

Taxonomy of the genus *Nala* Zacher, 1910 (Dermaptera: Labiduridae) from India

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Abstract

Three species of the genus *Nala*, viz., *Nala lividipes* (Dufour, 1829), *Nala nepalensis* (Burr, 1907) and *Nala basalis* Bey-Bienko, 1970 are known from India. These species are redescribed and illustrated based on detailed morphological characters, the unique male forceps structure and the structures of male genitalia. New additional diagnostic characters, which are more specific to each species are proposed for the identity of these species. A key to the Indian species of the genus *Nala* is provided, along with a systematic list, geographical distributions, type localities, taxonomic remarks, digital images and point distribution map of each Indian species. This study will be useful for the accurate identification of the species by future researchers.

Keywords: Dermaptera, *Nala*, redescription, India.

Introduction

Dermaptera are commonly known as “earwigs” and are primitive group of free-living insects abundant in tropical countries than other regions, comprising around 1,942 species globally (Hopkins *et al.*, 2017), of which 285 species are reported from India (Srivastava, 1988, 2003, 2013 and Karthik *et al.*, 2022). The genus *Nala* was erected by Zacher in 1910 with *Forficula lividipes*, as the type species. The genus *Nala* Zacher, 1910 belongs to the subfamily Nalinae Steinmann, 1975 under the family Labiduridae Verhoeff, 1902, which consists of three subfamilies, five genera and twenty-two species from India. Subfamily Nalinae Steinmann, 1975 consists of only one genus *Nala* Zacher, 1910, with eleven species distributed throughout the Ethiopian, Oriental, Australian and South Palaearctic regions (Steinmann 1989 a, b; Vigna 1994; Bivar, 1999) and seven species distributed throughout South-East Asia (Petr, 2006), out of these, three species, *Nala lividipes* (Dufour, 1829), *Nala nepalensis* (Burr, 1907) and *Nala basalis* Bey-Bienko, 1970 are known from India (Srivastava, 2003). *Nala lividipes* (Dufour, 1829) is the most abundant species of the genus in the Indian fauna. The present study represents a

review of the genus *Nala* Zacher, 1910 from India, including the redescription of Indian species of this genus, with type localities, geographical distributions, taxonomic remarks, digital images and point distribution map. Keys to all the Indian species of the genus are also given.

Material and methods

The specimens studied were collected and deposited at the National Zoological Collection of Zoological Survey of India, Kolkata, India (NZSI) by different survey parties and also some recent collections made by the authors, from West Bengal and Andhra Pradesh surveys. These specimens of Dermaptera were identified based on morphological characters and the unique structure of male genitalia, following Srivastava (1988, 2003 and 2013). For the study of morphological characters and genitalia, the specimens were examined under Leica EZ4 stereo zoom-microscope. The genitalia extracted from the male specimens by lifting penultimate sternite, and processed in KOH, stained and mounted on slides. The photographs and measurements were taken by a digital camera Leica DMC 4500 attached with Leica M205A stereo-zoom Microscope. The point

distribution map was created with QGIS software. For dry preservation specimens were cleaned, stretched and pinned and for wet preservation specimens were preserved in 70% alcohol.

Also study and examined the Holotypes and Paratypes of the species available in IARI, New Delhi and National Zoological Collection of Zoological Survey of India, Kolkata, India (NZSI).

Results

Taxonomy

Family- **Labiduridae** Verhoeff, 1902

Subfamily- **Nalinae** Steinmann, 1975

Genus- ***Nala*** Zacher, 1910

Type species: Forficula lividipes Dufour, 1829.

Paralabidura Burr, 1910, (synonymised by Burr, 1911) (treated as synonym of *Nala* Zacher, 1910)

Key to species of the genus *Nala* Zacher, 1910 from India (males only)

(Modified from Srivastava, 2003)

1. Penultimate sternite triangular, hind margin rounded, little emarginate in middle posteriorly (figs. 2H, 5E): parameres about 3-5 times longer than broad, margins are undulated. ----- 2
 - Penultimate sternite broad (Figure 7E), hind margin obtusely produced in middle; parameres (figs. 8A, 8B) about seven times longer than broad, both margins are straight, tip acuminate, pointed ----- *Nala basalis* Bey-Bienko, 1970
2. Forceps (figs. 2F, 3A-3K) with branches stout, remote, gently incurved, each tapering with apices pointed; parameres (figs. 4A, 4C) three times to four times longer than broad, external margin convex, inner margin straight with little undulations ----- *Nala lividipes* (Dufour, 1829)
 - Forceps (figs. 5F, 5G) with branches internally dilated, in basal one third, reaching nearly to midpoint, with its inner margin contiguous and strongly serrated, afterwards branches gently incurved; parameres (figs. 6A, 6B) five times longer than broad, both margins are little undulated ----- *Nala nepalensis* (Burr, 1907)

Nala lividipes (Dufour, 1829)

Forficula pallipes Dufour, 1820, *Ann gener des Se. Phys. de Bruxelles*, 4; 316, pI. 116, figs. 7, 7a & 7b (Male, Female; Lower Catalonia, Spain).

Forficula lividipes Dufour, 1829, *Annis Sci. Nat.*, 13: 340

Diagnosis

Representatives of this genus are medium to small sized (up to 16.5 mm in length), usually uniform dark, blackish body colour, legs are yellow with basal half of femora and tibiae blackish. Head convex, hind margin of pronotum firmly rounded, antennae filiform, slender with 20 to 23 segments, elytra and wings well developed and punctate; legs short; abdominal segments convex, body flat parallel-sided. In males, both branches of the forceps are stout, arcuate, apex pointed, with or without basal inner teeth; in females, forceps are simple straight with serrated inner margins. Male genitalia with parameres apically constricted, epimerite absent.

Distribution:

This genus shows distribution throughout the Oriental, African, Ethiopian, Australian and South Palaearctic regions (Steinmann 1989a).

(new name proposed since *Forficula pallipes* Dufour, 1820 preoccupied by *Forficula pallipas* Fabricius, 1775).

Labaidura lividipes : Bormans and Krauss, 1900, *Das Tierreich*, 11 : 36.

Nala lividipes : Burr, 1911, *Genera Insect.*, 122: 36.



Figure 1. *Nala lividipes* (Dufour, 1829). A, Dorsal view, male; B, Dorsal view, female.

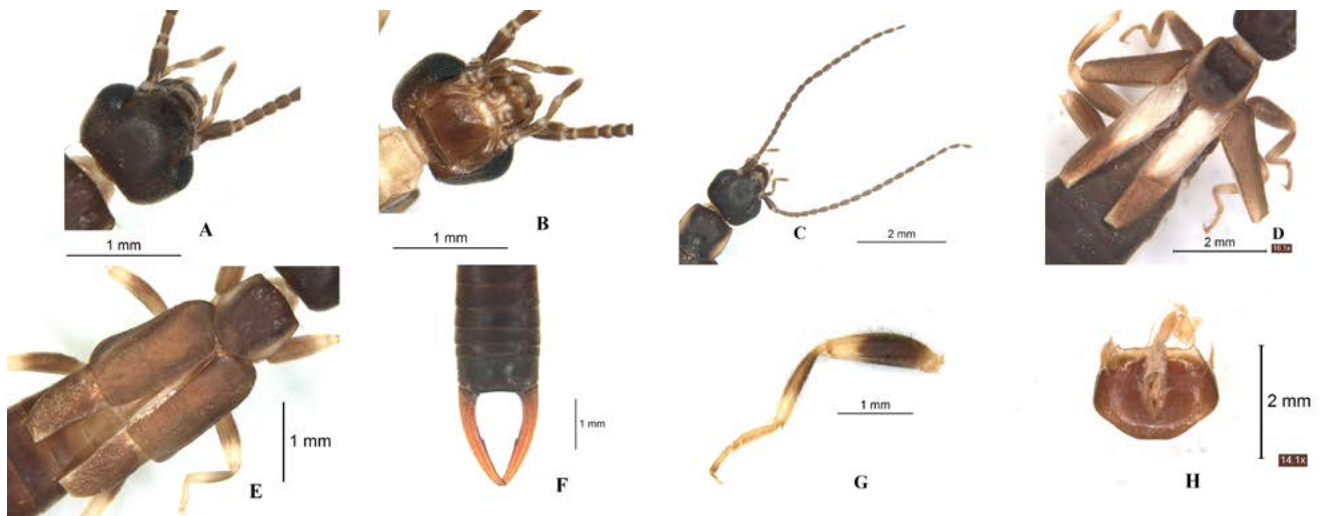


Figure 2. *Nala lividipes* (Dufour, 1829), male. A, head & eye; B, mouth parts, ventral view; C, head with antennae; D, uncovered wings & elytra; E, pronotum, elytra & wing; F, ultimate tergite with forceps; G, leg; H, penultimate sternite with genitalia, ventral view.

Material examined

India: 1 (Paratype male), Madhya Pradesh: Ashok nagar, 21.ix.1963, coll. V. C. Kapoor; 4 , 5 (Reg.No.36554/H5), West Bengal: Purba Bardhaman dist., Memari, 23.179340°N, 88.09506°E, altitude: 22.87 m, 07.v.2021, coll. S. L. Dey; 6 , 13 (Reg.No.39483/H5, 39734/H5), Andhra Pradesh: Kurnool: Srisailam, Sunde Penta, 16.058389°N, 78.867262°E, Altitude: 522.12 m, 25.iii.2022, coll. K. G. Emiliyamma & party.

Redescription

Male (Figs, 2A-H, 1A)

Small to medium sized body with colour dull blackish brown, sometimes ashy brown; eyes dark black; head more darker than body; antennae (Figure 2C) dark blackish brown with yellowish white border in basal joints of each antennal segment, few pre-apical antennal segments are yellow; mouth parts (Figure 2B) brown with yellowish white joints; both sides of pronotum, leg joints, inner wingtips (Figure 2E) yellow; legs (Figure 2G) yellow with half to 3/4th of basal femora and tibiae blackish brown to black patch. Sometimes elytra and wings are copper brown in colour with blackish brown outer margin.

Head, legs, antennae, mouth parts, abdomen and forceps evenly covered with fine yellow (golden-yellow) hairs; brown to blackish brown hairs present in margins of head, pronotum, elytra, legs and antennal bases.

Head (Figure 2A) highly pubescent, convex, slightly longer than broader, hind margin little concave, slightly emarginate in middle, head broader than pronotum, mainly broad in basal eye portion. Antennae 21 (Figure 2C) segmented, basal segment stout, shorter than the distance between antennal bases, 2nd short, about as long as broad; 3rd long, slender than 4th to 6th; 3rd and 7th are almost equal in length; 4th slightly shorter than 5th to 7th, 5th shorter than 6th & 7th and 6th shorter than 7th; The following segments gradually become shorter and thinner. Eyes (Figure 2A): dark, prominent, slightly reflexed, shorter than the post-ocular area. Pronotum (Figure 2E) is slightly broader than long, anterior margin in middle slightly convex, hind margin gently rounded, prozona swollen with distinct suture, metazona depressed, suture is not prominent in metazoan. Elytra (Figure 2E) and wings (Figure 2E) well developed, punctate; elytra with parallel longitudinal ridge in costal margin. The part of wings (Figure 2D) that covered by elytra is membranous, off-white in colour. The total wing

length is more than two times of pronotum. The abdomen is highly punctate, with abdominal segments convex and gradually expanded posteriorly. The Penultimate sternite is triangular, has marginal curvature, rounded, and emarginate through its middle posteriorly. Ultimate tergite (Figure 2F) transverse, slightly depressed medially, swollen above the roots of the inner margin of forceps. Pygidium is invisible in the dorsal view.

Male forceps (Figs. 1F, 3A-L)

There is an immense variation in the male forceps. Forceps with branches stout, remote, gently incurved, each tapering with apices pointed.

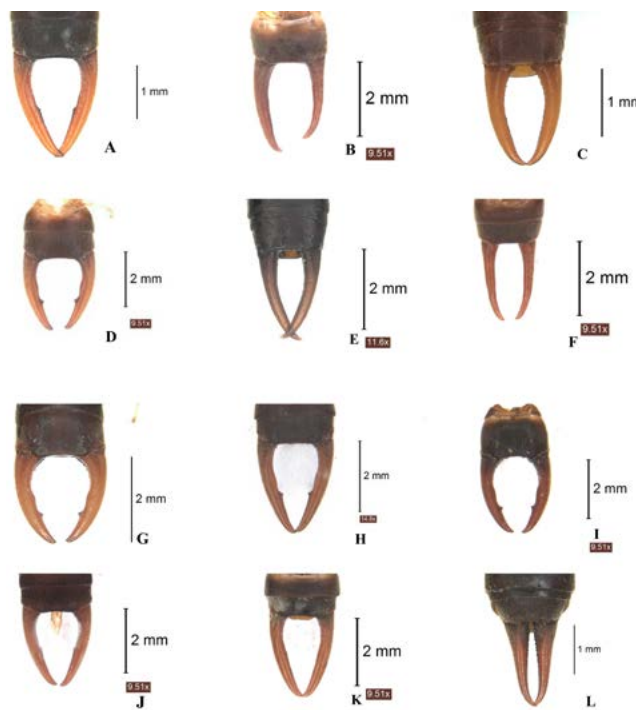


Figure 3. *Nala lividipes* (Dufour, 1829). A-K, male forceps, dorsal view; L, female forceps, dorsal view.

Important variations in Male forceps (Figs. 3A-K).

The inner margin ventrally crenulate (Figure 3D, 3G, 3I), sometimes crenulated only in basal 1/3rd with a distinct tooth at apical third, or sometimes at apical half and sometimes tooth absent. Ventral side of inner margin entirely crenulated or sometimes very few unevenly distributed crenulation without any tooth (Figure 3B, 3C, 3K, 3E, 3F). Inner ventral margin with very small tooth like crenulation at basal 1/3rd; apical one third with undulated inner margin and with pointed triangular tooth (Figure 3G, 3I).

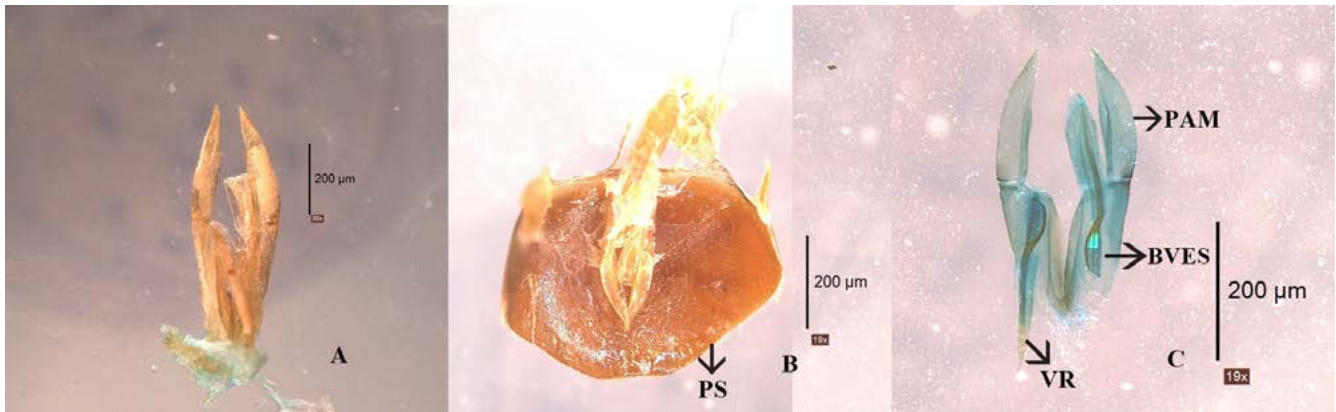


Figure 4. *Nala lividipes* (Dufour, 1829), male. A,C, male genitalia, B, genitalia attached in penultimate sternite; PAM- paramere; VR- virga; BVES- basal vesicle.

Male Genitalia (Figs.4 A-C)

Male genitalia typical for the genus *Nala*, with parameres (Figure 4A, 4C) near about four times longer than broad, tip acute, external margin convex, inner margin straight with little undulations, virga (Figure 4C) tubular, prominent, distinct basal vesicles (Figure 4C) with one margin convex and another margin straight.

Female (Figs. 1B, 3L)

In most characters, females agree with males except the last few abdominal segments and ultimate tergite strongly constricted posteriorly; forceps (Figure 3L) straight, simple, tapering apically, serrated internally in basal half, apical half brown to reddish brown in colour, tip incurved.

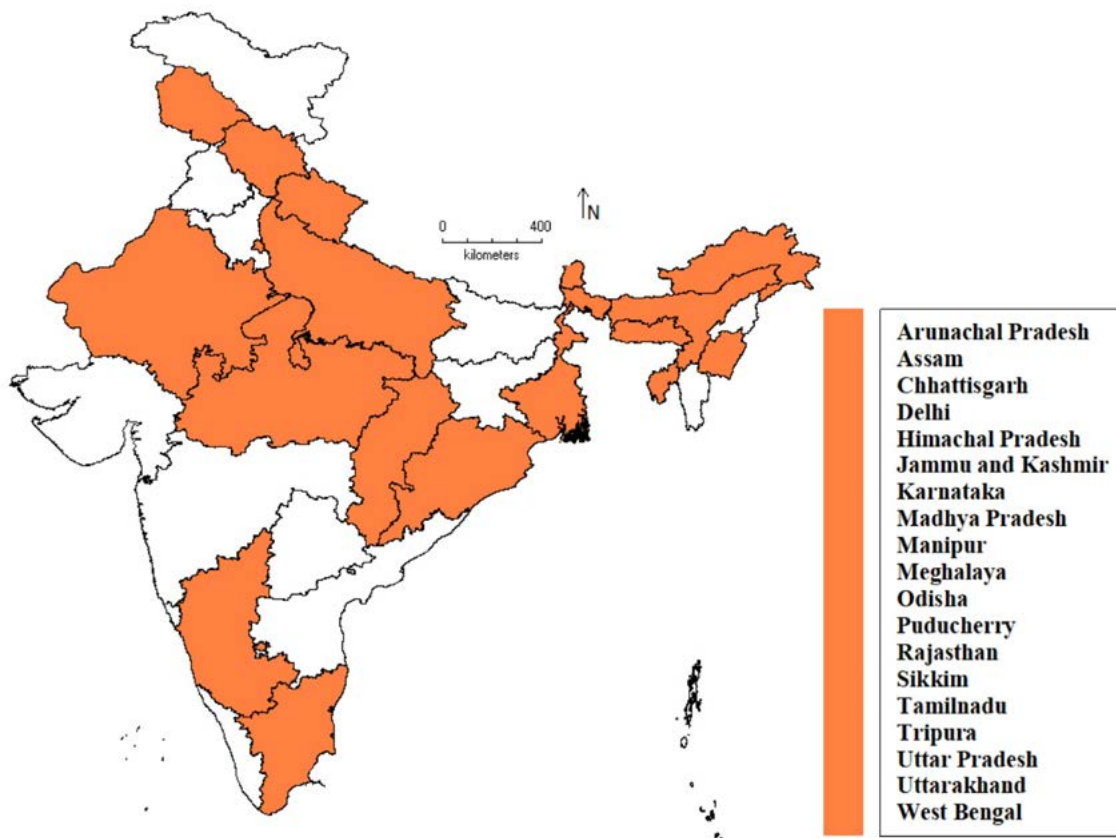
Remarks

Body colour ranges varies from blackish brown to ashy brown, sometimes testaceous brown; male forceps variation is very much an important distinct feature. This species is

distributed worldwide. Specimens were collected from multiple habitats viz. underneath stones, debris, loose soil. This species is very much available during the rainy season and attracted to light in large numbers.

Distribution

Nala lividipes (Dufour, 1829) is a cosmopolitan species of Afrotropical origin, gradually distributed across all biogeographic realms, dominant in tropical parts. Distributed almost throughout India, Bhutan, Nepal, Sri Lanka (Srivastava, 2003) and also reported from Australia. The species is widely distributed along the Mediterranean basin recorded from Algeria, France, Italy (including Sicily and Sardinia), Portugal, Malta, Morocco, Spain (including the Balearic and Canary Islands), Turkey, and Tunisia (Albouy and Caussanel 1990; Anlaş and Kočárek 2012; Pages 2012; Mifsud and Taglianti 2008; Rasplus and Roques 2010;). (Koutsoukos, E. *et al.*, 2022).



Map 1. Distrubution of *Nala lividipes* (Dufour, 1829) in India.

***Nala nepalensis* (Burr, 1907)**

Labidura nepalensis Burr, 1907, *Rec. Indian Mus.*, 1 : 208 (Male, Female; Nepal Soondrijal and Pharping); Burr, 1910, *Fauna British India, Dermaptera* : 96, pl. 4, Figure 30.

Paralabidura nepalensis: Burr, 1910, *Trans. ent. Soc. Lond.*, 1910: 185.

Nala nepalensis : Zacher, 1910, *Ent. Redsch.*, 1910: 184.

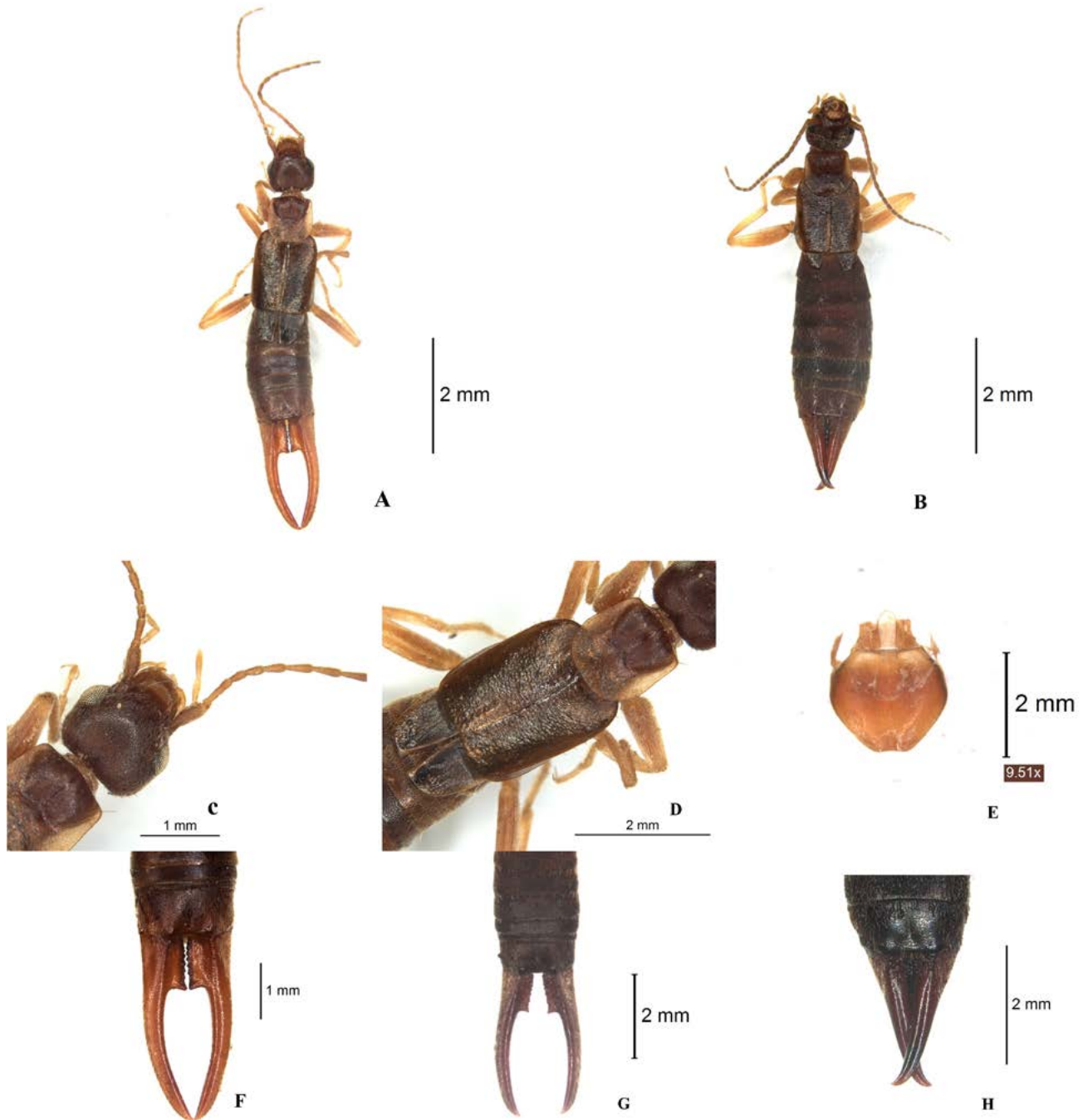


Figure 5. *Nala nepalensis* (Burr, 1907). A, Dorsal view, male; B, Dorsal view, female; C, head, eye, antennae; D, pronotum, elytra, wings; E, penultimate sternite, ventral view; F&G, ultimate tergite with male forceps; H, ultimate tergite with female forceps.

Material examined

1, 1 (Reg. No. 38499/H5), India: Himachal Pradesh: Mandi, bank of river Beas, 08.ii.1965, coll. A. Husain; 1, 1 (Reg. No. 38500/H5), Himachal Pradesh: Solan, Giripool, 30°52'54"N, 77°12'36"E, 06.x.2012, coll. V.D.Hedge & Party; 6, 3 (Reg. No. 37926/H5), Arunachal Pradesh: West Kameng, Ramo camp, 01.ix.1984, coll. R. N. Bhargava.

Redescription

Male (Figs. 5A, 5C-G)

General body colour brownish black; body colour uniformly distributed from head to abdomen; eyes (Figure 5C) shining black; antennae (Figure 5C) yellowish brown; legs (Figure 5A) yellow to brownish yellow with basal half of femora and tibiae shaded blackish brown to black; forceps brown to reddish brown with black shaded.

Head, antennae, mouth parts, abdomen, forceps and legs covered with fine golden-yellow hairs. In the abdomen and ventral body parts pubescence is very dense.

Small to medium sized body; head convex, smooth, approximately same width and length, frons depressed; invisible suture, hind margin straight with little depressed in middle. Antennae (Figure 5C) 22 segmented, basal segment little shorter than the distance between antennal bases, expanded apically; 2nd short, same length and breadth; 3rd long, slender, length about three times of 2nd; 4th to 6th gradually increasing, but shorter than 3rd and longer than

2nd; 7th equal to 3rd; remaining segments gradually become longer. Eyes shining black, compared to the post-ocular area, the eyes are shorter. Pronotum (Figure 5D) slightly longer than broad, sides straight, a little reflexed in penultimate part, rounded hind margin, prozona tumid, smooth, suture prominent; metazona highly rugose, suture distinct; width of pronotum equal with head. Elytra (Figure 5D) with straight hind margin, keeled costal margin and the texture rugose, tuberculated; length slightly shorter than two times of pronotum. Wings (Figure 5D) well developed, major parts concealed under elytra; remaining short triangular, rugose and tuberculated like elytra. Abdomen (Figure 5A, 5B) is densely punctated and pubescent, in the middle slightly dilated. A triangular, punctated Penultimate sternite (Figure 5A) is slightly broad, transverse, median line visible in posterior half, hind margin straight, concave in the middle, with protuberance at each base of forceps branch and slightly oblique laterally. Ultimate tergite (Figure 5E, 5G) is slightly broad, transverse, median line visible in posterior half, hind margin straight, concave in the middle, with protuberance at each base of forceps branch and slightly oblique laterally. In the dorsal view, Pygidium is narrowly visible and posteriorly, it is small and rounded.

Male forceps (Figs. 5E, 5G)

Forceps with stout branches, very much dilated internally in basal 1/3rd, sometimes it touches each other or sometimes it is reaching nearly to midpoint, with its inner margin contiguous, strongly serrated and terminating into an incurved blunt tooth; afterwards branches gently incurved, cylindrical, tapering apically with tip pointed.

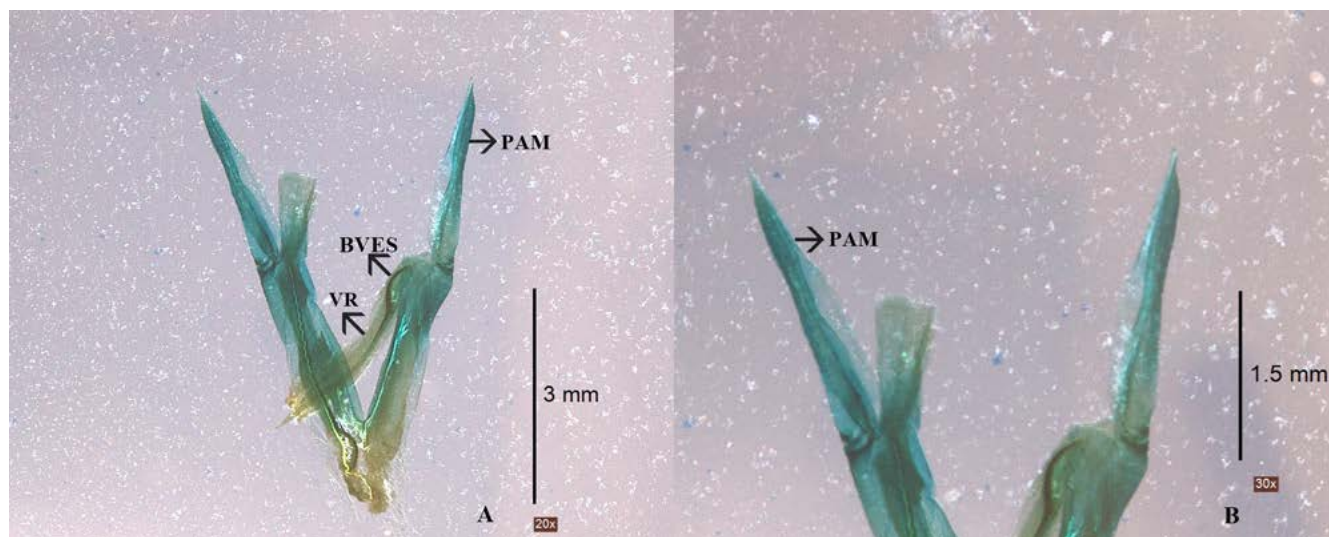


Figure 6. *Nala nepalensis* (Burr, 1907), male. A,B, male genitalia; PAM- paramere; VR- virga; BVES- basal vesicle.

Male Genitalia (Figs. 6A, 6B)

Male genitalia typical for the genus *Nala*, in comparison to the width, the parameres are five times longer, both margins are slightly undulated, penultimate outer margin reflexed, tip acute; virga thin, prominent, distinct basal vesicles.

Female (Figs. 5B, 5H)

Most of the female characteristics are similar to male, but differs in, the abdomen, which is slightly wider in the middle, posteriorly constricted ultimate tergite, forceps reddish brown, simple, straight with apices gently incurved, meeting, inner margin irregularly serrated.

Remarks

Nala nepalensis (Burr, 1907) is mainly a mountain-dwelling species. The specimens of this species were collected from underneath stones, on the edge of water bodies, rivers and streams.

General body colour varies from dull brownish black to shining reddish brown.

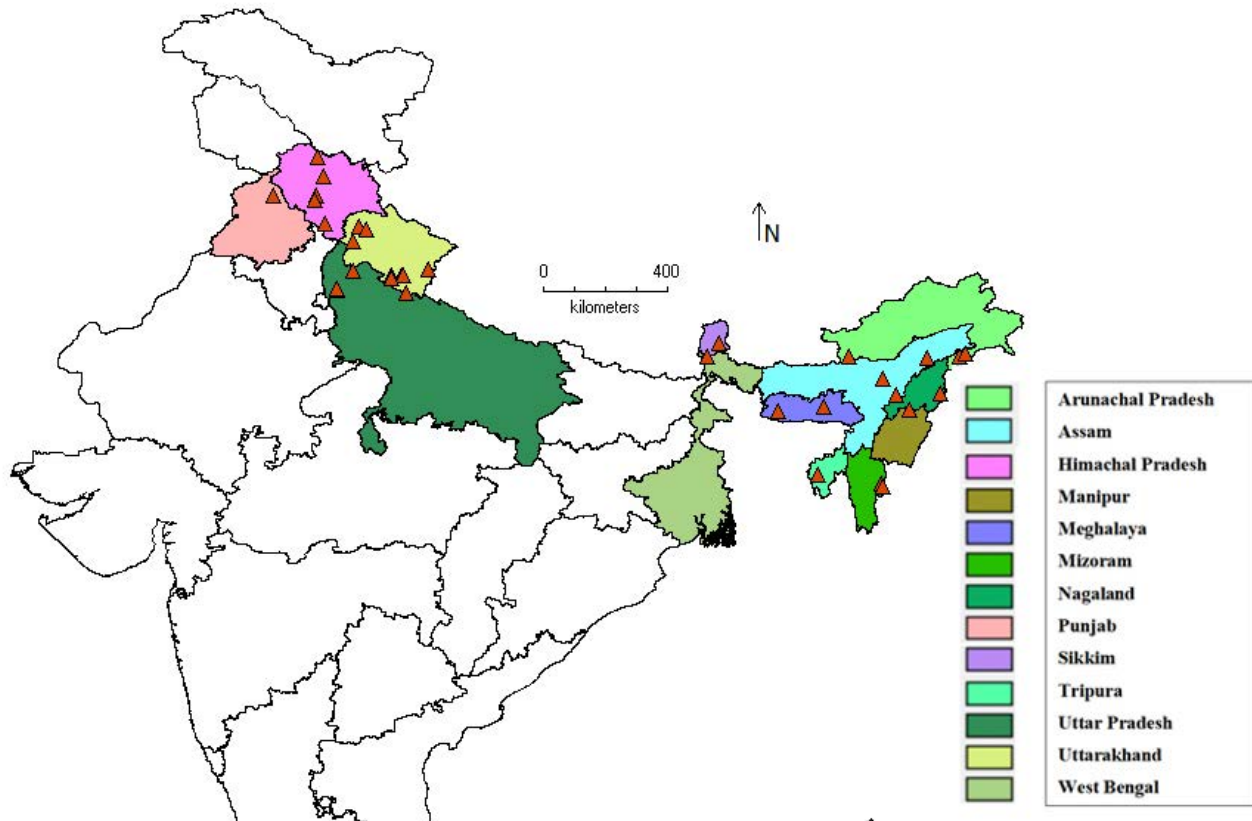
Burr (1907) identified 4 males and 6 females from Nepal but none of them was designated as the Holotype. Burr (1910) identified the Holotype, which is now present in the National Zoological Collections of ZSI HQ, Kolkata. In ZSI HQ, Kolkata one male labelled as "Nepal, Sondrijal, Reg. No. 1285/15" with a handwritten label, by Burr, "*Labidura nepalensis* Burr Type" treated as the Holotype. Besides, five more specimens with Reg. Nos. 1245/15, 1283/15, 1284/15, 1286/15 and 1299/15 are present which are considered as Paratypes (Srivastava, 2003).

Distribution

India: Arunachal Pradesh, Assam, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Sikkim, Tripura, Uttarakhand, Uttar Pradesh, West Bengal, Jammu and Kashmir. Also distributed in Bhutan, China, Nepal, Pakistan (Srivastava, 2003).

***Nala basalis* Bey-Bienko, 1970**

Nala basalis Bey-Bienko, 1970, *Zool. Zh.*, 69 : 1814, Figure 9-12 (Holotype Male, Paratypes 2 Females; West Pakistan:



Map 2. Distribution of *Nala nepalensis* (Burr, 1907) in India.

25 km No Rawalpindi; Paratype 7 Females East Afghanistan, Kunnar Tal, 900m); Srivastava, 1984, *Bull. zool. Surv. India*, 5(2&3): 11 (Thailand); Steinmann, 1975, *Folia ent. hung.*, 28: 157, Figure 21 (Male genitalia); Steinmann, 1989, *Das*

Tierreich, 105 :433, figs. 687-688; Steinmann,1989, *World Catalogue of Dermaptera* : 358; Sakai, 1982, *Bull. Daito Bunka Uniu.*, 20: 31.

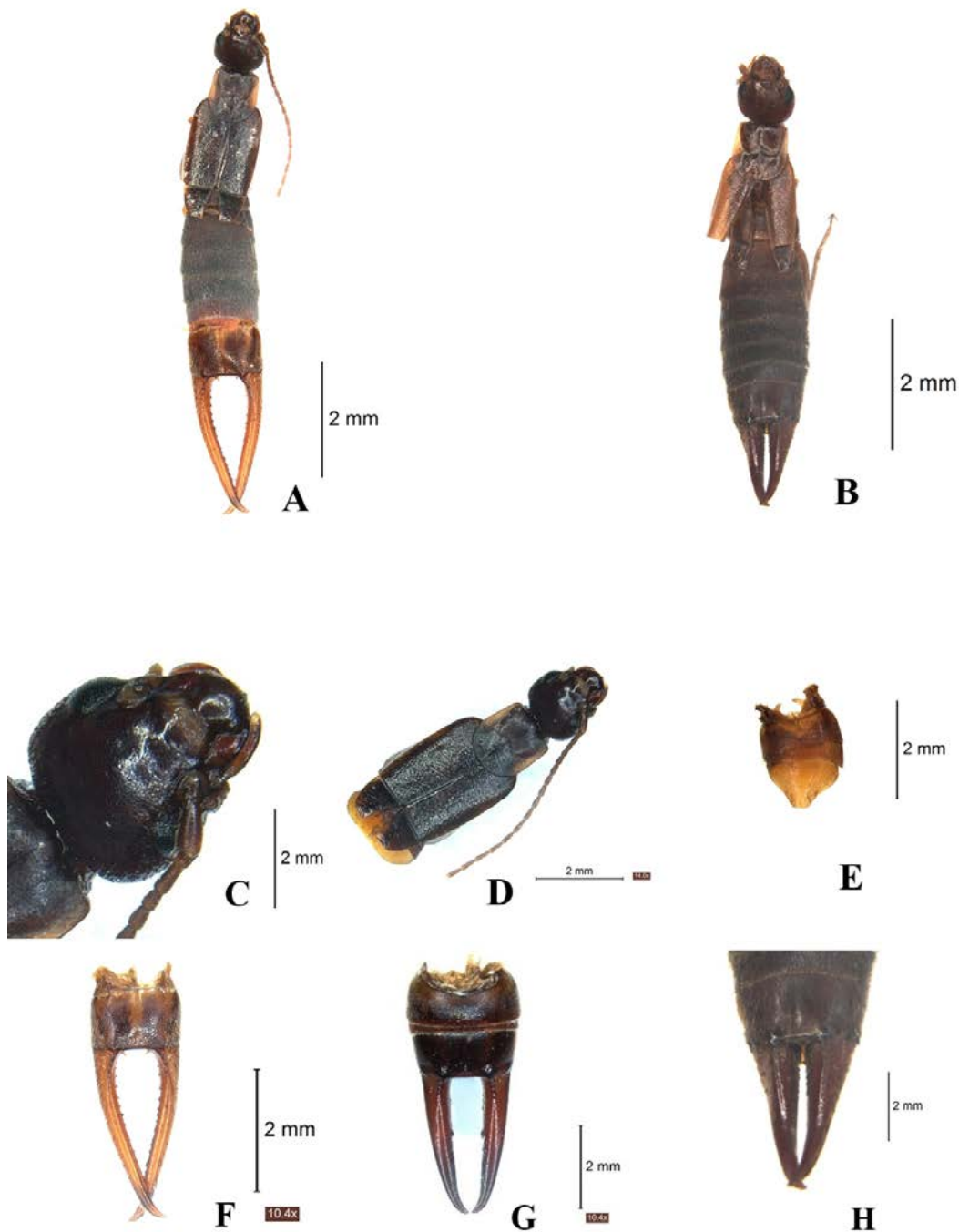


Figure 7. *Nala basalis* Bey-Bienko, 1970. A, Dorsal view, male; B, Dorsal view, female; C, head, eye; D, pronotum, elytra, wings & antennae; E, penultimate sternite; F&G, ultimate tergite with male forceps; H, ultimate tergite with female forceps.

Material examined

2, 2, India: Mizoram: Lawngtlai dist., Kaladan/ Tuipui river bank, 22°06'20"N, 92°50'40"E, 1000 ft, 23.iii.1979, coll. P. T. Cherian; 2, Manipur: Moreh, 24°15'10"N, 94°18'04"E, 25.x.1975, coll. M. S. Shishodia.

Redescription

Male (Figs. 7A, 7C-G)

Small to medium sized body; head, pronotum, elytra and wings shining dark brownish black; antennae (Figure 7D) brownish black; mouth parts brown; sides of pronotum and legs brownish yellow with basal half of femora and tibia brownish black, abdomen (Figure 7A) dull blackish; ultimate tergite (Figure 7F, 7G) and forceps (Figure 7F, 7G) brown to reddish brown.

Head, antennae, abdomen, forceps and legs densely pubescent by golden brown hairs; pronotum, elytra and wings without pubescent except few small brown hairs present on the margins only.

Head (Figure 7C) slightly longer than broad, frons convex, sutures absent, hind margin almost straight. Eyes (Figure 7C) prominent, dark black, very much shorter than the post-ocular area. Antennae 23 segmented, length of 1st segment shorter than the distance between the bases of the two antennae and the length is equal with the combined length of 2nd and 3rd; length of 3rd and 20th are similar and in comparison with all subsequent segments upto 19th these two are longer; the length of remaining segments increases gradationally from the 4th onwards. Pronotum (Figure 7D) expanded posteriorly, with wide curve angles along the hind margin; length moderately long compared to the width; prozona little upraised, smooth and separated from

flat, rugose metazonal disc; the median suture prominently distinct. Head slightly broader than pronotum. Elytra (Figure 7D) and wings (Figure 7D) well developed, shining, rugose; elytra 1.7 times of pronotum, hind margin straight, with prominent ridge along the costal margins. Abdominal segments convex, abdomen highly punctate and pubescent. Both sides of the Penultimate sternite (Figure 7E) slightly concave, texture uniformly punctate, and in the middle, the hind margin is obtuse. The Ultimate tergite (Figure 7F, 7G) broad, transverse, elevated above, laterally oblique, slightly depressed, posterior-medially. In front of the hind margin in between two forceps, the hind margin is curved, with an invisible median line in between. Pygidium is convex, constricted apically with rounded tip, and from the dorsal view it is barely visible.

Male forceps (Figs. 7F, 7G)

Forceps brown to reddish brown, slightly lighter than body colour with dense pubescence, basally branches are remote, gradually in-curved from basal one third, subsequently straight, tapering apically with apex gently hooked and tip pointed.

Significant variations in Male forceps (Figs. 7F, 7G)

The basal one fifth forceps look trigonal, later weakly depressed, directed backwards with its inner margin denticulated evenly up to bases, apex touches with each other or crossed; depressed lobe present at the ventral margin of each forceps bases, sometimes basal lobe is slightly larger but narrowed apically, sometimes it looks like triangular basal flap. Occasionally forceps with more stout branches, little less pubescence, internal margin unevenly serrated with blunt tooth in the internal margin of basal half, branches gently incurved, dorso-ventrally flattened, apex tapering, gently hooked without meeting tip.

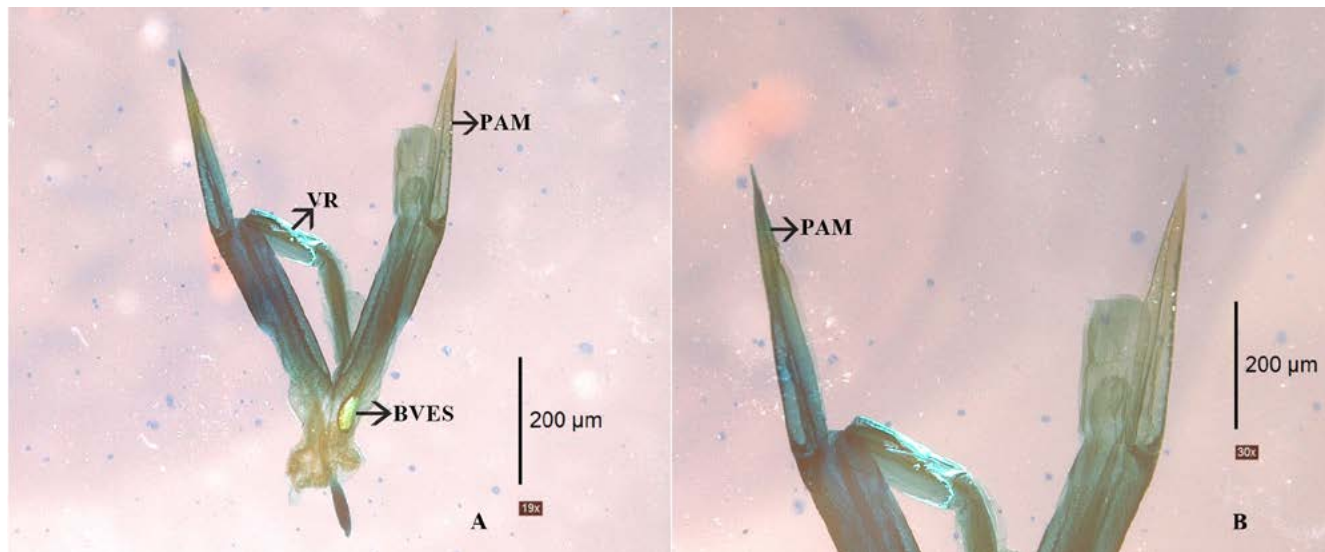


Figure 8. *Nala basalis* Bey-Bienko, 1970, male. A,B, male genitalia; PAM- paramere; VR- virga; BVES- basal vesicle.

Male Genitalia (Figs. 8A, 8B)

Male genitalia typical for this genus; genitalia with parameres about seven times longer than broad, very much narrowed apically, outer and inner margins are more or less straight, very much constricted apex with tip fine, acuminate, pointed; virga tubular, prominent, distinct oval basal vesicles.

Female (Figs. 7H)

Females agree with males in most characters, except ultimate tergite with tapering sides, forceps straight, simple with serrated inner margin in the basal half, and abdomen wider in middle part.

Remarks

This species shows little resembles with *Nala nepalensis* (Burr, 1907) except penultimate sternite, unique forceps and parameres of genitalia. In this species, forceps (Figure 7F) are formed differently, the basal fifth appears trigonal, then it

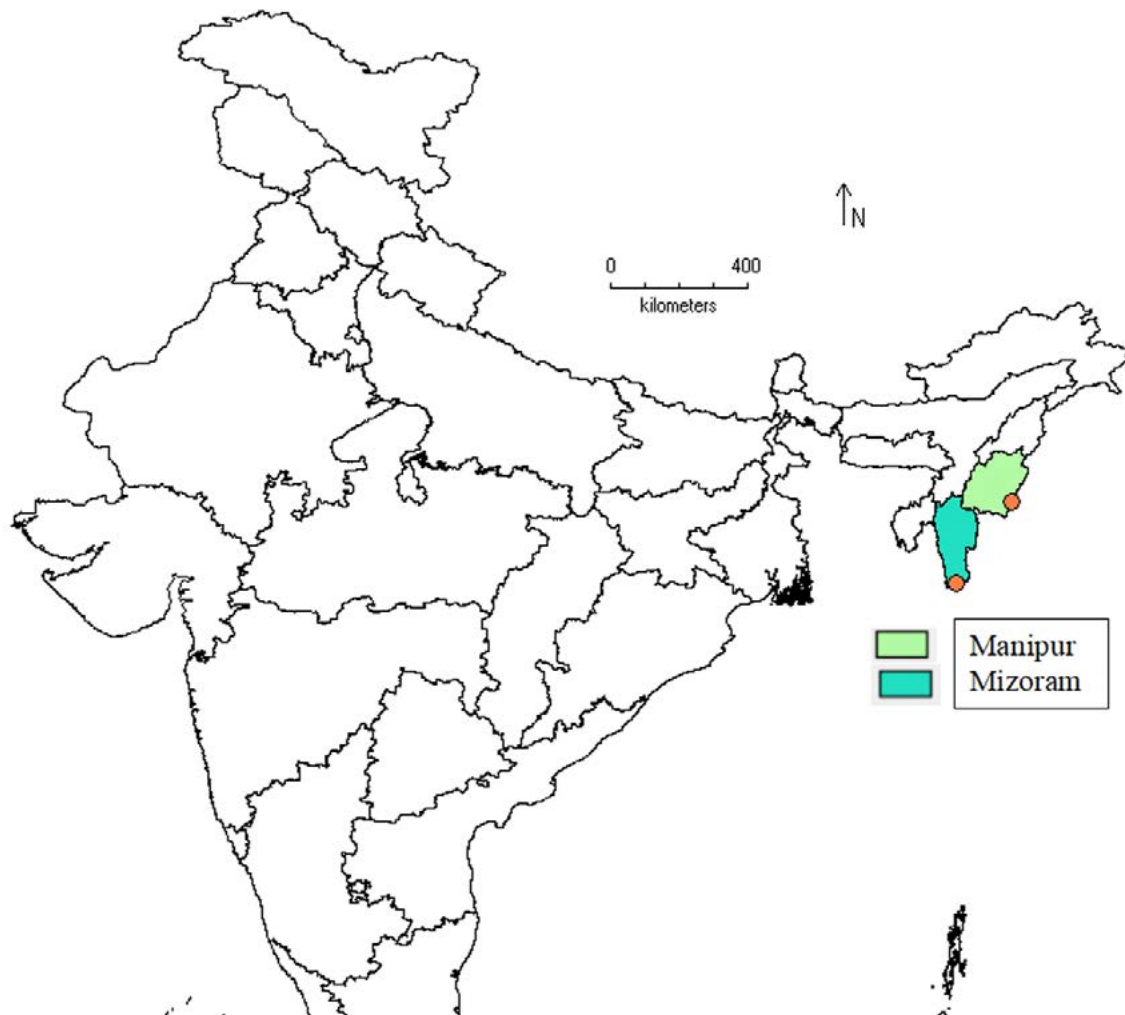
depressed weakly with its denticulated inner margin evenly distributed between bases to the apex.; each forceps base has a ventral depressed lobe (Figure 7F) and apically, parameres (Figure 8A, 8B) are very narrow with acuminate, pointed tips but *Nala nepalensis* (Burr, 1907) exhibits internally dilated forceps (Figure 5F, 5G) branches (upto basal one third), with highly serrated inner margin.

The specimens were mainly collected from underneath stones on riverbanks.

The specimens collected from Manipur (Moreh) and Mizoram (Chhimtuipui dist., now it is in Lawngtlai dist.) are preserved in the ZSI HQ, Kolkata at present.

Distribution

India: Mizoram, Manipur. Also distributed in Afghanistan, Pakistan, Thailand and Germany (Srivastava, 2003).



Map 3. Distribution of *Nala basalis* Bey-Bienko, 1970 in India.

Discussion

The three species of the genus under *Nala* Zacher, 1910 is known from India, inhabiting a common habitat, of moist soil, underneath stones, under debris and vegetations. The species, *Nala lividipes* (Dufour, 1829) is one of the most common one, collected from multiple habitats, but the other two species were mainly restricted to a single habitat, underneath stones. The distribution of *Nala lividipes* (Dufour, 1829) in India is very much common, even during heavy monsoon also their population is very high. Whereas, *Nala nepalensis* (Burr, 1907) and *Nala basalis* Bey-Bienko, 1970 are high elevation species and the status of *Nala basalis* Bey-Bienko, 1970 is with restricted distribution, only collected at its type localities. Here, in this paper, we are discussing the variations of male forceps of *Nala lividipes* (Dufour,

1829) for the first time. The male genitalia of three species of *Nala* are unique, species specific and significantly helped in identification and species confirmation. Besides, the new additional diagnostic characters, taxonomic remarks, digital images and distributional mapping will be useful for future researchers and helps to fill the gaps of the Dermapteran taxonomy of India.

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References

- Albouy, V. and C. Caussanel. 1990. Dermaptères ou Perce-oreilles. Faune de France 75. *Fédération Française des Sociétés de Sciences Naturelles, Paris*, 245 pp.
- Anlaş, S. and P. Kočárek. 2012. Current status of Dermaptera (Insecta) fauna of Turkey and Cyprus. *Türkiye Entomoloji Dergisi* 36(1): 43-58
- Bivar De Sousa, A. 1999. Descrição de uma nova espécie de dermáptero de Guiné Bissau. *Nala mendesi* sp. nov. (Insecta, Dermaptera). (Description of a new species of Dermaptera from Guinea-Bissau. *Nala mendesi* n. sp. (Insecta, Dermaptera)). *Boletim da Sociedade Portuguesa de Entomologia* 194: 141-146 (in Portuguese, English summary).
- Hopkins, Heidi, Maehr, M.D., Haas, F. and Deem, L.S. 2017. *Dermaptera Species File*. Version 5.0/5.0. [25/07/2017].
- Karthik CM, Kamimura Y, Kalleshwaraswamy CM. 2022. A new species of *Diplatys* (Insecta, Dermaptera, Diplatyidae) earwig from the Western Ghats of India. *ZooKeys* 1088: 53–64. <https://doi.org/10.3897/zookeys.1088.79416>
- Koutsoukos, E., Demetriou, J., Kalaentzis, K., & Kazilas, C. 2022. First occurrence of the black field earwig, *Nala lividipes* (Dermaptera: Labiduridae) in Greece. *Entomologia Hellenica*, 31(2). Retrieved from <https://ejournals.epublishing.ekt.gr/index.php/entsoc/article/view/30836>
- Mifsud, D. and V. Taglianti. 2008. *Nala lividipes* (Dufour, 1828), a new earwig for the Maltese Islands (Dermaptera: Labiduridae). *Bulletin of the Entomological Society of Malta* 1: 11- 13.
- Petr KOČÁREK, 2006. A new species of *Nala* (Dermaptera: Labiduridae) from Cambodia. *Acta Entomologica Musei Nationalis Pragae*, Volume 46, pp. 1-6
- Rasplus, J.Y. and A. Roques. 2010. Dictyoptera (Blattodea, Isoptera), Orthoptera, Phasmatodea and Dermaptera. *BioRisk* 4 (2): 807-831. <https://doi.org/10.3897/biorisk.4.68>
- Srivastava, G.K. 1988. *The Fauna of India and the Adjacent countries, Dermaptera Part I*. Superfamily: Pygidicranoidea, XII + pp. 268 (Published by the Director, Zoological Survey of India).
- Srivastava, G.K., 2003. *The Fauna of India and the adjacent countries, Dermaptera* (Part-2): (Superfamily: Anisolaboidae): 1-235 (Published by the Director, Zoological Survey of India, Kolkata).
- Srivastava, G.K., 2013. *Fauna of India and the adjacent Countries, Dermaptera: Apachyoidaea and Forficuloidae*, Part III: 1-469 (Published by the Director, Zoological Survey of India, Kolkata).
- Steinmann, H. 1989a. World catalogue of Dermaptera. *Series Entomologica* (Dordrecht) 43: 1-934.
- Steinmann, H. 1989b. *Dermaptera Catadermaptera 2. Tierreich* 105. Walter de Gruyter, Berlin – New York, 504 pp.
- Vigna Tagliantia. 1994. Further notes on Dermaptera from Sierra Leone. *Quaderni dell'Accademia Nazionale dei Lincei* 267: 199-212.