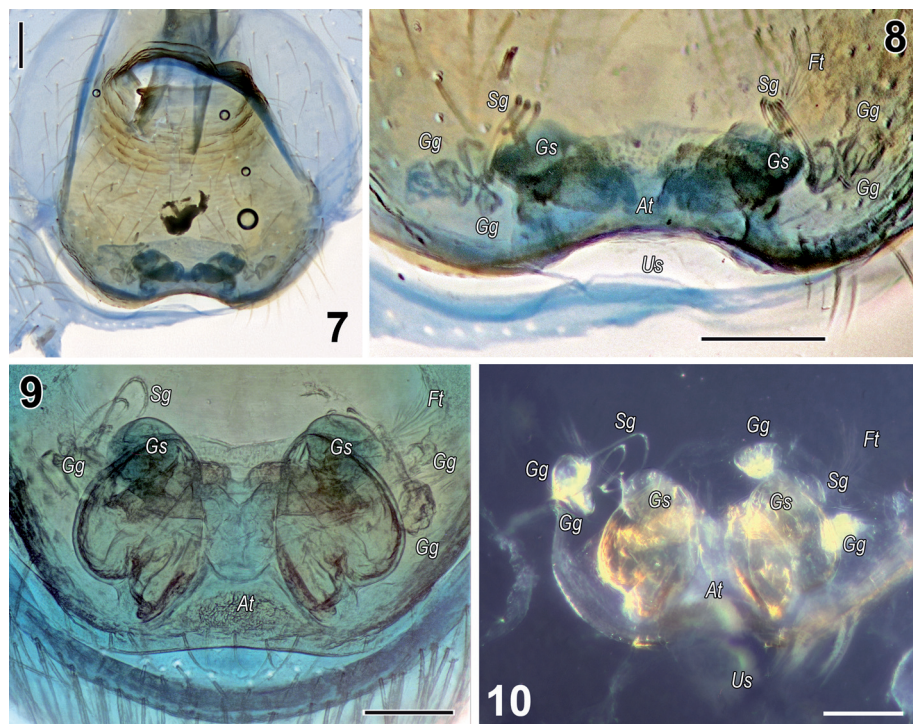
Comments: The additional data allow to conclude that all known *Steriphopus* species differ from members of the related and similarly looking chedimine genera (*Sarascelis* Simon, 1893, *Scelidocteus* Simon, 1907, *Scelidomachus* Pocock, 1899, *Sceliscelis* Oketch & Li, 2020, and *Tibetima* Lin & Li, 2020) in shape and structure of the carapace. Particularly, the carapace in *Steriphopus*, when viewed laterally, is dome-shaped, with the most elevated point of the postocular area forming a well-defined hump (Figs 1, 2, 4, 11, 12; Saaristo 2010, fig. 24.2; Marusik & Zonstein 2018, figs 3, 6, 12, 13), while in other aforementioned genera, except some species of *Sarascelis* and *Scelidocteus*, the carapace hump, even if present, is not so clearly developed (cf. Lin & Li 2020, fig. 2E; Oketch *et al.* 2020, fig. 1C).

The anterior part of the carapace in *Steriphopus* is unevenly rounded and demonstrates the presence of anterolateral obtuse corners (Figs 3, 11, 13; Saaristo 2010,



Figs 1–6. *Steriphopus lacertosus* Simon, 1898, female ZMUT AA 1.389: (1, 2) habitus in dorsal and lateral views, respectively; (3, 4) cephalothorax in dorsal and frontal (anterior) views, respectively; (5) same, ventrally, showing also petiolus, abdominal scuta and intact endogyne; (6) abdominal scuta and intact endogyne in close-up ventral view. Scale bars: Figs 1, 2 – 1 mm, Figs 3, 4, 6 – 0.2 mm, Fig. 5 – 0.5 mm. Abbreviations: Es – epigastral scutum, Ss – stripe-like scutum, Us – unpaired scutum (vestige).

fig. 24.1; Marusik & Zonstein 2018, figs 1–3), in contrast with their full absence in *Sarascelis* and *Sceliscelis* (cf. Jézéquel 1964, fig. 5a–c; Oketch *et al.* 2020, figs 1A–B, 2A–B). Nevertheless, in *Steriphopus* these corners are considerably less pronounced than in *Scelidocteus* and *Scelidomachus* (cf. Zonstein *et al.* 2018, figs 1, 5; Oketch *et al.* 2020, figs 3A, 4A).



Figs 7–10. *Steriphopus lacertosus* Simon, 1898, female ZMUT AA 1.389 (7, 8), and *Steriphopus macleayi* (O. Pickard-Cambridge, 1873) *sensu* Marusik & Zonstein (2018), female (9, 10), cleared endogyne: (7) dorsal (internal) view; (8–10) same, close-up view. Scale bars = 0.1 mm. Abbreviations: At – atrium, Ft – fine threads, Gg – grape-shaped gland, Gs – globular structure, Sg – stalk of Gg, Us – unpaired scutum.

In all known species of *Steriphopus*, the cuticle of the carapace is moderately rugose, as well as in other mentioned chedimine genera, except for the currently monotypic *Sceliscelis*, where the cuticle is densely and roughly granular (Oketch *et al.* 2020, figs 1A, 2A). Finally, the form of the thoracic fovea in *Steriphopus* spp. clearly differs from that in other mentioned genera. Unlike in *Sarascelis*, *Scelidocteus*, *Scelidomachus* and *Tibetima* with narrow slit-like, or anchor-shaped, or bipartite fovea, this structure in *Steriphopus* is rather Ω -shaped (Figs 3, 13; Saaristo 2010, fig. 24.1; Marusik & Zonstein 2018, figs 2, 3 cf. Zonstein & Marusik 2013 fig. 5; Zonstein *et al.* 2018, figs 1, 4; Lin & Li 2020, fig. 2B; Oketch *et al.* 2020, figs 3A, 4A). Although in *Steriphopus* the thoracic fovea somewhat resemble the fovea in *Sceliscelis*, which, at least in females, are clearly longer (cf. Oketch *et al.* 2020, fig. 2A).

The endogyne in *Steriphopus* is distinguishable due to the presence of the paired globular structures which are connected with the accessory glands by long, thin

and bent or coiled stalks vs. much shorter curved or sinuous stalks in the majority of other comparable genera (Jézéquel 1964, figs 1, 3, 6, 8, 10; Oketch *et al.* 2020, figs 2D, 3D–E; regarding *Scelidomachus* and *Tibetima*, these are known only from males). Although this difference was previously demonstrated only for a single species of *Steriphopus* (Figs 9, 10; Marusik & Zonstein 2018, figs 19–23, 25), it seems to be also true for two other congeners, considered herein (Figs 8, 19), i. e. for the majority of species included in this genus.

Composition and distribution: Thus, *Steriphopus* includes four species at present: *S. macleayi* (O. Pickard-Cambridge) (Sri Lanka), *S. crassipalpis* Thorell (Myanmar), *S. lacertosus* Simon (Seychelles) and *S. benjamini* n. sp. (India).

Steriphopus lacertosus Simon, 1898

(Figs 1–8)

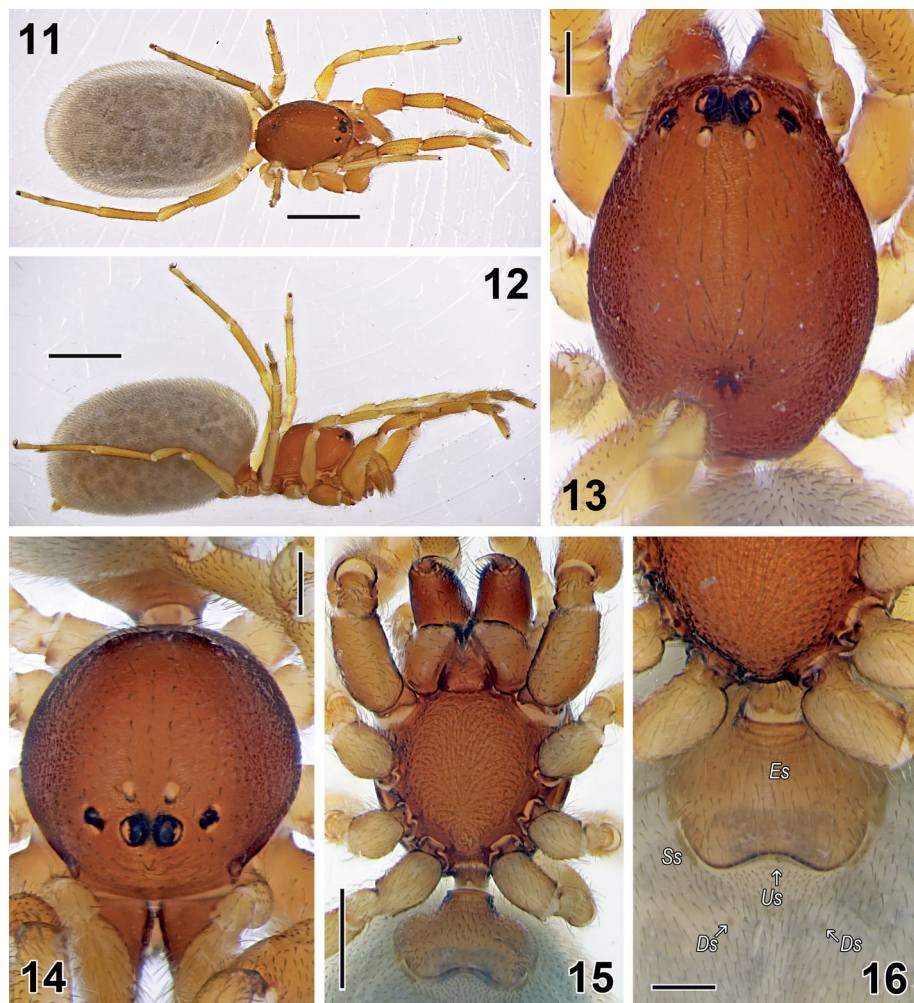
Steriphopus lacertosus Simon, 1898: 374 (♀); Marusik & Zonstein, 2018: 491.
Chediminae sp.: Saaristo 2010: 156, fig. 24.1–3 (♀).

Diagnosis: Female of this species can be distinguished from those of *S. macleayi* (*sensu* Marusik & Zonstein 2018) and *S. benjamini* n. sp. in possessing a different structure of the abdominal scuta and the endogyne. In *S. lacertosus*, a small unpaired ventral scutum (Us) is vestigial, and dot-like scuta (Ds) are completely absent (Fig. 6). In other species examined, these structures are either well-defined (Marusik & Zonstein 2018, fig. 10), or at least present (Fig. 16). The globular structures (Gs) of the endogyne in *S. lacertosus*, are connected with the accessory grape-shaped glands (Gg) by long tightly-coiled stalks (Sg), while in two other examined species these stalks either form several loops more broadly spaced from each other, or are bent only once each forming a single loop (Fig. 8 cf. Figs 9, 10, 21; Marusik & Zonstein 2018, figs 21–23, 25). In *S. lacertosus*, the median ocular quadrangle is noticeably wider than long (Fig. 3; Saaristo 2010, fig. 24.1), whereas in *S. crassipalpis*, the remaining fourth congener known only from the holotype male, it is only slightly wider than long, according to the original description (Thorell 1895).

Description: Female. *Habitus* as in Figs 1, 2. Total length 4.02.

Colour in alcohol: Carapace, chelicerae, labium, sternum and petiolar tube intensely scarlet red; maxillae, coxa and trochanter I, and entire epigastral scutum light tangerine orange, other segments of leg I and entire palp intensely yellowish orange, while legs II–IV, including coxae, and spinnerets pale yellowish orange. Unsclerotized part of abdomen dorsally and ventrally pale whitish orange.

Prosoma: Carapace (Figs 3, 4), with gently sloping thoracic hump, 1.53 long, 1.14 wide. Clypeus 0.29 long. *Eyes:* AME 0.12, ALE 0.07, PLE 0.06, PME 0.06, AME–AME 0.08, AME–ALE 0.08, ALE–PLE 0.01, PLE–PME 0.16, PME–PME 0.17. Fovea short, narrow and deep, not slit-like. Cheliceral furrow with 10–12 fairly long peg teeth on promargin and 2 small teeth on retromargin. Sternum, labium and maxillae as in Fig. 5.



Figs 11–16. *Steriphopus benjamini* n. sp., holotype female: (11, 12) habitus in dorsal and lateral views, respectively; (13, 14) cephalothorax in dorsal and frontal (anterior) views, respectively; (15) same, ventrally, showing also petiolus, abdominal scuta and intact endogyne; (16) abdominal scuta and intact endogyne in close-up ventral view. Scale bars: Figs 11, 12 = 1 mm, Figs 13, 14, 16 = 0.2 mm, Fig. 15 = 0.5 mm. Abbreviations: Ds – dot-like scutum (vestige), Es – epigastral scutum, Ss – stripe-like scutum, Us – unpaired scutum (vestige).

Palp and legs: Palp short and thick: femur L/W 1.7 (0.29/0.17), patella L/W 1.67 (0.20/0.12), tibia L/W 1.61 (0.29/0.18), tarsus L/W 2.07 (0.31/0.15). Femur I L/W 2.42 (1.16/0.48). Legs and palp length as following:

	Palp	I	II	III	IV
Femur	0.29	1.16	0.91	1.04	1.53
Patella	0.20	0.87	0.55	0.46	0.57
Tibia	0.29	0.72	0.61	0.59	0.88
Metatarsus	—	0.40	0.52	0.53	0.89
Tarsus	0.31	0.46	0.40	0.36	0.39
Total	1.09	3.61	2.99	2.98	4.26

Abdominal scuta: As in Fig. 6. Epigastral scutum (Es) accompanied with 3 distinct scuta, pair of stripe-shaped scuta (Ss) and unpaired scutum (Us) in front of copulatory opening; stripe-shaped scuta long and extending posterior edge of epigastral scutum; median part of epigastral scutum arch-bow shaped.

Endogyne: As in Figs 7, 8. Endogyne wider than long, with pair of globular structures (Gs), brush of fine threads (Ft) originates from globular structure; 4 pairs of large grape-shaped glands (Gg) having long and lopped stalks (Sg).

Male. Unknown.

Ecology: According to the label data, most specimens were found inhabiting the litter on the forest floor.

Holotype ♀ (MNHN, not examined): **Seychelles:** Mahé Island, no detail locality indicated, 1.v–30.vi.1895, A. Brauer.

Material examined: **Seychelles:** 1 ♀ (ZMUT AA 1.389), Aride Island, 4°13'S 55°40'E, 1–31.vii.2000, J. Gerlach; 1 juv. (ZMUT AA 1.391), same, Silhouette Island, Corgat-Cocos Marrons Ridge, 4°29'S 55°13'E, 18.vii.2000, J. Gerlach; 3 juv. (ZMUT AA 1.392), same, Praslin Island, Jardin Marron, 4°18'S 55°43'E, 5.vii.2000, J. Gerlach.

Distribution: Seychelles Archipelago: Mahé (the type locality), Silhouette, Praslin and Aride Islands.

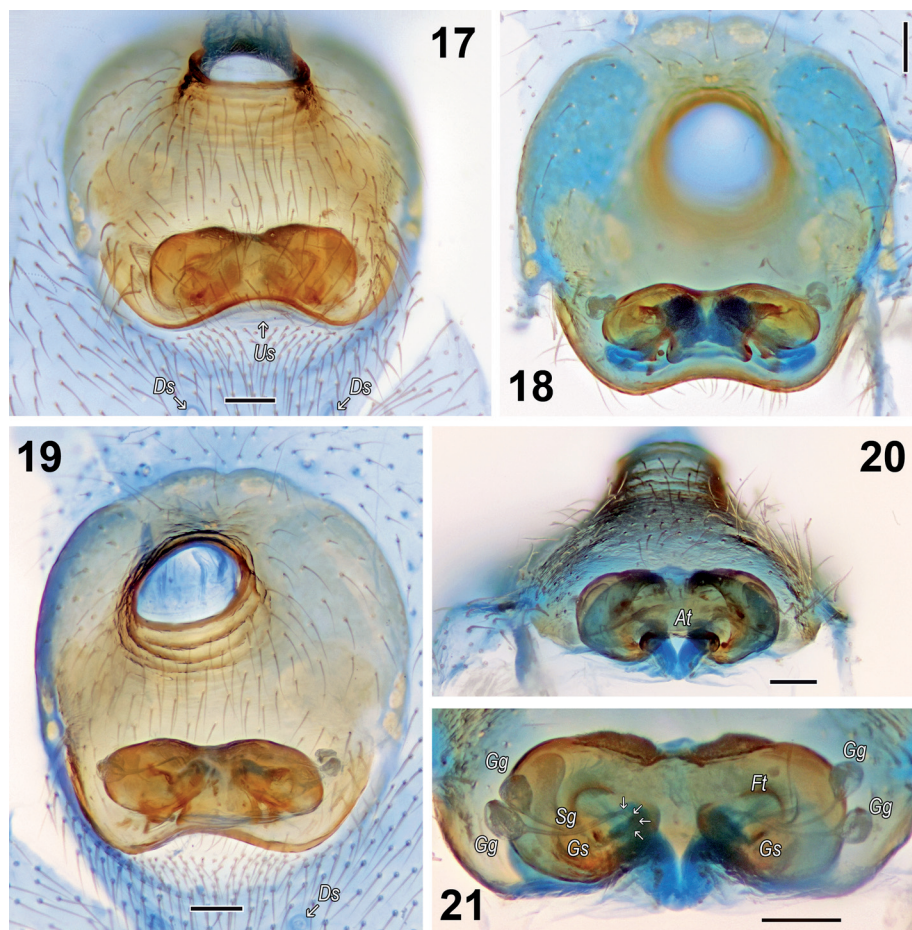
Steriphopus benjamini n. sp.

(Figs 11–21)

LSID: urn:lsid:zoobank.org:act:3F18A86B-8502-4A8B-A4D9-5C97064839A4.

Etymology: The specific epithet is a patronym in honour of Dr Suresh P. Benjamin, a well-known Sri Lankan arachnologist, for his substantial contribution to the study of South Asian spiders.

Diagnosis: The new species differs from two other congeners with described females in possessing different structure of the abdominal scuta and the endogyne. Unlike *S. lacertosus*, where dot-like scuta (Ds) are indiscernible, in *S. benjamini* n. sp. these paired scuta are weak but nevertheless present (Fig. 6 cf. Figs 16, 17, 19), as well as in *S. macleayi* (*sensu* Marusik & Zonstein 2018). However, the latter possesses concurrently a much better developed unpaired scutum (Us), which is represented by a poorly visible vestige in both *S. lacertosus* and *S. benjamini* n. sp.



Figs 17–21. *Steriphopus benjamini* n. sp., holotype female, cleared endogyne: (17) shown in ventral (external) view; (18, 19) same in dorsal (internal) view; (20) same, posteriorly (caudal view); (21) same, close-up. Scale bars = 0.1 mm. Abbreviations: At – atrium, Ds – dot-like scutum (vestige), Ft – fine threads, Gg – grape-shaped gland, Gs – globular structure, Sg – stalk of Gg (with bend indicated by several small arrows), Us – unpaired scutum (vestige).

(Figs 6, 8, 10, 16, 17; Marusik & Zonstein 2018, figs 4, 10). The structure of the endogyne in the new species is distinguishable due to paired bunches of several long connective stalks (Sg), where every stalk is bent only once forming a single loop, contrary to other examined congeners, where these stalks are coiled and form each several loops (cf. Figs 8, 10, 21; Marusik & Zonstein 2018, figs 21–23, 25). In *S. benjamini* n. sp., the median ocular quadrangle is clearly longer than wide (Figs 13, 14), while in *S. crassipalpis* it is slightly wider than long, according to the original description (Thorell 1895).

Description: Female (holotype). *Habitus* as in Figs 11, 12. Total length 4.16.

Colour in alcohol: Carapace, chelicerae, labium, sternum, petiolar tube and dorsal abdominal scutum light scarlet red; maxillae, coxa I, entire palp and leg I, and epigastral scutum intensely yellowish orange, while legs II–IV, including coxae, and spinnerets pale yellowish orange. Unsclerotized part of abdomen dorsally and ventrally pale yellowish grey.

Prosoma: Carapace (Figs 13, 14), with gently sloping thoracic hump, 1.27 long, 0.92 wide. Clypeus 0.21 long. *Eyes*: AME 0.10, ALE 0.06, PLE 0.05, PME 0.06, AME–AME 0.05, AME–ALE 0.10, ALE–PLE 0.02, PLE–PME 0.13, PME–PME 0.11. Fovea short, narrow and deep, but not slit-like. Cheliceral furrow with 5 or 6 peg teeth. Sternum, labium and maxillae as shown in Fig. 15.

Palp and legs: Palp short and thick: femur L/W 2.2 (0.33/0.15), patella L/W 1.25 (0.15/0.12), tibia L/W 1.55 (0.31/0.20), tarsus L/W 1.77 (0.30/0.17). Femur I L/W 2.79 (0.95/0.34). Legs and palp length as follows:

	Palp	I	II	III	IV
Femur	0.33	0.95	0.82	0.70	1.06
Patella	0.15	0.67	0.43	0.37	0.51
Tibia	0.31	0.67	0.53	0.48	0.82
Metatarsus	—	0.35	0.46	0.48	0.75
Tarsus	0.30	0.41	0.37	0.32	0.37
Total	1.09	3.05	2.61	2.35	3.51

Abdominal scuta: As in Fig. 16. Epigastral scutum (Es) accompanied with 3 scuta, a pair of short stripe-shaped scuta (Ss) not extending beyond epigastral scutum, a pair of rudimentary dot-like scuta (Ds) and unpaired weakly developed scutum (Us) in front of copulatory opening; posterior part of epigastral scutum arch-bow shaped.

Endogyne: As in Figs 17–21. Endogyne ca. 3 times wider than long; atrium (At) triangle-shaped in caudal view (Fig. 20); endogyne with pair of globular structures (Gs), brush of fine threads (Ft) originates from globular structure poorly indistinct; 2 pairs of large grape-shaped glands (Gg) with long and once-bent stalks (Sg) ca. 3.5 times longer than glands (Fig. 21).

Male. Unknown.

Holotype ♀ (ZMMU): **India**: Himachal Pradesh, Patlikuhl Town, 32°07.4'N 77°08.8'E, 1200 m, 17–23.vi.1999, Y.M. Marusik.

Additional material examined: **India**: 2♂ subad., Himachal Pradesh, Shimla City, university campus, 31°06.8'N 77°08.5'E, 2000–2200 m, 25–27.v.1999, Y.M. Marusik (ZMMU).

Distribution: Northern India (Himachal Pradesh).

Ecology: Unknown.

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