Taxonomic results
Family Lepidostomatidae

Lepidostomatidae Ulmer, 1903: 89
Type genus: *Lepidostoma* Rambur, 1842

**Diagnostic features:** Basal joint of the antenna usually much longer than the head (Fig. 1), generally clothed with very long, outstanding hair or scales, often in the male with processes or spine-like teeth at the base; maxillary palps (Figs. 35, 36, 49, 61) in male generally membranous and clothed with thickened hairs or scales or both; number of joints varying from one to three, the normal five always in the female; labial palps (Figs. 35, 36, 49, 61) three jointed in both the sexes, basal joint small, about half the length of second which is slightly shorter than the third; pronotum with two pairs of warts usually circular or elliptical; mesonotum with two pairs of warts, scutum and Scutellum each with one pair (Fig. 1); abdomen slender, no ventral teeth in either sex; wings (Figs. 38, 39, 50, 51) generally oval, densely pubescent in the male, often furnished with scales and also with grooves and folds, the former being more more or less open furrows lined with scales, whilst the latter are strongly chitinised, closely overlapping portions of the membrane, generally in the post-costal area and usually in the anterior wing; often the costal margin of this wing is doubled over and concealed in a heavy fringe; sometimes there is a similar fringe along a central groove; the wings of the female are more regular and there are neither scales, grooves nor folds present; spurs 2,4,4 or 1,4,4 varying according to the species.

**Distribution:** It is a cosmopolitan and is comparatively well represented in Oriental region followed by Palearctic region.

**Remarks:** Family Lepidostomatidae was erected by Ulmer in 1903 and is now represented by approximately 444 species under 11 genera all over the World.
Morse, 2012. From the Oriental region this family is represented by 225 species falling under 4 genera. In India this family is represented by 48 species under 3 genera. As far as Indian species are concerned 44 species have been reported from Himalayan region and 4 species *L. doligung* (Malicky), *L. dubitans* (Mosely), *L. palnia* (Mosely) and *L. lanca* (Mosely) are reported from Southern India. A complete distribution of Indian species of the family Lepidostomatidae is given in the table III.

**Key to Indian genera of Lepidostomatidae Ulmer**

1. Forewing each with fork I absent & discoidal cell open..................

   ........................................................................Zephropsyche Weaver
   - Forewing each with fork I present & discoidal cell usually closed........2

2. Forewing with fork I petiolate.................................Paraphlegopteryx Ulmer
   - Forewing with fork I sessile.........................Lepidostoma Rambur

**Genus Lepidostoma Rambur**

Type species: *Lepidostoma squamulosum* Rambur 1842: 493-494 (designated by Ross 1944)

**Synonymy**


*Adinarthrella* Mosely, 1941; type species, *Adinarthrella brunnea* Mosely.


*Agoerodes* Mosely, 1949a; type species *Agoerodes convolutes* Mosely.

*Anacrunoecia* Mosely, 1949b; type species *Anacrunoecia atania* Mosely.
Family Lepidostomatidae

*Dinarthrella* Ulmer, 1907; type species *Maniconeura destructa* Ulmer.

*Dinarthrena* Mosely, 1941; type species *Dinarthrena shanta* Mosely.

*Dinarthrum* McLachlan, 1871; type species *Dinarthrum ferox* McLachlan

*Goerodella* Mosely, 1949c; type species *Goerodella tesarum* Mosely.

*Goerodina* Mosely, 1949c; type species *Goerodina serrata* Mosely.

*Indocrunoecia* Martynov, 1936; type species *Indocrunoecia heterolepidia* Martynov.


**Diagnostic features:** Spurs 2, 4, 4. Male antennae each with scape (Fig. 35, 37, 59, 61) long, armed generally with distinct processes at its base, bearing large, unique, highly modified setae in certain species; however, these processes rudimentary, or absolutely wanting in some species, such that antennae cylindrical, simple. Maxillary palp (Fig. 35, 59, 61) each 2 segmented, 1st segment sometimes with extra apical or mesal lobes and 2nd segment often spatulate or lobiform, flexible and quite variable in length. Wings (Fig. 38, 39, 50, 51) covered with a mixture of highly variable hair and scales. Neuration irregular in forewings and generally regular in hind wings; forewings each usually with postcubital fold more than half as long as wing (Figs. 39, 50, 51). Forks I, II present (Fig. 38); presence of III, IV and V variable. Discoidal and thyridial cells varying in length. Hind wing venation usually not highly modified.

**Distribution:** Oriental, Palearctic, Afro tropical and Australasian.

**Remarks:** Based on the type species *Lepidostoma squamulosum* Rambur, the genus *Lepidostoma* was established by Rambur (1842). Now, this genus is represented by 419 species worldwide Morse, 2012. From Oriental region by 202 species. In India this genus is represented by 33 species which were contributed by Mosely 1939, 1941, 1949a, 1949b, 1949c (17 species); 5 species by Martynov
1936; McLachlan 1871, 1878; Malicky 1979, 2003, Ulmer 1905, 1906 and Weaver 1989, 2002 (2 species each); Navàs 1932 (1 species). Two other species i.e. \textit{L. brueckmanni} (Malicky & Chantaramongkol) and \textit{L. palmiles} (Ito) originally reported from Thailand & Nepal respectively have also been reported from India (Yang & Weaver, 2002). The present study deals with 16 previously described species, 2 as first record and 25 species new to science. In the present study Saini & Parey (2011) added 4 new species to this genus including the checklist to Indian \textit{Lepidostoma} Rambur. Parey & Saini (2012) again added 4 new species from Indian Himalaya.

**Key to Indian species of \textit{Lepidostoma} Rambur**

1. Forewing without closed pseudo cell near arculus, parameres absent………………\textit{Lepidostoma hirtum} Branch………………………………………2  
   - Forewing with closed pseudo cell near arculus, parameres present………………\textit{Lepidostoma ferox} Branch………………………………………12

2. Inferior appendages each 1 segmented  ……………………………………………3  
   - Inferior appendages each 2 segmented………………………………………9

3. Post-cubital fold absent in forewing  …………………………………………4  
   - Post-cubital fold present in forewing …………………………………………8

4. Maxillary palp single segmented………………………………………………5  
   - Maxillary palp two segmented………………………………………………6

5. Inferior appendage apically with two equal branches; basodorsal process present……………………………………………………\textit{L. cherrapngense} sp. nov.  
   - Inferior appendage apically with two unequal branches; basodorsal process absent……………………………………………………\textit{L. lanca} (Mosely)

6. Basodorsal processes absent in inferior appendage; phallobase curved………………………………………\textit{L. tridentatum} sp. nov.  
   - Basodorsal process present in inferior appendage; phallobase not curved…………………………………………………………7
7. Segment X apically with two points near its corners; maxillary palp with second segment curved backwards apically; phallobase pointed…………………………………………………………...L. rifati sp. nov.
- Segment X apically with three points, one at centre and two at corners; maxillary palp with second segment straight; phallobase rounded…………………………………………………………...L. khajjiarense sp. nov.
8. Postcubital fold short; apical margin of tergite IX produced into 2 pair of processes, outer quite long, as long as inferior appendages …………………………………………………..L. khasianum (Mosely)
- Postcubital fold long; apical margin of tergite IX produced into 2 pair of processes, outer long but considerably shorter than inferior appendage ……………………………………………………………...L. palnia (Mosely)
9. Segment X lateral processes shorter than inferior appendage…………………………………………………………………………..L. fuscatum (Navas)
- Segment X lateral processes quite prominent and about as long as inferior appendage ……………………………………………………………...10
10. Inferior appendages each basodorsal processes slendrical with apex rounded……………………………………………………...L. inequale (Martynov)
- Inferior appendage each basodorsal processes capitate with apex triangular………………………………………………………………11
11. Segment X lateral processes incurved………………L. doligung (Malicky)
- Segment X lateral processes outcurved .................L. divaricatum (Weaver)
12. Inferior appendage without any basodorsal processes………………..13
- Inferior appendage with a basodorsal processes………………………35
13. Inferior appendage apically branched………………………………14
- Inferior appendage apically unbranched……………………………..16
14. Segment X apically serrated & with a small process at its base……..15
- Segment X apically non-serrated & without any process at its base……………………………………………………... L. ylesomi (Weaver)
15. Segment X with a prominent finger-like process at its base in dorsal view; inferior appendage with all the three branches equal in length in ventral view……………………………………………………………..L. heterolepidium (Martynov)
- Segment X with a reduced process at its base in dorsal view; inferior appendage with all the three branches unequal in length..........................................................L. libitana (Malicky)
16. Scapes without any subbasodorsal processes at its base………………..17
- Scapes with 1 or 2 subbasodorsal processes at its base……………..18
17. Scapes with a dent at its base; segment IX apicodorsally broadly rounded; dorsolateral processes of segment X acutely produced in lateral view…………………………………………………………L. parvulum (Mosely)
- Scapes without any dent at its base; segment IX apicodorsally somewhat narrowly rounded; dorsolateral processes of segment X finger-like & cylindrical in lateral view……………………………………L. inerme (McLachlan)
18. Scapes with a 1 subbasodorsal process at its base..... L. ferox (McLachlan)
- Scapes with 2 subbasodrsal processes at its base……………………19
19. Segment X deeply notched apicolaterally..L. himachalicum Saini & Parey
- Segment X apicolaterally not notched……………………………………..20
20. Segment IX apicodorsally pyramidal in outline...L. pyramidatum sp. nov.
- Segment IX apicodorsally rounded………………………………………21
21. Segment X simple with reduced lateral processes…………………………..22
- Segment X complex with prominent lateral processes……..…………………..26
22. Post-cubital fold in forewing with 3 closed cells…………………………..23
- Post-cubital fold in forewing with 4 closed cells……………………………..24
23. Inferior appendage slendrical in lateral view; segment X serrated in lateral & dorsal view……………………………………..L. latum (Martynov)
- Inferior appendage cylindrical in lateral view; segment X with smooth surface in lateral & in dorsal view………..………..………..L. setosum sp. nov.
24. Segment IX apicodorsally sclerotized; segment X rounded near its lateral sides…………………………………………….L. badrenathense sp. nov.
- Segment IX apicodorsally not sclerotized; segment X narrow near its lateral sides in dorsal view……………………………………………………………………………….25

25. Segment IX with a triangular lateral processes in lateral view; inferior appendage apically excised in ventral view….L. punjabicum (Martynov)
- Segment IX without any triangular processes in lateral view; inferior appendage apically truncate in ventral view……….L. religiosum sp. nov.

26. Segment X not excised at its apical margin; dorsolateral processes finger-like…………………………………………………………………………………..L. steelae (Mosely)
- Segment X with distinct excision at its centre; dorsolateral processes not finger-like…………………………………………………………………………………..27

27. Segment X with mesal processes finger-like in lateral view………………28
- Segment X with mesal processes triangular or rounded in lateral view...30

28. Segment X with dorsolateral processes apically acutely produced in dorsal view; mesal processes somewhat triangular in lateral view……………………………………………………L. pahalgamense sp. nov.
- Segment X with dorsolateral processes roundly produced in dorsal view; mesal processes somewhat rounded in lateral view………………………………………29

29. Segment IX with small rounded projection near its sides in dorsal view; subbasodorsal processes of scapes almost unequal in length………………………………………….. L. gulmargense sp. nov.
- Segment IX without any rounded projection near its sides in dorsal view; subbasodorsal processes of scapes equal in length….L. sonomax (Mosely)

30. Scapes & maxillary palps densely covered with hair; inferior appendage apically truncate in ventral view…………………………………………………………….31
- Scapes & maxillary palps not densely covered with hair; inferior appendage apically excised in ventral view…………………………………………………………….32

31. Segment X with mesal processes curved antagonistically; parameres diverging from one another………………..L. lakhwinderae sp. nov.
- Segment X with mesal processes straight; parameres lying straight and parallel with one another…………………..L. ahlæ Parey & Saini
32. Dorsolateral processes of segment X triangularly produced in dorsal view ........................................... L. sonmargae Parey & Saini
   - Dorsolateral processes of segment X truncate or roundly produced in dorsal view...........................................33

33. Dorsolateral processes of segment X truncate in dorsal view; phallobase with two rounded stalks in lateral view ..........L. truncatum Parey & Saini
   - Dorsolateral processes of segment X rounded in dorsal view; phallobase with a single rounded stalk in lateral view...............................34

34. Segment IX apicodorsally truncate; parameres diverging with one another.......................................................... L. nagana (Mosely)
   - Segment IX apicodorsally rounded; parameres almost straight with one another.....................................................L. gangotri sp. nov.

35. Inferior appendage apically unbranched...........................................36
   - Inferior appendage apically branched...........................................42

36. Scapes without any subbasodorsal processes; inferior appendage apically with three prominent spines............................... L. margula (Mosely)
   - Scapes with 1 or 2 subbasodorsal processes; inferior appendage without any spines apically..........................................................37

37. Segment X without any excision near its centre; parameres placed parallel to each other.....................................................L. mandelense sp. nov.
   - Segment X with an excision near its centre; parameres placed across the genitalia..............................................................38

38. Mesal processes of segment X longer than lateral processes in dorsal view..........................................................39
   - Mesal processes of segment X shorter than lateral processes in dorsal view..............................................................41

39. Dorsolateral processes of segment X slendrical, finger-like in dorsal view; maxillary palps with 1st segment cylindrical.........L. digitatum (Mosely)
   - Dorsolateral processes of segment X pointed in dorsal view; maxillary palps with 1st segment slendrical.................................40
40. Inferior appendage apically slendrical in dorsal view; parameres longer than phallus………………………………………………………… L. kurseum (Mosely)
- Inferior appendage apically triangular in dorsal view; parameres shorter than phallus………………………………………… L. simplex (Kimmins)

41. Basodorsal processes of inferior appendage slendrical & vertically placed in lateral view; scapes with a single subbasodorsal process………………………………………………………… L. moulmina (Mosely)
- Basodorsal processes of inferior appendage triangular & inwardly placed in lateral view; scapes with two subbasodorsal processes………………………………………………………… L. muzamili sp. nov.

42. Scapes without any subbasodorsal process…………………………………………………43
- Scapes with 1 or 2 subbasodorsal processes…………………………………………………50

43. Scapes with a strong angular projection near its base………………………………………44
- Scapes without any angular projection near its base………………………………………46

44. Dorsolateral processes of segment X produced into a long, downwardly directed spines…………………………………………………………………………………………………… L. tesarum (Mosely)
- Dorsolateral processes of segment X without any spines at its apices………45

45. Inferior appendage apically with two unequal branches in lateral view; segment X with dorsolateral processes cylindrical……..L. sika (Mosely)
- Inferior appendage apically with two equal branches in lateral view; segment x with dorsolateral processes triangular……..L. betteni (Martynov)

46. Parameres absent; segment X with dorsolateral processes triangular………………………………………………………………………………………………………………………………………………………… L. mechukense sp. nov.
- Paramers present; segment X with dorsolateral processes cylindrical…..47

47. Maxillary palps single segmented; dorsolateral processes of segment X with two pointed processes .....................L. brueckmanni (Malicky & Chantaramongkol)
- Maxillary palps two segmented; dorsolateral processes of segment X with a single processes………………………………………………………………………………………………………………48
48. Maxillary palp apically clubbed; segment X with mesal processes triangular & lateral processes slender………………L. megahalayense Saini & Parey
- Maxillary palp apically slenderical; segment X with mesal processes rounded & lateral processes reduced or cylinder……………………49
49. Segment X with dorsolateral processes reduced; inferior appendage with lateral branch pointed & mesal branch truncate apically in dorsal view………………………………………………L. kimsa (Mosely)
- Segment X with dorsolateral processes cylindrical; inferior appendage apically with both branches rounded……………… L. vikrami sp. nov.
50. Scapes with 1 subbasodorsal processes……………………………… 51
- Scapes with 2 subbasodorsal processes ........................................ 57
51. Inferior appendage apically with equal branches…………………………52
- Inferior appendage apically with unequal branches………………………54
52. Dorsolateral processes of segment X truncate in dorsal view; parameres criss crossing one another…………………………… L. destructum (Ulmer)
- Dorsolateral processes of segment X triangular in dorsal view; parameres placed across the genitalia or parallel to one another…………………………53
53. Mesal processes of segment X truncate in dorsal view; parameres placed across the genitalia; phallobase rounded……L. garwalense Parey & Saini
- Mesal processes of segment X rounded in dorsal view; parameres parallel to one another; phallobase truncate………………… L. curvatum sp. nov.
54. Basodorsal process of inferior appendage apically dilated………………55
- Basodorsal process of inferior appendage slenderical……………………56
55. Segment X simple, without dorsolateral processes; post-cubital fold with 2 closed cells……………………………………………………L. dubitans (Mosely)
- Segment X complex, with dorsolateral processes; post-cubital fold with 5 closed cells………………………………………………L. dirangense Saini & Parey
56. Maxillary palps with second segment spoon-shaped; segment X complex with well developed dorsolateral processes……… L. assamense (Mosely)
- Maxillary palps with second segment cylindrical; segment X simple, without dorsolateral processes........................................... *L. palmipes* (Ito)

57. Segment X with strongly serrated margins; subbasodorsal processes of scapes apically bifurcated........................................... *L. serratum* (Mosely)

- Segment X non-serrated; basodorsal processes of scapes without any bifurcation..............................................................8

58. Mesal processes of segment X slenderical & longer than lateral processes; mesal processes of inferior appendage longer than other branches.........................................................*L. armatum* (Ulmer)

- Mesal processes of segment X pointed & shorter than lateral processes; mesal processes of inferior appendage shorter than other branches.................................................................59

59. Segment X with dorsolateral processes with slenderical processes & with another triangular processes in dorsal view.................... *L. liber* Malicky

- Segment X with dorsolateral processes with a single, slenderical processes only.........................................................*L. kashmiricum* Saini & Parey
**Family Lepidostomatidae**

*Lepidostoma sika* (Mosely)
(Figs. 28-30, 34-35, 38)


Scapes (Fig. 35) 1.3 mm in length, without any subbasodorsal process but with a small dent near its base. Maxillary palp (Fig. 35) 0.97 mm in length, two segmented; first segment longer & apically dilated; second segment finger-like and vertically placed. Forewing (Fig. 38) with costal and subcostal veins covered with dense hair, post cubital fold up to middle of the wing, with 3 closed pseudocells. Average length of forewings 9.7 mm.

**Male genitalia (Figs. 28-30, 34):** Segment IX apicodorsally slightly produced into a triangular projection; rectangular in lateral view. Segment X deeply & widely excised near its centre, forming two plates, each plate broadened near base and apically two lobed; lateral lobe short and rounded and mesal lobe slendrical and pointed near apex in dorsal view; lateral lobe appears much rounded and mesal lobe appear as a beak of a bird in lateral view. Inferior appendage single segmented and apically branched; lateral lobe of inferior appendage cylindrical with hooded head in dorsal view; mesal lobe much longer and apically pointed. Basodorsal process posteriad placed & apically clubbed. Phallus with phallobase truncate and phallocrypt excised. Parameres acute at apex.

**Holotype depository:** NHM (London).

**Material examined:** Arunachal Pradesh, Tato, 1800 m, 14-iv-2001, 1♂.

**Distribution:** India (Arunachal Pradesh, Sikkim).
**Diagnostic combination:** The key characters by which *Lepidostoma sika* (Mosely) differs from its closely allied species *Lepidostoma assamense* (Mosely) are as follows: segment X lateral processes shorter than mesal processes in case of former whereas, segment X lateral processes longer than mesal processes in case of latter. Mesal processes slendrical apically in *L. sika* whereas, these are triangular in dorsal view in case of *L. assamense*.

*Lepidostoma assamense* (Mosely)

(Figs. 31-33, 36-37, 39)

*Anacrinoecia assamense* Mosely, 1949b: 412-413.

Scapes (Fig. 37) 1.94 mm, broadened near base and then apically narrower & with a single saubbasodorsal processes near its centre. Maxillary palp (Fig. 37) 1.3 mm, 2 segmented; basal segment curved and longer; second segment short & hidden below the scapes, bearing long hair on its surface. Forewing (Fig. 39) with post cubital up to the tip of the wing, with 5 closed pseudo cells. Average length of forewings 8-9 mm.

**Male genitalia (Figs. 31-33, 36):** Segment X apicodorsally roundly triangular. Segment X excised near centre into dorsolateral and mesal processes; dorsolateral processes finger-like, separated from mesal processes by rounded excisions; mesal processes shorter than lateral processes & triangular in dorsal view; lateral processes appear clubbed apically and mesal lobe with serrated surface in lateral view. Inferior appendage single segmented and apically branched, short & stout near bottom and with two unequal branches; main branch long, with incurring & slightly dilated at centre; second branch shorter,
slendrical and incurving; also main branch with a small dent like surface in dorsal view & in ventral view this dent-like surface is serrated. Phallus with phallobase truncate & phallocrypt apically dilated. Parameres short & symmetrical.

**Holotype depository:** NHM (London).

**Material examined:** Meghalaya, Shillong, 1500 m, 12-iv-2009, 6♂ 1♀.

**Distribution:** Nepal: Bhutan: India (Meghalaya).

**Diagnostic combination:** The key characters by which *Lepidostoma assamense* (Mosely) differs from its closely allied species *Lepidostoma tesarum* (Mosely) are as follows: Segment X dorsolateral processes finger-like in case of former whereas, dorsolateral processes apically with incurving pointed process in case of latter.

*Lepidostoma destructum* (Ulmer)

(Figs. 40-42, 46-47, 50)

*Maniconeuria destructa* Ulmer, 1905: 35-36.

Scapes (Fig. 47) 1.8 mm, with a strong angular projection at the base; with single subbasodorsal process. Maxillary palp (Fig. 47) 0.97 mm, 2 segmented; first segment sharply bent & somewhat dilated near apex; beyond this segment there is a short, slender terminal segment. Forewing (Fig. 50) with post cubital fold slightly shorter in length than wing, post cubital fold with 8 pseudo cells. Average length of forewings 8-9 mm.
Male genitalia (Figs. 40-42, 46): Segment IX apicodorsally roundly produced into a triangular prominence. Segment X with a wide excision upto its centre & having dorsolateral & mesal processes; dorsolateral processes broad, with sinous outer margins & truncate apex in dorsal view; mesal processes shorter, diverging lateriad & with sub truncate apex; dorsolateral processes apically with a beak-like processes in lateral view & mesal processes in the form of a lobe with serrated surface in lateral view. Inferior appendage single segmented two branched; main branch crossing with one another and apically truncate in dorsal view & hammer-headed in lateral view; second branch dilated near base and apically cylinder with rounded apices in dorsal & lateral views. Basodorsal processes horizontally placed, almost 1/3 as long as inferior appendage in lateral view. Phallus with phallobase dilated, phallocrypt apically rounded, Parameres placed parallel to one another in ventral view.

Holotype depository: Paris Museum (France).

Material examined: Arunachal Pradesh, Hunli, 1800 m, 05-v-2011, 2♂♂. Dirang, 1700 m, 07-x-2010, 1♂.

Distribution: India (Arunachal Pradesh, West Bengal).

Diagnostic combination: The species under consideration is closely allied to Lepidostoma betteni (Martynov). The key characters which keep the two species distinct have been discussed under the latter.
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*Lepidostoma tesarum* (Mosely)

(Figs. 43-45, 48-49, 50)


Scapes (Fig. 49) 2.91 mm, each without any subbasodorsal processes but with a strong angular projection carrying tuft of setae at its surface. Maxillary palp (Fig. 49) 1.94 mm, 2 segmented; basal segment long, slightly curved towards its base; second segment short, covered with long setae. Forewing (Fig. 51) with post cubital fold much shorter than wing and almost as long as discoidal cell, with 3 closed pseudo cells. Average length of forewing 9.7 mm.

**Male genitalia** (Figs. 43-45, 48): Segment IX apicodorsally rounded; rectangular in lateral view. Segment X excised at the centre & produced into dorsolateral and mesal processes; dorsolateral processes in the form of triangular lobes with the apices of the triangle again produced in a long, downwardly directed spine as seen in lateral view; mesal process rounded & serrated apically. Inferior appendage each single segmented, bifurcated in midway, lateral lobe slenderical & apically produced; second lobe apically truncate; both lobes almost of the same size. Basodorsal process cylindrical & angled inward slightly. Phallus with phallobase rounded but with truncate apex; phallocrypt rounded apically. Parameres acute at apex.

**Holotype depository:** NHM (London).

**Family Lepidostomatidae**

**Distribution:** Bhutan: India (Uttarakhand, Himachal Pradesh).

**Diagnostic combination:** The key characters by which *Lepidostoma tesarum* (Mosely) differs from its closely allied species *Lepidostoma destructum* (Ulmer) are as follows: In case of former dorsolateral processes are produced into triangular lobes with the apices of the triangle again produced into a long, downwardly directed spine while as in case of latter dorsolateral processes are produced into a truncate apices without any downwardly directed spines.

*Lepidostoma divaricatum* (Weaver)

(FIGS. 52-54, 58-59, 62)

*Goerodes divaricatus* Weaver, 1989: 56.

Scapes (Fig. 59) 0.97 mm, without any subbasodorsal processes. Maxillary palp (Fig. 59) 0.8 mm, 2 segmented; both segments almost of the same length, apical segment somewhat triangular. Forewing (Fig. 62) without any post cubital fold. Average length of forewing 3-4 mm.

**Male genitalia** (FIGS. 52-54, 58): Segment IX apicodorsally rounded. Segment X with a pair of dorsolateral and mesal processes; dorsolateral processes slender, diverging apically in dorsal view; mesal processes more slender in dorsal view, less than 1/3 as long as dorsolateral processes. Inferior appendage each single segmented, apically three branched, main processes broadened near base, apex acute in dorsal and ventral view; subapical processes slender; ventromesal process short & apically rounded in dorsal and ventral views. Basodorsal process extended posteriad. Phallus without parameres.
**Holotype depository:** CNCBI (Canada).

**Material examined:** Himachal Pradesh: Punjpull nala, 1700 m, 2 ♂♂.

**Distribution:** Indonesia: India (Himachal Pradesh, Uttarakhand, Meghalaya).

**Diagnostic combination:** The key characters by which *Lepidostoma divaricatum* (Weaver) differs from its closely allied species *Lepidostoma brevior* (Ulmer) are as follows: Segment X with dorsolateral processes in dorsal view diverging in former whereas, segment X with dorsolateral processes in dorsal view converging in case of latter.

**Lepidostoma inequale** (Martynov)  
(Figs. 55-57, 60-61, 63)


Scapes (Fig. 61) 4.8 mm, much longer, without any subbasodorsal processes. Maxillary palp (Fig. 61) 1 mm, 2 segmented; first segment longer; second short and slightly curved, both segments covered with dense hairs. Forewing (Fig. 63) with post cubital fold half the length of wing, with 4 closed pseudo cells. Average length of forewing 7-8 mm.

**Male genitalia** (Figs. 55-57, 60): Segment IX narrowed near centre and dilated towards sides in dorsal view. Segment X divided into dorsolateral and mesal processes; dorsolateral processes much longer, almost as long as inferior appendage and apically outcurving in dorsal view, turned upward toward its
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apices in lateral view; mesal process somewhat triangular near base and apically bilobed, both lobes excised in the centre in dorsal view, appear leaf-like in lateral view. Inferior appendage single segmented and apically two branched; main branch apically dilated whereas, second branch short & slender in dorsal view. Basodorsal process almost vertically placed & cylinder in lateral view. Phallus dilated near phallobase and phallocrypt rounded apically. Parameres lacking.

**Holotype depository:** RIZ (St. Petersburg).

**Material examined:** Uttarakhand: Tala, 1700 m, 12-vi-2009, 2♂♂, 2♀♀.

**Distribution:** Bhutan: India (Uttarakhand).

**Diagnostic combination:** The main key character by which *Lepidostoma inequale* (Martynov) differs from its closely allied species *Lepidostoma palnia* (Mosely) is as follows: Segment X dorsolateral processes apically diverging in case of former whereas, the same are converging in case of latter.

*Lepidostoma liber* Malicky

*(Figs. 64-66, 70-71, 74)*


Scapes (Fig. 71) 1.9 mm, proximally acutely angled, with two subequal subbasodorsal processes. Maxillary palp (Fig. 71) 0.97 mm, 2 segmented; first segment slenderical, than second apical segment; second segment curved downwards, a membranous process arise between these two segments. Forewing (Fig. 74) without any post cubital fold. Average length of forewing 8-9 mm.
Male genitalia (Figs. 64-66, 70): Segment IX apicodorsally triangular, rectangular in lateral view. Segment X produced into dorsolateral & mesal processes; dorsolateral process two lobed, one lobe slendrical, second one rounded but produced acutely in dorsal view. Inferior appendage single segmented, apically three branched; main branch rounded apically in dorsal view & spoon-shaped in lateral view; mesal branch longer than others; third branch acute apically with a small cleft at its base. Basodorsal process clubbed apically & almost vertically placed on the base of inferior appendage.

Holotype depository: Malicky’s personal collection (Austria).

Material examined: Arunachal Pradesh, Loomla, 2300 m, 07-X-2010, 2 ♂♂.

Distribution: Bhutan: India (Arunachal Pradesh).

Diagnostic combination: The key characters by which Lepidostoma liber Malicky differs from its closely allied species Lepidostoma dubitans Mosely are as follows: Segment X dorsolateral and mesal processes well developed in case of former whereas, segment X simple, without dorsolateral and mesal processes in case of latter. Basodorsal process of inferior appendage clubbed apically in L. liber whereas, basodorsal process of inferior appendage slendrical in case of L. dubitans.
Lepidostoma betteni (Martynov)
(Figs. 67-69, 72-73, 75)

Scapes (Fig. 73) 1.94 mm, apically dilated, with a single subbasodorsal process having acutely curve toward base and densely covered with hair, basal portion of joint ending in a short almost triangular projection. Maxillary palp (Fig. 73) 0.97 mm, long, single segmented, curved upwards & covered with a tuft of long setae on its surface. Forewing (Fig. 75) with post cubital fold upto the tip of the wing, with 8 pseudo cells. Average length of forewing 8-9 mm.

Male genitalia (Figs. 67-69, 72): Segment IX apicodorsally with a rounded median projection. Segment X divided by a deep and wide excision near centre into dorsolateral and mesal processes; dorsolateral processes slendrical and apically almost pointed; mesal processes flat and apically truncate in dorsal view; laterally mesal processes appear rounded with serrated surface & the lateral process appear as a short finger-like, somewhat curved process. Inferior appendage single segmented but apically branched; both branches almost of the same length. Basodorsal process long, reaching near the base of upper branches. Phallus with phallobase dilated and truncate at apex, phallocrypt narrowed and then apically dilated. Parameres closely adhered together and only free at apices.

Holotype depository: Sikkim, Singhik, 1300 m, 14-ix-2009, 1 ♂, 4♀♀. Mangan, 1500 m, 12-v-2009, 1 ♂. Uttarakhand, Gairsain, 1600 m, 16-vi-2009, 1 ♂.
Material examined: RIZ (St. Petersburg).

Distribution: India (Sikkim, Uttarakhand).
**Family Lepidostomatidae**

**Diagnostic combination:** The key characters by which *Lepidostoma betteni* (Martynov) differs from its closely allied species *Lepidostoma destructum* (Martynov) are as follows: Segment X with dorsolateral processes slendrical, mesal processes flat & truncate apically in former whereas, dorsolateral processes flat & truncate apically, mesal processes leaf-like in latter.

**Lepidostoma ylesomi Weaver**

**(Figs. 76-78, 82-83, 86)**

*Lepidostoma ylesomi* Weaver, 2002: 183.

*Adinarthrella brunnea* Mosely 1941: 776 (Synonym by Weaver, 2002).

Scapes (Fig. 83) 1 mm, without any subbasodorsal processes. Maxillary palp (Fig. 83) 0.97 mm, 2 segmented; basal segment elbowed in the proximal half & enormously dilated at the bend, then the joint is narrow to the apex; second segment slender & about as long as the first segment. Forewing (Fig. 86) with post cubital fold fold as long as subcostal vein, with 4 closed pseudo cells. Average length of forewing 6-7 mm.

**Male genitalia (Figs. 76-78, 82):** Segment IX apicordorsally rounded; line of demarcation between segment IX and segment X is not clearly visible. Segment X with a narrow & long excision at its centre & forming two plates; each plate triangular in dorsal view; dilated near base & apically rounded in lateral view. Inferior appendage each single segmented but apically branched; main branch apically rounded in dorsal view, cylindrical in lateral view; second branch slendrical, curved inward & with a small median cleft near base. Phallus much longer; phallocrypt rounded apically. Paramares much smaller than phallus.
Family Lepidostomatidae

Holotype depository: NHM (London).


Distribution: India (Sikkim, Uttarakhand, Jammu & Kashmir).

Diagnostic combination: The key characters by which *Lepidostoma ylesomi* Weaver differs from its closely allied species *Lepidostoma inconspicus* (Mosely) are as follows: segment X each apicodorsally triangular in former whereas, segment X each apicodorsally rounded in case of latter. Inferior appendage each with two distinct lobes in case of *L. ylesomi* Weaver whereas, inferior appendage each single lobed in case of *L. inconspicum* (Mosely). Basal segment of maxillary palp enormously dilated near base in case of *L. ylesomi* whereas, basal segment of maxillary palp almost slendrical and without any dilation near base in case of *L. inconspicus*.

*Lepidostoma simplex* (Kimmins)  
(Figs.79-81, 84-85, 87)

*Adinarthrum simplex* Kimmins, 1964: 54-55.

Scapes (Fig. 84) 0.8 mm, with a single subbasodorsal process, thick & directed upwards. Maxillary palp (Fig. 84) each 0.97 mm, 2 segmented; first segment slendrical, slightly dilated near base; second segment short & curved (C-shaped). Forewing (Fig. 87) with post cubital fold upto the middle of the wing, with 2 closed pseudo cells. Average length of forewing 3-4 mm.
Family Lepidostomatidae

Male genitalia (Figs. 79-81, 84): Segment IX apicodorsally triangular, somewhat rectangular in lateral view. Segment X excised in the centre & forming a triangular lobe on each side; each lobe is apically serrated and when seen laterally serrated margin appear as a triangular prominence near base of this segment. Inferior appendage each single segmented, broad, incurring & dilated to a truncate apex; laterally inferior appendage is slender with triangular apex. Basodorsal process directed upwards and is stouter. Phallus with phallobase truncate and phallocrypt also truncate in lateral view. Parameres reduced to a pair of short, blunt processes.

Holotype depository: BMNH (London).


Distribution: Nepal: Bhutan: India (Uttarakhand).

Diagnostic combination: The key characters by which Lepidostoma simplex (Kimmins) differs from its closely allied species Lepidostoma ylesomi Weaver are as follows: Segment X excised near centre & forming a triangular lobe at each side; each lobe is apically serrated in former whereas, segment X excised near centre & forming a triangular lobe without any serrated side. Inferior appendage apically truncate in case of L. simplex whereas, the same is apically rounded in case of L. ylesomi.
Lepidostoma punjabicum (Martynov)
(Figs. 88-90, 94-95, 98)


Scapes (Fig. 95) 2.9 mm, with two subequal subbasodorsal processes, basal segment long & the apical segment shorter. Maxillary palp (Fig. 95) 0.98 mm, 2 segmented; first segment long; second shorter than first & slenderical. Forewing (Fig. 98) with post cubital fold slightly shorter than wing, with 4 closed pseudo cells. Average length of forewing 6-7 mm.

Male genitalia (Figs. 88-90, 94): Segment IX apicodorsally roundly pointed. Segment X with an excision near its centre forming two simple plates, each plate somewhat rectangular in dorsal view and with two triangular projections in lateral view. Inferior appendage each two segmented; first segment slightly dilated near its apex in lateral view, second segment apically excised in all the three views. Phallus with phallobase triangular & parameres closely adhered and free only towards their tips.

Holotype depository: RIZ (St. Petersburg).


Distribution: India: (Himachal Pradesh).

Diagnostic combination: The key characters by which Lepidostoma punjabicum (Martynov) differs from its closely allied species Lepidostoma latum (Martynov)
are as follows: Segment IX apicodorsally somewhat triangular in case of former whereas, the same is apicodorsally slightly rounded in case of latter. Each lobe of segment X apically plane in case of *L. punjabicum* whereas, each lobe of segment X apically excised in case of *L. latum*.

*Lepidostoma latum* (Martynov)

(Figs. 91-93, 96-97, 99)

*Dinarthrum* latum Martynov, 1936: 282-283.

Scapes (Fig. 97) 3.8 mm, much longer, with two subbasodorsal proceeses, basal process apically tapering, apical process cylindrical. Maxillary palp (Fig. 97) 1 mm, 2 segmented, basal segment much longer, broadened near base and apically tapering, second segment cylindrical and curved ventriad. Forewing (Fig. 99) with post cubital fold concave shaped, with 3 closed pseudo cells. Average length of forewing 8-9 mm.

**Male genitalia** (Figs. 91-93, 96): Segment IX apicodorsally nearly triangular. Segment X divided by a narrow excision near its centre into two simple plates; each plate broadened near base, sides somewhat truncate and finger-like near centre, with slight dentation near bottom in dorsal view. Inferior appendage each single segmented and apically excised in all the three views. Phallus with phallobase two stalked near its corners, phallocrypt apically rounded. Parameres antagonistical with one another near tips.

**Holotype depository**: RIZ (St. Petersburg).

Distribution: India (Jammu & Kashmir, Himachal Pradesh, West Bengal).

Diagnostic combination: The species under consideration is closely allied to *Lepidostoma punjabicum* (McLachlan). The key characters which keep the two species distinct have been discussed under the latter.

*Lepidostoma parvulum* (McLachlan)
(Figs. 100-102, 106-107, 110)


Scapes (Fig. 107) 1.9 mm, each without any subbasodorsal processes but covered with long and dense hair on its surface. Maxillary palp (Fig. 107) 0.97 mm, 2 segmented; first segment cylindrical, second segment short & finger-like. Forewing with post cubital fold upto the middle of the wing, with 3 closed pseudo cells. Average length of forewing 7-8 mm.

Male genitalia (Figs. 100-102, 106) : Segment IX apicodorsally roundly pointed; almost rectangular in lateral view. Segment X narrowly & deeply excised near centre forming dorsolateral and mesal processes; dorsolateral plate with broad base & apically rounded in dorsal view, triangular in lateral view; mesal processes triangular & with a small membranous lobe appearing finger-like in lateral view, mesal processes truncate with apically serrated margin. Inferior appendage each 2 segmented; basal segment long broadened near base &
apically tapering; apical segment short & apex excised. Phallus with phallobase broad, stalked at one side, posteriorly oval-shaped. Parameres acute at apex.

**Holotype depository:** RIZ (St. Petersburg).

**Material examined:** Jammu & Kashmir: Aru, 2300m, 29-viii-2008, 10 ♂♂. Aphanwat, 4000 m, 30-vii-2009, 2 ♂♂, 2 ♀♀. Dobivan, 1500 m, 03-viii-2009, 2 ♂♂, 2 ♀♀. Yusmarg, 2700 m, 01-viii-2009, 1 ♂.

**Distribution:** Uzbekistan: India (Jammu & Kashmir).

**Diagnostic combination:** The key characters by which *Lepidostoma parvulum* (Mosely) differs from its closely allied species *Lepidostoma inerme* (McLachlan) are as follows: segment X with dorsolateral process much longer apically in former whereas, segment X with dorsolateral process not longer but slightly shorter in latter; mesal process apically triangular in case of *L. parvulum* whereas, mesal process almost rounded in case of *L. inerme*. Maxillary palp with second segment cylindrical in case of *L. parvulum* whereas, maxillary palp with second segment slendrical in case of *L. inerme*. 
*Family Lepidostomatidae*

*Lepidostoma inerme* (McLachlan)

(Figs. 103-105, 108-109, 111)

*Dinarthrum inerme* McLachlan, 1878: 5-6.

Scapes (Fig. 109) 2.9 mm, without any subbasodorsal processes. Maxillary palp (Fig. 109) 1.9 mm, 2 segmented; basal segment much longer, cylindrical & densely covered with hairs; second segment shorter & slender. Forewing with post cubital fold as long as subcostal vein, with 4 closed pseudo cells. Average length of forewing 7-8 mm.

**Male genitalia** (Figs. 103-105, 108): Segment IX apicodorsally rounded. Segment X divided by a deep excision into dorsolateral and mesal processes; dorsolateral processes broadened near base and apically rounded; mesal processes finger-like and with a small membranous projection below its ventral side in dorsal view; laterally dorsolateral process is finger-like, mesal process with its apical side rounded & basal portion somewhat truncate at apex. Inferior appendage each two segmented, first segment longer than second, apically triangular in lateral view; second segment shorter & with a truncate apex. Phallus with phallobase stalked. Parameres widely separated from one another.

**Holotype depository:** ZSI (India).

**Material examined:** Jammu & Kashmir: Pahalgam, 2100 m, 28-viii-2008, 15 ♂♂, 16 ♀♀. Dobivan, 1600 m, 11-viii-2010, 1 ♂. Leh, 3000 m, 04-viii-2008, 4 ♂♂. Gulmarg, 2900 m, 03-viii-2009, 8 ♂♂. Baisern, 2100 m, 1 ♂ 3 ♀♀. Aru,
Family Lepidostomatidae

2600 m, 14-viii-2010, 1 ♂. Himachal Pradesh: Traila, 1600 m, 17-vii-2010, 2 ♂♂. Uttarakhand: Mandel, 1700 m, 17-vi-2010, 8 ♂♂.

**Distribution:** China: India (Jammu & Kashmir).

**Diagnostic combination:** The species under consideration is closely allied to *Lepidostoma parvulum* (McLachlan). The key characters which keep the two species distinct have been discussed under the latter.

*Lepidostoma nagana* (Mosely)

*(Figs. 112-114, 118-119, 122)*


Scapes (Fig. 119) 2.9 mm, with two subbasodorsal processes, lower processes slendrical and the apical process stout & cylindrical. Maxillary palp (Fig. 119) 1.9 mm, 2 segmented; basal segment long, slightly broadened near base and apically tapering; second segment short. Forewing with post cubital fold slightly shorter than wing, with 4 closed pseudo cells. Average length of forewing 6-7 mm.

**Male genitalia** *(Figs. 112-114, 118)*: Segment IX apicodorsally with a broad truncate apex. Segment X apically excised & forming two rounded lobes; each lobe almost squarish with truncate apex in lateral view. Inferior appendage two segmented; basal segment broadened near base, apical segment short with truncate apex in lateral view. Phallus short, phallobase truncate, phallocrypt rounded. Parameres twice in length than phallus and widely separated from one another.
Holotype depository: NHM (London).

Material examined: Himachal Pradesh: Ahla, 2000 m, 1 ♂.

Distribution: India (Himachal Pradesh, Jammu & Kashmir).

Diagnostic combination: The key characters by which *Lepidostoma nagana* (Mosely) differs from its closely allied species *Lepidostoma ferox* (McLachlan) are as follows: Segment IX apicodorsally with a broad truncate apex in case of former whereas, the same is apicodorsally rounded in case of latter.

*Lepidostoma serratum* (Mosely)

(Figs. 115-117, 120-121, 123)


Scapes (Fig. 121) 1.9 mm, each with a single subbasodorsal process having a small dent at its centre. Maxillary palp (Fig. 121) each 0.9 mm, 2 segmented; first segment long, slightly curved & covered with hair on its surface; second segment short and slendrical. Forewing with post cubital fold Average length of forewing 6-7 mm.

Male genitalia (Figs. 115-117, 120): Segment IX apicodorsally produced into a rounded lobe. Segment X with a wide and deep excision at its centre dividing it into two strongly serrated triangular processes in dorsal and lateral view. Inferior appendage single segmented but apically two branched; main branch cylindrical and its apex tridentated; mesal branch long & slendrical. Basodorsal process
vertically placed & with a characteristic hump in its middle. Phallus with phallobase stalked, phallocrypt rounded. Parameres crossing one another near centre.

**Holotype depository:** NHM (London).

**Material examined:** Meghalaya: Cherrapunge, 1300 m, 29-v-2010, 2 ♂, 2 ♀.

**Distribution:** India (Meghalaya).

**Diagnostic combination:** The key character by which *Lepidostoma serratum* (Mosely) differs from its closely allied species *Lepidostoma dubitans* (Mosely) is as follows: Segment X strongly serrated in case of former whereas, segment X simple, without any serration in case of latter.

**Lepidostoma margula** (Mosely)

*(Figs. 124-126, 130-131, 134)*


Scapes (Fig. 132) 1.94 mm, long, without any subbasososal processes. Maxillary palp (Fig. 132) 1 mm, 2 segmented; basal segment three times longer than apical segment; apical segment short. Forewing (Fig. 134) with Post cubital fold as long as subcostal vein, with 6 pseudo cells. Average length of forewing 6-7 mm.

**Male genitalia** *(Figs. 124-126, 130)*: Segment IX narrower in the centre and dilated towards its sides in dorsal view. Segment X divided by a excision into dorsolateral and mesal processes; dorsolateral processes diverging lateriad &
finger-like in dorsal view; mesal processes short and oval in dorsal view, rounded in lateral view. Inferior appendage single segmented, main branch apically pointed and bearing two bud-like processes at its centre in dorsal view, lateral bud bearing almost 3 spine-like thick hair on its surface. Basodorsal processes vertically placed and slightly dilated at its apex. Phallus with phallobase truncate and phallocrypt rounded apically. Parameres placed parallel to one another in ventral view.

**Holotype depository:** NHM (London).

**Material examined:** Jammu & Kashmir: Sonmarg, 3000 m, 11-viii-2008, 1 ♂.

**Distribution:** India (Jammu & Kashmir).

**Diagnostic combination:** The key characters by which *Lepidostoma margula* (Mosely) differs from its closely allied species *Lepidostoma steelae* (Mosely) are as follows: inferior appendage apically with two apical bud-like processes in case of former whereas, inferior appendage apically simple without any bud-like process in case of latter. Basodorsal processes present in *L. margula* whereas, the same is absent in *L. steelae*. 
Lepidostoma moulmina (Mosely)
(Figs. 127-129, 132-133, 135)

Adinarthrum moulmina Mosely, 1949a: 238.

Scapes (Fig. 133) 0.97 mm, dilated at apex & with a single subbasodorsal process, curved posteriad. Maxillary palp (Fig. 133) each 0.9 mm, 2 segmented; first segment longer, slightly dilated towards base; second segment cylindrical and shorter than first segment. Forewing (Fig. 135) with post cubital fold upto ¼ of wing, with 3 closed pseudo cells. Average length of forewing 5-6 mm.

Male genitalia (Figs. 127-129, 132): Segment IX apicodorsally somewhat triangular. Segment X narrowly excised at centre and forming dorsolateral and mesal processes; dorsolateral processes short and rounded apically, mesal process triangular; laterally lateral process appear as triangular lobe and mesal processes appear as rounded lobe. Inferior appendage two segmented, first segment cylindrical & longer and the second segment short & slenderical. Basodorsal processes vertically lying below the base of inferior appendage. Phallus with phallobase stalked at one corner and roundly produced at other end, phallocrypt truncate apically. Parameres lying parallel to one another in ventral view.

Holotype depository: Stockholm Museum (Sweden).

Material examined: Assam: Jetinga, 900 m, 23-v-2010, 2 ♂♂.

Distribution: India (Assam, Meghalaya).
**Family Lepidostomatidae**

**Diagnostic combination:** The key character by which *Lepidostoma moulmina* (Mosely) differs from its closely allied species *Lepidostoma taunggya* (Mosely) is as follows: Inferior appendage with second segment slender in case of former whereas, inferior appendage with second segment cylindrical in case of latter.

*Lepidostoma kashmiricum* Saini & Parey  
(Figs. 136-138, 142-143, 146, 448)

*Lepidostoma kashmiricum* Saini & Parey 2011, (3062): 26-27

Scapes (Fig. 143) 1.44 mm, with 2 subbasodorsal processes, both processes situated posteriorly about midlength, basal process slightly shorter than apical process. Maxillary palp (Fig. 143) 0.96 mm, 2-segmented, basal segment short, apical segment twice as long basal segment, apex curved. Forewing (Fig. 146) with post cubital fold as long as wing, with 2 closed pseudo cells. Average length of each forewing 9.7 mm. Wing venation as in Fig

**Male genitalia** (Figs. 136-138, 142): Segment IX triangular in dorsal view. Segment X, produced into 2 long, slender, finger-like, lateral processes and 2 short and conical, mesal processes. Inferior appendages each single-segmented, its apex 3-branched; outer main branch with tuft of apical setae, middle branch (probably second article) longer than others and clubbed apically, ventromesal branch broad and with acute apex curved somewhat laterad; also, basodorsal process directed dorsad apically. Phallus long and slanting downwards; phallocrypt apically dilated. Parameres present, parallel with one another.
Holotype depository: MDZPU (Patiala).


Distribution: India (Jammu & Kashmir, West Bengal, Sikkim).

Diagnostic combination: The key characters by which Lepidostoma kashmiricum Saini & Parey differs from its closely allied species Lepidostoma armatum (Ulmer) are as follows: Segment X having longer and more slender lateral processes and shorter and conical mesal processes in case of former whereas, segment X shorter & cylindrical lateral processes and longer & cylindrical mesal processes in case of latter.

Lepidostoma himachalicum Saini & Parey
(Figs. 139-141, 144-145, 147)

Lepidostoma himachalicum Saini & Parey 2011, (3062): 28

Scapes (Fig. 145) 2.88 mm, with 2 subbasodorsal posterior processes, basal process slightly shorter than apical process, apex membranous. Maxillary palp (Fig. 145) long, each 0.96 mm, 2-segmented, basal segment 3 times longer than terminal segment. Forewing (Fig. 146) with post cubital fold as long as forewing, with 4 closed pseudo cells. Length of each forewing 10 mm.

Male genitalia (Figs. 139-141, 144): Apical margin of segment IX pentagonal in dorsal view. Tergum X forming pair of spanner-shaped plates, each deeply
notched apicolaterally. Inferior appendages each 2- segmented, first article long and broad, second article shorter and shallowly excised at its apex. Phallus slender; phallobase truncate apically; parameres set across genitalia; phallocrypt slender, slanting downward.

**Holotype depository:** MDZPU (Patiala).

**Material examined:** Holotype ♂: India: Himachal Pradesh, Raskar 1700 m, 03-vii-2009.

**Distribution:** India (Himachal Pradesh).

**Diagnostic combination:** The key characters by which *Lepidostoma himachalicum* Saini & Parey differs from its closely allied species *Lepidostoma punjabicum* (Martynov) are as follows: Segment X apicodorsally notched in case of former whereas, segment X apicodorsally planner in case of latter.

**Lepidostoma meghalayaense** Saini & Parey

(Figs. 148-150, 154-155, 158)

*Lepidostoma meghalayaense* Saini & Parey 2011, (3062): 28-30

Scapes (Fig. 155) 0.96 mm, simple, unbranched. Maxillary palp (Fig. 155) 0.48 mm, 2-segmented, basal segment short, apical segment slightly longer than basal segment, slender. Forewing (Fig. 158) without post cubital fold. Length of each forewing 4.85mm.
Male genitalia (Figs. 148-150, 154): Tergum IX narrow transverse strap at its centre dorsally and slightly broader towards its sides. Segment X excised to its base at its centre, with 2 pairs of processes each with apical tuft of setae, lateral processes finger-like and longer than mesal ones. Inferior appendage each 2 segmented, first article long, broad with a basodorsal process directed dorsad; second article slender, with deep excision at its apex. Phallus short, phallobase truncate, phallicata finger-like, parameres short.

Holotype depository: MDZPU (Patiala).

Material examined: Holotype ♂: India: Meghalaya, Cherrapunge, 1500 m, 25-v-2010. Paratypes: 2 ♂♂, 1 ♀ from the same locality and data as that of holotype.

Distribution: India (Meghalaya).

Diagnostic combination: The key characters by which Lepidostoma meghalayaense Saini & Parey differs from its closely allied species Lepidostoma brueckmanni (Malicky & Chantaramongkol) are as follows: Maxillary palp clearly two segmented in case of former whereas, maxillary palp one segmented in case of latter. Segment X dorsolateral process single lobed in case of L. meghalayaense whereas, segment X two lobed in case of L. brueckmanni.
**Lepidostoma dirangense** Saini & Parey
*(Figs. 151-153, 156-157, 159, 449)*


Scapes (Fig. 157) 1.44 mm, with single subbasodorsal process. Maxillary palp (Fig. 157) 1.12 mm, 2-segmented, equal in size, apical segment dilated. Forewing (Fig. 159) with post cubital fold as long as wing, with 5 closed pseudo cells. Length of each forewing 9.7 mm. Wing venation and setae as in Fig.

**Male genitalia** (Figs. 151-153, 156): Segment IX triangular dorsally. Segment X deeply excised at its centre to base, each half divided 3/4ths to base, resulting in 4 lobes, lateral lobes with apices dilated, middle lobes slightly shorter than lateral lobes and apically pointed in dorsal view. Inferior appendages each single segmented, with 3 branches: apex of main branch long, slender to dilated apex, curved mesad and sometimes crossing its counterpart; second branch (probably second article) short and sometimes crossing its counterpart; and slender basodorsal process directed dorsad. Phallus with slightly notched apex in ventral view, membranous, phallobase dilated, phallicata slender, parameres short.

**Holotype depository:** MDZPU (Patiala).

**Material examined:** Holotype ♂: India: Arunachal Pradesh, Dirang, 1600 m, 07-x-2010.
**Family Lepidostomatidae**

**Distribution:** India (Arunachal Pradesh).

**Diagnostic combination:** The key characters by which *Lepidostoma dirangense* Saini & Parey differs from its closely allied species *Lepidostoma tesarum* (Mosely) are as follows: segment X having dorsolateral processes slightly longer and dilated apically and dorosomesal processes triangular in case of former whereas, segment X having dorsolateral processes shorter and apically pointed, and dorsomesal processes rounded in case of latter.

**Lepidostoma ahlæ Parey & Saini**
(Figs. 160-162, 166-167, 170)

*Lepidostoma ahlæ* Parey & Saini, 2012: 58 (1) 36, 38-39

Scapes (Fig. 167) 4.85 mm in length, with two small subbasal processes dorsally. Maxillary palp (Fig. 167) 1.94 mm, two-segmented; basal segment much longer; apical one with pointed apex, both segments covered with dense setae. Forewing (Fig. 170) with post cubital fold slightly shorter than forewing, with 5 closed pseudo cells. Average length of each forewing 7.7 mm.

**Male genitalia (Figs. 160-162, 166):** Segment IX apicodorsally produced into somewhat rounded tip. Segment X with dorsolateral plates broad at base, apically rounded; mesal processes narrow, situated closely to one another with small space between them; in lateral view dorsolateral plates triangular, apically rounded, with slightly serrate ventral margins, mesal processes somewhat dome-shaped, with very broad bases. Inferior appendages each two-segmented, 1st segment broad at base and narrower towards its apex, 2nd segment short with truncate apex; basodorsal processes absent. Phallus with phallobase and
phallicata slender, cylindrical in lateral view. Parameres about as long as phallus and with two paramere spines closely adjacent to one another.

**Holotype depository:** MDZPU (Patiala).


**Distribution:** India (Himachal Pradesh, Jammu & Kashmir).

**Diagnostic combination:** The key character by which *L. ahlae* Parey & Saini differs from its closely allied species *Lepidostoma inerme* (McLachlan) are as follows: Scapes each with two small subbasodorsal processes in case of former whereas, scapes without any subbasodorsal processes in case of latter. Maxillary palps with second segment apically tapering in case of *L. ahlae* whereas, maxillary palps with second rounded in case of *L. inerme*.

*Lepidostoma sonmargae* Parey & Saini

**(Figs. 163-165, 168-169, 171, 443)**

*Lepidostoma sonmargae* Parey & Saini 2012, 58 (1): 36

Scapes (Fig. 169) 3.88 mm, with two small subbasal processes dorsally, more distal process slightly curved. Maxillary palp (Fig. 169) 0.97 mm, two-segmented; 1st segment slightly thicker and longer than apical segment, covered with mixed hairs and scales. Forewing (Fig. 171) with post cubital fold slightly shorter than wing, with 4 closed pseudo cells. Length of each forewing 7.9 mm.
Male genitalia (Figs. 163-165, 168): Tergum IX apicodorsally produced into triangular projection. Segment X with narrow excision at its centre reaching to its base. Both dorsolateral and mesal processes well developed: dorsolateral processes triangular in dorsal view, mesal processes rounded and serrate in lateral view both pairs of processes appearing subquadrate. Inferior appendages each two-segmented, 1st segment apically rounded, 2nd segment apically excised in dorsal view; basodorsal processes absent. Phallus shorter than parameres, phallobase with anteroventral flange; paramere spines apically pointed and diverging from one another.

Holotype depository: MDZP (Patiala).

Material examined: Holotype ♂: India: Jammu & Kashmir: Sonmarg, 2900 m, 1♂ 1 ♀, 11-viii-2008.

Distribution: India (Himachal Pradesh, Jammu & Kashmir).

Diagnostic combination: The key character by which *L. sonmargae* Parey & Saini differs from its closely allied species *Lepidostoma nagana* (Mosely) are as follows: segment IX apicodorsally triangular in case of former whereas, segment IX apicodorsally truncate in case of latter.
Family Lepidostomatidae

_Lepidostoma garhwalense_ Parey & Saini

(Figs. 172-174, 178-179, 182)

_Lepidostoma garhwalense_ Parey & Saini 2012, 58 (1): 32-34

Scapes (Fig. 179) 1.0 mm, short and slightly curved at middle, with single subbasal process dorsally. Maxillary palp (Fig. 179) 0.97 mm, two-segmented; 1st segment broad; 2nd segment slender and densely covered with hair, both segments curved dorsad. Forewing (182) with post cubital fold slightly shorter than wing, with 8 closed pseudo cells. Length of each forewing 6.9 mm.

**Male genitalia (Figs. 172-174, 178):** Segment IX apicodorsally produced into triangular process. Distal margin of segment X produced into paired dorsolateral and mesal processes: Dorsolateral processes broad at base and apically triangular, mesal processes simple and with truncate and serrate apices, separated from each other by narrow, U-shaped excision nearly reaching tergum IX; when seen laterally mesal processes each appearing as rounded structure having serrated upper edge and non-serrated lower edge. Inferior appendages each 1-segmented, apically branched, branches of subequal length, lateral branch apically rounded, inner one truncate; basodorsal process slender, cylindrical, with serrated dorsal and ventral edges, half as long as inferior appendage. Phallus with phallobase round, phallicata broader and truncate apically.

**Holotype depository:** MDZP (Patiala).

**Material examined:** Holotype ♂: India: Uttrakhand, Gairsain, 2500 m, 1 ♂ 16-vi-2009.
Family Lepidostomatidae

Distribution: India (Uttarakhand).

Diagnostic combination: The key character by which *Lepidostoma garhwalense* Parey & Saini differs from its closely allied species *Lepidostoma tesarum* (Mosely) are as follows: segment IX apicodorsally triangular in case of former whereas, segment IX apicodorsally rounded in case of latter. Segment X dorsolateral processes apically triangular in case of *L. garhwalense* whereas, segment X dorsolateral processes apically acutely pointed in case of *L. tesarum*.

*Lepidostoma truncatum* Parey & Saini
(Figs. 175-177, 180-181, 183)


Scapes (Fig. 181) 2.91 mm, with two subequal subbasodorsal processes curved toward each other. Maxillary palp (Fig. 181) each 0.98 mm, two-segmented; basal segment three times longer than apical one. Forewing (Fig. 183) with post cubital fold slightly shorter than wing, with 5 closed pseudo cella. Length of each forewing 7.7 mm.

Male genitalia (Figs. 175-177, 180): Apicodorsal margin of segment IX bluntly pointed. Segment X divided by deep and narrow incision reaching to its base; each half bearing dorsolateral and mesal processes: in lateral view dorsolateral processes broad at base, mesal processes rounded and serrated apically; segment X appearing as bilobed structure. Inferior appendages each two-segmented, 1st segment triangular in outline with broadened base, 2nd segment broadened apically with slight apical excision; basodorsal processes absent. Phallobase with
small dent at its centre, phallicata slender and cylindrical; parameres much longer than phallus.

**Holotype depository:** MDZPU (Patiala).

**Material examined:** Holotype ♂: India: Himachal Pradesh, Ahla, 2000 m, 1♂, 11-vii-2010.

**Distribution:** India (Himachal Pradesh).

**Diagnostic combination:** The key key character by which *Lepidostoma truncatum* Parey & Saini differs from its closely allied species *Lepidostoma ferox* (McLachlan) are as follows: Scapes each with two basal processes in case of former whereas, scapes each with a single basal process in case of latter. Maxillary palps straight in case of *L. truncatum* whereas, maxillary palp curved in case of *L. ferox.*

**Lepidostoma curvatum** sp. nov.

(Figs. 184-186, 190-191, 194)

Male brown, head densely covered with dark brown hairs. Antennal scapes (Fig. 191) 2.4 mm long, with a single subbasodorsal process. Maxillary palp (Fig. 191) 0.96 mm, 2 segmented; basal segment longer than the distal segment; both segments curved upward into a c-shaped structure; distal segment hidden by long tuft of setae. Forewing (Fig. 194) with post cubital fold slightly shorter than wing, with 3 closed pseudo cells. Length of forewing 7.76 mm
Male genitalia (Figs. 184-186, 190): Tergite IX roundly produced in middle of posterodorsal margin; segment X, deeply and widely excised at its centre forming a pair of plates each plate broadened at its base with dorsolateral process slightly longer and pointed, whereas, dorsomesal processes with rounded apices, both apices bear long setae. Laterally segment X rounded, its upper surface wavy bearing long setae, a triangular process (actually dorsolateral process of segment X) bulged out from the centre of this segment. Inferior appendages each with main article nearly rectangular, apices branched, both branches nearly equal in length, ventroapical branch slendrical with apex pointed, second branch elongated with apex truncate. Basodorsal processes of each inferior appendage nearly cylindrical, apex slightly roundly pointed. phallocrypt rounded and phallobase squarish in lateral view. Two parameres elongated parallel.

Holotype depository: MDZPU (Patiala).


Distribution: India (Arunachal Pradesh).

Diagnostic combination: The key characters by which Lepidostoma curvatum sp. nov differs from its closely allied species Lepidostoma assamense (Mosely) are as follows: Inferior appendage with apex 2 branched, both branches equal in length in case of former whereas, inferior appendage with two unequal branches in case of latter.
Lepidostoma mandalense sp. nov.
(Figs. 187-189, 192-193, 195)

Scapes (Fig. 193) each 1 mm, with a single, cylindrical subbasodorsal processes at its base maxillary palp (Fig. 193) each 0.95 mm, two segmented; first segment long, straight and cylindrical; second segment short, curved downward bearing long setae on its surface. Forewing (Fig. 195) with post cubital fold upto the middle of the wing, with 2 closed pseudo cells. Average length of forewing 5.76 mm.

Male genitalia (Figs. 187-189, 192): Segment IX apicodorsally narrowly triangular. Segment X simple, divided into two plates, both plates closely adhered along the central line without any excision, laterally segment X broadened towards the base and apically roundly produced. Inferior appendage each single segmented, broadened near base, apically triangular with excised surface in dorsal & ventral views; basodorsal process present, short & cylindrical. Phallus with phallobase truncate & dilated, phallicate slendrical and apically rounded. Parameres comparatively shorter and somewhat closely situated.

Holotype depository: MDZPU (Patiala).


Distribution: India (Uttarakhand, Himachal Pradesh, Meghalaya).
**Family Lepidostomatidae**

**Etymology:** The species name is after its type locality “Mandel” (Uttarakhand).

**Diagnosis:** This species resembles *Lepidostoma inconspicus* (Mosely) but can be distinguished from latter by having segment IX apicodorsally triangular (segment IX apicodorsally rounded in *Lepidostoma inconspicus*); plates of segment X closely adhered (segment X divided by a deep and broad dividing it into two distinct dorsal plates in *Lepidostoma inconspicus*); inferior appendages pointed in dorsal view & lateral views (inferior appendage rounded in dorsal as well as in lateral views in *Lepidotoma inconspicus*); basodorsal process present (basodorsal process absent in *L. inconspicus*).

*Lepidostoma gangotri* sp. nov.

*(Figs. 196-198, 202-203, 206)*

Scapes (Fig. 203) with two subequal subbasodorsal processes, basal process slendrical, apical process short & apically recurved; in some of the paratypes scapes with a single subbasodorsal process. Maxillary palp (Fig. 203) two segmented, basal segment long, slightly broadened near base and then apically narrower, second segment much smaller. Forewing (Fig. 206) with post cubital fold with 5 closed pseudo cells. Average length of forewing 6-7 mm.

**Male genitalia (Figs. 196-198, 202):** Segment IX apicodorsally rounded. Segment X narrowly & deeply excised leaving two plates, each plate with dorsolateral processes rounded near side in dorsal & lateral views; mesal processes ventrally folded in dorsal view, with truncate apex in lateral view. Inferior appendage single segmented, basal 1/3 broadened and then slendrical with apex rounded in dorsal & lateral view. Phallus with phallobase dilated, with
a stalk at its bottom, phallicate cylindrical and apically rounded. Parameres slightly longer than phallus & placed across the genitalia.

**Holotype depository:** MDZPU (Patiala).


**Distribution:** India (Uttarakhand).

**Etymology:** This species is named after the river “Gangotri” in Uttarakhand.

**Diagnosis:** The new species belongs to *L. ferox* Branch. This species resembles *Lepidostoma nagana* Mosely but differs from it by having segment IX apicodorsally rounded (segment IX apicodorsally truncate in *L. nagana*). Mesal processes of segment X almost rectangular in lateral view (mesal processes of segment X almost rounded in lateral view in *L. nagana*). Scapes with subbasodorsal processes apically pointed (scapes with subbasodorsal processes apically curled in case of *L. nagana*). Maxillary palpi apically rounded (maxillary palpi apically pointed in case of *L. nagana*).
Family Lepidostomatidae

*Lepidostoma badrinathense* sp.nov.
(Figs. 199-201, 204-205, 207)

Scapes (Fig. 205) each 3.88 mm with two subbasodorsal processes, basal process apically curved, second process cylindrical. Maxillary palp (Fig. 205) each 2.97 mm, 2 segmented, basal segment much longer, slightly broader upto ½ and the narrow; second segment much smaller and oval in outline. Forewing (Fig. 207) with post cubital fold with 4 closed pseudo cells. Length of forewing 7.76 mm.

**Male genitalia** (Figs. 199-201, 204): Segment IX apicodorsally rounded, tip somewhat sclerotized; laterally nearly reactangular, broader towards bottom and top but slightly narrower in middle. Segment X simple distinctly divided into two plates, each plate apically truncate; laterally segment X appears roughly triangular, with posteroventral pointed tip. Inferior appendage each single segmented, its basal part slightly broadened, bulged & apically with excised tip in dorsal view; ventrally broadened near base and apically appears much excised; laterally slightly constricted near middle, with a tuft of setae. Phallus with phallobase broader and truncate, phallicate cylindrical. Parameres placed across the genitalia, closely adhered together upto ¼ and then tapering apically.

**Holotype depository:** MDZPU (Patiala).

**Material examined:** Holotype ♂: India: Uttarakhand: Badrinath, 3200 m, 24-vi-2008.

**Distribution:** India (Uttarakhand).
**Family Lepidostomatidae**

**Etymology:** The species name is after its type locality “Badrinath” (Uttrakhand).

**Diagnosis:** This species resembles *Lepidostoma ulmeri* but is different from latter by having segment IX apicodorsally broadly rounded (segment IX apicodorsally narrowly rounded in *Lepidostoma ulmeri*); phallicate cylindrical (phallicate slendrical in *Lepidostoma ulmeri*); parameres closely adhered together (parameres antagonistically with one another in *L. ulmeri*).

*Lepidostoma pahalgamense* sp. nov.

(Figs. 208-210, 214-215, 218)

Scapes (Fig. 215) each 3.97 mm, with two subbasodorsal processes; basal process slender and longer; apical processes short and almost rounded apically. Maxillary palp (Fig. 215) each 0.98 mm; two segmented, bearing mixed hair and scales; basal segment almost three times longer than apical segment. Forewing (Fig. 218) with post cubital fold as long as wing, with 5 closed pseudo cells. Average length of each forewing 6.97 mm.

**Male genitalia (Figs. 208-210, 214):** Tergum of segment IX nearly triangular. Segment X centrally divided by a deep incision, each half having dorsolateral and mesal processes; dorsolateral processes thickened basally and nearly triangular apically, mesal processes narrow and with slightly marginated surface; when seen laterally mesal processes appears as a triangular structure with base stretched almost upto the middle of segment IX, lateral processes appears squarish in outline covered with marginated surface. Inferior appendage each two segmented, 1st segment almost reactangular in lateral view; ventrally 1st segment broadened at base, 2nd segment appears as a bifid structure; basodorsal processes
absent in each inferior appendage. Phallus with phallobase slightly stalked at one corner, phallocr ipt long and slendrical. Parameres placed across the genitalia, longer than phallus and apically pointed.

**Holotype depository:** MDZP (Patiala).

**Material examined:** Holotype ♂: India: Jammu & Kashmir: Pahalagam, 3100, 2 ♂♂, 1 ♀ 08-viii-2009.

**Distribution:** India (Jammu & Kashmir).

**Diagnostic combination:** The key character by which *L. pahalgamense* sp. nov. differs from its closely allied species *Lepidostoma parvulum* (McLachlan) are as follows: Segment X with dorsolateral processes much broadened, mesal processes with marginated surface in case of former whereas, segment X with dorsolateral processes hardly broadened, mesal processes without marginated surface in case of latter. Scapes each with two basal processes in case of *L. pahalgamense* sp. nov. whereas, scapes each with a single basal processes in *L. parvulum*. 
Family Lepidostomatidae

*Lepidostoma gulmargense* sp. nov.
(Figs. 211-213, 216-217, 219, 446)

Scapes (Fig. 217) each 6.7 mm, with two subbasodorsal processes. Maxillary palp (Fig. 217) each 2.91 mm, two segmented; 1\textsuperscript{st} segment as long as labial palp; 2\textsuperscript{nd} segment short and capitate. Forewing (Fig. 219) with 4 closed pseudo cells behind the post cubital fold. Average length of each forewing 9.97 mm.

**Male genitalia** (Figs. 211-213, 216): Segment IX apicodorsally produced into a rounded structure, sides somewhat bulged. Segment X with a narrow excision reaching to the base of the segment IX, leaving dorsolateral and mesal processes; mesal processes thinner and nearly triangular apically; lateral processes broadened at base and apically rounded; a very thin membranous structure arise slightly below these two processes; when seen laterally lateral processes appear as squarish with marginated surface, mesal processes appear as a triangular projection and membranous structure hanging downward as triangle. Inferior appendage each two segmented, 1\textsuperscript{st} segment broadened, 2\textsuperscript{nd} segment appears as the neck of a zebra. Phallus with phallobase stalked at one corner and rounded at other side, phallocrypt slender. Parameres placed across the genitalia and closely adhered together.

**Holotype depository:** MDZPU (Patiala).

**Material examined:** Holotype ♂: India: Jammu & Kashmir: Gulmarg, 2900 m, 19-viii-2008, 2 ♂♂, 4 ♀♀.

**Distribution:** India (Jammu & Kashmir).
**Family Lepidostomatidae**

**Diagnostic combination:** The key character by which *L. gulmargense* sp. nov. differs from its closely allied species *Lepidostoma sonomax* (Mosely) are as follows: segment X with dorsolateral processes much broadened at base and apically bulged in case of former whereas, segment X with dorsolateral processes short and apically compressed in case of latter.

* Lepidostoma religiosum* sp. nov.  
(Figs. 220-222, 226-227, 230)

Scapes (Figs. 227) 1.95 mm, with two subequal sub basodorsal processes. Maxillary palp (Fig. 227) 0.97 mm, two segmented; 1st segment slightly broadened but finely narrowed at apex; 2nd segment much shorter and capitate. Forewing (Fig. 230) with post cubital fold slightly shorter than wing, with 3 closed pseudo cells. Average length of each forewing 5.82 mm.

Male genitalia (Figs. 220-222, 226): Tergum of segment IX much broadened, apicodorsally rounded. Segment X simple, symmetrical and each plate appears as half moon-shaped in outline, without any lateral or mesal processes. Inferior appendage each two segmented, 1st segment roughly rectangular with broadened apex in lateral view, 2nd segment narrow in middle, curved inward within segment X; when seen ventrally 1st segment broadened at base, 2nd segment narrow at base but dilated apically, with truncate apex; inferior appendages basodorsal process lacking. Phallus with phallobase truncate phallicrypt long, apex membranous. Parameres placed across the genitalia, broad but pointed apically.

**Holotype depository:** MDZPU (Patiala).

Distribution: India (Uttarakhand, Sikkim).

Diagnostic combination: The key character by which L. religiosum sp. nov. differs from its closely allied species Lepidostoma kamba Mosely are as follows: Inferior appendage each with basodorsal process absent in case of former whereas, inferior appendage each with basodorsal process present in case of latter.

*Lepidostoma setosum* sp. nov.
(Figs. 223-225, 228-229, 231)

Scape (Fig. 229) 2.88 mm, with two subbasodorsal processes towards its base, proximal process longer than the distal one. Maxillary palp (Fig. 229) 1.44mm, two jointed; basal joint 3X longer than the apical one. Forewing (Fig. 231) with 3 closed pseudo cells behind the post cubital fold. Length of forewing 9.7 mm.

Male genitalia (Figs. 223-225, 228): Tergite IX posterodorsally roundly produced, edges rounded but slanting. Segment X dorsally incised at centre, incision nearly reaching base, simple, symmetrical, each side almost square, curved downward along its apices. Inferior appendages each 1 segmented, segment broader near its base and terminally slightly excised at its centre, basodorsal process wanting. Phallus slanting downwards, phallobase broadened phalliccript slender, terminally truncate. Parameres placed diagonally across the genitalia, very prominent and pointed.
Holotype depository: MDZPU (Patiala).


Distribution: India (Uttarakhand).

Diagnostic combination: The key character by which Lepidostoma setosum sp. nov. differs from its closely allied species Lepidostoma latum (Martynov) is as follows: segment X apically plane in case of former whereas, segment X apically excised in case of latter.

Lepidostoma rifati sp. nov.
(Figs. 232-234, 238-239, 242, 445)

Scapes (Fig. 239) each 0.8 mm, simple without any subbasodorsal processes. Maxillary palpi (Fig. 239) 0.95 mm, two segmented, first segment short, nearly rectangular, second segment long, apically curved into a pointed tip. Forewing (Fig. 242) without post cubital fold. Average length of forewing 6.79 mm.

Male genitalia (Figs. 232-234, 238): Segment IX rectangular in dorsal view with a tuft of setae at its centre and close to posterodorsal angles. Segment X with a pair of dorsal plates, each plate broadened near base and apically bidentated, each dent bears a tuft of long setae; a small conical process arises on each side near the base of segment X; laterally segment X is with serrated surface. Inferior appendage each single segmented much broadened near base and apically three branched, mesal branch much smaller than rest of the two branches. Basodorsal process capitates, marginated surface and visible only in
dorsal view. Phallus with phallobase tapering near bottom and then almost rectangular, phallocrypt slendrical and apically pointed. Parameres absent.

**Holotype depository:** MDZPU (Patiala).

**Material examined:** Holotype ♂: India: Arunachal Pradesh: Jung 2200 m, 18-v-2011. Paratypes: 1 ♂, 1 ♀ from the same locality and date as that of the holotype. Lumpo, 2200 m, 17-05-2011, 2 ♂♂, 2 ♀♀.

**Distribution:** India (Arunachal Pradesh).

**Etymology:** This species is named in honor of Dr. Rifat. H. Raina who accompanied the team during collection surveys.

**Diagnostic combination:** This species resembles with *Lepidostoma heterolepidium* Martynov. However, it can be differentiated from latter by having broadened and apically bidentated dorsal plate of segment X (dorsal plate of segment X almost slendrical and apically pointed in *Lepidostoma heterolepidium*); segment X with a reduced, triangular process near base in dorsal view (segment X with a prominent and cylindrical process near base in dorsal view in *Lepidostoma heterolepidium*); basodorsal process of inferior appendage present (basodorsal process of inferior appendage absent *Lepidostoma heterolepidium*); phallocrypt apically pointed (phallocrypt apically rounded in *Lepidostoma heterolepidium*).
Lepidostoma cherrapungense sp. nov.
(Figs. 235-237, 240-241, 243, 438)

Scapes (Fig. 241) each 0.48 mm without any subbasodorsal processes, Maxillary palp (Fig. 241) each 0.2 mm, single segmented. Forewing (Fig. 243) without post cubital fold. Average length of forewing 6.79 mm.

Male genitalia (Figs. 235-237, 240): Segment IX apicodorsally slightly rounded; laterally a U-shaped depression near centre of its posterior side. Segment X deeply & widely excised in the centre forming two distinct plates. Dorsolateral process apically with irregular dentation, dorsomesal process slender, finger-like. Laterally dorsolateral process appears two lobed, with apical lobe dentate, ventral one longer and apically acute; laterally mesal processes appear as a triangular structure which is apically truncate. Inferior appendage each single segmented, apically two branched, lateral branch longer than mesal branch, truncate apically in dorsal view; laterally both branches apically pointed. Phallus simple & hammer-like, phallobase broadened & truncate, phallocrypt apically rounded. Parameres absent.

Holotype depository: MDZPU (Patiala).

Material examined: Holotype ♂: India: Meghalaya: Cherrapunge, 1700 m, 20-v-2011. Paratypes: 1 ♀ with same locality and date as of holotype.

Etymology: The species is named after its type locality Cherrapunge (Meghalaya).
Diagnostic combination: This species goes close to *Lepidostoma bifurcatum* Yang & Weaver, but can be differentiated from latter by having dorsolateral processes of segment X dentated (dorsolateral processes of segment X lobed in *L. bifurcatum*); inferior appendage each broadened near base in lateral view (inferior appendage each slendrical near base in *L. bifurcatum*); phallobase truncate in lateral view (phallobase rounded in lateral view in *L. bifurcatum*); parameres absent (parameres present in *L. bifurcatum*); scapes without any basal processes (scapes with a single basal process in *L. bifurcatum*); maxillary palpi single segmented (maxillary palpi two segmented in *L. bifurcatum*).

*Lepidostoma tridentatum* sp. nov.
(Figs. 244-246, 250-251, 254, 447)

Scapes (Fig. 251) each 0.97 mm, long, without any subbasodorsal processes. Maxillary palp (Fig. 251) each 0.6 mm, two segmented; 1<sup>st</sup> segment nearly as long as 2<sup>nd</sup> segment, latter bears a tuft of hairs on its surface. Forewing (Fig. 254) without post cubital fold. Length of each forewing 5.82 mm.

Male genitalia (Figs. 244-246, 250): Segment IX nearly reactangular in dorsal view, bearing a tuft of long setae in its centre, tip of anterolateral edge of pleurites also bear a tuft of setae. Segment X with a pair of dorsal plates, each plate bilobed, dorsolateral plate pointed at its tip and mesal plate tridentated apically, a finger-like process arises near the base of segment X. Inferior appendage each single segmented, apically 3-branched, middle branch vertically placed and spoon-shaped, rest of the two branches almost horizontally placed in dorsal view; ventrally each inferior appendage much broadened towards its base; laterally each inferior appendage nearly reactangular and apically tapering into a narrow branch, small branch is hidden.
behind the main branch. Phallus with phallobase having a small triangular stalk and then balloon-shaped, phallocrypt long, apically dilated, four lobed in ventral view. Parameres absent.

**Holotype depository:** MDZPU (Patiala).

**Material examined:** Holotype ♂: India: Arunachal Pradesh: Hunli, 1700 m, 03-v-2011.

**Distribution:** India (Arunachal Pradesh).

**Diagnostic combination:** The key character by which *L. tridentatum* sp. nov. differs from its closely allied species *Lepidostoma heterolidium* (Martynov) are as follows: Segment X with dorsolateral processes prominent, triangular in case of former whereas, segment X with dorsolateral processes reduced & pointed in case of latter. Mesal processes of segment X apically tridentated in case of *L. tridentatum* whereas, mesal process apically truncate in *L. heterolipidium*.

**Lepidostoma khajjiarense** sp. nov.  
(Figs. 247-249, 252-253, 255)

Scapes (Fig. 253) each 0.97 mm, simple without any basal processes. Maxillary palp (Fig. 253) each 0.84 mm, 2 segmented, first segment narrow near base and apically dilated, second segment longer than first, slightly broadened in the middle and then slendrical, finger-like bearing long setae on its surface. Forewing (Fig. 255) without post cubital fold. Length of forewing 6.79 mm.
Male genitalia (Figs. 247-249, 252): Segment IX almost rectangular, narrow towards centre with tuft of setae and broadened laterally dorsal view. Segment X divided by a wide excision into two plates, both plates antagonistically lying one another; each plate apically pointed near its corners; segment X almost as long as inferior appendage in lateral view, posteriorly produced into an apically bifid lobe. Inferior appendage each single segmented, apically 3 branched, main branch triangularly pointed apically, mesal branch apically rounded and ventromesal branch placed laterad in dorsal view. Basodorsal process of inferior appendage present & apically rounded. Phallus with phallobase almost rounded near base, phallocrypt almost cylindrical & apically tongue-like. Parameres absent.

Holotype depository: MDZPU (Patiala).

Material examined: Holotype ♂: India: Himachal Pradesh: Khajjiar, 1700 m, 18-vi-2011.

Distribution: India (Himachal Pradesh).

Etymology: The species name is after its type locality “Khajjiar” (Himachal Pradesh).
**Lepidostoma vikrami sp. nov.**

*(Figs. 256-258, 262-263, 265, 437)*

Scapes (Fig. 263) each 1.45 mm, without any subbasodorsal processes. Maxillary palp (Fig. 263) each 0.97 mm, two segmented, 1st segment three times longer than 2nd segment, latter with a small dent at its base. Forewing (Fig. 266) with 3 closed pseudo cells. Length of each forewing 7.76 mm.

**Male genitalia (Figs. 256-258, 262):** Segment IX apicodorsally produced into triangular projection, pleurites rounded in dorsal view. Segment X with dorsolateral lobes cylindrical, dorsomesal processes rounded but the apical portion is produced into a triangular projection with a narrow excision at its centre that extends upto its base; laterally, segment X appears as bilobed structure, apical lobe larger in size than basal lobe, later appears as a finger-like structure. Inferior appendages each single segmented but branched apically; dorsolateral branch slightly longer than the mesal branch. Basodorsal process of each inferior appendage is quite prominent. Phallus with phallobase truncate at base and dilated upto centre, phallocrypt slender. Parameres short.

**Holotype depository:** MDZPU (Patiala).

**Material examined:** Holotype ♂: India: Arunachal Pradesh: Hunli, 1700 m, 03-v-2011.

**Distribution:** India (Arunachal Pradesh).

**Diagnostic combination:** The key character by which *L. vikrami* sp. nov. differs from its closely allied species *Lepidostoma steelae* (Mosely) are as follows:
Scapes without any processes in case of former whereas, scapes with two subbasodorsal processes in case of latter. Apical segment of maxillary palp with a small dent near base in *L. vikrami* whereas, apical segment of maxillary palp without any dent near base in *L. steelae*.

*Lepidostoma muzamili sp. nov.*

*(Figs. 259-261, 264-265, 267)*

Scapes (Fig. 265) each 2.9 mm, long, with two subbasodorsal processes. Maxillary palp (Fig. 265) each 1 mm; two segmented; 1st much longer than 2nd segment with tuft of scales on its surface. Forewing (Fig. 267) with 3 closed pseudo cells. Length of each forewing 7.76 mm.

**Male genitalia (Figs. 259-261, 267):** Segment IX appears as a wing of flying bird, with its tergum broadened and pleurites narrowed dorsally. Segment X narrowly excised in the middle and the excision is extending upto its base; laterally segment X is broadened at its base, apex is carved in the form of ‘C’, and its extreme basolateral margin gives rise to a small finger like projection. Inferior appendage each single jointed, broadened upto its first half whereas, the second half slendrical in dorsal view. Basodorsal process small and pointed apically. Phallus with phallobase stalked, phallocrypt slendrical. Parameres pointed towards apex and set across the genitalia.

**Holotype depository:** MDZPU (Patiala).

**Material examined:** Holotype ♂: India: Uttarakhand: Sonprayag, 1900 m, 10-vi-2010. Paratypes 3 ♀♀ with the same data as that of holotype.

**Distribution:** India (Uttarakhand).
**Diagnostic combination:** The key character by which *L. muzamili* sp. nov. differs from its closely allied species *Lepidostoma sonomax* (Mosely) are as follows: segment IX apically slightly pointed in case of former whereas, segment IX apically rounded in of latter. Segment X with dorsolateral processes apically triangular in dorsal view in case of *L. muzamili* whereas, dorsolateral processes apically rounded in case of *L. sonomax*.

*Lepidostoma lakhwinderae* sp. nov.  
(Figs. 268-270, 274-275, 278, 444)

Scapes (Fig. 275) each 4.85 mm, with two subbasodorsal processes; basal processes slender and apically curved; second segment cylindrical and apically rounded. Maxillary palp (Fig. 275) 1.94 mm; two segmented; first segment much longer and about as long as labial palpi in lateral view; second segment short and straight. Forewing (Fig. 278) with 4 closed pseudo cells. Average length of forewing 9.7 mm.

**Male genitalia** (Figs. 268-270, 274): Segment IX apicodorsally broadly rounded, somewhat dome-shaped. Segment X divided in the middle forming a pair of plates; dorsolateral processes of each plate is apically triangular and broadened near base whereas, mesal process is rounded at the apex. laterally mesal processes appear as a long lobe with sides truncate and apex rounded, lateral lobe much shorter than mesal one. Inferior appendage single segmented, broadened near base, apices somewhat converging in dorsal & ventral views. Phallus with phallobase dilated & truncate, rounded near one side, phallicate apically rounded. Parameres placed across the genitalia, apically tapering & antagonistically lying one another, nearly as long as phallus.
Family Lepidostomatidae

Holotype depository: MDZPU (Patiala).

Material Examined: Holotype ♂: India: Jammu & Kashmir: Aru, 2700 m. Paratypes: 2 ♂♂ with same locality and data as that of holotype.

Distribution: India (Jammu & Kashmir).

Etymology: This species is named in honor of Lakwindar Kaur for her support and help during these years.

Diagnostic combination: This species closely resembles Lepidostoma nagana Mosely but is different from latter by having segment IX apicodorsally rounded (segment IX apicodorsally truncate in Lepidostoma nagana); segment X with dorsolateral processes apically triangular (segment X with dorsolateral processes apically rounded in L. nagana); laterally dorsolateral process much broadened (dorsolateral process slender in lateral view in L. nagana).

Lepidostoma mechukense sp. nov.
(Figs. 271-273, 276-277, 279, 440)

Antennal scape (Fig. 277) 1.4 mm, without any distinct processess. Maxillary palp (Fig. 277) 0.98mm, two segmented; basal segment 3x longer than distal one. Forewing (Fig. 279) with 3 closed pseudo cells. Length of each forewing 7.76 mm.

Male genitalia (Figs. 271-273, 276): Tergite IX dorsally extends posteriorly, extraordinarily bulged at its centre, sides somewhat triangular. Segment X excised at its centre forming two pair of processes; dorsolateral processes
triangular, whereas, dorsomesal processes rounded, apices of each process bear setae, median and lateral processes separated from each other by a wide space, median processes closely proximed. Laterally segment X broadened at base and notched at tip, from the lateral base of this segment a slender triangular projection appears which is actually dorsolateral process of this segment. Inferior appendages with apices branched, both branches nearly slendrical, dorsolateral branch slightly longer than mesal branch, basodorsal process finger like in lateral view. Phallus with phallobase dilated, phallocrypt slendrical. Parameres absent.

**Holotype depository:** MDZPU (Patiala).

**Material examined:** Holotype ♂: India: INDIA: Arunachal Pradesh: Mechuka, 3600m, 29- iv-2010.

**Distribution:** India (Arunachal Pradesh).

**Diagnostic combination:** The key characters by which *Lepidostoma mechukaense* sp. nov. differs from its closely allied species *Lepidostoma kimsa* (Mosely) are as follows: segment IX apicodorsally produced in its centre in case of former whereas, segment IX apicodorsally rounded in case of latter.
Family Lepidostomatidae

*Lepidostoma pyramidatum* sp. nov.

*(Figs. 280-285)*

Scapes (Fig. 284) 2.88 mm, bearing two subbasodorsal processes; proximal process brownish, curved distally and longer than distal one. Maxillary palp (Fig. 284) 1.48 mm; basal segment three times longer than distal segment, bearing long setae. Forewing (Fig. 285) with 2 closed pseudo cells behind the post cubital fold. Average Length of forewing 6.5 mm.

**Male genitalia***(Figs. 280-283):* Segment IX Pyramid shaped. Segment X deeply incised medially, each resulting lateral plate shallowly excised along its posterior margin, laterally bulging. In lateral view a small finger like projection present on basal ventral side of segment X. Inferior appendages 2-segmented, 1st segment, bearing stout setae distally 2X longer than 2nd terminal segment, basodorsal process absent. Phallobase broadened phallocrypt slender. Parameres thickened, diagonally lying across the genitalia.

**Holotype depository:** MDZPU (Patiala).


**Distribution:** India (Uttarakhand, Arunachal Pradesh).

**Diagnostic combination:** The key character by which *L. pyramidatum* sp. nov. differs by its closely allied species *Lepidostoma ulmeri* (Martynov) are as follows: segment X broadened and bulging at its sides in case of former whereas,
segment X compressed and not broadened near sides in case of latter. Parameres converging with one another in case of *L. pyramidatum* whereas, parameres diverging with each other in case of *L. ulmeri*. 
Genus *Paraphlegopteryx* Ulmer

*Paraphlegopteryx* Ulmer, 1907: 6-7.
Type species: *Paraphlegopteryx tonkinensis* Ulmer

**Diagnostic feature:** Vertex usually with minute whitish triangular projection. Setal warts typically having anterolateral, dorsoanterior, dorsoposterior and posterior pairs, similar. Scapes longer than head, simple and cylindrical. Maxillary palps short and finger like, 1-segmented in males, 5-segmented in females. Metascutellum sometimes normal and similar as in female or often modified having metascutellum varied, sometimes conspicuous dark brown (almost black), and either glossy or dull in appearance. Forewings (Fig. 22) with forks I, II, III and IV, with fork I always petiolate. Hind wing (Fig. 23) venation highly variable, r-m cell containing nygma.

**Distribution:** This genus is confined to the Oriental region only. Species records are known from Myanmar, Nepal, Thailand, Vietnam, the Zhejiang province of China and India.

**Remarks:** The genus *Paraphlegopteryx* Ulmer is recorded only from the Oriental region. Presently this genus includes 24 species over the globe.

In India this genus is represented by 14 species. Major contribution is by Weaver (1999) with 12 species, Martynov (1936) and Mosely (1949a) contributed 1 species each. The present study deals with 4 species. *Paraphlegopteryx weaveri* sp. nov. is added new to science.
Key to the Indian species of *Paraphlegopteryx* Ulmer

1. Hindwing thyridial cell long & broad, expanded from base to submargin densely covered with dark brown scales & nygmatal cell compressed between discal and thyridial cells, **composite group** ........................................2
   - Hindwing thyridial cell short & truncate, not extending beyond discal cell, with scales either sparse or absent, & nygmatal cell broader than thyridial cell.................................................................7

2. Ventromesal process absent .........................................................3
   - Ventromesal process present............................................................4

3. Apicoventral process quite prominent ............... *P. orestes* Weaver
   - Apicoventral process reduced ....................... *P. moselyi* Weaver

4. Apicominal process present ..........................................................5
   - Apicominal process absent............................................................6

5. Inferior appendage with apicoventral process long slender & capitates.................................................................*P. composita* Martynov
   - Inferior appendage with apicoventral process short & stout.................................................................*P. kamengensis* Weaver

6. Segment X ellipsoidal in lateral view, basolateral process short; inferior appendage apicoventral process longer ............*P. squamalata* Weaver
   - Segment X squarish in lateral view, basolateral process prominent; inferior appendage apicoventral process reduced ...... *P. weaveri* sp. nov.

7. Segment VIII with dorsal scent gland, having either tergite VIII bulbous & Tergum IX usually concave anteriad, or tergite VIII reduced & not bulbous, & Tergum IX always concave anteriad, & terga VIII & IX with expanded intersegmental membrane, **normalis group**.................................8
- Segment VIII without dorsal scent gland, having terga VIII & IX both normal, *tonkinensis group* .............................................14
8. Tergum IX normal, not concave anteriad; tergite VIII with ovoid projection......................................................9
- Tergum IX concave anteriad; tergite VIII either with spherical projection or reduced with expanded posterior membrane region .....10
9. Head without scales, scape & setal warts with many large dark brown seate; frons & dorsum concave .........................*P. ivanovi* Weaver
- Head with scales, scape & dorsal setal warts with combination of setae & slender light brown clavate scales, frons & dorsum not concave .............................................................*P. aykroydi* Weaver
10. Tergite VIII bulbous; mesoscutellum cordate and dark brown (nearly black), contrasting strongly with light brown mesoscutum ............11
- Tergite VIII not bulbous, mesoscutellum triangular and brown, only slightly darker than light brown mesoscutum......................12
11. Segment X apex bilobed in lateral view, and Tergum IX broad .................................................................*P. normalis* Mosely
- Segment X apex acuminate in lateral view, and Tergum IX narrower .................................................................*P. bulbosa* Weaver
12. Segment X long, at least 2x basal widths in lateral view; forewing without scaly basal fold on anterior margin ......................*P. schmidtii* Weaver
- Segment X shorter; forewing with scaly basal fold in anterior margin.................................................................13
13. Inferior appendage with ventromesal process ........*P. martynovi* Weaver
- Inferior appendage without ventromesal process…*P. porntipae* Weaver
14. Inferior appendage apicomesal process tapering; ventromesal process present.............................................................*P. pippini* Weaver
- Inferior appendage apicomesal process rounded; ventromesal process absent.......................................................*P. ulmeri* Weaver
**Paraphlegopteryx composite** Martynov

**(Figs. 286-289)**

*Paraphlegopteryx composite* Martynov, 1936: 291-293

Head and body generally brown. Head without scales; scapes 0.5 mm; maxillary palpi 0.40 mm. Metascutellum completely dark brown. Forewing 8.8 mm, covered with reddish brown setae.

**Male genitalia** (Figs. 286-289): Segment VIII and IX normal. Segment X with basolateral process short and slightly rounded in dorsal view, triangular in lateral view. Inferior appendage elongate with main article almost rectangular in lateral view; basodorsal process slender irregular finger-like in lateral view; second article (apicomesal process) long slender with apex slightly roundly pointed in lateral view, fingerlike with apex curved mesad in ventral view; apicoventral process slender and capitates with round apical knob bearing atleast four long thick setae in lateral view, apical knob short and broadly truncate in ventral view; ventromesal process fingerlike. Phallus with phallobase truncate and phallicrypt rounded in lateral view; parameres apically acute laterally.

**Holotype depository:** Unknown.

**Material examined:** Uttarakhand: Auli, 2700 m, 16-vi-2011, 2 ♂♂.

**Distribution:** India (Uttarakhand, West Bengal).

**Diagnostic combination:** The key characters by which *Paraphlegopteryx composita* Martynov differs from its closely allied species *Paraphlegopteryx*
orestes Weaver are as follows: ventromesal processes of inferior appendage present in case of former whereas, ventromesal processes of inferior appendage absent in case of latter. Phallus with phallocrypt apically truncate in Paraphlegopteryx composita whereas, the same is apically rounded in case of Paraphlegopteryx orestes.

\textit{Paraphlegopteryx normalis} Mosely

(Figs. 290-293)

\textit{Paraphlegopteryx normalis} Mosely, 1949: 788-789
\textit{Neoseverini aspiralis} Ito, 1992: 105

Head and body generally dark brown. Head seta warts, scape and maxillary palp with many long brown bristles and without scales. Head setose, but without scales; scapes 1.3 mm; maxillary palpi 0.4 mm. Forewing 10 mm, bearing long tuft of dark brown bristles.

\textbf{Male genitalia} (Figs. 290-293): Segment IX with dorsum concave to accommodate bulbous expansion of tergite VIII. Segment X with basolateral lobes about 2x as long as basal width; main processes each with apex bilobed in lateral view, dorsal lobe more slender and lobiform, and ventral lobe apically broad; main processes separated by deep narrow mesal notch in dorsal view. Inferior appendage each with base of main article broad; basodorsal process broadly rounded, nearly semicircular in lateral view; apicodorsal process minute; second article (apicomesal process) as long as main article, nearly straight and fingerlike, but with apex pointed in lateral view; apicoventral process reduced and ventromesal process absent. Phallus with phallobase triangular and phallocrypt rounded apically. Parameres nearly straight in lateral view.
**Holotype depository:** ZSI (India).

**Material examined:** Uttarakhand: Munsiyari, 1700 m, 20-vi-2011, 1 ♂
Himachal Pradesh: Traila, 1700 m, 17-vi-2011, 4 ♂♂.

**Distribution:** India: (Uttarakhand, Himachal Pradesh).

**Diagnostic combination:** The key character by which *Paraphlegopteryx normalis* Mosely differs from its closely allied species *Paraphlegopteryx bulbosa* Weaver includes: Segment X bilobed in lateral view in case of former whereas, segment X single lobed laterally in case of latter.

*Paraphlegopteryx moselyi* Weaver

*(Figs. 294-297)*


Head & body generally dark brown. Head setose, but without scales. Scapes 0.8 mm; maxillary palpi 0.4 mm. Forewing 10 mm, with dark brown bristles and short stout scales.

**Male genitalia** *(Figs. 294-297):* Segments VIII and IX normal. Segment X with basolateral lobes short and almost rounded apically in lateral and dorsal views; main process somewhat trapezoidal with apex apex broadly rounded in lateral view; main processes triangular, apex somewhat rounded, and separated by V-shaped mesal notch in dorsal view. Inferior appendages with base of main article broad and rectangular, apicoventral ridge inclined slightly dorsad toward base of
second article in lateral view; basodorsal process slender and curved posteriad in lateral view; apicodorsal process short and lobiform; second article (apicomesal process) long finger-like with trapezoidal apex, having apicodorsal angle acute; ventromesal process reduced to shallow shelf with minute apical lobe. Phallus with phallobase slightly rounded, phallocrypt truncate in lateral view. Parameres apically acute in lateral view.

**Holotype depository:** Canadian National Collection, Ottawa.

**Material examined:** Specimens: India: Arunachal Pradesh, Hunli, 1800 m, 3-v-2011, 2 ♂♂ Sikkim, Uttaray, 2300 m, 15-v-2011, 1 ♂.

**Distribution:** Nepal: India (Arunachal Pradesh, Sikkim, West Bengal, Uttarakhand).

**Diagnostic features:** The key character by which *Paraphlegopteryx moselyi* Weaver differs from its closely allied species *Paraphlegopteryx kamengensis* Weaver by following character: Apicoventral processes of inferior appendage absent in case of former whereas, apicoventral processes of inferior appendage is present in case of latter.

*Paraphlegopteryx weaveri* sp. nov.

**(Figs. 298-301)**

Scapes, head, thorax and wings dark brown. Abdomen light brown. Head setose without scales (in alcohol). Average length of scapes 0.48 mm, maxillary palp 0.30 mm, forewing 8.73 mm.
Male genitalia (Figs. 298-301): Segment IX apicodorsally produced into a rounded structure at its centre but almost rectangular in lateral view. Segment X with basolateral process quite prominent, rounded apically, appearing as small hump-like projection in lateral view; mesal process triangular in dorsal view and rectangular in lateral view. Inferior appendage broadened near base appearing rectangular in lateral view, apically 4 branched, apicoventral branch reduced, apically rounded, acuminate bearing a tuft of setae in lateral view, slightly pointed in ventral view; main article (apicomesal branch) longer than other branches, slightly pointed apically in dorsal view, rounded in ventral and lateral view; apicodorsal dorsal branch triangular lateral view, roundly pointed dorsally; ventromesal branch about as long as segment X in dorsal view, finger-like. Basodorsal process long, slendrical and curved posteriad. Phallus with phallobase truncate and phallocr ipt rounded apically rounded in lateral view. Parameres slightly shorter than phallus & apically tapering.

Material examined: Holotype ♂: India: Arunachal Pradesh, Zemithang, 1800 m. 16-v 2011. Paratype: 2 ♂♂ from the same locality and data as that of holotype.

Distribution: India (Arunachal Pradesh).

Etymology: The species is named after J. S. Weaver for his outstanding contribution to Indian Lepidostomatidae.

Diagnostic features: The key character by which Paraphlegopteryx weaveri sp. nov. differs from its closely allied species Paraphlegopteryx moselyi Weaver are as follows: Segment IX apicodorsally rounded in case of former whereas, segment IX apicodorsally truncate in case of Paraphlegopteryx moselyi Weaver. Inferior appendage with ventromesal processes prominent and finger like in case of Paraphlegopteryx weaveri sp. nov. whereas, inferior appendage with ventromesal processes reduced in case of Paraphlegopteryx moselyi Weaver.
Family Branchycentridae Ulmer

Branchycentrinae Ulmer, 1903, p.85
Type genus: *Branchycentrus* Curtis
Branchycentridae Ross, 1944, p. 260

**Diagnostic feature:** Head particularly short and wide. Eye small and hairy, vertex with 3 pairs of warts. Pronotum (Fig. 2) with a single pair of rounded setal warts (Fig. 2). Ocelli absent. First antennal segment short and slightly thickened. Maxillary palpi 3-segmented in male (Fig. 3) and 5-segmented in female. Spurs 2, 2, 2 or 2, 3, 3 or 2, 4, 4. Glands of abdominal sternite V in shape of small sphere with opening on anterior margin of segment. Forewing (Fig. 16) with fork I, II, III & V present in male and I, II, III, IV & V or I, II, III & V in female. Hindwing (Fig. 17) with fork I & V or I, II & V in female. In forewing (Fig. 16) discoidal cell small and closed, thyridial cell very long and closed, and median cell open. Cu₂ extends to wing margin & jointed to Cu₁₅ by cross vein. Anal veins occasionally simplified. In hindwing (Fig. 17) discoidal cell open or closed with three or 4 anal veins.

**Distribution:** This family is distributed throughout the Northern Hemisphere.

**Remarks:** Ulmer (1903) originally established this group as a subfamily of Seriscostomatidae. It now contains 7 genera and about 100 species. Three of these are monotypic: *Adicrophleps* Flint (Neartic), *Amiocentrus* Ross (Neartic), *Dolichocentrus* Wiggins (Japan & Western North America)) contains only a half dozen species & *Tsudaea* Nozaki (Japan) with a single species. *Branchycentrus* Curtis (30 species) and *Micrasema* McLachlan (75 species) are both wide spread across the Holartic and Oriental region. In India this family is represented by 2 genera *Branchycentrus* Curtis and *Micrasema* McLachlan. *Branchycentrus* is
represented by a single species and *Micrasema* contains 11 species from this region.

**Keys to Indian genera of Branchyceritidae**

1. Spurs 2, 2, 3 or 2, 3, 3. Forewings with R₁ sinuate at level with pterostigma.  
   - FⅡ sessile……………………………………………………… *Branchyceritrus* Curtis  
   - Spurs 2, 2, 2. Forewings with R₁ not sinuate at level with pterostigma. FⅡ petiolate……………………………………….…….. *Micrasema* McLachlan

**Genus Branchyceritrus** Curtis

*Branchyceritrus* Curtis, 1834, p. 216  
Monobasic type species: *Branchyceritrus subnobilus* Curtis  
*Sphintogaster* Provancher, 1877, p. 262  
Monobasic type species: *Sphintogaster lutescens* Provancher  
*Ologoplectrodes* Martynov, 1909, p. 294  
Type species: *Oligoplectrodes potanini* Martynov

**Diagnostic features**: Antennae faintly crenulated on inferior face & distinctly thicker in male than in female. Maxillary palp of male short, thick, densely covered with erect hairs raised against face and comprising 3 subequal segments. In female maxillary palp slender and weakly developed, but with thickened 1st segment. Legs covered with short hairs and number of spines. Spurs 2, 2, 2 or 2, 3, 3. Wings (Figs. 16-17) covered with short sparse hairs. Hindwing (Fig. 17) as wide as forewing, subrectangular, with well developed anal area. In female R1 strongly sinuate at level of pterostigma. Forks I, II, III & V present in male and I, II, III, IV & V in female. Fork II sessile. There are three anal veins forming 3
cells. In hindwing (Fig. 17), fork I & V present in male & I, II, III & V in female.
M single branched in male & 3 branched in female. Discoidal cell open.

**Distribution:** Holarctic and Oriental in distribution.

**Remarks:** Based on the type species *Branchycerus subnubilus* Curtis, the genus was established by Curtis in 1834. This genus is represented by about 40 species over the globe. In Oriental region including India this genus is represented by 1 species. The present study deals with its single species distributed throughout the Indian Himalaya.

*Branchycerus kozlovi* Martynov

(Figs. 302-305)


Head & thorax fuscous with light, honey colored hairs; ocelli black; antennae fuscous with pale annulations; spurs 2, 3, 3; wings grayish with light brown coloured pubescence; length of forewing 9.7 mm.

**Male genitalia (Figs. 302-304):** Segment IX apicodorsally produced into a rounded lobe, sides of this segment pointed bearing long setae on its surface; ventrally segment IX H- shaped. Segment X large hood with slightly excised apical margin in dorsal view; hood completely obscures all the genital parts from above. Inferior appendage curved inwards in lateral view; basal part of inferior appendage with a finger-like process; middle part rounded on its upper side; apically tapering; ventrally inferior appendage apically triangular and curved inwards. Phallus apically pointed in lateral view. Parameres almost rectangular in ventral view.
Female genitalia (Fig. 305): Female genitalia simple. Segment X apically with a small notch.

Holotype depository: Untraceable.


Family Goeridae

Goerinae Ulmer, 1903, p. 81
Type genus: *Goera* Stephens

**Diagnostic features:** Head wide, with 3 or 4 pairs of wartson vertex. Pronotum with two pairs of setal warts (Fig. 4). Ocelli present or absent. First antennal segment large, simple & slightly thicker in males than in females. Maxillary palp (Fig. 5) exhibiting strong sexual dimorphism, 2 or 3 segmented in males & 5 segmented with first 2 segments short, in female. Legs densely clothed with flattened hairs & bearing small spines. Spurs 2, 4, 4 or 2, 3, 4 or 1, 2, 2. Internal gland of abdominal sternite V absent. Wings densely hairy, fairly evenly elliptical with both pairs equal in width. Venation similar in both sexes and barely simplified, with forks I, II, III & V or I, II, & V present on both pairs. In front wing discoidal cell closed. Thyridial cell of variable length. Thyridial cells sometimes widened at extremity. One or 3 anal veins. In hindwings, discoidal cell open or closed.

**Distribution:** Cosmopolitan distribution except Neotropical America.

**Remarks:** The family Goeridae was erected by Stephens based on the type genus *Goera* in 1829. The family currently contains some 180 species under 11 genera worldwide. In Oriental region this family is represented by 110 species under 5 genera. In India this family is represented by 30 species under 2 genera.
Key to Indian genera of Goeridae Ulmer

1. Forewing with discoidal cell short, spurs 2, 4, 4………... *Goera* Stephens
   - Forewing with discoidal cell long, spurs 2, 4, 3………... *Larcasia* Navas

*Goera* Stephens, 1829, p. 28

Type species: *Phryganea pilosa* Fabricius (designated by Westwood in 1840)

**Diagnostic feature:** Head very short, with very prominent eyes. Maxillary palpi of male very small & comprising 2 segments. A large, membranous strongly erectile lobe equipped with flattened scales inserted behind 2\textsuperscript{nd} segments. Spurs 2, 4, 4. Abdominal sternite VI with ventral row of 8 or 10 long spines in comb-like arrangement in male and 1 or 2 shorter points, surrounded by a few tiny teeth in females. Wings brownish & distinctly narrower in female than in male. Forewing (Fig. 18) with discoidal cell short & united from long distances with F\textsubscript{I}, F\textsubscript{II}, F\textsubscript{III} petiolate. Thyridial cell very long. In hindwing (Fig. 19) discoidal cell open & F\textsubscript{III} with long petiole.

**Distribution:** Holarctic, African, Australian and Oriental.

**Remarks:** *Goera* Stephens (1829) is the largest genus in the family Goeridae and is represented by 156 described species from the World (Morse, 2012). The greatest diversity of this genus is found in Oriental region (Malicky & Chantaramongkol 1992, Malicky 1995, Yang & Armitage 1996, Malicky & Chantaramongkol 1997, Armitage & Arefina 2003, Malicky 2008). In India this genus is represented by 28 species. Of these 28 species, 21 species were
Family Goeridae

described by Schmid (1991), 5 by Mosely (1938) and 1 each by Betten (1909) & Navás (1932). Three species (G. paropadecha Schmid, G. parakaja Schmid and G. nigricornis Navás) are recorded from South India, and the remaining 25 species are reported from Himalayan belt. A complete distribution of Indian species of genus Goera is given in table IV. The present study deals with 6 species amongst which two species Goera arunachalica sp. nov. and Goera muniaryensis sp. nov. are new to science.

Key to Indian species of Goera Stephens

1. Males.................................................................2
   - Females.............................................................26
2. Spines like process of basal segment of each inferior appendage present..............................................................3
   - Spines like process of basal segment of each inferior appendage absent............................................................18
3. Dorsal process of segment X absent ................G. parapodea Schmid
   - Dorsal process of segment X present ...........................................4
4. Dorsal process of segment X shorter than ventrolateral processes ......5
   - Dorsal process of segment X longer than ventrolateral processes ......6
5. Inferior appendage each with two mesal processes ventrally.................................................................G. arsudana Schmid
   - Inferior appendage each with a single mesal process ventrally..............................................................G. janaka Schmid
6. Inferior appendages each with two pair of sclerotized spine like processes.............................................................7
   - Inferior appendage with a single pair of sclerotized spine-like process..8
7. Inferior appendage each truncate ventroapically ........G. dilipa Schmid
   - Inferior appendage each pointed ventroapically.G. vaichravana Schmid
8. Apicolaterally distal segment of inferior appendage plyers-like ……9
    - Apicolaterally distal segment of inferior appendage pointed ..........10
9. Ventrolateral processes of segment X membranous………………
    ................................................................................. G. rakchase Schmid
    - Ventrolateral process of segment X sclerotized… G. yajnadatta Schmid
10. Dorsal processes clubbed apically ..............................G. sarayu Schmid
    - Dorsal processes pointed apically……………………………………...11
11. Distal segment of inferior appendage branched ventrally………………12
    - Distal segment of inferior appendage not branched ventrally………..15
12. Sclerotized spines of inferior appendage touching apically…………13
    - Sclerotized spines of inferior appendage not touching apically………14
13. Apicolaterally distal segment of inferior appendage unbranched; mesal
    process of inferior appendage as long as preanal appendage………………………….. G. vaidehi Schmid
    - Apicolaterally distal segment of inferior appendage two branched; mesal
    process of inferior appendage shorter than preanal appendage
    laterally…………………………………………………………G. muniaryensis sp. nov.
14. Spine like processes of inferior appendage straight
    dorsally……………………………………………………………… G. dandaka Schmid
    - Spine like processes of inferior appendage curved
    dorsally……………………………………………………………… G. maithili Schmid
15. Preanal appendage blade-like apically ..............G. kasaulya Schmid
    - Preanal appendage slendrical or clubbed apically…………………..16
16. Preanal appendages clubbed apically, spine like processes of inferior
    appendage nearly c-shaped…………………………G. arunachalica sp. nov.
    - Preanal appendage slendrical apically, spine like processes of inferior
    appendage straight or curved………………………………………17
17. Phallus not excised apically .................................G. raghu Schmid
18. Ventrolateral processes of segment X strongly sclerotized
- Phallus excised apically………………………………………*G. vinata* Schmid
19. One process of ventrolateral processes blade-like…………………………………………………………*G. mandana* Mosely
- Ventrolateral processes of segment X not strongly sclerotized…………………20
- Both process of ventrolateral processes of same shape…………………………………………………………*G. paracrita* Schmid
20. Dorsal process of segment X absent………………...*G. parabhava* Schmid
- Dorsal processes of segment X present........................................21
21. Dorsal process of segment X rounded……………….*G. parakiya* Schmid
- Dorsal process of segment X slendrical………………………………22
22. Mesal process of inferior appendage present laterally………………………………23
- Mesal process of inferior appendage absent laterally…………………25
23. Mesal process of inferior appendage apically rounded in lateral view…………………………………………………………...*G. paramahasa* Schmid
- Mesal process of inferior appendage apically triangular in lateral view………………………………………………………24
24. Inferior appendage apically pointed in lateral view………………………………...*G. paramika* Schmid
- Inferior appendage rounded in lateral view.......... *G. relicta* Betten
25. Preanal appendage laterad in dorsal view; ventrolateral processes of segment X straight in dorsal view………………………………*G. valmiki* Schmid
- Preanal appendage straight in dorsal view; ventrolateral processes of segment X criss-crossing one another in dorsal view...*G. tridens* Mosely
26. Apex of forewing parabolic .........................*G. nigricornis* Navas
- Apex of forewing straight.............................................................27
27. Inferior appendage closely adhered together in dorsal view...............................................................*G. kursea* Mosely
- Inferior appendage separated with each other in dorsal view .............28
28. Forewing with fork I narrow, discoidal cell reactangular…………………………………….G. kalimpa Mosely

- Forewing fork I broad, discoidal cell pentagonal……G. mishmia Mosely

**Goera paracrita Schmid**

(Figs. 306-309)

*Goera paracrita* Schmid, 1991: 306

Adults dark brown in colour. Average length of forewing 7-8 mm. Maxillary palp 2.42 mm in length, two segmented. 1st segment slendrical, 2nd cylindrical, covered with small setae on its surface & about 4 times longer than first segment & 2 times longer than scapes in dorsal view.

**Male genitalia (Figs. 306-309):** Segment IX with two broad lobes near its side and centrally with a narrow lobe in dorsal view; laterally broadened near its posterior side & anteriorly tapering ; ventrally this segment almost appears as rectangular. Dorsal process much longer, almost cylindrical & apically rounded, longer than preanal appendage in lateral view. Preanal appendage curved lateriad in dorsal view & apically rounded, laterally narrowed near base & apically clubbed. Ventrolateral processes strongly sclerotized, crossing one another near tip and apically acute in dorsal view. Inferior appendage apparently two segmented, first segment broadened near base, second segment with three processes; basal process triangular, lateral process pointed and the mesal process rounded in ventral view. Phallus apically membranous. Parameres sclerotized & diverging outwards.

**Material depository:** Canadian National Collection (Canada).
Material examined: Uttarakhand: Tawaghat, 1500 m, 15-vi-2008, 1 ♂ Shayanachatti, 1600 m, 27-ix-2008, 1 ♂ Mandal, 1700 m, 17-vi-2010, 6 ♂♂ Pathibasa, 1700 m, 13-vi-2010, 15 ♂♂, 3 ♀♀. Himachal Pradesh: Ahla, 1700 m, 11-vii-2010, 6 ♂♂ Khajjiar, 1600 m, 13-vii-2010, 1 ♂ Traila, 1600 m, 1 ♂, Barara, 1900 m, 3 ♂♂.

Distribution: India (Uttarakhand, Himachal Pradesh).

Diagnostic combination: The key character by which *G. paracrita* Schmid differs from its closely allied species *G. mandana* Mosely are as follows: Ventrolateral processes both apically acute in case of former whereas, one lobe of ventrolateral processes flattened to triangular lobe in case of latter. Phallus freely lying in between two parameres in case of *G. paracrita* whereas, phallus compressed within two parameres in case of *G. mandana*.

*Goera mandana* Mosely

(Figs. 310-313)

*Goera mandana* Mosely, 1938: 490

Adults light brown in colour. Average length of forewings 8-9 mm. Maxillary palp of male 2 segmented; basal segment small and terminal segment glabrous, form a membranous sac which is covered on the inner surface with dark small hairs. Average length of maxillary palp 1.94 mm.

Male genitalia (Figs. 310-313): Segment IX with two broad lobes near its side and centrally with a narrow lobe in dorsal view; laterally broadened near its posterior side & anteriorly tapering; ventrally narrowed near side and slightly
broadened near centre. Dorsal process slightly narrower near base & apically clubbed in dorsal view; laterally dorsal process slightly longer than preanal appendage, curved near centre & then turned upwards. Preanal appendages cylindrical in dorsal view, apically clubbed in lateral view. Ventrolateral processes strongly sclerotized and one process of ventrolateral process flattened into a triangular lobe in dorsal view. Inferior appendage apparently two segmented; first segment hardly squarish in ventral view; second segment with three processes, basal process apically diverging outwards, lateral process slightly pointed and the mesal process finger-like in ventral view. Phallus compressed within parameres.

**Material depository:** BNMH (London).

**Material examined:** Assam: Jitinga, 800 m, 20-v-2010, 2 ♂♂. Uttarakhand: Gairsain, 1800 m, 16-vi-2009, 4 ♂♂.

**Distribution:** Vietnam: Nepal: India (Assam, Andaman, Uttarakhand).

**Diagnostic combination:** The key character by which *G. mandana* Mosely stands far apart from its closely allied species *G. paracrita* Schmid have been discussed under the latter.
Goera yajnadatta Schmid
(Figs. 314-317)

Goera yajnadatta Schmid, 1991: 314

Adults dark brown. Average length of forewings 6-8 mm. Maxillary palp 2\textsuperscript{nd} segment 3 times longer than 1\textsuperscript{st} segment, cylindrical in shape and somewhat membranous. Average length of maxillary palp 0.97 mm.


Material depository: Canadian National Collection (Canada).


Distribution: India (Sikkim, Arunachal Pradesh).

Diagnostic combination: The key character by which \textit{G. yajnadatta} Schmid differs from its closely allied species \textit{G. janaka} Schmid is as follows: inferior appendage apically rounded in case of former whereas, the same is apically truncate in case of latter.
Goera vaichravana Schmid
(Figs. 318-321)

Goera vaichravana Schmid, 1991: 311

Adults light brown in colour and much smaller in size. Average length of forewings 5-6 mm. Maxillary palp two segmented, 1st segment slender. 2nd segment 3 times longer than 1st segment, cylindrical in shape & apically curved downwards. Average length of maxillary palp 0.97 mm.

Male genitalia (Figs. 318-321): Segment IX long with subventral portion much broadened and apically produced into pointed tip in lateral view. Dorsal process slender in dorsal view; slightly broadened near base and apically rounded in lateral view. Preanal appendages slender near base and apically clubbed in dorsal view; laterally cylinder and slightly curved downwards. Ventrolateral processes longer than dorsal process and almost cylindrical in dorsal and lateral view. Inferior appendage with a pair of unequal sclerotized processes; inferior appendage single segmented but apically with two branches; main branch longer, broadened near upto 1/3rd and apically tapering; second branch shorter and tapering apically in ventral view. Phallus oval-shaped & bounded by a pair of parameres.

Material depository: Canadian National Collection (Canada).


Distribution: Nepal: India (Uttarakhand).
**Diagnostic combination:** The key character by which *G. vaichravana* Schmid differs from its closely allied species *G. dilipa* Schmid are as follows: Subventral portion of segment IX straight in case of former whereas, subventral portion of segment IX produced roundly in case of latter. Inferior appendage with main branch slendrical and apically pointed in case of *G. vaichravana* whereas, inferior appendage with main branch almost cylindrical and truncate apically in case of *G. dilipa*.

**Goera arunachlica sp. nov.**

*(Figs. 322-326)*

Colour golden brown. Maxillary palp each 0.96 mm in length. Distal segment of maxillary palp oval and membranous. A spine present in the male abdominal sternite V. Length of forewing 6.79 mm.

**Male genitalia (Figs. 322-326):** Segment IX roughly quadrangular in lateral view, without subventral portion. Preanal appendages slender, slightly dilated subapically. Dorsal process of segment X present, with a pair of ventrolateral processes apically adhered. Inferior appendage each with a strongly spine-like sclerotized processes curved, L-shaped. Basal processes of each inferior appendage subrectangular, distal segment fused with the basal segment, appearing as rod-like with acute apex, broadened proximally and tapering apically; a mesal process originating at the surface of the basal segment, incurved, laterally appearing as a small triangular structure with acute apex near the bottom of inferior appendage. Phallus simple, tube like, pointed apically in dorsal view. Parameres present and visible only in lateral view.
Material depository: MDZPU (Patiala).

Material examined: Holotype ♂: India: Arunachal Pradesh: Zemithang, 2000 m, 16-v-2011. Paratypes: 2 ♂♂ from the same locality and date as that of holotype.

Distribution: India (Arunachal Pradesh).

Diagnostic combination: The key character by which Goera arunachalica sp. nov. differs from its closely allied species G. ragu Schmid are as follows: Dorsal process more dilated in case of former whereas, dorsal processes slendrical in case of latter. Preanal appendages clubbed apically in case of G. arunachalica sp. nov. whereas, preanal appendage rounded apically in case of G. ragu.

Etymology: The name of the species is based on the state in which type locality falls.

*Goera muniaryensis* sp. nov.  
(Figs. 327-331)

Colour golden brown. Maxillary palp 0.68 mm length slightly dilated mesally and apically bulged. A spine present in the male abdominal sternite V. Average length of forewing 7.79 mm.

Male genitalia (Figs. 327-331): Segment IX somewhat triangular in lateral view, without subventral portion. Preanal appendages each slender at base and dilated apically. Dorsal process of segment X present, broadened near base and apically acute. Ventrolateral processes longer than dorsal processes. Inferior
appendage with strongly sclerotized process broadened near base and pointed apically. Basal segment of each inferior appendage rectangular ventrally, distal segment fused with the basal one, a straight, mesal branch originating at the surface of basal segment; distal segment slender in lateral view and apically with two unequal branches, a finger-like process originating near the centre of basal segment laterally. Phallus tubular appears banana-like laterally. Parameres present.

**Material depository:** MDZPU (Patiala).

**Material examined:** Holotype ♂: India: Uttarakhand: Munsiayri, 2400 m, 07-vi-2010. Paratypes: 2 ♂♂ from the same date and locality as that of type.

**Distribution:** India (Uttarakhand).

**Diagnostic combination:** The key character by which *Goera munsiaryensis* sp. nov. differs from its closely allied species *G. vaidehi* Schmid are as follows: Dorsal processes apically acute in case of former whereas, dorsal processes apically rounded in case of latter. Distal segment of inferior appendage with two unequal branches in case of *G. munsiaryensis* whereas, distal segment of inferior appendage with a single branch in case of *G. vaidehi*.

**Etymology:** The name of the species is based on its type locality, “Munsiayri”.


FAMILY LIMNEPHILIDAE

Limnephilidae Kolenati, 1848: 30
Type genus: *Limnephilus* Leach, 1815.

**Diagnostic features:** Family Limnephilidae is an easily recognizable natural group of caddisflies the adults of which possess the following combination of distinct characters: head usually short but wide with all the three ocelli present (Fig. 6); antenna almost equal to the length of forewing, 1st antennal segment not longer than head; maxillary palpi 3-segmented in males having 1st segment very short and the other two long and subequal (Fig. 6); in females, maxillary palpi 5-segmented; legs bears well developed spines; tibial spurs sequence is 0-1, 1-3, 1-4; mesoscutum has setae scattered in two elongate patches or confined to a pair of setal warts; mesoscutellar setae are within the ovoid mesial area or are confined to a pair of small warts; two pairs of wings fairly differently shaped; forewing narrow at base, distinctly wider at the level of anastomosis and elliptical at apex; hindwing wide with very ample anal area; venation very constant and almost complete, with forks I, II, III and V present in both pairs of wings; sexual dimorphism rare and weak; in forewing discoidal and thyridal cells closed and very long, median cell open; hindwing usually broader than forewing; discoidal cell generally long and occasionally open; 4 or 5 anal veins present.

**Distribution:** This family is represented in all cold and temperate regions of the World except South Africa.

**Remarks:** Family Limnephilidae was erected by Kolenati in 1848 taking *Limnephilus* Leach, 1815 as its type genus. This family is divided into 4 subfamilies: Limnephilinae Kolenati, 1848, Pseudostenophylinae Schmid, 1955,
Drusinae Banks, 1916 & Dicosmoecinae Schmid, 1955. It is by far the largest trichopteran family represented by approximately 100 genera and 884 species all over the globe (Holzenthal et al. 2011). From the Oriental region (excluding India), the family Limnephilidae is represented by 102 species referable to 17 genera. From the Oriental region is represented by 12 genera with 104 species. From India this family is represented by 6 genera with 35 species under 2 subfamilies. These 6 genera are Astratodina Mosely, Asynarchus McLachlan, Pseudostenophylax Martynov, Limnephilus Leach, Phylostenax Mosely and Aplatyphylax Kimmins. Limnephilidae is so far not reported from the ranges of South Indian hills. A complete distribution of Indian species of the family Lepidostomatiaide is given in the table V.

**Key to Indian subfamilies of Limnephilidae**

1. Phallic apparatus with small phallus & parameres forming very large membranous lobe..............................Pseudostenophylacinae Schmid
   - Phallic apparatus with large phallus & parameres forming with small membranous lobes.................................Limnephilinae Kolenati

**Subfamily Limnephilinae Kolenati**

Limnephilinae Kolenati, 1848: 47

**Diagnostic features:** Head shape, eye size, antennal and palpi thickness variable. Eyes and ocelli large and prominent. Maxillary palp of male long and stout. 1st segment of front tarsi occasionally shorter than 2nd. Spurs vary considerably in size and shape. Forewing fairly narrow, truncate or rounded at tip. Hindwing constantly wider, with anal area highly developed. Pilosity
of forewing varies considerably. Venation of primitive and complete type with forks I, II, III and IV present on both pair of wings. Venation very minor and always same in both sexes. In forewings discoidal cell very long.

**Remarks:** Subfamily Limnephilidae is the largest, most flourishing and widely distributed of the various subfamilies. The species are found throughout the Northern hemisphere and inhabit all types of lotic and lentic environments. From the Oriental region this subfamily is represented by 21 species falling under 8 genera. From India this subfamily is represented by 2 genera with 3 species. These 2 genera are *Asynarchus* McLachlan and *Limnephilus* Leach. The present study deals with a genus *Limnephilus* Leach.

**Key to Indian genera of Limnephilinae Kolenati**

1. Pronotum proportional in length to the length of head; intermediate appendage forming triangular, upward slanting plates or spurs; inferior appendage with a small part fused to segment IX, very thin and free portion poorly developed, spines free or dentate………………*Limnephilus* Leach

- Pronotum short; intermediate appendage always small located under superior appendage; Inferior appendage with relatively prominent part fused to segment IX; only small portion free and ends in two points……………………………………………….*Asynarchus* McLachlan
Family Limnephilidae

Genus *Limnephilus* Leach

*Limnephilus* Leach, 1815: 136

Monobasic type species: *Phryganea rhombicus* Linneaus

**Diagnostic features:** Head relatively long & narrow with eyes protruding slightly. Antenna stout, thick & slightly shorter than forewing. Maxillary palp long & slender. Front legs with 1st tarsal segment generally longer than second in both the sexes. Femur and apex of tibia often with black brush-like hairs. Wings medium sized or fairly small. Forewings generally strip-like. Hindwings markedly wider than forewings.

**Distribution:** Holarctic.

**Remarks:** *Limnephilus* Leach is one of the most species diverse genus, with nearly 200 described widely distributed across the Holartic region and as far as Central America. In India by 2 species *L. tibeticus* Schmid and *L. fuscovittatus* Matsumura. The latter is originally described from Japan but Schmid, 1966 also reported this species from Sikkim (India). The present study deals with a single species which is new to science.

**Key to Indian species of *Limnephilus* Leach**

1. Segment IX narrower in lateral view; inferior appendage broader near base and almost truncate apically……………………………….. *L. fuscovittatus* Matsumura
   - Segment IX broader in lateral view; inferior appendage narrowed near base and acute apically……………………………….. *L. morsei* Saini & Parey

*Limnephilus tibeticus* Schmid based on female genitalia only.
Limnephilus morsei Saini & Parey
(Figs. 332-336, 455)

Limnephilus morsei Saini & Parey, 2012

Adults brown in colour. Length of antennae 8-10 mm. Forewing light brown but with dark spots throughout the costal region, hindwing transparent without any dark brown spots both in male and female. Average length of forewing 9.7 mm.

Male genitalia (Figs. 332-334): Segment IX broad, apically rounded, pointed near bottom, base of this segment covered by segment VIII in lateral view; superior appendages rounded, slightly bulged near base, with long setae on its surface, ventrally nearly rectangular, with a spine like process at its centre; intermediate appendages almost hidden behind superior appendage, only base of its appendage visible in lateral view; ventrally intermediate appendage sclerotized, apically bifid, just like comb of cock. Inferior appendages each triangular apically, narrowed near base, reaching to base of segment IX. Phallus elongated, 2 segmented, basal segment much longer, with wing-like projection near base, centrally rounded, apical segment short and rounded. Parameres placed near parallel to one another, apically with a tuft of spines.

Female genitalia (Figs. 335-336): Segment IX apically rounded in lateral view. Segment X with appendage, bifid apically, one apical lobe finger-like and second upper lobe pointed. Subgenital plate median lobe pointed apically, lateral lobe nearly triangular.

Distribution: India: (Jammu & Kashmir, Himachal Pradesh).

Etymology: Species is named after Dr. J. C. Morse (USA) for his outstanding contribution in the systematic of Trichoptera.

Diagnostic combination: This species resembles Limnephilus fuscovittus Matsumura but new species is different from latter by having superior appendage much rounded (nearly rounded in L. fuscovittus); inferior appendage each apically triangular, narrowed near base (in L. fuscovittus rounded apically and broadened near base). Female of new species differs from later by having segment X lower lobe longer than apical lobe (in L. fuscovittus upper lobe longer than lower lobe); segment IX truncate laterally (Segment IX rounded laterally in L. fuscivittus). Female of new species is also different from Limnephilus tibeticus by having segment X bifid apically (truncate in case of L. tibeticus); appendage of X segment reduced in new species (elongated in L. tibeticus). Median lobe of subgenital plate pointed apically (In case of L. tibeticus rounded apically).
Subfamily Pseudostenophylacinae Schmid

Pseudostenophylacinae Schmid, 1955: 102
Type genus: *Pseudostenophylax* Martynov

**Diagnostic features:** Head very wide with eyes and ocelli large and very prominent. Antennae thick and strongly crenulated on inner surface. Maxillary palpi of ♂ long and stout. Spur formula 1, 3, 3 or 1, 3, 4. Abdominal haemogill system absent. Wings fairly broadly rounded with hindwings not much wider than forewings. Membranous of forewings grainy and clothed with erect setae. Venation complete (Figs. 24, 25, 26, 27) with forks I, II, III and V present on both pairs of wings and all of them sessile. In forewings (Figs. 24, 26) discoidal and thyridial cells very long.

**Remarks:** Based on the type genus *Pseudostenophylax* subfamily Pseudostenophylacinae was erected by Schmid on 1955. This subfamily is mainly restricted to the Oriental region but there are 2 species of *Pseudostenophylax* which are endemic to Nearctic region only. In India this subfamily is represented by 5 genera with 33 species. Genus *Pseudostenophylax* Martynov is the largest genus of this subfamily represented by about 68 species from Oriental region.

**Key to Indian genera of Pseudostenophylacinae Schmid**

1. Meso tibia with 3 spurs……………………………………………………………………………..2
   - Meso tibia with 2 spurs……………………………………………………………………………..3
2. Hind wing with specialized scales or specialized setae in the anal region either entirely or partly along $A_2$.........*Pseudostenophylax* Martynov
- Hind wing without such scales or setae…….. *Astenophyllina Mosely*

3. In fore wing, R1 strongly elbowed at base of pterostigma and then noticeably concave near its apex and parallel to R1………… *Aplatphylax Kimmins*

- In fore wing, R₁ not strongly elbowed at base of pterostigma or if so, then R₂ not parallel with it towards its apex………………………………4

4. Fore femur with a groove on its lower surface lined with black setae; fore wing elongate, costal margin rounded, apex sub-acute……………………………………… *Astratodina Mosely*

- Fore femur without groove or specialized spur, forewing elongate, costal margin straight, apex somewhat dilated…………….. *Phylostenax Mosely*

**Genus Pseudostenophylax Martynov**

*Pseudostenophylax* Martynov, 1909: 281

Type species: *Pseudostenophylax fumosus* Martynov (designation by Mosely, 1936)

**Diagnostic features:** Head very wide with eyes and ocelli large and very prominent. Antenna thick (Fig. 6) and strongly crenulated on inner surface. Maxillary palps (Fig. 6) of male long and stout, 1st segment short, 2nd and 3rd more than twice the length of 1st; female 1st segment short, 2nd nearly twice its length, 3rd and 5th longer than 2nd, 4th as long as 2nd. Tibial spurs 1, 2, 2 or 1, 3, 3 or 1, 3, 4. Terminal segment of each tarsus without spines or with two or three very short ones only. Wings fairly broadly rounded and with hind wing not much wider than fore wing. Membrane of forewing grainy and clothed with erect setae. Venation complete with forks I, II, III, and V present on both pairs of wings and all of them sessile. In forewing discoidal and thyridal cells very
long. In hind wing, posterior margin excised in the region of fork V. In anal area of male wing, there are specialized setae or scales.

**Distribution:** Oriental, Nearctic.

**Remarks:** The genus *Pseudostenophylax* is large, with an Oriental distribution centered around the Himalayas and south China. Only 2 species are Nearctic. All the species inhabit streams which generally arise from springs and are occasionally intermittent. From the Oriental region so far 68 species are reported whereas, the Indian fauna contains 23 species. The present work deals with 9 species. *Pseudostenophylax himachalensis* sp. nov. and *Pseudotenophylax gulmargensis* sp. nov. are added new to sciences. *Pseudostenophylax aniketos* is reported first time from India Gurez Valley (Jammu & Kashmir), earlier reported from Pakistan.

**Key to Indian species of *Pseudotenophylax* Martynov**

1. Intermediate appendage forms two lobes………………………………………2
   - Intermediate appendage without lobes………………………………………5

2. Preanal appendage pointed at apex and its superior margin convex only near base; phallus composed of two parts of much unequal length, 2\(^{nd}\) partially overlap 1\(^{st}\) which is little thick at base…………………………………………………………………………………………………………………*P. ithuriel Schmid*
   - Preanal appendage rounded at apex and its superior margin convex; phallus composed of two parts of subequal length, 1\(^{st}\) being conical and 2\(^{nd}\) articulating at base of 1\(^{st}\) …………………………………………3

3. Zone of spicules of tergite VIII forms two concave areas separated by a sufficiently large indentation followed by a depression of the tergite at bottom which is soft and desclerotized; interior part of segment IX concealed under segment VIII……………………………………*P. mitchelli Mosely*
- Zone of spicules of tergite VIII meeting along median line; thus there is no indentation and no desclerotized soft depression of tergite; anterior part of tergite IX not concealed under segment VIII……………………4

4. Zone of spicules of tergite VIII in form of a trapezium with its slight basal longitudinal depression, terminating in two angular lobes; preanal appendages narrow; inferior appendage longer than intermediate appendage………………………………………….. **P. schelpei** Kimmins

- Zone of spicules of tergite VIII relatively short and forming two very weak concavities; preanal appendage shorter than intermediate appendage………………………………………….. **P. arwiel** Schmid

5. Zone of spicules of tergite VIII poorly developed……………………6

- Zone of spicules of tergite VIII well developed and much dense……...8

6. Zone of spicules of tergite VIII long and narrow; preanal appendages long and narrow with internal superior part slightly bulbous; spurs on hind tibia 3………………………………………….. **P. griseolus** Martynov

- Zone of spicules of tergite VIII short and large; preanal appendage clearly triangular; spurs on hind tibia 4…………………………………………..7

7. Zone of spicules of tergite VIII slightly indented ap apex; intermediate appendage pointed and much prominent…… **P. himalayanus** Martynov

- Zone of spicules of tergite VIII not indented at apex; intermediate appendage rounded apically and not much prominent…………………………………. **P. amphion** Schmid

8. Zone of spicules of tergite VIII splitted horizontally; superior part forms a large and prominent cone covered with spicules at superior face only; inferior part found in the former in a plain much inclined in the form of a trapezium; spurs 1, 3, 3…………………………. **P. micraulax** Mosely

- Zone of spicules of tergite VIII not splitted horizontally; spurs 1, 3, 4 or 1, 2, 2………………………………………………………………………………..9

9. Preanal appendage ear-shaped, concave towards the interior and in lateral vertical position…………………………………………………………10
Family Limnephilidae

10. Hindwing carries a row of scales or setae or forms the folds filled with zones of oval scales at A₁ and A₂

- Hindwing with A₁ not carrying the specialized setae or scales; zone of spicules of tergite VIII sufficiently oblique towards the base, angular and undivided. P. ovalis Schmid

11. Preanal appendage with inferior angle not prominent

- Preanal appendage with inferior angle prominent

12. Zone of spicules of tergite VIII divided transversally in a large elliptical basal part and short transversal apical part

- Zone of spicules of tergite VIII not divided but slightly constricted transversally

13. In hind wing, anal area with a very large fold occupying all the space between A₁ and A₂ and attaining two-third the length of wing P. latifalcatus Schmid

- In hind wing, anal area consists of a fold occupying half the length between A₁ and A₂ and slightly longer than half the length of wing P. fambriotifalcatus Schmid

14. A₁ clearly arched and raised at its extreme base and carries a double fringe of short setae; preanal appendage with its apical edge vertical and straight P. falcatus Schmid

- A₁ not arched above the surface of wing and carries sufficiently long fine setae; preanal appendage with its apical edge little concave P. angustifalcatus Schmid

15. In forewing A₁ carries a row of minute scales at three-fourth of its length; ventrally intermediate appendages equal in length to preanal appendage reaching apex of tergite VIII P. tenuifalcatus Schmid

- In forewing, A₁ without scales; ventrally, intermediate appendage shorter than preanal appendage and not reaching apex of tergite VIII

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16. Zone of spicules of tergite VIII slightly constricted laterally in its middle……………………………………………………………………17
   - Zone of spicules of tergite VIII bilobes transversally…………………19
17. Intermediate appendage strongly projecting & with a broad base;
inferior appendage with a large median apical concavity…………………………P. squamolineatus Schmid
   - Intermediate appendage not strongly projecting & with a thin base;
inferior appendage with a short or without median apical concavity……………………………………………………………………18
18. Phallus shorter than parameres, without any spike at its centre;
parameres apically rounded…………………………………P. pauper Schmid
   - Phallus longer than parameres, with a pair of spikes originating near its
centre; parameres apically pointed………………P. himchalica sp. nov
19. Preanal appendage broader; Parameres slender..P. acutifalcatus Schmid
   - Preanal appendage narrower; Parameres cylinder.. P. angulatus Schmid
20. Preanal appendage triangular…………………………………………………21
   - Preanal appendage oval……………………………………………………24
21. Zone of spicules with two dense transverse parallel rows of spicules;
inferior appendage rounded apically; spurs 1, 2, 2……………………………………P. garhwalensis Schmid
   - Zone of spicules simple & with no rows of dense spicules; inferior
appendage truncate or pointed apically………………………………………22
22. Zone of spicules simple & without any particular shape; inferior
appendage truncate apically……………….. P. kashmirensis Mosely
   - Zone of spicules complex & with a particular shape; inferior appendage
pointed apically………………………………………………………………23
23. Preanal appendage with a hump-like structure on its dorsal surface;
parameres apically rounded……………………………………..P. aniketos Schmid
   - Preanal appendage smooth on its dorsal surface; parameres pointed
apically……………………………………………………………………..P. gulmargensis sp. nov.
24. Zone of spicules of tergite VIII forms three concavities; length of inferior appendage less than preanal appendage… *P. nectarion* Schmid
- Zone of spicules of tergite VIII forms one concavity; length of inferior appendage more than preanal appendage………… *P. glycerion* Schmid

*Pseudostenophylax indicus* Navas is based on female genitalia only.

**Pseudostenophylax aniketos** Schmid
(Figs. 337-341)

*Pseudostenophylax aniketos* Schmid, 1961: 216
Average length of forewings 15-16 mm. Body light brown except thorax which is dark brown.

**Male genitalia (Figs. 337-340):** Zone of spicules of tergite VIII in the hexagonal form. Segment IX moderately developed in lateral and ventral view; segment IX apicodorsally truncate in ventral view. Preanal appendages almost as long as intermediate appendages, slender, apically with 5 spines; laterally preanal appendages triangular, slightly bulged near middle at its upper surface. Intermediate appendages much prominent, almost squarish and apicodorsally produced in dorsal view; laterally intermediate appendages appears two branched, one branch is horizontally placed and the second branch inclined inwards. Inferior appendages each slightly excised near centre, produced into rounded structure near its ends in dorsal view; ventrally each plate of inferior appendage oval-shaped. Phallus with a pair of lobes near its centre bearing tuft of setae. Parameres apically rounded strongly armed with spines at apex of its external edge.
Female genitalia (Fig. 341): Segment IX with distinct tergite and sternite in lateral view. Segment X broadened near base and apically truncate in lateral view. Supragenital plate dome-shaped.

Holotype depository: ROM (Canada).

Material examined: Jammu & Kashmir: Kanzalwan, 2500 m, 04-vii-2011, 1♂ 1♀ Sonmarg, 2800 m, 26-vii-2011, 1 ♂.

Distribution: Pakistan: India (Jammu & Kashmir).

Diagnostic combination: The key character by which Pseudostenophylax aniketos Schmid differs from its closely allied species Pseudostenophylax ithuriel Schmid are as follows: Zone of spicules of tergite VIII hexagonal shaped in case of former whereas, zone of spicules of tergite VIII rounded in case of latter. Inferior appendage rounded apically, parameres membranous in case of Ps. aniketos whereas, inferior appendage pointed apically, parameres sclerotized in case of Ps. ithuriel.
Family Limnephilidae

*Pseudostenophylax mitchelli* Mosely

(Figs. 342-345)

*Pseudostenophylax mitchelli* Mosely, 1936: 13-14

Average length of forewings 14 mm. Body light brown.

**Male genitalia (Figs. 342-345):** Zone of spicules of tergite VIII in two rounded lobes, each lobe placed to at the edge of tergite VIII. Segment IX moderately developed in lateral and ventral view; produced posteriorly and showing a triangular prominence near its anterior surface in lateral view; ventrally segment IX horse-shoe shaped, broadened near side and narrow near centre. Preanal appendage each leaf-like, curved near base in dorsal view; cylindrical in lateral view. Intermediate appendage each pointed near its edges in dorsal view; vertically placed in lateral view. Inferior appendages each well developed, widely excised near centre, broadened near base and apically produced as rounded lobe in dorsal view; ventrally each inferior appendage right angled form. Phallus apically excised. Parameres membranous and apically armed with spines.

**Holotype depository:** Untraceable.

**Material examined:** Jammu & Kashmir: Aphanwat, 4000 m, 1 ♂ 1 ♀, 30-vii-2009 Khilanmarg, 3100 m, 03-ix-2008, 2 ♂♂ Izmarg, 2700 m, 29-vi-2009, 1 ♂.

**Distribution:** India (Jammu & Kashmir).
**Diagnostic combination:** The key character by which *Pseudostenophylax mitchelli* Mosely differs from its closely allied species *Pseudostenophylax amplus* McLachlan are as follows: Inferior appendage excised apically in dorsal view in case of former whereas, inferior appendage truncate apically in case of latter. Zone of spicules of tergite VIII prominently rounded and much darker in case of *Ps. mitchelli* whereas, zone of spicules of tergite VIII roughly rounded and lighter in colour in case of *Ps. amplus*.

*Pseudostenophylax latifalcatus* Schmid

**(Figs. 346-349, 454)**

*Pseudostenophylax latifalcatus* Schmid, 1991: 43
Average length of forewings 19-20 mm. Body dark brown except abdomen which is light brown.

**Male genitalia (Figs. 346-348):** Zone of spicules of tergite VIII posterioly truncate and apically rounded in dorsal view. Segment IX moderately developed in lateral and ventral view; anteriorly with a triangular projection in lateral view and slendrical narrow lobe in ventral view. Preanal appendage each cylindrical and rounded bearing long setae in dorsal view; somewhat rectangular in lateral view. Intermediate appendage slendrical in dorsal view and curved inward and vertically placed in lateral view. Inferior appendage each moderately developed in dorsal view and triangular in lateral view. Phallus apically excised. Parameres enlarged, apically slendrical and bearing spines on its apex.
Female genitalia (Figs. 349): Segment IX with distinct tergite and sternite in lateral view. Segment X broadened near base and apically produced into a slendrical lobe. Supragenital plate very prominent and apically rounded.

Holotype depository: ROM (Canada).

Material examined: Sikkim: Lachen, 3100 m, 24-v-2011, 10 ♂♂ 13 ♀♀.

Distribution: Nepal: India (Sikkim).

Diagnostic combination: The key character by which Pseudostenophylax latifalcatus Schmid differs from its closely allied species Pseudostenophylax angulatus Schmid are as follows: Inferior appendage each apically pointed in lateral view in case of former whereas, inferior appendages each apically truncate in case of latter. Parameres slendrical in case of Ps. latifalcatus whereas, parameres apically cylindrical in case of Ps. angulatus.

Pseudostenophylax griseolus Martynov
(Figs. 350-353)

Pseudostenophylax griseolus Martynov, 1936: 302
Average length of forewings 8-8.5 mm. Body dark brown. Antenna, maxillary palpi and legs light brown in colour. Body uniformly covered with inconspicuous golden pubescence. In the forewing costa carries a row of long fulvous setae upto half of its length.

Male genitalia (Figs. 350-353): Zone of spicules of tergite VIII long, narrow and simple. Segment IX apicoventrally produced as triangular structure; lateral
sides of this segment somewhat rounded. Inferior appendages somewhat oval shaped, broadened near lateral sides and constricting near mesal sides, bearing long hairs on its upper surface in ventral view; in lateral view inferior appendage not very long but large with apical edge slightly indented and relatively long and narrow with its internal superior part slightly bulbous in lateral view. Intermediate appendage rounded apically in lateral view and pointed at apex in dorsal view. Phallic apparatus large with phallus short and clearly indented at apex; sclerotized part of parameres strong and large.

**Holotype depository:** Untraceable.

**Material examined:** Himachal Pradesh, Kothi, 2900 m, 2♂, 06-vii-2009.

**Distribution:** Bhutan: India (Himachal Pradesh).

**Diagnostic combination:** The key character by which *Pseudostenophylax griseolus* Martynov differs from its closely allied species *Pseudostenophylax amphion* Schmid are as follows: Zone of spicules of tergite VIII short and large; preanal appendages triangular and number of spurs on hind tibia 4 in case of former whereas, in case of latter zone of spicules of tergite VIII long and narrow; preanal appendage long and narrow with its internal superior part slightly bulbous and number of spurs on hind tibia 4.
Pseudostenophylax schelpei Kimmins
(Figs. 354-358)

Pseudostenophylax schelpei Kimmins, 1950: 906


**Male genitalia** (Figs. 354-357): Zone of spicules of tergite VIII uniformly brilliant black, appears in the form of a trapezium, in dorsal view, with two slight longitudinal basal depression and terminating in two angular lobes. Segment IX short and obtuse at height of the lateral faces; somewhat cylindrical in ventral view. Inferior appendages as long as wide with a deep internal indentation; triangular in ventral view, broadened near base and apically protruding as triangular lobe. Preanal appendage long, narrow and thin, arched towards the base and interior. Intermediate appendage vertical, thin spur-shaped, jointed to one another and slightly arched in front.

**Female genitalia** (Fig. 358): Segment IX situated very low and without distinct tergite and sternite. Segment X long, pointed and tube-like in lateral view. Supragenital plate small and lying below segment X.

**Holotype depository:** NHM (London).

**Material examined:** Uttarakhand: Badrenath, 3100 m, 24-vi-2008, 1 ♂
Govindham, 3200 m, 22-vi-2008, 2 ♂♂.
Family Limnephilidae

Distribution: India: (Uttarakhand, Himachal Pradesh).

Diagnostic combination: The key character by which *Pseudostenophylax schelpei* Kimmins remains far apart from its closely allied species *Pseudostenophylax arwiel* Schmid have been discussed under the latter.

*Pseudostenophylax arwiel* Schmid

(Figs. 359-362)

*Pseudostenophylax arwiel* Schmid, 1991: 35

Average length of forewings 8-8.5 mm. Body dark brown. Antenna, maxillary palpi and labial palp light brown. Forewing fuscous with yellow spots. Hindwing subhyaline. Body uniformly covered with inconspicuous fuscous pubescence. In forewing costa with very long setae present only at basal half.

Male genitalia (Figs. 359-362): Zone of spicules of tergite VIII relatively short, without particular shape and forming two weak apical concavities. Segment IX moderately developed and rectangular in ventral view. Inferior appendage as long as large and with a deep internal indentation. Preanal appendage appear oval, largely round except at its inferior edge which is concave in lateral view. Intermediate appendage long, thin and spur-like, narrowly jointed to one another and slightly curved in front.

Female genitalia: Unknown.

Holotype depository: ROM (Canada).

Distribution: India (Jammu & Kashmir, Uttarakhand).

Diagnostic combination: The key character by which *Pseudostenophylax arwiel* Schmid differs from its closely allied species *Pseudostenophylax schelpei* Kimmins are as follows: Zone of spicules of tergite VIII trapezium in case of former whereas, zone of spicules of tergite VIII without any particular shape in case of latter. Inferior appendage longer than intermediate appendage in case of *Ps. arwiel* whereas, inferior appendage shorter than intermediate appendage in case of *Ps. schelpei*.

*Pseudostenophylax micraulax* (Martynov)  
(Figs. 363-366)

*Pseudostenophylax micraulax* Martynov, 1936: 240  
*Pseudohalesus aberrans* Mosely, 1936: 464-465  
*Pseudohalesus granulatus* Martynov, 1928: 482-483  
*Pseudohalesus kaschmirus* Martynov, 1928: 481-482  
*Halesus asiaticus* Ulmer, 1907: 213

**Family Limnephilidae**

**Male genitalia (Figs. 363-366):** Tergite VIII with zone of spicules very strong and splitted horizontally, its superior part form a prominent cone with setae at superior face only and inferior part is found in the former in a plain much inclined and in the form of a trapezium. Segment IX with its apical edge not concave, but its median angle much obtuse and strongly convex, almost rectangular in ventral view. Inferior appendages massive and with its apical edge slightly depressed. Intermediate appendage sufficiently thin and vertical, blade-like arranged transversally. Phallic apparatus of large size; phallus composed of two overlapped parts; inferior basal part conical; superior apical part desclerotized and articulate at base with the former. Parameres with basal membranous part cylindrical, sclerotized part thin, truncated and spiny at its apex.

**Holotype depository:** Untraceable.

**Material examined:** Jammu & Kashmir: Khilanmarg, 3200 m, 30-ix-2008, 1 ♂, 8 ♀♀ Kanzalwan, 2700 m, 28-vi-2009, 1 ♂ Sonmarg, 3100 m, 11-viii-2008, 05-viii-2009, 1 ♀, 3 ♂♂. Himachal Pradesh: Barot, 2900 m, 28-v-2008, 2 ♂♂ Marhi, 3100 m, 08-viii-2008, 1 ♂.

**Distribution:** China: Kazakhstan: Pakistan: India (Jammu & Kashmir, Himachal Pradesh, Uttarakhand).

**Diagnostic combination:** This species is isolated from all other species discussed under this genus on the basis of following characters: Spurs 1, 3, 3; zone of spicules of tergite VIII much prominent and splitted horizontally and not vertically.
Pseudotenphylax gulmargensis sp. nov.  
(Figs. 367-371)

Average length of forewing 17-18 mm. Body reddish brown in colour. Spines on legs blackish and spurs light brownish. Spur formula 1, 3, 4. Average length of maxillary palpi 2.91 mm.

Male genitalia (Figs. 367-370): Zone of spicules of tergite VIII crescent-shaped in outline in dorsal view. Segment IX moderately developed in lateral and ventral views but reduced dorsally; it shows a triangular prominence near its centre in lateral view. Segment X highly reduced. Preanal appendage cylindrical in dorsal view and rounded apically; laterally appearing as a long triangular lobe. Intermediate appendage forming two lobes in dorsal view, each lobe broadened near base and apicodorsally acutely produced; laterally intermediate appendage lying almost vertically above the preanal appendage, rounded at its upper side and with a small triangular prominence at bottom side. A large membranous structure is situated below the intermediate appendage in dorsal view, and in lateral view the same structure appears somewhat spoon-shaped. Inferior appendage large, and oval in outline in dorsal view whereas, laterally it is somewhat finger-like; in ventral view it is apically rounded with a small pointed projection near centre. Phallus apically rounded and with a pair of small stalks bearing long setae on its surface. Parameres apically much bulged and strongly armed with spines at apex of its external edge, a small acute projection near tip is visible in dorsal view.

Female genitalia (Fig. 371): Segment IX with distinct tergite and sternite in lateral view. Segment X rounded near base and acutely pointed near apex.
Family Limnephilidae

Supragenital plate very prominent with a small cleft near base and apically rounded.

**Material examined:** Holotype ♂: India: Jammu & Kashmir, Gulmarg, 2800 m, 19-viii-2010. Paratype: 1 ♀ with same data as that of holotype.

**Distribution:** India (Jammu & Kashmir).

**Etymology:** The name of the species is based on the type locality “Gulmarg” (Jammu & Kashmir).

**Diagnostic features:** This species closely resembles *Pseudostenophylax kashmirensis* Mosely but can be differentiated from it by having intermediate appendages apically slendrical in dorsal view (intermediate appendage apically triangular in dorsal view in *Pseudostenophylax kashmirensis*), when seen laterally intermediate appendage apically single branched (when seen laterally intermediate appendage apically two branched in *Pseudostenophylax kashmirensis*); preanal appendage apically clubbed (preanal appendages apically slightly rounded in *Pseudostenophylax kashmirensis*); phallus apically rounded (phallus apically slendrical in *Pseudostenophylax kashmirensis*); parameres apically pointed near tip (parameres apically not pointed near tip rather slightly triangular in *Pseudostenophylax kashmirensis*).
Family Limnephilidae

Pseudostenoplylax himachalica sp. nov.
(Figs. 372-376)

Average length of forewing 16-17 mm. Body dark brown in colour. Spines on legs blackish and spurs brownish in colour. Spur formula is 1, 3, 4. Average length of maxillary palpi 2 mm.

Male genitalia (Figs. 372-375): Zone of spicules of tergite VIII concave at its sides and apicodorsally produced into a triangular process. Segment IX appears moderately developed in lateral and ventral view but reduced dorsally; in lateral view this segment is apically truncate, showing a weak prominence at its posterodorsal angle; however, in ventral view segment IX is more developed and broadened near middle. Segment X highly reduced. Preanal appendages serrated near its base and apically cylindrical in dorsal view; laterally it is broadened near base and apically curved and pointed upwards. Intermediate appendages forming two antagonistically curved lobes with broadened base in dorsal view, finger-like and almost vertically produced in lateral view; a bilobed membranous area is lying below the intermediate appendage in dorsal view. Inferior appendage apically rounded and broadened near base in lateral view, excised in centre forming two plates and each plate rounded near its lateral sides and mesally bearing a small triangular prominence in dorsal view; ventrally each plate apically concave. Phallus long, centrally thin with a pair of spines at each side, apically and basally thick. Parameres curved apical sclerotized part beak-like and strongly armed with spines at apex of its external edge.
**Family Limnephilidae**

**Female genitalia (Fig. 376):** Segment IX consists of distinct tergite and sternite laterally. Segment X triangular & broadened near base laterally. Supragenital plate absent.

**Material examined:** Holotype ♂: India: Himachal Pradesh, Sathrundi, 2800 m, 12-vi-2011. Paratype: 3 ♂♂ and 2 ♀♀ with same collection data as of holotype.

**Distribution:** India (Himachal Pradesh).

**Etymology:** The name of the species is based on the state Himachal Pradesh from where the type specimen was collected.

**Diagnostic features:** This species closely resembles *Pseudostenophylax secretus* Martynov but its distinctive features include: zone of spicules of tergite VIII apically pointed (zone of spicules of tergite VIII apically rounded in *Pseudostenophylax secretus*); intermediate appendages apically triangular in dorsal view and slendrical in lateral view, (intermediate appendages slightly pointed apically in dorsal view and cylindrical in lateral view in *Pseudostenophylax secretus*); preanal appendage curved upwards in lateral view (preanal appendage straight in *Pseudostenophylax secretus*); phallus centrally with a pair of spines (phallus without any spines in *Pseudostenophylax secretus*); parameres apically beak-like (parameres apically C-shaped in *Pseudostenophylax secretus*).
Family Limnephilidae

Genus *Astratodina* Mosely

*Astratodina* Mosely, 1936


**Diagnostic features:** Antennae slender, about the length of the anterior wings, basal joint large and rounded, particularly on the inner side, next joint short; maxillary palpi male, first joint short; second long, about four times the length of the first; third slightly shorter than the second; female basal joint short, about half the length of the second; third slightly longer than second; fourth slightly longer than the first; fifth about as long as the second. Forewing (Fig. 24) elongate, costa somewhat rounded, apex sub-acute discoidal cell long both in anterior as well as posterior wing (Fig. 25). Anterior femur with a groove lined with black setae which are present also on the tibiae, without spurs; first tarsal joint more than twice the length of the second; spines black, no spines on the terminal tarsal joints; spurs 0, 2, 2 ♂; 1, 2, 2 ♀.

This genus was erected by Mosely in 1936 with *Astratodina inermis* as its type species. Only 2 species i.e. *Astratodina antenor* Schmid, 1991 and *Astratodina anteros* Schmid, 1991 were known from the Indian fauna both of which are reported from the Himalayan region. The present study deals with 3 species of this genus, among which *Astratodina inermis* Mosely is a new report to Indian fauna earlier reported from Pakistan.
Key to the Indian species of *Astratodina* Mosely

1. Tergite VIII with much developed paired zones of spicules almost confluent with each other along the median line; intermediate appendage trifid and laterally it is not masked by preanal appendage............ *A. antenor* Schmid
   - Tergite VIII with a paired zone of spicules clearly separated from one another; intermediate appendage bifid and laterally it is entirely masked by preanal appendage................................................................. 2

2. Phallus longer than parameres, apically truncate........... *A. anteros* Schmid
   - Phallus shorter than parameres, apically excised........... *A. inermis* Mosely

*Astratodina antenor* Schmid

(Figs. 377-380)

*Astratodina antenor* Schmid, 1991: 58

**Male genitalia (Figs. 377-380):** Tergite VIII with zone of spicules much developed, well large and two parts jointed to one another; half of segment IX concealed under VIII, ventrally broadened near its sides and narrowed near its centre; inferior appendage with its apical edge slightly concave, in lateral aspect, and its apex sufficiently prominent, when seen ventrally inferior appendage in the form of a broad triangular lobe but its apices are truncate; segment X not distinct; preanal appendage in dorsal position and does not mask the intermediate appendage in lateral view, but are lying above them, the latter not fused with edge of segment IX; intermediate appendage trifid, viewed from side, of complex form and reaching upto the apical edge of preanal appendage; parameres thin and narrow.
Family Limnephilidae

Holotype depository: ROM (Canada).

Material examined: Sikkim: Lachung, 3200 m, 15-v-2009, 6 ♂♂ 2♀♀.

Distribution: India (Sikkim).

Diagnostic combination: Astratodina antenor Schmid is characterized by more dark and pilosite of forewing much developed and is distinct from its allied species Astratodina anteros Schmid by the key characters such as: in the former, preanal appendage in relatively dorsal position and the intermediate appendage trifid while in latter, preanal appendage in lateral position is completely masking the intermediate appendage which is bifid.

Astratodina anteros Schmid
(Figs. 381-384)


Male genitalia (Figs. 381-384): Tergite VIII with zone of spicules divided in two parts well separated from one another; one-fourth of segment IX concealed under VIII, inferior appendage divided into much broadened lobe and form a C-shaped cavity posteriorly; inferior appendage obtuse, viewed from side, it appears large, subcircular and entirely masking the intermediate appendage, largely fused at edge of segment IX, ventrally inferior appendage almost rectangular with apices slightly pointed; intermediate appendage bifid, in lateral aspect, ending in two points unequally thick but sharp and equally long; parameres thin, regularly curved outwards at apex and its base moderately concave laterally.
Holotype depository: ROM (Canada).

Material examined: Himachal Pradesh: Marhi, 3200 m, 08-viii-2008, 3♂♂ Solang Valley, 2500 m, 15-vii-2009, 3 ♂♂ 2 ♀♀.

Distribution: India: (Himachal Pradesh).

Diagnostic combinations: Astratodina anteros Schmid is characterized by its preanal appendage subcircular, viewed from side, and completely masking the intermediate appendage, intermediate appendage bifid and its internal apical point subcylindrical and curved laterally. The key characters by which it differs from its closely allied species Astratodina antenor Schmid have been discussed under the latter.

Astratodina inermis Mosely
(Figs. 385-388, 452)

Astratodina inermis Mosely, 1936: 450-451

Head dark brown, antenna light brown in colour; maxillary palpi and legs brownish. Forewing elongate and granulous membrane.

Male genitalia (Figs. 385-388): Tergite VIII with zone of spicules tetragonal in shape in dorsal view; segment IX moderately developed in lateral view, half of this concealed under segment VIII; segment X not distinct; preanal appendage rounded in lateral aspect and conceals whole of the intermediate appendage, when seen dorsally preanal appendage somewhat rounded near ends and narrowed towards base; intermediate appendage horse-shoe shaped in lateral view, nearly rectangular in dorsal view apically sclerotized and curved at basal corner; inferior appendage rounded in dorsal and in lateral view; parameres
longer than phallus, much membranous near base and apically slendrical, sclerotized and curved outwards.

**Holotype depository:** NHM (London).

**Material examined:** Jammu & Kashmir: Songmarg, 3100 m, 20-vii-2011, 2 ♂♂. Kanzalwan, 2300 m, 04-vii-2011, 1 ♂.

**Distribution:** Pakistan: India (Jammu & Kashmir).

**Diagnostic features:** *Astratodina inermis* Mosely differs from other species of this genus by having zone of spicules of tergite VIII tetragonal; intermediate appendages horse-shoe shaped; inferior appendages rounded in outline; parameres longer than phallus.
Genus *Phylostenax* Mosely


Type species: *Phylostenax himalus* Mosely (Original designation).

**Diagnostic features:** Insects large and brown, somewhat resembling *Pseudostenophylax* species but without the specialized scales of hind wing. Fore wing somewhat elongate, costal margin straight, apex only slightly dilated. In both wings second apical cellulæ very broad and fork III very acute at base. In fore wing (Fig. 26) discoidal cell rather long and narrow, that of hind wing (Fig. 27) very broad at its distal end. Maxillary palp male, 1<sup>st</sup> segment small, 2<sup>nd</sup> and 3<sup>rd</sup> long and approximately equal in length. Legs, terminal tarsal segments with very few black spines. Tibial spurs 1, 2, 2.

**Distribution:** Oriental, Palearctic.

**Remarks:** Genus *Phylostenax* was erected by Mosely in 1936a taking *Phylostenax himalus* as its type species. Mosely first placed *himalus* species in the genus *Platyphylax* on the basis of number of tibial spurs. But McLachlan considered that the European species *Platyphylax frauenfeldi* was typical of the genus and that of the ultra European species would be better placed in other genera. So, Mosely created a new genus for this species. Genus *Phylostenax* has so far been reported by only one species. This species is abundantly available in whole of the Oriental and the Palearctic region.
Phylostenax himalus Mosely
(Figs. 389-392)

Phylostenax himalus Mosely, 1936: 469

Male genitalia (Figs. 389-392): Tergite VII with zone of spicules grouped in two round masses towards the side of the segment; segment IX reduced dorsally with its posterior edge not concave, ventrally segment IX slightly broadened near its side and narrowing centrally; inferior appendage single segmented, very small and wide, towards the centre is a tuft of black spines, ventrally inferior appendage in the form of a rounded balls; segment X not visible; Preanal appendage little developed and oval in lateral view; intermediate appendage situated very high, spur-shaped and branched, upper branches project beyond the margin of segment, appearing as two divergent rod-like processes, lower branch heavily chitinised and from above somewhat widely separated, broad, inclining towards each other, apices wide, truncate and turned slightly upwards.

Holotype depository: Untraceable.


FAMILY APATANIIDAE

Apataniidae Wallengren, 1886: 73.
Type genus: *Apatania* Kolenati, 1848 (original designation)
Apataniinae Ulmer, 1903: 74.
Type genus: *Apatidea* McLachlan, 1876.

**Diagnosis:** Head short with sides bulging. Eyes small. Maxillary palp 3 segmented in case of males (Fig. 7) and 5 segmented in case of females. Usual pattern of tibial spurs is 1, 2, 2 or 1, 2, 4. Wings medium sized with constant shape, similar in both sexes. Forewings elongated and obliquely elliptical with complete venation in which sub-costa ends on a cross vein joining the radius and the costal margin. Forks I, II, III and V present in both wings.

**Remarks:** Family Apatanniidae was described as a separate family by Wallengren in 1886. Ulmer (1903) considered it as a subfamily of Limnephilidae. Wiggins (1996) treated the group as a distinct family and subsequent workers has accepted this designation. This is a northern and montane group found in North America, Europe and Asia. There are nearly about 203 species and 21 genera Worldwide (Holzenthal et al. 2011). From India this family is represented by 4 genera with 24 species. These genera include *Apatania* Kolenati (8 species), *Apataniana* Mosely (1 species), *Moropsyche* Banks (11 species) and *Notania* Mosely (4 species).
Key to Indian genera of Apataniidae Wallengren

1. In hindwing discoidal cell open; spurs 1, 2, 2 or 1, 3, 4 or 1, 2, 3……2
   - In hindwing discoidal cell closed; spurs 1, 2, 4……Apataniana Mosely
2. 2nd segment of inferior appendage glabrous…………..Apatania Kolenati
   - 2nd segment of inferior appendage spiniform…………………………3
3. Discoidal cell in forewing closed; spurs 1, 2, 3……Moropsycche Banks
   - Discoidal cell in forewing open, spurs 1, 3, 4…………Notania Mosely

Genus Apatania Kolenati

Apatania Kolenati.1848 : 75.
Type species: Phryganea vestita (desig. by Fischer, 1967).

Diagnostic Features: Head relatively narrow with sides bulging. Eyes small. Maxillary palp of male, 1st segment about half the length of 2nd which is slightly shorter than 3rd; female, basal segment short, about two-thirds the length of 2nd, 3rd equal to 2nd, 4th equal to 1st and slightly shorter than 5th. Antennal basal segment large, 2nd very short, remaining segments each longer than 2nd. Venation complete with all forks (FII, FIII, FIV & FV) present. In forewing (Fig. 10), sub-costa ends abruptly on a transverse vein joining costa and the radius; radius heavily fringed with short thick setae; discoidal cell rather short and curved slightly upwards; fork I and III narrow or pointed. In hind wing (Fig. 11), discoidal cell open and fork I very short (Fig. 4). Tibial spurs 1, 2, 2 or 1, 2, 4.

Distribution: Holoarctic.
**Remarks:** Genus *Apatania* Kolenati is large and of Holoarctic distribution. It contains about 130 species half of which are Nearctic. *Apatania* species are essentially stenothermic *i.e.* dwelling in the cold springs. From the Oriental region, this genus is represented by 30 species, amongst which 8 species are from India.

All the Indian species are recorded from the Himalayan region. Mosely (1936) and Kimmins (1950) are credited with 1 species each from Jammu and Kashmir and Arunachal Pradesh respectively. Schmid (1968) contributed 4 species from Uttaranchal, Arunachal Pradesh and Sikkim. Mey & Malicky (1993), Olah (2011) each contributed one species from Himachal Pradesh and Arunachal Pradesh respectively. A complete distribution of Indian genus of *Apatania* is given in the table VI. The present study deals with 2 species.

**Key to Indian species of *Apatania* Kolenati**

1. Preanal appendage entirely fused with base of external branch of segment X; external branch of segment X convexly curved..........................*A. devisaraspali* Schmid
   - Preanal appendage directed upwards or curved downwards; external branch of segment X almost straight.................................2
2. External branch of segment X narrow at its base and gradually broadened towards its apex having a thick tuft of black setae……..3
   - External branch of segment X with an almost uniform thickness throughout possessing only few setae at its apical end...................5
3. External branch of segment X 4 times longer than preanal appendage with its apex twisted inward and then upwards…*A. avydhagada* Schmid
   - External branch of segment X 3 times longer than preanal appendage, with its apex straight.........................................................4
4. Internal branch of segment X apically clubbed in dorsal view; preanal appendage directed upwards in lateral view……**A. bhimagada Schmid**
   - Internal branch of segment X apically truncate with slightly excised surface; preanal appendage curved downwards in lateral view.................................................................**A. hatra Olah**

5. External branch of segment X apically pointed; inferior appendage with a small basal cleft in lateral view…..**A. auctumnalis Mey & Malicky**
   - External branch of segment X apically rounded; inferior appendage without basal cleft in lateral view………………………………………………………….6

6. Second segment of inferior appendage only one-fourth the length of the basal segment in lateral view; external branch of segment X almost 2.5 times more than preanal appendage………………**A. brevis Mosely**
   - Second segment of inferior appendage almost as long as the basal segment in lateral view; external branch of segment X almost 4 times more than preanal appendage……………………………………………………………7

7. 1st segment of inferior appendage broadly rounded in lateral view; external branch of segment X apically rounded...**A. dirghabahu Schmid**
   - 1st segment of inferior appendage almost rectangular in lateral view; external branch of segment X apically coin-shaped...**A. extent Schmid**
Apatania bhimagada Schmid
(Figs. 393-396)


Average length of forewing 6-10 mm. Body nigrescent. Maxillary palpi, labial palps and legs are brown. Hindwing subhyaline. Body uniformly covered with simple, mixed golden brown pubescence.

Male genitalia (Figs. 393-395): Segment IX well developed. 1\textsuperscript{st} segment of inferior appendage very thick and concave towards the exterior and the base; 2\textsuperscript{nd} segment slightly longer than 1\textsuperscript{st}, in lateral view, but more large and angular, in ventral aspect. Segment X short. preanal appendage free and attain one-third the length of external branch of segment X; external branch of segment X of considerable size, gradually thickened upto apex, equally concave at base, apex twisted at right angle towards the base and armed with a thick brush of black setae; internal branches of segment X fused in a thin band almost equal in length to that of inferior appendage. Phallus carries few subapical and apical spines. Paramere abruptly curved and sinuate at apical third.

Female (Fig. 396): Segment VIII without distinct tergite and sternite. Segment IX forms two ventrolateral quadrangular lobes. Segment X widely indented laterally.

Holotype depository: ROM (Canada).

Material examined: Arunachal Pradesh, Loomla, 2900 m, 3 ♂♂, 07-x-2010.
**Distribution:** India (Arunachal Pradesh).

**Diagnostic combination:** The key characters which keep *Apatania bhimagada* Schmid far apart from its closely allied species *Apatania avyddhagada* Schmid are: Apex of external branch of segment X is bent in a right angle towards the base and preanal appendage comparatively longer in case of former whereas, external branch of segment X twisted inwards and then upwards to almost 180° in case of latter.

*Apatania brevis* Mosely  
(Figs. 397-400)

*Apatania brevis* Mosely, 1936: 477-478

Average length of forewing 5-9 mm. Head & ocelli black. Maxillary palp and labial palp brownish. Hindwings subhyaline.

**Male genitalia** (Figs. 397-399): Segment IX well developed. inferior appendage 2 segmented; 1st segment short, very stout & rounded; 2nd segment turned inwards and rather pointed in lateral view. Segment X with external branch very long, strongly chitinised, apically dilated and slightly turned downwards in lateral view; internal branches of segment X wide at base and produced in a long, slender & turned downwards in lateral view. Preanal appendage cylindrical in dorsal view and upwardly produced in lateral view. Phallus apically excised in ventral view, bearing a tuft of setae at its corners. Parameres broadened near base and criss-crossing one another in ventral view.
Female genitalia (Fig. 400): Segment VIII without distinct tergite and sternite. Segment IX with a finger-like processes near its base in lateral view. Segment X apically with a U-shaped excision in lateral view.

Holotype depository: NHM (London).

Material examined: Jammu & Kashmir: Varinag, 2200 m, 16-viii-2010, 3 ♂♂ 2♀♀; Kangan 2000 m, 19-viii-2010, 1 ♂; Apharwat, 4000 m, 25-viii-2010, 1 ♂.

Distribution: India (Jammu & Kashmir).

Diagnostic combination: The key characters which keep Apatania brevis Mosely far apart from its closely allied species Apatania dirghabahu Schmid are: 2nd segment of inferior appendage reduced & rounded in case of former whereas, 2nd segment of inferior appendage prominent & triangular in case of latter. Phallus with prominent setae at its corners in case of A. brevis whereas, phallus without setae in case of A. dirghabahu.
**Genus Apataniana Mosely**

*Apataniana* Mosely, 1936: 75.

Type species: *Apataniana hutchinsoni* Mosely (original designation).

**Diagnostic features:** Head relatively wide. Eyes small. Maxillary palpi male, 1\textsuperscript{st} segment about half the length of the 2\textsuperscript{nd} which is slightly shorter than 3\textsuperscript{rd}; female, 1\textsuperscript{st} segment less than half the length of 2\textsuperscript{nd}, 3\textsuperscript{rd} segment almost as long as 1\textsuperscript{st} and 2\textsuperscript{nd} combined, 4\textsuperscript{th} segment slightly shorter than 5\textsuperscript{th} which is about twice the length of 1\textsuperscript{st}. Antenna slender, about the same length as forewing, basal segment large, 2\textsuperscript{nd} short, remaining segments each longer than 2\textsuperscript{nd}. Forewing alike in both sexes (fig. 12-13), sub-costa ending in a cross-vein joining the costa to radius. Forks I, II, III and V present. Discoidal cell closed, moderately long and narrow. Hind wing (fig. 13) broader than forewing, sub-costa parallel with radius, construction differing in the sexes; in male there is a narrow fold or flap along costal margin towards the base of wing lined with coarse yellow setae; this fold is wanting in female. Discoidal cell closed. Forks 1, II, III and V present, in male, radius running into the first apical sector, first apical fork short and rather broad at the base, 2\textsuperscript{nd} as long as the 3\textsuperscript{rd} which is sessile, 5\textsuperscript{th} short and with a distinct foot stalk. Tibial spurs 1, 2, 4.

**Distribution:** Oriental (India, Pakistan).

**Remarks:** This genus was erected by Mosely in 1936 to take the new species *hutchinsoni* from Tibet in which the characters of venation differ considerably from all other genera in Apataniidae. This genus is represented by a single species from India while 2 species are on record from Pakistan. The present study deals with only one species.
**Apataniana charadija Schmid**

*(Figs. 401-402)*


**Male genitalia** *(Fig. 401-401):* Segment IX well developed and broadly excised; inferior appendage 2-segmented, 1st segment long, thin and sub-cylindrical; 2nd segment about half the length of 1st and carries some sharp conical spines in sub-apical position; segment X much thick, very high and trilobed at apex; preanal appendage not visible; dorsal lobe of segment X not distinct from internal branches of segment X, all three fused and appear like a large black lobe, with concave sides, widened before its apex, then abruptly thin and shorter than external branches; external branch simple and in lateral view, triangular and directed obliquely upwards, phallus simple; parameres with few minute spines at its apex.

**Holotype depository:** ROM (Canada).

**Material examined:** Himachal Pradesh: Sarchu, 3200 m, 15-viii-2008, 1 ♂.

**Distribution:** India (Himachal Pradesh).
FAMILY UENOIDAE

Uenoinae Iwata 1927: 214
Uenoidae, Fischer 1973: 163

Type genus: *Uenoa* Iwata 1927: 204

**Diagnostic features:** Adults of this family are slender, medium to dark brown with uniform brown forewings; length of forewings 3-12 mm; head short, dorsum convex, ocelli present although medium ocellus lacking in *Uenoa*; coronal suture prominent; setae confined to setal warts; antennae approximately same length as forewing with scape as long as or longer than head in dorsal aspect; maxillary palpi in females 5-segmented, in males with 3 or fewer segments, usually thickened and variously modified in different genera. Pronotum (Fig. 8) with 2 pairs of setal warts, median pair nearly contiguous; mesonotum (Fig. 8) slender, scutum with 1 pair of elongate setal warts, Scutellum (Fig. 8) with single median setal wart; scutellum long and narrow, anterior apex acute and extended anteriorly beyond mid-point of mesonotum. Forewing (Fig. 14) usually narrow with dense hair covering, varying shades of brown, unpatterened, fringe of long stout setae along posterior margin; elongate concave thickening between bases of Sc and R_1_; hindwings (Fig. 15) rather narrow, row of stout hooked setae along anterior margin; venation similar in both sexes in *Uenoa*, and usually about same length as petiole in forewing; hindwing with branches of M and Cu variously fused. Legs with tibial spurs 1, 2-3, 4.

**Distribution:** This family is found in North America, eastern Asia, and southern Europe.

**Remarks:** It was originally described by Iwata (1927) as a subfamily of Seriscostomatidae. Martynov (1933) first established the Thremminae as a subfamily of the Sericostomatidae, but as pointed by Fischer (1970), the name was not accompanied by any diagnosis as required by Article 13 of the Code.
Family Uenoidae

Hence, and as further noted by Fischer (1970), the first valid use of a family-group name based on *Thremma* appears to be Martynov’s later work of 1935-Thremminae, emended by Fischer as Thremmatinae; included in this subfamily by Martynov were the genera *Thremma*, *Eothremma*, *Neothremma* and *Archithremma*, the latter assigned to the Limnephilidae by Levanidova and Schmid 1981. Fisher (1970) cited Schmid (1952) as the first author to elevate the group to familial status as Thremmidae, emended to Thremmatidae Martynov (1935). Apparently recognizing that Uenoinae Iwata (1927) held priority over Thremmatidae Martynov (1935) as the older valid family-group name, Fischer later (1973) established Uenoidae as the name to be applied to the family, with Thremmatidae as a junior synonym; 2 subfamilies Thremmatinae (Thremma) and Uenoinae (Uenoa), were retained. Botosaneanu (1976) recognized the Thremmatidae (Thremma) and Uenoinae (*Uenoa*) as distinct families and argued against close relationship between them.

Family Uenoidae is divided into two subfamilies Thremmatinae Martynov and Uenoinae Iwata. Former subfamily is divided into 3 genera *Neophylax* McLachlan (40 species), *Oligophlebodes* Ulmer (7 species) and *Thremma* McLachlan (7 species) while subfamily Uenoinae Iwata contains 4 genera *Uenoa* Iwata (11 species), *Farula* Milne (11 species), *Neothremma* Dodds & Hisaw (7 species) and *Sericostriata* Wiggins (1 species). Subfamily Uenoinae Iwata is found only in Oriental region.

Family Uenoidae is represented by 73 species with 7 genera all over the World (Morse, 2011). From the Oriental region this family is represented by 15 species under 2 genera. In India this family is represented by 4 species under a single genus *Uenoa*. 

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Genus *Uenoa* Iwata

*Uenoa* Iwata 1927: 214

Type species: *Uenoa tokunagai* Iwata

= *Eothremma* Martynov 1933: 150

Type species: *Uenoa japonica* Martynov

*Uenoa*, Tsuda 1937: 66; *Eothremma* as jr.syn.

**Diagnostic features:** Median ocellus absent; compound eyes finely setate; long axes of anterior setal warts parallel, setal warts posteromesad of lateral ocelli lacking or represented by a few setae; frontal setal warts divided into elongate lateral area and rounded mesal area in females, but in males these are united into a single enlarged bifurcate setal wart on each side; maxillary palp of male reduced to 1 or 2 segments, sometimes with a third minute segment; antennae with scape approximately as long as head. Wings with brown hair mainly on veins; venation similar in both sexes, forewing (Fig. 14) with M\(_1\) and M\(_2\) separate, discoidal cell short and wide; hindwings (Fig. 15) with R\(_2\) and R\(_3\) fused, discoidal cell open. Legs with tibial spurs 1, 3, 4.

**Distribution:** Oriental.

**Remarks:** Based on the type species *Uenoa tokunagai* Iwata, the genus *Uenoa* was established by Iwata (1927). This genus is represented by 6 species from Oriental region (barring India). Mosely (1939a) contributed 3 species from Myanmar and 1 from Pakistan, Hwang (1957), Kimmins (1964) and Hsu and Chen (1997) contributed 1 species each from China, Nepal and Taiwan respectively. In India this genus is represented by 4 species which are contributed one each by Martynov (1936), Mosely (1939b), Botosaneaneu (1979) and...
Wiggins, Weaver & Unzicker (1985). All the 4 species are found in the Himalayan belt. The present study deals with 1 species.

**Key to Indian species of *Uenoa* Iwata**

1. Internal branches of segment X paired & separate……………………………………2
   - Internal branches of segment X fused as a single median lobe………………3
2. Paired internal branches of segment X sclerotized & as long as external branch……………………………………………………………………………….*Uenoa arcuata* Wiggins
   - Paired internal branches of segment X membranous & much shorter than external branch………………………………………………………….*Uenoa hiberna* Kimmins
3. External branches of segment X narrow in lateral aspect, atleast 3 times as long as wide………………………………………………………….*Uenoa laga* Mosely
   - External branches of segment X broad in lateral aspect, length approximately twice width………….*Uenoa fernandoschmidtii* Botosaneanu

**Uenoa hiberna** Kimmins

**(Figs. 403-405, 442)**

*Uenoa hiberna* Kimmins, 1964: 52
= *Uenoa janetscheki* Botosaneanu, 1976: 194
Length of male forewing 5.7 mm. Maxillary palp of male apparently 1 segmented, 0.97 mm in length. Body dark brownish in colour except wings, which are light orange.

**Male genitalia (Figs. 403-405):** Segment IX annular, short dorsally, with flattened lateral sides; laterally segment IX very much broadened near base and
converging near its distal half. Segment X with a pair of cylindrical, external lobes in dorsal view which appear apically broad and rounded and with a narrow stalk near base in lateral view; internal lobes of segment X long, apically excised & criss-crossing in dorsal view near its apex. Inferior appendage single segmented & almost squarish in dorsal view; laterally cylindrical & apically rounded bearing prominent short spines on its upper surface. Phallus apically pointed in dorsal view with almost triangular base in dorsal view. Parameres in the form of a paired slender cylindrical lobes & apically pointed in dorsal view & hooded in lateral view.

**Holotype depository:** ROM (Canada).

**Material examined:** Sikkim: Dentam, 1700 m, 1♂, 14-v-2011.

**Distribution:** Nepal: Bhutan: India (Sikkim, West Bengal, Uttarakhand, Meghalaya, Arunachal Pradesh).

**Diagnostic combination:** The key character by which *Uenoa hiberna* Kimmins differs from its closely allied species *Uenoa arcuata* are as follows: paired internal branches of segment X apically excised in case of former whereas, paired internal branches of segment X apically rounded in case of latter. Parameres apically hooded in case of *U. hiberna* whereas, parameres apically pointed in case of *Uenoa arcuata*. 
Family Phryganeidae

Phryganeidae Leach 1815:136

Phryganeidae Burmeister 1839:922

Type genus: *Phryganea* Linnaeus 1758

**Diagnostic features:** Caddisflies of moderate to large size, length of forewing 43 mm. Head (Fig. 9) with ocelli relatively large, dorsal setal warts well developed; antennae stout, about same length as forewings, scape (Fig. 9) short and bulbous, flagellar segments short with narrow peripheral groove; mouthparts extended, labrum elongate, length approximately twice the width. Maxillary palps five-segmented in females (four in Agrypnetes), four segmented in males of phryganeinae; five-segmented in males and females of Yphriinae. Thorax (Fig. 9) with pair of wartose lines of stout setae on mesoscutum, single median wart with marginal stout setae on mesoscutellum. Legs with prominent spines, tibial spurs stout and usually 2, 4, 4. Forewings usually with prominent reticulate pigmentation, reduced and faint in some species, covered with dense setae in some genera but setae sparse in others; colour of forewing mottled grey in many species, light brown in others, but tending to reddish-brown and with bright yellow spotting in others; in some species forewings uniform dark brown. Forewing with vein SC simple or divided towards apex, variable; branches of M of both wings fused in various combinations at generic and species levels. Discoidal cells closed in both fore and hind wings; bifurcation of R₂ and R₄ in forewing usually arising around middle of discoidal cell. Fore wings with fused anal vein 1A+2A+3A relatively short, approximately one-third length of first anal cell; anal veins not curved in parallel to posterior margin of wing as in Limnephilidae and other families, but 1A, 3A with inflection at junction with 2A. Abdomen with filamentous gill-like lobes in pleural membrane. Sternum of
Family Phryganeidae

segment V in both males and females with external openings to pair of small glands.

**Distribution:** It is a cosmopolitan family and is confined for the most part to higher latitudes of world’s North Temperate Zone.

**Remarks:** Family Phryganeidae was erected by Leach (1815). It currently contains some 80 extant species in 15 genera. (Holzenthal et al. 2011). From the Oriental region this family is represented by 4 genera and 17 species. In India this family is represented by 2 genera and 8 species.

**Key to Indian genera of Phryganeidae**

1. Hind wing with a broad subapical yellow band extending posteriorly from anterior edge of wing.................. **Eubasilissa Martynov**

   - Hind wing without any such kind of markings ............... **Neurocyta Navas**

**Genus Eubasilissa Martynov**

*Ragina* Martynov, 1924: 79.

*Eubasilissa* Martynov, 1930: 87; new name

Type species: *Holostomis regina* McLachlan (Original designation).

**Diagnostic features:** Length of fore wing 18-43 mm. Dorsum of head dark brown; setae very stout, confined to warts; antennae generally dark brown. Dorsum of thorax and all of abdomen dark brown, thorax below attachment of wings lighter, basal segments of legs light brown with light setae, tibiae and tarsi dark brown, spurs and spines dark brown to black; dorsal setal warts of head and
Family Phryganeidae

Thorax and veins of forewing near base with unique long, thick, straight bristles. Forewing (Fig. 20) with variable dark brown reticulations on yellow background; hindwing (Fig. 21) brown, with a broad, subapical yellow band or patch extending posteriorly from anterior edge of wing. Hindwing (Fig. 21) of male with $M_{1+2}$ occasionally divided; forewing of female with $M_3$ and $M_4$ usually separate; hindwing of female with $M_1$ and $M_2$ separate, $M_{3+4}$ united; in most of species, forewings (Fig. 20) of both sexes with cross vein sc-r usually indistinct or absent, although in *E. maclachlani* cross vein usually well developed.

**Distribution:** Oriental, Palearctic.

**Remarks:** The species assigned to this genus are the largest living caddisflies. This group is entirely Asian, and most of the species are confined to the mountains rising between India and adjoining Afghanistan, Nepal, Burma, China and Tibet; some occur also in Korea and Japan. This genus contains about 20 species (Morse, 2012). From Oriental region this genus is represented by 14 species and in India it is represented by 7 species. A complete distribution of Indian species of genus *Eubasilissa* is given in table VII. All these 7 species are recorded from the Himalayan region. Amongst these 7 species 3 are contributed by Schmid (1962), and one each by White (1862), Betten (1909), Martynov (1930) and 1 by Ghosh & Chaudhury (1987). The present study deals with 5 species. *Eubasilissa sikkimensis* sp. nov. and *Eubasilissa schmidtii* sp. nov. have been reported as new to science.
Key to Indian species of *Eubasilissa* Martynov

1. Segment X with preanal appendages & usually posterior processes well developed
   ...........................................................................................................2
   - Segment X with preanal appendages & posterior processes very small or lacking
   ...........................................................................................................6

2. Segment IX enlarged posteroventrally as flattened median lobe with transverse ridges
   ................................................................. *E. maclachlani* (White)
   - Segment IX enlarged posteroventrally as median ridge
   .................................................................3

3. Dorsolateral processes of segment X shorter than mesal processes
   ................................................................. *E. avalokhita* Schmid
   - Dorsolateral processes of segment X longer than mesal processes
   .................................................................4

4. Phallotheca with sclerotized posteroventral lip apically truncate
   .................................................................................. *E. schmidi* sp. nov.
   - Phallotheca with sclerotized posteroventral lip apically acute
   .................................................................5

5. Phallotheca with sclerotized ventral lip dentate...*E. sikkimensis* sp. nov.
   - Phallotheca with sclerotized ventral lip simple...*E. chomolhari* Schmid

6. Phallotheca with posteroventral sclerotized lip in caudal aspect divided into two lobes
   .................................................................................. *E. asiatica* Betten
   - Phallotheca with posteroventral sclerotized lip is divided into a single median lobe
   ..................................................................................7
7. Posteroventral lip of phallotheca acutely pointed in caudal aspect……………………………………..\textit{E. tibetana} Martynov

- Posteroventral lip of phallotheca broadly triangular with apex rounded in caudal aspect…………………………..\textit{E. alaknanda} Schmid

\textit{Eubasilissa maclachlani} (White)
(Figs. 406-409, 414-415, 433)

\textit{Holostomis maclachlani} White, 1862: 26
\textit{Eubasilissa maclachlani} Martynov, 1930: 87

Average length of forewing 28-40 mm. Frontoclypeus and labrum light brown. Forewing with brown reticulation dense & more uniform in size & arrangement; anterior & central portion of the wing with brown spots more widely spaced but dense in apical third of the wing. Hindwing with subapical, longitudinal yellow band, not quite reaching; row of small brown spots across anterior edge of yellow band; costal & subcostal cells yellow for short distance mesad from subapical band, basal part brown.

\textbf{Male genitalia (Figs. 406-409):} Segment IX with posteroventral edge of sternum turned up as triangular median lobe with transverse edges. Segment X cleft medially almost to base, bearing a pair of short, apically almost pointed mesal processes and long & slender dorsolateral processes; preanal appendages long & slender in dorsal view and apically slightly dilated in lateral view. Inferior appendage in lateral aspect with sinous edges tapering towards blunt tip. Phallotheca extended into ventromesal rectangular plate with median pointed tooth; endotheca with a pair of short and apically pointed sclerites.
**Female genitalia** (Figs. 414-415): Subgenital plate with median lobe longer & narrower; lateral lobes reduced.

**Holotype depository:** NHM (London).

**Material examined:** Jammu & Kashmir: Patnitop, 2700 m, 14-viii-2009, 1 ♀. Nagaland: Pfitsero, 1800 m, 08-v-2010, 1 ♂. Arunachal Pradesh: Ziro, 1800 m, 02-iv-2009, 2 ♂♂, Dirang, 2100 m, 1 ♂, Mechuka, 2300 m, 29-iv-2010, 2 ♂♂. Sikkim: Golitar, 1900 m, 13-ix-2009, 3 ♂♂, 2 ♀♀.

**Distribution:** Bhutan: Nepal: India (Jammu & Kashmir, Arunachal Pradesh, Nagaland, Sikkim, Himachal Pradesh).

**Diagnostic combination:** The key character by which *Eubasilissa maclachlani* (White) differs from its closely allied species *Eubasilissa avalokhita* Schmid are as follows: Segment IX with posteroventral edge turned up as triangular median lobe with transverse ridges in case of former whereas, segment IX with posteroventral edge turned up as erect lobe with median edge blade-like in case of latter.
Eubasilissa sikkimensis sp. nov.
(Figs. 410-413, 416-417, 435-436)

Average length of forewing 27 mm. Head and thorax dark brown. Labrum & labial palpi brown. Colour pattern and wing venation as in figs.

Male genitalia (Figs. 410-413): Segment IX narrow up to upper ½ then broadened towards middle with rounded anterior surface in lateral view; dorsally tergum IX nearly elliptical bearing tuft of setae over its surface, its posteroventral edge extended into a dome-shaped lobe in caudal view. Segment X divided by a long and wide excision into posterolateral and mesal processes; excision reaching up to bottom of segment X; posterolateral slightly longer than posteromesal process, with tuft of long setae over its surface with slightly rounded surface near side in dorsal and lateral views; preanal appendages each long, finger like in dorsal view, originating near bottom edge of segment X in lateral view. Inferior appendage each glabrous near bottom, apically narrow and rounded in lateral view. Phallotheca produced into a long, narrow lobe with dentated surface; membranous endotheca with long, apically tapering sclerites.

Female genitalia (Figs. 416-417): Subgenital plate terminated in rounded median lobe with shorter, triangular lobe at each side; posterior edge of vaginal opening heavily sclerotized; vaginal pouch large, almost triangular, its posterior surface rounded and anterior one truncate in caudal view; tergum squarish, sternum rounded near centre and somewhat pointed near corner; median lobe finger-like in lateral view.

Diagnostic combination: The key character by which Eubasilissa sikkimensis sp. nov. differs from its closely allied species Eubasilissa maclachlani (White)
are as follows: Posteroventral edge of segment IX simple in case of former whereas, posteroventral edge of segment IX with transverse ridges in case of latter. Phallotheca with dentated lobe in case of *E. sikkimensis* sp. nov. whereas, phallotheca with a simple lobe in *E. maclachlani*. Endotheca with a straight sclerites in case of *E. sikkimensis* whereas, endotheca with grooved sclerites in *E. maclachlani*.

**Etymology:** The name of the species is based on the state in which the type locality falls.

**Distribution:** India (Sikkim).

**Material examined:** Holotype ♂: India: Sikkim: Lachung, 2600 m 14-viii-2009. Paratype: 1 ♀ from same locality and data.

**Eubasilissa alaknanda Schmid**

*(Figs. 418-420, 424-425, 432, 439)*

*Eubasilissa alaknanda* Schmid, 1962: 165

Average length of forewing 27-28 mm. Body fairly uniform brown, legs with basal segments yellowish brown, tibiae and tarsi somewhat darker. Forewing yellow with brown patches and reticulations, extensive uninterrupted yellow area in subapical part of wing; distally apical portion has diffuse brown and yellow markings in males, more uniform brown in females. Hindwing brown, subapical yellow band not reaching posterior margin, and not extended along costal area.
Family Phryganeidae

Male genitalia (Figs. 418-420): Segment IX narrowed at centre and broadened near sides in lateral aspect; posteroventral edge slightly extended but without raised median lobe. Segment X almost rounded, lacking preanal appendages and posterior processes in dorsal view and lateral view. Inferior appendages short, terminal segment in lateral aspect tapered with small ventral lobe. Phallotheca with posteroventral sclerotized lip with a short and rounded apex; endotheca with a pair of small sclerites.

Female genitalia (Figs. 424-425): Subgenital plate with median lobe rounded bearing a tuft of setae on its surface in ventral view.

Holotype depository: ROM (Canada).

Material examined: Uttarakhand: Chopta, 2700 m, 06-vii-2010, 1 ♂, 1 ♀; Munsiayri, 1800 m, 27-vi-2010, 6 ♂♂, 3 ♀♀.ss

Distribution: India (Uttarakhand).

Diagnostic combination: The key character by which Eubasilissa alaknanda Schmid differs from its closely allied species Eubasilissa asiatica (Betten) is as follows: Segment X lacking preanal appendages in case of former whereas, segment X with small preanal appendages in case of latter.
Eubasilissa asiatica (Betten)
(Figs. 421-423, 426-427, 434, 450)

Neuronia asiatica Betten, 1909: 242
Eubasilissa asiatica Martynov, 1930: 90
Eubasilissa asiatica Schmid, 1962: 156

Average length of forewings 22-23 mm. Head brown, antennae light brown, with dark bands; thorax and abdomen brown; legs with tibiae and tarsi somewhat darker than basal segments. Forewing with orange-yellow ground colour bearing light brown, irregular reticulations, larger along anterior margin, fine and diffuse posteriorly, and apically condensed into more brownish area. Hindwing dark brown with subapically yellow band.

Male genitalia (Figs. 421-423): Segment IX inverted U-shaped, narrow at centre, broadened towards sides in dorsal view, posteroventral edge produced into truncate and excised surface; segment X produced into a rounded lobe, apically almost triangular in dorsal view, laterally apex pointed; preanal appendages each reduced into a rounded structure in dorsal view. Inferior appendages each elongated in lateral view, truncate apically, ventral notch pointed, curved inwards. Phallotheca with its posteroventral edge produced ventrally into a sclerotized, slender lobe; membranous endotheca with pair of curved spike-like sclerites.

Female genitalia (Figs. 426-427): Subgenital plate with median lobe bilobed, both lobes closely adhered together with a small median gap between two lobes; lateral lobes narrow, triangular; laterally median lobe appears as spoon-shaped, lateral lobe slendrical; segment IX apicolaterally with bulged lobe.
Vaginal sclerites highly modified, main sclerite broad near anterior end with a small opening, centrally a pair of triangular sclerites and a long horizontal sclerited with rounded ends; a small anterior part of vaginal sclerite is hidden under segment VIII. Vaginal pouch long with rounded ends.

**Holotype depository:** ZSI (Kolkata, India)

**Material examined:** Jammu & Kashmir: Kanzalwan, 2300 m 5-ix-2010, 1♂, 1♀; Aphanwat, 4000 m 30-vii-2009, 1 ♀. Himachal Pradesh: Punjpullah, 1700 m 1♂, 1♀; Kothi, 2300 m 06-vii-2009, 1 ♀.

**Distribution:** India (Jammu & Kashmir, Himachal Pradesh).

**Diagnostic combination:** The key characters by which *Eubasilissa asiatica* (Betten) differs from its closely allied species *Eubasilissa alaknanda* Schmid have been discussed under latter.

*Eubasilissa schmidtii* sp. nov.

(Figs. 428-431, 451)

Average length of forewing 27-28 mm. Head and thorax dark brown. Labrum with first two segments yellowish, third dark brown; labial palpi yellowish. Colour pattern of wings as in fig. 14.

**Male genitalia (Figs. 428-231):** Segment IX almost rectangular in lateral view, narrow near centre and broadened near edges, apex rounded in dorsal view, posteroventral edge produced into a rounded lobe with apex excised in caudal
view. Segment X with a slight short excision near its apex; posteromesal process reduced, posterolateral process well developed and finger-like in dorsal view; preanal appendage well developed, apically rounded in dorsal view. Inferior appendage each broadened near base, apex tapering in lateral view. Phallotheca produced into short, ventral lip, apically pointed; endotheca with a short lobe, broadened near base and acute apically.

**Female:** Unknown.

**Diagnostic combination:** The key character by which *Eubasilissa schmidi* sp. nov. differs from its closely allied species *Eubasilissa avalokhita* Schmid are as follows: Segment IX with posteroventral edge rounded lobe in case of former whereas, posteroventral lobe blade-like in case of latter. Segment X posterolateral processes well developed in *E. schmidi* sp. nov. whereas, segment X posterolateral processes reduced in case of *E. avalokhita*.

**Etymology:** This species is named in honor of F. Schmid for his great contribution to the taxonomy of Indian Trichoptera.

**Distribution:** India (Jammu & Kashmir, Himachal Pradesh)