COMMUNICATION

TWO NEW LIGHT ATTRACTED ROVE BEETLE SPECIES OF AStENUS DEJEAN, 1833 (COLEOPTERA: STAPHYLINIDAE: PAEDERINAE) FROM KERALA, INDIA

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26 April 2021 | Vol. 13 | No. 5 | Pages: 18215–18226
DOI: 10.11609/jott.6729.13.5.18215-18226
Two new light attracted rove beetle species of *Astenus* Dejean, 1833 (Coleoptera: Staphylinidae: Paederinae) from Kerala, India

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Abstract: Two new light attracted species of rove beetles of the genus *Astenus* Dejean, 1833 (*Astenus keralensis* sp. nov. and *Astenus rougemonti* sp. nov.) from Malabar coastal plains of northern Kerala in southern India are described, illustrated, and compared to closely related species. First report of *Astenus kraatzi* Bernhauer, 1902 from Indian mainland and a checklist and key to all 41 species of *Astenus* recorded from the Indian mainland are provided.

Keywords: Beetles, Malabar coastal plains, Malappuram District, moist deciduous forest, northern Kerala, southern India, taxonomic key.
INTRODUCTION

Genus *Astenus* belongs to the subtribe Astenina Hatch, 1957, of tribe Lathrobiini Laporte, 1835 (Staphylinidae: Paederinae). The genus *Astenus* Dejean, 1833 is cosmopolitan (Cameron 1931) with 468 extant species described across the world (Newton 2020). It is easily recognizable from related genera by having head more or less expanded before eyes. Other diagnostic features being, rather small and slender habitus; reticulate-umbilicate sculpture of the integument; head comparatively large with respect to pronotum; narrow neck; labrum emarginate with two small teeth; long, slender, curved and pointed mandibles; and the bilobed penultimate tarsomere (Cameron 1931).

Thirty-nine species of *Astenus* are recorded from the Indian Mainland, with 19 of them being described by Cameron (1914, 1919, 1920, 1931, 1943). Cameron (1931) gave brief descriptions and keys to 25 species of *Astenus* from the Indian Mainland. After Cameron (1931), only 11 new species of *Astenus* were added to the Indian species list; three by Cameron (1943) himself, three by Coiffait (1982), four by Biswas & Sen Gupta (1983), and one by Biswas (2003) – with all records from northern India. There is very little work on *Astenus* species from southern India with only 14 species recorded, 13 of them being reported by Cameron (1931) and one by Fauvel (1904).

Two new species of *Astenus* (*A. keralensis* sp. nov. and *A. rougemonti* sp. nov.) are described from the Malabar coastal plains of northern Kerala in southern India. A revised and modified taxonomic key and checklist to *Astenus* of Indian mainland is provided along with first records from Indian mainland and from southern India. Notes on endemism, biogeographical affinities and remarks on taxonomy of *Astenus* are also discussed.

MATERIALS AND METHODS

Specimen collection and treatment

The specimens mentioned in this paper were collected as part of a three year (2017–2019) survey on Staphylinidae conducted in the entire northern Kerala region, specifically in the Western Ghats forest regions and scattered and isolated ranges of Malabar coastal plain moist deciduous forest. The rove beetle specimens, which were later identified as new species, were collected using low intensity UV light traps (SAFS) from isolated patches of forests in Chelari (11°13′40.6″N, 75°89′52″E ) located in Malabar coastal plains of Malappuram District in Northern Kerala. Collected specimens were transferred to 75% ethyl alcohol, were cleared using 10% KOH and were dissected to study the male genitalia. Species level identification was performed using new taxonomic key prepared based on type descriptions and key to species in Cameron (1931). Specimens and dissected genitalia were examined and measured under a Leica M205C stereozoom microscope. Images were taken using a Leica MC 170 HD microscope camera and enhanced using the Leica Application Suite V4.12.

The type specimens are deposited in Zoological Survey of India, Western Ghats Regional Center, Kozhikode, Kerala, India (ZSIK).

Abbreviations

The following abbreviations were used for measurements (in mm): Length of antenna (AL), head length from anterior margin of clypeus to posterior margin of head (HL), head width (excluding eyes) (HW), length of pronotum (PL), maximum width of pronotum (PW), maximum length of elytra from base to apex (EL), maximum width of elytra (EW), length of aedeagus from apex of ventral process to base of median lobe (ML), total body length (TL).

RESULTS

Taxonomy

Family Staphylinidae Latreille, 1802
Subfamily Paederinae Fleming, 1821
Tribe Lathrobiini Laporte, 1835
Subtribe Astenina Hatch, 1957
Genus *Astenus* Dejean, 1833

*Astenus keralensis* sp. nov.  
(Image 1 A–F)
urn:lsid:zoobank.org:act:A4851FFC-0051-4A03-A66F-209B44F159E5

Type material. Holotype: ID. S0101X19, 01.x.2019, male, India: Kerala: Malappuram: Chelari, 11.1112778N, 75.9039166E, light trap, coll. Sreevidhya, P.

Paratypes: S0210II18, 10.ii.2018, 2 males, India: Kerala: Malappuram: Chelari, 11.1112778N, 75.9039166E, light trap, coll. Sreevidhya, P; S0320II18, 20.ii.2018, 1 male, India: Kerala: Malappuram: University of Calicut, 11.2277778N, 76.4977777E, light trap, coll. Sreevidhya, P; S0401III18, 01.iii.2018, 1 male, India: Kerala: Malappuram: Chelari, 11.1112778N,
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75.9039166E, light trap, coll. Sreevidhya, P.; S0525X18, 25.x.2018, 2 males, India: Kerala: Malappuram: Chelari, 11.1112778N, 75.9039166E, light trap, coll. Sreevidhya, P.

Description

Measurements (n=7) TL: 4.394 (4.324–4.440); AL: 1.250 (1.242–1.251); HL: 0.844 (0.841–0.848); HW: 0.696 (0.682–0.709); PL: 0.770 (0.765–0.773); PW: 0.521 (0.517–0.523); EL: 0.719 (0.71–0.72); EW: 0.720 (0.717–0.722); ML: 0.5.

Colour: Head brownish-black, antennomeres I–IV dark brown and rest pale reddish-yellow; mouth parts infuscate; pronotum reddish-brown; elytra black with posterior margin in sharp contrast with distinct broad yellowish band, wider at the middle of each elytron and narrowed medially and laterally; scutellum reddish-brown; abdominal tergites III–V reddish, VI and VII dark brown, VIII dark brown with reddish posterior margin,
apex of the femora dark brownish-black, fore and middle tibiae dark brownish-black, tarsi entirely yellowish; setae entirely black.

Head: Elongate, rugose, closely punctate and reticulate, disc bulged at the middle, posterior angles widely rounded, tempora with several black setae, head in front of the eyes more or less parallel, eyes prominent; antennae long, all joints longer than wide, antennomeres III–X sub equal, XI longer.

Neck: 1/5th width of head.

Pronotum: Shield like, furnished with longitudinal rugae, narrower than head, gradually expanded until about 2/3 from base, then narrowed toward neck; anterior half of pronotum on each side with five black setae; posterior margin rounded.

Elytra: Glossy, wider but shorter than pronotum, narrowed at apex and base, strongly and closely punctate, having regular pubescence and several large setae.
Abdomen: Glossy, narrower than elytra at the base and slightly widened posteriorly, pubescence fine and dark; tergites VI and VII wider than preceding ones. Posterior margin of all segments glabrous. VIIth tergite longer than others, tergite VIII the shortest; anal styles rather long.

Aedeagus: Median lobe elongated, apex rounded and slightly curved ventrally in lateral view

Female: Unknown

Etymology: Named after Kerala, a state of India, from where the specimen was collected.

Differential diagnosis: Astenus keralensis is similar to A. gratellus (Fauvel, 1879) and A. diversiventris Cameron, 1943, but differs from them by its smaller size (TL 4.75mm in A. gratellus, TL 5.00mm in A. diversiventris), fore and middle tibiae dark brownish-black (fore and hind tibiae entirely yellowish in A. gratellus), antennal segments I–IV dark brown (antennae entirely yellow in A. gratellus, segments II to V infuscate in A. diversiventris), posterior margin of elytra distinctly yellow (elytra entirely black in A. diversiventris).

Astenus rougemonti sp. nov.

(type 2 A–F)

urn:lsid:zoobank.org:act:50DB62B3-15FF-4FD8-8DFE-51E49745F4E2

Type material. Holotype: S0615X17, 15.x.2017, male, India: Kerala: Malappuram: Chelari, 11.1112778N, 75.9039166E, light trap, coll. Sreevidhya, P.

Paratypes: S0710II18, 10.ii.2018, 1 male, India: Kerala: Malappuram: Chelari, 11.1112778N, 75.9039166E, light trap, coll. Sreevidhya, P; S0816X19, 16.x.2019, 2 males, India: Kerala: Malappuram: Chelari, 11.1112778N, 75.9039166E, light trap, coll. Sreevidhya, P; S0922X19, 22.xi.2019, 1 male, India: Kerala: Malappuram: Chelari, light trap, coll. Sreevidhya, P.

Description

Measurements (n=5) TL: 4.390 (4.353–4.442); AL: 1.514 (1.510–1.519); HL: 0.871 (0.870–0.871); HW: 0.733 (0.730–0.734); PL: 0.664 (0.649–0.666); PW: 0.646(0.640–0.650); EL: 0.743 (0.739–0.752); EW: 0.772 (0.769–0.778); ML: 0.4.

Colour: Head and pronotum dark reddish-yellow; elytra bicoloured with anterior half black and posterior half with pale reddish-yellow transverse band slightly extended anteriorly along the suture, sutural line yellowish posteriorly and black in anterior 1/3rd; abdominal tergites dark reddish-yellow, VIIth abdominal tergite with intersegmental membrane yellow, VIIth abdominal tergite mostly brownish-black with posterior margin pale reddish-yellow; antennae, legs and mouthparts pale reddish-yellow; setae black.

Head: Elongate and somewhat rectangular, quite umbilicate reticulate sculpture, head in front of the eyes parallel, two pairs of anterolateral punctures with black, short and stout setae, post ocular region moderately rounded bearing three black, short and stout setae and several long slender decumbent setae, posterior margin more or less straight; labrum short and wide with two distinct teeth and two very long yellow setae, eyes bulged, antennae long, almost reaching the base of pronotum, scape broader at the apex, second antennomere shortest, III–X sub equal, XI slightly longer.

Neck: 1/3rd width of head.

Pronotum: Convex, shorter and narrower than head, distinctly narrowed anteriorly and posteriorly, widest at 1/3rd; sculpture almost similar to head but broader, space between is more s-like; antero-lateral margin of pronotum with long erect setae.

Elytra: Glossy, finely pubescent, longer and wider than pronotum, as wide as long. Lateral margins with seven long oblique setae and numerous small setae. Anterior half more densely punctate than posterior half. Elytra narrowed apically.

Abdomen: Pubescence fine and dark, base of abdomen narrower than elytra.

Aedeagus: Median lobe narrowed from basal half to the apex, apical region pointed and curved.

Female: Unknown

Etymology: The species is named in memory and honour of late Guillaume de Rougemont, a very charming personality and a man who loved rove beetles, who guided us with the taxonomy of the genus Astenus.

Differential diagnosis: Astenus rougemonti is close to A. leptocerus (Eppelsheim, 1895) based on the colour pattern of elytra, but differs in having only the Vth visible abdominal tergite (VIth tergite) black (in A. leptocerus all the abdominal tergites are black). It is also close to Astenus horridus Rougemont, 2018, an endemic of Borneo but differs from it in following characters; slightly smaller (TL 4.80 mm in A. horridus) VIIth abdominal tergite (IVth visible tergite) not dark (IVth abdominal tergite dark in A. horridus), yellow fascia of elytral apex widening towards the suture (yellow fascia of elytral apex not widening towards the suture in A. horridus). Sculptures on the pronotum broader than on head and the space between is more’s’ like (sculptures on pronotum as on head in A. horridus).
Checklist of the genus *Astenus* (Staphylinidae: Paederinae) from India

**Genus Astenus** Dejean, 1833
*Astenus* Dejean, 1833: 65

**Type species** *Staphylinus angustatus* Paykull, 1789
(*= Staphylinus gracilis* Paykull, 1789)
*Astenus andrewesi* Cameron, 1931
*Astenus andrewesi* Cameron, 1931: 71
**Distribution:** India: Tamil Nadu: Nilgiri Hills.

*Astenus asitus* Biswas & Sen Gupta, 1983
*Astenus asitus* Biswas & Sen Gupta, 1983: 1
**Distribution:** India: Sikkim: Rangpo; West Bengal: Darjeeling

*Astenus bisalicus* Biswas & Sen Gupta, 1983
*Astenus bisalicus* Biswas & Sen Gupta, 1983: 3
**Distribution:** India: West Bengal: Darjeeling.

*Astenus bispinus* (Motschulsky, 1858)
=*Sunius bispinus* Motschulsky, 1858: 636
=*Sunius major* Kraatz, 1859: 146
**Distribution:** India: West Bengal: Darjeeling; Tamil Nadu: Nilgiri Hills. Sri Lanka: Kandy. Myanmar. Vietnam: Annam. Indonesia: Sumatra. Thailand.

*Astenus cachemiricus* Coiffait, 1982
*Astenus cachemiricus* Coiffait, 1982: 97
**Distribution:** India: Kashmir
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Astenus caspiracus Coiffait, 1982
Astenus caspiracus Coiffait, 1982: 99
Distribution: India: Kashmir

Astenus concolor (Kraatz, 1859)
= Sunius concolor Kraatz, 1859: 149
Distribution: India: West Bengal. Taiwan.

Astenus diversiventris Cameron, 1943
Astenus diversiventris Cameron, 1943: 32
Distribution: India: West Bengal: Darjeeling.

Astenus flavescens Scheerpeltz, 1933
Astenus flavescens Scheerpeltz, 1933: 1232
=Astenus flavipennis Cameron, 1931: 80
Distribution: India: Himachal Pradesh; Uttar Pradesh; Darjeeling; Manipur. Nepal: Siwaliks.

Astenus flavus (Kraatz, 1859)
= Sunius flavus Kraatz, 1859: 149
Distribution: India Oriental “Ind. Or.” as given by Kraatz 1859; Eastern India and Nepal (Newton 2020); India: Kerala: Tholpetty.

Astenus ghumensis Cameron, 1943
Astenus ghumensis Cameron, 1943: 32
Distribution: India: West Bengal: Darjeeling

Astenus gracilentus (Fauvel, 1879)
= Sunius gracilentus Fauvel, 1879: 83
= Sunius gracilis Kraatz, 1859: 147
Distribution: India: Himachal Pradesh; Uttar Pradesh; Darjeeling; Manipur; Meghalaya; Tripura; Tamil Nadu: Nilgiri Hills. Bangladesh: Dacca. Singapore. China: Hong Kong.

Astenus gratellus (Fauvel, 1879)
= Sunius gratellus Fauvel, 1879: 83
= Sunius pulchellus Kraatz, 1859: 147
Distribution: India: Uttarakhand: Dehradun; West Bengal: Darjeeling District; Maharashtra: Mumbai; Tamil Nadu: Nilgiri Hills. Sri Lanka: Colombo, Kandy. Myanmar: Tenasserim. Indonesia: Sumatra, Java. Vietnam: Tonkin. Bhutan. China: Hong Kong.

Astenus gratus Cameron, 1931
Astenus gratus Cameron, 1931: 72
Distribution: India: Uttarakhand: Dehradun.

Astenus h-signatus Cameron, 1914
Astenus h-signatus Cameron, 1914: 540
Distribution: India: Patkai Hills.

Astenus hindostanus Cameron, 1919
Astenus hindostanus Cameron, 1919: 227
Distribution: India: Nilgiri Hills. Sri Lanka: Colombo, Kandy, Nuwara Eliya.

Astenus indicus (Kraatz, 1859)
= Sunius indicus Kraatz, 1859: 148
= Sunius aequalis Blackburn, 1888: 9
= Sunius oculus Sharp, 1874: 72
Distribution: India: Uttarakhand; Sikkim; West Bengal: Darjeeling; Maharashtra: Mumbai; Kerala: University of Calicut (Botanical Garden). Sri Lanka. Myanmar. Japan. Oman. Saudi Arabia. Italy. Egypt. Turkey. Iran. Afghanistan. China: Shanghai. Taiwan. Canary Islands. Eastern and western Africa. Tanzania.

Astenus jhopus Biswas & Sen Gupta, 1983
Astenus jhopus Biswas & Sen Gupta, 1983: 5
Distribution: India: West Bengal: Darjeeling.

Astenus kashmiricus Cameron, 1943
Astenus kashmiricus Cameron, 1943: 32
Distribution: India: Kashmir.

Astenus kraatzi Bernhauer, 1902
Astenus kraatzi Bernhauer, 1902: 36
Distribution: India: Kerala: Chelari. Sri Lanka: Nalanda, Anuradhapura, Trincomalee, Colombo.

Astenus ladakhensis Coiffait, 1982
Astenus ladakhensis Coiffait, 1982: 98
Distribution: India: Kashmir

Astenus leptocerus (Eppelsheim, 1895)
= Sunius leptocerus Eppelsheim, 1895: 64
Distribution: India: Uttarakhand: Dehradun, Musssorie; Madhya Pradesh; West Bengal; Maharashtra: Nagpur; Tamil Nadu: Nilgiri Hills; Kerala: Chelari. Sri Lanka. Vietnam: Ogasawara Island. Mauritius: Rodriguez Island. Madagascar. Reunion (France). Comoros.

Astenus maculatus Cameron, 1920
Astenus maculatus Cameron, 1920: 146
=Astenus saigonensis Cameron, 1940: 250
Distribution: India: Tamil Nadu: Nilgiri Hills. Bangladesh: Dacca. Thailand. Vietnam. China: Hong Kong, Yunnan.
Astenus maculipennis maculipennis (Kraatz, 1859)
=Sunius maculipennis maculipennis Kraatz, 1859: 148
=Sunius bicolor Sharp, 1874: 72
Distribution: India: West Bengal; Meghalaya; Tamil Nadu: Nilgiri Hills; Kerala: Parambil Bazar. Sri Lanka. Vietnam. Philippines. Indonesia. China: Guangxi. Japan: Honshu, Kyushu, Shikoku. South Korea. Taiwan. Mauritius. Madagascar. Senegal. Ivory Coast.

Astenus marginalis Cameron, 1931
Astenus marginalis Cameron, 1931: 77
Distribution: India: Uttarakhand: Chakrata, Mussorie, Kempty Falls, Manjgaon, Dhobi Ghat.

Astenus melanurus (Küster, 1853)
=Astenus melanurus (Küster, 1853) =Sunius melanurus Küster, 1853: 76
=Astenus aemulus Rottenberg, 1870: 33
Distribution: India: Uttarpradesh: Lakhimpur Kheri; Uttarakhend: Dehradun; West Bengal; Manipur; Maharashtra. Indonesia: Java. Cypris. Iran. Syria. Turkey. Croatia. France. Greece. Italy. Malta. Portugal. Slovakia. Slovenia. Algeria. Canary Islands. Egypt. Libya. Morocco. Tunisia. South Africa.

Astenus nilgiriensis Cameron, 1931
Astenus nilgiriensis Cameron, 1931: 82
Distribution: India: Nilgiri Hills; Kerala: Pookkottur.

Astenus obscurus Cameron, 1931
Astenus obscurus Cameron, 1931: 82
Distribution: India: Nilgiri Hills.

Astenus peraffinis Cameron, 1931
Astenus peraffinis Cameron, 1931:90
Distribution: India: Nilgiri Hills.

Astenus pulchripennis Cameron, 1931
Astenus pulchripennis Cameron, 1931: 76
Distribution: India: Uttar Pradesh: Lakhimpur Kheri; Uttarakhend: Chakrata, Mussorie.

Astenus semibrunneus Cameron, 1931
Astenus semibrunneus Cameron, 1931: 87
Distribution: India: Uttarakhend: Dehradun; West Bengal: Darjeeling.

Astenus setiferides Newton, 2017
Astenus setiferides Newton, 2017: 10
=Astenus setiferus Cameron, 1931: 90
Distribution: India: Nilgiri Hills; Kerala: Kambalakkad.

Astenus sikkimensis Biswas, 2003
Astenus sikkimensis Biswas, 2003: 260
Distribution: India: West Bengal: Darjeeling

Astenus similaeensis Cameron, 1931
Astenus similaeensis Cameron, 1931: 74
Distribution: India: Himachal Pradesh: Simla, Kotgarh, Gahan. Afghanistan.

Astenus subnotatus Fauvel, 1904
Astenus subnotatus Fauvel, 1904: 51
Distribution: India: Uttar Pradesh: West Bengal; Chhathisgarh: Dugel; Maharashtra; Karnataha: Nagargali, Sampgaon. Indonesia: Java. South Africa. Lesotho. Botswana. Namibia.

Astenus suturalis Cameron, 1931
Astenus suturalis Cameron, 1931: 69
Distribution: India: Uttarakhend: Chakrata: Mohana. Thailand.

Astenus tancus Biswas & Sen Gupta, 1983
Astenus tancus Biswas & Sen Gupta, 1983: 5
Distribution: India: Uttar Pradesh: Gorakhpur: Nautanawa; Jharkhand: Singrah Falls.

Astenus terminalis Cameron, 1931
Astenus terminalis Cameron, 1931: 84
Distribution: India: West Bengal; Nilgiri Hills; Kerala: Kozhippara (Nilambur). China: Hong Kong.

Astenus varians Cameron, 1931
Astenus varians Cameron, 1931: 78
Distribution: India: Uttarakhend: Dehradun: Kheri Rao, Mussorie, Nakraunda, Arinagad, Kolhu Khet gad. Myanmar. Thailand. China: Yunnan, Hong Kong.

DISCUSSION

Of the 10 species collected from northern Kerala region (Image 3), three species of Astenus (A. flavus (Kraatz, 1859) from Tholpetty which is a part of the Wayanad Wildlife Sanctuary; A. setiferides Newton, 2017 from Kambalakkad in Wayanad Reserve Forest; A. terminalis Cameron, 1931 from Kozhippara in Nilambur Reserve Forest) were collected from the Western Ghats hotspot of biodiversity and seven species (A. indicus (Kraatz, 1859); A. keralensis sp. nov.; A. kraatzi Bernhauer, 1902; A. leptocerus (Eppelsheim, 1895); A. maculipennis (Kraatz, 1859); A. nilgiriensis Cameron,
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Endemism and Biogeographic Affinities

Of the 41 species of Astenus recorded from Indian mainland, nine species (A. andrewesi Cameron, 1931; A. hindostanus Cameron, 1919; A. keralensis sp. nov.; A. kraatzi Bernhauer, 1902; A. nilgiriensis Cameron, 1931; A. obscurus Cameron, 1931; A. rougemonti sp. nov., and A. setiferidus Newton, 2017) are endemic to the Western Ghats and Sri Lanka hotspot of biodiversity with A. keralensis sp. nov., A. kraatzi, A. nilgiriensis, and A. rougemonti sp. nov. extending their distribution to the Malabar coastal plain moist deciduous forest region (Table 1). Another seven species (A. asitus Biswas & Sen Gupta, 1983; A. bisalicus Biswas & Sen Gupta, 1983; A. diversiventris Cameron, 1943; A. ghumensis Cameron, 1943; A. h-signatus Cameron, 1914; A. jhopus Biswas & Sen Gupta, 1983; and A. sikkimensis Biswas, 2003) are endemic to the eastern Himalaya.
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The Kashmir Himalaya region (Table 1).

Table 1. Endemic status of Astenus species recorded from India.

| Species name | Distribution/ Endemism |
|--------------|------------------------|
| A. hindostanus Cameron, 1919 | Endemic to India and Sri Lanka (WG & SL)* |
| A. kraatzi Bernhauer, 1902 | Endemic to India and Sri Lanka (WG & SL)* |
| A. gratus Cameron, 1931 | Endemic to the Indian mainland |
| A. marginalis Cameron, 1931 | Endemic to the Indian mainland |
| A. pulchripennis Cameron, 1931 | Endemic to the Indian mainland |
| A. semibrunneus Cameron, 1931 | Endemic to the Indian mainland |
| A. tunicus Biswas & Sen Gupta, 1983 | Endemic to the Indian mainland |
| A. ausitus Biswas & Sen Gupta, 1983 | Endemic to the Indian mainland (EH)* |
| A. bisalicus Biswas & Sen Gupta, 1983 | Endemic to the Indian mainland (EH)* |
| A. diversiventris Cameron, 1943 | Endemic to the Indian mainland (EH)* |
| A. ghumensis Cameron, 1943 | Endemic to the Indian mainland (EH)* |
| A. h-signatus Cameron, 1914 | Endemic to the Indian mainland (EH)* |
| A. jhopus Biswas & Sen Gupta, 1983 | Endemic to the Indian mainland (EH)* |
| A. sikkimensis Biswas, 2003 | Endemic to the Indian mainland (EH)* |
| A. cachemiricus Coiffait, 1982 | Endemic to the Indian mainland (KH)† |
| A. kashmiricus Coiffait, 1982 | Endemic to the Indian mainland (KH)† |
| A. caspiracus Coiffait, 1982 | Endemic to the Indian mainland (EH)* |
| A. ladamkensis Coiffait, 1982 | Endemic to the Indian mainland (KH)† |
| A. andrewesi Cameron, 1931 | Endemic to the Indian mainland (KH)† |
| A. nilgiricenesis Cameron, 1931 | Endemic to the Indian mainland (WG)* |
| A. obscurus Cameron, 1931 | Endemic to the Indian mainland (WG)* |
| A. peregrassins Cameron, 1931 | Endemic to the Indian mainland (WG)* |
| A. setiferidus Newton, 2017 | Endemic to the Indian mainland (WG)* |
| A. rougemoani sp. nov. | Endemic to the Indian mainland (WG)* |
| A. keralensis sp. nov. | Endemic to the Indian mainland (WG)* |

#—Endemic to Western Ghats (WG) and Sri Lanka (SL) | @—Endemic to Eastern Himalayas (EH) |
†—Endemic to Kashmir Himalayas (KH) |
*—Endemic to only the Western Ghats (WG)

(Table 1). Four species (A. cachemiricus Coiffait, 1982; A. caspiracus Coiffait, 1982; A. kashmiricus Cameron, 1943; and A. ladakhenensis Coiffait, 1982) are endemic to the Kashmir Himalaya region (Table 1).

Five species of Astenus (A. indicus (Kraatz, 1859); A. leptocerus (Eppelsheim, 1895); A. maculipennis (Kraatz, 1859); A. melanurus (Küster, 1853); and A. subnotatus Fauvel, 1904) show diverse distribution pattern with distribution ranging from Oriental realm to Afrotopical realm through Palaearctic realm with only A. melanurus (Küster, 1853) having European distribution.

Twenty-three species (including the two new species described; seven species endemic to the eastern Himalaya; five of the seven species (except A. hindostanus Cameron, 1919; A. kraatzi Bernhauer, 1902) endemic to the Western Ghats and Sri Lanka hot spot of biodiversity; four species endemic to the Kashmir Himalaya; and five other species (A. gratus Cameron, 1931; A. marginalis Cameron, 1931; A. pulchripennis Cameron, 1931; A. semibrunneus Cameron, 1931; A. tunicus Biswas & Sen Gupta, 1983)) are endemic to the Indian mainland (Table 1).

First Reports
Astenus kraatzi Bernhauer, 1902, which had distribution records only from Sri Lanka, is recorded for the first time from the Indian mainland (India: Kerala: Chelari, 11.1112778N, 75.9039166E) and two species, A. flavus (Kraatz, 1859) and A. indicus (Kraatz, 1859) are recorded for the first time from southern India.

Taxonomic Remarks
Notes on Tribe Lathrobini Laporte, 1835: There exists wide confusion on the tribe to which Astenus belongs. The two tribe classification (Pinophilini and Paederini) of Paederinae followed by the majority of Staphylinidae workers place Astenus in tribe Paederini Fleming, 1821 (Ganglbauer 1895; Casey 1905; Blackwelder 1939; Lobl & Smetana 2004; Schülke & Smetana 2015) whereas it was included in Lathrobini by Jeannel & Jarrige (1949). Later it was confirmed that Astenus belongs to tribe Lathrobini by analysing the molecular and morphological characteristics (McKenna et al. 2015; Schomann & Solodovnikov 2017) and Schomann & Solodovnikov (2017) proposed that Paederinae could be divided into not two but four tribes (Cylindroxystini; Lathrobini; Paederini; Pinophilini).

Taxonomic status of Astenus subnotatus Fauvel, 1904: Fauvel described Astenus subnotatus as a variation of A. melanurus (Küster, 1853) and it was considered as a variation by Cameron (1931) also. Later the subtype of A. subnotatus (with locality given as Bedford Cape, South Africa) was wrongly re-described as A. itreum Lecoq, 1996 (a species with distribution only in Madagascar), which is evident from the subtype label (Royal Belgian Institute of natural Sciences). As per the current classification A. subnotatus is having
### Key to species of the genus Astenus from the Indian mainland.

1. Antennal segment XI almost 4x longer than 10 ................................................................. A. asiitls Biswas & Sen Gupta, 1983 - Antennal segment XI not 4x longer than 10 ........................................................................ 2

2. Species dark, entirely black or in greater part black or brown ........................................... 3 - Species entirely black or in greater part reddish-yellow ...................................................... 22

3. Abdomen with first three or four visible tergites red, rest black ........................................ 4 - Abdomen essentially black or brown .................................................................................. 6

4. Abdomen with first three visible tergites red, rest black .................................................... 5 - Abdomen with first three visible tergites red, rest black .................................................... A. gratius Cameron, 1931

5. Elytra entirely black ........................................................................................................... A. diversiventris Cameron, 1943 - Elytra black with posterior margin broadly reddish-yellow ........................................ A. keralensis sp. nov.

6. Legs reddish-yellow, the apex of the femora black or blackish ......................................... A. gratielus (Faule, 1879) - Legs entirely reddish-yellow ......................................................................................... 7

7. Elytral spot black and transverse but not forming the shape of `H' ...................................... 11 - Elytra uniformly black ....................................................................................................... 9

8. Elytra with a reddish-yellow mark from postero-internal area to the postero-external angle ........................................................................................................ 13 - Elytra with reddish-yellow markings or reddish-yellow with black markings ......................... 8

9. Elytra reddish-yellow, more or less extensively marked with black ................................ 10 - Elytra otherwise marked ................................................................................................ 9

10. Elytra with a round black spot of variable size, sometimes extending to the epipleura; elytral suture very narrowly black ................................................................. A. marginalis Cameron, 1931 - Elytra with an elongate black spot narrowing basally, extending laterally on to the epipleura; elytral suture rather broadly black ........................................................................................................................................... 11

11. Elytral spot black, elongate and transverse which forms the shape of `H' when combined with black lateral longitudinal margin ......................................................................................................................... A. h-signatus Cameron, 1914 - Elytral spot black and transverse but not forming the shape of `H' ........................................ 12

12. Elytral elongate spot connected through the middle of the suture, running from one epipleuron to the other ................................................................................................. 13 - Elytral elongate spot not connected through the middle of the suture ................................ A. pulchripennis Cameron, 1931

13. Elytra with the sutural and the apical margins reddish yellow ........................................ 14 - Elytra otherwise marked .................................................................................................. 16

14. Elytra with narrow reddish-yellow sutural margin confined to the posterior half ........ A. kashmiricus Cameron, 1943 - Elytra with broad reddish-yellow sutural margin almost reaching the base .................................................. 15

15. Larger (6.5mm). Head longer, the post-ocular region nearly twice as long as the eye ........ A. suturalis Cameron, 1931 - Smaller (5 mm). Head shorter, the post-ocular region slightly longer than the eye ........ A. andrewnesi Cameron, 1931

16. Elytra with the humeral angle and apical margin reddish-yellow ................................. A. simlensis Cameron, 1931 - Elytra with only the apical margin reddish-yellow, each elytron with or without a small oblong red spot at apex near suture ............................................................................................................................... 17

17. Elytra with a small oblong red spot at apex near suture ................................................. A. bisalicus Biswas & Sen Gupta, 1983 - Elytron without any red spot at apex near suture ........................................................................................................ 18

18. Thorax with fine longitudinal rugae sculpture ................................................................ A. varians Cameron, 1931 - Thorax with normal reticulate-umbilicate sculpture .......................................................................... 19

19. Elytra more coarsely and less closely punctuated, the apical margin sharply and distinctly reddish-yellow ................................................................. 20 - Elytra more finely and more closely punctuated, the apical margin very narrowly and obscurely reddish-yellow .................................................................................. A. obscurus Cameron, 1931

20. Pleurites of genital segments long, extended and pointed .................................................. A. hindostanus Cameron, 1919 - Pleurites of genital segments short, either slightly curved pointed or not pointed ..................... 21

21. Pleurites of genital segments short but slightly extended forming a curved point; penultimate antennomere as long as wide ........................................................................ A. casipracus Coiffait, 1982

22. Pleurites of genital segments short and not at all extended and not forming any point; penultimate antennomere almost twice as long as wide ............................................................................................................... A. cachemiricus Coiffait, 1982

23. Abdomen reddish-yellow, either only Vth visible tergite/ or visible tergites III-V/ or both IVth and Vth visible tergites/ or both Vth and VIth visible tergites more or less black ................................................................................................................................. A. semibrunneus Cameron, 1931

24. Abdomen reddish-yellow ................................................................................................. A. semibrunneus Cameron, 1931

24. Larger (4 mm). Penultimate joints of antennae about three times as long as broad, sides of the elytra with several long black setae ......................................................................................... A. flovescens Schererlitz, 1933

25. Smaller (3 mm). Penultimate joints of the antennae slightly longer than broad, sides of the elytra without black setae ................................................................. 25

25. Post-ocular region not coarscate with the base, head more subquadrate, elytra not longer than the thorax, colour more reddish ......................................................................................... A. concolor (Kraatz, 1859)
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- Post-ocular region coarctate with the base, head more suborbicular, elytra slightly longer than the thorax, colour yellowish .................................................................................. A. flavus (Kraatz, 1859)

26. Abdomen with the only Vth visible tergite with anterior black and posterior lighter .................................................................................................................. 27
- Abdomen with either visible tergites III–V or both IVth and Vth visible tergites/ or both Vth and VIth visible tergites black .................................................................................................................. 28

27. Elytra uniformly reddish-yellow ............................................................................. 29
- Elytra bicolloured with anterior half brown black and posterior half reddish-yellow/ or suture narrowly black anteriorly and bulging in the middle/ or with a black oval spot on each elytron .......................................................... 30

28. Elytra longer and broader than thorax ........................................................................ A. ghumensis Cameron, 1943
- Elytra shorter and narrower than thorax........................................................................ 29

29. Sides of thorax with two long black setae .................................................................. A. melanurus (Küster, 1853)
- Sides of thorax with five long black setae ................................................................... A. indicus (Kraatz, 1859)

30. Elytra bicoloured with anterior half brown black and posterior half reddish yellow .................................. A. rougemonti sp. nov.
- Elytra reddish-yellow with suture narrowly black anteriorly and bulging in the middle/ or with a black oval spot on each elytron .......................................................... 31

31. Elytra reddish yellow with suture narrowly black anteriorly and bulging in the middle A. sikkimensis Biswas, 2003
- Elytra with a black oval spot on each elytron ................................................................ A. flavus (Kraatz, 1859)

32. Black spot on elytra almost reaching the epipleura and suture ........................................... A. subnotatus Fauvel, 1904
- Black spot on elytra narrow and placed in the middle not reaching the epipleura and suture A. kraatzii Bernhauer, 1902

33. Abdomen with visible tergites III–V black ................................................................ A. jhopus Biswas & Sen Gupta, 1983
- Abdomen with either both IVth and Vth visible tergites/ or both Vth and VIth visible tergites black .......................................................... 34

34. IVth abdominal tergite black with light, narrow posterior margin, Vth abdominal tergite with only the base black and rest broadly lighter ........................................................................ A. maculatus Cameron, 1920
- Vth and VIth visible abdominal tergites black with posterior margin broadly or scarcely lighter .......................................................... 35

35. Vth and VIth visible abdominal tergites black, their posterior margin scarcely lighter ........................................................................................ A. terminalis Cameron, 1931
- Vth and VIth visible abdominal tergites blackish, their posterior margin more or less broadly lighter .......................................................... 36

36. Sculpture of head and thorax of normal size ................................................................ A. maculipennis (Kraatz, 1859)
- Sculpture of head and thorax notably larger than usual ........................................................................ A. setiferides Newton, 1913

37. Sides of elytra with long black outstanding setae ................................................................ 38
- Sides of elytra with short black decumbent setae ................................................................ 40

38. Elytra with a black spot on each elytron ................................................................. A. tanicus Biswas & Sen Gupta, 1983
- Elytra without any black spot ....................................................................................... 39

39. Head elongate, VIIth abdominal sternite yellow .......................................................... A. setiferides Newton, 2017
- Head suborbicular, VIIth abdominal sternite black ........................................................ A. peraffinis Cameron, 1931

40. Larger (5 mm) and more robust, post-ocular region parallel for a short distance, then broadly rounded to the base ........................................................................ A. nilgirensis Cameron, 1931
- Smaller (4 mm) and narrower, post-ocular region coarctate with the base .................. A. gracilentus (Fauvel, 1879)

verified species status with Oriental, Palaeartic, and Afrotropical distribution (Newton 2020).

**Distribution of Astenus flavus** (Kraatz, 1859): Kraatz (1859) described *A. flavus* as *Sunius flavus* with data on distribution given only as "Oriental India (Ind. Or.)" which could be anywhere in British India. Later Newton (2020) gave its distribution as confined to eastern India and Nepal. This work reports *A. flavus* form southern India with recorded distribution from the Western Ghats.

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