

FAUNA OF **SIKKIM**

(PART-3)



Zoological Survey of India

STATE FAUNA SERIES 9

FAUNA OF SIKKIM

PART-3

Edited by
The Director
Zoological Survey of India, Kolkata



सत्यमेव जयते

Zoological Survey of India
Kolkata

CITATION

Editor-Director, 2003. *State Fauna Series 9, Fauna of Sikkim-Part-3 1-411* (Published by the Director, Zool. Surv. India, Kolkata)

Published : June, 2003

ISBN 81-8171-005-3

Project Coordinator
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(Director, Zoological Survey of India)

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PRICE

India : Rs. 750.00
Foreign : \$ 60 £ 50

Published at the Publication Division by the Director, Zoological Survey of India, 234/4, A. J. C. Bose Road, 2nd MSO Building (13th Floor), Nizam Palace, Kolkata 700020 and printed at Krishna Printing Works, 106, Vivekananda Road, Kolkata 700 006.

STATE FAUNA SERIES

FAUNA OF SIKKIM

PART-3

2003

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INSECTA : THYSANOPTERA

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INTRODUCTION

Thysanoptera or Thrips, the plant infesting small insects are found on big or small plants. Sometimes they damage economic plants considerably. Earlier Muraleedharan (1982), Sen and Muraleedharan (1977), Sen *et al.* (1988), worked for North Eastern parts of India and reported about 105 spp. From Sikkim 17 species have been recorded so far. A brief diagnostic character is given for the recorded species.

SYSTEMATIC ACCOUNT

Order THYSANOPTERA

Sub-order TEREBRANTIA

Family THIRIPIDAE

1. *Anaphothrips sudanensis* Thybom
2. *Ctenothrips niger* Kudo
3. *Lefroyothrips lefroyi* (Bagnall)
4. *Megaleurothrips distalis* (Kerny)
5. *Stenchaetothrips biformis* (Bagnall)
6. *Taeniothrips major* (Bagnall)
7. *Thrips beharensis* (Ram. & Maig.)
8. *Thrips flavus* (Schrunk)
9. *Thrips hawaiiensis* (Morgen)

Suborder TUBULIFERA

Family PHLAEOTHIRIPIDAE

1. *Elaphrothrips curviceps* Priesner
2. *Elaphrothrips denticollis* (Bagnall)
3. *Elaphrothrips procer* (Schmutz)
4. *Elaphrothrips spiniceps* Bagnall

5. *Gigantothrips elegans* Zimmerman

6. *Haplothrips gowdeyi* Franklin

7. *Haplothrips ganglbaueri* Schmutz

8. *Liothrips aberrans* Muralee & Sen

Key to suborder

Abdominal segment X tubular. Female without saw like ovipositor. Forewing without longitudinal veins and setae

..... Suborder TUBULIFERA

Abdominal segment X rarely tubular. Female always with saw like ovipositor. Forewing with veins and setae on veins

..... Suborder TEREBRANTIA

Suborder TEREBRANTIA

Family THIRIPIDAE

Key to the genera

1. Prothorax without any major setae, only with 2 conspicuous setae at hind angle. Antennae 8-segmented. Wings not very broad, setae on veins weak. Abdominal tergum IX of female without a pair of well developed mediodorsal setae and males often with one or two pairs of stout thorn like setae on abdominal segment IX *Anaphothrips* Uzel.
- Prothorax with major setae and with one or two conspicuous setae at hind angles and usually with 2-6 pairs of post marginal setae 2.
2. Antennae always 8-segmented, style 2-segmented 3.

Antennae 7 segmented, very rarely 8-segmented due to split in the style 6

3. Forewings with a regular series of setae in both veins. Head constricted behind eyes, checks bulged. Males with subapical glandular area, one on each abdominal sterna III VIII. Terminal setae on abdominal tergite X long and stout and sternite without accessory setae *Ctenothrips* Franklin.
- Forewings without regular series of setae.. 4
4. Head with only one pair of anteocellar. Abdominal tergite VIII with or without a comb. Taeniothrips Amyot & Serville.
Head with 2 pairs of anteocellars 5
5. Postocular in two rows. Males with 6 setae on abdominal tergum IX
..... *Lefroyothrips* Priesner.
- Postocular in a single row. Head not constricted behind eyes, parallel sided ; check narrowed posteriorly. Antennae showing sexual dimorphism..... *Megaleurothrips* Karney.
6. Spinula on meso and metasternum absent or weakly developed in metasternum only. Maxillary palpi 2-segmented. Antennal segment 2 with middorsal seta
..... *Stenchaetothrips* Bagnall.
- Spinulla on mesosternum distinct, absent on metasternum. Abdominal tergites without posterior marginal flange. Sternites with or without glandular areas in males ; accessory setae on abdominal sternites in both sexes may or may not be present. Forelegs unarmed ...
..... *Thrips* Linn.

Genus *Anaphothrips* Uzel

1895. *Anaphothrips* Uzel, *Monogr. Ord. Thysanoptera* : 142

1. *Anaphothrips sudanensis* Trybow.

1911. *Anaphothrips sudanensis* Trybom, *Result Sweedish Zool. Exped. Egypt, pt. 4* : 1-4.

1978. *Anaphothrips sudanensis* Trybom; Bhatti, *Oriental Ins*, 12 (1) : 3-4.

Diagnosis : Body brown, abdomen anteriorly light brown, posteriorly brown. Head almost as long as wide. Prothorax, hind angle without conspicuous setae. Setae on veins weak.

Material : 1 ♀, Tadong, 25.8.97. coll. T. D. Soota

Distribution : India, Throughout

Elsewhere : Widely distributed.

Genus *Ctenothrips* Franklin

1907. *Ctenothrips* Franklin, *Ent. News*, 18 : 247.

2. *Ctenothrips niger* Kudo

1977. *Ctenothrips niger* Kudo, *Kontyu*, 45(1) : 1-4.

1988. *Ctenothrips niger* : Kudo ; Sen, Pramanik & Sengupta, *Rec. zool. Surv. India, Occ. Paper* 100 : 8

Diagnosis : Body colour blackish brown, forewing dark brown, setae dark brown. Head as long as wide, check surface reticulate, constricted behind eyes. Eyes large, half of head length. Post ocular well developed. Mouth long. Antennae 8-segmented, segment 3 longest. Prothorax as long as head. Anterior margin with 2 pairs of setae, inner much longer than outer, post angular 2 pairs, posterior margin with 2 pairs of setae. Meso and metanotum hexagonally reticulate, spinula present only on mesosternum. Fore-wings pointed, both the veins with a regular series of setae. Abdominal tergite and sternite with hexagonal reticulation. Segment X tube like. Completely divided longitudinally.

Material : 1 ♀, Yumthang, 7.vii.89, coll. S. Chatterjee.

Distribution : India : Sikkim.

Elsewhere : Nepal.

Genus *Lefroyothrips* Priesner

1938. *Lefroyothrips* Priesner, *Treubia*, 16 (4) : 499. 3.

3. *Lefroyothrips lefroyi* (Bagnall)

1913. *Physothrips lefroyi* : Bagnall, *Ann. Mag. nat. Hist.*, 8 (12) : 292.

1978. *Lefroyothrips lefroyi* (Bagnall), Bhatti, *Oriental Ins.*, 12 (12) : 194.

Diagnosis : Long post ocular region of the head with strong transverse lines dorsally, tergite IX with 3 pairs of stout thorns in males.

Material : 1 ♀; Sikkim, 25.III.89; D. K. Mondal.

Distribution : India, Sikkim, U. P., W. B.

Elsewhere : China, Formosa, Sumatra, Java.

Genus *Megaleuthrips* Bagnall

1915. *Megaleurothrips* Bagnall, *Ann. Mag. Nat. Hist.*, 8 (15), 589

4. *Megaleurothrips distalis* (Karny)

1913. *Teenithrips distalis* Karny, *Arch. Naturgesch* (A), 79 (2), 122-124.

1969. *Megaleurothrips distalis* (Karny), Bhatti, *Oriental Ins.*, 3 (3) : 241.

1988. *Megaleurothrips distalis* (Karny), Sen et al; *Zool. Surv. India, Occ. Paper. No. 100* 12

Diagnosis Antennae dark; distally clear area on forewing absent. Postocular is a single row.

Material 1 ♀, Sikkim, 25.III.89, D. K. Mondal

Distribution India : widely distributed

Elsewhere : Distributed widely

Genus *Stenchaetothrips* Bagnall

1926. *Stenchaetothrips* Bagnall, *Ann. Mag. Nat. Hist.*, (9) 18 : 107.

5. *Stenchaetothrips biformis* (Bagnall)

1913. *Bagnallis biformis* Bagnall, *J. econ. Biol.*, 8 (4) : 237-238.

1982. *Stenchaetothrips biformis* (Bagnall), Bhatti, *Oriental Ins.*, 16 (4) : 397-401.

Diagnosis : Antennal segments 1st & 2nd brownish, 3, 4 & 5 segments pale, 6th & 7th brown, wing with rows of setae, 2nd row with 10 setae. Body dark brown except foretibiae and tarsi. Abdominal tergite II VII with serration; comb of setae on tergite VIII incomplete medially.

Material : 6 ♀ Tadong, 25.vii.77, T. D. Soota.

Distribution : India, M. P ; U. P., H. P., Sikkim, Orissa, T. N., W. B :

Elsewhere : widely distributed.

Genus *Taeniothrips* Amyot & Serville

1843. *Taeniothrips* Amyot & Serville, *Hist. Nat. Ins. Hem.*, 644.

6. *Taeniothrips major* Bagnall.

1916 *Taeniothrips major* Bagnall, *Ann. Mag. nat. Hist.*, (8) 17 : 213-223.

Diagnosis : Antennal segment 3 dark color, origin of ocellar setae III on a line joining the posterior ocelli.

Material : 3 ♀, 1. Lachen, 2.vii.89 : Thangpoo, 15.viii.89, S. Chatterjee.

Distribution : India ; Sikkim, U. P.

Elsewhere : Nepal.

Genus *Thrips* Linnaeus

1758. *Thrips* Linnaeus, *Systema Naturae*, Ed. 10 : 457.

1980. *Thrips* Linn., Bhatti, *Syst. Ent.*, 5 : 122-113.

Key to the speices of genus *Thrips* Linn

1. Mouth cone very long and narrow, surpassing base of prosternum, Maxillary palpi long and slender..... *beharensis* (Ram. & Marg.)
- Mouth cone not surpassing base of prosternum 2
2. Abdominal sterna II VII without accessory setae. Forewing with 10 (4+3+3) upper and 11-15 lower vein setae. Body yellow. *flavus* Schrank.
- Abdominal sternites with 6-10 pairs of accessory setae. Forewing 10-11 upper and 12-13 lower vein setae..... *hawaiiensis* (Morgan)

7. *Thrips beharensis* (Ram. & Marg.)

1939. *Oxyrrhinothrips beharensis* Ram & Marg. *Rec Indian Mus.*, 41 (1) : 29-30.

1942. *Thrips (oxyrrhinotrips) beharensis* (Ram. & Marg.), Shumsher, *Indian J. Ent.*, **4** (2) : 130-131.

1980. *Thrips beharensis* (Ram. & Marg.) Bhatti, *Sys. Ent.*, **5** : 127.

Diagnosis : Mouth cone very long and narrow, surpassing base of presternum, maxillary palpi long and slender. Body pale.

Material : 4♀, Churengthang, 10.viii.79; S. M. Ali.

Distribution : India, Bihar, Sikkim, Meghalaya.

8. *Thrips flavus* Schrank

1776. *Thrips flavus* Schrank, *Beitr. Eur. Natur* : 31-33.

1980. *Thrips flavus* Schrank, Bhatti, *Sys. Ent.*, **5** : 133-136.

Diagnosis : Antennae 7 segmented, sometimes 8-segmented due to split of segment 7, segments 4-5 brownish distally, 6-7 brown. Interocular setae placed within ocellar triangle. Meta-scutum longitudinally striate, 2nd row with 10-11 setae.

Material : 7♀, 1♂, Rabangla, 25.II.89. D. K. Mondal ; Lachung, 3.viii.79. S. M. Ali.

Distribution : India, H. P., J & K., Punjab ; Meghalaya, T. N. Sikkim.

Elsewhere : Europe, N. America, Nepal, Korea, Japan, Malwai.

9. *Thrips hawaiiensis* (Morgan)

1913. *Euthrips hawaiiensis* Morgan, *Proc. U.S. Nat. Mus.*, **46** : 3

1966. *Thrips hawaiiensis* (Morgan), Anth. & Jagadish, *Ent. Tidsk* **87** (1-2): 88.

1980. *Thrips hawaiiensis* (Morgan), Bhatti, *Sys. Ent.* **5** : 137-140.

Diagnosis : Mesoscutal inner pair of setae placed at anterior margin. Head and thorax light. Antennae 7-segmented, sometimes 8 segment due to split of style, segment 4 & 5 pale yellowish at base, forewing with 10-11 upper vein setae. Abdominal tergite VIII with complete comb.

Material : 2♀ Chunthang, 10.viii.79. S. M. Ali.

Distribution : India ; widely distributed.

Elsewhere : Widely distributed.

Suborder TUBULIFERA

Family PHLAEOTHIRIPIDAE

Key to the genera

- Maxillary stylet broadened at apex, broader than labial pulp. Fore tarsal tooth developed in males, reduced or absent in females *Elaphrothrips* Buffa
- Maxillary stylet slender, never broadened, narrower than labial palp 1
- 1. Foretarsi unarmed in both sexes, mouth cone elongate, pointed to narrowly reduced. Head 1.1 – 1.7 times as long as wide and almost twice as long as pronotum. Fore femora mostly thin *Liothrips* Uzel.
- Fore tarsi armed in both sexes or armed only in males 2.
- 2. Tube very much longer than head. Ocellar hump produced. Tube not pilose. Setae on abdominal segment IX fine, not short and blunt *Gigantothrips* Zimmerman.
- Tube shorter than head or about as long as head. Pronotum about as long as head. Antennal segment 3 not very symmetrical. Fore femora of females usually simple, almost enlarge in males *Haplothrips* Serville.

Genus *Elaphrothrips* Buffa

1909. *Elaphrothrips* Buffa, *Redia*, **5** : 162-163

1988. *Elaphrothrips* Buffa, Sen et al, *Rec. zool Surv. India*, Occ. paper No. **100** : 110.

Key to the species of genus *Elaphrothrips*

- 1. Cephalic production pronounced, about 0.9-1.2 times as long as wide. Oedymorous males devoid of sickle like setae at the apex of fore femora. All tibiae basally more brownish and yellowish beyond middle. Antennal segment 3 yellowish with a tinge brown at apex, 4 & 5 distinctly yellowish at basal half, rest brownish

- *denticollis* (Bagnall)
- Cephalic production much shorter, distinctly wider than long, almost 0.5 times as long as wide 2.
 - 2. Foretarsi of females unarmed ; all tibiae basally more brownish and yellowish distally. Antennal segment 3 yellowish with a tinge of brown at apex, 4 & 5 yellow at proximal half & brown distally. Anteromarginals shorter than anteroregulars, mid lateral, epimeral and postangulals almost subequal
..... *curviceps* Priesner.
 - Foretarsi of females armed, all tibiae uniformly brown 3
 - 3. Body setae brown. Antennal segment 3 brown with yellowish distal tip, 4 & 5 proximally yellow and brown distally *procer* Schmutz
 - Body setae hyaline. Antennal segment 2, 3 grayish yellow, rest brown ; 4-8 brown
..... *spiniceps* Bagnall.

10. *Elaphrothrips curviceps* Priesner

1929. *Elaphrothrips curviceps* Priesner, *Treubia*, 11 : 206.
1980. *Elaphrothrips curviceps* Priesner, Anan. & Sen. *Zool. Surv. India*, Handbook, Series, 1, 168.

Diagnosis : Body color dark brown, antennal segment 1 & 2 brown, 3, 4, & 5 brownish distally. Femora brown, tarsi yellowish, wings clear. Setae hyaline and blunt. Head long, narrowed at middle, postocular, 2 pairs outer longer than inner, Antennae 8 segmented. Prothorax long, wider posteriorly. foretarsal tooth absent in female. Fore wing with double fringes. Pelta pyramid shaped. Tube longer than anal setae.

Material : 1 ♀, Rangpoo, 16.IV.76 A. R. Bhowmik.

Distribution : India, Meghalaya, Manipur, Sikkim, W. B.

Elsewhere : Bhutan, Laos, Malaya, Java Sumatra, Thailand.

11. *Elaphrothrips denticollis* (Bagnall)

1909. *Dicaiothrips denticollis* Bagnall, *Trans. nat. Hist. Soc. Northumb* 3 : 527.

1978. *Elaphrothrips denticollis* (Bagnall), Palmer & Mound; *Bull. Br. Mus. nat. Hist. (Ent)*, 37 (5) : 179-180.

Diagnosis : Head long, oedymorous males without sickle like setae at the apex of fore femora. Tibiae brownish at base. Antennal segments 3, 4 & 5 yellowish at base, rest brownish.

Material : 1 ♀, Rangpo, 25.XII.75, G. K. Srivastava.

Distribution : India, Assam, Meghalaya, Kerala, Karnataka, Sikkim, T. N., Tripura.

Elsewhere : Srilanka, Burma, Malaya, Java, Borneo.

12. *Elaphrothrips procer* (Schmutz)

1913. *Dicaiothrips procer* Schmutz, *Akad. Wiss. Wien*. 122. 1063.
1968. *Elaphrothrips procer* (Schmutz) Mound, *Bull. Br. Mus. nat. Hist. (Ent.)*, *Suppl.* 11 : 98.
1982. *Elaphrothrips procer* (Schmutz), Muralee., *Rec. Zool. Surv. India*, 79 : 378.

Diagnosis : Tibiae brownish, Foretarsi of female with a tooth. Forewing with 25-29 double fringes.

Material : 1 ♀ Bharikola, 11.III.89. D. K. Mondal, 1 Kumare, 17.IX.93. T. K. Pal.

Distribution : India, Kerala, Karnataka, Maharashtra, Manipur, Sikkim, T. N., W. B.

Elsewhere : Srilanka; Laos.

13. *Elaphrothrips spiniceps* Bagnall

1932. *Elaphrothrips spinicesp* Bagnall, *Ann. Mag. nat. Hist.* 10 (10) : 514.
1983 *Elaphrothrips spiniceps* Bagnall, Mound & Palmer, *Bull. Br. Mus. nat. Hist. (Ent.)*, 46 (1) : 68.

Diagnosis : Cephalic production much wider than long. Tibiae brown. Body setae hyaline. Forewing with 42-55 double fringes. Head about 1.9 times as long as width across eyes. Ante ocular spines long & strong. Abdominal segment 8 about as long as broad. Tube slender about 4 times as long as broad at base.

Material : 1 ♀, Gantok, F. M. Bailey

Distribution : India, Sikkim, U. P., W. B.

Elsewhere : Nepal, Burma, Taiwan. Java.

Genus *Gigantothrips* Zimmerman

1900. *Gigantothrips* Zimmerman, *Bull. Inst. Bot. Bruit* 7 : 18.

14. *Gigantothrips elegans* Zimmerman

1900. *Gigantothrips elegans* Zimmerma, *Bull. Ins. Bot. Baitenzorg*, 7 : 18-19.

1980. *Gigantothrips elegans* Zimmerman, Anan. & Sen. *Zool. Surv. India*, Handbook. Ser. 1 : 92.

Diagnosis : Antennal segments 1, 2, 7 & 8 and distal portion of 3, 4 & 6 brown, rest yellow. Femora brown, fore tibiae yellow. Forewings with 25-28 double fringes. Tube not pilose.

Material : 1 ♀, S Ranipool. 25.V.94. B. C. Das

Distribution : India, Bihar, Orrissa, Kanataka, Sikkim, T. N.

Elsewhere : Japan, Java, Philippines, Thailand.

Genus *Haplothrips* Amyot & Serville

1843. *Haplothrips* Amyot & Serville. *Hist. nat. Ins. Hemiptera* : 640.

1988. *Haplothrips* Amyot & Serville ; Sen et al, *Rec. Zool. Surv. India*, Occ. paper No. 100 : 57

Key to the species of genus *Haplothrips*

Antennal segment 2 with O+1 sense cone.
Antennal segment 3 with brownish yellow, 4, 5 & 6 successively darker
..... *Ganglbaueri* Schmutz.

Antennal segment 3 with 1+1 or 1+2 sense cones. Antennal segment 3 yellowish, 3-8 uniformly shaded *gowdeyi* (Franklin)

15. *Haplothrips ganglbaueri* Schmutz

1913. *Haplothrips ganglbaueri* Schmutz, *Sitz. Akad. Wiss. Wien*, 122 : 1034.

1980. *Haplothrips ganglbaueri* Schmutz ; Anan. & Sen. *Zool. Surv. India*, Handbook, Series 1 : 94 & 153.

Diagnosis : Body pale brown, fore femora brown. Antennae 7 segmented, 3rd segment pale, rest brownish, post ocular setae long.

Material : 1 ♂, Tadong, 25.VIII.77; T. D. Soota.

Distribution : India ; Widely distributed.

Elsewhere : Bangladesh, Sri Lanka, Pakistan, Java, Phillipines.

16. *Haplothrips gowdeyi* (Franklin)

1908. *Anthothrips gowdeyi* Franklin, *Proc. U. S. nat. Mus.* 33 : 724.

1921. *Haplothrips gowdeyi* (Franklin), Watson, *Fla. Ent.* 4 : 34.

1976. *Haplothrips gowdeyi* (Franklin), Pitkin: *Bull. Br. Mus. nat. Hist (Ent.)*, 34 (4) : 250-252.

Distribution : India ; Andaman Is., Meghalaya, Rajasthan, T. M., Tripura, Sikkim, W. B.

Elsewhere : Bangladesh, Sri Lanka

Genus *Liothrips* Uzel

1895. *Liothrips uzel*, *Monogr. Ord. Thys.*, 261. 17.

17. *Liothrips aberrans* Murelee & Sen

1978. *Liothrips aberrans* Muralee, & Sen, *Bull. Zool. Surv. India* 1 (3) : 259-261.

1988. *Liothrips aberrans* Muralee & Sen ; Sen et al ; *Rec. zool. Surv. India*, Occ. Paper No. 100 : 68

Diagnosis : Body color brown, all femora, mid and hind tibiae brown, fore tibiae and tarsi yellowish, antennal segment 1 & 2 brown, 3 yellow, 4-6 distally brownish, 7 & 8 pale brown, wing transparent, all setae dark brown.

Head longer than wide, cheek crenulate with 1-2 setae. Eyes large. Post ocular long. Mouth cone pointed.

Prothorax shorter than head. Epimeral suture complete. Forewing with 13-18 double fringes. Mesopraesternum incomplete, restricted to two trinangular selerites.

Material : 1 ♀, Phensong (Gantok), 25.IV.76,
A. R. Bhowmik.

Distribution : India, Sikkim, W. B.

less equally represented. But it is expected that this number may go up if it is explored more extensively.

SUMMARY

Only 17 species under 11 genera have been recorded from Sikkim. From the present recorded species it is seen that both suborders are more or

ACKNOWLEDGEMENTS

The authors are grateful to the Director for providing facilities and to Sri S. Sen. retired scientist, Z. S. I. for valuable guidance.

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INSECTA : COLEOPTERA : ADEPHAGA : CICINDELIDAE (TIGER BEETLES)

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INTRODUCTION

The family Cicindelidae belongs to the suborder Adephaga under the order Coleoptera of Insecta. The members of this family are commonly known as tiger beetles and are remarkable for their activity and ferocity. They are also known as predacious beetles because of their hunting and feeding on other insects particularly ants, small beetles, bugs, caterpillars and nymphs or dead bodies of large and more active insects with the help of their powerful mandibles and long legs adapted for rapid running. Some of them are usually found in open sunny places where the soil is sandy or dusty and also in moist ground near streams, ponds and sea-shore (e.g. *Cicindela* L.) while the others are predominantly arboreal and found in foliage and bark (*Neocollyris* Horn, *Tricondyla* Latreille). The former belongs to the soil burrowing group and lays their eggs singly in a pit and the latter belongs to the twig boring group whose females cuts a short vertical tunnel on the twig with the help of hook present in ovipositor and deposits the eggs therein. Little is known about the length of the life cycle of Indian Cicindelidae.

This group of beetles have attracted much attention of a number of workers like Dover and Rebeiro (1923), Heynes-wood and Dover (1928), Mandl (1969-78), Pajni and Bedi (1972), Saha and Halder (1986), Biswas and Rynth (1987), Saha, Halder and Biswas (1995). Some of the authors treated Paussidae and Cicindelidae as a two distinct subfamily of the family Carabidae. The members of this family are easily recognised by

its head being large with prominent eyes, inner lobe of maxillae elongated and provided with an articulated hook like processes at the end, antennae filiform and 11 segmented, clypeus extending laterally in front of insertion of antennae, elytra covering or nearly covering the abdomen, first three segments of ventrites connate, legs long, slender with five jointed tarsi.

Present study is based on the materials collected by different survey parties of Zoological Survey of India from Sikkim. A systematic list, key to the subfamilies, genera and species recorded from Sikkim including the references of the studied material have also been included in this work. The astrix marked (*) species given in the list are being reported from the literature.

SYSTEMATIC ACCOUNT : LIST OF THE TAXA

Suborder ADEPHAGA

Family CICINDELIDAE

Subfamily I. COLLYRINAE

Genus 1. *Collyris* Fabricius, 1801

*1. *C. longicollis* F., 1787

Genus 2. *Neocollyris* Horn, 1901

2. *N. redtenbacheri* (Horn), 1912

*3. *N. attenuata* (Redt.), 1912

*4. *N. bonelli* Guer, 1834

*5. *N. fuscitarsis* Schm. Goeb, 1846

*6. *N. crassicollis* Chaud., 1864

7. *N. saphyrina* (Chaud.), 1850

*8. *N. smaragdina* Horn, 1894.

* Northern Regional Station, Z.S.I. Dehra Dun, U.P.

9. *N. insignis* Chaud, 1864

Genus 3. *Tricondyla* Latreille, 1822

10. *T. macrodera* Chaudoir, 1860

Subfamily II. CICINDELINAE

Genus 4. *Cicindela* Linnaeus, 1735

11. *C. chloropleura* Chaud.

12. *C. assamensis* Parry, 1845

13. *C. sexpunctata* F., 1775

14. *C. oberthuri* Fleutiaux, 1893

15. *C. rugosiceps* Chaud., 1865

*16. *C. imperfecta* Chaud. var. *atelesta* Chaud., 1854

17. *C. dromicoides* Chaud., 1852

18. *C. funebris* Schm. Goeb., 1846

*19. *C. angulata* F., 1798

*20. *C. cardoni* Fleut., 1890

21. *C. aurelenta* F. *vergula* Fleut.

*22. *C. chloris* Hope, 1831

23. *C. funerea* MacLeay

24. *C. albopunctata* Chaud., 1852

Family CICINDELIDAE

Key to the subfamilies of the family CICINDELIDAE

1. Episterna of the metasternum very narrow and more or less strongly furrowed
..... COLLYRINAE
- Episterna of the metasternum very narrow but broad and smooth; outer lobe of maxillary palpi normal and well developed
..... CICINDELINAE

Subfamily COLLYRINAE

Key to the genera of the subfamily COLLYRINAE

1. Wings always present, labrum with seven teeth; Ventrites never entirely connate 2

– Wings absent; labrum with six teeth; ventrites connate; head deeply excavate. elytra narrowed in front and dilated behind *Tricondyla* Latr.

2. Head very widely and deeply excavated between the eyes; size larger and ranges from 18-27 mm; vertex very short behind the eyes *Collyris* F.

– Head bistrated between the eyes ; size comparatively smaller and ranges from 9-23 mm ; vertex more or less long behind the eyes *Neocollyris* Horn

Genus 1. *Collyris* Fabricius, 1801

1801. *Collyris* Fabricius (ex parte), *Syst. El.*, 1 : 226.

1806. *Colliurus* Latreille (ex parte), *Gen. crust. Ins.*, 1 : 174.

1. *Collyris longicollis* F. 1787

1787. *Collyris longicollis* F., *Mant. Ins.*, P. 185.

1834. *Collyris caviceps* Klug, *Jahrb. Insektenk.*, 1 : 45.

1912. *Collyris longicollis* F. : Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : Genl. Intro., Cicindelidae and Paussidae, pp. 225.

Material examined : Not Seen.

Distribution : India : Assam, Sikkim, Bihar, Karnataka. Elsewhere : SIAM.

Genus 2. *Neocollyris* Horn, 1901

1901. *Neocollyris* Horn, *Deutsche Ent. Zeit.*, P. 45.

Key to the species of the genus *Neocollyris* Horn

1. Species smaller and ranges from 8-13 mm; vertex of head longer and narrower; elytra closely and finely punctured 2
- Species comparatively larger and ranges from 13-15 mm; vertex shorter and more wider behind eyes; elytra strongly punctured 3
2. Three central teeth of labrum broad and blunt; head distinctly longer than broad; pronotum much constricted before base; elytra distinctly and regularly punctured
..... *redtenbacheri* (Horn).

- Five intermediate teeth of labrum strong and blunt; head slightly longer than broad; pronotum a little shorter and less constricted before base; elytra finely and closely punctured*attenuata* Redt.
- 3. Vertex of head shorter and more widened behind the eyes; species ranges from 13 to 15 mm 4
- Vertex long; species larger and ranges from 15 to 22 mm 5.
- 4. Head rather large; colour variable from cyaneous, blue or dark but without any violaceous tinge; pronotum strongly constricted at base, disc of the pronotum not striolate *bonelli* Guer.
- Head large; colour usually blue with violaceous tinge; pronotum moderately constricted at base, disc of the pronotum with distinct rugose striation*fuscitarsis* SchmGoeb.
- 5. Pronotum more dilated behind and much less constricted in front; first two segments of antennae reddish and gradually darker towards apex, body very stout *crassicollis* Chaud.
- Pronotum less dilated behind; body less stout and sometimes elongated 6
- 6. Pronotum cylindrical and without well developed collum*saphyrina* (Chaud.)
- Pronotum with well developed collum 7
- 7. Antennae long; base of the elytra strongly punctured *insignis* Chaud.
- Antennae shorter; base of the elytra finely punctured *smaragdina* Horn.

2. *Neocollyris redtenbacheri* (Horn), 1864

1864. *Collyris attenuata* Chaud. (nec, Redt.), *Ann. Soc. ent. Fr.*, P. 523, pl. 9, fig. 19.
1864. *Collyris redtenbacheri* Horn, *Deutsche Ent. Zeit.*, : 12.
1912. *Neocollyris redtenbacheri* (Horn) : Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : Genl. intro., *Cicindelidae and Paussidae*, P. 239.

Material examined : 1ex., India : Sikkim : Jorethung, 11. IV. 1999, P. H. Roy coll.

Distribution : India : West Bengal, Assam, Sikkim, Himachal Pradesh, Meghalaya, Nagaland.

Elsewhere : Nepal : Myanmar : Tenasserim.

Remarks : This species is recorded here for the first time from Sikkim.

3. *Neocollyris attenuata* Redt., 1912

1848. *Collyris attenuata* Redt., *Hugel's Kashmir*, 4 : 498.

1850. *Collyris maculicornis* Chaud., *Bull. Soc. Moscou*, 1 : 19.

1912. *Neocollyris attenuata* Redt., Flower, *The Fauna of British India including Ceylon and Myanmar*, col. : *Genl. Intro. and Cicindelidae Paussidae*, P. 240.

Material examined : Not seen.

Distribution : India : Himachal Pradesh, West Bengal, Assam, Sikkim.

4. *Neocollyris bonelli* Guer, 1834

1834. *Neocollyris bonelli* Guerin, *Belanger voy. Ind. or. Zool.*, P. 481, pl. 2, fig. 1.

1912. *Neocollyris bonelli* Guer. : Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae and Paussidae*, pp. 248-249.

Material examined : Not seen.

Distribution : India : West Bengal, Assam, Nagaland, Sikkim.

Elsewhere : Myanmar, Tenasserim, Indonesia

5. *Neocollyris fuscitarsis* Schm.-Goeb., 1846

1846. *Neocollyris fuscitarsis* Schm.-Goeb., *Faun. Col. Birm.*, P. 16.

1912. *Neocollyris fuscitarsis* : Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae and Paussidae*, PP. 256-257.

Material examined : Not seen.

Distribution : India; Assam; Sikkim.

Elsewhere : Myanmar, Cochin-China, Indonesia, Malacca.

6. *Neocollyris crassicollis* Chaud., 1864

1846. *Neocollyris crassicollis* Chaud., *Ann. Soc. ent. Fr.*, P. 497.

1912. *Neocollyris crassicollis* : Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae and Paussidae*, P. 259.

Material examined : Not seen.

Distribution : India : Sikkim.

7. *Neocollyris saphyrina* (Chaud.) 1850

1950. *Collyris saphyrina* Chaudoir, *Bull. Soc. Moscou*, : 18.

1912. *Neocollyris saphyrina* (Chaud.) : *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae and Paussidae*, PP. 257.

Material examined : 2 ex., INDIA : Sikkim : Mongan, 30.v.1994, B. N. Das Coll. 1ex., Sikkim, Alkinson Coll.

Distribution : India : West Bengal, Assam, Sikkim.

Elsewhere : Nepal.

8. *Neocollyris smaragdina* Horn, 1894

1894. *Neocollyris smaragdina* Horn, *Deutsche Ent. Zeit.*, P. 220.

1912. *Neocollyris smaragdina* : Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae and Paussidae*, PP. 258.

Material examined : Not seen.

Distribution : India : West Bengal, Sikkim.

Elsewhere : Bhutan.

9. *Neocollyris insignis* Chaud, 1864

1864. *Neocollyris insignis* Chaud, *Rev. Mag. Zool.*, P. 76.

1912. *Neocollyris insignis*, Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae and paussidae*, P. 258.

Material examined : 1ex. India : Sikkim, 1864.

Distribution : India : West Bengal, Meghalaya, Sikkim.

Elsewhere : Myanmar, Bhutan.

Genus 3. *Tricondyla* Latreille, 1822

1822. *Tricondyla* Latreille, *Hist. Nat. Col. Eur.*, 1 : 65.

1912. *Tricondyla* : Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae and Paussidae*, PP. 273-281.

10. *Tricondyla macrodera* Chaudoir, 1860

1860. *Tricondyla macrodera* Chaud., *Bull. Soc. Moscou*, : 300.

1912. *Tricondyla macrodera* : Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae and Paussidae*, P. 278.

Material examined : 2ex. India : Sikkim, 1911, W. K. Webb Colln.; 3ex., Sikkim.

Distribution : India : West Bengal, Assam, Sikkim.

Elsewhere : Tonkin, Bhutan.

Subfamily II CICINDELINAE

Genus 4. *Cicindela* Linnaeus, 1735

1735. *Cicindela* Linnaeus, *Syst. Nat.*, 2 : 657.

1912. *Cicindela* : Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae and Paussidae*, PP. 314-443.

Key to the species of the genus
Cicindela L.

1. Ventral side of the body usually without pubescence or partially pubescent 2
 - Ventral side of the body densely pubescent 5
2. Margins of elytra brilliantly and broadly metallic ; length ranges from 8-12 mm
..... *chloropleura* Chaud.
 - Margins of elytra not or only narrowly metallic 3
3. Elytra usually oblong with parallel side margins and well marked shoulders
..... *assamensis* Parry
 - Elytra less oblong and parallel sided 4

4. Sides of the pronotum without setae
..... *sexpunctata* F.
– Sides of the pronotum and sometimes disc with more or less pronounced setae ; elytra without crescent shaped patch extending from the shoulders, genae with a few scattered hairs *oberthuri* Fleut.
 5. Species small, its average length ranges from 8 to 10 mm and very rarely attaining 11 or 12 mm 6
– Average length of the species ranges from 12-16 mm and rarely 10-11 mm 9
 6. Elytra even ; species obscure, dark, with or without more or less distinct light markings 7
– Elytra variegated metallic or velvety ; if velvety, it is with or without large punctures distributed on the disc *rugosiceps* Chaud.
 7. Elytra more or less uneven, velvety or with velvety patches, but not foveolate 8
– Elytra narrower and somewhat widened behind and very finely sculptured; more or less distinctly foveolate or subfoveolate; pronotum subquadrate, genae with long white hairs
..... *imperfecta* Chaud. var. *atelesta* Chaud.
 8. Labrum testaceous, head large with the eyes not very prominent, elytra much narrower at base than behind middle, apices much produced *dormicoides* Chaud.
– Labrum short, testaceous; head broad with the eyes moderately prominent ; elytra with its side almost straight and depressed before apex *funebria* Schm. Goeb.
 9. Elytra with a particular pattern of margin beyond spots or patches 10
– Elytra without any particular pattern of marking beyond spots or patches 11
 10. Dorsal surface obscurely bronze in colour with coppery or greenish reflection or its ground colour almost black; the 4th segment of antenna with thick set of hairs; elytra with white markings extending from shoulder to apex, a lunulate patch at apex, a reverse 's' shaped patch at middle, a patch with transverse extension at about first third and connected with apical patch at its border ... *angulata* F.
– Dorsal surface dark brown in colour with more or less distinct reflections; the 4th segment of antennae without any set of hairs; each elytron with a crescent shaped spot at the shoulder, a short transverse band near middle followed by a small distinct spot near suture and a lunulate band at apex *cardoni* Fleut.
 11. Average length of the species from 10 to 14 mm 12
– Length of the species ranges from 15 to 18 mm; Pronotum almost square with its side margin straight; elytra considerably broader than the pronotum and with a whitish spot at the shoulder and other three spots varying in size, of which central one, more or less commashaped and its extrimity turning towards the apex *aurelenta* F. *vergula* Fleut.
 12. Elytra with small white spots; dorsal surface fully covered with more or less distinct hairs *albopunctata* Chaud.
– Elytra with three white spots at side margins and disc of the pronotum clothed with hairs except centre 13
 13. Elytra with a distinct spot at its shoulder; dorsal surface bright green in colour; clypeus densely pubescent *chloris* Hope
– Elytra without any spot at its shoulder; dorsal surface dull greenish bronze in colour; clypeus scarcely pubescent *funerea* Macleay.
11. ***Cicindela chloropleura*** Chaudoir, 1865
1865. *Cicindela chloropleura* Chaudoir, *Cat. Col.* : 59.
1912. *Cicindela chloropleura* : Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae* and Paussidae, PP. 327.
- Material examined** : 1ex. India : Sikkim : Shishney, 2.v. 1962, S. Ali Coll.
- Distribution** : India : West Bengal, Himachal Pradesh, Sikkim.

Elsewhere : Bangladesh.

Remarks : This species is recorded here for the first time from Sikkim.

12. *Cicindela assamensis* Parry, 1845

1845. *Cicindela assamensis* Parry, *Trans. Ent. Soc. Lond.*, 4 : 84.

1862. *Calostola assamensis* Mots., *Etud. Ent.*, 11 : 22.

1912. *Cicindela assamensis* Parry : Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae and Paussidae*, PP. 395.

Material examined : 1ex. India : Sikkim : Mungphu, Mus. Colln.

Distribution : India : West Bengal, Assam, Manipur, Sikkim

Elsewhere : Bangladesh, Myanmar, Penang.

13. *Cicindela sexpunctata* F. 1775

1775. *Cicindela sexpunctata* F. *Syst. Ent.* : 226.

1862. *Calochroma sexpunctata* Motschulsky, *Etud. Ent.*, 11 : 22.

1912. *Cicindela sexpunctata*, Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae and Paussidae*, PP. 385.

Material examined : 1ex. India : Sikkim : Ranipul, 22.v. 1994, B.C. Das Coll.

Distribution : India : West Bengal, Bihar, Maharashtra, Tamil Nadu, Kashmir, Sikkim, Andaman and Nicobar Islands.

Elsewhere : Myanmar China, Bangladesh, Vietnam

14. *Cicindela oberthuri* Fleutiaux, 1893

1893. *Cicindela oberthuri* Fleut, *Bull. Soc. Ent. France*, PP. 216.

1912. *Cicindela oberthuri*, Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae and Paussidae*, PP. 380.

Material examined : 2ex. India : Sikkim : Rongpo, 18.v. 1995, P.H. Roy Colln.; 2 ex., Leg shop, 9.v. 1995, P.H. Roy Colln., 1ex.,

Mamthong, 13.v. 1995, P.H. Roy Colln.; 1ex., Topakhan, 21.v. 1995, P. H. Roy Colln.; 4 ex., Tikjuk 8.v. 1995, P.H. Roy Colln.; 1ex., West Sikkim : Nayabazar, 11.v. 1995, P.H. Roy Coll. ; 2 ex., Sikkim, v. 1912; 3ex., Sikkim, 1911, W.K. Webb Colln.

Distribution : India : West Bengal, Sikkim.

15. *Cicindela rugosiceps* Chaud., 1865

1865. *Cicindela rugosiceps* Chaud., *Cat. Col.*, P. 57.

1912. *Cicindela rugosiceps*, Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae and Paussidae*, PP. 333-334.

Material examined : 1ex., India : Sikkim : Gangtok : Deorali, 1.vi. 1979, M.S. Shishodia Colln.; 1ex., Sikkim : Geyzing, 18.v. 1998, A.K. Hazra Colln.

Distribution : India : Tamil Nadu, Karnataka, Sikkim.

Remarks : This species is recorded here for the first time from Sikkim. They are very active even making on slaught on flying termites (Fowler, 1912).

16. *Cicindela imperfecta* Chaud, 1852, var *atelesta* Chaud, 1854.

1852. *Cicindela imperfecta* Chaud, *Bull. Soc. Moscou*, P. 8.

1854. *Cicindela atelesta* Chaud, *Bull. Soc. Moscou*, P. 4.

1886. *Cicindela despecta*, Fleut, *C. R. Soc. Ent. Belgique*, P. 88 (ex. parte)

1912. *Cicindela imperfecta*, Chaud. var. *atelesta* Chaud : Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae and Paussidae*, P. 357-258.

Material examined : Not seen.

Distribution : India : West Bengal, Bihar, Sikkim.

Elsewhere : Bangladesh.

17. *Cicindela dromicoides* Chaud, 1852

1852. *Cicindela dromicoides* Chaud., *Bull. Soc. Moscou*, 1 : 21.

1912. *Cicindela dromicoides*, Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae* and Paussidae, P. 341.

Material examined : 1 ex., India : Sikkim : Gangtok, 5. v. 1962, G. Ramakrishna.

Distribution : India : West Bengal, Meghalaya, Bihar, Uttar Pradesh, Himachal Pradesh, Sikkim.

Elsewhere : Nepal.

18. *Cicindela funebris* Schm.-Goeb, 1846

1846. *Cicindela funebris*, Schmidt-Geobel, *Col. Faun. Birm.*, P. 8.

1886. *Cicindela dolens* Fleut., *Bull. Soc. Ent. Fr.*, P. 111.

1912. *Cicindela funebris* : Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae* and Paussidae, PP. 341-342.

Material examined : 3 ex., INDIA : Sikkim : Ind. Mus. Colln.

Distribution : India : Nagaland, Manipur, West Bengal, Punjab, Sikkim.

Elsewhere : Myanmar.

19. *Cicindela angulata* F. 1798

1798. *Cicindela angulata* F., *Ent. Syst.*, Suppl., P. 62.

1845. *Cicindela latipennis* Parry, *Trans. Ent. Soc. Lond.*, P. 84.

1912. *Cicindela angulata* : Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae* and Paussidae, P. 370.

Material examined : Not seen.

Distribution : India : West Bengal, Bihar, Sikkim.

Elsewhere : Pakistan, Bangladesh, Myanmar, Hainan, Annam.

20. *Cicindela cardoni* Fleut., 1890

1890. *Cicindela cardoni* Fleut., *C. R. Soc., Ent. Belgique*, P. 169.

1912. *Cicindela cardoni* : Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae* and Paussidae, PP. 372-373.

Material examined : Not seen.

Distribution : India : West Bengal, Bihar, Sikkim, Maharashtra, Karnataka, Tamil Nadu.

Elsewhere : Myanmar.

21. *Cicindela aurulenta* Fabr. 1825, var. *virgula* Fleut, 1839

1825. *Cicindela aurulenta*, F., *Syst. El.*, 1 : 239.

1839. *Cicindela auro lenta* F. var. *Virgula* Fleut., *Bull. Soc. Ent. Fr.*, P. 491.

1912. *Cicindela aurulenta* F. var. *virgula* : Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae* and Paussidae, PP. 383-384.

Material examined : 1 ex., India : Sikkim : Rangpo, 7.vii. 79, S.C. Mitra Colln.; 1 ex. : Rangpo, 6.ix. 09, Mus. Colln.; 2 ex., Sikkim; 1911, W.K. Webb. Colln.

Distribution : India : West Bengal, Assam, Nagaland, Sikkim.

Elsewhere : Bhutan, Bangladesh, Myanmar, China, Hongkong.

22. *Cicindela chloris* Hope, 1831

1831. *Cicindela chloris* Hope, *Gray's Zool. Misc.*, P. 21.

1848. *Cicindela himalayica* Redt., *Hugel's Kashmir*, 4 (2) : 497, pl. 23, fig. 1.

1912. *Cicindela chloris* : Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae* and Paussidae, P. 376-377.

Material examined : Not seen.

Distribution : India : Kashmir, Uttar Pradesh, Sikkim.

Elsewhere : Nepal.

23. *Cicindela funerea* Macleay, 1825

1825. *Cicindela funerea* MacLeay, *Ann. Jav.* : 12.

1826. *Cicindela marginepunctata* Dajean, *Spec. Col.*, 2 : 428.

1831. *Cicindela assimilis* Hope, *Gray's Zool. Miscell.* : 21.

1912. *Cicindela funerea* : Fowler, *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae* and Paussidae, PP. 377.

Material examined : lex., India : Sikkim : Jorethang, 12.v. 1998, A.K. Hazra Colln., lex., Sikkim : BR, 1911, W.K. Webbs Colln.

Distribution : India : West Bengal, Assam, Bihar, Maharashtra, Himachal Pradesh, Sikkim.

Elsewhere : Bangladesh, Myanmar, Indonesia, Indochina.

24. *Cicindela albopunctata* Chaud, 1852

1852. *Cicindela albopunctata* Chaud, *Bull. Soc. Moscou*, P. 10.

1878. *Cicindela olivia* Bates, *Cist. Ent.*, P. 330.

1912. *Cicindela albopunctata* : Fowler *The Fauna of British India including Ceylon and Myanmar*, Col. : *Genl. Intro. and Cicindelidae and Paussidae*, PP. 378.

Material examined : lex., India : Sikkim : A.V. Knyveth Colln.

Distribution : INDIA : West Bengal, Sikkim, Punjab, Himachal Pradesh, Uttar Pradesh.

Elsewhere : Nepal, Bhutan.

SUMMARY

The present paper is based on the study of the total collections made by different survey parties

of Zoological Survey of India from different districts of Sikkim including the National collection present in the Coleoptera Section. Besides this, some species which were recorded from Sikkim as per literature has also been included here to make a complete list of species recorded from Sikkim. This include a total of 24 species under four genera belonging to two sub families viz. Collyrinae and Cicindelinae. Of which three species viz. *Neocollyris redtenbacheri* (Horn), *Cicindela chloropleura* Chaud, and *Cicindela rugosiceps* Chaud are recorded here for the first time from Sikkim. Besides this, key to the subfamilies, genera and species recorded from Sikkim have been provided. Relevant references, collection and distributional data are also provided.

ACKNOWLEDGEMENTS

We are highly indebted to Dr. J. R. B. Alfred, Director, Zoological Survey of India for giving the opportunity to study the group. Thanks are also due to Dr. G. K. Srivastava, Additional Director (retd.) and Dr. S. K. Mitra, Joint Director (Retd.) for their encouragement and valuable suggestions.

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INSECTA : COLEOPTERA FAMILY. GYRINIDAE AND FAMILY. DYTISCIDAE

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INTRODUCTION

Of the 18 families of aquatic Coleoptera known from the World, representatives of 13 families spreading over all the four suborders are known from India. Among them the family Gyrinidae, Dytiscidae and Hydrophilidae are the dominant families. Present paper dealt with the family Gyrinidae and Dytiscidae and latter family Hydrophilidae will be dealt separately.

The members of the family Gyrinidae are commonly known as 'whirligigibeetles' because of their habit of swimming in groups on the surface of ponds and quiet streams. They are aquatic both in adult and larval stages. The major workers who dealt with the group are Fabricius (1781), Regimbart (1882-83), Vazirani (1958-84) and very recently Biswas, Mukhopadhyay and Saha (1994), Vazirani (1984) has recorded 46 species under the family Gyrinidae from India. Of which, eight species under the genus *Orectochilus* Eschscholtz were recorded from Sikkim in Fauna of India (Coleoptera). In the present study author dealt with the single species available in the unidentified collection. So till to date eight species belonging to the genus *Orectochilus* are known from Sikkim.

The members of the other family Dytiscidae are commonly known as 'Predaceous diving beetles' and are most perfectly adapted to aquatic life. They are very active swimmers and preying on all other small water life. They are in habit in both fresh and brackish water. They also serve as food for carnivores or omnivorous fishes. The major workers who dealt with this group are

Brancucci (1983), Zimmermam (1920), Vazirani (1953-80), Balfour-Browne (1946), Guignot (1954-58), Biswas, Mukhopadhyay and Saha (1994) etc.

Present study is based on the materials collected by different survey parties of Zoological Survey of India from different districts of Sikkim. This include eight species of the genus *Orectochilus* Eschscholtz under the family Gyrinidae and 32 species under 13 genera belonging to the five subfamilies of the family Dytiscidae. Of which 20 species under 9 genera belonging to the family Dytiscidae are recorded here for the first time from Sikkim and one species recorded for the first time from India. Besides this, a systematic list, key to the families, subfamilies, genera and species with references recorded from Sikkim have also been included here. The astrix marked (*) species given in the list are being reported here from the literature.

SYSTEMATIC ACCOUNT : LIST OF THE TAXA

Family I GYRINIDAE

Subfamily I ORECTOCHILINAE

Genus 1. *Orectochilus* Eschscholtz, 1833

1. *O. (S. Str.) murinus* Regimbart, 1891
- *2. *O. (Patrus) desgodinsi desgodinsi* Regim., 1886.
- *3. *O. (P.) cuneatus* Regimbart, 1891
- *4. *O. (P.) cribratellus metallescens* Regimbart, 1907
- *5. *O. (P.) metallicus* Regimbart, 1883.

6. *O. (P.) figuratus* Regimbart, 1891.
7. *O. (P.) oblongiusculus* Regimbart, 1886.
8. *O. (P.) gangeticus* (Widemann), 1930.

Family II. DYTISCIDAE
Subfamily 2. NOTERINAE

Genus 2. *Canthydrus* Sharp, 1882

9. *C. laetabilis* (Walker), 1882

Subfamily 3. LACCOPHILINAE

Genus 3. *Laccophilus* Leach, 1817

10. *L. chinensis* Boheman, 1858
11. *L. flexuosus* Aube, 1838
12. *L. inefficiens* (Walker), 1983
13. *L. indicus* Gschwendtner, 1983
14. *L. medialis* Sharp, 1882
15. *L. parvulus* Aube, 1838
16. *L. ritsemae* Regimbart, 1880
17. *L. Sharpi* Regimbart, 1889
18. *L. uniformis* Motschulsky, 1859

Subfamily 4. HYDROPORINAE

Tribe (A) **Hydrovatini**

Genus 4. *Hydrovatus* Motschulsky, 1855

19. *Hydrovatus* sp.

Tribe (B) **Bidessini**

Genus 5. *Guignotus* Houlbert, 1934

20. *G. angularis* (Klug), 1954
21. *G. flammulatus* (Sharp), 1854
22. *G. inconstans* (Regimbart), 1963
23. *G. pusillus* (F.), 1845

Genus 6. *Uvarus* Guignot, 1939

24. *U. genitilis* Sharp

Subfamily 5 COLYMBETINAE

Tribe (C) **Agabatini**

Genus 7. *Lacconectus* Motschulsky, 1855

- *25. *L. (S.Str.) fulvescens* Mots., 1855

Tribe (D) **Agabini**

Genus 8. *Agabus* Leach, 1817

26. *A. (Gaurodytes) amoenus sinuaticollis* Regimbart
- *27. *A. (Dichonectes) lobonyx* Guignot, 1952

Genus 9. *Platynectes* Regimbart, 1887

- *28. *P. (Gueorguivtes) kashmirens* Balfour-Browne, 1944

Tribe (E) **Colymbetini**

Genus 10. *Rhantus* Stephens, 1835

29. *R. (S. Str.) punjabensis* Vazirani, 1970
30. *R. (S. Str.) sikkimensis*, Regimbart, 1899
31. *R. (S. Str.) sexualis* Zimmermann, 1919

Tribe (F) **Copelatini**

Genus 11. *Copelatus* Erichson, 1832

32. *Copelatus* sp.

Subfamily 6. DYTISCINAE

Tribe (G) **Eretini**

Genus 12. *Eretes* Castalenau, 1833

33. *E. sticticus* (Linnaeus) 1833

Tribe (H) **Hydaticini**

Genus 13. *Hydaticus* Leach, 1817

34. *H. (G.) fabricii* Macleay, 1833
35. *H. (G.) leechi* Sato, 1961
36. *H. (G.) vittatus* (F.) 1838

Tribe (I) **Cybisterini**Genus 14. ***Cybister*** Curtis, 1827

37. *C. convexus* Sharp, 1882
 *38. *C. ventralis* Sharp, 1882
 39. *C. sugillatus* Erichson, 1934
 40. *C. tripunctatus asiaticus* Sharp, 1899

**Key to the families of aquatic Coleoptera
(GYRINIDAE & DYTISCIDAE)**

1. Eyes divided by side of the head appearing as dorsal and ventral pair; antennae short and stout; middle and hind legs short and flattened, tarsi folding, fanwise..... GYRINIDAE
 – Eyes not divided; antennae elongate, slender; hind legs modified for swimming, tarsi flattened and usually fringed with long hairs DYTISCIDAE

Family I GYRINIDAE

Subfamily 1 ORECTOCHILINAE

Genus 1. ***Orectochilus*** Eschscholtz, 1833

1883. *Orectochilus* Eschscholtz, in Dejeans, *Col. Cat.*, ed. II, PP. 59.
 1984. *Orectochilus* : Vazirani, *Fauna of India, Coleoptera : Gyrinidae and Haliplidae*, pp. 35-107.

**Key to the species of the genus
Orectochilus Eschscholtz**

1. Pronotum and elytra entirely pubescent punctate; lateral margin of pronotum not bordered; apical margin of Clypeus slightly concave; labrum two times broader than long; elytral epipleurae reddish *murinus* Regimbart
 – Lateral side of Pronotum and elytra pubescent punctate but glabrous in the middle 2
 2. Labrum transverse and one and half times broader than long; Lateral margin of elytra black; pronotum almost impunctate; elytra with carina in females *gangeticus* (Wied.)
 – Labrum, usually 3-4 times broader than long 3

3. Pronotum and elytra with yellow border 4
 – Pronotum and elytra not yellow bordered; apical margin of labrum hardly convex with reddish cilia, scutellum small and triangular; pubescence of elytra touching the suture at middle and its external apical angle with a small spine *desgodinsi desgodinsi* Regimbart
 4. Lateral pubescence on elytra broader than on pronotum ; labrum 4-times broader than long; scutellum triangular and visible in male *cuneatus* Regimbart
 – Lateral pubescence on elytra not broader than on pronotum..... 5
 5. Smooth area on the pronotum and elytra cardiform 7
 – Smooth area on the pronotum and elytra oval 6
 6. Colour bronze-black, puncturation on elytra moderate; very closely arranged with distinct reticulation..... *metallicus* Regimbart
 – Colour bluish black; elytra strongly punctured *cribratellus metallescens* Regimbart
 7. Lateral pubescence on elytra dilated just before middle; head brown with reddish clypeus; scutellum as along as broad in both sexes ... *figuratus* Regimbart
 – Lateral pubescence on elytra dilated behind middle; head bronze-black with ferruginous clypeus; scutellum two times broader than long in male and almost invisible in female *oblongiusculus* Regimbart

1. ***Orectochilus*** (S. Str.) ***murinus*** Regimbart, 1891

1891. *Orectochilus murinus* Regimbart. *Ann. Soc. ent. Fr.* 60 : 709.

1930. *Orectochilus* (S. Str.) *murinus* : Ochs, *Cat. Ind. Ins.*, pl. 19.

1984. *Orectochilus* (S. Str.) *murinus* : Vazirani, *Fauna of India, Coleoptera : Gyrinidae and Haliplidae*, P. 39-40.

Material examined : 19 ex., India : W. Sikkim : Sombaria, 2.v.1994, S. K. Saha colln.; 2 ex., E. Sikkim : Rongpo, Teesta river, 29.v.1997, S. Biswas colln.

Distribution : India : Sikkim, Himachal Pradesh, Uttar Pradesh, West Bengal, Assam, Meghalaya.

Elsewhere : Bhutan, Indochina.

2. *Orectochilus (Patrus) desgodinsi desgodinsi* Regimbart, 1886

1886. *Orectochilus desgodinsi* Regimbart, *Ann. Soc. ent. Fr.*, (6) 6 : 260, pl. 4, f. 10.

1930. *Orectochilus (Patrus) desgodinsi desgodinsi* : Ochs, *Cat. Indian Ins.*, pt. 19 : 23.

1984. *Orectochilus (P.) desgodinsi desgodinsi* : Vazirani, *Fauna of India, Coleoptera : Gyrinidae and Halipidae*, P. 43-44.

Material examined : Not seen.

Distribution : India : West Bengal, Bihar, Sikkim.

Elsewhere : Bhutan.

3. *Orectochilus (Patrus) cuneatus* Regimbert, 1891

1891. *Orectochilus cuneatus* Regimbart, *Ann. Soc. ent. Fr.*, 60 : 702.

1930. *Orectochilus (Patrus) cuneatus* : Ochs., *Cat. Indian Ins.*, 19 : 23.

1984. *Orectochilus (Patrus) cuneatus* : Vazirani, *Fauna of India, Col. : Gyrinidae and Halipidae*, PP. 55-56.

Material examined : Not seen.

Distribution : India : West Bengal, Sikkim, Punjab, Himachal Pradesh, Uttar Pradesh.

Elsewhere : Nepal.

4. *Orectochilus (Patrus) cribratellus metallescens* Regimbart, 1907

1907. *Orectochilus cribratellus metallescens* Regimbart, *Ann. Soc. ent. Fr.*, 76 : 206

1977. *Orectochilus (Patrus) cribratellus metallescens* : Vazirani, *Newsl. Zool. Surv. India*, 3 (5) : 292.

1984. *Orectochilus (Patrus) cribratellus metallescens* : Vazirani, *Fauna of India. Col. : Gyrinidae and Heleplidae*, PP. 65-66.

Material examined : Not seen.

Distribution : India : West Bengal, Assam,

Arunachal Pradesh, Sikkim.

Elsewhere : Bhutan.

5. *Orectochilus (Patrus) metallicus* Regimbart, 1883

1883. *Orectochilus metallicus* Regimbart, *Ann. Soc. ent. Fr.*, (6) 3 : 418.

1930. *Orectochilus (Patrus) metallicus* Ochs, *Cat. Indian Ins.*, pt. 19 : 29.

1984. *Orectochilus (Patrus) metallicus* : Vazirani, *Fauna of India Col. : Gyrinidae and Halipidae*, PP. 67-68.

Material examined : Not seen.

Distribution : India : West Bengal, Sikkim, Uttar Pradesh.

Elsewhere : Nepal.

6. *Orectochilus (Patrus) figuratus* Regimbart, 1891

1891. *Orectochilus figuratus* Regimbart, *Ann. Soc. ent. Fr.*, 60 : 698.

1930. *Orectochilus (Patrus) figuretus* : Ochs, *Cat. Indian Ins.*, pt. 19 : 25.

1984. *Orectochilus (Patrus) figuretus* : Vazirani, *Fauna of India, Col. : Gyrinidae and Halipidae*, PP. 71-72.

Material examined : Not seen.

Distribution : India : West Bengal, Sikkim.

Elsewhere : Nepal.

7. *Orectochilus (Patrus) oblongiusculus* Regimbart, 1886

1886. *Orectochilus oblongiusculus* Regimbart, *Ann. Soc. ent. Fr.*, (6) 6 : 262, pl. 4, fig. 11.

1930. *Orectochilus (Patrus) oblongiusculus parkeri* : Ochs, *Cat. Indian Ins.*, pt. 19 : 31.

1984. *Orectochilus (Patrus) oblongiusculus* : Vazirani, *Fauna of India, Col. : Gyrinidae and Halipidae*, PP. 74-76.

Material examined : Not seen.

Distribution : India : West Bengal, Meghalaya, Sikkim, Punjab, Himachal Pradesh, Uttar Pradesh.

Elsewhere : Nepal, Burma, Laos, Vietnam.

8. *Orectochilus (Patrus) gangeticus* (Wiedmann), 1838

1821. *Gyrinus gangeticus* Wiedmann, in Germar, *Magazin D' Ent.*, **4** : 119.
 1838. *Orectochilus gangeticus* : Aube, *Species Coleopteres*, **6** : 740.
 1930. *Orectochilus (Patrus) gangeticus* : Ochs, *Cat. Indian Ins.*, Pt. **19** : 25.
 1984. *Orectochilus (Patrus) gangeticus* : Vazirani, *Fauna of India, Col. : Gyrinidae and Haliplidae*, PP. 92-94.

Material examined : Not seen.

Distribution : India : West Bengal, Bihar, Assam, Sikkim, Uttar Pradesh.

Elsewhere : Bangladesh, Indonesia.

Family DYTISCIDAE

Key to the subfamilies of the family DYTISCIDAE

1. Scutellum not visible 2
- Scutellum visible 4
2. Fourth segment of pro and mesotarsi not reduced and subequal to the 3rd tarsal segment; prosternal process straight, sometimes depressed 3
- Fourth segment of pro and mesotarsi much reduced, hardly visible; prosternal process arched and oblique HYDROPORINAE
3. Hind legs with two tarsal claws of equal length, sides of pronotum, rebordered NOTERINAE
- Hind legs with single tarsal claw; sides of pronotum not rebordered LACCOPHILINAE
4. Anterior border of the eyes, excised; three basal segments of protarsi enlarged but not forming a large pallet COLYMBATINAE
- Anterior border of the eyes not excised; three basal segment of protarsi enlarged into oval or subtriangular pallet DYTISCINAE

Subfamily 2 NOTERINAE

Genus 2. *Canthydrus* Sharp, 1882

1882. *Canthydrus* Sharp, *Sci. Trans. R. Dublin Soc.*, **2** 269, 838.
 1977. *Canthydrus* : Vazirani, *Cat. Orient. Dytiscidae*, P. 5.

9. *Canthydrus laetabilis* (Walker), 1882

1858. *Canthydrus laetabilis* Walker, *Ann. Mag. Nat. Hist.*, (3) **2** : 205.
 1882. *Canthydrus laetabilis* (Walker) : Sharp, *Sci. Trans. R. Dublin Soc.*, **2** : 277.
 1977. *Canthydrus laetabilis* : Vazirani, *Cat. Orient. Dytiscidae*, P. 6.

Material examined : 35 ex., India : S. Sikkim : Jorethang, 2.v.1994, S.K. Ghosh Colln.; 15 ex., S. Sikkim : Legship, 21. xii. 1994, S.K. Saha Coll.

Distribution : India : West Bengal, Orissa, Assam, Sikkim, Tripura, Punjab, Gujrat, Rajasthan, Uttar Pradesh, Andhra Pradesh, Kerala.

Elsewhere : Srilanka, Bangladesh, Nepal.

Remarks : This species is recorded here for the first time from Sikkim.

Subfamily 3. LACCOPHILINAE

Genus 3. *Laccophilus* Leach, 1817

1817. *Laccophilus* Leach, *Zool. Misc.*, **3** : 69.
 1882. *Laccophilus*, Sharp, *Sci. Trans. R. Dublin Soc.*, **2** : 287, 841.
 1930. *Laccophilus*, Zimmermann, *Koleopt. Rdsch.*, **16** : 45.
 1977. *Laccophilus*, Vazirani, *Cat. Orient. Dytiscidae*, P. 9.

Key to the species of genus *Laccophilus* Leach

1. Reticulation of pronotum and elytra (at least at the base) double 2
- Reticulation of elytra and very often of pronotum simple 7
2. Elytra with well marked sinuous stripes or with regular wavy lines, not or very briefly

- interrupted sub basally. Very little reticulation on elytra visible on the basal third 3
- Sinuous stripes on elytra very often coalesce and distinctly interrupted in a sub basal band. Reticulation on elytra clearly visible on the basal third 4
3. Species ranges from 3.9 – 4.4 mm in length; stripes on elytra double and strongly sinuous. Elytral surface with punctures at many points where meshes meet *flexuosus* Aube
- Species ranges from 3.2 – 3.5 mm in length. Elytra marked with regular wavy lines. Elytral surface with punctures at a few points where meshes meet *indicus* Gschwendtner
4. Transverse testaceous sub basal band on the elytra with its border strongly excavate 5
- Transverse testaceous subbasal band on the elytra with its anterior border straight *ritsemae* Regimbart
5. Male Penis truncate apically *medialis* Sharp
- Male Penis terminating in a point 6
6. Male Penis short, in lateral view, with its ventral ridge angled in the posterior *chinensis* Boheman
- Male Penis elongate, in lateral view, with its ventral ridge angled near base *inefficiens* (Walker)
7. Species large ranging 3.6 — 4.1 mm in length; left paramere in male very short and as broad as long *sharpi* Regimbart
- Species of moderate size ranging 3 — 3.7 mm in length. Left paramere in male elongate and about twice as long as broad 8
8. Elytra usually with distinct sinuous stripes and occasionally abbreviated or very rarely absent. Penis of male truncate at apex *parvulus* Aube
- Elytra testaceous with brown irrorations, sometimes only slightly distinct. Penis in male terminating in a blunt point *uniformis* Motsch.

10. *Laccophilus chinensis* Boheman, 1858

1858. *Laccophilus chinensis* Boh., *Fregatten Eugenie's Resa* : 21.
1859. *Laccophilus inefficiens* Walker, *Ann. Mag. nat. Hist.*, (3) 3 : 51.
1899. *Laccophilus chinensis* var. *inefficiens* : Regimbart, *Ann. Soc. ent. Fr.*, 68 : 260.
1954. *Laccophilus chinensis inefficiens* : Guignot, *Ark. Zool.*, (N. S.) 6 : 565.
1983. *Laccophilus chinensis* : Brancucci, *Ent. Arb. Mus. Frey*, 31/32, P. 329.

Material examined : 2 ex., India : Sikkim : Tarki. 11.xii. 1994, S.K. Saha Colln.

Distribution : India : West Bengal, Assam, Sikkim.

Elsewhere : Nepal, Bhutan, Bangladesh, China, Hongkong, Japan, Taiwan, Vietnam, Laos, Thailand.

11. *Laccophilus flexuosus* Aube, 1838

1838. *Laccophilus flexuosus* Aube, *In Dajans species Coleopteres*, 6 : 430.
1977. *Laccophilus flexuosus* : Vazirani, *Cat. Orient. Dytiscidae*, P. 11.

Material examined : 3 ex., India : Sikkim (S.), Leg ship, 21.xii. 1994, S.K. Ghosh Colln.; 1ex., Sikkim (N.) Mongan, 23.iv. 1994, S.K. Saha Colln.; 2 ex., Sikkim (S.), Jorethang, 21.xii. 1994. S.K. Saha Colln.; 3ex., Sikkim (S.), Jorethang, 02.v. 1994, S.K. Saha Colln.

Distribution : India : West Bengal, Bihar, Orissa, Tripura, Sikkim, Madhya Pradesh, Gujrat, Rajasthan, Maharashtra, Uttar Pradesh, Himachal Pradesh, Andhra Pradesh, Karnataka, Tamil Nadu.

Elsewhere : Iran, Iraq, Japan, Burma, Sri Lanka, Pakistan, Nepal, Indonesia, Hongkong.

Remarks : This species is recorded here for the first time from Sikkim.

12. *Laccophilus inefficiens* (Walker), 1882

1859. *Hydroporus inefficiens* Walker, *Ann. Mag. Nat. Hist.*, 3 : 51.
1882. *Laccophilus inefficiens* (Walker) ; Sharp. *Sci. Trans. R. Dublin Soc.*, 2 : 287, 797.

1959. *Laccophilus chinensis inefficiens* (Walker) : Fernando, *Ceylon J. Sci. (Bio. Sci.)*, **2** : 1-3.

1983. *Laccophilus inefficiens* (Walker) : Brancucci, *Ent. Arb. Mus. Frey*, 31/32, P. 332.

Material examined : 12 ex., India : Sikkim : (S.), Jorethang, 21.xii. 1994, S.K. Saha coll. ; 22 ex., Sikkim (S.) : Jorethang, 2.v. 1994, S.K. Saha coll., 1 ex., Sikkim (S.) : Jorethang, 5.vi. 1997, S. Biswas coll., 39 ex., Sikkim (S.) : Legship, 21.xii. 1994, S.K. Saha colln., 20 ex., Sikkim : Torku, 11.xii. 1994, S.K. Saha Colln. : 25 ex., Sikkim (E) : Rongpo : Teesta river bed, 27.v. 1997, S. Biswas Colln., 22 ex., Sikkim (E) : Rongpo, on Teesta river bed, 28.v. 1997, S. Biswas colln.

Distribution : India : West Bengal, Bihar, Orissa, Sikkim, Tripura, Uttar Pradesh, Punjab, Maharashtra, Madhya Pradesh, Andhra Pradesh, Karnataka, Tamil Nadu, Kerala.

Elsewhere : Nepal, Sri Lanka.

Remarks : This species is recorded here for the first time from Sikkim.

13. *Laccophilus indicus* Gschwendtner, 1983

1936. *Laccophilus solutus* var. *indicus* Gschwendtner, *Rec. Indian Mus.*, **37** (1935) : 367.

1959. *Laccophilus flexuosus* Aube, Guignot, *Bull. mens. Soc. Linn. Lyon*, **28** : 11.

1968. *Laccophilus sindensis* Vazirani, *Ori. Ins.*, **2** : 247.

1983. *Laccophilus indicus* Gschwendtner : Brancucci, *Ent. Arb. Mus. Frey*, 31/32, P. 322.

Material examined : 1 ex., India : Sikkim (S.), Jorethang, 2.v. 1994, S.K. Ghosh Colln. ; 1 ex., Sikkim (S.), Leg Ship, 21.xii. 1994, S.K. Saha Colln.

Distribution : India : West Bengal, Sikkim, Punjab, Tripura.

Elsewhere : Bangladesh.

Remarks : This species is recorded here for the first time from Sikkim.

14. *Laccophilus medialis* Sharp, 1882

1882. *Laccophilus medialis* Sharp, *Sci. Trans. R. Dublin Soc.*, **2** : 309.

1977. *Laccophilus medialis* : Vazirani, *Cat. Orient. Dytiscidae*, P. 13.

Material examined : 1 ex., India : Sikkim (S.) : Legship, 21.xii. 1994, S.K. Saha Colln.

Distribution : India : West Bengal, Sikkim.

Elsewhere : Bhutan, Thailand, Laos, Vietnam, Indonesia.

Remarks : This species is recorded here for the first time from Sikkim.

15. *Laccophilus parvulus* Aube, 1838

1838. *Laccophilus parvulus* Aube, *In Dajans species Coleopteres*, **6** : 429.

1977. *Laccophilus parvulus* : Vazirani, *Cat. Orient. Dytiscidae*, P. 13.

Material examined : 3 ex., INDIA : Sikkim (S.), Jorethang, 21.xii. 1994, S.K. Saha Colln. ; 2 ex., Sikkim (N.), Mongan, 23.iv. 1994, S.K. Saha colln.; 5 ex., Sikkim (S.) Legship, 21.xii. 1994, S. K. Saha Colln.

Distribution : India : West Bengal, Assam, Sikkim, Bihar, Tripura, Manipur, Orissa, Madhya Pradesh, Maharashtra, Rajasthan, Gujarat, Andhra Pradesh, Tamil Nadu.

Elsewhere : Burma, Sri Lanka, Pakistan, Thailand, Malayasia, Indonesia, Vietnam.

Remarks : This species is recorded here for the first time from Sikkim.

16. *Laccophilus ritsemae* Regimbart, 1880

1880. *Laccophilus ritsemae* Regimbart, *Notes Leydon Mus.*, **2** : 209.

1983. *Laccophilus ritsemae* : Brancucci, *Ent. Arb. Mus. Frey*, 31/32, P. 335.

Material examined : 1 ex., India : Sikkim (S.) : Legship, 21. xii. 1994, S. K. Saha Colln.

Distribution : India : Sikkim, Andaman & Nicobar Islands.

Elsewhere : Indonesia, Philippines

Remarks : This species is recorded here for the first time from Sikkim.

17. *Laccophilus sharpi* Regimbart, 1889

1889. *Laccophilus sharpi* Regimbart, *Ann. Soc. ent. Fr.*, 6 : (9) : 151.

1977. *Laccophilus sharpi* : Vazirani, *Cat. Orient. Dytiscidae*, P. 15.

Material examined : 1 ex., India : Sikkim (S.) : Legship, 21.xii. 1994, S.K. Saha Colln.; 5 ex., Sikkim (S.) : Jorethang, 21.xii. 1994, S.K. Saha Colln.

Distribution : INDIA : Sikkim, Tripura, Bihar, Orissa, Madhya Pradesh, Maharashtra, Rajasthan, Gujarat, Uttar Pradesh, Tamil Nadu, Andaman I.s.

Elsewhere : Myanmar, Pakistan, Nepal, Sri Lanka, Japan, China, Iraq.

Remarks : This species is recorded here for the first time from Sikkim.

18. *Laccophilus uniformis* Motschulsky, 1859

1859. *Laccophilus uniformis* Most., *Etudes Entomologique*, 8 : 46.

1882. *Laccophilus uniformis* : Sharp, *Sci. Trans. R. Dublin Soc.*, 2 : 822.

1977. *Laccophilus uniformis* : Vazirani, *Cat. Orient. Dytiscidae*, P. 17.

1983. *Laccophilus uniformis* : Brancucci, *Ent. Arb. Mus. Frey*, 31/32, P. 366.

Material examined : 1 ex., India : Sikkim (S.), : Jorethang, 21.xii. 1994, S.K. Ghosh Colln.

Distribution : India : Sikkim.

Elsewhere : Burma, China, Vietnam, Laos, Cambodia, Thailand, Indonesia.

Remarks : Brancucci (1983) has recorded this species from India with question mark. In the present study this species is recorded from Jorethang : Sikkim.

Subfamily 4. HYDROPORINAE

Key to the genera of the subfamily
HYDROPORINAE

1. Prosternal process broadened at the apex; sutural angle of elytra acuminate.....
.....*Hydrovatus* Motschulsky

- Prosternal process not broadened at apex 2
- 2. Elytra with a sutural striae.....
.....*Guignotus* Houlbert
- Elytra without a sutural striae, if present, only near apex.....*Uvarus* Guignot

Tribe A. **Hydrovatini**Genus 4. *Hydrovatus* Mostchulsky, 1855

1855. *Hydrovatus* Motschulsky, *Etudes Entomologiques*, 5 : 82.

1977. *Hydrovatus* : Vazirani, *Cat. Orient. Dytiscidae*, P. 25.

19. *Hydrovatus* sp.

Material examined : 8 ex., India : Sikkim (S.), Jorethang, 2.v.1994, S.K. Saha colln.; 25 ex., Sikkim (S.) : Legaship, 21.xii.1994, S.K. Saha colln.; 2 ex., Sikkim (E.), Rongpo, 28.v. 1997, S. Biswas colln.

Remarks : The detailed study regarding the species will be dealt separately.

Tribe B. **Bidessini**Genus 5. *Guignotus*, Houlbert, 1934

1934. *Bidessus* (*Guignotus*) Houlbert, *Fauna Ext. Arm.*, Hydrocanthares, P. 54.

1945. *Guignotus* : Guignot, *Mem. Mus. natn. Hist. nat.*, 19 : 226.

1977. *Guignotus* : Vazirani, *Cat. Orient Dytiscidae*, P. 31.

Key to the species of the genus
Guignotus Houlbert

1. Laterobasal plica on pronotum not continued on elytra at all*flammulatus* (Sharp)
- Latero basal plica distinctly continued on elytra 2
2. Length of the species less than 2 mm
.....*inconstans* (Regimbart)
- Length of the species more than 2 mm 3
3. Punctuation on elytra dense, strong and a little feeble along margin, length ranges from 2.5 to 2.75 mm.....*angularis* (Klug.)

- Punctuation on elytra fine; the length of the species ranges from 2.0 – 2.2 mm
.....*pusillus* (F.)

20. *Guignotus angularis* (Klug), 1954.

1833. *Hydroporus angularis* Klug, *Symbolac physicae*, 4 : t. 34, f. 1, 2.
1895. *Bidessus angularis* : Regimbart, *Mem. Soc. Ent. Belgique*, 4 : 86, fig. 30.
1920. *Bidessus* (S. Str.) *angularis* : Zimmermann, *Col. Cat.*, 4 (21) : 49.
1954. *Guignotus angularis* : Guignot, *Bull. Soc. Linn. Lyon*, 28 : 9.

Material examined : 2 ex., India : Sikkim (E.) : Rangpo, 31. v. 1997, S. Biswas colln.

Distribution : India : Sikkim.

Elsewhere : Pakistan, Egypt, Tunisia, Algeria.

Remarks : This species is recorded here for the first time from India.

21. *Guignotus flammulatus* (Sharp), 1954.

1882. *Bidessus flammulatus* Sharp, *Sci. Trans. R. Dublin Soc.*, 2 : 359.
1920. *Bidessus* (S. Str.) *flammulatus* : Zimmermann, *Col. Cat.*, 4 : 51.
1954. *Guignotus flammulatus* (Sharp) Guignot, *Opusc. end.*, hind, 19 : 221.
1977. *Guignotus flammulatus* : Guignot, *Cat. Orient. Dytiscidae*, P. 32.

Material examined : 12 ex., India : Sikkim (S.), Jorethang, 3.v. 1994, S.K. Saha colln.

Distribution : India : West Bengal, Bihar, Orissa, Sikkim Uttar Pradesh, Madhya Pradesh, Rajasthan, Gujarat, Tamil Nadu.

Elsewhere : Bangladesh, Myanmar, Sri Lanka, Pakistan, China, Japan, Indonesia, Vietnam, Thailand.

Remarks : This species is recorded here for the first time from Sikkim.

22. *Guignotus inconstans* (Regimbart), 1963

1892. *Bidessus inconstans* Regimbart, *Ann. Soc. ent. Fr.*, 36 : 119.

1963. *Guignotus inconstans* (Regimbart) : Fernando, *Bull. Fish. Res. Stn. Ceylon*, 16 (1) : 26.

1977. *Guignotus inconstans* : Vazirani, *Cat. Orient. Dytiscidae*, PP. 33-34.

Material examined : 8ex., India : Sikkim (S.), Jorethang, 3. v. 1994, S. K. Saha colln., 3 ex., Sikkim (S.) : Legship, 21.xii. 1994, S.K. Saha colln.

Distribution : India : Bihar, Sikkim, Orissa, Rajasthan, Maharashtra, Goa, Karnataka.

Elsewhere : Sri Lanka, Nepal, Malaysia, Bhutan, Burma, Indonesia.

Remarks : This species is recorded here for the first time from India.

23. *Guignotus pusillus* (Fab.), 1945

1781. *Dytiscus pusillus* F., *Species Ins.*, 1 : 297.
1792. *Dytiscus pusillus geminus* F., *Ent. Syst.*, 1 : 199.
1945. *Guignotus pusillus* (F.) : Guignot, *Mem. Mus. nat. Hist. nat.*, 19 : 241.
1977. *Guignotus pusillus* Vazirani, *Cat. Orient. Dytiscidae*, P. 35.

Material examined : 16 ex., India : Sikkim : Jorethang, 3.v. 1994, S.K. Saha colln.; 1 ex., Sikkim (S.) : Legship, 21.xii. 1994, S.K. Saha & S.K. Ghosh colln.

Distribution : India : Sikkim, Kashmir, Madhya Pradesh, Uttar Pradesh, Rajasthan.

Elsewhere : Palaearctic Region.

Remarks : This species is recorded here for the first time from Sikkim.

Genus 6. *Uvarus* Guignot, 1939

1939. *Amarodytes* (*Uvarus*) Guignot, *Bull. Soc. Etude Sci. nat.*, Vaucluse, P. 53.
1959. *Uvarus* Guignot, *Ann. Mus. R. Congo Belge.*, (8) 70 : 294.
1977. *Uvarus* : Vazirani, *Cat. Orient. Dytiscidae*, P. 41.

24. *Uvarus genitilis* (Sharp) 1963

1890. *Bidessus genitilis* Sharp, *Trans. Ent. Soc. London* : 344.

1920. *Bidessus* (S.Str.) *genitilis* : Zimmermann, *Colo. Cat.*, 4 (71) : 53.

1963. *Uvarus genitilis* (Sharp) ; Fernando, *Bull. Fish. Res. Sin. Ceylon*, 16 : 25.

1977. *Uvarus genitilis* : Vazirani, *Cat. Orient. Dytiscidae*, P. 42.

Material examined : 4 ex., INDIA : Sikkim (S.) : Jorethang, 3.vi.1994, S. K. Saha colln.; 1 ex., Sikkim (S.) : Legship, 21.xii.1994, S. K. Saha colln., 1 ex., Sikkim (E.) : Rongpo, on Teesta river bed, 28.v.1997, S. Biswas colln.

Distribution : India : Bihar, Sikkim, Orissa.

Elsewhere : Pakistan, Sri Lanka, Malaysia.

Remarks : This species is recorded here for the first time from Sikkim.

Subfamily 5. COLYMBETINAE

Key to the genera of the subfamily COLYMBATINAE

1. Metafemora with a group of ciliae at the posterior apical angle (Agabini) 2
- Meta femora without a group of ciliae at the posterior apical angle 3
2. Pronotum not so short, its side margin rebordered with two lines of transverse punctures, pronotum not convex in the middle near scutellum *Agabus* Leach
- Pronotum short and about four times broader than long, base of pronotum convex in the middle near scutellum *Platynectes* Regimbart
3. Posterior claws unequal (Colymbetini) ; elytral sculpture without any transverse striae ; male with 3-basal segments of protarsi and meso-tarsi dilated or compressed and thickened *Rhantus* Stephens
- Posterior claws equal 4
4. Hind coxal lines divergent anteriorly and coming so close together as almost to touch median line and turn outwards almost at right angles to hind coxal process; sides of pronotum distinctly margined (Copelatini) *Copelatus* Er.

- Hind coxal lines never touching median line and turning outwards almost at right angle to hind coxal processes ; sides of pronotum not distinctly margined (Agabatini) *Lacconectus* Mots.

Tribe (C) Agabatine

Genus 7. *Lacconectus* Motschulsky, 1855

1855. *Lacconectus* Motschulsky, *Etudes Entomologiques*, 4 : 83.

1977. *Lacconectus* : Vazirani, *Cat. Orient. Dytiscidae*, P. 58.

25. *Lacconectus* (S.Str.) *fulvescens* Motschulsky, 1855

1855. *Lacconectus fulvescens* Motschulsky, *Etudes Entomologiques*, 4 : 83.

1970. *Lacconectus* (S.Str.) *fulvescens* : Vazirani, *Orient. Ins.*, 4 : 325.

Material examined : Not seen.

Distribution : India : West Bengal, Manipur, Sikkim.

Elsewhere : Burma, Malaysia, Indonesia.

Tribe (D) Agabini

Genus 8. *Agabus* Leach, 1817

1817. *Agabus* Leach, *Zool. Muscell.*, 3 : 69, 72.

1882. *Agabus* : Sharp, *Sci. Trans. R. Dublin Soc.*, 2 : 493, 876.

1970. *Agabus* : Vazirani, *Orient. Ins.*, 4 (3) : 331.

1977. *Agabus* : Vazirani, *Cat. Orient. Dytiscidae*, P. 61.

Key to the species of the genus *Agabus* Leach

1. Prosternal process neither discoidal nor a plate; reticulation on elytra rounded and almost regular. Apex of penis bifid, head rufo ferrugineus *(Gaurodytes) amoenus sinuaticollis* Regimbart
- Prosternal process very large in the form of discoidal or subdiscoidal plate, its apex simple;

29. *Rhantus* (S. Str.) *Punjabensis*

Vazirani, 1970

1970. *Rhantus* (S. Str.) *punjabensis* Vazirani, *Ori. Ins.*, 4 : 355.1977. *Rhantus* (S. Str.) *punjabensis* : Vazirani, *Cat. Orient. Dytiscidae*, P. 72.*Material examined* : 7 ex., India : Sikkim (E.) : Rongpo, 25.xii.1975, G.K. Srivastava colln.*Distribution* : India : Sikkim, Himachal Pradesh.*Elsewhere* : Pakistan.*Ramarks* : This species is recorded here for the first time from Sikkim.30. *Rhantus* (S. Str.) *sexualis*

Zimmermann, 1919

1919. *Rhantus sexualis* Zimmermann, *Arch. Naturgesch.*, 83A (12) : 219.1936. *Rhantus sexualis* : Gschwendtner, *Rec. Ind. Mus.*, PP. 37.1970. *Rhantus* (S. Str.) *sexualis* : Vazirani, *Ori. Ins.*, 4 : 358.1977. *Rhantus* (S. Str.) *sexualis* : Vazirani, *Cat. Orient. Dytiscidae*, PP. 72.*Material examined* : 29 ex., India : Sikkim (N.), Yumthang, 3.xi.1992, M.S. Shishodia colln.*Distribution* : India : Sikkim, Himachal Pradesh.*Elsewhere* : China.31. *Rhantus* (S. Str.) *sikkimensis* Regimbart, 18991899. *Rhantus sikkimensis* Regimbart, *Ann. Soc. ent. Fr.*, 68 : 306.1970. *Rhantus* (S. Str.) *sikkimensis* : Vazirani, *Ori. Ins.*, 4 : 355.1977. *Rhantus* (S. Str.) *sikkimensis* : Vazirani, *Cat. Orient. Dytiscidae*, P. 72.*Material examined* : 2 ex., India : Sikkim (S.), M. Pokhri, Nagi Lower Lake, 15.ix.1995, M.P. Thapa colln.*Distribution* : India : West Bengal, Meghalaya, Sikkim, Himachal Pradesh, Punjab.*Elsewhere* : Pakistan, Burma, China.Tribe (F) *Copelatin*Genus 11. *Copelatus* Erichson, 18321832. *Copelatus* Er., *Genera Dytiscidae*, PP. 18, 38.1970. *Copelatus* : Vazirani, *Ori. Ins.*, 4 (3) : 306.1977. *Copelatus* : Vazirani, *Cat. Orient. Dytiscidae*, P. 52.32. *Copelatus* sp.*Material examined* : 9 ex., India : Sikkim (E.) : Rongpo, Teesta River bed, 28.v.1997, S. Biswas colln.*Distribution* : India : Sikkim.*Remarks* : The detailed study regarding the species will be dealt elsewhere.

Subfamily 6. DYTISCINAE

Key to the genera of the subfamily
DYTISCINAE

1. Hind margins of the four basal metatarsal segments on both the anterior and posterior faces fringed with golden-yellow cilia overlapping the base of the next segment..... 2
- Hind margins of the four basal metatarsal segments not fringed with any cilia
..... (Cybisterini) *Cybister* Curtis
2. Sides of pronotum reboardered; lateral margin of elytra serrated in the posterior half (Eretini)
..... *Eretes* Castalenau
- Sides of pronotum not reboardered ; lateral margin of elytra not serrated in the posterior half ; posterior claws unequal (Hydaticini) ...
..... *Hydaticus* Leach

Tribe (G) *Eretini*Genus 12. *Eretes* Castalenau, 18331833. *Eretes* Castalenau, *Ann. Soc. ent. Fr.*, (5) 8 : 450.1977. *Eretes* : Vazirani, *Cat. Orient. Dytiscidae*, P. 73.33. *Eretes sticticus* (Linnaeus), 18331767. *Dytiscus sticticus* Linnaeus, *Syst. Nat.*, ed. 12, P. 666.

1833. *Eretes sticticus* (L.) : Castalenau, *Ann. Soc. ent. Fr.*, (5) 8 : 450.

1977. *Eretes sticticus* : Vazirani, *Cat. Orient. Dytiscidae*, P. 73.

Material examined : 1 ex., India : Sikkim (S.), Jorethang, 5.v.1994, S.K. Ghosh colln. ; 6 ex., Sikkim (S.) : Jorethang, 5.v. 1994, S. Biswas colln.; 4 ex., Sikkim (E.) : Rongpo, Teesta river bed, 5.vi. 1997, S. Biswas colln.; 1 ex., Sikkim : Mamthang, 13.v. 1995. P. H. Roy & Party.

Distribution : India : West Bengal, Bihar, Orissa, Assam, Sikkim, Manipur, Punjab, Uttar Pradesh, Maharashtra, Kashmir, Rajasthan, Gujarat, Delhi, Andhra Pradesh, Goa, Karnataka, Tamil Nadu, Andaman Is.

Elsewhere : Nepal, Myanmar, Pakistan, Thailand.

Remarks : This species is recorded here for the first time from Sikkim.

Tribe (H) *Hydaticini*

Genus 13. *Hydaticus* Leach, 1817

1817. *Hydaticus* Leach, *Zool. Miscell.*, 3 : 69, 72.

1977. *Hydaticus* : Vazirani, *Cat. Orient. Dytiscidae*, P. 75.

Key to the species of the genus *Hydaticus*

1. Elytra black 2
- Elytra reddish yellow *fabricii* Macleay
2. Two Humeral and sub marginal yellow stripes on elytra converging posteriorly and joined after the middle *vittatus* (F.)
- Humeral and submarginal yellow stripes on elytra not joined posteriorly *Leachi* Sato.

34. *Hydaticus* (*Guignotites*) *fabricii* Macleay, 1833

1833. *Hydaticus fabricii* Macleay, *Annulosa Javanica*, P. 134.

1838. *Hydaticus rufulus* Aube, in *Dejean's Species Coleopteres*, : 6 : 199.

1858. *Hydaticus confusus* Boheman, *Eugen, Ressies Col.*, P. 21.

1977. *Hydaticus* (*Guignotites*) *fabricii* : Vazirani, *Cat. Orient. Dytiscidae*, P. 76-77.

Material examined : 7 ex., India : Sikkim (E.), Rongpo, 25.xii.1975, G. K. Srivastava colln.; 1 ex., Sikkim (S.), Jorethang, 5.v.1994, S. K. Saha colln.

Distribution : India : Sikkim, Rajasthan, Goa, Tamil Nadu, Andaman Is.

Elsewhere : Indonesia, Vietnam, Philippines.

Remarks : This species is recorded here for the first time from Sikkim.

35. *Hydaticus* (*Guignotites*) *leechi* Sato, 1961

1961. *Hydaticus leechi* Sato, *Trans. Shikoku ent. Soc.*, 7 : 61.

1977. *Hydaticus* (*Guignotites*) *Leechi* : Vazirani, *Cat. Orient. Dytiscidae*, P. 78.

Material examined : 1 ex., India : Sikkim (S.), M. Pokhri, Nagi Lower Lake, 15.ix.1995, T. P. Thappa colln.

Distribution : India : Sikkim, Andaman Is.

Elsewhere : Indonesia, Vietnam.

Remarks : This species is recorded here for the first time from Sikkim.

36. *Hydaticus* (*Guignotites*) *vittatus* (Fabricius), 1838

1775. *Dytiscus vittatus* F., *Syst. ent. App.*, : 825.

1838. *Hydaticus vittatus* (F.) : Aube, in *Dejeans species Col.*, 6 : 208.

1977. *Hydaticus* (*Guignotites*) *vittatus* : Vazirani, *Cat. Orient. Dytiscidae*, P. 81.

Material examined : 1 ex., India : Sikkim (E.) : Rongpo, Teesta river bed, 28.v. 1997, S. Biswas colln.; 1 ex., Sikkim (E.) : Rongpo, Teesta river bed, 29.v. 1997, S. Biswas colln.; 2 ex.; Sikkim (S.), M. Pokhri, Nagi Lower Lake, 15.ix. 1995. M.P. Thappa colln.

Distribution : India : West Bengal, Sikkim, Tripura, Uttar Pradesh, Gujarat, Tamil Nadu.

Elsewhere : Indonesia.

Remarks : This species is recorded here for the first time from Sikkim.

Tribe (I) **Cybisterini**Genus 14. **Cybister** Curtis, 18271827. *Cybister* Curtis, *Brit. Ent.*, 4 : 151.1977. *Cybister* : Vazirani, *Cat. Orient. Dytiscidae*, P. 86.**Key to the species of the genus
Cybister Curtis**

1. Elytra without yellow lateral stripe 2
- Elytra with yellow lateral stripe 3
2. Pronotum with reddish margin on the sides; abdominal sternites with indistinct spot on each side *sugillatus* Er.
- Pronotum without any reddish margin on the sides; 3rd and 4th abdominal sternites with small reddish spot on side *convexus* Sharp.
3. Elytra with yellow lateral stripe extending to and covering epipleurae, species without any sexual sculpture in the form of longitudinal or zig-zag striations in female
..... *tripunctatus asiaticus* Sharp
- Elytra with yellow lateral strips submarginal, not extending to the epipleurae at the base ; species generally with elytral sexual sculpture in the form of longitudinal or zig-zag striations *ventralis* Sharp.

37. ***Cybister convexus*** Sharp, 18821882. *Cybister convexus* Sharp, *Sci. Trans. R. Dublin Soc.*, 2 : 718.1977. *Cybister convexus* : Vazirani, *Cat. Orient. Dytiscidae*, P. 87.**Material examined** : 1 ex., India : Sikkim (E.), Rongpo, 13.xi. 1992, A.K. Hazra colln.**Distribution** : India : West Bengal, Assam, Sikkim, Manipur.**Elsewhere** : China**Remarks** : This species is recorded here for the first time from Sikkim.38. ***Cybister ventralis*** Sharp, 18821882. *Cybister ventralis* Sharp, *Sci. Trans. R. Dublin Soc.*, 2 : 742.1882. *Cybister gracilis* Sharp, *Sci. Trans. R. Dublin Soc.*, 2 : 743.1882. *Cybister crassus* Sharp, *Sci. Trans. R. Dublin Soc.*, 2 : 743.1969. *Cybister ventralis* Sharp : Vazirani, *Ori. Ins.*, 2 (3-4) : 296-298.**Material examined** : Not Seen.**Distribution** : India : Bihar, Assam, Orissa, Sikkim, Madhya Pradesh, Karnataka.39. ***Cybister sugillatus*** Erichson, 19341934. *Cybister sugillatus* Er., *Nova Acta Leop Carol.*, 16 : 227.1977. *Cybister sugillatus* : Vazirani, *Cat. Orient. Dytiscidae*, P. 89.**Material examined** : 2 ex., India : Sikkim (E.), Rongpo, Teesta river bed, 28.v. 1997, S. Biswas colln.**Distribution** : India : West Bengal, Assam, Tripura, Orissa, Sikkim, Uttar Pradesh, Madhya Pradesh, Maharashtra, Tamil Nadu.**Elsewhere** : Tibet, Japan, Indonesia, Philippines.40. ***Cybister tripunctatus asiaticus*** Sharp, 18821882. *Cybister asiaticus* Sharp, *Sci. Trans. R. Dublin Soc.*, 2 : 731.1899. *Cybister tripunctatus asiaticus* : Regimbart, *Ann. Soc. ent. Fr.*, 68 : 352.1977. *Cybister tripunctatus asiaticus* : Vazirani, *Cat. Orient. Dytiscidae*, P. 92.**Material examined** : 1 ex., India : Sikkim (S.), M. Pokhri, Nagi Lower Lake, 15.ix. 1995, M. Thapa ; 1 ex., Sikkim (S.), Namchi, 8.xi. 1993, B.N. Das ; 1 ex., Sikkim (E.) : Rangpo, 13.xi. 1992, A.K. Hazra colln.; 6 ex., Sikkim (W.), soreng, 20.xii. 1994, S.K. Saha ; 3 ex., Sikkim (W.), chakung, 19.xii. 1994, S.K. Saha colln.; 4 ex., Sikkim (E.) : Setipool, 13.xii. 1994, S.K. Saha colln.; e ex., Sikkim (S.), Jorethang, 5.v. 1994, S.K. Saha coll., 5 ex., Sikkim (S.) : Vanjyang, 12.xii. 1994, S.K. Saha colln.

Distribution : India : Sikkim, Tripura, Rajasthan, Gujarat, Tamil Nadu, Andaman Is.

Elsewhere : Pakistan, Sri Lanka, Myanmar, Nepal, Bangladesh, Afganishtan.

SUMMARY

A comprehensive taxonomic account of Orectochilinae (Gyrinidae) and Noterinae, Laccophilinae, Hydroporinae, Colymbetinae and Dytiscinae of the family Dytiscidae with reference to the species known from Sikkim India is presented. It includes 8 species of the genus *Orectochilus* Eschscholtz under the family Gyrinidae and 32 species under 13 genera belonging to 5-subfamilies of the family Dytiscidae. Of which the species *Guignotus angularis*

(Klug) is recorded for the first time from India and 20 species under 9 genera are recorded for the first time from Sikkim. Besides this, a systematic list, key to the families, subfamilies, genera and species with references material examined and distribution have also been included here.

ACKNOWLEDGEMENT

Authors are grateful to the Director, Zoological Survey of India for providing laboratory facilities. Thanks are also due to Dr. G.K. Srivastava, Additional Director (Retd.) and Dr. S.K. Mitra, Joint Director (Retd.) for their encouragement and suggestions for improvement of the paper.

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INSECTA : POLYPHAGA : COLEOPTERA : HYDROPHILIDAE

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INTRODUCTION

The family Hydrophilidae belongs to the superfamily Hydrophiloidea of the suborder Polyphaga : Coleoptera. The members of this family are commonly known as 'water scavenger beetle' and majority of which are truly aquatic. Some of them are terrestrial and found in moist places like dung, decaying vegetable garbage, under crevices in oozing trunk, rotten banana and such other places also. This insect varies from small to large in size and can be easily distinguished by its maxillary palpi which may be mistaken as antennae. The systematic position of the subfamilies of this family is interesting and controversial. Knisch (1924) divided the family Hydrophilidae into eight subfamilies viz. Hydraeninae, Limnebiinae, Spercheinae, Helophorinae, Epimentopinae, Hydrochinae, Sphaeridiinae and Hydrophilinae. Other major workers who dealt with the group are d'Orchymont (1928), Crowson (1981), Lawrence (1982), Sharp (1890), Regimbartia (1903), G.C.Champion (1920), Balfour Browne (1948), Jayaswal (1971) & Very recently schodl (1992-95), Bameul (1993, 1996). Of them schodl (1992) revised the genus *Berosus* Leach of the oriental region. Sato (1979) dealt with the Indian species. Later Biswas and Mukhopadhyay (1995) provided the latest account of Hydrophilidae from West Bengal, wherein, they dealt with 40 species belonging to 19 genera. Prior to this study, only two species viz. *Ochthebius* (Hymenodes)

explanatus d'orchymont and *Pachysternum cardoni* d'orchymont were recorded from Sikkim. Present study includes a total of twenty two species under thirteen genera belonging to three subfamilies viz. Hydraeninae, Sphaeridiinae and Hydrophilinae from Sikkim, of which, one species, *Pachysternum nigrovittatum* Motsch. is recorded here for the first time from India and 19 species under 12 genera are recorded here for the first time from Sikkim.

SYSTEMATIC ACCOUNT : LIST OF THE TAXA

Family HYDROPHILIDAE

Subfamily I. HYDRAENINAE

Genus 1. *Ochthebius* Leach, 1815

1. *Ochthebius* (Hymenodes) *explanatus* d'orchy, 1937.

Subfamily II. SPHAERIDIINAE

Tribe I. *Sphaeridiini*

Genus 2. *Coelostoma* Brulle, 1835

2. *C. horni* Regimbart, 1902
3. *C. stultum* Walker, 1858

Genus 3. *Dactylosternum* Wollaston, 1854

4. *D. hydrophiloides* (M'Leay), 1825
5. *D. abdominale* F. 1792

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Tribe II. **Cercyonini**Genus 4. **Cercyon** Leach, 1817

- 6.
- C. (C.) vicinalis*
- Walker, 1859

Tribe III. **Megasternini**Genus 5. **Pachysternum** Mots., 1863

- 7.
- P. cardoni*
- d'orchymont, 1926

- 8.
- P. nigrovittatum*
- Mots., 1863

Subfamily III. : **HYDROPHILINAE**Tribe IV. **Hydrobiini**Genus 6. **Paracymus** Thomson, 1867

- 9.
- P. evanescens*
- (Sharp), 1890.

Genus 7. **Ameter** Semenov, 1900

- 10.
- A. rugosus*
- Knisch, 1924

Genus 8. **Laccobius** Erichson, 1837

- 11.
- L. simulans*
- d'orchymont, 1923

- 12.
- L. orientalis*
- Knisch, 1924

Genus 9. **Helochares** Mulsant, 1844

- 13.
- H. lentus*
- Sharp, 1890

- 14.
- H. crenatus*
- Regimbart, 1903

- 15.
- H. pallens*
- (Macleay), 1825

Genus 10. **Enochrus** Zaitzev, 1919

- 16.
- E. escuriens*
- (Walker), 1858

Tribe V. **Hydrophilini**Genus 11. **Sternolophus** Solier, 1834

- 17.
- S. rufipes*
- (F.), 1792

Tribe VI. **Berosini**Genus 12. **Berosus** Leach, 1817

- 18.
- B. fairmairei*
- Zaitzev, 1908

- 19.
- B. indicus*
- Mots., 1861

- 20.
- B. pulchellus*
- M'Leay, 1825

- 21.
- B. nigriceps*
- (F.), 1801

Genus 13. **Regimbartia** Zaitzev, 1908

- 22.
- R. attenuata*
- (F.), 1801

Family **HYDROPHILIDAE****Key to the subfamilies of the family
HYDROPHILIDAE**

1. First joint of hind tarsi very short, often not visible from above 2
- First joint of hind tarsi elongate; antennae usually longer than maxillary palpi.....
..... SPHAERIDINAE
2. Second joint of hind tarsi elongate and longer than third; metasternum prolonged into a sharp elongate spine; antennae shortened and as long as or often shorter than maxillary palpi
..... HYDROPHILINAE
- Second joint of hind tarsi short or about as long as third joint; front coxal cavities open behind, metasternum not prolonged into a sharp spine; antennae shorter than maxillary palpi.
..... HYDRAENINAE

Subfamily I. **HYDRAENINAE**Genus 1. **Ochthebius** Leach, 1815

- 1815.
- Ochthebius*
- Leach in Brewster's
- Edinb., Enc.*
- , 9 : 95.

- 1887.
- Ochthebius*
- : Er.,
- Kaf. Mark Brand.*
- , 1 : 199.

- 1916.
- Ochthebius*
- : Kuhn, III.
- Best-Tab. Kaferb.*
- , ed. 6, pp. 325-327.

- 1920.
- Ochthebius*
- : Tullgren & Wahlgren,
- Svenska Ins.*
- (2), P. 233.

- 1.
- Ochthebius***
- (Hymenodes)
- explanatus***
-
- d'orchy, 1937

- 1937.
- Ochthebius*
- (H.)
- explanatus*
- d'orchy,
- Rec. Ind. Mus.*
- , Calcutta, 39 : 36.

Material examined : 1ex., India : Sikkim : Jorethang, 5.v.1994, S. K. Saha Colln.*Distribution* : India : Sikkim.

Subfamily II. SPHAERIDIINAE

**Key to the tribes of the subfamily
SPHAERIDIINAE**

1. Antennae inserted under a laminated border and concealing the base from above; head not narrowed immediately before eyes **Sphaeridiini**
- Antennae inserted free and its base visible from above; head abruptly narrowed before eyes. 2
2. Mesocoxae never widely separated **Cercyonini**
- Mesocoxae very widely separated **Megasternini**

Tribe I. **Sphaeridiini****Key to the genera of the tribe Sphaeridiini**

1. Elytra with only one sutural stria and irregularly punctured; club of antenna very long *Coelostoma* Brulle
- Elytra with several striae including sutural stria and puncturation on it regularly arranged; antennal club comparatively shorter *Dectylosternum* Wollaston.

Genus 2. *Coelostoma* Brulle, 1835**Key to the species of the genus
Coelostoma Brulle**

1. Maxillary palpi yellow in colour and species smaller in size *horni* Regimbart
- Maxillary palpi not yellow in colour and species comparatively larger in size *stultum* Walker

2. *Coelostoma horni* Regimbart, 1902

1902. *Coelostoma horni* Regimbart, *Ann. Soc. ent. Fr.*, 71 : 474.
1922. *Coelostoma horni* : d'orchymount, *Rec. Ind. Mus.*, 8 : 265.
1925. *Coelostoma horni* : d'orchymount, *Ann. & Bull. Soc. Ent. Belg.*, 65 : 267.

Material examined : 9ex., India : Sikkim : Rongpo, 22.xii.1980, S.K. Saha colln.; lex., Sikkim : Rongpo, on Teesta river bed, 27.v. 1997, S. Biswas colln.; lex., Sikkim : Sombaria, 2.vi. 1994, S.K. Saha colln.; lex., Sikkim : Jorethang, 2.v. 1994, S.K. Saha colln.; lex., Sikkim, 5 km West of Gayzeng, near water false, 4.iii. 1989, D.K.M. colln.

Distribution : India : Sikkim, Andaman & Nicobar Islands. *Elsewhere* : Srilanka, Arob Country.

Remarks : This species is recorded here for the first time from Sikkim.

3. *Coelostoma stultum* Walker, 1858

1858. *Coelostoma stultum* Walker, *Ann. Mag. Nat. Hist.*, (3) 2 : 209.

1919. *Coelostoma stultum* : d'orchymount, *Ann. Soc. Ent. Belg.*, 59 : 71.

1922. *Coelostoma stultum* : d'orchymount, *Rec. Ind. Mus.*, 8 : 625.

Material examined : 1ex., India : Sikkim : Mangan, 23.iv. 1994, S.K. Saha colln.; lex., Sikkim : Ranipool, 18.iv. 1983, B.N. Das colln.

Distribution : India : Bihar, Assam, Sikkim.

Elsewhere : Sri Lanka, Myanmar, Nepal, Indochina. Cochin, China, Indonesia, Japan.

Remarks : This species is recorded here for the first time from Sikkim.

Genus 3. *Dactylosternum* Wollaston, 1854

1854. *Dactylosternum* Woll., *Ins. Mader.*, P. 99, t. 3, f. 1.

1874. *Dactylosternum* : Redt., *Fauna Austr.*, ed. 3, 2 : 124.

1911. *Dactylosternum* : Jakobs, *Kaf. Russl.*, P. 858.

1919. *Dactylosternum* : Knisch, *Archiv. Naturg.*, 85 (A 8) : 71.

**Key to the species of the genus
Dactylosternum Woll.**

1. Elytral striae 3 & 4 and 6 & 7 are united before the tip of the elytra, species larger in size *hydrophiloides* (M'Leay)
- Elytral striae 6 & 7 united in the form of 'V' before the tip of the elytra; species smaller in size *abdominale* F.

4. *Dactylosternum hydrophiloides* M'Leay, 1825

1825. *Dactylosternum hydrophiloides* M'Leay, *Annul. Jav.*, P. 36, ed. 2.

1914. *Dactylosternum hydrophiloides* : d'orchym., *Ent. Mitteil.*, 3 : 122.

Material examined : 30 ex., India : Sikkim : Nayabazar, 4. I. 1978, G.K. Srivastava colln.; 15 ex., Sikkim : Rangli, 21. xii. 1975, G.K. Srivastava colln.; 3 ex., Sikkim : Jorethang, 24. iv. 1983, B.N. Das colln.

Distribution : India : West Bengal, Bihar, Assam, Meghalaya, Rotung, Sikkim, Western India.

Elsewhere : Indochina, Fokien, Formosa, Sunda Is., Tonkin, Indonesia, Philippines, Laos, Annam, Myanmar, Singapore.

Remarks : This species is recorded here for the first time from Sikkim.

5. *Dactylosternum abdominale* F., 1792

1792. *Dactylosternum abdominale* F., *Ent. Syst.*, 1 : 79.

1890. *Dactylosternum abdominale* : Horn, *Trans. Amer. Ent. Soc.*, 17 : 283.

1925. *Dactylosternum abdominale* : d'Orchym, *Ann. & Bull. Soc. Ent., Belg.*, 65 : 274.

Material examined : 1ex., India : Sikkim : Rangpo, 29.v. 1997, S. Biswas colln.

Distribution : India : West Bengal, Sikkim, Andaman Is.

Elsewhere : Sri Lanka, North, Middle and South America.

Remarks : This species is recorded here for the first time from Sikkim.

Tribe II. *Cercyonini*Genus 4. *Cercyon* Leach, 1817

1817. *Cercyon* Leach, *Zool. Misc.*, 3 : 95.

1887. *Cercyon* : Fowler, *Col. Brit. Isl.*, 1 : 252, 253.

1917. *Cercyon* : Des Gozis, *Misc. Ent.*, 24 : 65.

1919. *Cercyon* : Knisch, *Archiv. Naturg.*, 85 (A-8) : 71 (1921).

6. *Cercyon* (*Cercyon*) *vicinalis* Walker, 1859

1859. *Cercyon* (C.) *vicinalis* Walker, *Ann. Mag. Nat. Hist.*, (3) 3 : 258.

1926. *Cercyon* (C.) *vicinalis* : d'orchym, *Ann. & Bull. Soc. Ent. Belg.*, 66 : 209.

Material examined : 6ex., India : Sikkim : Legship, 3.v. 1994, S.K. Saha colln.

Distribution : India : West Bengal, Sikkim.

Elsewhere : Sri Lanka, Indo-China, Tonkin, Sunda Is., Indonesia, Formosa, Philippines.

Remarks : This species is recorded for the first time from Sikkim.

Tribe III. *Megasternini*Genus 5. *Pachysternum* Mots., 1863

1863. *Pachysternum* Mots., *Bull. Soc. Imp. Nat. Moscou*, 36 (2) : 446.

1909. *Pachysternum* : Reitt., *Fauna Germ.*, 2 : 367.

1919. *Pachysternum* : Knisch, *Archiv. Naturg.*, 85 (A-8) : 72, 86 (1921)

Key to the species of the genus
Pachysternum Mots.

1. Sexual dimorphism strongly developed
..... *nigrovittatum* Mots.
- Sexual dimorphism very feebly or not developed; elytra not reticulate and strongly punctured *cardoni* d'orchym.

7. *Pachysternum cardoni* d'orchymont, 1926

1926. *Pachysternum cardoni* d'orchym., *Bull. Soc. Ent. Belg.*, 66 : 220, 223.

Material examined : 1ex., India : Sikkim : Mangan, 24.iv. 1994, S.K. Saha colln.

Distribution : India : Sikkim.

8. *Pachysternum nigrovittatum* Motsch., 1863

1863. *Pachysternum nigrovittatum* Motsch., *Bull. Soc. Imp. Nat. Moscou*, 36 (2) : 447, t. 9, f. 22.

1919. *Pachysternum nigrovittatum* : Knisch, *Archiv. Naturg.*, 85 (A-8) : 88 (1921).

1926. *Pachysternum nigrovittatum* : d'orchym, *Ann. & Bull. Soc. Ent. Belg.*, **66** : 222, 227.

Material examined : 3 ex., India : Sikkim : Mongan, 24.iv. 1994, S.K. Saha colln.

Distribution : India : Sikkim.

Elsewhere : Sri Lanka.

Remarks : This species was earlier recorded by Motschulsky (1863) from Sri Lanka. Present study recorded the species for the first time from India (Sikkim).

Subfamily III. HYDROPHILINAE

Key to the tribes of the subfamily HYDROPHILINAE

1. Scutellum is not longer than its width at base, antennae 9 segmented 2
- Scutellum long, triangular; antennae 8-segmented; eyes convex and hind legs with long swimming hairs **Berosini**
2. Meso and metasternal carina not reunited ...
..... **Hydrobiini**
- Meso and metasternal carina fused to form one ridge **Hydrophilini**

Tribe IV. Hydrobiini

Key to the genera of the tribe Hydrobiini

1. Maxillary palpi robust and short nearly as long as antennae or shorter, their last joint as long or usually longer than penultimate. Elytra with sutural stria, if not, antennae less than 9-segmented 2
- Maxillary palpi more slender, longer than antennae with last joint shorter than penultimate. If last joint is longer than preceding, the antennae have less than 9-segments. Elytra without any sutural stria 4
2. Second joint of intermediate and posterior tarsi not longer than first, sometimes even of same size. Elytra irregularly punctured and with sutural stria *Paracymus* Thomsom

- First joint of intermediate and posterior tarsi very short, second joint much longer 3
- 3. Posterior trochanters elongate at apex and separated from femora. Posterior tibiae curved, elytra usually striate punctate
..... *Laccobius* Er.
- Posterior trochanters not enlarged and posterior tibiae not curved; elytra regularly striate punctate and its outer margin dentate, at least at base, striae 5 and 6, exceptionally 6 and 7 shortened and united behind
..... *Ametor* Semenov
- 4. Second joint of maxillary palpi with anterior side concave or straight, convex on posterior side; palpi sometimes very long
..... *Helochaeres* Mulsant
- Maxillary palpi rather short, never very long with second joint convex on anterior side and concave posteriorly, the last joint bending outwardly. Eyes rounded
..... *Enochrus* Zaitzev

Genus 6. *Paracymus* Thomson, 1867

1867. *Paracymus* Thomson, *Skand. Col.*, **9** : 119, 120.

1882. *Hydrobius* Sharp, *Biol. Centr. Amer.*, **1** : (2) : 64.

1916. *Paracymus* : Des Gozis, *Misc. Ent.*, **23** : 15.

9. *Paracymus evanescens* (Sharp), 1890

1890. *Hydrobius evanescens* Sharp, *Trans. Ent. Soc. London*, P. 349.

1924. *Paracymus evanescens* (Sharp) : Knisch, *Col. Cat.*, Col. : Hydrophilidae, **14** (Pars 79) : 166.

Material examined : 1ex., India : Sikkim : Rongpo, on Teesta river bed, 27.v. 1997, S. Biswas colln., 8 ex., Sikkim : Rongpo, Teesta river bed, 28.v. 1997, S. Biswas & Party, 2 ex., Sikkim : Rongpo, P.W.D. Banglow, 29.v. 1997, small tank, S. Biswas colln.; 39 ex., Sikkim : Jorethang, 2.v. 1994, S.K. Saha colln., 4 ex., Sikkim : Jorethang, 5.v. 1994, S.K. Saha colln.

Distribution : India : West Bengal, Bihar, Sikkim.

Elsewhere : Sri Lanka, Tonkin, Indonesia, Philippines.

Remarks : This species recorded here for the first time from Sikkim.

Genus 7. *Ametor* Semenov, 1900

1900. *Ametor* Semenov, *Horae Soc. Ross.*, **34** : 614.

1911. *Ametor* : Jakovs, *Kaf. Russl.*, P. 852.

1924. *Ametor* : Knisch, *Col. Cat.*, **14** : (Pars 79) : 176.

10. *Ametor rugosus* Knisch, 1924

1924. *Ametor rugosus* Knisch, *Wien. Ent. Zeit.*, **41** : 32.

Material examined : 1ex., India : Sikkim : Mangan, 23.iv. 1994, S.K. Saha colln.

Distribution : India : Uttar Pradesh, Himachal Pradesh, Sikkim.

Remarks : This species recorded here for the first time from Sikkim.

Genus 8. *Laccobius* Erichson, 1837

1837. *Laccobius* Er., *Kaf. Mark Brand.*, **1** : 202.

1916. *Laccobius* : Des Gozis, *Misc. Ent.*, **23** : 14.

1924. *Laccobius* Er. : Knisch, *Col. Cat.*, **14** (Pars. 79) : 181-192.

**Key to the species of the genus
Laccobius Er.**

1. Elytral striae and interstitial space with coarse punctures; hind angle of pronotum rounded..
..... *simulans* d'orchymont.
- Punctuation on elytral striae fine with glabrous interstitial space; hind angle of pronotum acute-
orientalis Knisch.

11. *Laccobius simulans* d'orchym., 1923

1923. *Laccobius simulans* d'orchym, *Mem. Dep. Agric. India*, **8** : 7.

Material examined : 3 ex., India : Sikkim : M. Pokhri Nagi Lower Lake, 15.ix. 1995, M.P. Thapa colln.

Distribution : India : West Bengal, Bihar, Sikkim, Meghalaya, Uttar Pradesh.

Remarks : The species is recorded here for the first time from Sikkim.

12. *Laccobius orientalis* Knisch, 1924

1924. *Laccobius orientalis* Knisch, *Wien. Ent. Zeit.*, **41** : 33.

Material examined : 10 ex., India : Sikkim : Jorethang, 2.v. 1994, S.K. Saha colln.; 10 ex., Sikkim : Rongpo; on Teesta river bed, 28.v. 1997, S. Biswas colln.; 9 ex., Sikkim, Jorethang, 5.vi. 1997, S. Biswas colln.

Distribution : India : Uttar Pradesh, Sikkim.

Remarks : The species is recorded here for the first time from Sikkim.

Genus 9. *Helochares* Mulsant, 1844

1844. *Helochares* Mulsant, *Palpi.*, P. 197.

1920. *Helochares* : Tullgren & Wahlgren, *Svenska Ins.*, (2) PP. 234, 235.

**Key to the species of the genus
Helochares Mulsant**

1. Elytra striated and regularly punctured 2
- Elytra not striated and not regularly punctured
..... *pallens* (MacLeay)
2. Punctuation on elytral striae strong and deep
..... *crenatus* Regimbart
- Punctuation on elytral striae rather fine and distant..... *lentus* Sharp.

13. *Helochares lentus* Sharp, 1890

1890. *Helochares lentus* Sharp, *Trans. Ent. Soc. Lond.*, PP. 352.

Material examined : 2ex., India : Sikkim : Jerethang, 5.v. 1994, S.K. Saha colln.; 1ex., Sikkim : Jorethang, F.R.H. compound, 10.ix. 1994, G.C.Sen colln.; 3 ex., India : Jorethang, 21.xii. 1994, S.K. Saha colln.; 2 ex., Majhitar, 17.xii. 1994, S.K. Saha colln.; 11ex., Sikkim : Rongpo, on Teesta river bed, 27.v. 1997, S. Biswas colln.; 5 ex., Sikkim : Rongpo, Teesta river bed, 28.v. 1997, S. Biswas colln., 1ex., Sikkim : Namchi, 2.vi. 1997, S. Biswas colln.

Distribution : India : West Bengal, Bihar, Assam, Sikkim.

Elsewhere : Sri Lanka, Indo-China, Formosa, Sunda Is.

Remarks : This species is recorded here for the first time from Sikkim.

14. *Helochares crenatus* Regimbart, 1903

1903. *Helochares crenatus* Regimbart, *Ann. Soc. ent. Fr.*, 72 : 54.

Material examined : 1ex., India : Sikkim : Rongpo, on Teesta river bed, 27.v. 1997, S. Biswas colln.; 2 ex., Sikkim : Rongpo, on Teesta river bank, 28.v. 1997, S. Biswas colln.

Distribution : India : West Bengal, Sikkim, Pandicherry.

Elsewhere : Indo-China, Sunda Is., Philippines, Indonesia, F.M.S., Cochin-China, Cambodia, Tonkin.

Remarks : This species is recorded here for the first time from Sikkim.

15. *Helochares pallens* (MacLeay), 1825

1825. *Enhydrus pallens* MacLeay, *Annul. Javan.*, P. 35.

1903. *Helochares minutissimus* Regimbart, *Ann. Soc. ent. Fr.*, 72 : 27, 54.

Material examined : 1ex., India : Sikkim : Jorethang, 5.v. 1994, S.K. Saha coll.; 2 ex., Sikkim : Jorethang, F.R.H. Compound, 10.xi. 1994. G.C. Sen colln.

Distribution : India : West Bengal, Bihar, Assam, Sikkim.

Elsewhere : Syria, Madagascar, Africa, Egypt, Tonkin, F.M.S., Philippines, Indonesia, N. Oceania.

Remarks : This species recorded here for the first time from Sikkim.

Genus 10. *Enochrus* Zaitzev, 1919

1834. *Philhydrus* Solier, *Ann. Soc. ent. Fr.*, PP. 302, 315.

1835. *Philhydrus* Brulle, *Hist. Nat. Ins.*, 5 (2) : 276.

1919. *Enochrus* Zaitzev, *Rev. suisse d'Entom.*, 8 : 91.

16. *Enochrus escuriens* (Walker), 1858

1858. *Philhydrus escuriens* Walker, *Ann. Mag. Nat. Hist.*, (3) 2 : 209.

1903. *Enochrus escuriens* (Walker) : Regimbart, *Ann. Soc. ent. Fr.*, 72 : 56.

Material examined : 3 ex., India : Sikkim : Jorethang, 5.v. 1994, S.K. Saha colln.; 2 ex., Sikkim : Jorethang, on Teesta river bed, 5.vi. 1997, S. Biswas colln.; 3 ex., Sikkim : Rangpo, on Teesta river bed, 27.v. 1997, S. Biswas colln.; 3 ex., Sikkim : Rangpo, Bank of river Teesta, 28.v. 1997, S. Biswas colln.; 2 ex., Sikkim : Rangpo, on Teesta river bed, 28.v. 1997, S. Biswas colln.

Distribution : India : West Bengal, Sikkim, Nicobar Is.

Elsewhere : Indonesia, F.M.S., Siam, Annam, Tonkin, Cochin-China, Sri Lanka, Indo-China, Sunda Is., Vietnam.

Remarks : This species is recorded here for the first time from Sikkim.

Tribe V. *Hydrophilini*

Genus 11. *Sternolophus* Solier, 1834

1834. *Sternolophus* Solier, *Ann. Soc. ent. Fr.*, 3 : 302, 310.

1851. *Helobius* Mulsant, *Mem. Ac. Soc. Lyon*, (2) 1 : 75.

17. *Sternolophus rufipes* (F.), 1792

1792. *Hydrophilus rufipes* F., *Entom. Syst.*, 1 : 183.

1856. *Sternolophus rufipes* : Mulsant, *Opusc. Ent.*, 7 : 173.

Material examined 9ex., India : Sikkim : Rangpo, 22.XII. 1980, S.K. Saha coll.; 1ex., Sikkim : pakyong, 19.IV. 1983, B.N. Das colln.; 5ex., Sikkim : Jorethang, 2.V. 1994, S.K. Saha colln.; 9ex., Sikkim : Jorethang, 5.V. 1994, S.K. Saha colln.; 14ex., Sikkim : Rangpo, 14.XII. 1994, S.K. Saha colln., 6ex., Sikkim : Rangpo. on Teesta river bed, 27.V. 1997, S. Biswas colln; 2ex., Sikkim : Rangpo : on. Teesta river bed, 28.V 1997, S. Biswas colln., 8ex., Sikkim : Rongo : Bank of river Teesta, 28. V. 1997, S Biswas colln.; 2ex., Sikkim : Jorethang, 5.VI. 1997, S. Biswas colln.

Distribution India : West Bengal, Bihar, Sikkim, Punjab, Maharashtra, Kashmir, S. India.

Elsewhere : Asia, Sunda is, Burma, Philippines, Japan, Formosa, Indonesia, F.M.S., Indochina, China, Sri Lanka.

Remarks : This species is recorded here for the first time from sikkim.

Tribe VI. **Berosini**

Key to the genera of the tribe Berosini

1. Antennae composed of seven segments (4+3); five ventral segments not retractile; upper surface never uniformly deep and shining black *Berosus* Leach.
- Antennae composed of eight segments (5+3), only four ventral segments not retractile; upper surface always deep and shining black; Metasternum with a simple carina along the middle *Regimbartia* Zaitzev.

Genus 12. *Berosus* Leach, 1817

1817. *Berosus leach*, *Zool. Misc.*, 3 : 92.

Key to the species of the genus *Berosus* Leach

1. Apex of elytra with spine 3
2. Apex of elytra without any apical spine 2
2. Larger species ranging from 4.8 to 7.0 mm. in length; upper surface yellowish brown *fairmairei* Zaitzev.
- Smaller species, less than 4.8 mm in length; elytra distinctly striated with smooth interval; sutural angle rounded and divergent in male and acute and weakly convergent in female *indicus* Motschulsky.
3. Pronotum with black patch *pulchellus* Mac, Leay.
- Pronotum without black patch *nigriceps* F.

18. *Berosus fairmairei* Zaitzev, 1908

1908. *Berosus fairmairei* Zaitzev, *Horae. Soc. Ent. Ross.*, 38 : 356.

Material examined : 25 ex., India : Sikkim : Jorethang, 5.v. 1994, S.K. Saha colln.; 1ex., Sikkim : Rongpo, on Teesta river bed, 28.v. 1997, S. Biswas colln.

Distribution : India : West Bengal, Bihar, Sikkim, Delhi, Rajasthan, Kerala, Andaman Is.

Elsewhere : Indo-China, Indonesia, Tonkin, Laos, Annam, Siam, F.M.S., Philippines, Pakistan, Nepal, Bangladesh, Myanmar, China, Hongkong, Japan, Taiwan, Thailand, Malaysia.

Remarks : This species is recorded here for the first time from Sikkim.

19. *Berosus indicus* Motschulsky, 1861

1861. *Berosus indicus* Motschulsky, *Bull. Soc. Imp. Nat. Moscou*, 34 : 110.

1903. *Berosus indicus* : Regimbart, *Ann. Soc. ent. Fr.*, 72 : 60.

Material examined : 29 ex., India : Sikkim : Jorethang, 5.v. 1994, S.K. Saha colln.; 1ex., Sikkim : Rongpo, Bank of Teesta river, 28.v. 1997, S. Biswas colln.

Distribution : India : West Bengal, Bihar, Sikkim, Punjab, Rajasthan, Uttar Pradesh, Karnataka, Goa, Tamil Nadu, Pondicherry, Kerala.

Elsewhere : Myanmar, Sri Lanka, S. Asia, Sunda Is., China, Formosa, Indonesia, Philippines, F.M.S., Cambodia, Laos, Annam, Indo-China, Tonkin, Siam, Pakistan, Nepal, Bangladesh.

Remarks : This species is recorded here for the first time from Sikkim.

20. *Berosus pulchellus* M'Leay, 1825

1825. *Berosus pulchellus* M'Leay, *Annual.Jav.*, : 35.

1923. *Berosus pulchellus* : d'orchymont, *Mem. Depart. Agric. India*, 8 : 11.

Material examined : 32 ex., India : Sikkim : Jorethang, 5.v. 1994, S.K. Saha colln.; 1ex., Sikkim : Ranipool, 25.v. 1997, S. Biswas colln.; 9 ex., Sikkim : Rongpo, on Teesta river bed, 28.v. 1997, s. Biswas colln.; 3ex., Sikkim : Rongpo, bank of river Teesta, 28.v. 1997, S. Biswas colln.; 13ex., Sikkim : Jorethang, 5.vi. 1997, S. Biswas colln.

Distribution : India : West Bengal, Bihar, Sikkim, Maharashtra, Rajasthan, Delhi, Haryana, Uttar Pradesh, Karnataka, Tamil Nadu, Pondicherry, Kerala.

Elsewhere : Indonesia, Australia, Philippines, Sri Lanka, Indo-china, Annam, Formosa, Tonkin, Myanmar, Iran, Nepal, Bangladesh, Laos, Vietnam, China, Japan, Hongkong, Thailand, Taiwan, Malaysia.

Remarks : This species is recorded here for the first time from Sikkim.

21. *Berosus nigriceps* (Fabricius), 1801

1801. *Hydrophilus nigriceps* F., *Syst. Eleutheratorum*, 1 : 254.

Material examined : 1 ex., India : Sikkim : Rongpo, 22.xii. 1980, S.K. Saha colln.

Distribution : India : West Bengal, Sikkim, Delhi, Uttar Pradesh, Rajasthan, Madhya Pradesh, Tamil Nadu.

Elsewhere : Pakistan, Bangladesh, Sri Lanka, Nepal, Mesopotamia, Persia, Yemen, Iraq, Iran.

Remarks : This species is recorded here for the first time from Sikkim.

Genus 13. *Regimbartia* Zaitzev, 1908

1908. *Regimbartia* Zaitzev, *Hor. Soc. Ent. Ross.*, 38 : 362.

1919. *Regimbartia* : d'orchymont, *Ann. Soc. ent. Fr.*, 83 : 166.

22. *Regimbartia attenuata* (F.), 1801

1801. *Hydrophilus attenuata* Fabricius, *Syst. Eleuth.*, 1 : 236.

Material examined : 4 ex., India : Sikkim : Jorethang, 2.v. 1994, S.K. Saha colln.; 3 ex., Sikkim : Jorethang, 5.v. 1994, S.K. Saha colln.;

1 ex., Sikkim : Majhitar, 17.xii. 1994, S.K. Saha colln., 3 ex., Sikkim : Rongpo, 27.v. 1997, S. Biswas colln.; 2 ex., Sikkim : Rongpo, bank of river Teesta, 28.v. 1997, S. Biswas colln.

Distribution : India : West Bengal, Bihar, Sikkim.

Elsewhere : Sri Lanka, S. Asia, Philippines, Sunda Is., Australia, Japan, Formosa, Indonesia, Cambodia, Cochin-China, Indo-China, Annam.

Remarks : This species is recorded here for the first time from Sikkim.

SUMMARY

This study is based mainly on the collections made by different survey parties of Zoological Survey of India and the national collection present in the Section. This includes a total of twenty two species under thirteen genera belonging to three subfamilies viz. Hydraeninae, Sphaeridiinae and Hydrophilinae of which, one species under the genus *Pachysternum* Mots. is recorded here for the first time from India and 19 species under 12 genera are recorded for the first time from Sikkim. Besides this, key to the subfamilies, tribes, genera and species where necessary have also been provided. Distributional data of each species has been given from the published records as well as the actual study of the specimens. Selected synonyms, collection data of each species have also been given.

ACKNOWLEDGEMENT

Authors are highly indebted to Dr. J.R.B. Alfred, Director, Zoological Survey of India for giving laboratory facilities. Thanks are also due to Dr. G.K. Srivastava, Additional Director (Retd.) and Dr. S.K. Mitra, Joint Director (Retd.) for suggestions and encouragement to complete the work.

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INSECTA : COLEOPTERA : HISTERIDAE

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INTRODUCTION

Family Histeridae belongs to Superfamily Histeroidea which consists of three families namely, Sphaeritidae, Synteliidae and Histeridae. This family is well represented in the Indian sub-continent. Beetles of this family are very small to medium in size, very hard and of various shapes namely, round, oval, elongated or oblong and flat. They are predacious in habit both in larval and adult form. They occur in various habitats namely in soil, in termite and ant nests, in dung of various animals, under loose bark and carcasses of animals.

The Indian fauna of Histeridae was studied by early workers like Fabricius (1798), Paykul (1811), Widemann (1819-21), Erichson (1834), Redtenbacher (1848), Marseul (1853-54), Thomson (1862), Lewis (1892-1894). Amongst above workers Marseul and Lewis studied extensively on the Indian-subcontinent fauna and described a large number of Indian species. Later Bickhardt (1913-1921) and Cooman (1932) contributed more to our knowledge. Recently Therond (1970-78), Mazur (1975-86) and Gomy (1976) contributed further to our knowledge.

Indian authors Pal and Biswas (1985) initiated the study on this work and studied the fauna of Namdapha, Arunachal Pradesh. Later Chakraborty and Biswas (1995) worked out fauna of West Bengal. They have further studied fauna of Meghalaya (in press), fauna of Tripura (in press) and now this fauna of Sikkim.

As regards the Histeridae fauna of Sikkim very little attention has been paid so far. Desbordes (1923) has recorded the only known species, *Hister inexpectatus* from Gopaldhara, Sikkim.

Till now about 175 species under 34 genera are known from India in comparison to about 200 genera and 3000 species all over the world.

The present paper deals with materials received from different survey parties of this department. Type specimens have been deposited in the collection of Zoological Survey of India, Calcutta.

SYSTEMATIC ACCOUNT : LIST OF THE TAXA

Family HISTERIDAE

Subfamily I. HOLOLEPTINAE

Genus 1. *Hololepta* Paykul 1811

1. *H. indica* Erichson 1834

Subfamily II. SAPRININAE

Genus 2. *Hypocaccus* Thomson 1867

2. *H. sinae* (Marseul) 1862

Genus 3. *Saprinus* Erichson 1834

3. *S. cupreus* Erichson 1834

Subfamily III. ABRAEINAE

Tribe-1. **Abraeini**

Genus 4. *Abraeus* Leach 1817

4. *A. indicus* Lewis 1888

Tribe-2. **Acritini**

Genus 5. *Acritus* Leconte 1853

5. *A. copricola* Cooman 1932

Subfamily IV. DENDROPHILINAE

Genus 6. *Platylomalus* Cooman 1948

6. *P. mendicus* (Lewis) 1892
 7. *P. oceanitis* (Marseul) 1855

Subfamily V. HISTERINAE

Tribe-3. Tribalini

Genus 7. *Tribalus* Erichson 1834

8. *T. colombius* Marseul 1864

Tribe-4. Histerini

Genus 8. *Atholus* Thomson 1862

9. *A. coelestis* (Marseul) 1857
 10. *A. philippinensis* (Marseul) 1854
 11. *A. silvicola* (Lewis) 1901

Genus 9. *Hister* Linnaeus 1767

12. *H. coracinus* Erichson 1834
 13. *H. paraincognitus* n. sp.
 14. *H. planiceps* Lewis 1888
 15. *H. pullatus* Erichson 1834

Genus 10. *Peranus* Lewis 1906

16. *P. maindroni* (Lewis) 1901

Genus 11. *Chronus* Lewis 1914

17. *C. scaliformis* Desbordes 1923

Tribe-5. Platysomini

Genus 12. *Hyposolenus* Lewis 1907

18. *H. bengalensis* (Lewis) 1906

Genus 13. *Platylister* Lewis 1892

19. *P. atratus* (Erichson) 1834
 20. *P. borneolus* (Marseul) 1861

Genus 14. *Platysoma* Leach 1817

21. *P. brahmani* Lewis 1910
 22. *P. confucii* Marseul 1857

Family HISTERIDAE

Key to the subfamilies of HISTERIDAE

- 1 (2) Head directed horizontally in front, non-retractible within pronotum; mandibles long; propygidium and elytra in the same plane; body extremely flat..... *Hololeptinae*
 2 (1) Head inclined, retractible; propygidium and elytra not in the same plane.
 3 (4) Antennae inserted in front, near internal border of eyes, often with a little pit opened in front *Abraeinae*
 4 (3) Antennae inserted under lateral border of frons, between eyes and base of mandibles.
 5 (6) Prosternum without distinct lobe anteriorly, internal groove placed immediately before anterior coxae, elytral striae are oblique lines outwardly and shortened posteriorly *Saprininae*
 6 (5) Prosternum with a distinct anterior lobe, generally limited by a transverse sutural line.
 7 (8) Both sides of the prosternal lobe as well as the prosternum before the anterior coxae are grooved to accommodate the funicle of antennae at rest *Dendrophilinae*
 8 (7) None of the sides of prosternum grooved as above; antennae are accommodated in the antennal fossettes at the anterior angles of prosternum *Histerinae*

Subfamily 1. HOLOLEPTINAE

Genus 1. *Hololepta* Paykul 1811

1811. *Hololepta* Paykul, *Mon. Histeroid*, P. 101.

1910. *Hololepta*, Bickhardt. *Coleopt. Cat.*, pars 24, P. 4.

1. *Hololepta indica* Erichson 1834

1834. *Hololepta indica* Erichson, in *Klug Jahrb Ins.* : 90

1995. *Hololepta indica*, Chakraborty & Biswas, *Zool. Surv.*

India, State Fauna series 3 : Fauna of West Bengal, Part 6 (A) : 174.

Material studied : 2 exs., Rangpo, East Sikkim, 25 xii. 1975 and 1 ex. Singla Bazar, East Sikkim, 5. xi. 1976, ex "Bannana sheath" G.K. Srivastava Coll.

Distribution : India : Sikkim (East), Assam, Meghalaya. and West Bengal. Also known from Indonesia, New Guinea and Formosa.

Remarks : This species is first time recorded from Sikkim. It often infests bannana plants and generally found under bark of felled logs in forest area.

Subfamily II SAPRININAE

Key to the genera of subfamily SAPRININAE

- 1 (2) Smaller in size; frons convex with angular transverse wrinkles; pattern of dorsal striae etc. as in the members of the subfamily; prosternum with antero-lateral foveae, prosternal striae gradually converging anteriorly and united angularly
.....*Hypocaccus* Thomson
- 2 (1) Small to medium in size; frons weakly convex and finely punctate; dorsal striae oblique, shortened behind, generally 4 in numbers (rarely 5); sutural present, continue along the apical margin of the elytrae upto where it forms the marginal, sometimes shortened at the base or reunite by an arch at the dorsal 4th; humeral fine, oblique, close to the 1st. dorsal, often joined with the internal subhumeral; the external subhumeral when exist reduced to a short basal rudiment; elytrae strongly punctate posteriorly; prosternum without any antero-lateral foveae, prosternal striae diverging and meeting anteriorly, narrowest in the middle, limited by a border which meeting one more exterior *Saprinus* Erichson

Genus 2. *Hypocaccus* Thomson 1867

1867. *Hypocaccus*, Thomson, *Skand. Col.* ix, P. 400.

1910. *Hypocaccus*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 102

2. *Hypocaccus sinae* (Marseul)

1862. *Saprinus sinae* Marseul, *Ann. Soc. Ent. Fr.* (4) 2 : 496

1910. *Hypocaccus sinae*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 105

Material Studied : 6 exs., Legship, West Sikkim, 3.v. 1994, ex. "Dung" and 5 exs., Singtam, East Sikkim, 7.v. 1994, S. K. Saha & Party Coll.; 5 exs., Jorethang, South Sikkim, 5.vi. 1997, S. Biswas Coll.

Distribution : India : Sikkim, Meghalaya and Arunachal Pradesh. Also known from China, Sri Lanka and Australia.

Remarks : Recorded for the first time from Sikkim.

Genus 3. *Saprinus* Erichson 1834

1834. *Saprinus* Erichson, in *Klug. Jahrb. Ins.* 1. P. 172

1910. *Saprinus*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 89

3. *Saprinus cupreus* Erichson 1834

1834. *Saprinus cupreus* Erichson, in *Klug. Jahrb. Ins.* 1. P. 182

1910. *Saprinus cupreus*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 93

Material studied : 1ex., Rumtek, East Sikkim, 20.iv. 1983, B.N. Das & Party Coll., ex. "Cowdung"; 1ex., Jorethang, South Sikkim, 10.xi. 1994, G.C. Sen Coll.

Distribution : India : Sikkim, Bombay and Nilgiri Hills. Also known from Capland.

Remarks : This species is recorded for the first time from Sikkim.

Subfamily III ABRAEINAE

Key to the genera of subfamily ABRAEINAE

- 1 (2) Body suborbicularly convex; scutellum very small, indistinct; hind tarsi with 5 articles *Abraeus* Leach

- 2 (1) Body oval, weakly convex, shining; scutellum very small, triangular; hind tarsi with only 4 articles *Acritus* Le Conte

Tribe 1. **Abraeini**

Genus 4. *Abraeus* Leach 1817

1817. *Abraeus* Leach, *Zool. Miscell.* III, P. 76

1910. *Abraeus*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 83

4. *Abraeus indicus* Lewis 1888

1888. *Abraeus indicus* Lewis *Ann. Mus. Genova* (2) vii : 665.

1910. *Abraeus indicus*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 84.

Material Studied : 1 ex ; Rhenok, East Sikkim, 10.iii. 1979, ex. "under dung" S.K. Saha & Party Coll.

Distribution : India : Sikkim. Also known from Myanmar.

Remarks : This species was originally described from Rangoon, Myanmar. It is first time recorded from India as well as Sikkim.

Tribe 2. **Acritini**

Genus 5. *Acritus* Le Conte 1853

1853. *Acritus* Le Conte, *Proc. Acad. Philad.*, vi. P. 288

1910. *Acritus*, Bickhardt, *Coleopt. Cat.*, Pars 24, : P. 87

5. *Acritus copricola* Cooman 1932

1932. *Acritus copricola* Cooman, *Bull. Mus.* 2 serie, T. iv. No. 4 : 402

1976. *Acritus copricola*, Gomy, *Bull. Soc. ent. Fr.*, 81 : 262

Material studied : 1 ex ; Rhenok, East Sikkim, 10. iii. 1979, ex. "under dung" S.K. Saha & Party Coll.

Distribution : India : Sikkim, West Bengal, U. P., Kerala and Kranataka. Also known from Vietnam.

Remarks : Recorded for the first time from Sikkim.

Subfamily IV. DENDROPHILINAE

Genus. *Platylomalus* Cooman 1948

1948. *Platylomalus* Cooman, *Notes Ent. Chin.*, 12 : 134

Key to the species of the genus
Platylomalus

1 (2) Oblong oval, larger in size (2-2.5 mm length); mesosternum without any transverse stria *mendicus* (Lew)

2 (1) Oval, smaller in size (2.20 mm Length) ; mesosternum with a bisinuous almost arched transverse stria
..... *oceanitis* (Marseul)

6. *Platylomalus mendicus* (Lewis) 1892

1892. *Paromalus mendicus* Lewis, *Ann. Mag. Nat. Hist.* (6) 9 : 33

1948. *Platylomalus mendicus*, Cooman, *Notes Ent. Chin.*, 12 : 134

Material studied : 4 exs., Rangpo, East Sikkim, 29.v. 1997, S. Biswas & Party Coll., ex "under bark"

Distribution : India : Sikkim. Also known from Java and Japan

Remarks : This species was first described from Japan. Lewis reported it from Java in 1899. It is a new record from India as well as Sikkim.

7. *Platylomalus oceanitis* (Marseul) 1855

1855. *Paromalus oceanitis* Marseul, *Ann. soc. Ent. Fr.*, (3) 3 : 410.

1970. *Platylomalus oceanitis*, Therond, *Opusc. Zool.*, 10 : 336.

Material studied : 1 ex., Singla Bazar, East Sikkim, 5.xi. 1976, G.K. Srivastav Coll., "bannana sheath"; 18 exs., Bardang, Singtam, East Sikkim, 24.xii. 1980, T. Sengupta Coll., ex, "fallen Sajna tree"

Distribution : India : Sikkim, Meghalaya, Tripura and West Bengal. Also known from Philippines, Myanmar, Malacca, Malayasia and Sumatra.

Remarks : This species generally feeds on the larvae of under-bank fauna in the felled trees. It is a new record from Sikkim.

Subfamily V. HISTERINAE

Key to the tribes of subfamily HISTERINAE

- 1 (2) Mesosternum truncated or feebly rounded in front (rarely broadly but evenly emarginate); true frontal stria absent; pronotum without lateral striae; front tibiae narrow with fine spine on external edge, not dented **Tribalini**
- 2 (1) Mesosternum emarginate in front; frontal stria generally present; pronotum rarely with one or more lateral striae (except *Macrosternus* Mars., *Asolenus* Lewis and *Baconia* Lewis); front tibiae much broadened with external edge dented.
- 3 (4) Tarsal groove of front tibiae straight, distinctly bordered at the inner edge only **Histerini**
- 4 (3) Tarsal groove of front tibiae 'S' shaped, strongly cleft, sharply defined **Platysomini**

Tribe 3. Tribalini

Genus 7. *Tribalus* Erichson 1834

1834. *Tribalus* Erichson, in *Klug. Jahrb. ins.* 1. P-164

1910. *Tribalus*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 65

8. *Tribalus colombius* Marseul 1864

1864. *Tribalus colombius* Marseul, *Abeille* 1 : 335

1913. *Tribalus colombius*, Bickhardt, *Rec. Ind. Mus.*, 8 : 125

Material studied : 6 exs., Bardang, 12 Kms. from Singtam, East Sikkim, 24.xii. 1980, T. Sentupta & Party Coll., ex., "Under loose bark"

Distribution : India : Sikkim, Meghalaya (West Garo Hills) and Assam. Also known from SriLanka and Myanmar.

Remarks : This species also feeds on under

bark fauna like the previous one. Its a new record of this species from Sikkim.

Tribe 4. Histerini

Key to the genera of the tribe Histerini

- 1 (2) Mesosternum roundedly truncated anteriorly; prosternal keel narrow, flat at the base; antennal fossettes closer, deep, non-circular; pronotum generally with a fovea near the anterior angle which is sometime punctate, with a single lateral stria; elytra with a subhumeral, five dorsal and a sutural striae; frontal stria present; arched, generally complete *Atholus* Thomson
- 2 (1) Mesosternum weakly to strongly sinuous anteriorly.
- 3 (4) Upper surface uniformly, closely and microscopically punctate; body short, oval and depressed; head flat, not impressed. frontal stria arched and complete, scape of the antennae angulate on the outer edge *Chronus* Lewis
- 4 (3) Upper surface generally smooth, not punctate as mentioned above; body medium to large and thick.
- 5 (6) Mesosternum very weakly sinuous anteriorly; prosternal keel narrow, base flat; front concave, stria biarcuate; pronotum narrowed at the base, with a lateral stria and distinct fovea behind the anterior angle; antennal fossettes wider, less deep, not circular; elytra, humeral stria generally absent, 5th and sutural striae when complete join at the base, anterior tibiae 3-dented *Peranus* Lewis
- 6 (5) Mesosternum strongly to weakly sinuous even straight in front with a stria generally interrupted in middle; prosternal keel wider, projecting round at the base; frontal stria semicircular, some times interrupted or absent; pronotum wider at the base with a marginal stria and one or two lateral striae. antennal fossettes well limited; elytra dialated

at shoulder, humeral stria fine, oblique, subhumeral sometimes absent, 5 dorsal striae of which the internals shortened or absent as well as the sutural; anterior tibiae triangular, compressed, dented, terminated by two equal spines.
.....*Hister* Linnaeus

Genus 8. *Atholus* Thomson 1862

1862. *Atholus* Thomson, *Skand. Coll.*, 4 : 220.

1910. *Atholus*, Bickhardt, *Coleopt. Cat.*, pars 24 : 53.

Key to the species of the genus *Atholus*

- 1 (2) 1-3 dorsal striae entire; pronotum without foveae at the anterior angles. 4th dorsal stria reaching beyond the middle, 5th and sutural shorter, apical, almost reaching the middle; subhumeral strong, like a furrow, shortened at both ends.
.....*philippinensis* (Marseul)
- 2 (1) 1-4 dorsal striae entire; pronotum with foveae at the anterior angles.
- 3 (4) Fovea on the pronotum sparsely punctate ; 5th and sutural stria of same length, reaching the middle ; internal subhumeral stria reduced to an oblong puncture
.....*coelestis* (Marseul)
4. (3) Fovea on the pronotum smooth; 5th reaching the middle, sutural a little longer than 5th, internal subhumeral stria long and deep near the base*silvicola* (Lewis)

9. *Atholus coelestis* (Marseul) 1857

1857. *Hister coelestis* Marseul, *Ann. Soc. Ent. Fr.* (3) 5 : 416-417.

1906. *Atholus coelestis*, Lewis, *Ann. Mag. Nat. Hist.*, (7) 18 : 402.

1910. *Atholus coelestis*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 53.

Material studied : 1 ex., Rangpo, 23.ii. 1979, ex. "under dung"; 10 exs., Rhenok, 58 kms. from Gangtok, 10.iii. 1979 Ex. "under bamboo sheath" and "under dung"; 3exs., Rongli, 12 km from Rhenok, 13.iii. 1979, ex "under dung" S.K. Saha

& Party Coll.; 2exs Rangpo, 22.xii. 1980, ex. "cow dung" T. Sengupta & Party Coll., All collections from East Sikkim.

Distribution : India : Sikkim, Meghalaya, Tripura, West Bengal and Tamil Nadu. Also known from China, Myanmar and Sri Lanka.

Remarks : It is a widely distributed species. Recorded for the first time from Sikkim.

10. *Atholus philippinensis* (Marseul) 1854

1854. *Hister philippinensis* Marseul, *Ann. Soc. Ent. Fr.*, (3) 2 : 547-548.

1906. *Atholus philippinensis*, Lewis, *Ann. Mag. Nat. Hist.*, (7) 18 : 402.

1910. *Atholus philippinensis*, Bickhardt, *Coleopt. Cat.*, pars 24 : 54.

Material studied : 1 ex. Naya Bazar, West Sikkim, 4.i. 1976; 8 exs; Singla Bazar, East Sikkim 15, xi. 1976, ex "Bannana sheath" G.K. Srivastav & Party Coll.; 2 exs., Rhenok, 58 km from Gangtok, East Sikkim, 10.iii. 1979 ex. "under bamboo sheath" and 1 ex., Rhenok, 14.iii. 1979, ex. "under bannana sheath" S.K. Saha & Party Coll. ; 1ex., Namchi, South Sikkim, 26.iv. 1983, ex. "Bannana trunk" B.N. Das & Party Coll.

Distribution : India : Sikkim and Meghalaya (Khasi Hills). Also known from Myanmar and Philippines.

Remarks : This species is recorded for the first time from Sikkim.

11. *Atholus silvicola* (Lewis) 1901

1901. *Hister silvicola* Lewis, *Ann. Mag. Nat. Hist.*, (7) 8 : 376-377.

1906. *Atholus silvicola*, Lewis, *Ann. Mag. Nat. Hist.*, (7) 18 : 402.

1910. *Atholus silvicola*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 55.

Material studied : 1 ex., Naya Bazar, West Sikkim, 4.i. 1976, G.K. Srivastav & Party Coll.; 1 ex., Rongli, 12 km from Rhenok, East Sikkim, 12.iii. 1979, ex. "under dung" and 3 exs., Phodong, North Sikkim, 24.iv. 1994, ex. "dung" S.K. Saha & Party Coll.

Distribution : India : Sikkim, Meghalaya, Tripura and West Bengal.

Remarks : This is an indigenous species. Only found in India. Recorded first time from Sikkim.

Genus 9 *Hister* Linnaeus 1767

1767. *Hister* Linnaeus, *Syst. Nat.*, ed. 12. 11. P-566.

1910. *Hister*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 35

Key to the species of the genus *Hister*

- 1 (2) Frons without any stria ; pronotum with only one internal stria, a little shortened at the base; elytra with a long external subhumeral stria, 1-3 dorsal striae entire, 4-5 and sutural reduced; propygidium and pygidium evenly and densely punctate; prosternum wider between the coxae, without striae, mesosternum emarginate, stria entire; anterior tibiae falciform, with 5-6 teeth *planiceps* Lewis.
- 2 (1) Frons with distinct stria.
- 3 (4) Frontal stria semicircular, pronotum with two lateral striae, external very short, near the anterior angle, internal entire; elytra with a short, arch like, external subhumeral at the out side of the humerus, 1-3 dorsal striae entire, 4 apical, short with a puncture or small trait at the base, 5 apical, obsolete, sutural rudimentary or absent; propygidium and pygidium marked with large, sparse punctures only at the base; prosternum bistriate, mesosternum sinuous, stria entire; anterior tibiae 3 dentate *coracinus* Erichson.
- 4 (3) Frontal stria not semicircular but biangular or otherwise.
- 5 (6) Frons plane, with a biangular 'M' like interrupted stria ; anterior margin of pronotum sinuous, with two lateral striae, external shortened before middle, internal entire, lateral margin depressed at middle; elytra with a long external subhumeral, 1-3 dorsal striae entire, very fine, 1 st often indistinct in middle, 4-5 and sutural apical,

obsolete; propygidium and pygidium finely and densely punctate
..... *paraincognitus* n. sp.

- 6 (5) Frons concave, with a 'T' like stria ; anterior margin of pronotum bisinuous, with two lateral striae, external short, internal entire ; elytra with a short internal subhumeral, 1-4 dorsal striae entire, 5th apical, short, sutural a little longer than 5th ; propygidium and pygidium finely and sparsely punctate *pullatus* Erichson

12. *Hister coracinus* Erichson 1834

1834. *Hister coracinus* Erichson, in *Klug, Jahrb. Ins.*, P. 146.

1910. *Hister coracinus*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 42.

Material studied : 1 ex., Singtam, East Sikkim, 7.v. 1994, S.K. Saha & Party Coll.

Distribution : India : Sikkim, Hardwar (U.P). Also known from Bhutan and Sri Lanka.

Remarks : Recorded for the first time from Sikkim.

13. *Hister paraincognitus* sp. nov.

Body elongate oval, weakly convex, black and shining. Antennae brown, club greyish, funicle blackish brown. Head medium sized, subtriangular, frons plane, with a biangular 'M' like interrupted stria; labrum short, squarish, weakly sinuous in front; mandibles robust, dentate, curved with a sharp tip. Pronotum wider than long, arched at the base with a small antescutellar stria, lateral margin weakly arched with a depression at middle, anterior margin narrowed and strongly sinuous, anterior angles acute, projecting; marginal stria entire along the sides and anterior angles, interrupted behind the head, anterior margin with two isolated distinct punctures each behind the eyes, lateral margin with two similar punctures, one at the anterior one third and the other below the posterior two third, a little above the base, on the marginal stria; two lateral striae united anteriorly behind the eyes, external shortened

before base or at the middle, internal complete, entire behind the head, not touching the basal margin of pronotum. Scutellum small, triangular. Elytrae longer than broad, widest at the base, swollen at the humerus, narrowed and weakly arched at the end with a weak subapical impression; lateral border inflexed, without a marked groove, punctate strongly; apart from these punctation six isolated big punctures are found on each side of the elytrae close to the external subhumeral striae, which is complete, 1-3 dorsal striae fine, entire, 4-5 and sutural short, apical and obsolete 1st dorsal stria interrupted or indistinct in the middle and 3rd dorsal stria very fine and interrupted below the middle towards apex. Propygidium very compactly punctate, punctures are smaller than the size of interspaces; pygidium convex, more densely punctate. Prosternum angular at the base, lobe short, inclined, bordered and punctate; mesosternum deeply and angularly sinuous in front with two marginal stria, the anterior most is restricted to the corners only, posterior one runs along the sinuous margin, entire. Anterior tibiae with six small teeth, anterior one bifid; posterior tibiae with seven or eight pairs of spines.

Measurements : Length 7.11-8.00 mm, Width 5.11-5.44 mm.

Holotype : Thanggu, North Sikkim, alt. 3842 m. 20.viii. 1989, S.S.Saha Coll.

Paratype : 1 ex., Thanggu, North Sikkim, alt. 3842 m; 13.vii. 1989, S.S.Saha Coll.

Remarks : This species appears very close to *H. incognitus* Marseul, but differs considerably by the following characters. In *H. incognitus* head is rounded, pronotum almost straight at the base and without any depression on lateral margins; two isolated punctures on the anterior margin and none on the lateral margins; dorsal striae 1-3 fine, entire, external subhumeral shortened at the base and no isolated punctures close to the subhumeral striae; base of the prosternum obtuse, mesosternum with two marginal stria. The species under consideration can not be placed under *incognitus* Marseul. More over marseul has

mentioned only India as the locality. Considering all these facts the species under consideration is placed under the name *H. paraincognitus* as a new species. More over this species differs considerably by the size and other important characters from the only known Histeridae species from Sikkim (British India) *H. inexpectatus* Desbordes.

14. *Hister planiceps* Lewis 1888

1888. *Hister Planiceps* Lewis, *Ann. Mus. Genova* (2) 6 : 639.

1910. *Hister planiceps*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 47.

Material studied : 1 ex., Cherry bag, Gangtok, East Sikkim, 14.iv. 1983 B.N. Das & Party Coll., ex. "Bannana plant"

Distribution : India : Sikkim. Also known from Myanmar.

Remarks : This species was originally described from Myanmar. This is the first time record of this species from Sikkim as well as India.

15. *Hister pullatus* Erichson 1834

1834. *Hister pullatus* Erichson, in *Klug, Jahrb. Ins.* 1 : 138.

1910. *Hister pullatus*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 47.

Material studied : 7 ex., Rangpo, 23.ii. 1979, ex. "under dung", 1 ex., Rhenok, 10.iii. 1979, ex. "under dung" all from East Sikkim; 1 ex., Legship, West Sikkim, 3.v. 1994, ex. "dung" S.K. Saha & Party Coll.; 1 ex., Rumtek, East Sikkim, 20.iv. 1983, B.N. Das & Party Coll., ex. "cowdung"; 2 exs., Jorethang, South Sikkim, 5.iv. 1997, S. Biswas & Party Coll.

Distribution : India : Sikkim, Assam, Meghalaya, West Bengal and Tripura.

Remarks : This species is an indigenous species of India. It has not yet been reported from out-side India. It is a new record of this species from Sikkim.

Genus 10. *Peranus* Lewis 1906

1906. *Peranus* Lewis, *Ann. Mag. Nat. Hist.* (7) 18 : 401.
 1909. *Atholister*, Reitter, *Fauna Germanica* 11 : 286.
 1910. *Peranus*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 53.

16. *Peranus maindroni* (Lewis) 1901

1901. *Hister maindroni* Lewis, *Ann. Mag. Nat. Hist.* (7) 7 : 243.
 1906. *Peranus maindroni* Lewis, *Ann. Mag. Nat. Hist.* (7) 18 : 401-402.
 1910. *Peranus maindroni*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 53.

Material studied : 1 ex., Singtam, East Sikkim, 7.v. 1994, S.K. Saha & Party Coll. ; 1 ex., Jorethang, South Sikkim, 5.vi. 1997, S. Biswas & Party Coll.

Distribution : India : Sikkim. Also known from Kurrachi, Pakistan.

Remarks : It is recorded for the first time from Sikkim.

Genus 11. *Chronus* Lewis 1914

1914. *Chronus* Lewis, *Ann. Mag. Nat. Hist.*, (8) 14 : 285.
 17. *Chronus scaliformis* Desbordes 1923
 1923. *Chronus scaliformis* Desbordes, *Bull. Soc. ent. Fr.*, 26 : 60

Material studied : 1 ex., Rangli, 21.xii. 1975 and 1 ex., Singla bazar, 5.xi. 1976, East Sikkim, G.K. Srivastava Coll. ; 2 exs., Gangtok, 7.iii. 1979, ex. "on fallen bannana plant" and 3 exs., Rhenok, 10.iii. 1979. ex. "under bamboo sheath," East Sikkim, S.K. Saha & Party Coll. ; 3 exs., Bardang, 12 km. from Singtam, East Sikkim, 24.xii. 1980, T. Sengupta & Party Coll., ex. "dead bannana plant."

Distribution : India : Sikkim, West Bengal and Meghalaya.

Remarks : It is an indigenous species. Recorded for the first time from Sikkim.

Tribe 5. *Platysomini*Key to the genera of the tribe *Platysomini*

- 1 (2) Anterior tibiae much dilated with two prominent stump like teeth at external margin, larger species, anterior margin of mesosternum with a deep groove *Hyposolenus* Lewis.
 2 (1) Anterior tibiae not much dilated, with at least three teeth at external margin, smaller to medium sized beetles, anterior margin of mesosternum with a shallow groove.
 3 (4) External margin of the Pygidium arched, usually medium sized beetles *Platylister* Lewis
 4 (3) External margin of the Pygidium plain or convex, usually smaller in size *Platysoma* Leach.

Genus 12. *Hyposolenus* Lewis 1907

1907. *Hyposolenus* Lewis, *Ann. Mag. Nat. Hist.* (7) 20 : 97.
 1910. *Hyposolenus*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 15.

18. *Hyposolenus bengalensis* (Lewis) 1906

1906. *Plaesus bengalensis* Lewis, *Ann. Mag. Nat. Hist.* (7) 27 : 338.
 1907. *Hyposolenus bengalensis*, Lewis, *Ann. Mag. Nat. Hist.* (7) 20 : 97.

Material studied : 1 ex., Nayabazar, West Sikkim, 4.1.1976. G.K. Srivastava & Party Coll.

Distribution : India : Sikkim, West Bengal (Darjeeling Dist.)

Remarks : It appears to be an indigenous species. Recorded from Sikkim for the first time.

Genus 13. *Platylister* Lewis 1892

1892. *Platylister* Lewis, *Ent. Month. Mag.*, 28 : 103.
 1910. *Platylister*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 19.

Key to the species of the genus *Platylister*

- 1 (2) Frons subconcave, stria straight; anterior margin of pronotal groove bisinuous,

marginal stria entire, lateral striae entire, continued at the base; 1-3 dorsal striae entire, 4 and 5 strongly reduced, others absent; elytral marginal stria extending upto the suture along the apical margin

..... *atratus* (Erichson)

- 2 (1) Frons strongly concave, stria only on the eyes; anterior margin of pronotum bisinuous, marginal stria interrupted, lateral stria entire; 1-3 dorsal entire, 4 and 5 apical, strongly reduced, sutural absent

..... *borneolus* (Marseul)

19. *Platylister atratus* (Erichson) 1834

1834. *Platysoma atratum* Erichson, in Klug, *Jahrb. Ins.*, P-110.

1910. *Platylister atratus*, Bickhardt, *Coleopt. Cat.*, Pars. 24 : 19.

Material studied : 3 exs., Singla, East Sikkim, 2.i. 1976, G.K. Srivastav & Party Coll., ex. "under bark"

Distribution : India : Sikkim, West Bengal, Meghalaya, Tripura and Tamilnadu.

Remarks : Recorded for the first time from Sikkim.

20. *Platylister borneolus* (Marseul) 1861

1861. *Platysoma borneolum* Marseul, *Ann. Soc. Ent. Fr.* (4) 1 : 143.

1910. *Platylister borneolus*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 19.

Material studied : 2 exs., Rangpo, East Sikkim, 25.xii. 1975 G.K. Srivastava & Party Coll.

Distribution : India : Sikkim, West Bengal and Meghalaya. Also known from Borneo.

Remarks : Recorded for the first time from Sikkim.

Genus 14. *Platysoma* Leach 1817

1817. *Platysoma* Leach. *Zool. Misc.*, 3 : 77.

1910. *Platysoma*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 20.

Key to the species of the genus *Platysoma*

- 1 (2) Sutural stria present, short, below the middle; frons weakly depressed, stria complete ; pronotum with the marginal stria obscurely interrupted behind the eyes, lateral striae entire, lateral area is broadly punctate, punctation varying in size; 1-3 dorsal striae entire, 4 apical, reaching the middle, 5 two third of 4 in length; apical margin of elytrae punctate; propygidium and pygidium covered with large ocellate punctures *brahmani* Lewis.

- 2 (1) Sutural stria absent, frons weakly depressed, stria entire; pronotum with the marginal stria absent behind the head, lateral stria entire, sinuous ; 1-3 dorsal striae entire, 4-5 equal, shortened at middle; propygidium and pygidium covered with spacious punctures only at their bases *confucii* Marseul.

21. *Platysoma brahmani* Lewis 1910

1910. *Platysoma brahmani* Lewis, *Ann. Mag. Nat. Hist.* (8) 6 : 51.

1910. *Platysoma brahmani*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 21.

Material studied : 1 ex., Bardang, Singtam, East Sikkim, 24.xii. 1980. T. Sengupta & Party Coll., ex "fallen *Sajna* tree"; 1 ex., Rangpo, East Sikkim, 29.v. 1997, S. Biswas & Party Coll., ex. "under bark"

Distribution : India : Sikkim, West Bengal and Uttar Pradesh. Also known from Bhutan.

Remarks : Its a new record of this species from Sikkim.

22. *Platysoma confucii* Marseul 1857

1857. *Platysoma confucii* Marseul, *Ann. Soc. Ent. Fr.* (3) 5 : 404.

1910. *Platysoma confucii*, Bickhardt, *Coleopt. Cat.*, Pars 24 : 21.

Material studied : 2 exs., Singtam, East Sikkim, 24.xii.1980, T. Sengupta & Party Coll., ex. "under loose bark"

Distribution : India : Sikkim, West Bengal, Assam, Meghalaya, Tripura and Andaman Islands. Also known from Myanmar, China, Sumatra, Philippines and Sri Lanka.

Remarks : Very widely distributed specis. Recorded for the first time from Sikkim.

SUMMARY

The present paper deals with 125 exs. of Histeridae beetles falling under 22 species, under 14 genera belonging to 5 tribes under 5 subfamilies. Amongst these, the species, *H. paraincognitus*, has been described as new to science. All the species reported here are recorded for the first time from Sikkim. Keys to the subfamilies ; tribes, genera and species have been

provided. Relevant collection data and important references under each species have also been provided.

ACKNOWLEDGEMENT

Authors are thankful to the Director, Zoological Survey of India for providing facilities to this work. Thanks are also due to Dr. P. Mukhopadhyaya, O/c, Coleoptera Section for his valuable suggestion, cooperation and constant encouragement. We are thankful to our Insect Setters, Sri H. N. Singh (Retired) and Sri H. S. Saha for preparing study materials as and when required urgently. Our thanks are also due to the forest personnels, Government of Sikkim for providing necessary assistance to the survey parties visited Sikkim.

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INSECTA : COLEOPTERA : SCARABAEIDAE

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INTRODUCTION

The Coleoptera comprising beetles is the largest Order in the Class Insecta. It contains a large number of groups, of which one is the Scarabaeidae or popularly known as "Dung beetles". Generally, they are phytophagous and coprophagous in nature. Some of them are very attractive due to their very beautiful colouration and shining appearance. They can also be recognized by their characteristic form of antennae.

Knowledge on the Indian Scarabaeidae is mainly based on the monographic works of Arrow Fauna of British India series (1910, 1917, 1931). Besides, Biswas and Chatterjee (1985, 1986, 1987, 1991, 1995) published a number of papers on the collections from Tiger Reserve Forests and some states as well.

Altogether 25 species under 13 genera belonging to 5 subfamilies are dealt with in this paper, and all the species are recorded for the first time from Sikkim. All the taxa have been keyed and synonymies for the species have also been cited wherever necessary.

SYSTEMATIC ACCOUNT : LIST OF TAXA

Family SCARABAEIDAE

Subfamily I. CETONIINAE

Genus 1. *Diceros* Lacordaire

1. *D. childreni* (Westwood)

Genus 2. *Protaetia* Burmeister

2. *P. fusca* (Herbst)

Genus 3. *Oxycetonia* Arrow

3. *O. jucunda* Faldermann

Genus 4. *Clinteria* Burmeister

4. *C. spuria* Burmeister
5. *C. spilota* (Hope)

Subfamily II. DYNASTINAE

Genus 5. *Xylotrupes* Hope

6. *X. gideon* (Linnaeus)

Genus 6. *Alissonotum* Arrow

7. *A. crassum* Arrow

Genus 7. *Phyllognathus* Eschscheltz

8. *P. dienysius* (Fabricius)

Subfamily III. RUTELINAE

Genus 8. *Popillia* Serville

9. *P. cupricollis* Hope
10. *P. feae* Kraatz

Genus 9. *Callistopopillia* Ohaus

11. *C. iris* (Candeze)

Genus 10. *Mimela* Kirby

12. *M. passerinii* Hope
13. *M. princeps* Hope
14. *M. bicolor* Hope

Genus 11. *Anomala* Samouelle

15. *A. bilunata* Fairmaire

16. *A. rugosa* Arrow
17. *A. varicolor* Gyllenthal
18. *A. variegata* Hope
19. *A. bilobata* Arrow
20. *A. flavopicta* Arrow
21. *A. grandis* (Hope)
22. *A. rufiventris* Redtenbacher

Subfamily IV. COPRINAE

Genus 12. *Catharsius* Hope

23. *C. molossus* (Linnaeus)
24. *C. granulatus* Sharp

Subfamily V. MELOLONTHINAE

Genus 13. *Apogonia* Kirby

25. *A. cribricollis* Burmeister

Subfamily I. CETONIINAE

Key to the genera of CETONIINAE

1. Sides of the scutellum concave, apex extremely sharp.....*Clinteria*
- Sides of the scutellum straight, convex or sinuous.....2
2. Base of the pronotum in a transverse line....
.....*Diceros*
- Base of the pronotum not in a transverse line.....3
3. Clypeus not elongate, rather broad in front
.....*Protaetia*
- Clypeus elongate, narrow in front.
.....*Oxycetonia*

Genus 1. *Diceros* Lacordaire 1856

1833. *Dicheros* Gory & Percheron, *Monogr. Cat.*, 2 : 40.
1856. *Diceros* Lacordaire, *Genera des Coleopt.*, 3 : 486.
1910. *Diceros*, Arrow, *Fauna Brit. India* (Coleoptera; Lamellicornia), 1 : 71-72.

1. *Diceros childreni* (Westwood) 1842

1842. *Heterorrhina childreni* Westwood, *Arcana Ent.*, 1 : 139, Pl. 36, fig. 3.
1910. *Diceros childreni*, Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 1 : 74-75.

Material examined : 1 ex., India, East Sikkim, Pandong, 5. I. 1993, S.K. Chatterjee Coll.

Distribution : India : West Bengal, Meghalaya and Sikkim.

Remarks : First time recorded from Sikkim.

Genus 2. *Protaetia* Burmeister, 1842

1842. *Protaetia* Burmeister, *Handb. Ent.*, 3 : 472.
1856. *Cetonia*, subg. *Protaetia*, Lacordaire, *Gen. des. Coleopt.*, 3 : 536.
1881. *Eumimetica* Kramatz, *Deutsche Ent. Zeitschr.*, P. 264.
1910. *Protaetia*, Arrow, *Fauna Brit. India* (Coleoptera: Lamellicornia), 1 : 136-137.

2. *Protaetia fusca* (Herbst) 1790

1790. *Cetonia fusca* Herbst, *Natursyst. Kafer*, 3 : 257, Pl. 32, fig. 4.
1910. *Protaetia fusca* Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 1 : 154-155.

Material examined : 1 ex., India, South Sikkim, Namchi, 3. vi. 1997, S. Biswas Coll.

Distribution : India : West Bengal & Sikkim.

Elsewhere : Myanmar, Malaysia, North Queensland, South China and Thailand.

Remarks : First time recorded from Sikkim.

Genus 3. *Oxycetonia* Arrow, 1910.

1842. *Gametis* Burmeister, *Handb. Ent.*, 3 : 358.
1910. *Oxycetonia* Arrow, *Fauna Brit. India* (Coleoptera Lamellicornia), 1 : 163-164.

3. *Oxycetonia jucunda* (Faldermann) 1835

1835. *Cetonia jucunda* Faldermann, *Mem. Pres. a 'l' Acad. Sci. St. Petersb.*, 2 : 386.
1910. *Oxycetonia jucunda*, Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 1 : 168-169.

Material examined : 2 exs., 1 ex., India, North Sikkim, Lachungthang, 15. iv. 1992, S.R. Banerjee Coll., 1 ex., Dantem, 29, iv. 1994, S.K. Saha Coll.

Distribution : India : West Bengal, Manipur, Meghalaya & Sikkim.

Remarks : First time recorded from Sikkim.

Genus 4. *Clinteria* Burmeister 1842

1842. *Clinteria* Burmeister, *Handb. Ent.*, 3 : 299.

Key to the species of genus *Clinteria*

1. Pronotum bearing spots on each side of the middle *spuria* Burmeister
- Pronotum bearing a longitudinal median line *spilota* Hope

4. *Clinteria spuria* Burmeister 1847

1847. *Clinteria spuria* Burmeister, *Handb. Ent.*, 5 : 555.

1910. *Clinteria spuria*, Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 1 : 184.

Material examined : 1 ex., India, East Sikkim, Rangpo, 24. v. 1997, S. Biswas Coll.

Distribution : India : Manipur, Meghalaya & Sikkim.

5. *Clinteria spilota* (Hope) 1831

1831. *Cetonia spilota* Hope, *Cray's zool. Misc.*, P. 25.

1833. *Gymnetis confinis* Gory & Percheron, *Monogr. Cet.*, P. 378, Pl. 77, fig. 5.

1910. *Clinteria spilota* Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 1 : 184-185.

Material examined : 3 exs., 2 exs., India, Sikkim, Chauthang, 25. iv. 1994; 1 ex., West Sikkim, Sombaria, 02.v. 1994, S.K. Saha Coll.

Distribution : India : West Bengal (Darjiling), Himachal Pradesh, Uttar Pradesh and Sikkim.

Remarks : First time recorded from Sikkim.

Subfamily II. DYNASTINAE

Key to the genera of DYNASTINAE

1. Basal joint of hind tarsus similar to those succeeding *Xylotrupes*
- Basal joint of hind tarsus more or less triangular 2
2. Mandibles deeply notched externally; sexes similar *Alissonotum*
- Mandibles not notched externally; sexes dissimilar *Phyllognathus*

Genus 5. *Xylotrupes* Hope 1837

1837. *Xylotrupes* Hope, *Coleopterist's Manual* 1, : 19.

6. *Xylotrupes gideon* (Linnaeus) 1767

1767. *Scarabaeus gideon* Linnaeus, *Syst. Nat.* 12th ed., 1 (2) : 541.

1910. *Xylotrupes gideon*, Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 1 : 262-265.

Material examined : 1 ex., India, East Sikkim, Rumtek, 1.x. 1993, B.N. Das & Party coll.

Distribution : India : West Bengal (Darjiling), Assam, Kerala, Maharashtra, Meghalaya and Sikkim.

Elsewhere : Sri Lanka.

Remarks : First time recorded from Sikkim.

Genus 6. *Alissonotum* Arrow 1908

1908. *Alissonotum* Arrow, *Trans. Ent. Soc. London*, P. 322.

7. *Alissonotum crassum* Arrow 1908

1908. *Alissonotum crassum* Arrow, *Trans. Ent. Soc.*, London P. 323.

Material examined : 2 exs., 1 ex., India, East Sikkim, Ranipul, 22.v. 1994; 1 ex., Pandam, 5.x. 1993, all are collected by B.N. Das & Party.

Distribution : India : West Bengal, Bihar and Sikkim.

Elsewhere : Bangladesh and Myanmar.

Remarks : First time recorded from Sikkim.

Genus 7. *Phyllognathus* Eschscholtz 1830

1830. *Phyllognathus* Eschscholtz, *Bull. Soc. Moscou*, P. 65.
 1867. *Oryctes* subg. *Phyllognathus*, Burmeister, *Handb. Ent.*, 5 : 187.
 1910. *Phyllognathus*, Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 1 : 306-307.

8. *Phyllognathus dionysius* (Fabricius) 1910

1792. *Scarabaeus dionysius* Fabricius, *Ent. Syst.*, 1 : 20.
 1910. *Phyllognathus dionysius*, Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 1 : 307-308.

Material examined : 3 exs.; 2 exs., India, South Sikkim, Melli, 6.v. 1994, S.K. Saha Coll. : 1 ex., East Sikkim, Rangpo, 30.v. 1997, Dr. S. Biswas & Party Coll.

Distribution : India : West Bengal (Darjiling), Bihar, Karnatak, Orissa and Sikkim.

Elsewhere : Sri Lanka.

Remarks : First time recorded from Sikkim.

Subfamily III. RUTELINAE

Key to the genera of RUTELINAE

1. Pronotum excised before the scutellum.....2
- Pronotum not excised before the scutellum.
..... 3
2. Hind coxae not acutely produced at the base.
..... *Popillia*
- Hind coxae acutely produced at the base
..... *Callisto poillia*
3. Prosternum strongly elevated and bent abruptly forward.....*Mimela*
- Prosternum rarely elevated and never bent abruptly forward *Anomala*

Genus 8. *Popillia* Serville 1825

1825. *Popillia* Serville, *Encycl. Meth.*, 10 : 367.
 1917. *Popillia* Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 2 : 58-59.

Key to the species of genus *Popillia*

1. Elytra without distinct dorsal foveae
..... *cupricollis* Hope
- Each elytron with a foveae before the middle
..... *feae* Kraatz

9. *Popillia cupricollis* Hope 1831

1831. *Popillia cupricollis* Hope, *Gray's Zool. Miscell.*, P. 23.
 1855. *Popillia hilaris* Burmeister, *Handb. Ent.*, 4 (2): 510.
 1917. *Popillia cupricollis*, Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 2 : 73-74.

Material examined : 36exs.; 2 exs., India, East Sikkim, Gangtok, 10.ix. 1993, 3exs., Rumtak, 11.ix. 1993, 1ex., Paykong, 12.ix. 1993, 3exs., Satipool, 13.ix. 1993, all Coll. S.K. Chatterjee; 13exs., East Sikkim, Paykong, 29.ix. 1999, 1ex., Ranipool, 2.x. 1993, 3exs., Rorathang, 4.x. 1993, 3exs., Pandom, 5.x. 1993, all Coll. B.N.Das & Party; 2exs., North Sikkim, 31.x. 1992, M.S. Shishodia & Party; 2exs., Sikkim, Benjong, 9. xi. 1992, A.K. Hazra & Party; 2 exs., East Sikkim, Ranipool, 22.v. 1994, B.C.Das & Party, 1 ex., West Sikkim, Nayabazar, 3.vi. 1994, B.C. Das & Party.

Distribution : India : West Bengal (Darjiling), Assam, Himachal Pradesh, Uttar Pradesh and Sikkim.

Elsewhere : Nepal.

Remarks : First time recorded from Sikkim.

10. *Popillia feae* Kraatz, 1892.

1892. *Popillia feae* Kraatz, *Deutsche Ent. Zeits.*, P. 269.
 1917. *Popillia feae*, Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 2 : 80.

Material examined : 2 exs.; 1ex., India, Sikkim, Dentam, 29. iv. 1994, S.K. Saha Coll. : 1ex., East Sikkim, Setipool, 15.ix. 1993, S.K. Chatterjee Coll.

Distribution : India : West Bengal (Darjiling), Assam and Sikkim.

Elsewhere : Myanmar, Thailand, Malaysia.

Remarks : First time recorded from Sikkim.

Genus 9. *Callistopopillia* Ohaus 1903

1903. *Popillia* subg., *Callistopopillia* Ohauz, *Deutsche Ent. Zeits.*, P. 219.

1917. *Callistopopillia*, Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 2 : 92.

11. *Callistopopillia iris* (Candeze) 1869

1869. *Anomala iris* Candeze, *Col. Hefte.*, 5 : 43.

1917. *Callistopopillia iris*, Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 2 : 93.

Material examined : 2 exs.; 1 ex., India, North Sikkim, Zema, 03.viii. 1989, S.S. Saha Coll.; 1 ex., Zema, 27. vii. 1989, S.K. Chatterjee Coll.

Distribution : India : West Bengal (Darjiling), Kashmir and Sikkim.

Elsewhere : Tibet.

Remarks : First time recorded from Sikkim.

Genus 10. *Mimela* Kirby 1825

1825. *Mimola* Kirby, *Trans. Linn. Soc.*, 16 : 101.

1839. *Paracrusis*, Newman, *Mag. Nat. Hist.*, 3 : 366.

1917. *Mimela*, Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 2 : 102-103.

Key to the species of genus *Mimela*

1. Pygidium clothed with conspicuous hair.....
..... *passerinii* Hope
- Pygidium without conspicuous hair 2
2. Upper surface green or chiefly green
..... *princeps* Hope
- Upper surface red, yellow or golden yellow
..... *bicolor* Hope

12. *Mimela passerinii* Hope 1842

1842. *Mimela passerinii* Hope, *Proc., Linn., Soc.*, 1 : 128.

1917. *Mimela passerinii*, Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 2 : 105-106.

Material examined : 45 exs.; 5 exs., India, North Sikkim, Lachen, 20. vi. 1989; 7 exs., Zeema, 25. vi. 1989; 6 exs., Yunthung, 1.vii. 1989, all Coll. S. Chatterjee; 2 exs., North Sikkim, Nathula Road, 25.vi. 1989, 1 ex., Lachen, 24.vii. 1989, 3 exs., Zeema, 27. vii. 1989, 3 exs., Nathula Road, 30. vii. 1989, 4 exs., Yunthang, 8. vii. 1989, 1 ex., Lachen, 2. viii. 1989, 13 exs., Zeema, 3. viii. 1989, all Coll. S.S. Saha.

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

Elsewhere : West China and Tibet.

Remarks : First time recorded from Sikkim.

13. *Mimela princeps* Hope 1842

1842. *Mimela princeps* Hope, *Trans. Ent. Soc. London*, 3 : 65.

1917. *Mimela princeps* Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 2 : 115-116.

Material examined : 1 ex., India, North Sikkim, Mongan, 31.v. 1994, B.C. Das & Party Coll.

Distribution : India : West Bengal (Darjiling), Meghalaya and Sikkim.

Elsewhere : Bangladesh, Bhutan and Vietnam.

Remarks : First time recorded from Sikkim.

14. *Mimela bicolor* Hope 1836.

1836. *Mimela bicolor* Hope, *Trans. Ent. Soc. London* 1 116.

1836. *Mimela similis* Hope, *Trans. Ent. Soc. London*, 1 116.

1917. *Mimela bicolor* Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 2 : 125.

Material examined : 1 ex., India, South Sikkim, Namchi, 1.vi. 1997, Dr. S. Biswas & Party.

Distribution : India : West Bengal (Darjiling), Assam and Sikkim.

Elsewhere : Nepal.

Remarks : First time recorded from Sikkim.

Genus 12. *Anomala* Samouelle 1819

1819. *Anomala* Samouelle, *The Entomologist's useful companion*, P. 191.
1830. *Phyllopertha* Stephens, III, *Brit. Ent. Mandib.*, 3 : 223.
1888. *Paraspilota* Bates, *Proc. Zool. Soc.*, P. 374.
1910. *Spinanomale* Ohaus, *Ann. Soc. Ent. Belg.*, 54 : 213.
1917. *Anomala*, Arrow, *Fauna Brit. India* (Coleoptera: Lamellicornia), 2 : 126-127.

Key to the species of genus *Anomala*

1. Base of the pronotum completely margined 2
- Base of the Pronotum not completely margined 6
2. Longer claw cleft on the middle feet 3
- Longer claw of the front feet only cleft *variegata* Hope
3. Front tibia tridentate 4
- Front tibia bidentate *biodata* Arrow
4. Smaller size 5
- Larger size, dark patch upon the pronotum.. *varicolor* Gyllenthal
5. Elytra with opaque lateral areas *bilunata* Fairman
- Elytra very closely sculptured *rugosa* Arrow
6. Elytre showing strongly-marked striae or lines of punctures *flavopicta* Arrow,
- Elytra without strongly-marked grooves or lines of punctures 7
7. Upper surface bright green *grandia* Hope
- Upper surface dark coppery *rufiventris* Redtenbachero.

15. *Anomala bilunata* Fairmaire 1888

1888. *Anomala bilunata* Fairmaire, *Ann. Soc. Ent. France*, (6) 6 : 341
1917. *Anomala bilunata*, Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia)

Material examined : 4 exs.; 1 ex., India, East Sikkim, Ranipool, 26. v. 1997, 3 exs., South Sikkim, Namchi, 1.vi., 1997, both collected by Dr. S. Biswas and Party.

Distribution : India : West Bengal (Darjiling), Manipur and Sikkim.

Elsewhere : Vietnam and S. China.

Remarks : First time recorded from Sikkim.

16. *Anomala rugosa* Arrow 1899

1899. *Anomala rugosa* Arrow, *Trans. Ent. Lond.*, P. 263.

Material examined : 2 exs.; 1 ex., India, South Sikkim, Jorethang, 3.v. 1993; 1 ex., Melli, 6.v. 1994, S.K. Saha and Party coll.

Distribution : India : West Bengal (Darjiling), Himachal Pradesh, Uttar Pradesh and Sikkim.

Elsewhere : Nepal.

Remarks : First time recorded from Sikkim.

17. *Anomala varicolor* Gyllenthal 1817

1817. *Melolontha varicolor* Gyllenthal, *Schönb. Syn. Ins.*, 1 (3) : 114.

1917. *Anomala varicolor*, Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia) 2 : 152-153.

Materials examined : 15 exs.; 4 exs., India, East Sikkim, Rangpo, 6. iv. 1981, R.K. Varshney Coll., 1 ex., South Sikkim, Malli, 13. iv. 1994, 2 exs., East Sikkim, Rangpo, 15. iv. 1994, all Coll. P.H. Roy; 1 ex., Rangpo, 29. v. 1997, 4 exs., Ranipool, 25 & 26.v. 1997, 2 exs., South Sikkim, Namchi, 1.vi. 1997, all Coll. S. Biswas.

Distribution : India : West Bengal (Darjiling & Jalpaiguri), Bihar, Karnataka, Tamil Nadu, Uttar Pradesh and Sikkim.

Elsewhere : Sri Lanka.

Remarks : First time recorded from Sikkim.

18. *Anomala variegata* Hope 1831

1831. *Anomala variegata* Hope, *Gray's Zool. Miscell.* P. 24.

1917. *Anomala variegata*, Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 2 : 192-193.

Material examined : 7 exs.; 4 exs., India, East Sikkim, Paykong, 12. ix. 1993, S.K. Chatterjee Coll. ; 2 exs., South Sikkim, Jorethang, 2.vi. 1994, S.K. Saha Coll., 1 ex., Namchi, 1.vi. 1997, S. Biswas Coll.

Distribution : India : West Bengal (Darjiling and Kalimpong) and Sikkim.

Elsewhere : Nepal.

Remarks : First time recorded from Sikkim.

19. *Anomala bilobata* Arrow 1912

1912. *Anomala bilobata* Arrow, *Ans. Nag. Nat. Hist.*, 10 (8) : 329.

Material examined : 7 exs.; 1 ex., India, East Sikkim, Rangpo, 6. iv. 1981, (at night), R.V. Varshney Coll., 1 ex., 12. iv. 1994, P.H. Roy & Party Coll.; 2 exs., 30.v. 1997, S. Biswas Coll., 1 ex., Sikkim, Benjeng, 9.xi.1992, A.K. Hazra & Party Coll., 1 ex., West Sikkim, Nayabazar, 9. iv. 1994, P.H. Roy & Party Coll. ; 1 ex., Sikkim, Jorethang, 4. vi. 1997, S. Biswas Coll.

Distribution : India : West Bengal (Calcutta, Darjiling and Murshidabad) and Sikkim.

Elsewhere : Myanmar; China.

Remarks : First time recorded from Sikkim.

20. *Anomala flavopicta* Arrow 1912

1912. *Anomala flavopicta* Arrow, *Ann. Mag. Nat. Hist.*, (8) 9 : 75.

Material examined : 1 ex., India, East Sikkim, Namthang, 21. v. 1994, S. Chattopadhyaya Coll.

Distribution : India : West Bengal (Darjiling) and Sikkim.

Remarks : First time recorded from Sikkim.

21. *Anomala grandis* (Hope) 1840

1840. *Euchlora grandis* Hope, *Mag. Nat. Hist.*, (2) 4 : 284.

1917. *Anomala grandis* Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 2 : 234-235.

Material examined : 3 exs.; 1 ex., India, East Sikkim, Rangpo, 29.v. 1997; 2 exs., South Sikkim,

Jorethang, 2 & 4.vi. 1997, all collected by S. Biswas.

Distribution : India : Assam, Meghalaya, Orissa, Chennai and Sikkim.

Elsewhere : Myanmar.

Remarks : First time recorded from Sikkim.

22. *Anomala rufiventris* Redtenbacher 1848

1848. *Anomala rufiventris* Redtenbacher, *Hiigel's Kashmir*, 4 (2) : 526.

1917. *Anomala rufiventris* Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 2 : 236-237.

Material examined : 11 exs.; 4 exs., India, North Sikkim, Nathula Road, 24 & 25.vi. 1989, all Coll. S.S. Saha, 1 ex., Nathula Road, 25.vi. 1989, S. Chatterjee, 1 ex., Zeema, 3. viii. 1989, S.S.Saha Coll., 1 ex., East Sikkim, Gangtok, 10. ix. 1993, 1 ex., Paykong, 12. ix. 1993, all Coll. S.K. Chatterjee; 1 ex., Ranipool, 2.x. 1993, B.N. Das & Party; 1 ex., North Sikkim, Mongon, 31. v. 1994, B. C. Das & Party; 1 ex., South Sikkim, Tumir, 5 vi. 1997, P.H. Roy & Party.

Distribution : India : West Bengal (Darjiling), Manipur, Meghalaya, Uttar Pradesh and Sikkim.

Elsewhere : Bhutan.

Remarks : First time recorded from Sikkim.

Subfamily IV. COPRINAE

Diagnostic character of the genus *Catharsius* known from Sikkim.

Hind tibia with one spur, middle eoxae widely separated, the tarsi more or less flat and tapering.

Key to the species of the genus *Catharsius*

1. Head with a small smooth area adjoining each eye *molossus* Linnaeus
- Head without smooth area adjoining each eye, lateral prominence on each side of the pronotum *granulatus* Sharp

Genus 13. *Catharsius* Hope 1846

1846. *Catharsius* Hope, *Col. Man.* 1 : 21.

1931. *Catharsius*, Arrow, *Fauna Brit. India* (Coleoptera: Lamellicornia), 3 : 92.

23. *Catharsius molossus* (Linnaeus)

1758. *Scarabaeus molossus* Linnaeus, *Syst. Nat.*, edle, P. 347.
1801. *Copris ursus* Fabricius, *Syst. Eleuth.*, 1 : 43.
1931. *Catharsius molossus* Arrow, *Fauna Brit. India* (Coleoptera : Lamellicornia), 3 : 94-95.

Material examined : 6 exs.; 2 exs., India, East Sikkim, Rangpo, 15. ix. 1993, S.K. Chatterjee Coll.; 1 ex., Ranipool, 2. x. 1993, B.N. Das & Party; 1 ex., Singtam, 14. ix. 1993, S.K. Chatterjee Coll., 1 ex., West Sikkim, Hilby, 17. vi. 1997, P.H. Roy & Party; 1 ex., East Sikkim, Namthang, 24. ix. 1993, S.K. Saha & Party.

Distribution : India : Assam, Orissa, Uttar Pradesh, Maharashtra, Himachal Pradesh, Karnataka, Kerala, Andaman Island, Arunachal Pradesh, West Bengal and Sikkim.

Remarks : First time recorded from Sikkim.

24. *Catharsius granulatus* Sharp 1875

1875. *Catharsius granulatus* Sharp, *Col. Hefte*, 13 : 41.

Material examined : 1 ex., India, East Sikkim, Rorathang, 4.x. 1993, B.N. Das & Party.

Distribution : India : Bihar, Uttar Pradesh and Sikkim.

Elsewhere : Pakistan, Sri Lanka.

Remarks : First time recorded from Sikkim.

Subfamily V. : MELOLONTHINAE

Genus 14. *Apogonia* Kirby

1818. *Apogonia* Kirby, *Trans. Linn. Soc. London*, 12 : 401.

1899. *Apogonia* Kolbe, *Ent. Nachr.*, 25 : 198-204.

25. *Apogonia cribricollis* Burmeister

1855. *Apogonia cribricollis* Burmeister, *Handb. Ent.* 4 (2) : 256.
1912-13. *Apogonia cribricollis* Von Dalla Torre, In Junk's *Coleopt. Cat. (Scarabaeidae : Melolonthinae)*, 20 (49) : 137.

Material examined : 5 exs.; 2 exs., India, East Sikkim, Ranipool, 22.v. 1994; 1 ex., Gangtok, 24. ix. 1993, both the Collections B.N. Das & Party, 1 ex., Ranipool, 6.iv. 1994, P.H. Roy & Party and 1 ex., Singtam, 14.ix. 1993, S.K. Chatterjee Coll.

Distribution : India : Assam & Sikkim.

Elsewhere : Vietnam, Hongkong.

Remarks : First time recorded from Sikkim.

SUMMARY

The present paper deals with 25 species under the 14 genera belonging to 5 subfamilies of Lamellicorn beetles from Sikkim. All the dealt species are recorded for the first time from the State of Sikkim.

Distributional records of all the species in this paper have been provided on the basis of available literature and collections present in Zoological Survey of India.

ACKNOWLEDGEMENTS

The authors are grateful to Dr. J.R.B. Alfred, Director, Zoological Survey of India, for providing working facilities. We are also thankful to Dr. G.K. Srivastava, Additional Director (Retd.) and Dr. S.K. Mitra, Joint Director (Retd.), Z.S.I., Kolkata, for their encouragements.

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- BISWAS, S. and CHATTERJEE, S.K. 1991. *Insecta : Coleoptera : Scarabaeidae*, P.P. 243–262. In *Fauna of Orissa, State Fauna Ser., 1* (3) : 1–262. Zoological Survey of India, Calcutta.
- CHATTERJEE, S.K. and BISWAS, S. 1995. *Coleoptera : Scarabaeidae : Cetoniinae : Dynastinae : Rutelinae*, P.P. 363–447. In *Fauna of West Bengal, State Fauna Ser. 3* (6A) : 1– 447. Zoological Survey of India, Calcutta.

INSECTA : COLEOPTERA : RHIZOPHAGIDAE

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INTRODUCTION

The Rhizophagidae with about 250 species are a moderately large family and are represented in all major biogeographic regions. Species of Rhizophagidae have been found under bark of old logs, ascomycetes fungi, haystacks, decaying vegetation and are sometime called 'root-eating beetles'. The concept of Rhizophagidae suffered from changes since Redtenbacher (1854) until Crowson (1955) defined the group in the present sense bringing Monotominae : Cucujidae under it. By the way, genera listed by Méquignon (1914) and Hetschko (1930) under Rhizophagidae, and Monotominae : Cucujidae respectively were considered to belong to this family. Crowson (*loc. cit.*) transferred 3 genera to the families Smicripidae, Lyctidae and Curculionidae. Sengupta (1977, 1988) added 4 genera from India and he (1988) considered two subfamilies under Rhizophagidae. The present account is based on some recent collection made by the author in Sikkim plus earlier material records from the State.

Characters of Family Rhizophagidae

Body elongated, somewhat parallel-sided, cylindrical to subdepressed, with short clubbed antenna and truncate elytra exposing tip of pygidium, light to dark brown in colour.

Head about as broad as long or little elongate, without fronto-clypeal suture, antennal insertions hidden under projection of frons, 10-segmented antenna with 1- or 2-segmented club, small to moderately large eyes not much protruding, often with distinct tempora, on ventral side often with strongly or weakly developed antennal cavities,

anterior part of gular region often with transverse curved impressed line, gular sutures widely separated; mandible often partially exposed, with one or two apical teeth, mola well developed, rarely with mandibular cavity; maxilla with well developed lacinia but never with apical spine, galea slender, palpi with apical segment elongate, segments 2 and 3 subequal or rarely segment 2 markedly large (*Monotoma*); labium with mentum about as broad as long or little elongate, palpi often with apical segment elongate and sometimes with larger segment 2 than apical one (*Monotoma*); labrum usually not distinguishable.

Prothorax of variable proportion from distinctly elongate to little transverse, pronotal disc often more or less depressed, front coxal cavities usually rounded with hidden trochantins and rarely little transverse with partially exposed trochantins, coxal cavities broadly closed behind, prosternal process more or less broad at apex.

Meso-metathorax : Mesocoxae closely situated, mesocoxal cavities open outwardly (rarely closed), sternal fitting between mesocoxae often with a projection from metasternum; metasternum transverse, with median impressed line, hind coxae closely situated or little widely separated.

Elytra somewhat parallel-sided, punctures usually in linear rows, without scutellary striae, epipleura narrow and often complete up to apex. Hind wing with 1 to 3 anal veins, no radial cell, often with r-m cross vein or its trace.

Legs moderately long, trochanters usually simple, femora more or less swollen, tibiae broadened at apex with two apical spurs; tarsal



formula 4-4-4, or 5-5-4 in male and 5-5-5 in female, or 5-5-5 in both sexes.

Abdomen narrow-elongate, ventrities freely articulated, ventrite 1 longer than others, intercoxal process narrow with pointed apex to broad with truncate apex, femoral lines present or absent. Aedeagus uninverted cucujoid-type, temngmen complete or incomplete, no distinct parameres, often with a pair of thread-like median strut. Ovipositor with separate paraprocts, valvifers, coxites and styli.

key to subfamilies of RHIZOPHAGIDAE

1. Front coxal cavities transverse with exposed trochantins; no transverse impression or line on anterior part of gular region of head, antennal cavities well developed and converging; 3 anal veins on wing; labrum exposed RHIZOPHAGINAE*
- Front coxal cavities round with hidden trochantins; with a transverse impression or line on anterior part of gular region of head, antennal cavities weakly developed and diverging; usually with 1 anal vein on wing MONOTOMINAE

LIST OF TAXA

Family RHIZOPHAGIDAE

Subfamily MONOTOMINAE

1. *Montoma spinicollis* Aubé
2. *Europs* sp.
3. *Mimemodes harmandi* (Grouvelle)
4. *Tarunius punctatus* Sengupta

Key to the genera and species of RHIZOPHAGIDAE

1. Segment 2 of both maxillary and labial palpi markedly large, apical segment smaller; dorsal surface largely pubescent and dull *Montoma spinicollis* Aubé
- Segment 2 of both maxillary and labial palpi normal and smaller than apical segment; dorsal

surface glabrous or sparsely pubescent and more or less shiny 2

2. Antennal club 2-segmented. Anterior part of gular region without longitudinal grooves but with a transverse line. Abdominal ventrite 1 without femoral lines *Europs* sp.
- Antennal club 1-segmented 3
3. Head large, at least as wide as prothorax or wider; short femoral lines on abdominal ventrite 1; antennal scape large and trapezoidal in male; prothorax broader than long. Scoop at apex of tempora indistinct *Mimemodes harmandi* (Grouvelle)
- Head normal, not wider than prothorax; no femoral lines on abdominal ventrite 1; antennal scape in male not trapezoidal; prothorax elongate. Elongated impressed area on middle of pronotal disc *Tarunius punctatus* Sengupta.

Subfamily MONOTOMINAE

Genus I. *Montoma* Herbst

1793. *Monotoma* Hebst. *Käfer* 5 : 22

[Type-species : *Monotoma picipes* Herbst.]

Diagnosis : Elongated, moderately depressed, somewhat elliptical with narrower anteriorly, densely setose and dull. Head elongate, eyes moderately large, tempora well developed, transverse impressed line on vertex behind eyes, 10-segmented antenna moderately long with 1-segmented club, mandible with bifid apical teeth, maxillary galea narrow and finger-like, segment 2 of maxillary palpi markedly large, segment 3 transverse, apical segment short; labium with transverse mentum, segment 2 of labial palpi large and apical segment minute. Prothorax usually elongate, sides serrate, pronotum more or less excavated, front coxal cavities closed behind, prosternal process broader apically than between coxae; mesocoxae moderately widely separated; elytra exposes at least one abdominal segment, striate-punctate; tarsi 5-5-4 in male and 5-5-5 in female; intercoxal process of first abdominal ventrite broad and truncate apically, no femoral lines.

* Subfamily not recorded from Sikkim.

1. *Monotoma spinicollis* Aubé

1837. *Monotoma spinicollis* Aube, *Annls. Soc. ent. Fr.* 6 : 463.

1845. *Monotoma spinigera* Chaudoir, *Bull. Moscou*, 18 (1) : 97.

1857. *Monotoma spinifera* Wollaston, *Cat. Col. Mader.* p. 57.

Diagnosis : Elongate-elliptical, dark brown, clothed with somewhat squamiferous setae; elongated head with anterior clypeal margin little arcuate, vertex somewhat excavated on sides, eyes about one-fifth as long as head and hardly larger than antennal scape, antennal segments 4-9 about as broad as long or little transverse, club elongate-oblong; elongate prothorax widest behind middle and narrowed anteriorly, front margin arcuate, side margins sinuate, anterior spines slightly produced, pronotum with a pair of shallow depressions above base, head and pronotum coarsely punctate; elytra less than one and a half times as long as broad, sides little arched, punctures deep and large. Length – 2-2.2 mm.

Material : 8 ex. India : Sikkim, South District, Karfektar, 2 km. O-Jorethang, 7 ex., 20. ix. 1993, T.K. Pal, ex. vegetation debris; West District, Nayabazar, 400 m., 1 ex. 21. ix. 1993, T.K. Pal, ex. vegetation debris.

Distribution : India : West Bengal, Sikkim (new record); Middle Europe, Mediterranean islands of Corceca; Atlantic islands of Madeira, Cape Verde, Canary, St. Helena, Guadeloupe etc.; East Africa.

Genus II. *Europs* Wollaston

1854. *Europs* Wollaston, *Insecta Maderensia*, p. 149

[Type-species : *Europs impressicollis* Wollaston].

Diagnosis : Elongate, dorsally depressed, subparallel, with scanty pubescence and shining. Head about as broad as long, eyes large, tempora well developed, transverse impressed line on vertex behind eyes, 10-segmented antenna with 2-segmented club, mandible with single apical tooth, maxilla with fan-like lacinia, apical segment

of maxillary palpi longest, labium with ligula about as broad as long, apical segment of labial palpi longest. Prothorax about as broad as long, sides finely serrate, pronotum not excavate but punctate, front coxal cavities closed behind, prosternal process broader apically than between coxae, mesocoxae moderately widely separated; elytra exposes one abdominal segment, striate-punctate; tarsi 5-5-4 in male and 5-5-5 in female; intercoxal process of first abdominal ventrite moderately broad and rounded apically, no femoral lines.

2. *Europs* sp.

Diagnosis : Narrow, elongated, subparallel, dorsal surface moderately strongly punctate and sparsely setose; clypeal margin of head little indented, sides of frons somewhat raised above antennal bases, eyes slightly shorter than half as long as head, temple about one-third as long as eyes, antennal segments 4-9 more or less transverse, apical segment of club about as broad as long and wider than penultimate one, puncturation on vertex moderately coarse with interspaces much wider than punctures, prothorax marginally elongate, widest near middle and sides weakly rounded, anterior and posterior angles not produced, pronotum moderately coarsely punctate leaving a dorso-median part; elytra less than twice as long as broad, sides feebly arched, elytral punctures about as coarse as pronotal ones or little stronger. Length – 1.7-2.1 mm.

Material : 4 ex. India : Sikkim, South District, Karfektar, Jorethang, 650 m., 10. iii. 1996, T. K. Pal, ex. *Mangifera indica* log.

Genus III. *Mimemodes* Reitter

1876. *Mimemodes* Reitter, *Deutsche ent. Zeitschr.* 20 : 296

[Type-species : *Bactridium monostrosum* Reitter]

Diagnosis : Elongated, dorsally depressed, subparallel with scanty pubescence and moderately shiny. Exposed part of head slightly transverse, with distinct neck constriction. Eyes moderately large, tempora well developed, transverse impressed line on vertex behind eyes, 10-

segmented antenna with 1-segmented club, mandible with bifid apical tooth and with dorsal cavity near base; maxillary lacinia sword-like and setose, apical segment of maxillary palpi longest and fusiform; labium with mentum slightly elongate and somewhat triangular, apical segment of labial palpi longest and somewhat fusiform. Prothorax slightly transverse and little narrowed posteriorly, sides finely serrate, pronotum not excavate, front coxal cavities closed behind and intercoxal process broad at apex, mesocoxae separated about as wide as front coxae, mesocoxal cavities narrowly closed; elytra exposes one abdominal segment, striate-punctate; tarsi 5-5-4 in male and 5-5-5 in female; intercoxal process of first abdominal ventrite rather narrow and rounded apically, with short femoral lines.

3. *Mememodes harmandi* (Grouvelle)

1903. *Europs harmandi* Grouvelle, *Annl. Soc. ent. Fr.* 72: 123.

1976. *Mimemodes harmandi* : Sengupta, *J. Zool. Soc., India* 28 : 68.

Diagnosis : Narrow, elongated, subparallel, dorsal surface moderately strongly punctate and sparsely setose; clypeal margin of head little indented, sides of frons below antennal bases excavated, temple slightly shorter than eyes and angulate, no distinct scoop on tempora, antennal scape in male large and trapezoidal, antennal segments 4-9 more or less transverse, club elongate-oblong, frons weakly excavate, puncturation on vertex moderately coarse with interspaces wider; transverse prothorax little narrowed posteriorly, front angles almost right angle, pronotum moderately coarsely punctate leaving a small impunctate space near middle; elytra slightly longer than one and a half times as long as broad, sides little arched, punctures moderately large. Length – 2.6-2.8 mm.

Material : 2 ex. India : Sikkim, South District, Temi, 600 m., 1 ex., 24.ix.1993, T.K. Pal, ex. stored maize; East District, Gangtok, 1704 m., 1 ex., 24.iv.1976, T. K. Pal, ex. *Castanopsis*

tribuloides log.

Distribution : India : West Bengal (Darjeeling district), Sikkim (new record).

Genus IV. *Tarunius* Sengupta

1977. *Tarunius* Sengupta, *Oriental Ins.* 11 : 532

[Type species : *Tarunius punctatus* Sengupta].

Diagnosis : Elongated, dorsally depressed, subparallel and shiny. Head elongate, with prominent neck constriction, eyes moderately large, tempora well developed, transverse impressed line on vertex behind eyes, 10-segmented antenna with 1-segmented club, mandible with single apical tooth, apical segments of maxillary and labial palpi longest. Prothorax subquadrate, sides finely serrate, pronotum with an elongated medial impressed area, front coxal cavities closed behind and intercoxal process broad at apex, mesocoxae moderately widely separated; elytra exposes one abdominal segment, striate-punctate; intercoxal process of first abdominal ventrite rather narrow and rounded apically, no femoral lines.

4. *Tarunius punctatus* Sengupta

1977. *Tarunius punctatus* Sengupta, *Oriental Ins.* 11 : 533.

Diagnosis : Narrow, elongated, subparallel, dark brown, dorsal surface moderately strongly punctate and almost glabrous; anterior clypeal margin of head arcuate, temple shorter than eyes, antennal segments 4-9 more or less transverse, club elongate-oblong, frons weakly excavate, puncturation on vertex coarse and moderately dense, punctures on frons and clypeus finer; prothorax nearly subparallel, front angles almost right angles and hind angles rounded. either extremities of impressed area on pronotum little deeper, pronotal punctures more densely arranged than on vertex, interspaces narrower than punctures only except front margin and near middle of disc; elytra longer than one and a half times as long as broad, sides little arched, punctures moderately large. Length 2.3 mm.

Material : 2 ex. (holotype and paratype). India :

Sikkim, East District, Gangtok, 1704 m., 2.iv.1976,
A.R. Bhaumik, *ex. Castanopsis tribuloides* log.

Distribution : India : Sikkim.

Aubé and *Mimemodes harmandi* (Grouvelle) are
first time recorded from this State. The species
are systematically keyed and characterized.

ACKNOWLEDGEMENTS

SUMMARY

The paper deals with 4 species under 4 genera
of 1 subfamily from Sikkim. *Monotoma spinicollis*

The author is indebted to the Director,
Zoological Survey of India for providing necessary
facilities for the work.

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INSECTA : COLEOPTERA : SILVANIDAE

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INTRODUCTION

The Silvanidae are a moderately large family of the section Clavicornia of the superfamily Cucujoidea. The silvanids are usually small (1.3-4.5 mm.), reddish-brown and occasionally with dorsal spot. They are largely associated with litter or vegetation debris and a good number of species are subcorticolous by habit. A few species cause considerable damage to stored food products of vegetable origin. The Silvanidae seem to be more diversely represented in the tropical and subtropical climates than in the temperate zones. The representatives of the family occur in all the main continental areas of the world, but so far a few species only have been recorded from New Zealand and the oceanic islands. Subsequent to Grouvelle (1908, 1912) the works of Pal and Sengupta (1977, 1979, 1984); Pal (1981, 1985); Pal, Sengupta and Crowson (1984); and Sengupta and Pal (1996) have contributed to the knowledge of Silvanidae of India. The present account is based on the collections made by various parties of Zoological Survey of India since 1976 plus those by the author from Sikkim. These represent 15 species under 7 genera.

Characters of Family Silvanidae

Body small to moderately large (1.3-11.6 mm.), usually parallel-sided and somewhat flattened, or sometimes ovoid and subconvex, elytral punctation in rows.

Head usually little elongate, sometimes transverse, usually with a transverse impressed line on vertex behind eyes, fronto-clypeal suture present or absent, antennal insertions hidden or

exposed but never distinctly dorsal; gular sutures well separated, anterior part of gular region without longitudinal grooves, genal process normal; antenna 11-segmented, often with 3-segmented club and sometimes without club; mandible with two or three apical teeth, mola well developed, on dorsal side sometimes with a large cavity, otherwise cavity reduced to a vestige and without dorsal tubercle; maxilla with distinct lacinia and galea, lacinia narrow and with or without apical spine, galea broad and its apex densely hairy, palpi with apical segment rarely securiform; labium with mentum transverse; palpi with apical segment rarely securiform or transverse or distinctly smaller than segment 2.

Prothorax usually elongate and sometimes transverse, side margins often serrated and sometimes with distinct teeth, pronotum without distinct prebasal impression, prosternum moderately broad with apical margin almost straight, front coxae usually closely and rarely widely situated, trochantins hidden; coxal cavities somewhat rounded, usually externally closed behind and rarely open.

Elytra punctured in regular rows and usually with 9 rows of punctures, rarely with a scutellary stria, epipleura usually complete. Wing usually with single anal vein, sometimes with three or five anal veins; devoid of radial cell, R-m cross vein and subcubital fleck.

Mesocoxae often closely situated, sternal fitting between mesocoxae usually in a straight line and sometimes with a narrow projection from metasternum, mesocoxal cavities broadly opened outwardly; hind coxae transverse and moderately



widely separated; metendosternite often reduced and without lateral plates, sometimes well developed with anterior tendons.

Legs moderately long, trochanters short and simple, femora swollen towards middle, tibiae slightly broadened at apex and usually with two spurs, tarsal formula 5-5-5 in both sexes, tarsal segments 1 to 3 usually simple or slightly lobed below.

Abdomen covered by elytra, all ventrites freely articulated, ventrite 1 longest and ventrites 2 to 5 more or less equal in length, ventrite 1 sometimes with open femoral lines, intercoxal process variable. Aedeagus uninverted cucujoid-type, median lobe usually broadly elongated and with a median strut, articulated parameres well developed. Ovipositor well developed with separate paraprocts, valvifers, coxites and styli.

LIST OF TAXA

Family SILVANIDAE
Subfamily SILVANINAE

1. *Silvanus lewisi* Reitter
2. *Silvanus difficilis* Halstead
3. *Silvanoprus scuticollis* (Walker)
4. *Silvanoprus indicus* Pal & Sengupta
5. *Silvanoprus longicollis* (Reitter)
6. *Silvanoprus cephalotes* (Reitter)
7. *Silvanoprus angusticollis* (Reitter)
8. *Silvanoides cribricollis* (Grouvelle)
9. *Protosilvanus lateritius* (Reitter)
10. *Monanus concinnulus* (Walker)
11. *Monanus (Monanops) rambicus* Pal

Subfamily PSAMMOECINAE

12. *Psammoecus harmandi* Grouvelle
 13. *Psammoecus bambusae* Pal
 14. *Psammoecus trimaculatus* Motschulsky
- Subfamily : CRYPTAMORPHINAE
15. *Cryptamorphus sculptifrons* Reitter

Family SILVANIDAE
Subfamily SILVANINAE

Genus I. *Silvanus* Latreille

1804. *Silvanus* Latreille, *Histoire Naturelle, générale et partiulière, des crustacés et des insectes* 11 : 158.

[Type-species : *Ips unidentata* Olivier].

Diagnosis : Head devoid of fronto-clypeal suture, eyes moderately large and coarsely faceted, temple often flattened beneath eye, transverse impressed line on vertex behind eyes, 11-segmented antenna with 3-segmented club, antennal insertions hidden under projection of frons, mandible with 3 apical teeth, apical segments of maxillary and labial palpi fusiform ; prothorax usually elongate, side margins finely serrated, front coxal cavities closed and prosternal process broad at apex, mesocoxae narrowly separated; wing with single anal vein; each elytron with 9 rows of striae punctures; tarsi of legs simple; intercoxal process of first abdominal ventrite broad and its apical margin broadly pointed, no femoral lines.

1. *Silvanus lewisi* Reitter

1876. *Silvanus lewisi* Reitter, *Col. Hefte* 15 : 76.

1908. *Silvanus lewisi* Grouvelle, *Annls. Soc. ent. Fr.* 77 : 491.

1912. *Silvanus (Silvanus) lewisi* : Grouvelle, *Annls. Soc. ent. Fr.* 81 : 338.

1973. *Silvanus lewisi* Halstead, *Bull. Br. Mus. Nat. Hist. (Ent.)* 29 (2) : 53.

Diagnosis : Yellowish to reddish-brown and covered with short pubescence; eyes about half as long as head, temple shorter than one eye facet and its outer apical angle pointed, puncturation on vertex coarse and dense; elongated prothorax with anterior spine about half as long as eye and its tip pointed, lateral depressions on pronotal disc slightly marked, puncturation on pronotum coarse and dense and almost similar to that of vertex of head, elytra about twice as long as wide, parallel-sided with margins little wavy, punctures deep and large. Length 2.08-2.47 mm.

Material : 1 ex. India : Sikkim, East District, Kumre, 500 m., 6 km. O-Rongpo, 17.ix. 1993, T.K. Pal, ex. under bark.

Distribution : India : Assam, Meghalaya, Sikkim (new record), West Bengal, Himachal Pradesh, Tamil Nadu, Karnataka, Kerala, Andaman Is.; Sri Lanka; Vietnam; Taiwan; Japan; Malaysia; Singapore; Indonesia; Philippines; New Guinea; Solomon Is.; Australia; Congo; Ghana.

2. *Silvanus difficilis* Halstead

1973. *Silvanus difficilis* Halstead, *Bull. Br. Mus. Nat. Hist. (Ent.)* **29** (2) : 73.

1977. *Silvanus difficilis* : Pal and Sengupta, *Oriental Ins.* **11** (2) : 279.

Diagnosis : Reddish-brown and covered with short pubescence; eyes slightly shorter than half of length of head, temple about as long as 1.5 to 2 eye facets with broad outer apical angle, puncturation on vertex coarse and dense; elongated prothorax, anterior spine about half as long as eye with slightly blunt tip, well developed lateral depressions on pronotal disc, puncturation on pronotum coarse and dense and almost similar to that of vertex of head; elytra little more than twice as long as broad, side margins little wavy, punctures deep and large. Length 2.20–2.50 mm.

Material : 2 ex. India : Sikkim, East District, Tadong, Gangtok, 1800 m., 25.ix.1993, T.K. Pal, ex. under bark.

Distribution : India : Arunachal Pradesh, Assam, Meghalaya, Sikkim (new record), West Bengal, Himachal Pradesh, Uttar Pradesh, Madhya Pradesh, Maharashtra, Kerala, Tamil Nadu, Andaman Is.; Sri Lanka; Myanmar; Vietnam; Taiwan; Malaysia; Singapore; Indonesia; Philippines; Moluccas; I. Delcas; Solomon Is.; Samoan Is.; Australia; New Ireland; West Africa.

Genus II. *Silvanoprus* Reitter

1911. *Silvanoprus* Reitter, *Fauna Germanica* **3** : 45 [Type-species : *Silvanus fagi* Guérin-Meneville].

Diagnosis : Head devoid of fronto-clypeal suture, eyes moderately large and coarsely

faceted, temple usually flattened beneath eye, vertex with a transverse impressed line behind eyes, 11-segmented antenna with 3-segmented club, antennal insertions hidden under projection of frons, mandible with well developed mola and 3 apical teeth, apical segments of maxillary and labial palpi fusiform; prothorax usually elongate and rarely transverse, side margins finely serrated, front angles with more or less prominent spines, front coxal cavities closed and prosternal process broad at apex, mesocoxae closely situated; wing with single anal vein; each elytron with 9 rows of stria punctures; tarsal segment 3 of legs strongly lobed below; intercoxal process of first abdominal ventrite broad but narrowed towards apex and slightly pointed, coxal lines closed and usually narrowly separated from posterior margins of hind coxal cavities.

3. *Silvanoprus scuticollis* (Walker)

1859. *Silvanus scuticollis* Walker, *Ann. Mag. nat. Hist.* (3) **3** : 53.

1876. *Silvanus triangulus* Reitter, *Col. Hefte* **15** : 60.

1908. *Silvanus scuticollis* : Grouvelle, *Annls. Soc. ent. Fr.* **77** : 491.

1912. *Silvanoprus scuticollis* : Grouvelle, *Annls. Soc. ent. Fr.* **81** : 342.

1979. *Silvanoprus scuticollis* : Pal and Sengupta, *Entomologica Basiliensia* **4** : 70.

Diagnosis : Yellowish to reddish-brown and covered with short pubescence; eyes slightly shorter than half of length of head, temple about as long as one eye facet and its outer apical angle slightly pointed, puncturation on vertex coarse and dense; prothorax broader than long and distinctly narrowed posteriorly, widest across anterior spines, anterior spine about two-thirds as long as eye, lateral depressions on pronotum slightly developed; puncturation on pronotum almost similar to that of vertex of head; elytra slightly less than twice as long as broad, side margins little wavy, punctures deep and large. Length—2.17–2.55 mm.

Material : 16ex. India : Sikkim, East District, Rangpo, 450 m., 10 ex., 10.iv.1976, T.K. Pal, ex.

haystack ; Marchak, 1600 m., 12 km. O-Gangtok, 6 ex., 3.x. 1993, T.K. Pal, *ex.* stored maize.

Distribution : India : Assam, Meghalaya, Sikkim, West Bengal, Bihar, Uttar Pradesh, Tamil Nadu; Sri Lanka; Malaysia; Indonesia; Japan; East Africa; Madagascar; France; Guyana; West Indies.

4. *Silvanoprus indicus* Pal and Sengupta

1979. *Silvanoprus indicus* Pal and Sengupta, *Entomologica Basiliensis* 4 : 71.

Diagnosis : Yellowish to reddish-brown and covered with short pubescence; eyes slightly less than half of length of head, temple about as long as 2 to 3 eye facets and its outer apical margin broad, temple not flattened beneath eye, puncturation on vertex coarse and dense; prothorax elongate, slightly narrowed posteriorly, anterior spine short and its tip broadly pointed; side margins curved and sinuate near extremities, lateral depressions on pronotum slightly developed, puncturation on pronotum almost similar to that of vertex of head; elytra about twice as long as broad, side margins little wavy, punctures deep and large. Length 2.20 2.33 mm.

Material : 25 ex. **Paratypes** : India : Sikkim, East District, Rangpo, 450 m., 19.iv. 1976, A.R. Bhowmik, *ex.* haystack.

Distribution : India : Assam, Meghalaya, Sikkim ; Bhutan.

5. *Silvanoprus longicollis* (Reitter)

1876. *Silvanus longicollis* Reitter, *Col. Hefte* 15 : 60.

1908. *Silvanus longicollis* Grouvelle (nec. Reitter), *Annls. Soc. ent. Fr.* 77 : 491.

1912. *Silvanoprus longicollis* : Grouvelle (nec. Reitter), *Annls. Soc. ent. Fr.* 81 : 341.

1984. *Silvanoprus longicollis* : Pal, *Rec. zool. Surv. India* 81 (3-4) : 339.

Diagnosis : Yellowish to blackish-brown and covered with short pubescence; eyes short, temple long, slightly longer than length of eye and its outer margin slightly rounded, antennal scape large

and about twice as long as broad, antennal segments 2-8 narrow-elongate, puncturation on vertex coarse and ocellate; prothorax elongated and almost parallel-sided, anterior spine small, about half as long as eye and projected forward, puncturation on pronotum almost similar to that of vertex of head and little finer anteriorly, lateral depressions on pronotum indistinct; elytra about twice as long as broad, side margins little wavy, punctures deep and large. Length 2.2 mm.

Material : 1 ex. India : Sikkim : West District, Nayabazar, 400 m., 21. ix. 1993, T. K. Pal, *ex.* vegetation debris.

Distribution : India : Assam, Meghalaya, Sikkim, (new record), West Bengal, Uttar Pradesh, Tamil Nadu; Sri Lanka; Malaysia; Indonesia; China; Japan; Madagascar; East Africa.

6. *Silvanoprus cephalotes* (Reitter)

1876. *Silvanus cephalotes* Reitter, *Col. Hefte* 15 : 62.

1908. *Silvanus longicollis* Grouvelle (nec. Reitter), *Annls. Soc. ent. Fr.* 77 : 492.

1912. *Silvanoprus longicollis* : Grouvelle (nec. Reitter), *Annls. Soc. ent. Fr.* 81 : 342.

1979. *Silvanoprus cephalotes* : Pal and Sengupta, *Entomologica Basiliensis* 4 : 70.

1984. *Silvanoprus cephalotes* : Pal, *Rec. zool. Surv. India* 81 (3-4) : 339.

Diagnosis : Yellowish to reddish-brown and covered with short pubescence; eyes slightly less than half of length of head, temple about as long as one eye facet and its outer apical angle slightly pointed, temple flattened beneath eye, puncturation on vertex coarse and dense and not ocellate-type; elongated prothorax widest near middle, anterior spine small, about one-fourth as long as eye or shorter and projected forward, lateral depressions on pronotum slightly developed, puncturation on pronotum almost similar to that of vertex of head; elytra more than twice as long as broad, side margins little wavy, punctures deep and large. Length 2.20 2.40 mm.

Material : 17 ex. India : Sikkim, East District, Rangpo, 450 m., 11 ex., 10.iv. 1976, T.K. Pal, *ex.*

haystack; South District, Karfektar, 400 m., 2 km. O-Jorethang, 1 ex., 20.ix. 1993, T.K. Pal, ex. vegetation debris; West District, Nayabazar, 400 m., 4 ex., 21.ix. 1993, T.K. Pal, ex. vegetation debris.

Distribution : India : Assam, Meghalaya, Sikkim, West Bengal, Bihar, Uttar Pradesh, Delhi, Karnataka, Tamilnadu; Bhutan; Nepal; Sri Lanka; Indonesia; Japan; China.

7. *Silvanoprus angusticollis* (Reitter)

1876. *Silvanus angusticollis* : Reitter, *Col. Hefte* 15 : 59.

1912. *Silvanoprus angusticollis* : Grouvelle, *Annl. Sec. ent. Fr.* 81 : 341.

1979. *Silvanoprus angusticollis* : Pal and Sengupta, *Entomologica Basiliensia* 4 : 71.

Diagnosis : Reddish-brown to blackish-brown and covered with short pubescence ; eyes slightly less than half of length of head, temple shorter than one eye facet and its outer apical angle pointed, temple flattened beneath eye, puncturation on vertex coarse and dense; elongated prothorax widest across anterior spines, slightly narrowed posteriorly behind middle, anterior spine moderately long, slightly shorter than half of length of eye and projected antero-laterally, lateral depressions on pronotum slightly developed, puncturation on pronotum almost similar to that of vertex of head; elytra about twice as long as broad, side margins little wavy, punctures deep and large. Length 2.55 – 3.00 mm.

Material : 54 ex. India : Sikkim, East District, Gangtok, 1800 m., 2 ex., 24.iv. 1976, T.K. Pal, ex. under bark of *Schima wallichii*; 14 ex., 24.iv. 1976, T.K. Pal, ex. garbage of *Cryptomaria* leaf; Pakyang, 29 ex., 27.iv. 1976, T.K. Pal, ex. under bark; Tadong, Gangtok, 1800 m., 2 ex., 25.ix. 1993, T.K. Pal, ex. vegetation debris; North District, Soem, 1260 m., 20 km. O-Mangan, 7 ex., 28.ix. 1993, T.K. Pal, ex. haystack.

Distribution : India : Meghalaya, Sikkim, West Bengal (Darjiling District), Uttar Pradesh, Kashmir, Tamil Nadu; Bhutan; Nepal; Japan.

Genus III. *Silvanoides* Halstead

1973. *Silvanoides* Halstead, *Bull. Br. Mus. nat. Hist. (Ent.)* 29 (2) : 87

[Type-species : *Silvanoides cheesmanae* Halstead].

Diagnosis : Head devoid of fronto-clypeal suture, eyes large and coarsely faceted, temple flattened beneath eye and shelf-like, transverse impressed line on vertex behind eyes indistinctly visible, 11-segmented antenna moderately long, segments 4 to 8 transverse or about as broad as long, club 3-segmented, mandible with well developed mola and 3 apical teeth, apical segments of both maxillary and labial palpi fusiform, maxillary lacinia with apical spine; prothorax elongate, front angles with prominent spines beneath level of anterior margin, side margins finely denticulate, front coxal cavities closed behind and prosternal process broad at apex, mesocoxae moderately widely separated, wing with single anal vein, each elytron with 9 rows of stria punctures, tarsi of legs simple; intercoxal process of first abdominal ventrite broad and broadly pointed at apex, femoral lines opened.

8. *Silvanoides cribricollis* (Grouvelle)

1897. *Silvanus cribricollis* : Grouvelle, *Anali. Mus. civ. Stor. nat. Giacomo Doria* 38 (series 2, 18) : 397.

1912. *Neosilvanus cribricollis* : Grouvelle, *Annl. Soc. ent. Fr.* 81 : 324.

1985. *Silvanoides cribricollis* : Pal, *Rec. zool. Surv. India* 82 (1-4) : 196.

Diagnosis : Reddish-brown, rather shiny and covered with short pubescence; eyes large and about half as long as head, temple slightly shorter than width of an eye facet and sloped downward, puncturation on vertex fine and sparse; elongated prothorax slightly narrowed posteriorly, anterior spine short broad and its tip somewhat pointed, side margins curved and slightly sinuate near posterior angles, lateral depressions on pronotal disc moderately developed, puncturation on sides of pronotum coarser than near middle; elytra more than twice as long as broad, side margins feebly wavy, punctures deep and large. Length 2.6 mm.

Material : 9 ex. India : Sikkim, South District, Melli, 500 m., 18.ix. 1993, T.K. Pal, *ex.* under bark.

Distribution : India : Arunachal Pradesh, Meghalaya, Sikkim (new record); Indonesia.

Genus IV. *Protosilvanus* Grouvelle

1912. *Silvanus* (*Protosilvanus*) Grouvelle, *Annl. Soc. ent. Fr.* **81** : 336.

1973. *Protosilvanus* Grouvelle : Halstead, *Bull. Br. Mus. nat. Hist. (Ent.)* **29** (2) : 89

[Type-species : *Silvanus lateritius* Reitter].

Diagnosis : Elongated, rather parallel-sided, head devoid of fronto-clypeal suture, eyes large and coarsely faceted, temple flattened beneath eye and shelf-like, vertex with a distinct transverse impressed line behind eyes, 11-segmented antenna with 3-segmented club, antennal insertions hidden under projection of frons, mandible with well developed mola and 3 apical teeth, maxillary lacinia without apical spines, segments 2 of both maxillary and labial palpi longer than apical segments; prothorax elongated, front angles with prominent spines, side margins finely denticulate, front coxae widely separated and coxal cavities closed behind, sterno-pleural suture extending to lateral margin, mesocoxae widely separated; wing with single anal vein, each elytron with 9 rows of striae punctures, interstice 7 more or less carinate; tarsi of legs simple; intercoxal process of first abdominal ventrite broad and broadly pointed at apex, coxal lines closed, bordering hind margins of hind coxae.

9. *Protosilvanus lateritius* (Reitter)

1876. *Silvanus lateritius* Reitter, *Verh. zool. bot. Ges. Wien.* **28** : 194.

1908. *Silvanus lateritius* : Grouvelle, *Annl. Soc. ent. Fr.* **77** : 490.

1912. *Silvanus* (*Protosilvanus*) *lateritius* : Grouvelle, *Annl. Soc. ent. Fr.* **81** : 336.

1973. *Protosilvanus lateritius* : Bull. Brit. Mus. nat. Hist. (Ent.) **29** (2) : 96.

1984. *Protosilvanus lateritius* : Pal and Sengupta, *Oriental Ins.* **18** : 237.

Diagnosis : Dorsally flattened, yellowish- to reddish-brown and covered with short pubescence; eyes about half as long as head, temple shorter than width of an eye facet and sloped downward, antennal segments 9 and 10 with apical spines, puncturation on vertex coarse and dense; elongated prothorax slightly narrowed behind middle, widest across anterior spines, lateral depressions on pronotum well developed, puncturation on pronotum almost similar to that of vertex of head; elytra more than twice as long as broad, almost parallel-sided with side margins slightly wavy, punctures deep and large, interstice 7 strongly carinate and extending slightly more than anterior three-fourths. Length 2.94 4.64 mm.

Material : 2 ex. INDIA : Sikkim, East District, Kumre, 600 m., 6 km. O-Rangpo, 1 ex., 17.ix. 1993, T.K. Pal, *ex.* under bark; South District, Melli, 500 m., 1 ex., 18.ix. 1993, T.K. Pal, *ex.* under bark.

Distribution : India : Arunachal Pradesh, Assam, Meghalaya, Sikkim (new record), West Bengal, Bihar, Uttar Pradesh, Himachal Pradesh, Kerala, Tamil Nadu, Andaman Is.; Nepal; Bangladesh; Myanmar; Sri Lanka; Thailand; Vietnam; Malaysia; Singapore; Indonesia; Philippines; Taiwan; China; Japan.

Genus V. *Monanus* Sharp

1879. *Monanus* Sharp, *Trans. ent. Soc. Lond.* **2** : 85

[Type-species : *Monanus crenatus* Sharp].

1899. *Emporius* Ganglbauer, *Die Käfer von Mitteleuropa* **3** : 429.

Diagnosis : Head devoid of fronto-clypeal suture, eyes moderately large and coarsely faceted, temple flattened beneath eye, transverse impressed line on vertex behind eyes absent, 11-segmented antenna with 3-segmented club, antennal insertions hidden under projection of frons, mandible with well developed mola and 3 apical teeth, apical segments of maxillary and labial palpi longer than other segments and fusiform, maxillary lacinia without apical spine; prothorax about as

broad as long, side margins with a few setose denticles, front coxae contiguous and coxal cavities closed behind, sterno-pleural suture extending usually to anterior denticle, mesocoxae contiguous; wing with single anal vein, each elytron with 9 rows of striae punctures, alternate interstices with single and double rows of pubescence; tarsal segments 2 and 3 of legs strongly lobed below; intercoxal process of first abdominal ventrite broad and its apex slightly rounded, coxal lines closed.

10. *Monanus concinnulus* (Walker)

1858. *Monotoma concinnulus* Walker, *Ann. Mag. nat. Hist.* (3) 2 : 207.
1867. *Silvanus signatus* Frauenfeld, *Verh. zool. bot. Ges. Wien* 17 : 438.
1874. *Cryptomorpha fasciatus* : Wollaston, *Entomologist's mon. Mag.* 10 : 169.
1876. *Cryptomorpha concinnula* : Waterhouse, *Entomologist's mon. Mag.* 13 : 122.
1899. *Emporius signatus* : Ganglbauer, *Die Käfer von Mitteleuropa* 3 : 586.
1908. *Emporius concinnulus* : Grouvelle, *Annl. Soc. ent. Fr.* 77 : 489.
1911. *Emporius concinnulus* : Reitter, *Fauna Germanica* 3 : 48.
1912. *Monanus (s. str.) concinnulus* : Grouvelle, *Annl. Soc. ent. Fr.* 81 : 371.
1981. *Monanus (s. str.) concinnulus* : Pal, *Oriental Ins.* 15 (3) : 247.

Diagnosis : Moderately convex, rather shiny, yellowish- to reddish-brown and with black markings on elytra, covered with short pubescence; eyes shorter than one-third of length of head, temple about as long as 1.5 eye facets and its outer apical angle slightly pointed, antenna shorter than head and prothorax together, puncturation on vertex coarse and dense; quadrate prothorax slightly rounded anteriorly, side margin with about ten small and blunt denticles and each denticle bears an anteriorly directed seta, puncturation on pronotum almost similar to that of

vertex of head; elytra shorter than twice as long as broad, side margins almost uniformly curved, a transverse black spot near middle and that extends towards apex along suture, punctures large. Length 1.60 – 2.30 mm.

Material : 17 ex. India : Sikkim, East District, Kumre, 600m., 6 km. O-Rangpo, 8 ex., 17.ix. 1993, T.K. Pal, ex. haystack ; Marchak, 1600 m., 12 km. O-Gangtok, 9 ex., 3.x. 1993, T.K. Pal, ex. stored maize.

Distribution : India : Meghalaya, Sikkim (new record), West Bengal, Bihar, Uttar Pradesh, Delhi, Tamil Nadu, Karnataka; outside India this species is widely distributed in both the Old and New Worlds.

11. *Monanus (Monanops) rambicus* Pal

1981. *Monanus (Monanops) rambicus* Pal, *Oriental Ins.* 15 (3) : 251.

Diagnosis : Elongated, flattened, somewhat parallel-sided, reddish-brown, slightly shiny and covered with short pubescence; eyes shorter than half as long as head, temple about as long as 2 to 2.5 eye facets and its outer apical angle broad; slightly elongated prothorax widest near anterior third, anterior angle with a short and broad spinous projection, lateral margin with nine well marked denticles, puncturation on pronotum coarse and dense and almost similar to that of vertex of head; elytra about 2.5 x as long as broad, rather parallel-sided, punctures moderately large, interstices about as wide as punctures. Length 3.3 – 3.5 mm.

Material : 15 ex. India : Sikkim, East District, Lower Lagyap, nr. Ranipul, 1100 m., 2.iii. 1996, T.K. Pal, ex. beneath bamboo sheath.

Distribution : India : Sikkim (new record), West Bengal (Darjiling District).

Subfamily PSAMMOECINAE

Genus VI. *Psammoecus* Latreille

1829. *Psammoechus* Latreille, *Cuv. Règne Anim.* ed. 2, 5 : 135

[Type-species : *Dermestes bipunctatus* (Fabricius)].

1830. *Crypta* Stephens, *Illustrations of British Entomology. Mandibulata*, 3 : 103.

1846. *Psammoecus* : Erichson, *Naturgeschichte der Insekten Deutschlands*, 1, *Coleoptera*, 3 : 329.

Diagnosis : Elongate, slightly ovoid; head with fronto-clypeal suture, two lateral longitudinal striae on vertex originating near base of antennae, eyes moderately large and coarsely faceted, temple may or may not extend beneath eye, transverse impressed line on vertex behind eyes, 11-segmented antenna with no distinguishable club, antennal insertions somewhat dorso-lateral, mandible with a large basal mandibular cavity and 3 apical teeth, apical segments of maxillary and labial palpi securiform or transverse, maxillary lacinia without apical spine; prothorax usually transverse, side margins with more or less prominent denticles, front coxae contiguous and coxal cavities closed behind, apical margin of prosternal process little sinuate, sterno-pleural suture extending to lateral margin; wing with single anal vein; each elytron with 10 rows of striae punctures; tarsal segments 1 to 3 of legs lobed below; intercoxal process of first abdominal ventrite broad and its apical margin broadly pointed, coxal lines almost marginal striae of hind coxal cavities.

12. *Psammoecus harmandi* Grouvelle

1912. *Psammoecus harmandi* Grouvelle, *Bull. Mus. Paris*, 28 : 413.

1985. *Psammoecus harmandi* : Pal, *Misc. Publ. Rec. zool. Surv. India, Occ. Pap.*, 71 : 19.

Diagnosis : Elongate-ovoid, moderately convex, slightly shiny, yellowish- to reddish-brown with blackish spots on elytra and antennal segments 9 and 10 blackish, covered with moderately long pubescence; eyes shorter than half of length of head, temple moderately long and slightly flattened beneath eye, antenna long and slender, scape moderately large and about twice as long as broad, segments 3 to 7 longer than pedicel, segments 8 to 11 slightly wider than segment 7, segment 11 elongate and slightly

acuminate at apex, puncturation on vertex coarse and dense; prothorax transverse, anteriorly about as wide as head across eyes, front margin and side margins slightly rounded, side margin with six minute teeth, puncturation on pronotum almost similar to that of vertex of head; elytra about one and a half times as long as broad, widest near middle, punctures moderately large, interstices narrower than punctures, a more or less rounded blackish spot on each elytron near middle and a somewhat rounded sutural spot behind them. Length 3.0 mm.

Material : 1 ex. India : Sikkim, East District, Gangtok, 25.iv. 1976, T.K. Pal, ex. under garbage of *Cryptomaria* leaf.

Distribution : India : Arunachal Pradesh, West Bengal (Darjeeling District), Sikkim; Nepal.

13. *Psammoecus bambusae* Pal

1985. *Psammoecus bambusae* Pal, *Misc. Publ. Rec. zool. Surv. India, Occ. Pap.*, 71 : 33.

Diagnosis : Elongate-ovoid, subdepressed, slightly shiny, yellowish-brown with blackish spots on elytra, apical part of clypeus and antennal segments 7 to 10 blackish, covered with long pubescence; eyes about half as long as head, temple moderately long and slightly flattened beneath eye, antenna long and slender, antennal structure almost similar to that in *P. harmandi*, puncturation on vertex coarse and dense; prothorax distinctly transverse and narrowed posteriorly, anterior margin about as wide as head across eyes and sinuate on either side on middle, side margin slightly rounded bearing seven distinct denticles, puncturation on pronotum slightly denser than on vertex of head; elytra more than one and a half times as long as broad, widest near middle, punctures large and interstices narrower than punctures, two elongated yellowish areas on both anterior and posterior halves of blackish elytra. Length 3.6 mm.

Material : 11 ex. *Holotype*, India : Sikkim, East District, Gangtok, 1400 m., 4.iii. 1979, S.K. Saha, ex. under bamboo (*Bambusa aurandaceae*) sheath; *Paratypes*, 10 ex., data same as holotype.

Distribution : India : Sikkim.

14. *Psammoecus trimaculatus* Motschulsky

1858. *Psammoecus trimaculatus* Motschulsky, *Etud. Ent.* 7 : 45.
 1859. *Cucujus incommodus* Walker, *Ann. Mag. Nat. Hist.* (3) 3 : 53.
 1876. *Psammoecus trimaculatus* : Waterhouse, *Entomologist's mon. Mag.* 13 : 124.
 1876. *Telephanus cruciger* : Waterhouse, *Entomologist's mon. Mag.* 13 : 125.
 1879. *Psammoecus trimaculatus* : Reitter, *Verh. zool. bot. Ges. Wien* 29 : 509.
 1906. *Psammoecus trimaculatus* : Grouvelle, *Annls. Soc. ent. Fr.* 75 : 125.
 1908. *Psammoecus trimaculatus* : Grouvelle, *Annls. Soc. ent. Fr.* 77 : 476.
 1979. *Psammoecus trimaculatus* : Pal and Sengupta, *Entomologica Basiliensia* 4 : 75.
 1984. *Psammoecus trimaculatus* : Pal, *Rec. zool. Surv. India.* 81 (3-4) : 352.
 1985. *Psammoecus trimaculatus* : Pal, *Misc. Publ. Rec. zool. Surv. India, Occ. Pap.*, 71 : 41.

Diagnosis : Elongate-ovoid, moderately convex, slightly shiny, yellowish-brown with blackish spots on elytra and antennal segments 7-10 blackish, covered with moderately long pubescence; eyes slightly shorter than half of length of head, temple short and slightly flattened beneath eye, antenna long and slender, antennal structure almost similar to that in *P. harmandi* only except segments 7 to 11 wider than preceding segment, puncturation on vertex coarse and dense; prothorax transverse, across anterior margin narrower than head across eyes, front margin and side margins feebly rounded, side margin with six or seven teeth of variable length, puncturation on pronotum almost similar to that of vertex of head; elytra shorter than one and a half times as long as broad, widest near middle, punctures moderately large, interstices about as wide as or wider than punctures, a more or less rounded blackish spot on each elytron in posterior half and a longitudinal sutural spot present behind them. Length 2.3 mm.

Material : 1 ex. India : Sikkim, West District, Nayabazar, 400 m., 21.ix. 1993, T.K. Pal, ex. vegetation debris.

Distribution : India : Arunachal Pradesh, Assam, Meghalaya, Sikkim (new record), West Bengal, Bihar, Orissa, Uttar Pradesh, Jammu & Kashmir, Delhi, Karnataka, Tamil Nadu, Kerala; Nepal; Bhutan; Sri Lanka; Myanmar; Malaysia; Japan; Madagascar.

Subfamily CRYPTAMORPHINAE

Genus VIII. *Cryptamorpha* Wollaston

1854. *Cryptamorpha* Wollaston, *Insecta Maderensia* : 156
 [Type-species : *Cryptamorpha musae* Wollaston = *desjardinsi* (Guérin-Meneville)].
 1859. *Pseudophanus* Leconte, : *Proc. Acad. Philadelphia* : 84.
 1867. *Parabrantes* Redtenbacher, *Reise Novara Zool.* 2 : 40.

Diagnosis : Elongated, subparallel; head with fronto-clypeal suture, two longitudinal grooves present on lateral sides and often united, additional longitudinal impressed lines originating from lateral grooves and extending posteriorly to outer margin, eyes usually large and coarsely faceted, temple slightly flattened beneath eye, no transverse impressed line on vertex behind eyes, 11-segmented antenna with no distinguishable club, antennal insertions partly hidden under projection of frons, anterior part of gular region with a transverse groove, mandible with a large basal mandibular cavity, right mandible with 3 and left mandible with 2 apical teeth, apical segments of maxillary and labial palpi elongated and fusiform, maxillary lacinia without apical spine; prothorax elongated to transverse, front coxae contiguous and coxal cavities closed behind, apical margin of prosternal process little sinuate, sterno-pleural suture extending to lateral margin; mesocoxae contiguous; wing with 5 anal veins; each elytron with ten rows of striae punctures and a scutellary striae ; tarsal segments 1 and 2 of leg slightly lobed below, segment 3 bilobed; intercoxal process

margin slightly rounded, coxal lines almost marginal striae of hind coxal cavities.

15. *Cryptamorpha sculptifrons* Reitter

1889. *Cryptamorpha sculptifrons* Reitter, *Wien. ent. Ztg.* 8 : 320.

1908. *Cryptamorpha sculptifrons* : Grouvelle, *Annls. Soc. ent. Fr.* 77 : 474.

1979. *Cryptamorpha sculptifrons* : Pal and Sengupta, *Entomologica Basiliensia* 4 : 77.

Diagnosis : Elongated, moderately depressed, reddish-brown and covered with short pubescence; eyes shorter than half of length of head, longitudinal grooves on vertex unite posteriorly and U-shaped, antenna long and slender, segments 9 to 11 slightly broader than preceding segments, puncturation on vertex minute, rather indistinct and sparse; prothorax elongated, convex and widest near middle, side margins rounded, a transverse impressed line near posterior margin of pronotum, puncturation on pronotum coarse and dense; elytra less than twice as long as broad, widest behind middle, punctures large and interstices about as wide as punctures, scutellary striae consists of about seven punctures. Length 3.6 mm.

Distribution : India : Sikkim, West Bengal (Darjiling District); Bhutan; Japan; China.

Key to the Subfamilies, genera and species of Silvanidae

1. Head without fronto-clypeal suture and devoid of longitudinal groove or striae on vertex; antennal insertions hidden under projection of frons, with distinct antennal club (*Silvanidae*). 2
 - Head with distinct fronto-clypeal suture and a pair of longitudinal grooves or striae on vertex; antennal insertions more or less exposed; no distinguishable antennal club 12
2. Lateral margin of prothorax finely serrated and without large teeth or denticles; tarsi simple or only segment 3 lobed. 3
 - Lateral margin of prothorax with ten blunt denticles; tarsal segments 2 and 3 strongly lobed (*Monanus* Sharp) 11
3. Dorsal surface markedly flattened; sterno-pleural suture of prothorax extending to lateral margin, front coxae widely separated, apical segments of maxillary and labial palpi shorter than segment 2; antennal segments 9 and 10 with apical spines at extremities; 7th elytral interstices carinate *Protosilvanus lateritius* (Reitter)
 - Dorsal surface moderately flattened; sterno-pleural suture of prothorax extending to anterior spine, front coxae less widely separated; apical segments of maxillary and labial palpi longest; antennal segments 9 and 10 devoid of apical spines; elytral interstices not carinate 4
4. Tip of anterior spines lying beneath level of front margin of prothorax; antennal segments 4 to 8 about as broad as long; femoral lines on abdominal ventrite 1 open; dorsal surface of head and prothorax sparsely punctate and somewhat shiny *Silvanoides cribricollis* (Grouvelle)
 - Tip of anterior spines lying in a same level or beyond front margin of prothorax; antennal segments 4 to 8 elongate; coxal lines on abdominal ventrite 1 close; dorsal surface of head and prothorax densely and coarsely punctate and rather dull 5
5. Tarsi simple and not lobed (*Silvanus* Latreille) 6
 - Tarsal segment 3 strongly lobed below (*Silvanoprus* Reitter) 7
6. Temple short and represented by a thin platform, length of temple shorter than width of one eye facet and its outer apical angle pointed *Silvanus lewisi* Reitter
 - Temple distinct and thick, length of temple longer than one eye facet and its outer apical angle broad *Silvanus difficilis* Haltead
7. Prothorax broader than long, width of prothorax across anterior spines more than 1.5 x as broad

- as width across posterior angles, prothorax distinctly narrowed posteriorly, lateral margins almost straight, shape of prothorax rather triangular
 *Silvanoprus scuticollis* (Walker)
- Prothorax longer than broad, width of prothorax across anterior spines less than 1.25 x as broad as width across posterior angles, prothorax slightly narrowed posteriorly behind middle, lateral margin distinctly curved, shapes of prothorax different 8
 - 8. Temple of head moderately long and not flattened beneath eye, about as long as two to three eye facets and inwardly notched
 *Silvanoprus indicus* Pal & Sengupta
 - Temple of head very short or long and distinctly flattened beneath eye; temple either short, thin with outer apical angle pointed or long with outer apical margin rounded 9
 - 9. Temple of head short, length of temple about as long as one or two eye facets and its outer apical angle somewhat pointed; puncturation of head and prothorax reticulate-type, coarse and dense 10
 - Temple of head long, length of temple about as long as eye or longer than eye and its outer apical margin rounded; puncturation of head and prothorax ocellate-type, coarse and somewhat globular
 *Silvanoprus longicollis* (Reitter)
 - 10. Front and middle femora with a distinct spine near middle; lateral margins of prothorax more or less uniformly curved outwardly; anterior spine of prothorax small, projected in front and about as long as one-fourth of eye
 *Silvanoprus cephalotes* (Reitter)
 - Front and middle femora devoid of any spine; lateral margins of prothorax distinctly wavy and sinuate across anterior one-third; anterior spine of prothorax larger, about half as long as eye and projected somewhat outwardly (Reitter) *Silvanoprus angusticollis*
 - 11. Elytra ovoid, moderately convex and hardly twice as long as broad, transverse blackish spot near middle of elytra; sterno-pleural suture of prothorax extending to anterior denticle. ..
 *Monanus* (s. str.) *concinulus* (Walker)
 - Elytra parallel-sided, dorsally flattened and more than twice (2.5 x) as long as broad, elytra unicolourous; sterno-pleural suture of prothorax extending to lateral margin and far below anterior denticle
 *Monanus* (*Monanops*) *rambicus* Pal
 - 12. Apical segments of labial and maxillary palpi securiform or strongly transverse; elytra ovoid and without scutellary striae; head devoid of curved transverse groove on anterior part of gular region; tarsal segments 1 to 3 lobed below (*Psammoecinae*) *Psammoecus* Latreille
 13
 - Apical segments of labial and maxillary palpi elongated and more or less fusiform; elytra more or less parallel-sided with distinct scutellary striae; head with a distinct transverse groove on anterior part of gular region; tarsal segments 3 bilobed and segments 1 and 2 slightly unilobed. Longitudinal grooves of head unite on posterior side of vertex to form U-shaped structure, slightly elongate prothorax widest near middle (*Cryptamorphinae*)
 *Cryptamorpha sculptifrons* Reitter
 - 13. Antennal segments 9 and 10 blackish; teeth on lateral margin of prothorax minute, either broader than long or about as broad as long
 *Psammoecus harmandi* Grouvelle
 - Antennal segments 7 to 10 blackish; teeth on lateral margin of prothorax partly long, distinct and longer than broad 14
 - 14. Elytral pattern of four light regions on blackish base, dorsal surface subdepressed; front margin of prothorax sinuate on either side of middle
 *Psammoecus bambusae* Pal
 - Elytra without pattern of four light regions, three blackish spots on yellowish-brown base; front margin of prothorax slightly rounded ...
 *Psammoecus trimaculatus* Motschulsky

SUMMARY

The paper deals with 15 species under 7 genera of 3 subfamilies of which 6 species are recorded for the first time from the State of Sikkim. The species are systematically keyed and characterized.

ACKNOWLEDGEMENTS

The author is indebted to the Director, Zoological Survey of India for providing necessary facilities for the work.

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INSECTA : COLEOPTERA : LANGURIIDAE

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INTRODUCTION

The Languriidae with about 900 species are a well defined family of the section clavicornia under the superfamily Cucujoidea. The languriids are small to large, elongate-oval to narrow-elongate, subcylindrical to slightly flattened, and often glabrous. They are usually bicoloured or metallic and are commonly called as 'lizard beetles.' The Languriidae have world-wide distribution but predominantly found in the tropical parts of both the Old and New worlds. Larvae of many species are stem borers and their adults feed on pollen or the foliage of host plants. Many a forms are found in rotting vegetation and some others remain associated with stored agricultural products.

Following the publication of Arrow's 'Fauna' in 1925 not much works on this family have come out from the Indian subregion. Only recently, Sengupta and Mukherjee (1977, 1979, 1985) have dealt with the languriines of Himalaya and described a new genus from this part. Subsequently, Pal (1992) recorded a few species from Arunachal Himalaya. Variety of vegetation in different altitudes in the humid forests in Sikkim have facilitated a good assemblage of languriids in this part. The present account is based on some recent collection made by the author in Sikkim plus earlier material records from this State.

Characters of Family Languriidae

Head usually transverse, rarely with distinct tempora, vertex often with a pair of stridulatory files or occasionally single, often with transverse impressed line on vertex behind eyes, often with

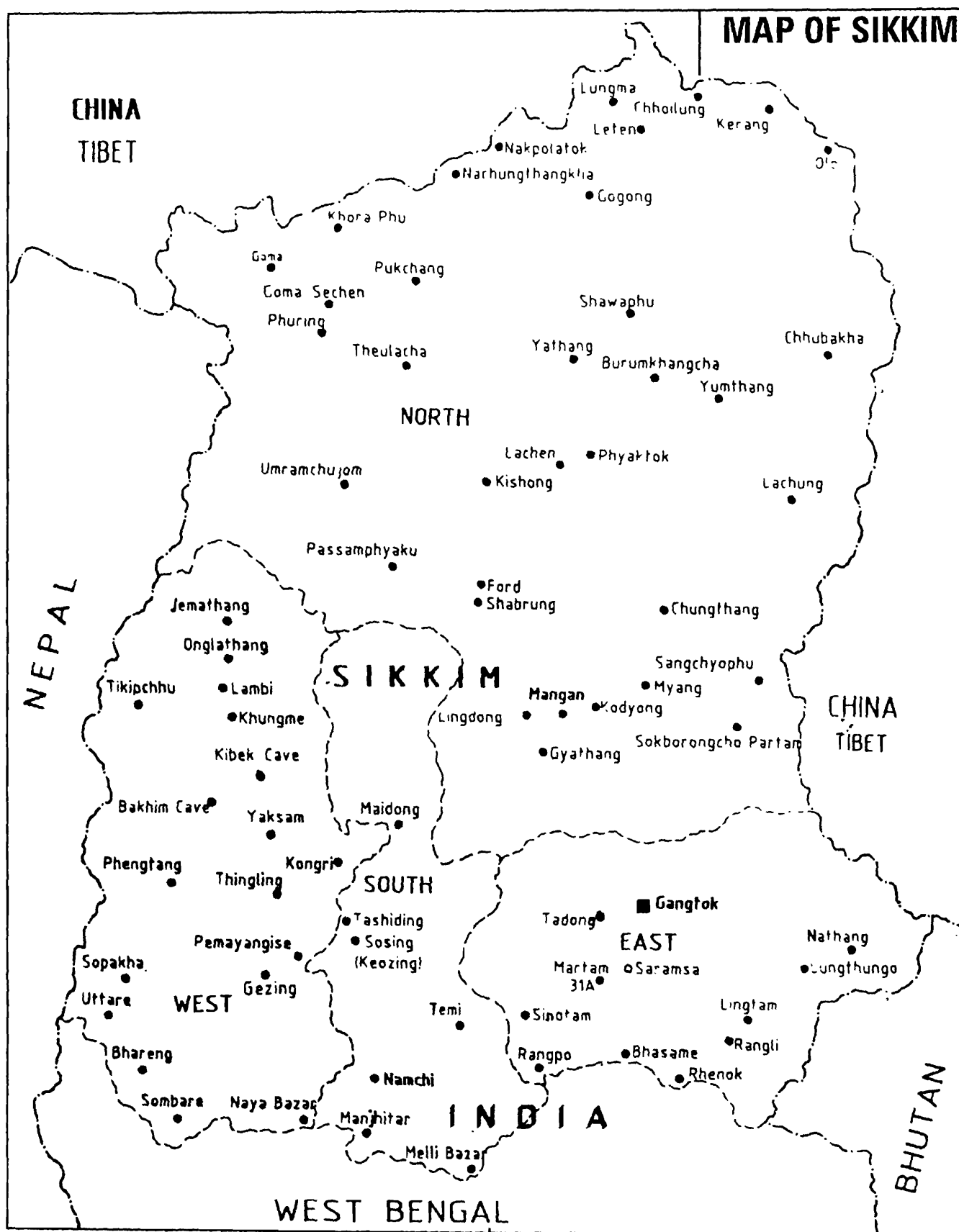
fronto-clypeal suture, eyes moderately large, gular sutures well separated, antenna 11-segmented with club variable, antennal insertions somewhat exposed; mandible usually with two apical teeth, mola more or less developed; maxilla with well developed lacinia, galea and palpi, lacinia often bears three apical spines, apical segment of palpi elongate and never securiform; mentum often transverse, ligula often bilobed, apical segment of labial palpi usually with truncate tip and rarely elongate-fusiform.

Prothorax a little elongate to little transverse, side margins often smooth, occasionally crenulate, pronotum usually bears prebasal impressions and sometimes a basal transverse groove, front coxae slightly transverse, intercoxal process moderately broad, coxal cavities usually open and occasionally closed.

Elytra striate-punctate, with or without scutellary striae, epipleura complete. Wing often with four anal veins and sometimes less in number, often with anal cell when wing has four anal veins, but without anal cell if with less anal veins, usually with subcubital fleck.

Mesocoxae moderately to widely separated, mesocoxal cavities closed outwardly by sterna, mesepimeral pockets usually present. Metasternum sometimes with femoral lines, metacoxae rather narrowly to moderately widely separated; metendosternite usually with moderately widely separated anterior tendons.

Legs moderately long, trochanters usually broadly elongate but never heteromeroid, tibiae often little widened apically and with two normal



spurs, tarsal formula 5-5-5 with segment 4 often reduced.

Abdomen covered by elytra, five ventrites freely articulated and more or less equally long, ventrite 1 often with femoral lines.

Aedeagus on one side when retracted, with articulated parameres, median lobe bears long struts. Ovipositor often with apically pointed coxites, with styli attached laterally.

Key to Subfamilies of LANGURIIDAE

1. Front coxal cavities externally as well as internally closed; elytra without scutellary striole; stridulatory file on head if present, single and median; first anal vein of wing may or may not running into subcubital fleck CRYPTOPHILINAE
- Front coxal cavities externally open behind, if closed then internally open and elytra with scutellary striole; stridulatory file on head if present, double; first anal vein not running into subcubital fleck 2
2. Trochanters narrow and distinctly elongate; sternal fitting between mesocoxae with two knobs; scutellary striole of elytra and stridulatory files on head absent; wing with less than four anal veins ... TORAMINAE *
- Trochanters not very narrow-elongate, sternal fitting between mesocoxae with single knob, rarely in straight line; elytra with scutellary striole and stridulatory files present on head; wing with four anal veins usually 3
- 3 2-Segmented antennal club SETARIOLINAE *
- Antennal club with more than two segments 4
4. Antennal club often with more than three segments, antennal insertions dorso-lateral, head with fronto-clypeal suture; maxillary galea short and broad, mandibular mola poorly developed; front coxal cavities internally closed behind LANGURIINAE

- Antennal club 3-segmented, antennal insertions lateral, fronto-clypeal suture absent; maxillary galea narrow-elongate, mandibular mola well developed and projecting; front coxal cavities internally open behind LOBERINAE*

LIST OF TAXA

Family LANGURIIDAE
Subfamily LANGURIINAE

1. *Megalanguria metasternalis* (Crotch)
2. *Pachylanguria collaris* (Crotch)
3. *Pachylanguria elongata* (Fabricius)
4. *Pachylanguria variiventris* (Kraatz)
5. *Pentelanguria elateroides* (Crotch)
6. *Pentelanguria notopedalis* Crotch
7. *Caenolanguria birmanica* (Harold)
8. *Doubledaya ruficollis* Kraatz
9. *Doubledaya viator* White
10. *Doubledaya severini* Fowler
11. *Doubledaya ustulata* Arrow
12. *Doubledaya dilatipes* (Gorham)
13. *Doubledaya mouhoti* (Crotch)
14. *Anadastus gratus* Gorham
15. *Anadastus loricatus* Arrow
16. *Anadastus dohertyi* Arrow

Subfamily CRYPTOPHILINAE

17. *Cryptophilus integer* (Heer)
18. *Xenoscelinus* sp.

Key to the Genera of Languriinae

1. Elytral epipleura indistinct 2
- Elytral epipleura well defined 4
2. Antennal club distinctly broad and abrupt *Megalanguria* Arrow
- Antennal club less broad and not very abrupt 3
3. Pronotum margined at base. Elytra not acuminate at apex, scutellum elongate and angulate behind *Pachylanguria* Crotch

* not recorded from Sikkim.

- Pronotum not margined at base. Elytra little produced behind abdominal apex *Pentelanguria* Crotch
- 4. Eyes finely faceted 5
- Eyes coarsely faceted. Elytra with prominent humeral angles *Caenolanguria* Gorham
- 5. Head dilated in front of eyes, asymmetrical in female. Shoulders of elytra not tuberculate *Doubledaya* White
- Head not dilated in front of eyes and symmetrical in both sexes. Elytral apices not separately rounded *Anadastus* Gorham

Family LANGURIIDAE
Subfamily LANGURIINAE

Genus I. *Megalanguria* Arrow

1925. *Megalanguria* Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 168.

Diagnosis : Broad-elongate; head large with finely faceted eyes situated wide apart, vertex with a pair of stridulatory files near middle, 11-segmented antenna with 4-segmented club, long mandible with bifid apex, apical segment of maxillary palpi fusiform, apical segment of labial palpi elongate; transverse prothorax distinctly rounded at sides, prosternal process bluntly bilobed at apex and deeply sulcate on each side; elytra broader at shoulders than prothorax, rounded at apex, epipleurae not distinct.

1. *Megalanguria metasternalis* (Crotch)

1876. *Pachylanguria metasternalis* Crotch, *Cist. Ent.* 1 : 378.

1879. *Languria metasternalis* : Harold, *Mitth. Münch. Ent. Ver.* 3 : 55.

1925. *Megalanguria metasternalis* : Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 169.

Diagnosis : Facies broadly elongate, steel blue or purple coloured with sides of pronotum broadly reddish orange; head with antennal club broad and abrupt, vertex finely punctate and clypeus little strongly punctate; base of pronotum little depressed and finely margined, lateral foveae small,

pronotum unevenly punctured at middle; elytra little more shiny than head and pronotum with a slight swelling behind middle, with inconspicuous lines of rather large punctures and interspaces with fine punctures; ventrally sides of prothorax with reddish orange bands and a pair of same coloured patch on metasternum. Length—15-20 mm.

Distribution : India : Sikkim.

Genus II. *Pachylanguria* Crotch

1876. *Pachylanguria* Crotch, *Cist. Ent.* 1 : 377 [Type-species : *Pachylangurai paivae* Wollaston].

1876. *Tetralangura* Crotch, *Cist. Ent.* 1 : 378

1887. *Metabelus* Gorham, *Proc. zool. Soc. Lond.* 1887 : 361.

1887. *Languriomorpha* Gorham, *Proc. zool. Soc. Lond.* 1887 : 361.

Diagnosis : Facies elongate with short antennae, head with finely faceted eyes, vertex with or without a pair of stridulatory files, 11-segmented antenna with 4-segmented club, mandible with bifid apex, maxillary lacinia tridentate, apical segment of maxillary palpi elongate, ligula broadly bilobed and apical segment of labial palpi broad; transverse prothorax with distinct basal margin, front coxae moderately widely separated, prosternal process little produced behind coxae and with a pair of lateral grooves; elytra narrower posteriorly but not acuminate at apex, epipleurae not distinct; first abdominal ventrite with femoral lines.

Key to the species of *Pachylanguria* Crotch

1. Shoulders of elytra not prominent, embraced by hind angles of prothorax 2
- Shoulders of elytra prominent, not embraced by hind angles of prothorax *collaris* Crotch
2. Ventral surface red, with terminal segment of abdomen blackish *elongata* (Fabricius)
- Ventral surface except prothoracic episterna, anterior part of metasternum, first two abdominal ventrites and a spot on anterior part

of other abdominal segments bright reddish
 *variiventris* (Kraatz)

2. *Pachylanguria collaris* Crotch

1876. *Pachylanguria collaris* Crotch, *Cist. Ent.*
 1 : 377

1879. *Languria punctata* Harold, *Mitth. Munch. Ent. Ver.* 3 :
 58.

1925. *Pachylanguria collaris* : Arrow, *Fauna Brit. India,*
Coleoptera : Clavicornia : 178.

Diagnosis : Facies elongate and not markedly narrowed behind, steel blue coloured with prothorax orange red, moderately shiny; head with antennal club abrupt, club segments transverse and closely set, vertex closely and densely punctate; prothorax convex with sides rounded, slightly narrowed posteriorly, front angles blunt and hind angles acutely produced, pronotum more finely and sparsely punctate than vertex, pronotum finely transversely wrinkled near front margin; scutellum somewhat triangular with little rounded apex, elytral shoulders finely prominent, with inconspicuous lines of rather large punctures and interspaces with fine close punctures; ventrally prosternal process, a median spot and two lateral spots on prosternum blackish, a pair of lateral reddish spots on abdominal ventrites. Length—12-16 mm.

Distribution : India : Sikkim.

3. *Pachylanguria elongata* (Fabricius)

1801. *Trogosita elongata* Fabricius, *Systema Eleutheratorum.*
 1 : 152.

1823. *Languria tripunctata* Wiedemann, *Zool. Mag.* 2 (1) :
 46.

1823. *Languria splendens* Wiedemann, *Zool. Mag.* 2 (1) :
 46.

1825. *Languria pyramidalis* Macleay, *Annulosa Javan.* :
 44.

1860. *Languria angularis* Motschulsky, *Schrenck's Reisen*
un Amurl. 2 : 243.

1896. *Tetralanguria elongata* : Gorham, *Ann. Mus. Civ.*
Genova 36 : 259.

1925. *Pachylanguria elongata* : Arrow, *Fauna Brit. India,*
Coleoptera : Clavicornia : 173.

Diagnosis : Facies narrow elongate, dark metallic blue or coppery in colour with prothorax reddish, shiny; head with antennal segment 3 rather long, club segments of antenna transverse and closely set, vertex closely and densely punctate; prothorax with sides nearly parallel, front angles blunt, hind angles acutely produced and closely applied to elytral shoulders, pronotum coarsely punctate near middle and more feebly towards sides, a roundish depression in middle of pronotal base and minute lateral foveae; scutellum transverse and pointed at apex; elytral shoulders not prominent, with distinct lines of punctures and interspaces with fine punctures, sides straight and little convergent posteriorly, apex finely serrated; ventral surface largely reddish. Length—12-17 mm.

Distribution : India : Sikkim, West Bengal (Darjeeling District); Bangladesh; Myanmar; Thailand; Malaysia; Indonesia.

4. *Pachylanguria variiventris* (Kraatz)

1899. *Tetralanguria variiventris* Kraatz, *Deutsche ent.*
Zeitschrift. 1899 : 348.

1925. *Pachylanguria variiventris* : Arrow, *Fauna Brit. India,*
Coleoptera : Clavicornia. : 174.

Diagnosis : Facies elongate and not markedly narrowed behind, dark metallic blue or green, pronotum with reddish broad lateral bands and a small blackish spot at middle of each lateral band; head with antennal club abrupt, club segments transverse and closely set, vertex closely and densely punctate; prothorax with sides nearly parallel, front margin rounded and front angles slightly produced, hind angles acutely produced and closely applied to elytral shoulders, pronotum coarsely punctate near middle and more feebly towards sides, a roundish depression in middle of pronotal base and lateral foveae minute; scutellum transverse and acutely pointed behind; elytral shoulders not prominent, with linear rows of moderately strong punctures and intervals with fine punctures, sides straight and little convergent

posteriorly, apices feebly truncate; ventrally reddish except prothoracic episterna, anterior part of metasternum, abdominal ventrites 1 and 2, and a pair of united spots at anterior margin of each segment. Length–13–19 mm.

Distribution : India : Sikkim, Meghalaya; Myanmar; Vietnam.

Genus III. *Pentelanguria* Crotch

1876. *Pentelanguria* Crotch, *Cist. Ent.* 1 : 380

[Type-species : *Pentelanguria elateroides* Crotch].

Diagnosis : Facies elongate, head with coarsely faceted large eyes, 11-segmented antenna with 5-segmented club; prothorax little elongate, pronotum margined at sides but not at base; elytra without humeral carina and apex little produced, epipleurae not prominent.

Key to the species of *Pentelanguria* Crotch

1. Coppery brown and shining; head and pronotum densely punctured
..... *elateroides* Crotch
- Greenish and shining; head and pronotum sparsely punctured *notopedalis* Crotch.

5. *Pentelanguria elateroides* Crotch.

1876. *Pentelanguria elateroides* Crotch, *Cist. Ent.* 1 : 380.

1925. *Pentelanguria elateroides* : Arrow, *Fauna Brit. India*,
Coleoptera : *Clavicornia*. : 180.

Diagnosis : Facies narrowly elongate; steel blue in colour, prothorax orange-red except its front and hind margins narrowly, a small spot in middle and one on each side a little before middle are blackish, shiny; head with short antennae, antennal segment 3 slightly elongate, club segments transverse and rather closely set, vertex rather coarsely and densely punctate; prothorax with sides rather straight and gently convergent anteriorly, anterior angles little produced and blunt, posterior angles acute; scutellum triangular and acutely pointed behind; elytra with indistinct lines of large punctures, intervals with finer punctures,

sides straight and convergent posteriorly, a spine at inner edge just before apex. Length–19 mm.

Material : India : Sikkim, North District, Lachen, 2706 m., 1 ex., 9.vi. 1959, A.G.K. Menon; West District, Pechrek, 486 m., 1 ex., 2.iv. 1959, A.G.K., Menon.

Distribution : India : Sikkim, West Bengal (Darjiling District).

6. *Pentelanguria notopedalis* Crotch

1876. *Pentelanguria notopedalis* Crotch, *Cist. Ent.* 1 : 380.

1925. *Pentelanguria notopedalis* : Arrow, *Fauna Brit. India*,
Coleoptera : *Clavicornia*. : 180.

Diagnosis : Very similar to *elateroides*, can be differentiated by the characters in the key. Length 15.5 mm.

Material : 1 ex., 'Gopaldhara, Rungbong valley, Br. Sikkim, W. K. Webb, 1912' (in label).

Distribution : India : Sikkim.

Remarks : The distinction between *elateroides* and *notopedalis* as revealed from the above specimens are not enough to recognise them as separate good species. Arrow (1925) also had similar doubt. Antero-lateral angles of last abdominal ventrites in *notopedalis* are reddish but in *elateroides* the entire segment is blackish, the only convincing character I could recognise. I have not examined the types of these two species and therefore, not in a position to make any definitive comment about the status of these species.

Genus IV. *Caenolanguria* Gorham

1887. *Caenolanguria* Gorham, *Proc. zool. Soc. Lond.* 1887 : 361

[Type-species : *Languria coarctata* Crotch].

Diagnosis : Facies elongate with moderately slender legs and antennae; head without stridulatory files, coarsely faceted prominent eyes, 11-segmented antenna with 3-segmented club (rarely 4 to 5-segmented), mandible with bifid tip, maxillary lacinia tridentate, apical segment of maxillary palpi elongate, ligula bilobed and apical

segment of labial palpi securiform; prothorax contracted towards base, pronotum margined laterally and basally, front coxae not widely separated and prosternal process produced behind coxae; elytra rather parallel in anterior half and then gradually narrowed posteriorly, epipleurae distinct, first abdominal ventrite with acutely pointed intercoxal process.

7. *Caenolanguria birmanica* (Harold)

1879. *Languria birmanica* Harold, *Mitth. Münch. Ent. Ver.* 1 : 74.

1925. *Caenolanguria birmanica* : Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 241.

Diagnosis : Facies elongate, deep chocolate brown with head and prothorax little paler; head with antennal segments 1 to 7 little elongate, antennal club 3-segmented and not very broad, vertex finely and sparsely punctate, eyes moderately large; prothorax slightly transverse, sides rounded and little sinuate before hind angles, pronotal base little depressed, lateral foveae very small, pronotal punctures fine and sparse; scutellum about as broad as long; elytral base wider than pronotal base with rows of small but distinct punctures. Length—5.4-5.5 mm.

Material : 2 ex., India : Sikkim, North district, Chungthang, 1560 m., 30. ix. 1993, T. K. Pal, ex. shrubby vegetation.

Distribution : India : Sikkim, Uttar Pradesh; Myanmar.

Genus V. *Doubledaya* White

1850. *Doubledays* White, *Proc. Ent. Soc. Lond.* 1850 : 13.

1876. *Languriosoma* : Crotch, *Cist. Ent.* 1 : 379.

1896. *Coptolanguria* Gorham, *Ann. Mus. Civ. Genova*, 36 : 261

1899. *Cosmolanguria* Kraatz, *Deutsche Ent. Zeitschr.* 1899 : 352.

1908. *Glyphilanguria* Fowler, *Wytsman's Gen. Insect., Languriinae* : 14.

Diagnosis : Facies elongate; head dilated beneath laterally making eyes little bit dorsal in position, eyes finely faceted, 11-segmented

antenna with 3- or 4-segmented club, mandible with bifid tip, maxillary lacinia tridentate, apical segment of maxillary palpi narrow-elongate, apical segment of labial palpi securiform; prothorax may be of different proportions, front coxae not widely separated and prosternal process produced behind coxae; elytra more or less convergent posteriorly, epipleurae distinct; first abdominal ventrite with narrow intercoxal process.

Key to the species of *Doubledaya* White

1. Elytra without sharp outer apical angles 2
- Elytra with sharp outer apical angles 5
2. Apices of elytra not produced or fringed ... 3
- Apices of elytra produced and finely fringed. Head dark and antennal club 3-segmented ..
..... *ruficollis* Kraatz
3. Pronotum longitudinally sulcate along middle line *viator* White
- Pronotum not longitudinally sulcate 4
4. Elytra steel-blue, head and pronotum reddish *severini* Fowler
- Body reddish-brown with apex of elytra blue black *ustulata* Arrow
5. Body entirely greenish-black
..... *dilatipes* Gorham
- Species reddish-brown with apex of elytra and legs blackish *mouhoti* Crotch

8. *Doubledaya ruficollis* Kraatz

1899. *Cosmolanguria ruficollis* Kraatz, *Deutsche Ent. Zeitschr.* 1899 : 351.

1886. *Doubledaya varians* Fowler, *Trans. Ent. Soc. Lond.* 1886 : 24 (Part).

1908. *Cosmolanguria kraatzi* Fowler, *Wytsman's Genera Insectorum, Languriinae* : 13.

1925. *Doubledaya ruficollis* : Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 196.

Diagnosis : Facies moderately elongate, with slender legs and short antennae, deep metallic blackish-green with anterior part of head and pronotum reddish, ventrally sides of the body and

abdomen reddish, very shiny; head with antennal segments 1-8 elongate, antennal club compact and 3-segmented, vertex almost devoid of punctures; prothorax contracted behind, pronotum with a longitudinal median groove and deeply impressed basal foveae, basal margin narrow, hind angles acute, pronotal surface almost similar to vertex; scutellum rather transverse and obtusely pointed behind; elytra with closely set rows of large punctures. Length—14-20 mm.

Distribution : India : Arunachal Pradesh, Nagaland, Meghalaya, Sikkim; Vietnam.

9. *Doubledaya viator* White

1850. *Doubledaya viator* White, *Proc. Ent. Soc. Lond.* 1850 : 13.

1859. *Doubledaya lewisi* Kraatz, *Deutsche Ent. Zeitschr.* 1859 : 208.

1876. *Doubledaya whitei* Crotch, *Cist. Ent.* 1 : 382.

1886. *Doubledaya varians* Fowler, *Trans. Ent. Soc. Lond.* 1886 : 24 (part).

1925. *Doubledaya viator* : Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 187.

Diagnosis : Facies elongated, moderately narrow, brick-red with antennae and legs partly blackish, ventrally sides of metasternum and first abdominal ventrite with black patches, head with antennal club loose and 4-segmented; prothorax about as broad as long (male) or transverse (female), pronotum with a longitudinal median sulcus, lateral foveae well marked, basal margin raised; scutellum transverse and acute at apex, elytra with closely set rows of deep punctures. Length—15-25 mm.

Distribution : India : Meghalaya, Sikkim, West Bengal (Darjeeling District), Andaman and Nicobar Is.; Bangladesh; Myanmar; Thailand; Vietnam.

10. *Doubledaya severini* Fowler

1893. *Deubledaya severini* Fowler, *Ann. Soc. Ent. Belg.* 37 : 74.

1925. *Doubledaya severini* : Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 190.

Diagnosis : Facies elongate, slender, bright orange-red with elytra steel-blue, and eyes, antennae, legs and tip of abdomen blackish, rather shining; head with antennal club 4-segmented and rather broad, vertex almost smooth and with only a few minute sparse puncture; prothorax elongated (male) or transverse, distinctly contracted at base, pronotum rather convex, transversely impressed near base, lateral foveae deeply impressed, hind angles acute; scutellum transverse and acute at apex; elytra with prominent shoulders, apices truncate, with closely set rows of strong punctures, Length 15 mm.

Distribution : India : Sikkim, West Bengal (Darjeeling District).

11. *Doubledaya ustulata* Arrow

1925. *Doubledaya ustulata* Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 191.

Diagnosis : Facies elongate, slender, brick-red with tip of elytra blue-black, and eyes, antennae and legs blackish; head with short antenna bearing an abrupt 4-segmented club, vertex very finely and sparsely punctate; prothorax about as broad as long (male) or transverse, narrowed towards base, pronotum with a short median groove near base, lateral foveae well marked and divergent anteriorly, pronotum with minute and very sparse punctures; elytra narrowed posteriorly, apices truncate, with closely set rows of coarse and deep punctures. Length—15 mm.

Distribution : India : Sikkim, West Bengal (Darjeeling District), Nagaland; Bangladesh, Myanmar; Laos.

12. *Doubledaya dilatipes* (Gorham)

1896. *Coptolanguria dilatipes* Gorham, *Ann. Mus. Civ. Genova* 36 : 262.

1925. *Doubledaya dilatipes* : Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 200.

Diagnosis : Facies elongate, slender, golden brown with tinge of metallic green, shiny, ventral surface reddish-brown; head with moderately long antenna bearing a 5-segmented club, eyes

moderately large, vertex very finely and sparsely punctate; prothorax little elongate (male) or transverse (female), pronotal base markedly impressed near middle, with a short longitudinal median groove near base, lateral foveae little divergent, hind angles right angle, pronotum with fine and moderately sparse punctures; scutellum little transverse, obtusely angulate at apex; elytra narrowed posteriorly, shoulder rather prominent and little raised, distinctly striate-punctate, apices truncate and forming two closely placed dentations. Length—5 mm.

Material : 1 ex., India : Sikkim, North District, Soem, 1260 m., 20 km. O-Mangan, 1 ex., 28.ix. 1993, T.K. Pal, ex. shrubby vegetation.

Distribution : India : Sikkim (new record); Myanmar.

13. *Doubledaya mouhoti* (Crotch)

1876. *Languriosoma mouhoti* Crotch, *Cist. Ent.* 1 : 379.

1879. *Languria mouhoti* : Harold, *Mitth. Münch. Ent. Ver.* 3 : 92.

1925. *Doubledaya mouhoti* : Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 202.

Diagnosis : Facies elongate, bright brick-red with apical part of elytra and major part of antennae blackish, and ventrally metasternum, abdomen and legs (except trochanters) blackish, species shining; head with short antenna bearing a 5-segmented club, vertex moderately coarsely and densely punctate; prothorax about as broad as long (male) or transverse (female), sides rounded and distinctly margined, pronotal base markedly impressed near middle, lateral foveae moderately long and divergent, pronotum moderately coarsely and densely punctate, scutellum pentagonal, rather sharply angulate at apex; elytra narrowed posteriorly, shoulders rather prominent, regular rows of coarse and deep punctures, apical angles of elytra sharp. Length 6.5–13.0 mm.

Distribution : India : Sikkim, West Bengal (Darjeeling District); Myanmar; Vietnam; Malaysia; Indonesia.

Genus VI. *Anadastus* Gorham

1887. *Anadastus* Gorham, *Proc. Zool. Soc. Lond.* 1887 : 362.

1887. *Neolanguria* : Gorham, *Proc. Zool. Soc. Lond.* 1887 : 361.

1887. *Stenodastus* Gorham, *Proc. Zool. Soc. Lond.* 1887 : 362.

Diagnosis : Facies elongate; head not dilated beneath laterally, eyes finely faceted, 11-segmented antenna with 3- to 5-segmented club, mandible with a blunt tooth just behind sharp apical tooth, maxillary lacinia with an apical spine, apical segment of maxillary palpi fusiform, apical segment of labial palpi globular; prothorax somewhat quadrate, front coxae not widely separated and prosternal process produced behind coxae; intercoxal process of first abdominal ventrite moderately narrow and its tip not pointed, with a paired (femoral) lines; elytra somewhat parallel, epipleurae distinct.

Key to the species of *Anadastus* Gorham

1. Antennal club 5-segmented.....2
- Antennal club 4-segmented .. *gratus* Gorham
2. Antennal club compact and broad; extremity of abdomen blackish, remaining part reddish *loricatus* Arrow
- Antennal club segments loosely arranged and not broad; abdomen uniformly reddish
..... *dohertyi* Arrow

14. *Anadastus gratus* Gorham

1896. *Anadastus gratus* Gorham, *Ann. Mus. Civ. Genova* 36 : 274.

1925. *Anadastus gratus* : Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 227.

Diagnosis : Facies elongate, rather parallel-sided, orange-red with elytra metallic greenish-black, antennal club and distal part of legs blackish; head with antennal club 4-segmented and rather loosely articulated, vertex finely and sparsely punctate; quadrate prothorax little narrowed posteriorly, front angles blunt and hind angles

acute, pronotal base markedly impressed, lateral foveae short, pronotal punctures little coarser than on vertex; elytral shoulders rather prominent and little tumid, with regular rows of coarse and deep punctures, elytral interstices smooth and shining, apex not distinctly truncate. Length—3.75 mm.

Material : 1 ex. India : Sikkim, North District, Soem, 1260 m., 20 km. O-Mangan, 28.ix. 1993, T.K. Pal, ex. shrubby vegetation.

Distribution : India : Sikkim (new record); Myanmar.

15. *Anadastus loricatus* Arrow

1925. *Anadastus loricatus* Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 213.

Diagnosis : Facies elongate; reddish with head, a diffused patch at the middle of front margin of pronotum, elytra and legs brassy, distal part of antenna blackish, ventrally middle of prosternum, metasternum and tip of abdomen brassy; head with eyes moderately large, antennal club rather compact and 5 segmented, vertex very finely and sparsely punctate; prothorax about as broad as long, sides feebly rounded and little narrowed posteriorly, pronotal base strongly punctate and median part of pronotal disc almost similarly punctate as on vertex of head, lateral foveae nearly parallel; elytra narrowed posteriorly, sides little curved, with regular rows of moderately coarse punctures, apex of elytra truncate. Length—8mm.

Distribution : India : Sikkim.

16. *Anadastus dohertyi* Arrow

1925. *Anadastus dohertyi* Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 216.

Diagnosis : Facies elongate, rather parallel-sided; metallic bluish-black with head and prothorax reddish, legs and antenna blackish; head with eyes moderately large, antennal club 5-segmented and rather loosely articulated, vertex with moderately coarse and sparse punctures; prothorax little transverse, sides feebly rounded and little

narrowed posteriorly, front angles blunt and hind angles acute, pronotal base little depressed near middle and coarsely punctate, lateral foveae divergent in front, pronotal punctures little finer than on vertex; elytral shoulders little prominent, with regular rows of moderately coarse punctures, apex not distinctly truncate.

Length—3.80-4.25 mm.

Material : 3 ex. India : Sikkim, West District, Nayabazar, 400 m., 2 ex., 21.ix.1993, T.K. Pal ex. shrubby vegetation; South District, Temi, 600m., 42 km. O-Gangtok, 1 ex., 24.ix. 1993, T.K.Pal, ex. shrubby vegetation.

Distribution : India : Sikkim (new record), Arunachal Pradesh (Patkai hills).

Key to the Genera of Cryptophilinae

1. Third tarsal segment lobed below with minute fourth segment; head with single stridulatory file; trochanters broadly elongate; sternal fitting between mesocoxae with closely situated double knobs; first anal vein of wing not running into subcubital fleck
.....*Cryptophilus* Reitter
- Tarsi simple with fourth segment little shorter than segment 3; head without stridulatory file; trochanters short and broad; sternal fitting between mesocoxae in a straight line; first anal vein of wing running into subcubital fleck
.....*Xenoscelinus* Grouvelle

Subfamily CRYPTOPHILINAE

Genus VII. *Cryptophilus* Reitter

1874. *Cryptophilus* Reitter, *Verh. zool. bot. Ges. Wien.* **14**: 381.

[Type-species : *Cryptophagus integer* Heer]

Diagnosis : Facies elongate, more or less ovoid; head with transverse impressed line on dorsal side behind eyes, antennal insertion hidden under projection of frons, 11-segmented antenna with 3-segmented club, mandible bidentate at tip,

maxillary lacinia with a bifid apical spine, apical segment of maxillary palpi fusiform, apical segment of labial palpi elongate; prothorax transverse, front coxal cavities closed, prosternal process broad at apex and apical margin little emarginate; elytral epipleurae distinct, punctures not in regular rows; intercoxal process of first abdominal ventrite broad and its apex rounded.

17. *Cryptophilus integer* (Heer)

1838. *Cryptophagus integer* Heer, *Fauna Helvetia* 1 : 426.

1874. *Cryptophilus integer* : Reitter, *Verh. zool. bot. Ges. Wien.* 14 : 381.

1971. *Cryptophilus integer* : Sengupta & Crowson, *Mem. zool. Surv. India* 15 (2): 24.

Diagnosis : Facies elongate-ovoid, sub-depressed, punctate pubescent, reddish-brown in colour; head with coarsely faceted moderately large eyes, antennal segments 1-8 almost moniliform, segments 9 and 10 weakly transverse and segment 11 about as broad as long, club segments loosely articulated; pronotum finely margined, sides gently rounded, front and hind angles not pronounced; transverse scutellum impunctate; elytral punctures not very coarse and somewhat diffused, elytral apex rounded.

Length—2.2.-2.5 mm.

Material : 50 ex. INDIA : SIKKIM, East Sikkim District, Marchak, 1600 m., 12 km. O-Gangtok, 3.x.1993, T.K.Pal, ex. stored maize.

Distribution : Many parts of World through transport of food grains (Aitken, 1975).

Genus VIII. *Xenoscelinus* Grouvelle

1910. *Xenoscelinus* Grouvelle, *Bull. Soc. ent. Fr.* 1910 : 143

[Type-species : *Xenoscelinus malaicus* Grouvelle].

Diagnosis : Facies elongate-oval, subdepressed; head with transverse impressed line on vertex behind eyes, interocular margins of frons and lateral sides of clypeus finely ridged, eyes moderately large and prominent, antennal insertions

hidden under projections of frons, 11-segmented antenna with a 3-segmented club, mandible stout with sharply bifid tip and well developed mola, maxillary galea and lacinia normal, apical segment of maxillary palpi nearly cylindrical, mentum transverse and subtriangular, apical segment of labial palpi elongate-oval; prothorax transverse, front angles blunt and hind angles little sharp, front coxal cavities closed with broad prosternal process; elytra with distinct punctate striae, epipleura strongly ridged, intercoxal process of first abdominal ventrite broad and its apex rounded, with femoral lines.

18. *Xenoscelinus* sp.

Diagnosis : Facies elongate-ovoid, sub-depressed, glabrous and shining, reddish-brown in colour, tip of mandible little blackish; head with coarsely faceted large eyes, antenna little longer than head and somewhat moniliform, apical segment of club distinctly narrower and shorter than penultimate one; pronotum wider than head, sides weakly arcuate and distinctly margined, front angles slightly projected, pronotal disc weakly convex, rather strongly and densely punctate and comparable to that of vertex of head; transverse scutellum impunctate; elytral base wider than pronotal base and sides weakly arcuate, striae punctures strong, interstices with minute disperse punctures, elytral apex rounded.

Length—2.3 mm.

Material : 1 ex., India : Sikkim, South District, Karfektar, Jorethang, 650m., 10.iii.1996, T.K.Pal, ex. under bark (Mango)

Remarks : This species resembles *X. bicolor* Grouvelle but differs slightly in having minute punctures on elytral interstices.

SUMMARY

The paper deals with 18 species under 8 genera of 2 subfamilies of which 3 species are recorded for the first time from the State. The species are systematically keyed and characterized.

ACKNOWLEDGEMENTS

The author is indebted to the Director, Zoological Survey of India for providing necessary

facilities for the work. Dr. H. Sasaji of Fukui University, Japan provided him with a few important literature is also duly acknowledged.

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INSECTA : COLEOPTERA : EROTYLIDAE

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INTRODUCTION

The Erotylidae with about 2500 species from the World are a well defined large family of the section Clavicornia under the superfamily Cucujoidea. The representatives of Erotylidae are small to large, elongate-ovoid, generally brightly coloured and are commonly called as "pleasing fungus beetles". The Erotylidae have world-wide distribution, with more abundance in warmer parts of both the Old and New Worlds and with a fewer representatives from temperate regions. They are usually fungus feeders of certain basidiomycetes, with adults and larvae sometimes found together. Hosts may be mushrooms, bracket fungi, or soft hyphae filled bark. They are often found in moist woodland areas and adult beetles are generally gregarious, whether on the host plant or in hiding.

Following the publication of Arrow's "Fauna" in 1925 not much work has come out from the Indian subregion. Only recently, Pal (1992) has dealt with erotylids of Arunachal Himalaya with description of 2 species. The present account is based on some recent collection made by the author in different districts of Sikkim plus earlier material records from this State.

Characters of Family Erotylidae

Facies ranging from suborbicular, hemispherical to elongate-elliptical, more or less convex, rarely pubescent.

Head transverse, eyes large, no fronto-clypeal suture, stridulatory files usually present and double; 11-segmented antenna usually with 3-segmented

club, rarely club of more than 3 segments, antennal insertions dorso-lateral or lateral; on ventral side gular sutures widely separated, without antennal cavities; mandible with well developed mola and usually with two apical teeth; maxilla with well developed galea and lacinia, lacinia often with apical spine, apical segment of palpi may be elongate to transverse and securiform; labium with mentum variously shaped, ligula not well developed, apical segment of palpi elongate or transverse.

Prothorax usually transverse and narrowed in front, sides smooth, pronotum usually with prebasal impression, front coxal cavities more or less well separated, prosternal process broad, front coxal cavities closed with hidden trochantins.

Elytra often striato-punctate but occasionally with confused punctures, no scutellary striae, epipleura well developed. Wing usually with four anal veins, anal cell, radial cell, r-m cross vein and subcubital fleck.

Mesocoxae widely separated, coxal cavities closed laterally by sterna; metasternum often transverse and occasionally with coxal lines, metacoxae widely separated, metendosternite with moderately widely separated anterior tendons.

Legs moderately long, trochanters simple, tibiae often expanded apically, tarsal formula 5-5-5.

Abdomen fully covered by elytra, ventrites more or less equal in length, ventrite 1 sometimes with coxal lines. Aedeagus retracted on one side, with articulated parameres, median lobe bearing



one or two struts. Ovipositor with well developed paraprocts, valvifers, coxites and styli.

Key to the Subfamilies of EROTYLIDAE

1. Fourth tarsal segment scarcely reduced, subequal to third and attached in normal manner to end of third segment; apical segment of maxillary palpi cylindrical, not transverse or triangular; mentum strongly transverse 2
..... DACNINAE
- Fourth tarsal segment strongly reduced, not more than half length of width of third, attached mediodorsally to third segment; apical segment of maxillary palpi strongly transverse or triangular; mentum not transverse 2
2. Elytra nonstriate, confusedly punctate with large black punctures; prothorax at base but little more than half as wide as greatest common elytral width..... EROTYLINAE*
- Elytra regularly striate-punctate; prothorax at base subequal to greatest common elytral width TRIPLACINAE (= TRITOMINAE)

* Not recorded from Sikkim.

LIST OF TAXA

Family EROTYLIDAE

Subfamily DACNINAE

1. *Episcapha quadrimacula* (Wiedemann)
2. *Megalodacne tonkinensis* (Heller)
3. *Megalodacne vitalisi* Arrow
4. *Megalodacne laevis* Arrow
5. *Megalodacne singhalensis* (Csiki)

Subfamily TRITOMINAE

6. *Aulacochilus quadripustulatus* (Fabricius)
7. *Aulacochilus nigrorufus* Pal
8. *Spondotriplax fulviceps* Arrow
9. *Cyrtomorphus dux* Arrow
10. *Tritoma laxicornis* Arrow

Key to the Genera of Erotylidae

1. Mentum strongly transverse; terminal segment of maxillary palpi elongate and fusiform; three basal segments of palpi not widening from first to third 2
– Mentum not transverse; terminal segment of maxillary palpi transverse and securiform; three basal segment of tarsi widening from first to third 3
2. Third antennal segment slightly longer than fourth segment *Episcapha* Lacordaire
– Third antennal segment distinctly longer than fourth segment *Megalodacne* Lacordaire
3. Sides of mouth cavity with rather sharp edge or carinate. Body form oval; all the coxae with oblique femoral lines
..... *Aulacochilus* Lacordaire
– Sides of mouth cavity form flat plates or lobes 4
4. Antennal club 3-segmented 5
– Antennal club 5-segmented
..... *Spondotriplax* Crotch
5. Apical segment of antennal club about as wide as preapical segment ; head with stridulatory files *Cyrtomorphus* Lacordaire
– Apical segment of antennal club narrower than preapical segment; head without stridulatory files *Tritoma* Fabricius

Family EROTYLIDAE

Subfamily DACNINAE

Genus I. *Episcapha* Lacordaire

1842. *Episcapha* Lacordaire, *Monog. Erotyl.* : 48

[Type-species : *Engis quadrimacula* Wiedemann].

Diagnosis : Oblong, often moderately pubescent, head partly inserted into prothorax; maxillary lacinia without spine, apical segment of palpi fusiform; mentum transverse, apex of ligula bilobed; front margin of prothorax emarginate, prosternum moderately broad; legs simple with tarsal segments 1-3 not broad, 4th segment smaller; elytral punctures confused or linear; no femoral lines on abdomen.

1. *Episcapha quadrimacula* (Wiedemann)

1823. *Engis quadrimacula* Wiedemann, *Zool. Mag.* (2) 1 : 132.
1825. *Dacne quadrimacula* : Macleay, *Annul. Jav.* : 41.
1842. *Episcapha quadrimacula* : Lacordaire, *Monog. Erotyl.* : 53.
1918. *Episcapha quadrimacula* : Heller, *Arch. f. Nat.* : 84 : 67.
1925. *Episcapha quadrimacula* : Arrow, *Fauna Brit. India, Coleoptera, Clavicornia* : 39.

Diagnosis : Facies elongate-ovoid, subdepressed and covered with fine pubescence; head with large eyes, 11-segmented antenna with 3-segmented club, 3rd antennal segment slightly longer than 4th; transverse prothorax with lateral margins gently curved and converging in front, a pore at each extremity of lateral margin; elongate ovoid elytra with confused punctures; blackish body with each elytron decorated with two transverse orange bands one at base and other before apex and rather irregular in outline, anterior band immediately behind shoulder with an extended base to basal margin. Length—9–14 mm.

Material : 3 ex. 'Sikkim' (no other data in label).

Distribution : India : Sikkim, West Bengal, Uttar Pradesh, Tamil Nadu; Sri Lanka; Myanmar; Vietnam; Malaysia; Indonesia; Philippines.

Genus II. *Megalodacne* Crotch

1873. *Megalodacne* Crotch, *Trans. Amer. Ent. Soc.* 4 : 352 [Type-species : *Ips fasciata* Fabricius].
1876. *Episcaphula* Crotch, *Cist. Ent.* 4 : 409.
1925. *Megalodacne* : Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 44.

Diagnosis : Facies oblong, usually glabrous, head partly inserted into prothorax, no stridulatory file, 11-segmented antenna with 3-segmented club, 3rd antennal segment markedly longer than the 4th, mouthparts similar to *Episcapha*; transverse prothorax with front margin emarginate, leg structure similar to *Episcapha*.

Key to the Species of *Megalodacne*
LACORDAIRE

1. Prothorax transverse, slightly broader than long 2
- Prothorax markedly transverse, about 1.5 times at broad as long 3
2. Humeral angles of elytra red *tonkinensis* (Heller)
- Humeral angles of elytra black *vitalisi* Arrow
3. Pronotum finely and sparsely punctured *laevis* Arrow
- Pronotum coarsely and densely punctured ... *singhalensis* (Csiki)

2. *Megalodacne tonkinensis* (Heller)

1918. *Episcaphula tonkinensis* Heller, *Arch. f. Nat.* 74 : 83.
1921. *Megalodacne major* Arrow, *Trans. Ent. Soc. Lond.* 1921 : 288.
1925. *Megalodacne tonkinensis* : Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 50.

Diagnosis : Facies elongate-ovoid, subdepressed; head with coarsely faceted moderately large eyes, antennal club not much broader than long, pronotum finely bordered, with rather fine and sparse punctures lateral margins gently curved; elytra with linear rows of punctures, interstices also minutely punctate; blackish body, each elytron decorated with two transverse orange bands—one at base and other before apex, the first extending from shoulder to near the suture touching base at two points, the second one emits three angular processes in front and two behind. Length 8–11 mm.

Distribution : India : Sikkim, Manipur; Myanmar; Vietnam.

3. *Megalodacne vitalist* Arrow

1921. *Megalodacne vitalisi* Arrow, *Trans. Ent. Soc. Lond.* 1921 : 287.
1925. *Megalodacne vitalist* : Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 49.

Diagnosis : Facies elongate-ovoid and moderately convex, dorsum smooth and shining; head strongly punctate with coarsely faceted large eyes, 3rd antennal segment fairly longer than 4th; prothorax slightly broader than long with sides little convergent in front and rather parallel behind, front angles acutely produced with pronotal disc strongly and evenly punctate; lateral margins of elytra narrowly flanked, punctures in longitudinal rows with interspaces minutely punctate; blackish body, each elytron with two reddish spots one in both anterior and posterior halves, spots lateral but not reaching margin, anterior spot extends to near suture and reaching base leaving only a small black area, posterior spot placed before apex which is arched behind and produced at three points anteriorly. Length 6.5–9.0 mm.

Distribution : India : Sikkim, West Bengal (Darjeeling District); Myanmar; Vietnam.

4. *Megalodacne laevis* Arrow

1925. *Megalodacne laevis* Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 54.

Diagnosis : Facies elongate-ovoid, somewhat convex, shining, legs rather long; head with coarsely faceted prominent eyes, antennal club not much broad and segments loosely articulated, vertex coarsely and densely punctate; prothorax distinctly transverse, sides rounded and little contracted near base, pronotum rather finely and sparsely punctate; elytra with linear rows of fine punctures, interstices minutely punctate; blackish body, each elytron decorated with two transverse orange bands the first forming an oblique crescent extending from humeral angle to near suture, the second irregularly transverse, its posterior margin slightly emarginate near middle and placed before apex; ventral side black. Length—7 mm.

Distribution : India : Sikkim.

5. *Megalodacne singhalensis* (Csiki)

1902. *Episcaphula singhalensis* Csiki, *Termes Füzetek* 25 : 26.

1925. *Megalodacne singhalensis* : Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 52.

Diagnosis : Facies elongate-ovoid, subdepressed, moderately shining; head with coarsely faceted moderately large eyes, antennal club broad and segments loosely articulated, vertex coarsely and densely punctate; prothorax distinctly transverse, sides rounded, pronotum coarsely and densely punctate; elytra with linear rows of punctures and interstices minutely punctate; blackish body, each elytron decorated with two transverse orange bands, the first extending from side to near suture including humeral angle, the second placed before apex with irregular margin. Length—6–8 mm.

Material : India : Sikkim, East District, Kumre, 600 m., 6 km. O-Rangpo, 11 ex., 17. ix. 1993, T.K. Pal, *ex. fungus* log; South District, Melli, 500 m., 1 ex., 18. ix. 1993, T.K. Pal, *ex. fungus* on log.

Distribution : India : Sikkim (new record), Uttar Pradesh, Maharashtra; Sri Lanka.

Subfamily : TRITOMINAE

Genus III. *Aulacochilus* Lacordaire

1842. *Aulacochilus* Lacordaire, *Monog. Erotyl.* : 245

[Type-species : *Erotylus javanus* Guérin-Meneville].

1871. *Aulacochilus* : Bedel, *Trans. Ent. Soc. Fr.* (5) 1 : 271.

Diagnosis : Facies ovoid, usually glabrous; head without stridulatory file, 11-segmented antenna with 3-segmented club, 3rd antennal segment much longer than 4th, mandible with bifid tip, apical segment of maxillary palpi transverse; transverse prothorax with front margin emarginate, broad prosternum, all coxae with oblique femoral lines; legs simple with tarsal segments 1 to 3 gradually wider and 4th one minute; elytra with linear punctures.

Key to the Species of *Aulacochilus* LACORDIARE

1. Blackish elytra decorated with two pairs of reddish-brown spots, one subbasal and another subapical pair *quadripustulatus* Fabricius

- Blackish elytra decorated with one pair of reddish-brown spots near base
.....*nigrorufus* Pal

6. *Aulacochilus quadripustulatus* (Fabricius)

1801. *Erotylus quadripulatus* Fabricius, *Systema Eleutheratorum* 2 : 6.
1825. *Engis subrotunda* Macleay, *Annul. Jav.* : 42.
1842. *Aulacochilus quadripustulatus* : Lacordaire, *Monog. Erotyl.* : 247.
1925. *Aulacochilus quadripustulatus* : Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 85.

Diagnosis : Facies elongate-ovoid, rather convex; head with moderately large eyes, antennal club broad, antennal segments 10 and 11 closely articulated, vertex coarsely and densely punctate; side margins of prothorax ridged and gently curved, pronotal punctures little sparser than vertex; outer margin of elytra gently flattened, gradually converging from a little behind humeral angle towards apex, blackish body with each elytron decorated with two transverse orange bands, the first one extending from basal margin to near external margin leaving humeral angle, its posterior border tridentate, the second one situated before apex and not touching outer or sutural margin, both its anterior and posterior borders dentate. Length—9 mm.

Material : India : Sikkim : South District, Melli, 500 m., 1 ex., 18.ix. 1993, T.K. Pal, ex. fungusy log.

Distribution : India : Sikkim (new record), Andaman Is.; Myanmar; Vietnam; Malaysia; Indonesia.

7. *Aulacochilus nigrorufus* Pal

1992. *Aulacochilus nigrorufus* Pal *Rec. zool. Surv. India*, 90 (1-4) : 206.

Diagnosis : Facies elongate-ovoid, convex; head with large eyes, fronto-clypeal suture little arcuate, antennal club rather compact with more or less transverse segments, puncturation on vertex

moderately coarse and dense; side margins of prothorax rounded, feebly raised and pits on either extremity very small, pronotum with coarse dense punctures; broadly elongate elytra with rounded sides and edges narrowly flanked, each elytron decorated with a reddish-brown irregular spot occupying greater part of anterior half, spot not reaching either internal or external or basal margin. Length 6.0 6.4 mm.

Material : 6 ex. India : Sikkim, East District, Rikuley vill., 1100 m., 25 km. O-Ranipool, 4.iii. 1996, T.K. Pal, ex. fallen log.

Distribution : India : Arunachal Pradesh, Sikkim (new record).

Genus IV. *Spondotriplax* Crotch

1876. *Spondotriplax* Crotch, *Cist. Ent.* 1 : 469

[Type-species : *Spondotriplax endomychoides* Crotch].

1918. *Neotritoma* Heller, *Arch. f. Nat.* 84 : 28.

Diagnosis : Facies broadly ovoid with moderately stout legs; head broad, 11-segmented antenna with 5-segmented club, sides of mouth-cavity moderately dilated, apical segment of maxillary palpi markedly transverse; transverse prothorax with front coxae widely separated, mesocoxae with femoral lines; elytra with linear punctures.

8. *Spondotriplax fulviceps* Arrow

1925. *Spondotriplax fulviceps* Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 144.

Diagnosis : Facies elongate-ovoid; blackish body with head, basal part of antennae, part of elytra and abdomen yellowish; head with finely faceted small eyes, apical three segments of antennal club broad and closely articulated, vertex rather coarsely and densely punctate; front angles of prothorax little produced and hind angles quadrate; interstices of elytra minutely punctate, a pair of transverse humeral and a post-median transverse yellowish patch on blackish elytra. Length 3.5 mm.

Distribution : India : Sikkim, West Bengal (Darjiling).

Genus V. *Cyrtomorphus* Lacordaire,

1842. *Cyrtomorphus* Lacordaire, *Monog. Erotyl.* : 240
[Type-species : *Cyrtomorphus pantherinus* Lacordaire].

Diagnosis : Facies ovoid; head deeply inserted into prothorax, with stridulatory files, 11-segmented antenna with 3-segmented club, labrum distinct, apical segment of maxillary palpi markedly transverse, ligula bilobed, apical segment of labial palpi subglobular; transverse prothorax with closely situated coxae; elytra with linear punctures.

9. *Cyrtomorphus dux* Arrow

1925. *Cyrtomorphus dux* Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 113.

Diagnosis : Facies broadly ovoid; reddish body with base of pronotum blackish, a transverse patch placed before middle of elytral suture, a round spot behind middle of base, a larger lateral spot behind shoulder and an oblique patch before apex of each elytron; head with finely faceted small eyes, apical segment of antennal club much smaller than preceding one, vertex finely and densely punctate; prothorax about two and half times as broad as long, sides gently curved, front angles little blunt, pronotum almost similarly punctate as on vertex; linear punctures on elytra not very distinct. Length—9-11 mm.

Distribution : India : Sikkim, Meghalaya.

Genus VI. *Tritoma* Fabricius

1775. *Tritoma* Fabricius, *Systema Entomologicae* : 570
[Type-species : *Tritoma bipustulata* Fabricius].
1872. *Cyrtotriplax* Crotch, *Ent. mon. Mag.* 9 : 189.
1883. *Motrita* Westwood, *Tijdschrift Ent.* 26 : 77.
1888. *Pseudotritoma* Gorham, *Notes Leyd. Mus.* 10 : 147.
1901. *Triplacidea* Gorham, *Stettin Ent. Zeit.* 62 : 191.
1918. *Ortiima* Heller, *Arch. f. Nat.* 84 : 27.
1918. *Trimota* Heller, *Arch. f. Nat.* 84 : 27.

Diagnosis : Facies ovoid; head deeply inserted into prothorax, with two longitudinal stridulatory files, 11-segmented antenna with 3-segmented club, sides of mouth cavity form hemispheric lobes, with antennal cavities, apical segment of maxillary palpi markedly transverse, ligula narrow, apical segment of labial palpi securiform; transverse prothorax with moderately widely separated coxae, prosternal process with anteriorly converging lines; elytra with linear punctures.

10. *Tritoma laxicornis* Arrow

1925. *Tritoma laxicornis* Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 123.

Diagnosis : Facies elongate-ovoid, moderately convex, shiny; head with small eyes, antennal segment 3 distinctly longer than 2nd and 4th, club segments loosely articulated with the apical one subglobose, blackish, vertex densely punctate; transverse prothorax with sides slightly curved and finely margined, front angles blunt and hind angles nearly rectangular, pronotum finely punctate, dorsal and ventral sides orange-yellow, two small blackish spots near middle of front margin and two similar spots at hind margin; elytral interstices finely punctate, blackish; abdomen orange-yellow. Length—5-6 mm.

Distribution : India : Sikkim.

SUMMARY

The paper deals with 10 species under 6 genera under 2 subfamilies of which 3 species are recorded for the first time from the State of Sikkim. The species are systematically keyed and characterized.

ACKNOWLEDGEMENTS

The author is indebted to the Director, Zoological Survey of India for providing necessary facilities for the work.

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INSECTA : COLEOPTERA : ENDOMYCHIDAE

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INTRODUCTION

The Endomychidae with about 1300 species are a sufficiently distinct family of the section Clavicornia under the superfamily Cucujoidea. The endomychids are small to large, broadly ovoid to elongate and narrow, strongly convex to moderately flattened, often brightly coloured and are commonly called as 'handsome fungus beetles'. The Endomychidae have world-wide distribution, more diverse in tropical Asia and a few genera predominate in Holarctic Regions. Most endomychids are sporophagous or consume softer tissues of various fungi. They are often seen beneath bark or in rotten wood, decayed fruit refuse or may be collected in leaf litter. In moist woodland areas they are frequently seen.

Following the publication of Arrow's 'Fauna' in 1925 not much work has come out from the Indian subregion. In recent past, Vazirani and Saha (1972) described 1 new species, and Strohecker (1974, 1975, 1982, 1983) described at least 11 new species and recorded a few more species from the Indian territory. The present account is based on some recent collection made by the author plus earlier material records from this State.

Characters of Family Endomychidae

Body broadly ovate to elongate and narrow, strongly convex to moderately flattened, glabrous but occasionally clothed with hairs, and often brightly coloured.

Head with fronto-clypeal suture, eyes moderately large, vertex occasionally bears stridulatory files, antennal insertions lateral or

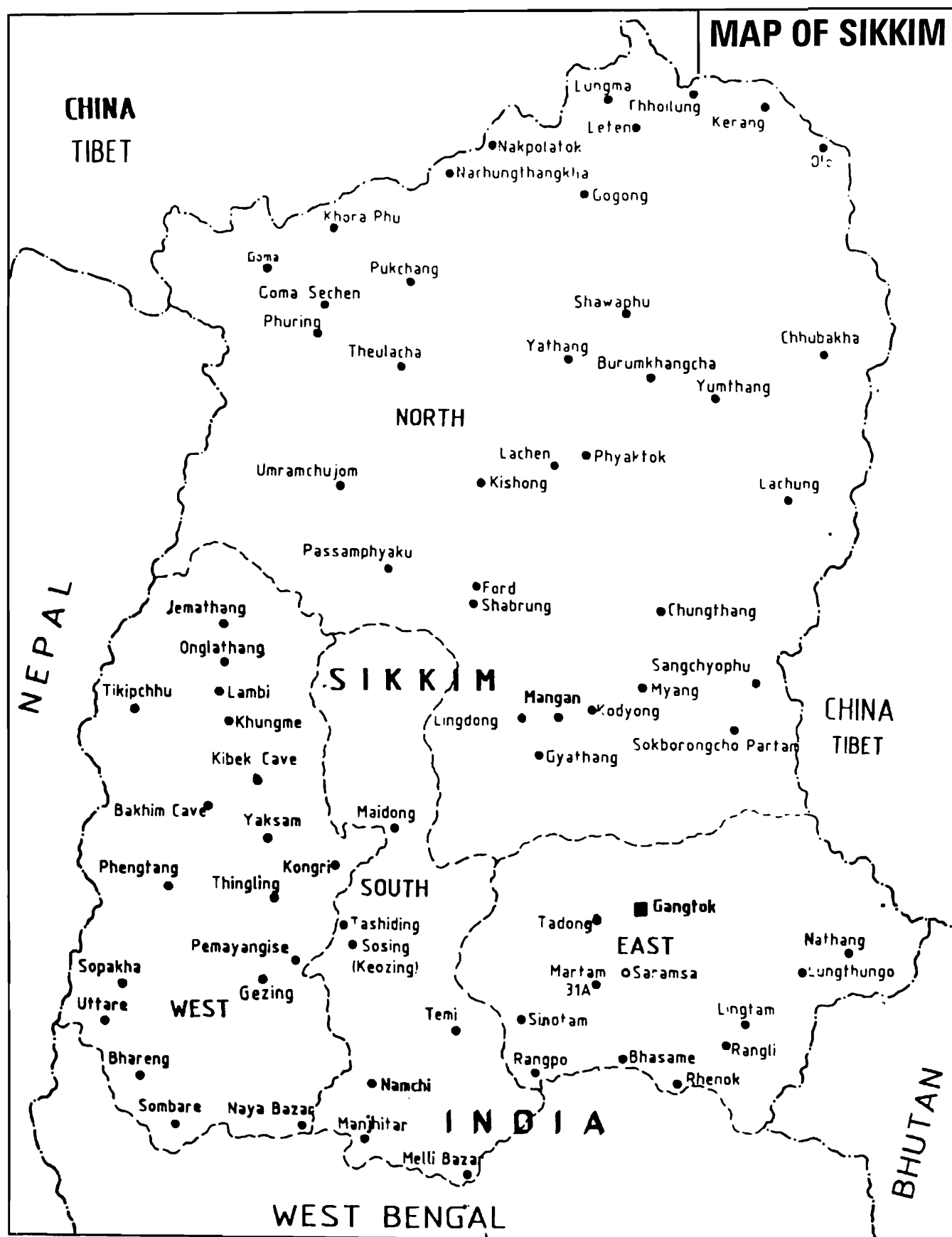
dorso-lateral; antenna 10- or 11-segmented with 3-segmented club, rarely 4- or 5-segmented; mandible usually well developed, apical teeth three or less, mola well developed; maxillary lacinia and galea well developed, lacinia with or without apical spine, apical segment elongated and more or less fusiform; labium is more subject to variation in form, mentum strongly chitinized, apical segment of labial palpi truncate apically.

Prothorax often transverse, side margins usually smooth and rarely serrulate, front edge sometimes has a stridulatory membrane, pronotal disc often with paired basal impressions, grooves or carinae, and a transverse prebasal groove, prosternum moderately long to very short, front coxae subglobular or slightly transverse with hidden trochantins.

Elytra entire, punctation usually confused, epipleura usually incomplete. Wing devoid of radial cell and usually without anal cell, with a trace of subcubital fleck.

Mesosternum sometimes reduced and concealed, anteriorly excavate or bicarinate, mesocoxae narrowly to moderately widely separated, mesocoxal cavities narrowly open outwardly; metasternum transverse, rarely with femoral lines, hind coxae widely separated, metendosternite usually with widely separated anterior tendons.

Legs short to moderately long, trochanters simple or slightly heteromeroid; narrow tibia slightly broadened at apex and without prominent apical spurs, tarsal formula 4-4-4 or 3-3-3, tarsi either simple, or segment 3 reduced with segment 1 and 2 lobed. Five abdominal ventrites freely articulated.



ventrite 1 longer than others and sometimes with femoral lines, often with five pairs of spiracles. Aedeagus with or without articulated parameres, median lobe devoid of strut. Ovipositor with fused valvifers and coxites.

Key to the subfamilies of ENDOMYCHIDAE*

1. First abdominal ventrite with femoral lines; no prebasal impression on pronotum, front coxae little transverse; apical segment of maxillary palpi broad and securiform; seven pairs of abdominal spiracles SPHAEROSOMINAE
- First abdominal ventrite without femoral lines ; pronotum with a transverse subbasal groove and two longitudinal impressions, front coxae globular; apical segment of maxillary palpi elongate and not securiform; five pairs of abdominal spiracles 2
2. Tarsi pseudotrimerous, penultimate segment minute and almost fused with apical segment, second segment lobed .. ENDOMYCHINAE
- Tarsi linear, 3-segmented or 4-segmented with penultimate segment exposed 3
3. Antenna 4- or 5-segmented, short and stout.. TROCHOIDEINAE
- Antenna 10- or 11-segmented, slender and long MYCETAEINAE

LIST OF TAXA

Family ENDOMYCHIDAE
Subfamily ENDOMYCHINAE

1. *Cymbachus spilotus* Arrow
2. *Spathomeles decoratus* Gerstaecker
3. *Engonius variicornis* Arrow
4. *Encymon cinctipes* Gorham
5. *Ancylopus pictus indianus* Strohecker

6. *Ancylopus nigrothoracica* sp. nov.
7. *Endomychus bicolor* Gorham
8. *Chondria araneola* Arrow
9. *Danae sericea* Arrow

Family ENDOMYCHIDAE

Key to the Tribes and Genera of ENDOMYCHINAE

1. Front margin of pronotum provided with a stridulatory membrane (Eumorphini) 2
- Front margin of pronotum without stridulatory membrane 6
2. Front coxae widely separated 3
- Front coxae closely situated 5
3. Prosternal process bifid at the tip *Cymbachus* Gerstaecker
- Prosternal process not bifid at the tip 4
4. Segments of antennal club very closely and almost immovably articulated *Spathomeles* Gerstaecker
- Segments of antennal club rather loosely and movably articulated. Tip of mandible pointed. *Engonius* Gerstaecker
5. Antennal club broad, basal segment of club about three times as wide as the preceding segment *Encymon* Gerstaecker
- Antennal club not broad, basal segment of club hardly one and half times as wide as the preceding segment *Ancylopus* Costa
6. Body not pubescent dorsally; not unicolourous; ligula elongate (Endomychini) *Endomychus* Panzer
- Body densely pubescent; unicolorous; ligula truncate and produced laterally....(Stenotarsini) 7
7. Tarsi slender. Sides of elytra not dilated *Chondria* Gorham

* Subfamilial classification after Crowson, 1955; Sphaerosominae is at present considered as a separate family (Sphaerosomatidae) but not recorded in India. Of other three subfamilies only Endomychinae is yet recorded from Sikkim.

- Tarsal segment 2 dilated. Mesosternum narrow and not excavated in front *Danae* Reiche

Subfamily ENDOMYCHINAE

Genus I. *Cymbachus* Gerstaecker

1842. *Cymbachus* Gerstaecker, *Archiv f. Naturg.* **23** (1) : 233

[Type-species : *Cymbachus pulchellus* Gerstaecker].

Diagnosis : Facies elongate-ovoid, glabrous; head with eyes strongly transverse and rather prominent, 11-segmented antenna with 3-segmented broad club, segment 3 about as long as segments 4 and 5 together, mandible with a sharp apical tooth and short tooth just behind it, maxillary lacinia slender, apical segment of maxillary palpi narrowly elongate at tip, apical segment of labial palpi broad oval; transverse prothorax with a stridulatory membrane on front margin, lateral foveae on pronotum not long, front coxae moderately widely separated, prosternal apex bifid, transverse mesosternum with a sharp anterior process, elytra convex and rounded at sides.

1. *Cymbachus spilotus* Arrow

1925. *Cymbachus spilotus* Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 281.

Diagnosis : Facies elongate, broadly ovoid, moderately shining, bluish-black with purplish elytra and each elytron decorated with two pale yellow spots one behind humerus and other at posterior third close to side margin; head with large eyes, antenna long with short broad club, all three club segments distinctly transverse, vertex finely punctate; transverse prothorax converge anteriorly, sides feebly sinuate, front angles blunt and hind angles acute, pronotal base finely margined and lateral foveae fine and short, pronotum similarly punctate as on vertex of head; elytra coarsely and densely punctate, punctures on yellow spots finer, margins narrowly reflexed, apex rounded. Length 7 mm.

Distribution : India : Sikkim.

Genus II. *Spathomeles* Gerstaecker

1857. *Spathomeles* Gerstaecker, *Archiv f. Nat.* **23** (1) : 218
[Type-species : *Spathomeles anaglyptus* Gerstaecker].

1857. *Rhachidophorus* Guérin-Meneville, *Rev. Mag. Zool.* (2) **9** : 581.

1857. *Cacodaemon* Thomson (in part), *Arch. Ent.* **1** : 154.

Diagnosis : Facies elongate, subparallel, head with rather large eyes, 11-segmented antenna with 3-segmented club, segment 3 nearly twice as long as segment 4, mandible with a sharp apical tooth and a short tooth just behind it, apex of maxillary lacinia hairy, apical segment of maxillary palpi broad-elongate, front margin of ligula arcuate, apical segment of labial palpi strongly transverse ; prothorax with a stridulatory membrane on front margin, lateral foveae on pronotum distinctly impressed, front coxae not widely separated and prosternal process contracted between coxae, prosternal process rather pointed at apex, metasternum more or less excavated, elytra rather prominent at shoulders with sides slightly rounded.

2. *Spathomeles decoratus* Gerstaecker

1857. *Spathomeles decoratus* Gerstaecker, *Archiv f. nat.* **23** (1) : 219.

1857. *Cacodaemon hamatus* Thomson, *Arch. Ent.* **1** : 154.

1858. *Rachidophorus latreillei* : Guérin-Meneville, *Rev. Mag. Zool.* (2) **10** : 61.

Diagnosis : Facies elongate, less ovoid, moderately shining, blackish body with each elytron decorated with four orange-yellow spots- an oval one near scutellum, two placed transversely near middle and a transverse irregular one before apex, head with two shallow pits between eyes, moderately long antenna with short broad club, club segments closely set, vertex sparsely punctate; transverse prothorax with pronotum distinctly margined, transversely impressed beyond middle, with two deep pits placed transversely before middle and an elevated area on each side near basal margin, side margins raised, front angles projected and blunt and hind angles acute, pronotum more densely punctate than vertex ;

scutellum broadly transverse; elytra markedly convex, broader than prothorax at base, shoulders prominent, nearly straight from shoulders to middle and then narrowed behind, apex rounded, finely and rather sparsely punctate, in male with a sharp hooked process near suture behind middle and directed posteriorly. Length—12-15 mm.

Distribution : India : Sikkim, Arunachal Pradesh, West Bengal.

Genus III. *Engonius* Gerstaecker

1857. *Engonius* Gerstaecker, *Archiv f. Nat.* **23** (1) 220

[Type-species : *Engonius sexguttatus* Gerstaecker].

Diagnosis : Elongate-oblong with long antennae and legs; head deeply inserted into prothorax, dorsally with a stridulatory area, eyes narrow and coarsely faceted, 11-segmented antenna with 3-segmented club, segment 3 about as long as segments 4 and 5 together, mandible with a sharp apical tooth and a short tooth behind it, maxillary lacinia and galea narrow, apical segment of maxillary palpi a little elongate, apical segment of labial palpi transverse; transverse prothorax with a stridulatory membrane on front margin, side margins raised, pronotal base margined and lateral foveae distinctly impressed, front coxae narrowly separated and prosternal process contracted between coxae, mesosternum subquadrate between middle coxae; elytral shoulders prominent and sides gently rounded.

3. *Engonius variicornis* Arrow

1925. *Engonius variicornis* Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 317.

Diagnosis : Facies elongate-oblong, convex ; blackish body with two transverse yellow bands upon each elytron- one near base, reaching almost outer margin and slightly constricted near middle, another one before apex and not reaching either outer or sutural margin, species shiny; head with rather long antenna bearing a compact club, vertex with minute indistinct punctures; prothorax more than twice as wide as long, somewhat parallel-sided, front angles projected and bluntly rounded,

hind angles nearly rectangular, pronotal base deeply sulcate, lateral foveae parallel and reaching almost middle, pronotum almost similarly punctate as on vertex; semicircular scutellum almost smooth; elytra rather densely punctate, little dilated behind shoulders and then gently narrowed posteriorly. Length—5 mm.

Distribution : India : Sikkim, Arunachal Pradesh.

Genus IV. *Encymon* Gerstaecker

1857. *Encymon* Gerstaecker, *Archiv f. Nat.* **23** (1) : 232

[Type-species : *Encymon violaceus* Gerstaecker].

Diagnosis : Facies elongate-ovoid with long antennae and legs; head with eyes obliquely transverse, 11-segmented antenna with 3-segmented club, scape to segment 8 except 2nd quite elongate, segment 3 about as long as segments 4 and 5 together, mandible with tip produced and bifid, maxillary lacinia short, apical segment of maxillary palpi elongate, ligula with narrow lateral lobes, apical segment of labial palpi broad and compressed; prothorax broader in front and contracted behind, front angles projecting, front margin with distinct stridulatory membrane, pronotal base with a deep sulcus and lateral foveae distinctly impressed, front coxae narrowly separated, mesosternum narrow between middle coxae; elytra convex with sides distinctly rounded.

4. *Encymon cinctipes* Gorham

1897. *Encymon cinctipes* Gorham, *Proc. Zool. Sc. Lnd.* 1897 : 459.

1925. *Encymon cinctipes* : Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 332.

Diagnosis : Facies elongate, not very broad, blackish, shiny, apices of femora bright orange-yellow; head with fronto-clypeal suture deeply grooved, antennal club not very broad, vertex finely punctate; prothorax transverse, pronotum entirely margined, sides diverging from base and then obtusely angulate near middle, front angles strongly produced and somewhat blunt, lateral foveae on pronotum about as long as one-third of its length; scutellum transverse and smooth; elytra

moderately long, rather convex, each elytron with a subsutural stria, shoulders prominent, side margins little reflexed and gently rounded, surface finely punctate. Length—7-8.5 mm.

Distributions : India : Sikkim, Arunachal Pradesh, Assam ; Myanmar.

Genus V. *Ancylopus* Costa

1854. *Ancylopus* Costa, *Fauna del Regno Napoli, Coleotteri* 1 : 14

[Type-species : *Endomychus melanocephalus* Olivier].

Diagnosis : Facies elongate, moderately broad, rather parallel-sided with moderately long antennae and legs; head with rather prominent eyes, 11-segmented antenna with 3-segmented narrow club, scape to segment 8 elongate, segment 3 about as long as segments 4 and 5 together, mandible with tip produced and bifid (at least for left), maxillary lacinia short, apical segment of maxillary palpi elongate, ligula with two lobes, apical segment of labial palpi broad transverse ; prothorax transverse, emarginate in front, front margin with distinct stridulatory membrane, pronotal base with strongly impressed marginal stria and moderately long lateral foveae, front coxae almost contiguous and prosternal process

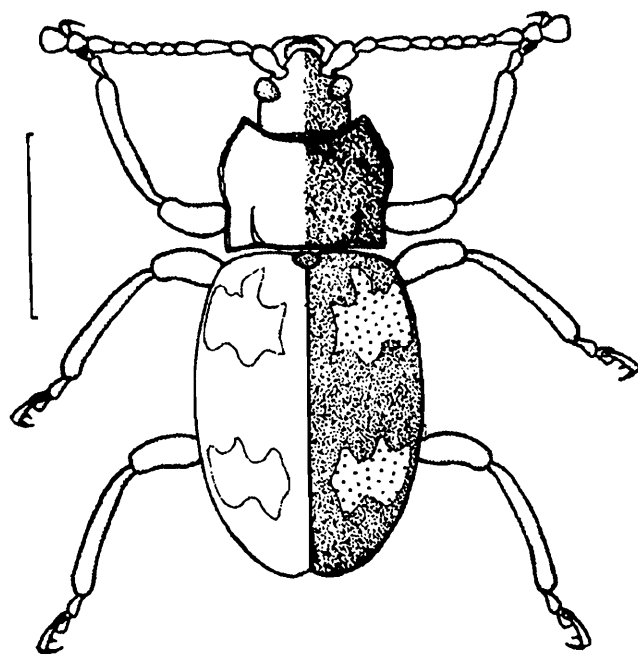


Fig. 1. *Ancylopus nigrothoracica*, sp. nov., Dorsal view (scale = 2.5 mm.).

narrowly pointed at apex, mesocoxae moderately widely separated, hind coxae widely separated and intercoxal process of first abdominal ventrite broad and truncate at apex; elytra moderately long with narrowly deflexed side margins.

5. *Ancylopus pictus indianus* Strohecker

1823. *Eumorphus pictus* Wiedemann, *Zool. Mag.* 2 : 78.

1858. *Ancylopus melanocephalus pictus* : Gerstaecker, *Mon. Endom.* : 190

1925. *Ancylopus melanocephalus* (in part) : *sensu* Arrow (nec. Olivier), *Fauna Brit. India, Coleoptera* : *Clavicornia* : 334.

1972. *Ancylopus pictus indianus* Strohecker, *Pacific. Ins.* 14 (4) : 706.

Diagnosis : Facies broadly elongate, subdepressed; orange-yeollow with head and antennae, basal margin of elytra, its suture except near apex, a rectangular patch on outer margin near middle and an oval patch before apex of each elytron blackish; head with eyes coarsely faceted and separated by little more than three times of the diameter, club little broader than rest of antenna, segments 9 and 11 elongate and segment 10 about as broad as long, dorsal surface moderately coarsely and densely punctate and pubescent; transverse prothorax little narrower behind middle, front angles projecting and not very acute, hind angles nearly right angle, side margins finely raised; in female pronotum with a median longitudinal depression and anterior end of lateral fovea on each side connected with it by a deep curved oblique channel, pronotum more finely punctate than on head; transverse scutellum impunctate; elytra separately rounded at apex, base of elytra little emarginate, each elytron with a broad oblique depression from behind scutellum to beyond middle, moderately coarsely and densely punctate; in male mesotibial tooth large and sharp, inner edge of metatibia undulate and sharply serrulate. Length—5.0-5.8 mm.

Material : 2 ♀♀. India : Sikkim, South District, Karfektar, 400 m., 2 km. O-Jorethang, 20.ix.1993, T.K. Pal, *ex*. vegetable debris.

Distribution : India : Sikkim (new record), Uttar Pradesh, Bihar, Tamil Nadu; Afghanistan.

6. *Ancylopus nigrothoracica* sp. nov.

Facies (Taxt fig. 1) broadly elongate, moderately convex. little shiny, entirely blackish body with four yellow patches on elytra, species little shiny.

Exposed part of head little broader than long, apical margin of clypeus little rounded, eyes moderately large, transverse, coarsely faceted, separated by about four times of diameter; antennal insertions widely separated, antenna moderately long and slender, scape moderately large and broadly elongate, pedicel shorter, narrower and elongate, segment 3 about as long as segments 4 and 5 together, segments 4-8 short and subequal, 3-segmented club gradually wider apically, segments loosely articulated; puncturation on vertex moderately fine and not dense, puncturation on clypeus finer, finely pubescent.

Prothorax transverse (1 : 1.2), widest little beyond middle, narrowed both anteriorly and posteriorly, sides feebly bisinuate, front angles projecting and not very acute, hind angles nearly right angle, pronotum moderately convex near middle and sides little flattened, side margins finely raised, pronotal base with a deep marginal stria, lateral foveae narrow, deeply impressed and extending up to little below middle, puncturation on pronotum almost similar as on vertex of head, finely pubescent. Scutellum transverse, finely punctate-pubescent.

Elytra broadly elongate (1.4 : 1.0), little wider than prothorax at base, widest near middle, lateral edges very narrowly flanked, shoulders little prominent, sides gently rounded and separately rounded at apex; puncturation confused, moderately fine and not dense; each elytron decorated with two large yellow spots, first one situated little below base, second transverse and situated considerably above apex, coloured spot not touching either outer or inner margin.

Ventral surface shiny, almost impunctate, entirely blackish, tarsi of legs little paler than remaining part.

Measurements of holotype : Total length 6.6 mm., width of head across eyes 1.3 mm., length of antenna 3.5 mm., length and width of prothorax 1.6 mm. and 2.4 mm., length and width of elytra 4.5 mm. and 3.1 mm.

Holotype ♂, India : Sikkim, South District, Karfektar, Jorethang, 450 m., 9. iii. 1996, T.K. Pal, *ex. log of Mangifera indica*; **Paratype**, 1 ♀, Karfektar, Joretahang, 450 m., 20.ix.1993, T.K. Pal, *ex. vegetation debris*. (Zooligical Survey of India, Calcutta).

Distribution : India : Sikkim

Comments : This species differs from *A. pictus* (Wiedemann) by its body colour black with only four yellow patches on elytra, prothorax less transverse, pronotum in female devoid of median longitudinal depression and lateral sulci on base not touching it.

Genus VI. *Endomychus* Panzer

1857. *Endomychus* Panzer, *Ent. Taschen.* : 175

[Type-species : *Chrysomela coccinea* Linnaeus].

1796. *Endomychus* Latreille, *Précis car. Gen. Ins.* : 71.

1874. *Cyanauges* Gorham, *Entomologist's mon. Mag.* **11** : 54.

1893. *Coenomychus* Lewis, *Entom.* **26** : 153.

Diagnosis : Facies ovoid with moderately long antennae and legs; head with prominent eyes, 11-segmented antenna with 3-segmented club, antennal segment 3 little longer than segments 2 and 4, mandible with tip minutely trifid, maxillary lacinia narrow, apical segment of maxillary palpi elongate, ligula little elongate, apical segment of labial palpi pointed at tip; prothorax transverse, front margin devoid of stridulatory membrane, pronotum with strongly impressed basal stria, front coxae moderately widely separated, mesocoxae moderately widely separated and mesosternum somewhat quadrate, hind coxae widely separated; elytra convex with sides gently rounded.

7. *Endomychus bicolor* Gorham

1857. *Endomychus bicolor* Gorham *Trans. Ent. Soc. Lond.* 1875 : 22.

1925. *Endomychus bicolor*. Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 357.

Diagnosis : Facies elongate, broadly ovoid, blackish with elytra and abdomen orange-yellow, species shiny; head with eyes projecting and finely faceted, all segments of antenna more or less elongate, club narrow elongate and segments loosely articulated, vertex finely punctate; prothorax markedly transverse, wider posteriorly, biemarginate in front, sides finely margined and rather straight, front angles blunt and hind angles slightly acute, lateral foveae on pronotum extending about one-third of length, minutely and sparsely punctate; scutellum triangular; elytral shoulders little prominent, sides evenly rounded, finely and sparsely punctate. Length—6 mm.

Distribution : India : Sikkim.

Genus VII. *Chondria* Gorham

1887. *Chondria* Gorham, *Proc. zool. Soc. Lond.* 1887 : 651.

[Type-species : *Chondria lutea* Gorham].

Diagnosis : Facies elongate-ovoid or subglobose with slender legs and antennae, body pubescent; head with prominent eyes, 11-segmented antenna with 3-segmented club, mandible with pointed tip, apical segment of maxillary palpi fusiform, ligula truncate apically, apical segment of labial palpi broad and transverse, prothorax transverse; with front margin emarginate, pronotum with broad elevated borders, front coxae rather closely situated, meso- and hind coxae more widely separated, tarsal segment 1 cylindrical, segment 2 lobed, segment 3 small and segment 4 longest; elytra without dilated margin and distinct epipleura.

8. *Chondria araneola* Arrow

1925. *Chondria araneola* Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 366.

Diagnosis : Facies hemispherical convex,

reddish-brown with elytra blackish except narrow lateral rim, club of antenna darker than remaining part, species shiny with dense long pubescence; head with eyes widely placed, antennal segments 1-8 (except 2) more or less elongate, apical segment of antennal club elongate and club segments loosely articulated; prothorax markedly transverse, lateral borders of pronotum raised and little hollowed, front angles bluntly produced, lateral foveae deep crescent-shaped, finely and sparsely punctate; elytra a little elongate, sides rounded and margins narrowly reflexed, humeral angles moderately sharp, apex a little angulate by joining of two elytra, with rows of moderately large punctures, rows distinctly impressed on sides than on middle. Length — 2.5 mm.

Distribution : India : Sikkim.

Genus VIII. *Danae* Reiche

1857. *Danae* Reiche, in Ferret and Galinier, *Voyage on Abyssinie*, 3 : 408

[Type-species : *Danae rufula* Reiche.]

1858. *Oediarthrus* Gerstaecker, *Mon. Enodm.* : 344.

1873. *Rhabduchus* Gorham, *Entomologist's mon. Mag.* 9 : 257

1873. *Coniopoda* Gorham, *Entomologist's mon. Mag.* 9 : 205.

Diagnosis : Facies elongate-ovoid and not very convex, with long legs and antennae, body pubescent; head with large eyes, 11-segmented antenna with 3-segmented loose and symmetrical club, mandible with bifid tip, apical segment of maxillary palpi fusiform, ligula truncate apically, apical segment of labial palpi broad and transverse; prothorax transverse with basal margin closely applied to base on elytra, side margins of pronotum raised, prosternum produced behind coxae as prominent lobe; meso- and hind coxae moderately widely separated; tarsal segment 1 elongate, segment 2 lobed and dilated, segment 3 small and segment 4 longest; elytra without dilated margin.

9. *Danae sericea* Arrow

1925. *Danae sericea* Arrow, *Fauna Brit. India, Coleoptera : Clavicornia* : 391

Diagnosis : Facies elongate-ovoid, moderately convex, yellowish-brown, legs and antennae blackish except basal part, densely pubescent; head with eyes widely placed, antennal scape and pedicel yellowish; transverse prothorax with side margins sinuate behind middle, borders of pronotum moderately wide and raised, basal groove terminating on sides in very short lateral foveae, front angles blunt and hind angles acutely produced; elongate elytra rounded at sides and not very broad at shoulders, with irregular fine punctures. Length — 3.9 mm.

Material : India : Sikkim, East District, Assam Lingzey, 1100 m., 11km. O-Ranipool, 2.iii. 1996, T.K. Pal, *ex* beating bush.

Distribution : India : Meghalaya, Sikkim (new record).

SUMMARY

The paper deals with 9 species under 8 genera of 1 subfamily of which 1 species is new (*Ancylopus nigrothoracica*). The species are systematically keyed and characterized.

ACKNOWLEDGEMENTS

The author is indebted to the Director, Zoological Survey of India for providing necessary facilities for the work. Drs. S. A. Slipinski of Museum & Institute of Zoology, Warsaw, Poland, H. Sasaji of Fukui University, Japan and Joseph McHugh of Cornell University, Ithaca, U.S.A. provided the author with important literature are also duly acknowledged.

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INSECTA : COLEOPTERA : COCCINELLIDAE

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INTRODUCTION

The Coccinellidae beetles, popularly known as lady bird beetles are very common in forested and agricultural area. These beetles are of profound economic importance as many of them predate on crop or plant pests like Aphids, Mealy bugs, Scale insects and other soft bodied pests of plants. Members of the subfamily Epilachninae are phytophagous, causing injury to the crops.

Some important contributions were made by the early workers from Sikkim. Mulsant (1850) described five species and Weise (1895) recorded three species. Kapur (1958) noted that eleven species are found in Sikkim. In his extensive work Kapur (1963) added another thirtyfour species, of which eleven are new to science. So a total of fifty three species are already known from Sikkim.

In this present study another thirty four species are added to the Sikkim fauna, of which one is new to science. Hence the total numbers of species raised to eightyseven.

SYSTEMATIC ACCOUNT

Family COCCINELLIDAE

Subfamily I. STICHOLOTINAE

Tribe 1. **Sticholotini**

Genus 1. **Sticholotis** Crotch

1. *Sticholotis* sp.

Genus 2. **Jauravia** Motschulsky

2. *J. quadrinotata* Kapur

Subfamily II. SCYMNINAE

Tribe 2. **Stethorini**

Genus 3. **Stethorus** Weise

3. *Stethorus* sp.

Tribe 3. **Scymnini**

Genus 4. **Scymnus** Kugelann

4. *S. (pullus) apiciflavus* Motschulsky

5. *S. (pullus) brunnescens* Mots.

6. *S. (pullus) posticalis* (Sicard)

7. *S. (pullus) pyrocheilus* Mulsant

8. *S. (pullus) quadrillum* Mots.

Genus 5. **Pullus** Mulsant

9. *P. bhaumiki* sp. nov.

10. *P. bourdilloni* Kapur

11. *P. higstoni* Kapur

12. *P. testacecollis* Kapur

Tribe 4. **Aspidimerini**

Genus 6. **Cryptogonus** Mulsant

13. *C. ariasi* (Muls.)

14. *C. bimaculatus* Kapur

15. *C. complexus* var. *posticus* Kapur

16. *C. himalayensis* Kapur

17. *C. hingstoni* Kapur

18. *C. orbiculus* (Gyllen.)

19. *C. postmedialis* Kapur

20. *C. quadriguttatus* (Weise)

21. *C. trioblitus* (Gorham)

Subfamily III CHILOCORINAE

Tribe 5. **Platynaspini**Genus 7. **Platynaspis** Redtenbacher22. *P. kapuri* Chakraborty & BiswasTribe 6. **Chilocorini**Genus 8. **Brumus** Mulsant23. *B. suturalis* FabriciusGenus 9. **Chilocorus** Leach24. *C. braeti* Weise25. *C. hauseri* Weise

Subfamily IV. COCCIDULINAE

Tribe 7. **Coccidulini**Genus 10. **Singhikalia** Kapur26. *S. ornata* KapurTribe 8. **Exoplectrini**Genus 11. **Sumnius** Weise27. *S. cardoni* WeiseTribe 9. **Noviini**Genus 12. **Rodolia** Mulsant28. *R. guerini* (Crotch)29. *R. sp.*

Subfamily V. COCCINELLINAE

Tribe 10. **Coccinellini**Genus 12. **Oenopia** Mulsant30. *O. kirbyi* Mulsant31. *O. luteopustulata* Mulsant32. *O. quadripunctata* Kapur33. *O. sauzeti* MulsantGenus 13. **Coelophora** Mulsant34. *C. bissellata* Mulsant35. *C. nitidicollis* Kapur36. *C. sexareata* Mulsant37. *C. unicolor* (Fab.)Genus 14. **Adonia** Mulsant38. *A. Variegata* (Goeze)Genus 15. **Anisolemnia** Crotch39. *A. dilatata* FabriciusGenus 16. **Aiolocaria** Crotch40. *A. dodecaspilota* (Hope)41. *A. hexaspilota* (Hope)Genus 17. **Leis** Mulsant.42. *L. dimidiata* (Fabricius)Genus 18. **Calvia** Mulsant43. *C. durgae* Kapur44. *C. pasupati* Kapur45. *C. pinaki* Kapur46. *C. shiva* Kapur47. *C. sykesi* (Crotch)48. *C. trilochana* KapurGenus 19. **Adalia** Mulsant49. *A. tetraspilota* (Hope)Genus 20. **Lioadalia** Crotch50. *L. luteopicta* (Mulsant)Genus 21. **Callineda** Crotch51. *C. sedecemnotata* FabriciusGenus 22. **Synharmonia** Ganglbauer52. *S. signatella* (Mulsant)

Genus 23. *Coccinella* Linnaeus53. *C. septempunctata* Linnaeus54. *C. tranversalis* FabriciusGenus 24. *Menochilus* Timberlake55. *M. sexmaculatus* (Fabricius)Genus 25. *Ballia* Mulsant56. *B. eucharis* Mulsant57. *B. gustavi* Mulsant58. *B. zephirinae* Mulsant59. *Ballia* sp.Tribe 11. *Psylloborini*Genus 26. *Halyzia* Mulsant60. *H. sanscrita* Mulsant61. *H. straminea* HopeGenus 27. *Illeis* Mulsant62. *I. bistigmosa* (Mulsant)63. *I. confusa confusa* Timberlake64. *I. indica* Timberlake

Subfamily VI. EPILACHNINAE

Tribe 12. *Epilachnini*Genus 28. *Epilachna* Chevrolat65. *E. bengalica* (Dieke)66. *E. congener* Gorham67. *E. flavicollis* (Thunberg)68. *E. gibbera* Crotch69. *E. grayi* Mulsant70. *E. macularis* Mulsant71. *E. marginicollis* Hope72. *E. mystica* Mulsant73. *E. mysticoides* (Sicard)74. *E. undecimpilota* HopeGenus 29. *Henosepilachna* Li75. *H. boisduvali* (Mulsant)76. *H. dodecastigma* (Wiedmann)77. *H. indica* (Mulsant)78. *H. ocellata* (Redtenbacher)79. *H. processa* (Weise)80. *H. septima* (Dieke)81. *H. sikkimica* (Kapur)82. *H. vigintioctopunctata* (Fabricius)Genus 30. *Afidenta* Dieke83. *A. mimetica simplex* Dieke84. *A. parvula* (Crotch)Genus 31. *Afidentula* Kapur85. *A. himalayana* Kapur86. *A. manderstjernae* (Mulsant)Genus 32. *Afissula* Kapur87. *A. sanscrita* (Crotch)

Family COCCINELLIDAE

Key to the subfamilies of
COCCINELLIDAE

1. Terminal segment of maxillary palpi elongate oval or elongate conical; mentum very narrowly articulated with submentum; the ninth sternite of male flat, triangular; head capsule sometimes projecting anteriorly
..... STICHOLOTINAE
- Terminal segment of maxillary palpi strongly divergent apically or nearly parallel sided, rarely slightly convergent apically; mentum usually not very narrowly articulated with submentum; the ninth sternite of male linear or clavate; head capsule not projecting anteriorly 2
2. Antennae relatively short, at most about two-thirds as long as head width, often very short, strongly modified and inserted frontally, laterally or ventrally; the terminal segment of maxillary palpi generally nearly parallel sided, never

- strongly divergent apically; clypeus normal or strongly expanded laterally; meso-and metasterna usually broadly and compactly articulated and middle coxal cavities broadly separated; femora relatively stout or sometimes strongly depressed 3
- Antennae relatively long, at least about one-half as long as the head-width, usually longer than two-third and inserted frontally, laterally or dorsally; the terminal segment of maxillary palpi usually strongly divergent apically; clypeus never strongly expanded laterally; meso-and metasterna always feebly and narrowly articulated, separating middle coxal cavities narrowly; femora relatively slender, never strongly depressed 4
3. Clypeus strongly expanded laterally; anterior margin of pronotum deeply and trapezoidally concave and lateral portions very strongly descending below; elytral base distinctly broader than pronotal base; metasternum distinctly impressed for the reception of middle femore; elytral epipleure relatively broad and its inner carina reaching elytral apex; tibiae often angulate externally
..... CHILOCORINAE
- Clypeus not strongly expanded laterally; anterior margin of pronotum not deeply or trapezoidally concave, lateral portion descending below but not very strongly; elytral base slightly broader than pronotal base; elytral epipleura very narrow and its inner carina not reaching the elytral apex but ending near two-third of the elytral length from base
..... SCYMNINAE
4. Female genital plate (9th sternite) always very elongate; dorsum pubescent, weakly or moderately convex; compound eyes sometimes coarsely faceted; antennae eight to eleven segmented and laterally inserted; abdomen composed of five or six visible segments; tarsi true tetramerous, cryptotetramerous or true trimerous COCCIDULINAE
- Female genital plate not elongate, oval or transverse; dorsum glabrous or pubescent, if pubescent, it is strongly convex; compound eyes never coarsely faceted; antennae always eleven segmented and more or less dorsally inserted; abdomen composed of six visible segments; tarsi cryptotetramerous 5
5. Dorsum glabrous; mandibles with a bifid or multidenticulate tip and also with a basal tooth; mesepimeron nearly triangular, its posterior margin almost straight or slightly angulate, mentum relatively narrowly articulated with submentum and distinctly divergent apically; inner margin of female genital plate without notch or small emargination and with a stylus near the inner corner; siphon of male genitalia rather long and usually strongly curved with a well developed capsule, median piece of tegmen usually not very slender
..... COCCINELLINAE
- Dorsum pubescent; mandibles with a multidenticulate tip and without a basal tooth; mesepimeron quadrate, its posterior margin distinctly angulate; mentum very broadly articulated with submentum and convergent apically; inner margin of female genital plate with notch or small emargination and with a stylus at far outward from the inner corner of female genital plate; siphon of male genitalia rather short and weakly curved without a well developed capsule, median piece of tegmen tubular and slender EPILACHNINAE.
- Subfamily I. STICHOLOTINAE
- Tribe 1. Stichlotini
- Key to the Genera of Tribe
STICHOLOTINI
- 1. Dorsum glabrous; frons not emarginate around antennal insertions; antennae eleven segmented *Sticholotis*
 - Dorsum pubescent; frons emarginate around antennal insertions; antennae eleven segmented *Jauravia*
- Genus 1. *Sticholotis* Crotch
1874. *Sticholotis* Crotch. *Revision of the Coleopterous family Coccinellidae*, p. 200

1. *Sticholotis* sp.

Material studied : 4 exs, Gangtok, alt. 5000 ft., E. Sikkim, 17.xii. 1975, G.K. Srivastava Coll.

Remarks : This species is reddish brown in colour, each elytron with a moderately large black spot near the humerus and at the centre of the disc, small black spot one at the middle of lateral margin, another near the apex, just below the middle there is a small black spot in between lateral margin and suture and a small spot near the apex close to the suture. In total those are six in number, the central one on the disc meeting its counterpart on the other elytron. Due to lack of literature and standard identified material we could not place this material to its place.

Genus 2. *Jauravia* Motschulsky

1858. *Jauravia* Motsch., *Etud. Ent.*, vii : 117

1931. *Jauravia*, Korschefsky, *Coleoptm.*, *Cat.*, pars 118. P. 222

2. *Jauravia quadrinotata* Kapur

1946. *Jauravia quadrinotata* Kapur, *Ann. Mag. nat. Hist.*, London, 13 (11) : 85-86 (Type-loc.—Patkai Mountains, Assam)

1977. *Jauravia quadrinotata*, A.K. Ghosh, S. Biswas & A.R. Lahiri, *Bull. Meg. Sci. Soc.* 2 : 13

Material studied : 1 ex., Rhenok, E. Sikkim, alt. 1130m., 9.iii-1979, S.K. Saha & party coll.

Distribution : India : Sikkim, Assam and Meghalaya. Also known from Bhutan.

Remarks : This is a new record of this species from Sikkim.

Subfamily II. SCYMNINAE

Key to the Tribes of Subfamily SCYMNINAE

1. Eyes covered anteriorly by the expanded head-capsule; antennae nine segmented and very short; elytral epipleurae very narrow with distinct foveae; trochanters elongate, femora broadly expanded concealing the compressed tibiae, tarsi true trimerous; abdomen composed

of six segments, first segment convex posteriorly in an arc **Aspidimerini**

- Eyes exposed anteriorly, moderate in size, antennae nine to eleven segmented; elytral epipleurae very narrow without distinct foveae; trochanters normal, femora nearly cylindrical, tarsi trimerous or crypto-tetramerous; the first abdominal segment not convex posteriorly ...
..... 2

2. Anterior margin of prosternum roundedly convex anteriorly, prosternal carina absent; terminal segment of maxillary palpi slightly convergent apically with a truncate apex
..... **Stethorini**

- Anterior margin of prosternum flat or slightly concave; prosternal carina present or absent; terminal segment of maxillary palpi parallel sided **Scymnini**

Tribe 2. **Stethorini**Genus 3. *Stethorus* Weise

1885. *Stethorus* weise, *Best. Tab. II.*, ed. 2., p. 65

1931. *Stethorus*, Korschefsky, *Coleoptm.*, *Cat.* 16 pars 118, p. 111

3. *Stethorus* sp.

Material studied : 1 ex., Jorethang, S. Sikkim, 2.v. 1994, S.K. Saha and party coll.

Remarks : The specimen is light brown in colour and very small in size. Due to insufficient material species could not be identified.

Tribe 3. **Scymnini**

Key to the Genera of Tribe Scymnini

1. (2) Femoral line of the first abdominal sternite complete *Pullus*, *Scymnus* (*Pullus*)
- 2.(1) Femoral line of the first abdominal sternite incomplete *Scymnus* (*sensustricto*)

Genus 4. *Scymnus* Kugelann

1794. *Scymnus* Kugelann, *Neues Magazin Lieb. Ent.* 1, 5. p. 545

1931. *Scymnus*. Korschefsky, *Coleoptm. Cat.*, **16**, pars 118, p. 115

**Key to the species of the Genus
Scymnus (Pullus)**

1. Elytra yellowish brown, reddish brown, dark brown or black, without testaceous apex ...2
- Elytra black, except the apical testaceous portion. 3
2. Pronotum and elytra uniformly yellowish brown to dark brown without any spot or marking, body elongate oval
..... *brunnescens* Mots.
- Pronotum and elytra black; each elytron with one large sub-humeral, oblique oval and one subapical small oblique oval reddish brown spot *quadrillum* Mots.
3. Pronotum testaceous, without any spot; base of the apical testaceous area of the elytron convex and directed anteriorly
..... *apiciflavus* Mots.
- Pronotum reddish brown with a basal or median black spot; apical testaceous portion narrow. 4
4. Smaller species, pronotal black spot semi circular situated at the basal margin
..... *pyrocheilus* Mulsant
- Larger species, pronotal black spot rectangular, situated at the median line, extending from base to anterior margin *posticalis* Sicard

4. *Scymnus* (pullus) *apiciflavus* Motschulsky

1858. *Scymnus apiciflavus* Motschulsky, *Etud. Ent.*, Heslingfors, **7** : 119 (Type-loc, China)

1931. *Scymnus* (Pullus) *apiciflavus*. Korschefsky, *Coleoptm. Cat.*, **16**, pars 118, p. 141

Material studied : 1 ex., Rangpo, alt. 450 m. E. Sikkim, 19. iv. 1976, A.R. Bhowmik coll., 1 ex., Rongli, 12 km from Rhenok, E. Sikkim, 12. iii. 1979, S.K. Saha & Party coll.

Distribution : India : Sikkim, Meghalaya. Also known from Sri Lanka, Thailand and S. China.

Remarks : This is a new record of this species from Sikkim.

5. *Scymnus* (pullus) *brunnescens* Motschulsky

1863. *Scymnus brunnescens* Motschulsky, *Bull. Soc. Nat. Moscou*, **36** : 425 (Type-loc. Ceylon)

1931. *Scymnus* (pullus) *brunnescens*. Korschefsky, *Coleoptm. Cat.*, **16**, pars 118, p. 122

Material studied : 2 exs., Rangpo, E. Sikkim, 25.xii. 1975. G.K. Srivastava coll. and 24.ii. 1979, S.K. Saha & party Coll., 1ex., Rhenok, E. Sikkim, alt. 1130 m. 9.iii. 1979 and 3 exs., Singtam, W. Sikkim, 24.xii. 1980, S.K. Saha & Party Coll.

Distribution : India : Sikkim, Meghalaya, Assam, West Bengal, Central and South India, Andamans. Also known from Sri Lanka.

Remarks : Recorded for the first time from Sikkim.

6. *Scymnus* (pullus) *posticalis* (Sicard)

1912. *Pullus posticalis* Sicard, *Ann. Soc. Ent. France*, **81** : 503 (Type-loc. Burma)

1931. *Scymnus* (Pullus) *posticalis*, Korschefsky, *Coleoptm. Cat.*, pars 118. p. 144

Material studied : 5 exs., Rangpo, alt. 450m. 19. iv. 1976; 2 exs; Gangtok alt. 1704., 24.iv. 1976, A.R. Bhaumik Coll. 4 exs; Rangpo, alt. 400m. 26.xii. 1975, G.K. Srivastava Coll. 10 exs; Rangpo, 23.ii. 1979; 1 ex; Gangtok, 2.iii. 1979; 2 exs; Rhenok, alt. 1130m. 10.iii. 1979; 3exs; Rongli, 12,iii. 1979; 1ex; Gangtok, 25,xii. 1980, S.K. Saha Coll. 1ex., Serten Forest area, 17.iv. 1983, B.N. Das & Party coll. All from East Sikkim. 2 exs; Chungthang, West Sikkim, 25.iv. 1994, S.K. Saha Coll.

Distribution : India : Sikkim, Meghalaya and Tripura. Also known from Burma.

Remarks : This is a new record of this species from Sikkim.

7. *Scymnus* (pullus) *pyrocheilus* Mulsant

1853. *Scymnus* (pullus) *pyrocheilus* Mulsant, *Ann. Soc. Linn. Lyon* **1** : 281 (Type-loc, - Calcutta)

1931. *Scymnus (pullus) Pyrocheilus*. Korschefsky, *Coleoptm.*
Cat. 16, pars 118 : 144

Material studied : 2 exs; Rangpo, alt. 4000m., East Sikkim, 25-26xii. 1975, G.K. Srivastav Coll.; 16 exs; Rangpo, alt. 4500m; E. Sikkim, 19. iv. 1976, A.R. Bhaumik Coll.; 16 exs; Rangpo, 23.ii. 1979 and 3exs; Rangpo, 24.ii. 1979, 2 exs; Rhenok, E. Sikkim, alt. 1130 m. 10.iii. 1979, 2 exs., Rongli, E. Sikkim, 12.iii. 1979 and 1 ex; Detam, 29.iv. 1994, S.K. Saha & Party Coll.

Distribution : India : Sikkim, Meghalaya, Tripura, West Bengal and Andamans. Also known from Nepal.

Remarks : Recorded for the first time from Sikkim.

8. *Scymnus (pullus) quadrillum* Motschulsky

1858. *Scymnus quadrillum* Motschulsky, *Etud. Ent.*, 7 : 120 (Type-loc.—“indes orientales”)

1931. *Scymnus (pullus) quadrillum*, Korschefsky, *Coleoptm.*
Cat., 16, pars 118 : 144

Material studied : 1 ex; Nanthang, East. Sikkim. 20. ix. 1993, S.K. Chatterjee coll.

Distribution : India, Sikkim, Tripura, Delhi, Karnataka and Goa.

Remarks : It is a very widely distributed species and recorded for the first time from Sikkim.

Genus 5. *Pullus* Mulsant

1846. *Pullus* Mulsant, *Sulcicolles-Securipalpes*. 4 : 241

1963. *Pullus*, Kapur, *Bull. Br. Mus. nat. Hist. (Ent.)*, 14 : 22-23.

Key to the Species of the Genus *Pullus* Mulsant

1. Pronotum testaceous, elytra black except the apical one-third which is testaceous..... 2
- Pronotum black or reddish testaceous; elytra reddish testaceous or bordered black along the base, suture and external margin black; always with the apical part less than one-third of its

length is testaceous. 3

2. Body oval, smaller in size, 1.48 – 1.60 mm long and 1.03 – 1.06 mm width; basal margin of the testaceous area almost straight with a little extension of black along the suture and lateral margin towards apex *bhaumiki* n. sp.

– Body oblong oval, larger in size, 2.00 mm. long. and 1.40 mm. width; basal margin of the testaceous area almost straight to widely rounded *hingstoni* Kapur

3. Apical one-fourth of the elytra testaceous, widely emarginate at the base; oblong oval, 2.20 mm long and 1.50 mm. width *testacecollis* Kapur

Apical one-seventh of the elytra testaceous, testaceous area on each elytron is oval; oblong oval, larger species, 2.5mm. long and 1.75 mm width *bourdilloni* Kapur

9. *Pullus bhaumiki* sp. nov.

Body oval, moderately convex (Text. Fig. IA) with fairly distinct humeral calli; pubescence greyish, moderate in length and sparse; the frons, mouth-parts, antennae and pronotum reddish brown; basal two third of the elytra dark brown and apical one third yellowish brown; basal margin of the testaceous area almost straight with a little extension of black along the suture and lateral margin. Underside dark, except prothorax, legs and abdominal sternites which are yellowish brown. **Head** rather coarsely and densely punctate, pubescence moderately long, subdepressed, directed anteriorly, greyish; eyes finely faceted; antennae club shaped, eleven segmented. **Pronotum** convex, a little less than twice as broad as long, slightly narrowed and very weakly convex laterally, weakly emarginate anteriorly; narrowly but distinctly margined; the anterior angles subacute, the posterior ones rather subrounded and obtuse; punctation uniform, moderately coarse, shallow and sparse; pubescence longer and suberect, mostly directed antero-medially except in the median basal area where it is more inclined towards the longitudinal median line and rather

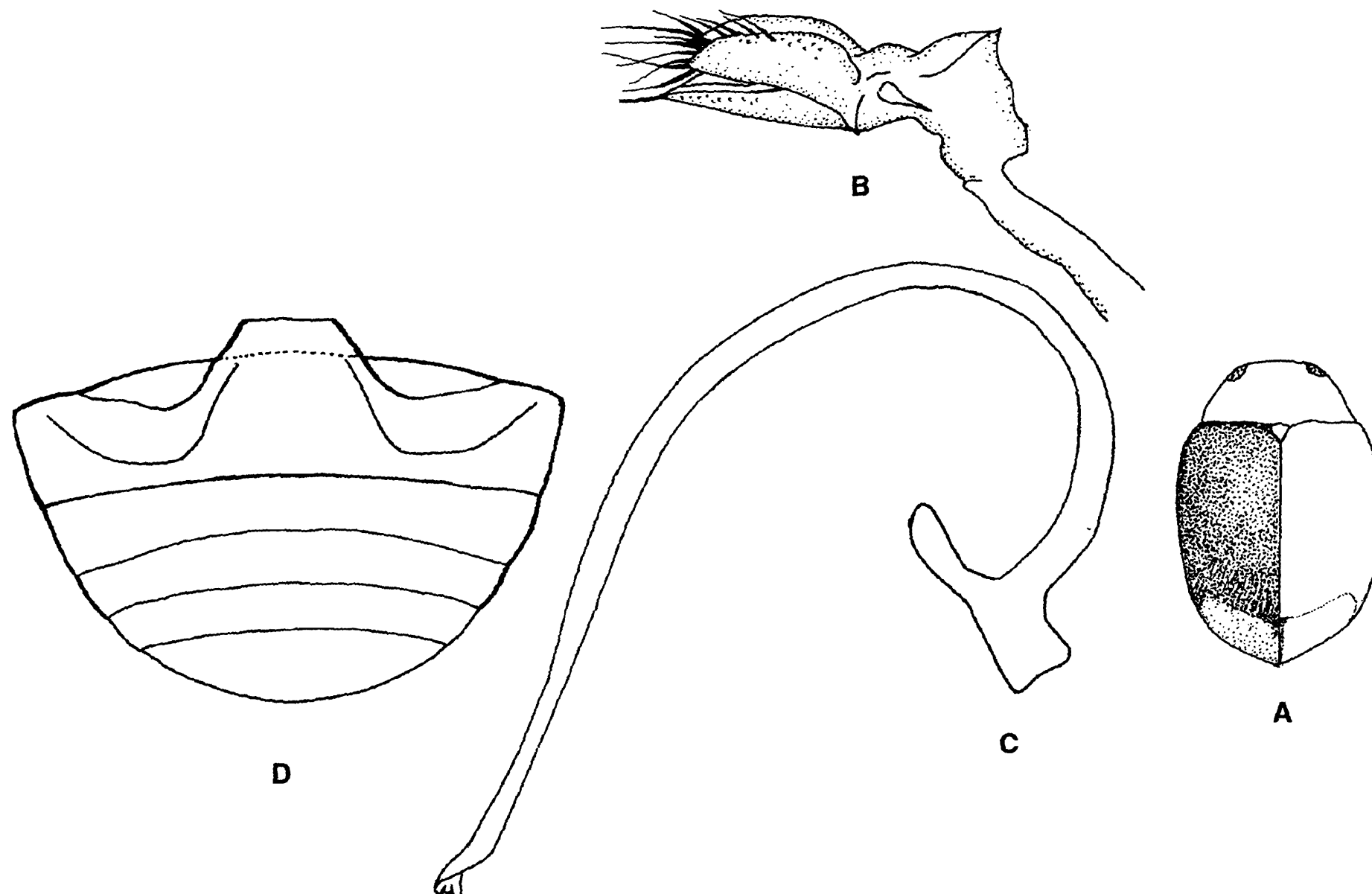


Fig. 1. *Pullus bhaumolo* sp.n. A) outline of the beetle showing colour pattern; B) male genitalia except siphon; C) siphon; D) femoral line on the first abdominal sternite.

irregularly directed near the posterior angles. *Scutellum* small subtriangular, with a few fine punctures. Elytra, much longer than broad, moderately convex; humeral angles rounded, lateral margins narrowly bordered from the base to a little below the middle; apical angles narrowly rounded; punctation coarse, rather sparse and impressed more distinctly than that on the pronotum and head; interspaces moderately smooth. Pubescence nearly as long as that on the pronotum but relatively stronger, sparse suberect and greyish, directed backward, pattern of pubescence on elytra not clear due to the lack of pubescence on the major area. *Underside* with generally short and depressed pubescence and with fine to coarse and impressed punctation; the prosternal carinae almost straight, very weakly concave anteriorly and convergent towards the anterior margin; punctation on the pro- and mesosternum fine and impressed that on the metasternum coarse and impressed and fairly close. The femoral lines complete. (Text. Fig. 1D), semicircular, extending beyond the middle of the first abdominal segment; the pubescence on the terminal sternites of the abdomen relatively long, depressed and directed posteriorly.

Male genitalia (Fig. 1B,C) with a sub-transverse and well-developed basal piece, the long trabes, the elongate oval parameres, each bearing a number of long and delicate setae; the median lobe conical, a little longer than parameres; the siphon distinctly long and narrow, the siphonal capsule elongate, its inner arm narrower than the outer one, the terminal part is weakly flattened and twisted with the tip fringed irregularly.

Length 1.48 – 1.60mm.; breath 1.03 – 1.06 mm.

Holotype – India : Rangpo (Sikkim), 19. iv. 1976. A.R. Bhowmik. Coll. in The National Collection of the Zoological Survey of India, Calcutta (The genitalia dissected and mounted in Canada Balsam between two coverslips and pinned with the specimen).

Paratypes : 2 exs, with the same data as the holotype, deposited in the National Collection of

Z.S.I., Calcutta.

Comparison : This species is apparently very close to *Pullus pallidicollis* (Mulsant), *Pullus hingstoni* Kapur and *pullus testacecollis* Kapur by its pattern of pronotum and elytra but differs from all by its smaller size and narrowness of the body. *P. pallidicollis* is more rounded and convex, the testaceous area of the two elytra together gives a semilunar appearance. Length 1.93 mm; breadth 1.54 mm. *P. testacecollis* is oblong oval, much longer, elytra black, except apical one-fourth is testaceous; each Length 2.20mm; breadth 1.5mm, each testaceous apical part is broadly curved at the base. *P. hingstoni* is less elongate than *P. testacecollis*, Length 2.00 mm; breadth 1.4 mm, elytra as above except the apical one-third is testaceous, basal margin of each testaceous portion together almost straight or widely rounded.

This species has been named as regards to Mr. A.R. Bhaumik who devoted his whole service life in the study of Indian Coccinellidae as an assistant to Dr. A. P. Kapur in Zoological Survey of India.

10. *Pullus bourdilloni* Kapur

1955. *Pullus bourdilloni* Kapur, *Rec. India Mus.* 53. (3 & 4) 335-338 (Type loc. – Nepal.)

1963. *P. bourdilloni* Kapur, *Bull. Brit. Mus. Nat. Hist (Ent)* 14 (1) : 20.

Material studied : 1 ex; Gangtok, 24. iv. 1976, A.R. Bhaumik Coll; 1 ex., Rangpo, 23. ii. 1979; 4 exs; Rhenok, 9-11. iii. 1979, 2 exs, Gangtok 25. xii. 1980 and 1 ex. Tarpu 27. iv. 1994 and 1 ex Detam 29. iv. 1994, S.K. Saha & Party Coll.

Distribution : This species is known from Nepal and Sikkim.

11. *Pullus hingstoni* Kapur

1963. *Pullus hingstoni* Kapur, *Bull. Brit. Mus. (Nat. Hist.) (Ent.)* 14 (1) : 22-23 (Type-loc. -Sikkim)

Material studied : Material was not available for study.

Distribution : This species was described from

Tsuntung and Singhik, Sikkim.

12. *Pullus testacecollis* Kapur

1963. *Pullus testacecollis* Kapur, *Bull. Brit. Mus. Nat. Hist. (Ent.)* 14 : (1) : 21 or 22. (Type-loc. – Sikkim)

Material studied : Material was not available for study.

Distribution : This species is known only from Sikkim.

Tribe 4. *Aspidimerini*

Genus 6. *Cryptogonus* Mulsant

1850. *Cryptogonus* Mulsant. *Spec. Trim-Securipalp.* P. 944-5.

1931. *Cryptogonus* Mulsant : Korschefsky, *Coleoptm. Cat.*, pars 118, p. 172).

Key to the Species of the Genus *Cryptogonus* Muls.

1. Prosternal Carinae as long as the prosternum, meeting each other at the anterior margin ... 2
- Prosternal Carinae shorter than the length of prosternum, nearly two-third as long, meeting each other in a rounded arch away from the anterior margin 3
2. Carinae much narrower at the base than the width of prosternal process, subparallel in the basal half and widening in the anterior half before meeting each other in an arch at the apical margin of prosternum; body rounded oval, 2-2.25 mm. long, elytra black except the apical one-third is reddish testaceous with the basal black area meeting it and being convex near the sutural and concave towards the external margins *Complexus* var. *posticus* Kapur
- Carinae as wide apart at the base as the width of prosternal process, subparallel in the basal half and narrow in the apical half; body oblong oval 2.25-2.50 mm. long, elytron slightly tapering towards the apex, black except the testaceous apical one-third with its margin

towards the base subtransverse being a little convex in the middle and at the external margin *himalayensis* Kapur

3. Elytron reddish brown or testaceous with black spots..... 4
- Elytron black with yellow testaceous spots 7
4. Elytron with one large oblong – oval discal, black spot, slightly near the suture, body subrounded 2.15–2.30 mm. long *bimaculatus* Kapur
- Elytron usually with three black spots 5
5. Pronotum black, except the anterolateral corners which have a quadrate, yellowish spot; elytra yellowish brown with the basal, apical and part of external margin bordered black; the basal border on each elytron widest in the middle, the apical rather subquadrate and projecting into the yellowish area of the disc; the external indistinctly marked off and narrow; the first spot subrounded, confluent with the external margin, slightly nearer the base, the second semicircular, sutural, situated on the mid-transverse line, forming a rounded spot together with its counterpart on the other elytron; body oblong-oval 1.5-1.7 mm long and 1.9-2.15mm. width *trioblitus* (Gorham)
- Pronotum yellowish brown with a median black spot 6
6. Black spot on pronotum transverse oval, situated at middle of the base of pronotum; humeral spot absent; first spot sub rounded, moderately large, situated a little below the humeral callus; second semi-circular, sutural, forming a complete rounded spot with its counterpart on the other elytron; third much smaller, rounded and situated in the centre of the posterior half of elytron; body subrounded, 2.8mm. long *ariasi* (Mulsant)
- Black spot on pronotum transverse or rounded, situated in the middle and along the anterior margin; humeral spot small and rounded; the second larger, sutural, forming a complete rounded spot with its counterpart on the other

elytron situated a little anterior to the transverse middle line; the third of the same size and shape as the sutural and situated on the transverse middle line, slightly nearer the suture than the external margin; body subrounded, 2.8mm. long *hingstoni* Kapur

7. Elytron with two testaceous spots situated one behind the other in the anterior and posterior halves, distinct from each other; body oblong oval, 2.3-2.7mm long
..... *quadriguttatus* (Weise)

– Elytron with one testaceous spot only 8

8. Elytral spot oblong oval, usually one-third as long as elytron, situated in the middle of its length, close to the suture, body oblong oval, 2.2 – 2.8 mm. long *orbiculus* (Gyllenhal)

– Elytral spot transverse-oval, reniform or quadrate, always confined to the posterior half of elytron, body oblong oval, 2-2.5mm. long *postmedialis* Kapur

13. *Cryptogonus ariasi* (Mulsant)

1853. *Aspidimerus ariasi* Mulsant, *Ann. Soc. linn. Lyon*, 1 : 265 (Type-loc. – North India)

1948. *Cryptogonus ariasi* (Mulsant), Kapur, *Trans. R. ent. Soc. Lond.*, 99 : 102-3.

Material studied : 1 ex., Pechrek, West Sikkim, alt. 1515 mm., 2.iv. 1959. A.G.K. Menon Coll., 1 ex., Singhik, alt. 1380 m. 7.v. 1962 and 2 exs., Kewzing, alt. 1800 mm. 20.v. 1962. S. Ali Coll., 1 ex., Gangtok, E. Sikkim, alt. 1704m., 24.iv. 1976, 1 ex., Phensung, 25.iv. 1976, 2 exs., Singtam, W. Sikkim, 26.iv. 1976 and 1 ex., Pakyang, 27. iv. 1976, A.R. Bhaumik Coll., 2 exs., Chungthang, W. Sikkim, 25.iv. 1994, S.K. Saha, Coll., 1 ex., Jodong, E. Sikkim, 31.x. 1994, G.C. Sen Coll. and 4exs., Namchi, S. Sikkim, 3.iv. 1997, S. Biswas Coll.

Distribution : India : Sikkim, West Bengal (Darjiling Dist.) and Northern Indian. Also known from Burma.

14. *Cryptogonus bimaculatus* Kapur

1948. *Cryptogonus bimaculatus* Kapur, *Trans. R. ent. Soc. Lond.*, 99 : 100-101. (Type-loc. Assam)

Material studied : 1 ex., Rangpo, alt. 450 m. 19.iv. 1996, A.R. Bhaumik Coll., 1 ex. Rhenok, alt. 1130 m., 11.iii. 1978; 1 ex; Damthang, 5.iv. 1994 and 1 ex., Rumtek, E. Sikkim, 20.iv. 1994, S.K. Saha & Party Coll; 1 ex; Namchi, S. Bhowmik, 3.vi. 1997, S. Biswas & Party Coll.

Distribution : India : Sikkim, West Bengal (Darjeeling Dist.), Assam, Tripura, Nagaland and Arunachal Pradesh. Also known from Bhutan, Burma and Thailand.

Remarks : This is a new record of this species from Sikkim.

15. *Cryptogonus complexus* Kapur

1948. *Cryptogonus complexus* Kapur, *Trans. R. ent. Soc. Lond.*, 99 : 110-111. (Type-loc. – Assam, Patkai Mountain)

1963. *Cryptogonus complexus* Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* 14 (1) : 24

Material studied : 1 ex., Rangpo, alt. 450 m. 19.iv. 1976, A.R. Bhaumik Coll 2 ex., Rangpo, 23.ii. 1979; 1 ex., Rhenok, E. Sikkim, 12.iii. 1979, S.K. Saha & Party Coll.

Distribution : India : Sikkim (Singhik), Assam, Meghalaya and Tripura. Also known from Bhutan and Burma.

Remarks : The specimens studied here belongs to variety *Posticus* Kapur (1948).

16. *Cryptogonus himalayensis* Kapur

1948. *Cryptogonus himalayensis* Kapur, *Trans. R. ent. Soc. Lond.* 99 : 108-109, (Type-loc. – Rubymines, Burma)

1963. *Cryptogonus himalayensis* Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* 14 (1) : 24

Material studied : Material was not available for study.

Distribution : India : Sikkim (Singhik). Also known from Bhutan and Burma.

17. *Cryptogonus hingstoni* Kapur

1948. *Cryptogonus hingstoni* Kapur, *Trans. R. ent. Soc. Lond.*, **99** : 103-104 (Type-loc.-Sikkim)

1963. *Cryptogonus hingstoni* Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* **14** (1) : 24.

Material studied : Material was not available for study.

Distribution : India : Sikkim.

18. *Cryptogonus orbiculus* (Gyllenhal)

1808. *Coccinella orbicula* Gyllenhal, in *Schönherr, Synonymia. Insectorum* **2** (2) : 205 (Type-loc. – Oriental India)

1850. *Cryptogonus orbiculus* (Gyllenhal), *Mulsant Ann. Soc. Agric. Lyon* **2** (2) : 945.

1931. *Cryptogonus orbiculus*, *Korschevsky, Coleopt. Cat.*, **16** pars **118** : 173.

Material studied : 1 ex., Rongli, 13.iii. 1979, 1ex., Rumtek, 20.iv. 1994; E. Sikkim; 4 exs., Chungthang, N. Sikkim, 25.iv. 1994; 1ex., Tarpu, 27.iv. 1994 and 1 ex., Detam, 29.iv. 1994, S.K. Saha & Party Coll.; 1 ex., Tadang, E. Sikkim, 1.xi. 1994, G.C. Sen Coll.; 1ex., Phodong and 1 ex., Chungthang, N. Sikkim, 1-2.iv. 1996 and 1 ex., Jorthang, S. Sikkim, 10.iv. 1996, R.N. Tiwari & Party Coll.

Distribution : India : Sikkim, West Bengal, Assam, Tripura, Maharashtra, Tamil Nadu. Also known from Bhutan, Burma, Sri Lanka, Malaya, Indonesia, China and Japan.

Remarks : This present study includes the variety *fulvocinctus* (Mulsant) which is a little different by the colour pattern of elytra. Here the discal spot is absent and the entire external border distinctly testaceous and confluent with the apical one-third.

This species is recorded for the first time from Sikkim.

19. *Cryptogonus postmedialis* Kapur

1948. *Cryptogonus postmedialis* Kapur, *Trans. R. ent. Soc. Lond.*, **99** : 95-97 (Type-loc. – Ranikhet, kumaon Hills)

1963. *Cryptogonus postmedialis*, Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* **14** (1) : 23.

Material studied : 2 exs., Shingbang, W. Sikkim, alt. 5900 m. 15.x. 1959, B.K. Tikadar Coll.; 1ex., Toong, alt. 1440m, 10.v. 1962 and 2exs. Kewzing, alt. 1800m. 20.v. 1962, S. Ali Coll.

Distribution : India : Sikkim, West Bengal (Darjeeling) and U.P. (Kumaon Hills). Also known from Bhutan and Burma.

20. *Cryptogonus quadriguttatus* (Weise)

1895. *Aspidiphorus quadriguttatus* Weise, *Dtsch. ent. Z.*, p. 326 (Type-loc. – Sikkim)

1931. *Cryptogonus quadriguttatus* (Weise), *Korschevsky, Coleopt. Cat.*, **16** : pars **118** : 174

1963. *Cryptogonus quadriguttatus*, Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* **14** (1) : 23.

Material studied : 1 ex., Rangpo, alt. 450 m, 19.iv. 1876., A.R. Bhaumik Coll.; 1ex., Rangpo, 23.ii. 1979; 1ex., Rhenok, alt. 1130 m., E. Sikkim, 9.iii. 1979, 1ex., Phensang, W. Sikkim, 8.ix. 1993; 1 ex., Chungthang, N. Sikkim, 25.iv. 1994; 1 ex., Tarpu, 27.iv. 1994 and 1 ex., Detam, 29.iv. 1994, S.K. Saha & Party Coll.; 1 ex., Pahyong, E. Sikkim, 28.iii. 1996 and 1 ex., Mangan, R.N. Tiwari & party Coll.; 1ex., Ranipool, 25.v. 1997 and 1 ex., Rangpo, E. Sikkim, 28.v. 1997; 6 exs., Namchi, S. Sikkim, 2-3.vi. 1997, S. Biswas & party Coll.; 1 ex., Zadang, E. Sikkim, 15.iii. 1994, L. K. Ghosh & Party Coll.

Distribution : India : Sikkim, Assam, Meghalaya, U.P. (Kumaon), West Bengal and Goa. Also known from Bhutan.

21. *Cryptogonus trioblitus* (Gorham)

1895. *Aspidimerus trioblitus* Gorham, *Ann. Mus. Stor. nat. Genova*, **34** : 690 (Type-loc. –Burma)

1958. *Cryptogonus trioblitus*, Kapur, *Rec. Indian Mus.*, **53** : 335

Material studied : 1 ex., Lachen, N. Sikkim, 17.v. 1959, A.G.K. Menon & Party Coll.

Distribution : India : Sikkim, Assam (Patkai

Mountain) and U.P. (Kumaon Hills). Also known from Burma and Nepal.

Remarks : The material under study was previously determined by Dr. A.P. Kapur. Although this is the first time record of this species from Sikkim.

Subfamily III CHILOCORINAE

Key to the Tribes of the Subfamily CHILOCORINAE

1. Antennae very short, 7 segmented; meso coxal cavities broadly separated; metendo-sternite with a short stalk; tarsi true trimerous; abdomen composed of five visible segments in both sexes. Body small, less than 2 mm. in length, dorsum pubescent **Telsimini***
- Antennae longer, 7-10 segmented, meso coxal cavities moderately separated; metendo-sternite with a rather long stalk; tarsi cryptotetramerous; abdomen composed of six visible segments at least in male. Body larger, more than 2 mm. in length, dorsum glabrous or pubescent 2
2. Dorsum pubescent; cardo of maxilla distinctly expanded laterally; femora strongly flattened and set into foveae of underside of body; abdomen composed of six distinct visible segments in both sexes **Platynaspini**
- Dorsum glabrous; Cardo of maxilla not expanded laterally, femora normal; abdomen composed of five visible segments in female and in six male **Chilocorini**

Tribe 5. **Platynaspini**

Genus 7. **Platynaspis** Redtenbacher

1843. *Platynaspis* Redtenbacher, *Tentamen Dispos. Gen.*, p. 6, 11.

1932. *Platynaspis* Redtenbacher : Korschefsky, *Coleoptm. Cat.*, Pars 120, p. 231

22. **Platynaspis kapuri** Chakraborty & Biswas

2000. State fauna series – Coccinellidae of Tripura

* Not treated in this paper

Material studied : 2 exs., Rhenok, E. Sikkim, 9. iii. 1979 and 1 ex., Singtam, W. Sikkim, 24. xii. 1980, S.K. Saha & Party Coll.

Distribution : India : Sikkim, West Bengal (Siliguri) and Tripura.

Remarks : Key has not been provided for single species. This species can be recognised by the colour pattern given below. Pronotum black except the lateral margins below eyes which is yellowish; elytra and scutellum black, elytra with narrow brownish-yellow apical margin, each elytron with a transverse, wavy brownish yellow discal spot, close to the suture. It is a new record of this species from Sikkim.

Tribe 6. **Chilocorini**

Key to the Genera of Tribe Chilocorini

1. Anterior tibiae and the other two with a triangular tooth on outer margin at extremity of tarsal groove; body subhemispherical; pronotum almost emerginate towards the outer corners where it does not lie against the elytral margins; elytral margin feebly reflexed, epipleurae deeply incurved; antennae 8-segmented **Chilocorus** Leach
- Anterior tibiae without any such tooth as mentioned above but middle and posterior tibiae with tibial spurs; body shortly oval, moderately convex; pronotum lies for the most part against the elytral margin; elytral margin not reflexed; antennae 9-segmented **Brumus** Mulsant

Genus 8. **Brumus** Mulsant

1850. *Brumus* Mulsant, *Spec. Trim. Securipalp.*, p. 492.

1932. *Brumus* Mulsant, Korschefsky, *Coleopt. Cat.* 16 pars 120, p. 265

23. **Brumus suturalis** (Fabricius)

1798. *Coccinella suturalis* Fabricius, *Suppl. En: Syst.*, : 78. (Type-loc.-India).

1850. *Brumus suturalis* (Fab.) : Mulsant, *Ann. Soc. Agric. Lyon.* (2) 2 : 494

1972. *Brumus suturalis* (Fab.) : Kapur, *Rec. zool. Surv. India*, 66 (1-4) : 315

Material studied : 3 exs., Rangpo, E. Sikkim, 23.ii. 1979, S.K. Saha & Party Coll.; Phungla, E. Sikkim, 27.iv. 1983 and 1 ex., Martam, E. Sikkim, 28.iv. 1983, B.N.Das and Party Coll.

Distribution : India : Sikkim, Meghalaya, Tripura, West Bengal, Madhya Pradesh, Maharashtra, Karnataka and Goa. Also known from Nepal, Bhutan and Sri Lanka.

Remarks : It is a very widely distributed species and can be easily recognised by its shortly oval and moderately convex body with pronotum reddish brown; elytra testaceous, each elytron with a narrow black longitudinal stripe at middle and a black sutural border forming 3 black, narrow and almost parallel strips in total. Strips are free at both ends. This is a new record of this species from Sikkim.

Genus 9. *Chilocorus* Leach

1815. *Chilocorus* Leach, in Brewster, *Edinb. Encyclo.*, ix, 116

1932. *Chilocorus* Leach : Korschefsky, *Coleopt. Cat.*, 16 pars 120, p. 237

24. *Chilocorus braeti* Weise

1895. *Chilocorus braeti* Weise, *Ann. Soc. ent. Belg.*, 39 : 154 (Type-loc. -Kurseong, N. Bengal)

1963. *Chilocorus braeti* : Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* 14 (1) : 24

Material studied : No material was available from Sikkim for study.

Distribution : India : Sikkim, Meghalaya, Tripura and West Bengal.

Remarks : Key could not be provided. This species is a medium sized beetle with pronotum and elytra shining black.

25. *Chilocorus hauseri* Weise

1895. *Chilocorus hauseri* Weise, *Ann. Soc. ent. Belg.*, 39 : 135 (Type-loc. - Sikkim)

1963. *Chilocorus hauseri* : Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* 14 (1) : 24.

Material studied : No material was available for study.

Distribution : India : Sikkim. Also known from Burma and Tali, Yunan.

Remarks : No information about the diagnostic characters is available at present.

Subfamily IV. COCCIDULINAE

Key to the Tribes of Subfamily COCCIDULINAE

1. Antennae short, about a half as long as head capsule, eight segmented, weakly clubbed; Labrum broader than clypeus; mentum with a very narrow base; prosternal process strongly raised; junction between meso-and metasterna very narrow; tibiae angulate externally; tarsi true trimerous; eyes finely faceted **Noviini**
- Antennae longer, generally longer than head capsule, ten or eleven segmented, strongly clubbed; labrum narrower than clypeus; base of mentum not very narrow; prosternal process not raised; junction between meso-and metasterna moderate in its width; tibiae simple, not angulate externally; tarsi cryptotetramerous or true tetramerous; eyes generally coarsely faceted. 2
2. Tarsi true tetramerous, composed of four distinct segments, scarcely dilated apically, third segment not much shorter than the second; antennae ten-segmented; metendo sternite very short; abdomen composed of five visible segments **Lithophilini**
- Tarsi cryptotetramerous, composed of four segments but appear to be composed of three segments, the second segment dilated apically and the third segment very small, much shorter than the second; metendosternite moderate.. 3
3. Abdomen composed of six segments; compound eyes coarsely faceted..... **Coccidulini**

- Abdomen composed of five segments, compound eyes finely faceted
..... **Exoplectrini**

Tribe 7. Coccidulini

Genus 10. *Singhikalia* Kapur

1963. *Singhikalia* Kapur, *Bull. Br. Mus. (Nat. Hist) Ent.* 14 (1) : 16-17.

26. *Singhikalia ornata* Kapur

1963. *Singhikalia ornata* kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* 14 (1) : 17-20. (Type-loc. – Sikkim, Singhik)

Material studied : No material was available for study.

Distribution : India : Sikkim (Singhik).

Tribe 8. Exoplectrini

Genus 11. *Sumnius* Weise

1892. *Sumnius* Weise, *Ann. Soc. Ent. Belg.*, 36 : 29.
1931. *Sumnius* Korschefsky, *Coleopt. Cat.*, 16 : pars 118. p-94

27. *Sumnius cardoni* Weise

1892. *Sumnius cardoni* Weise, *Ann. Soc. Ent. Belg.* 36 : 30 (Type-loc. – India : Bengal)
1931. *Sumnius cardoni*. Korschefsky, *Coleopt. Cat.*, 16 pars 118. p. 94

Material studied : 1ex., Legship, W. Sikkim, alt. 520 m., 28.iv. 1969, A.G.K. Menon Coll.; 1 ex., Jorethang, S. Sikkim, 2.v. 1994, S.K. Saha & Party Coll.

Distribution : India : Sikkim, Bengal. Also known from S. China and Thailand.

Remarks : This species is first time recorded from Sikkim.

Tribe 9. Noviini

Genus 12. *Rodolia* Mulsant

1850. *Rodolia* Mulsant. *Spec. Trim. Securipalp.* P. 901-902

1931. *Rodolia*, Korschefsky, *Coleopt. Cat.*, 16 Pars 118, p. – 98

28. *Rodolia guerini* (Crotch)

1874. *Vadalia guerini* Crotch. A revision of the Coleopterous family Coccinellidae p. 282 (Type-loc.–Pondichery. India)

1931. *Rodolia guerini* (Crotch) : Korschefsky, *Coleopt. cat.*, 16 pars 118, p. 101

1949. *Rodolia guerini* (Crotch) : Kapur, *Bull. ent. Res.*, 39 : 535

Material studied : No material was available for study.

Distribution : India : Sikkim. Also known from Bhutan.

29. *Rodolia* sp.

Material studied : 2 exs., Rangpo, E. Sikkim, 23.ii. 1979, S.K. Saha & Party Coll.

Remarks : Smaller beetles, oblong oval in shape, body carmine red, each elytron with two transverse spots, anterior one at the base and the posterior one a little below the middle. It is a completely different species amongst the known Indian species and may be placed as new to science.

Subfamily V. COCCINELLINAE

Key to the Tribes of Subfamily COCCINELLINAE

1. Anterior margin of clypeus with an anterior projection on each side; antennae inserted very close to the eyes, antennal club compact, the pre-apical segment broader than long; mandibles always with a bifid tip, inner margin entire; maxillary galea conical; anterior margin of pronotum usually deeply emerginate and with angulate corners; body yellow to reddish testaceous with usually black markings on the pronotum and elytra; habit carnivorous
..... **Coccinellini**
- Anterior margin of clypeus truncate without any projection on each side; antennae inserted

infront a little away from the eyes, antennal club loosely segmented, the pre-apical segment longer than broad; mandibles bifid, often with multidenticulate tip, inner margin finely serrated; maxillary galea quadrate; anterior margin of pronotum weakly sinuate with rounded corners; body yellowish or light testaceous, Pronotum with a pair of black spots but elytra without any black markings; habit fungivorous

Psylloborini

Tribe 10. Coccinellini

Key to the Genera of Tribe Coccinellini

1. Elytral base much broader than pronotum, elytral epipleuron entire; body hemispherical, or short oval; dorsum strongly or moderately convex 2
- Elytral base a little broader than pronotum, elytral epipleuron not entire, ceasing before the apex; body oval; dorsum convex 11
2. Pronotum more or less deeply impressed along the lateral margin; lateral side of elytra broadly expanded externally and not marginate. Body size very large 3
- Pronotum not impressed along the lateral margin; lateral side of elytra marginate and not broadly expanded laterally; body size moderate to small 6
3. Anterior margin of clypeus distinctly roundedly emarginate, lateral margin of pronotum strongly rounded, widest at middle, weakly sinuous at the apices; prothoracic hypomeron impressed only at the anterior part; mesosternum slightly emarginate; femoral line incomplete with an oblique lateral part *Aiolocaria*
- Anterior margin of clypeus straight; lateral margin of pronotum almost straight, widest at base, femoral line incomplete 4
4. Basal corners of pronotum angulate, lateral margin almost straight; prosternal process with parallel carinae; claw with a tooth at base ..
..... *Callicaria*
- Basal corners of pronotum rounded, lateral margin sinuous at the apex; elytra margined; femoral line complete 5
5. Lateral side of pronotum strongly rounded; metasternum slightly and mesosternum deeply emarginate, elevated, strigosely punctate; eippleurae foveolate *Anisolemnia*
- Lateral side of pronotum almost straight; meta- and mesosternum as above; thoracic foveae evident; elytral epipleurae deeply concave; antennae not very long, terminal segment semicircular *Cyphocaria*
6. Prosternal process with a pair of subparallel carinae, converging and reaching to the middle; inner margin of the elytral epipleurae is reduced at about three-fourths; femoral line terminal, reaching the lateral margin *Leis*
- Prosternal process with a pair of parallel carinae, almost at the base 7
7. Antennae long : pronotum with an impressed line following the anterior margin, sometimes obsolete in the middle; the inner margin of the elytral epipleurae is narrowed at about four fifth *Ballia*
- Antennae short 8
8. The terminal segment of antennae divergent, antennae short, club three jointed, the terminal segment very large and obliquely placed, appearing securiform; mesosternum sinuate; femoral line v-shaped *Callineda*
- The terminal segment of antennae convergent apically, elytral epipleurae about one-sixth as broad as body width, smaller in size 9
9. The terminal segment of antennae pointed at apex, antennae short, nearly as long as or shorter than frons; lateral side of elytra not marginate *Menochilus*
- The terminal segment of antennae not pointed at apex 10
10. Thoracic foveae well marked; antennae short, club compact, subfusiform; elytral epipleuron not marked with fovea; prosternal carinae reaching almost to the anterior margin of the prosternal process *Oenopia*

- Thoracic fovea not marked; antennae long, slender, club loosely set, 9th and 11th segment generally longer than broad; elytral epipleuron with distinct fovea; prosternal carinae reaching almost half of the prosternal process.....

..... *Coelophora*

11. Body oblong oval, dorsum weakly convex; pronotum weakly or bisinuously truncated in front, widest at middle; antennae hardly longer than the half of the lateral margin of pronotum, club short, truncated, composed of transverse articles, femoral line regular, transverse, hardly extending beyond the two-third or three-fourth of the first abdominal line. Claws bifid.....

..... *Adonia*

- Body short oval or elongate oval, dorsum moderately to weakly convex

12

12. The terminal segment of antennae elongate oval, antennae rather thin and long, the 9th segment much larger than broad, the 10th longer than broad, club loosely set; lateral side of pronotum impressed, basal corner subangulate; body short oval.....

Calvia

- The terminal segment of antennae transverse with a truncated apex, body elongate oval ...

13

13. Prosternal process without a pair of carinae

14

- Prosternal process with a pair of carinae

15

14. Inner carina of elytral epipleuron ending before the third abdominal sternite; femoral line incomplete

Adalia

- Inner carina of elytral epipleuron ending before the apex; femoral line incomplete....

..... *Synharmonia*

15. Inner carina of elytral epipleuron ending before the fourth abdominal sternite; femoral line complete; prosternal process with a pair of carinae at the base

Lioadalia

- Inner carina of elytral epipleuron ending behind the fourth abdominal sternite; femoral line incomplete; prosternal carinae reaching a little

beyond the level of anterior margin of coxal cavity *Coccinella*

Genus 12. *Oenopia* Mulsant

1850. *Oenopia* Mulsant, *Spec. Trim. Securipalp.* p. 420

1932. *Oenopia* Mulsant : Korschefsky. *Coleopt. Cat.*, **16**, pars 120, p. 287

Key to the Species of the Genus *Oenopia* Muls.

1. Elytra testaceous yellow or yellowish brown
2

- Elytra black, each elytron with a sub-basal, obliquely oval and postmedian roundish flavus spot, lateral margin flavus with two flavus semicircular spots on it.....

..... *quadripunctata* Kapur

2. Each elytron bordered black only on the sutural margin

3

- Each elytron completely bordered black, on its lateral as well as sutural margin, sutural black margin thickened in the middle, each elytron furnished with a premedian large, irregularly rounded and a post median large irregularly oval black spots; pronotum black except the anterolateral two-third flavus.....

..... *kirbyi* Muls.

3. Sutural margin, much thickened near the base, often with one elongated black spot at the humeral callus and one irregularly rounded black spot at the posterior two thirds

..... *luteopustulata* Muls.

- Sutural margin dilated into a large round black spot just beyond the middle, and into a smaller one immediately before the apex, there are also two large black spots on each elytron, one quadrangular discoidal, just touching the callus the other rounded near the margin at posterior two-thirds

..... *sauzeti* Muls.

30. *Oenopia kirbyi* Mulsant

1850. *Oenopia kirbyi* Mulsant, *Spec. Trim. Securipulp.*: 425
(Type-loc. –Eastern India)

1963. *Oenopia kirbyi* Muls. : Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* 14 (1) : 26.

Material studied : 1ex., Rangli, 23.xii. 1975, G.K. Srivastav Coll., 1ex., Rangpo, 23. ii. 1979; 2 exs., Gangtok, 3-6. iii. 1979; 2exs., Rhenok, alt. 1130m., 9.iii. 1979, 1ex., Rumtek, 20.iv. 1994; 1ex., Dikchu, 21.iv. 1994; 1ex., Chungling 25.iv. 1994, all from East Sikkim, S.K. Saha & Party Coll. 1ex., Settikul Saramsha garden, E. Sikkim, 21.iv. 1983, B.N. Das and party Coll., 1ex., Terrace, 7.iii. 1989. Y. Chaturvedi Coll., 1ex., Pohyong, 28.iii. 1996 and 1ex., Tsongo Lake, 5.iv. 1996, E. Sikkim; 2 exs., Phodong, 1.iv. 1996; 1ex., Chungthang, 2.iv. 1996, N. Sikkim; 1ex., Jorthang, 10. iv. 1996, S. Sikkim, R.N. Tiwari & Party Coll.; 1 ex., Rangpo, E. Sikkim, 28. v. 1997, 8 exs., Namchi, S. Sikkim, 2-3. vi. 1997, S. Biswas & Party Coll.

Distribution : India : Sikkim, Meghalaya, and West Bengal. Also known from Bhutan and Burma.

Remarks : This species is recorded for the first time from Sikkim.

31. *Oenopia luteopustulata* Mulsant

1850. *Oenopia luteopustulata* Mulsant, *Spec. Trim. Securipalp.* P. 421. (Type-loc.-Assam)

1963. *Oenopia luteopustulata* Muls.: Kapur, *Bull. Br. (Nat. Hist.) Ent.* 14 (1) : 26

Material studied : 9 exs., Rangli, alt. 950m. 23.xii. 1975; 5 exs., Rangpo, alt. 400 m., 25.xii. 1975, G.K. Srivastava Coll; 1ex., Gangtok, alt. 1704 m., iv. 1976, A.R. Bhowmik Coll.; 1 ex., Rangpo, 23. ii. 1979, S.K. Saha & Party Coll.; 5 exs., Rumtek, 20.iv. 1983, B.N. Das & Party Coll.; all from E. Sikkim. 2exs., Geyzing, W. Sikkim, 4-10. iii. 1989, Y. Chaturvedi Coll.; 1ex., Singtam, W. Sikkim, 29.x. 1992, M.S. Shisodia Coll; 1ex., Singhik, 4.xi. 1992 and 1ex., Rangpo, E. Sikkim, 2.xi. 1992, A.K. Hazra & Party Coll.; 1ex., Sombaria, W. Sikkim, 19.ix. 1993, S.K. Chatterjee Coll.; 1ex., Gangtok, E. Sikkim, 24.ix. 1993, B.N. Das & Party Coll.; 1ex., Jorethang, S. Sikkim, 2.v. 1994 and 2 exs., Legship, W. Sikkim, 3.v. 1994, S.K. Saha & Party Coll.; 3

exs., Jorethang, S. Sikkim, 6-10.xi. 1994, G.C. Sen & Party Coll.; 3 exs., Pahyong, E. Sikkim, 28.iii. 1996; 3 exs., around 9 coffin, 31.iii. 1996 and 1 ex., Phodong, N. Sikkim, i.iv. 1996; R.N. Tiwari & Party Coll.; 5 exs., Namchi, S. Sikkim, 2.vi. 1997, S. Biswas & Party Coll.; and 1ex., Namchi, S. Sikkim, 29.iv. 1998, A.K. Hazra & Party Coll.; 1ex., Mangan, N. Sikkim, 11.iv. 1992, J.K. Prasad Coll.

Distribution : India : Sikkim, Meghalaya, Assam, Tripura, H.P. (Simla) and Kumaon Hills. Plains of U.P., West Bengal and Andaman Islands. Also known from Nepal, Bhutan, Burma, Tibet, and Thailand.

Remarks : This widely distributed species shows considerable variation in the elytral colour pattern. In the present study we found the varieties – *Pracuae* Weise, *nigromaculata* Mader and *thibetina* Mulsant.

32. *Oenopia quadripunctata* Kapur

1963. *Oenopia quadripunctata* Kapur, *Bull. Br. Mus. (Nat. Hist.) ent.* 14 (1) : 27-29 (Type-loc. Shillong)

1977. *Oenopia quadripunctata* Kapur : A.K. Ghosh, S. Biswas & A.R. Lahiri, *Bull. Meg. Sci. Soc.*, 2 : 14

Material studied : 2exs., Chungthang, N. Sikkim, 25.iv. 1994, S.K. Saha & Party Coll.; 1 ex., Tadong, E. Sikkim, 1.xi. 1994, G.C. Sen & Party Coll.; and 1 ex., Phodong, N. Sikkim, 1.iv. 1996 R.N. Tiwari & Party Coll.

Distribution : India : Sikkim, Meghalaya, Tripura and West Bengal. Also known from Bhutan and Burma.

33. *Oenopia sauzeti* Mulsant

1866. *Oenopia sauzeti* Mulsant, *Monogr. Coccinell.*, p. 281 (Type-loc.-India)

1963. *Oenopia sauzeti* Muls., Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* 14 (1) : 27

Material studied : 1exs., Gangtok, 17.xii. 1975, 4 exs., Rangli, E. Sikkim, 20-22.xii. 1975, G.K. Srivastava Coll., 4 exs., Singtam, W. Sikkim, 26.iv. 1976, A.R. Bhaumik; Coll. 1ex., Gangtok, 7.iii. 1979; 2exs., Rhenok, 11.iii. 1979, 2exs. Rongli,

12-13.iii. 1979, all from E. Sikkim, S.K. Saha & Party Coll.; 4exs, Bhusur, 22.iv. 1983 and 3exs, Phungla, E. Sikkim, 27.iv. 1983, B.N. Das & Party Coll.; 1ex., Mangan, N. Sikkim, 10.iv. 1992, A.R. Lahiri Coll.; 1ex., Singhik, E. Sikkim, 4.xi. 1992, A.K. Hazra Coll.; 3exs, Chungthang, N. Sikkim, 23-25.iv. 1994; 2exs., Tarpu, 27.iv. 1994; 1ex., legship, W. Sikkim, 2.v. 1994, S.K. Saha & Party Coll. 2 exs., Tadong, E. Sikkim, 15.iii. 1994, L.K. Ghosh Coll.; and 2exs., Tadong, 31.x. -1.xi. 1994, G.C. Sen Coll.; 1 ex; Pahyong, E. Sikkim, 28.iii. 1996; 3 exs., around 9 coffins 31.iii. 1996; 1ex., Mangan and 1ex., Phodong, N. Sikkim, 1.iv. 1996, R.N. Tiwari & Party Coll.; 5 exs., Namchi, S. Sikkim, 2-3.vi. 1997, S. Biswas Coll.

Distribution : India : Sikkim, Tripura, West Bengal, Kumaon Hill, (U.P.), Murree and Dalhousie Hills (Punjab). Also known from Nepal and Bhutan.

Genus 13. *Coelophora* Mulsant

1850. *Coelophora* Mulsant, *Spec. Trim. Securipalp.*, pp. 374, 390.

1932. *Coelophora* Mulsant : Korschefsky, *Colept. Cat.*, 16 : pars 120, p. 290

Key to the Species of the Genus *Coelophora* Muls.

1. Pronotum and elytra yellowish brown without any marking *unicolor* (Fab.)
- Pronotum and elytra yellowish brown with marking. 2
2. Pronotum yellowish with two median, broadly oval black spots near the base and two small round black spots, one at each postero-lateral corner; elytra yellowish brown, each elytron with six large, round black spots, of which two semicircular and sutural, common to both the elytron *bissellata* Muls.
- Pronotum black 3
3. Pronotum black except the lateral margins which are flavus, almost quadrangular and extends almost near the base; elytra yellowish brown, each elytron completely margined with black border and divided into two anterior and one posterior compartments by black markings *sexareata* Muls.
- Pronotum mostly shining black with a green lustre, except along the anterior and lateral margins which are translucent, anterior margin of the black part of pronotum with two deep and oblique notches near each anterior angle; elytra testaceous except for a common sutural black stripe and an ill defined, rather piceous, submarginal vitta running close to lateral margin, tapering at either end *nitidicollis* Kapur

34. *Coelophora bissellata* Mulsant

1850. *Coelophora bissellata* Mulsant, *Spec. Trim. Securipalp.* p. 400 (Type-loc.: -Bengal)

1932. *Coelophora bissellata* Muls., Korschefsky, *Coleopt. Cat.*, 16 : pars 120, p. 291

Material studied : 9 exs., Rongli, alt., 830m., 20-21.xii. 1975; 8exs., Rhenok, alt., 1000 m. 22.xii. 1975; 2exs., Rangpo, alt. 400 m. 4. 2. 1976, all from E. Sikkim, G.K. Srivastava & Party Coll.; 2exs., Rangpo, 23-24.ii. 1979; 1ex., Gangtok, 2.iii. 1979; 3exs., Rangli, 12.iii. 1979; 1ex., Bardang, 24.xii. 1980, all from E. Sikkim, S.K. Saha & Party Coll.; 3exs., Rumtek, 20.iv. 1983, and 1ex., Phungla, E. Sikkim, 27.iv. 1983, B.N. Das & Party Coll.; 1ex., Geizing, W. Sikkim, 4.iii. 1989, Y. Chaturvedi Coll.; 1ex., Phodong, N. Sikkim, 10.xi. 1993, S. Chatterjee Coll.; 2 exs., Rumtek, E. Sikkim, 11.ix. 1993, S.K. Saha Coll.; 2exs., Settippool, 13.ix. 1993; 1ex., Rangpo, E. Sikkim 23.ix. 1993 and 1ex; Sombaria, W. Sikkim 19.ix. 1993, S.K. Chatterjee Coll.; 1ex., Dam thang, 18.xi. 1993, S.K. Chatterjee Coll.; 2 exs., Singtam, W. Sikkim, 30.ix. 1993, B.N. Das Coll.; 9 exs., Tarku, 27.iv. 1994, S.K. Saha Coll.; 1ex., Ranipool, E. Sikkim, 21.v. 1994 and 1ex. Naya Bazar, W. Sikkim, B.C. Das & Party Coll.; 1ex., Namchi Bazar, S. Sikkim, 19.iv. 1994, L.K. Ghosh Coll.; 1ex., Tadong, E. Sikkim, 31.x. 1994 and 2 exs., Jorethang, S. Sikkim, 1-10.xi. 1994, G.C. Sen & Party Coll.; 2exs., Ranipool, 25.v. 1997; 2 exs., Rangpo, E. Sikkim, 28.v. 1997 and 2exs., Namchi,

S. Sikkim 1-2.vi. 1997, S. Biswas & Party Coll.

Distribution : India : Sikkim, Meghalaya, Tripura, Assam, West Bengal, U.P. (Kumaon Hills) and S. India. Also known from Bhutan, Nepal, Indonesia, Malacca, Philippines and New Guinea.

Remarks : Spot-patterns on elytra varies, sometimes without any spots on elytra. Widely distributed species.

35. *Coelophora nitidicollis* Kapur

1963. *Coelophora nitidicollis* Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* **14** (1) : 29-30. (Type-loc.-Sikkim)

Material studied : No material was available for study.

Distribution : India : Sikkim (Tsuntang, alt. 7000 ft.)

36. *Coelophora sexareata* Mulsant

1853. *Coelophora sexareata* Mulsant, *Ann. Soc. Linn. Lyon.* **1** : 181 (Type-loc.-N. India)

1963. *Coelophora sexareata* Mulsant : Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* **14** (1) : 29.

Material studied : 7 exs., Ranipool, 18. xii. 1975; 57 exs., Rangli, 20, 23.xii. 1975; 23exs., Rhenok, 22.xii. 1975; 9exs., Rangpo, 25.xii. 1975, all from E. Sikkim and lex., Naya Bazar, W. Sikkim, 5.i. 1976, G.K. Srivastava & Party Coll.; 3exs., Rangpo, E. Sikkim, 19.iv. 1976 and 23.ii. 1979, A.R. Bhaumik Coll. 4exs., Rangpo, 23-24.ii. 1979; 3exs., Gangtok, 3.iii. 1979; 11exs., Rhenok, 9-11. iii. 1979; 9 exs., Rangli, 12-13.iii. 1979, all from E. Sikkim, S.K. Saha & Party Coll.; lex., Pakyong, 19.iv. 1983; 23 exs., Rumtek, 20. iv. 1983; 2 exs., Bhusur, 22.iv. 1983, all from E. Sikkim and lex., Namchi. S. Sikkim, 26.iv. 1983, B.N.Das & Party Coll.; 4 exs., Geyzing, W. Sikkim, 5.iii. 1989 and 4.ix. 1989, lex., Dentam, 7.iii. 1989, Y. Chaturvedi Coll.; lex., Singtam, W. Sikkim, 29.x. 1992, M.S. Shishodia Coll.; lex., Namchi., S. Sikkim, 10.ix. 1992. A.K. Hazra Coll.; 3ex., Tarku, S. Sikkim and lex., Detam, 27-29.iv. 1994, S.K. Saha Coll.; 4exs., Damthang, S. Sikkim, 18.iii. 1994 lex., Tarku, S. Sikkim, 21.iii. 1994, and lex., Rangpo, E. Sikkim, 22.iii. 1994, L.K. Ghosh Coll.;

lex., Tadong, E. Sikkim, 31.cx. 1994 and lex., Jorethang, S. Sikkim, 10.xi. 1994, G.C. Sen Coll.; lex., Rumtek, E. Sikkim, 17.v. 1995, P.H. Roy Coll.; lex., around 9 Coffins, 31.iii. 1996; 3exs., Legship, W. Sikkim, 7.iv. 1996 and lex., Namchi, S. Sikkim, 11.iv. 1996, R.N. Tiwari & Party Coll.; 3 exs., Namchi, S. Sikkim, 2-3.vi. 1997, S. Biwas & Party Coll.

Distribution : India : Sikkim, Meghalaya, Assam, Tripura, West Bengal. Also known from Nepal, Bhutan, Burma and China.

37. *Coelophora unicolor* (Fab.)

1792. *Coccinella unicolor* Fabricius, *Ent. Syst.*, **1**, 267 (Type-loc. - India)

1932. *Coelophora unicolor* (Fab.) : Korschefsky, *Coleopt. Cat.*, **16**, pars 120, p. 297.

Material studied : lex., Rangpo, E. Sikkim, 15.iv. 1994, P.H. Roy Coll.; and 3exs., Jorethang, S. Sikkim, 2.v. 1994. S.K.Saha & S.K. Ghosh Coll.

Distribution : India : Sikkim, Pondichery, Chota Nagpur (Bihar), Andaman Islands and Himalayan Border. Also known from Thailand.

Remarks : This is the first record of this species from Sikkim.

Genus 14. *Adonia* Mulsant

1846. *Adonia* Mulsant, *Securipalp*, p. 39

1932. *Adonia* Muls. : Korschefsky, *Coleopt. Cat.*, **16**, pars 120, p. 345

38. *Adonia variegata* (Goeze)

1777. *Coccinella variegata* Goeze, *Entomol. Beytrage* **1** : 246 (Type-loc.-Europe)

1963. *Adonia variegata* (Goeze) : Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* **14** (1) : 31-32

Material studied : lex., Ruvang, S. Sikkim, 2.v. 1998 and lex., upper Pelling, W. Sikkim, 6.v. 1998, A.K. Hazra & Party Coll.

Distribution : India : Sikkim, West Bengal (Darjeeling), Kashmir and U.P. (Mussoorie Hills). Also known from Nepal, Tibet, China, and Middle

Africa.

Remarks : This species is recorded for the first time from Sikkim.

Genus 15. *Anisolemnia* Crotch

1874. *Anisolemnia* Crotch, *Revis. Cocc.*, p. 146

1932. *Anisolemnia* Crotch : Korschefsky, *Coleopt. Cat.*, **16**, pars – 120, p. 269.

39. *Anisolemnia dilatata* Fabricius

1775. *Anisolemnia dilatata* Fabricius, *Syst. Ent.*, p. 82 (Type-loc. –Indochina)

1932. *Anisolemnia dilatata* Fab.: Korschefsky, *Coleopt. Cat.*, **16**, pars 120, p. 269.

Material studied : 1ex., Legship, W. Sikkim, 8.x. 1969, B.K. Tikadar Coll.; 1ex., Dickling, N. Sikkim, Hooker's Trail Expedition, 20.iv. 1994, S. Chatterjee Coll.

Distribution : India : Sikkim, Meghalaya. Also known from Nepal, Manchuria, China, Indonesia.

Remarks : Recorded for the first time from Sikkim.

Genus 16. *Aiolocaria* Crotch

1874. *Aiolocaria* Crotch, *Revis. Cocc.*, p. 178

1932. *Aiolocaria* Crotch : Korschefsky, *Coleopt. Cat.* **16**, pars 120, p. 277.

**Key to the Species of the Genus
Aiolocaria Crotch**

1. Pronotum light yellow with a black median strip extending from base to the anterior margin, broadest at the base, anterolateral margin light yellow; elytra brown, each elytron with a humeral black, elongated spot, one small black discal spot and the other marginal strip like marking in the same level as the discal one; sutural margin black only upto the middle of the body, thickened a little below the scutellum *hexaspilota* (Hope)
- Pronotum light yellow with two black, conjugated spots at the base, leaving anterior

and lateral margin yellow; elytra light yellow with the external margins brownish; each elytron with six large black spots, of which two sutural spots are common to both the elytron, apical spot is conjugated with its close spot on the postero-lateral margin
..... *dodecaspilota* (Hope)

40. *Aiolocaria dodecaspilota* (Hope)

1831. *Coccinella 12-spilota* Hope, in Gray, *Zoological Miscellany*, p. 31. (Type-loc.–Nepal)

1963. *Aiolocaria dodecaspilota* (Hope) : Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* **14** (1) : 26

Material studied : No material was available for study.

Distribution : India : Sikkim. Also known from Nepal, Burma, Bhutan and Thailand.

41. *Aiolocaria hexaspilota* (Hope)

1831. *Coccinella 6-spilota* Hope, in Gray, *Zoological Miscellany*, p. 31 (Type-loc.-Nepal).

1963. *Aiolocaria hexaspilota* (Hope) : Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* **14** (1) : 25.

Material studied : 1ex., Lachen, 18.v. 1959; 1ex., Tema, alt. 2706 m, 12.vi. 1959; 1ex., Manshitang, alt. 1076 m., 26.vii. 1959 and 1ex., Chatang, alt. 2485m., 27.vii. 1959, all from N. Sikkim, A.G.K. Menon Coll.; 1ex., Lachen, 28.vii. 1989 and 1ex., Dickling, N. Sikkim, 21.vi. 1994, S. Chatterjee Coll.; 1ex., Chungthang, N. Sikkim, 25.vi. 1994, S. Saha Coll.; 2exs, Phodong, N. Sikkim, i.vi. 1996, R.N. Tiwari coll.

Distribution : India : Sikkim, Himalaya, Kashmir, Northern India. Also known from Burma and Nepal.

Genus 17. *Leis* Mulsant

1850. *Leis* Mulsant, *Spec. Trim. Securipalp.* p. 241

1932. *Leis* Mulsant; Korschefsky, *Coleopt. Cat.*, **16** : pars 120, p. 273

42. *Leis dimidiata* (Fabricius)

1781. *Coccinella dimidata* Fabricius, *Species Insectorum*,
p. 94 (Type-loc. -India)

1963. *Leis dimidiata* (Fab.) Kapur, *Bull. Br. Mus.*
(*Nat. Hist.*) *Ent.*, 14 (1) : 25

Material studied : 1ex., Rangpo, E. Sikkim,
13.iv. 1994, P.H. Roy Coll.; Tarpu, S. Sikkim, 27.iv.
1994, S.K. Saha Coll.; 1ex., Ranipool, 25.v. 1997
and 1ex., Rangpo, 28.vi. 1997, both from E. Sikkim,
S. Biswas & Party Coll.

Distribution : India : Sikkim, West Bengal
(Darjeeling), Manipur, Punjab, Kashmir. Also
known from Nepal, Bhutan, China and Japan.

Genus 18. *Calvia* Mulsant

1850. *Calvia* Mulsant, *Spec. Trim. Securipalp*, p-140

1932. *Calvia* Muls.: Korschefsky, *Coleopt. Cat.*, 16 : pars
120. p-520

**Key to the Species of the Genus *Calvia*
Muls.**

1. Pronotum uniformly coloured. black or
testaceous 2
- Pronotum not uniformly coloured, with marking
or black spots 3
2. Pronotum black, except the broad, lateral
testaceous area on either side and relatively
narrower, testaceous to translucent border along
with anterior margin; in the middle of each
testaceous area is a straw yellow, suboval spot;
scutellum black; elytra black with moderately
wide testaceous external border, each elytron
with six roundish, straw-yellow spots and a
common spot near the apex *shiva* Kapur
- Pronotum testaceous, with three, rather ill
defined longitudinal, straw-yellow vittae, one
in the centre and other two on each side;
scutellum straw-yellow; elytra testaceous, each
elytron with three, straw-yellow rather narrow
vittae of uneven breadth, joined along the base
and at the external apical area of the elytron
..... *trilochana* Kapur

3. Pronotum marked with a 'M' shaped spot or
marking 5
- Pronotum marked with two black spots 4
4. Pronotum straw-yellow with a pair of large,
quadrate, black spots on the base; scutellum
straw-yellow; elytra straw-yellow except a
narrow, translucent, testaceous border along
the external margin, each elytron with six large
black spots of which two suturals are common
to each elytron *pasupati* Kapur
- Pronotum brown with two subrounded black
spots; scutellum brown; elytra brown, each
elytron with six comparatively smaller black
spots of which two spots on the suture are
common to each elytron *pinaki* Kapur
5. Pronotum translucent with broad, rather 'M'
shaped orange testaceous spot in the middle
with three additional straw-yellow spots, the
central one is oval and smallest, the other two
elongate and touching the basal and anterior
margins but not the lateral margins; scutellum
straw-yellow; elytra orange-testaceous except
the testaceous and translucent external borders;
each elytron with five roundish to shortly oval,
strawyellow testaceous spots *durgae* Kapur
- Pronotum light green to light brown in colour,
marked with an irregular 'M' in brownish red
colour; scutellum greenish ochreous; elytra
greenish ochreous tinged with red along the
suture, each elytron marked with three very
small black dots *sykesi* (Crotch)

43. *Calvia durgae* Kapur

1963. *Calvia durgae* Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.*
14 (1) : 42 (Type-loc.-Sikkim, Singhik)

Material studied : No material was available
for study.

Distribution : India : Sikkim.

44. *Calvia pasupati* Kapur

1963. *Calvia pasupati* Kapur, *Bull. Br. Mus. (Nat. Hist.)*
Ent. 14 (1) : 45-46. (Type-loc.-Sikkim, Singhik)

Material studied : No material was available for study.

Distribution : India : Sikkim.

45. *Calvia pinaki* Kapur

1963. *Calvia pinaki* Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.*, **14** (1) : 43-45. (Type-loc. Sikkim, Singhik)

Material studied : No material was available for study.

Distribution : India : Sikkim.

46. *Calvia shiva* Kapur

1963. *Calvia shiva* Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* **14** (1) : 40-41, (Type-loc.-Sikkim, Singhik)

Material studied : No material was available for study.

Distribution : India : Sikkim.

47. *Calvia sykesi* (Crotch)

1874. *Anisocalvia sykesi* Crotch, *Revis. Cocc.* P.-146.

1963. *Calvia sykesi* (Crotch) : Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* **14** (1) : 39-40

Material studied : 1ex., Rongli, E. Sikkim, alt. 830 m. 20.xii. 1975, G.K. Srivastava Coll.

Distribution : India : Sikkim, Meghalaya.

48. *Calvia trilochana* Kapur

1963. *Calvia trilochana* Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* **14** (1) : 42-43. (Type-loc.-Sikkim, Singhik)

Material studied : No material was available for study.

Distribution : India : Sikkim.

Genus 19. *Adalia* Mulsant

1850. *Adalia* Mulsant, *Spec. Trim. Securipalp.*, p. 36, 49.

1932. *Adalia* Muls. : Korschefsky, *Coleopt. Cat.*, **16**, pars 120, p. 384.

49. *Adalia tetraspilota* (Hope)

1831. *Coccinella tetraspilota* Hope, in Gray, *Zoological Miscellany*, : **31**. (Type-loc.-Nepal.)

1963. *Adalia tetraspilota* (Hope) : Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* **14** (1) : 32.

Material studied : No material was available for study.

Distribution : India : Sikkim and Kashmir. Also known from Nepal, Turkistan, Afghanistan and Baluchistan (Pakistan).

Genus 20. *Lioadalia* Crotch

1874. *Lioadalia* Crotch, *Revis. Cocc.*, p. 103

1963. *Lioadalia* Crotch : Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* **14** (1) : 32-33.

50. *Lioadalia luteopicta* (Mulsant)

1866. *Adalia luteopicta* Mulsant, *Mem. Acad. Lyon.*, **15** : 45 (Type-loc.-E. Indies)

1963. *Lioadalia luteopicta* (Muls.) : Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* **14** (1) : 32-33.

Material studied : 1ex., Hi, W. Sikkim, 3.iv. 1959; 2exs., Namnasu, N. Sikkim, alt. 3661m, 12.v. 1959; 25exs., Lachen, N. Sikkim, alt. 2706m, 14-28.v. 1959; 10exs., Thombyak, alt. 3879 m, 30-31.v. 1959; 7exs., Lachen, 8-12.vi. 1959; 6exs., Thombu, alt. 3136m, 14.vi. 1959. 2exs., Yanthang, 15-16.vi. 1959; 2exs., Lachen, 2-6.vii. 1959; 12exs., Dambang, alt. 2985m, 10-11.vii. 1959; 16 exs., Namnasa, alt. 3661m., 12.vii. 1959, all from North Sikkim. A.G.K. Menon Coll.; 1ex., Lachung, N. Sikkim, 22.vi. 1992, A.R. Lahiri Coll.; 4exs., Thangu, 13-19.vii. 1989 and 2exs, Lachen, N. Sikkim, 28.vii. 1989, 1ex., Gangtok, E. Sikkim, 10.v. 1994, S. Chatterjee Coll.

Distribution : India : Sikkim, Northern U.P. Dehra Dun. and Eastern India. Also known from Nepal, Bhutan, Tibet and China.

Remarks : This is the first published record of this species from Sikkim.

Genus 21. *Callineda* Crotch

1874. *Callineda* Crotch, *Revis. Cocc.*, p. 161

1932. *Callineda* Crotch : Korschefsky, *Coleopt. Cat.*, **16**, pars 120, p. 282

51. *Callineda sedecimnotata* Fabricius

1801. *Callineda sedecimnotata* Fab., *Syst. Eleuth.*, 1, p. 370. (Type-loc. – Philippines)

1932. *Callineda sedecimnotata* Fab., Korschefsky, *Coleopt. Cat.*, 16, pars 120, p. 282

Material studied : 1ex., Talaymoo, N. Sikkim, alt. 342., 3.vi. 1959, A.G.K. Menon Coll.; 4exs., Namchi, S. Sikkim, 1-2vi. 1997, S. Biswas Coll.

Distribution : India : Sikkim, W. Bengal, (Darjeeling). Also known from Philippines, Indonesia, Malacca, Celebes and Ceram.

Remarks : This is a new record of this species from Sikkim

Genus 22. *Synharmonia* Ganglbauer

1899. *Synharmonia* Ganglbauer, *Kaf. Mitteleur.*, 3 : 994

1932. *Coccinella (synharmonia)* : Korschefsky, *Coleopt. Cat.*, Pars 120, p. 440.

1963. *Synharmonia* Gangl.: Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* 14 (1) : 33

52. *Synharmonia signatella* (Mulsant)

1866. *Harmonia signatella* Mulsant, *Mem. Acad. Lyon.*, 15: 58 (Type-loc. – North India)

1931. *Synharmonia signatella* (Muls.) : Mader, *Z. Ver. Natbeob.*, Wien, *Suppl.* 6 : 199.

1963. *Synharmonia signatella* (Muls.) : Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.*, 14 (1) : 33

Material studied : 1ex., Chufunfun, N. Sikkim, alt. 1667m, 24.iv. 1959, A.G. K. Menon Coll.

Distribution : India : Sikkim, West Bengal, (Darjeeling), Manipur. Also known from Burma, Bhutan and Japan.

Genus 23. *Coccinella* Linnaeus

1758. *Coccinella* Linnaeus, *Syst. Nat.* ed. 10 : 364

1965. *Coccinella* Linn. : Kamiya, *Mem. Fac. Lib. Art.*, Fukui Univ., *Ser. ii. Nat. Sci.*, No. 15, p. 35

**Key to the Species of the Genus
Coccinella Linn.**

1. Elytra yellowish brown, each elytron with three small oval black spots and a common pear

shaped scutellar black spot, totalling to seven spots, in some examples the elytral spots are enlarged and confluent; pronotum black except the anterior corners which are flavus and quadrangular..... *septempunctata* Linn.

- Elytra testaceous yellow, each elytron with a triangular black marking on the sub humeral area, with a wavy, black, postmedian band confluent with the black sutural margin, a subquadrate black spot at three – fourth of the external margin, further two common spots, one immediately behind the scutellum and the other before the apex, present on the suture *transversalis* Fab.

53. *Coccinella septempunctata* Linnaeus

1758. *Coccinella 7-punctata* Linnaeus, *Syst. Nat.*, (ed. x), (Type-loc. – Europe)

1977. *Coccinella septempunctata* Linn. : A.K. Ghosh, S. Biswas & A. R. Lahiri, *Bull. Meg. Sci. Soc.*, 2 : 12

Material studied : 3 exs., Rangli, 20-21. xii. 1975; 7exs., Rhenok, 22.xii. 1975; 3 exs., Rangli, 23.xii. 1975; 2 exs., Rangpo, 25-26.xii. 1975., all from E. Sikkim and 3exs., Naya Bazar, W. Sikkim 4-5.i. 1976, G.K. Srivastava Coll.; 1ex., Rangpo, 19.iv. 1976., 3exs., Gangtok, E. Sikkim, 24.iv. 1976; 7exs., Phensung, W. Sikkim, 25.iv. 1976; 1ex., Singtam, W. Sikkim, 26.iv. 1976, 2 exs, Pakyong, 27.iv. 1976 and 3exs, Rangpo, E. Sikkim, 23.xi. 1979, A. R. Bhaumik Coll.; 2 ex., Rangpo, 24.ii. 1979; 4 exs., Gangtok, 3.iii. 1979; 2exs., Rhenok, 10-11.iii. 1979; 4 exs., Rangli, 13.iii. 1979. all from E. Sikkim, S.K. Saha & Party Coll.; 1ex., Duga, 5.vii. 1979 and 1ex., Rangy, 12.vii. 1979, M. Prasad Coll.; 26exs., Gangtok, 14.iv. 1983; 23exs., Settipool, 21.iv. 1983; 18 exs., Bhusur, 22. iv. 1983, all from E. Sikkim and 1ex., Namchi, 26.iv. 1983; 1ex., Jorethang, S. Sikkim, 29.iv. 1983 and 3exs., Singtam, W. Sikkim, 30.ix. 1993, B.N. Das & Party Coll.; 44exs., Geyzing, W. Sikkim, 3-4.iii. 1989, Y. Chaturvedi Coll., 12exs., Yangan 10-11.iv. 1992, A.R. Lahiri & J.K. Prasad Coll.; 1ex., Rongnam, 12.iv. 1992, R.S. Mirdha Coll.; 9 exs, Chungthang, 13-14.iv. 1992, A.R. Lahiri & J.K. Prasad Coll.; 54 exs., Lachung. 14-22.iv. 1992, A.R. Lahiri, J.K. Prasad and R.S. Mridha

& S.R. Banerjee Coll.; 6 exs., Lachen, 24-25.iv. 1992, A.R. Lahiri Coll.; all from N. Sikkim Dist., 1ex., Singtam, W. Sikkim, 29.x. 1992, 1ex., Geyzing, W. Sikkim, 7.xi. 1992; 1 ex., Melli, S. Sikkim, 9.xi. 1992, M.S. Shisodia Coll.; 3exs., Lachen, N. Sikkim, 27-28.vii. 1989, S. Chatterjee Coll.; 3exs., Coop Field, 4exs., Tadong, 18-15.iii. 1994; 2exs., Namli, 3exs., Maragaon, 11-13.iii. 1994; 2 exs., Rangpo, 23.iii. 1994, all from E. Sikkim; 13exs, Damthang, 18.iii. 1994; 2exs., Namchi Bazar, 19.iii. 1994; 9exs., Tarku 21.iii. 1994, all from S. Sikkim, L.K. Ghosh & Party Coll.; 1ex., Pandam, E. Sikkim, 5.x. 1993, B.N. Das Coll.; 1ex; Rangpo, E. Sikkim, 13.iv. 1994, P. H. Roy Coll.; 1ex., Tadong, E. Sikkim, 1.xi. 1994 and 2exs., Jorethang, S. Sikkim, 10. xi. 1994. G.C. Sen Coll.; 21 exs., Geyzing, W. Sikkim, 7.iv. 1995, A.T. Biswas Coll.; 2exs., Detam and Chungthang, N. Sikkim, 21-25.iv. 1994, S. Saha Coll.; 3exs, Rumtek, E. Sikkim, 21-25.iv. 1994, S. Saha Coll.; 3exs, Rumtek, E. Sikkim, 19. iii. 1996; 1 ex., 9 Coffins, 31.iii. 1996; 2exs., Legship, 7.iv. 1996 and exs., Pelling. W. Sikkim, 8.iv. 1996, R.N. Tiwari & Party Coll.; 2 exs., Ranipool, 25.v. 1997, 2exs., Rangpo, 28.v. 1997, all from E. Sikkim and 6 exs., Namchi, S. Sikkim, 2. vi. 1997; S. Biswas Coll.; 2exs., Namchi, 30.iv. 1998 and Ravangla, 2.v. 1998, from S. Sikkim and 3exs., upper Pelling, 6.v. 1998 and Geyzing, 8.v. 1998, A.K. Hazra Coll.

Distribution : India : Sikkim, Meghalaya, Manipur, Tripura, and West Bengal. Also known from Nepal, Bhutan and Japan.

Remarks : This species is recorded for the first time from Sikkim.

54. *Coccinella transversalis* Fabricius

1781. *Coccinella transversalia* Fabricius, *Spec. Ins.*, P. 97 (Type-loc.-Coromandel, S. India)

1980. *Coccinella transversalis* Fab.: Chunram & Sasaji, *Oriental Insects*, 14 (4) : 485

Material studied : 1ex., Naya Bazar, W. Sikkim, 4.i. 1976, G.K. Srivastava Coll.; 1ex.,

Rangpo, 13.ix. 1978, A.N.T. Joseph Coll.; 1ex, Rangpo, 24.ii. 1979, S.K. Saha & Party Coll.; 2exs., Rangpo, 23-29.xi. 1979. A.R. Bhaumik Coll.; 1ex., Rangpo, 22.xii. 1980, S.K. Saha Coll.; all from E. Sikkim. 1ex., Gangtok, 17.iv, 1989, 1ex., Phungla, 27.iv. 1983 ; 2exs., Bhusur, 28.iv. 1983 and 1ex., 5.x. 1993 and 1ex., Pandam, 5.x. 1993, all from E. Sikkim and 1ex., Namchi, 26.iv. 1983 and 1ex., Jorethan, S. Sikkim, 29.iv. 1983, B.N. Das & Party Coll.; 1ex., Geyzing, W. Sikkim, 10.iii. 1989, Y. Chaturvedi Coll.; 2exs., Tadong, E. Sikkim, 10.iii. 1984 and 1 ex., Tarku, S. Sikkim, 21.iii. 1994, L.K. Ghosh & Party Coll.; 1ex., Naya Bazar, W. Sikkim, 3.vi. 1994, B.C. Das & Party Coll.; 4exs., Jorethang, S. Sikkim, 6-7.xi. 1994, G.C. Sen & Party Coll.; 1ex., Ranipool, E. Sikkim, 25.v. 1997 and 1ex., Namchi, S. Sikkim, 2.vi. 1997, S. Biswas Coll.; 1ex., Hills, W. Sikkim, 17.vi. 1997, P.H. Roy & Party Coll.

Distribution : India : Sikkim, Meghalaya, Tripura, West Bengal, Kerala, S. India, Goa and Andaman Islands. Also known from South East Asia, Thailand, Japan and Australia.

Remarks : Very widely distributed species, generally found in plains. First time recorded from Sikkim.

Genus 24. *Menochilus* Timberlake

1943. *Menochilus* Timberlake, *Hawaii, Plant Rec.* 47 (1) : 40

1965. *Menochilus* Timb. : Kamiya, *Mem. Fac. Lib. Arts.*, Fukui Univ., ser. ii. Nat. Sci. No. 15. p. 61

55. *Menochilus sexmaculatus* (Fabricius)

1781. *Coccinella sexmaculata* Fabricius, *Spec. Ins.*, P. 96 (Type-loc. -East India)

1943. *Menochilus sexmaculatus* (Fab.) : Timberlake, *Bull. Hawaiian Sug. Plrs. Ass. Exp. St.*, (Ent. Series) 47 (22) : 40-41.

Material studied : 1ex., Bhusur, E. Sikkim, 22.iv.1983, B.N. Das Coll.; 1ex; Tarku, 27.iv. 1994, S.K. Saha Coll.; and 1 ex., Jorethang, 6.xi. 1994, G.C. Sen Coll.; both from S. Sikkim, 1ex., Tikjuk, 8.v.1995, P.H. Roy Coll.

Distribution : India : Sikkim, Meghalaya, Tripura, West Bengal and Andaman Islands. Also known from Nepal, Indonesia, Philippines, Thailand, Celebes, New Guinea and Japan.

Remarks : This is a new record of this species from Sikkim.

Genus 25. *Ballia* Mulsant

1850. *Ballia* Mulsant, *Spec. Trim. Securipalp.* p. 1042

1932. *Ballia* Muls.: Korschefsky, *Coleopt. Cat.*, 16, pars 120. p. 278

Key to the Species of the Genus *Ballia* Mulsant

1. Elytra light ochreous without any black spots 2
 - Elytra yellowish ochreous with black spots or markings 3
2. Pronotum light ochreous, moderate in size, without any sorts of marking *Ballia* sp.
 - Pronotum yellowish brown with the sides ochreous; elytra with ten yellowish brown spots arranged as follows – two basal, one scutellar, three medial, three transverse and one sutural at the posterior two-third and one apical. The scutellar and the sutural spots are common to both the elytron; scutellum dark brown *gustavi* Muls.
3. Pronotum yellowish, without any black spots or marking; each elytron generally with three, sometimes with four small black spots in a manner – one at the humeral callus, two a little before the transverse median line and one at the posterior two-third; scutellum dark brown *eucharis* Muls.
 - Pronotum yellowish ochreous with two converging, black vittae on either side of the median line; each elytron marked with ten large black spots, arranged as in *B. gustavi* Muls *zephyrinae* Muls.

56. *Ballia eucharis* Mulsant

1853. *Ballia eucharis* Mulsant, *Opusc. Ent.*, 3: 39 (Type-loc.–India)

1977. *Ballia eucharis* Muls.: A.K. Ghosh, S. Biswas & A.R. Lahiri, *Bull. Meg. Sci. Soc.* 2: 13.

Material studied : 1 ex., Namchi, S. Sikkim, 3. vi. 1997, S. Biswas and Party Coll.

Distribution : India : Sikkim, Meghalaya, Also known from Bhutan and South China.

Remarks : Recorded for the first time from Sikkim.

57. *Ballia gustavi* Mulsant

1853. *Ballia guastavi* Mulsant, *Ann. Soc. Linn. Lyon.*, 1 : 190 (Type-loc.–North India, Himalaya)

1963. *Ballia gustavi* Muls., : Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* 14 (1) : 26

Material studied : No material was available for study.

Distribution : India : Sikkim and Meghalaya. Also known from Nepal.

58. *Ballia zephyrinae* Mulsant

1866. *Ballia zephyrinae* Mulsant, *Mem. Acad. Lyon.*, 15 : 190 (Type-loc. –India)

1874. *Ballia zephyrinae* Muls.: Crotch, *Revis. Cocc.*, p. 128

Material studied : 1ex., Namchi, S. Sikkim, i.vi. 1997. S. Biswas & Party Coll.

Distribution : India : Sikkim and Meghalaya.

59. *Ballia* sp.

Material studied : 6exs., Rangpo, 23.ii. 1979 and 9exs., Gangtok, E. Sikkim, 4.iii. 1979, S.K. Saha and Party Coll.; 1ex., Tashi Hills, 1.xi. 1992, A.K. Hazra Coll.

Remarks : Specimens are very similar in colour to the species *B. eucharis* Muls. but without any black spots. More over the size is also smaller.

Tribe 11. **Psylloborini****Key to the Genera of Tribe
PSYLLOBORINI**

1. Elytra uniformly coloured, pale yellowish, or yellowish creamy or pale yellowish brown; without any spots or markings *Illeis* Mulsant
- Elytra yellowish or yellowish creamy in colour, always marked with spots or markings *Halyzia* Mulsant

Genus 26. ***Halyzia*** Mulsant1846. *Halyzia* Mulsant, *Securipalp*, p. 141, 148.1932. *Halyzia* Muls.: Korschefsky, *Coleopt. Cat.*, pars 120, p. 570.**Key to the Species of the Genus
Halyzia Muls.**

1. Pronotum yellow, with two brown spots on each side and close to the median line; elytra yellow, each elytron with four brown spots, basal one is the largest, close to the scutellum, sutural margin brownish, the second one at the mid-transverse line is close to the suture and a little shorter than the basal one, other two near the external margin moderate in size. *straminea* Hope
- Pronotum brown, with five white spots, two on each side and one at the base on the median line, extending narrowly to the disc; elytra brown, each elytron with nine whitish elongated spots and two whitish vittae of unequal length, running from base to three fourths of its length, the internal vittae meeting with the third spot close to the suture which is bordered white *sanscrita* Mulsant

60. ***Halyzia sanscrita*** Mulsant1853. *Halyzia sanscrita* Mulsant, *Ann. Soc. Linn. Lyon.*, 1 : 152 : (Type-loc.—N. India)1963. *Halyzia sanscrita* Muls., Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* 14 (1) : 47.*Material studied* : 5exs., Mangphu, 1888; 5 exs., 1.xi. 1910, E.T. Atkinson coll.; 1ex.,

Shingbang, W. Sikkim, alt. 5900m., 15.x.1959, B.K. Tikader coll.

Distribution : India : Sikkim, H.P. (Simla). Delhi. Also known from Bhutan and Tibet.61. ***Halyzia straminea*** (Hope)1831. *Coccinella straminea* Hope, in Grey, *Zoological Miscellany* : 33, (Type-loc. – Nepal).1963. *Halyzia straminea* (Hope) : Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* 14 (1) : 46.*Distribution* : India : Sikkim, Simla, (Darjeeling), W. Bengal. Also known from Nepal.Genus 27. ***Illeis*** Mulsant1850. *Illeis* Mulsant, *Spec. Trim. Securipalp*. P. 1026.1932. *Illeis* Muls., Korschefsky, *Coleopt. Cat.* Pars 120, p. 558.**Key to the Species of the Genus *Illeis* Muls.**

1. Tip of siphon (male genitalia), bifurcate, external margin of the median lobe of male genitalia a little wavy, tip sharp and strongly hooked; body relatively large, (over 5.00 mm), less convex and distinctly narrowed towards the apex, pale yellow in colour *indica* Timberlake
- Tip of siphon (male genitalia) entire, not bifurcate, body relatively smaller (4.3 mm.) in size; tip of median lobe not strongly hooked 2
2. External margin of median lobe (male genitalia) almost straight and very weakly and gradually curved at the tip; tip of siphon subround, weakly curved with a notch at the top; body distinctly narrowed towards apex; grayish yellow *confusa confusa* Timb.
- External margin of median lobe straight upto two-third of its length then bent suddenly; tip of siphon strongly arched, without any notch at tip; body orbicular; pale yellow in colour *bistigmosa* (Muls)

62. *Illeis bistigmosa* (Mulsant)

1850. *Psyllobora bistigmosa* Mulsant, *Annls. Soc. Agric. Lyon.* 2 : 168 (Type-loc, – Penang)

1972. *Illeis bistigmosa* (Muls.) : Kapur, *Rec. zool. Surv. India.* 66 : (1–4) : 318

Material studied : 1ex., Jorethang, S. Sikkim, 29.iv. 1983, B.N. Das & Party Coll.

Distribution : India : Sikkim, Goa and South Andamans. Also known from Sri Lanka Celebes, Indinesoa, Sumba, Thailand, Philippines and Penang.

Remarks : This is a new record of this species from Sikkim.

63. *Illeis confusa confusa* Timberlake

1943. *Illeis confusa* Timberlake, *Bull. Hawaiian Sug. Plrs. Ass. Ex. Stn.* (Ent. series) No. 22 : 67 pp. (Type-loc–China, Hongkong)

1961. *Illeis confusa confusa* Timberlake : Bielawski, *Annals. zool. warsz.*, 19 : 361

Material studied : 1ex., Rangli, alt. 900 m., 21 xii. 1975, G.K. Srivastava Coll.; 14exs; Rhenok, alt. 1130m., 9.iii. 1979, S.K. Saha and Party Coll; 1ex., Rangpo, 23.i. 1979, A.R. Bhaumik coll.; all from E. Sikkim. 3exs. Legship, W. Sikkim, 3.v. 1994, S.K. Saha Coll.

Distribution : India : Sikkim. Also known from China, Hongkong.

Remarks : This species is recorded for the first time from India (Sikkim).

64. *Illeis indica* Timberlake

1943. *Illeis indica* Timberlake, *Bull. Hawaiian Sug. plrs. Ass. Exp. Stn.*, (Ent. series) No. 22: 61 (Type-loc. – Lahore, Pakistan)

1966. *Illeis indica* Timberlake : Kapur, *Proc. Nat. inst. Sci.India, Delhi*, 32 B. (3 & 4) : 180-181.

Material studied : 1ex., Rangpo, E. Sikkim, 29.v. 1997 and 6exs., Namchi, S. Sikkim, 3.vi. 1997, S. Biswas & Party Coll.

Distribution : India : Sikkim, Meghalaya,

Tripura, West Bengal, Delhi and Andaman Islands. Also known from Pakistan and Thailand.

Remarks : This species is also recorded for the first time from Sikkim.

Subfamily VI. EPILACHNINAE**Tribe 12. Epilachnini****Key to the Genera of Tribe Epilachnini**

1. Tarsal claws without any basal tooth, body oval, moderate in size
..... *Epilachna* Chevrolat
- Tarsal claws with basal tooth 2
2. Sixth visible abdominal sternite of female longitudinally divided; body oval, large; yellowish setae present on upper edge of male aedeagus
Henosepilachna Li
- Sixth visible abdominal sternite of female entire, not divided longitudinally 3
3. Body sub-hemispherical; antennae shorter than headwidth; mandibles large, curved, provided with three major teeth situated at different levels, the apical tooth is the longest and has two prominent dentules one on either side, the subapical and median tooth as well as the molar surface bear a large numbers of dentules, basal tooth on tarsal claws subquadrate; male genitalia not well developed
..... *Afidenta* Dieke
- Body not sub-hemispherical 4
4. Body short-oval, small, antennae subequal to the head-width; mandibles subtriangular in shape, apex provided with three teeth, without any dentulation; basal tooth on tarsal claws sub-triangular; male genitalia well developed
Afidentula Kapur
- Body elongate oval, legs relatively longer; antennae a little longer than head-width; mandibles with three apical and one median teeth, without any serration; basal tooth sub-triangular; male genitalia well developed; female genital plate elongate and tapering ...
..... *Afissula* Kapur

Genus 28. *Epilachna* Chevrolat

1837. *Epilachna* Chevrolat, in Dejean's *Cat. Coleopt.*, ed. 3 : 460-461.

1947. *Epilachna* Chevrolat : Dieke, *Smithson, Misc. Collns.*, 106 (15) : 22.

Key to the Species of the Genus
Epilachna Chevrolat

1. Pronotum reddish brown, without any spot or marking. 2
- Pronotum black or reddish brown with median black spot 3
2. Each elytron with five rounded, medium sized black spots, arranged as 2+2+1
..... *flavicollis* (Thunberg)
- Each elytron with six large, elongated black spots or macula of which scutellar and discal are common to both the elytron, the sub-apical and discal maculas are only rounded in shape
..... *macularis* Mulsant
3. Pronotum black, except the external lateral margin which is reddish brown in colour
..... 4
- Pronotum reddish brown with a single oval or transverse black spot on the disc 5
4. Elytra black, each elytron with seven yellow rounded spots, arranged as 2+2+2+1, anterior margin of pronotum reddish testaceous
..... *marginicollis* Hope
- Elytra reddish brown, each elytron with seven black spots arranged as 2+3+2 & scutellar and discal spot close on the suture to meet their counter part on the other elytron
..... *undecimspilota* Hope
5. Pronotum with an elongated oval sub rounded black spot on the disc 6
- Pronotum with a transverse black spot on the disc 8
6. Elytra with transverse, band like spots; pronotum with a median, oblong black spot, extending from the anterior margin to the base; elytra black, each elytron with six reddish brown or

testaceous spots, arranged as 1+2+2+1, spot shapes varies, scutellar oval, apical sub-triangular, others transverse, body large
gibbera Crotch

- Elytra with distinct, small and rounded spots
7
- 7. Pronotal spot median, extending from the anterior margin to the scutellum; scutellum black; elytra reddish brown, each elytron with six black spots, arranged as 2+2+2+, of which humeral, and two sutural, one near scutellum and the other at the posterior one-third are large, the other spots are smaller, the subapical one is horizontal; body oval
..... *bengalica* (Dieke)
- Pronotal spot close to the anterior margin, sub-triangular, roundish; scutellum reddish brown; elytra reddish brown, each elytron with six small black spots arranged as 2+2+2, of which the scutellar and the discal are situated on the sutural line and common to both the elytron; body small orbicular *congener* Gorham
- 8. Elytra without distinct spots, spots enlarged into bands which coalesce at places to enclose one to three roundish cells close to the suture and sometimes two incomplete cells near the external margin; pronotal spot small, black and transverse *mystica* Mulsant
- Elytra with distinct spots 9
- 9. Smaller species, (Length 4.00mm) elongate oval; each elytron with five black spots, arranged as 2+2+1, humeral spot elongated and curves like "C" discal spot transverse and subapical one subtriangular, pronotal spot transverse, black *mysticoides* (Sic.)
- Larger species, (Length 7.5mm) oval; each elytron with six black spots, arranged as 2+2+2 of which spots No. 3 and 5 are well developed; pronotal spot transverse, black broad and subtriangular *grayi* Mulsant

65. *Epilachna bengalica* (Dieke)

1947. *Afissa bengalica* Dieke, *Smithson, misc. Coll.*, 106 (15) : 154 (Type-loc. Kurseong, W. Bengal).

1979. *Epilachna bengalica* (Dieke) : Bielawski, *Entomologica Basiliensia*, 4 : 96.

Material studied : 1ex., Gangtok, alt. 5500 ft., 16.xii. 1976. G.K. Srivastava Coll.; 1ex., Singhik, 4.xi. 1992 and 1ex., Rangpo, 13.xi. 1992, A.K. Hazra Coll.; all from E. Sikkim.

Distribution : India : Sikkim, West Bengal (Darjeeling). Also known from Bhutan.

66. *Epilachna congener* Gorham

1894. *Epilachna congener* Gorham, *Ann. Mus. Stor. nat. Genova*, (2) 34 : 693 (Type-loc. Burma)

1963. *Afissa congener* (Gorham) : Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* 14 (1) : 9.

Material studied : 1ex., Rangpo, E. Sikkim, 29.v. 1997, S. Biswas Coll.

Distribution : India : Sikkim, West Bengal (Darjeeling) and North East India. Also known from Burma.

67. *Epilachna flavicollis* (Thunberg)

1781. *Coccinella flavicollis* Thunberg, *Nov. Ins. Spec.*, 1 : 18

1850. *Epilachna flavicollis* (Thunberg) : Mulsant, *Spec. Trim. Securipalp.*, : 800.

1947. *Afissa flavicollis* (Thunb.) : Dieke, *Smithson. misc. Coll.*, 106 (15) : 135

1961. *Epilachna flavicollis* (Thunb.) : Li & Cook, *Pacif. Ins.*, 3 : 63.

Material studied : 1ex., Naya Bazar, W. Sikkim, 9.iv. 1994 and 3exs., Jorethang, S. Sikkim, 11.iv. 1994, P.H. Roy Coll.; 1ex. Tarku, 27.iv. 1994, S.K. Saha Coll and 7exs., Jorethang, 29.iv. 1994, B.N. Das & Party Coll.; both from S. Sikkim. 2exs., Namchi, 12.iv. 1998 and 4exs., Rangli River, Jorethang, 12.V. 1998, both from S. Sikkim, A.K. Hazra & Party Coll.

Distribution : India : Sikkim, Meghalaya, West Bengal, (Darjeeling) Tripura. Also known from Sri Lanka, Burma, Indonesia, Celebes, Sarawak, Taiwan, Penang and Thailand.

Remarks : Recorded first time from Sikkim.

68. *Epilachna gibbera* Crotch

1874. *Epilachna gibbera* Crotch, *Revis. Cocc.*, 80 (Type-loc. – India)

1963. *Afissa gibbera* (Crotch) : Kapur, *Bull. Bur. Mus. (Nat. Hist.) Ent.* 14 (1) : 10

Material studied : No material was available for study.

Distribution : India : Sikkim.

69. *Epilachna grayi* Mulsant

1850. *Epilachna grayi*, Mulsant, *Ann. Soc. Agric. Lyon*, 3 : 774-776 (Type-loc.–Bengal and Northern India)

1947. *Afissa grayi* (Mulsant) : Dieke, *Smithson, Misc. Coll.*, 106 (15) : 121-122.

Material studied : 1ex., Lachen, N. Sikkim, alt. 2706 m., Ivi. 1959, A.G.K. Menon Coll.; 1ex., Settipool, E. Sikkim, 21.iv. 1983, B.N. Das Coll.

Distribution : India : Sikkim, U.P. (Kumaon Hills), N. Bengal and (Abhor Hills) Assam, Tamil Nadu (Nilgiri Hills). Also known from Indonesia (Java). Formosa and Nepal.

Remarks : Recorded for the first time from Sikkim.

70. *Epilachna macularis* Mulsant

1850. *Epilachna macularis* Mulsant. *Spec. Trim. Securipalp.*, P-797 (Type-loc.–Nepal, Assam)

1947. *Afissa macularis* (Mulsant) : Dieke, *Smithson, misc. Coll.*, 106 (15) : 120

1980. *Epilachna macularis* Mulsant : Chunram & Sasaji, *Orient. Insects*, 14 (4) : 482

Material studied : 1ex., Zampuk, W. Sikkim, alt 890 m., 2.x. 1959, B.K. Tikader coll.

Distribution : India : Sikkim, Assam. Also known from Nepal, S. China, Tibet and Thailand.

71. *Epilachna marginicollis* (Hope)

1831. *Coccinella marginicollis* Hope, in Gray, *Zoological Miscellany*, p. 31. (Type-loc–Nepal)

1850. *Epilachna marginicollis* (Hope) : Mulsant, *Ann. Soc.–Agric. Lyon*, 3 : 728

1955. *Afissa marginicollis* (Hope) : Kapur, *Rec. Indian Mus.*, 53 : 315

Material studied : 2 exs., Lachen, alt. 2706m., 10-2. vi. 1959 and 1 ex., Chumba, alt. 336m., 24. vi. 1959, A.G.K. Menon coll, both from N. Sikkim.

Distribution : India : Sikkim, North Bengal. Also known from Nepal, Burma and Bhutan.

72. *Epilachna mystica* Mulsant

1850. *Epilachna mystica* Mulsant, *Ann. Soc. Agric. Lyon*, 3 : 841 : (Type-loc. –East India?)

1947. *Afissa mystica* (Mulsant) : Dieke, *Smithson. misc. Coll.*, 106 : 146

1972. *Epilachna mystica* Mulsant : Bielawski, *Fragmenta-Faunistica*, 18 (16) : 288

Material studied : 1ex., Hi, alt. 1290 m., W. Sikkim, 3.iv. 1959; 1ex., Rishikhola, alt. 994m., 8.v. 1959; 1ex., Chufunguns, alt. 1667m., 14.v. 1959 and 1ex., Lachung, alt. 2727 m., 30.vi. 1959. all from N. Sikkim, A.G.K. Menon Coll.; 2 exs., Gayzing, W. Sikkim, 28.ix. 1959, B.K. Tikader Coll.; 4 exs., Kewging, S. Sikkim, alt. 1800m., 20. v. 1962, S. Ali Coll., 1 ex., Singtam, W. Sikkim, 26.iv. 1976, A.R. Bhaumik Coll.

Distribution : India : Sikkim, North Bengal, U.P. (Kumaon Hills), Karnataka (Bangalore). Also known from Nepal, Burma and Bhutan.

73. *Epilachna mysticoides* (Sicard)

1912. *Solanophila mysticoides* Sicard, *Ann. Soc. Ent. France*, 81, p. 507 (Type-loc. –India)

1931. *Epilachna mysticoides* (Sic.) : Korschefsky, *Coleopt. Cat.*, 16, pars 118, p. 30

1947. *Afissa mysticoides* (Sic.) : Dieke, *Smithson. misc. Coll.*, 106 (15) : 145

1972. *Epilachna mysticoides* (Sic.) : Bielawski, *Fragmenta-Faunistica*, 18 (16) : 287.

Material studied : 1ex., Lachen, alt. 2706m., N. Sikkim, 9.vi. 1959, A.G.K. Menon Coll.; 10 exs., Punchwan mile, S. Sikkim 22.v. 1962, S. Ali coll.

Distribution : India : Sikkim, N. Bengal. Also known from Nepal.

74. *Epilachna undecimspilota* Hope

1831. *Coccinella II-spilota* Hope in Gray's *Zoological Miscellany*, p.-31 (Type-loc.–Nepal)

1850. *Epilachna undecimspilota* (Hope) : Mulsant, *Spec. Trim.–Securipalp.*, : 799

1947. *Afissa undecimspilota* (Hope) : Dieke, *Smithson. misc.–Coll.*, 106 (15) : 138

1979. *Epilachna undecimspilota* (Hope) : Biclawski, *Entomologica Basiliensia*, 4: 105.

Material studied : No material was available for study.

Distribution : India : Sikkim, W.Bengal (Darjeeling) and Assam. Also known from Nepal, Bhutan and Burma.

Genus 29. *Henosepilachna* Li

1961. *Henosepilachna* Li, *Pacif. Ins.*, 3 : 35

Key to the Speices of the Genus *Henosepilachna* Li

1. Elytral apex with distinct sutural angle; medium sized beetles 2
- Elytral apex without distinct sutural angle... 3
2. Pronotum with four black spots; each elytron with six black spots arranged as 2+ 2+ 2+, humeral callus distinct; body elongate oval... *sikkimica* (Kapur)
- Pronotum spotless or with five to seven black spots; elytral spot six to fourteen in number on each elytron *vigintioctopunctata* (Fab.)
3. The external median black spot (No. 4) on the elytra generally touching the external margin of elytra 4
- The external median black spot (No.4) generally approaching but not touching the external margin; 7
4. Large (above 7 mm in length) sized beetles 5
- Medium (below 7 mm in length) sized beetles 6

5. Discal spot on elytra large, transverse; each elytron with six black spots, arranged as 2+ 2+ 2+ *indica* Mulsant
- Discal spot on elytra small, rounded; each elytron generally with seven black spots, may increase to twelve, arranged as 3+ 2+ 1+ 1 *processa* Weise
6. Medium sized beetles. Pronotum generally with five, sometimes with seven black spots; elytral spots varies in number from generally six to fourteen on each elytron *dodecastigma* (Wiedmann)
- Pronotum generally spotless, rarely with one faint median black spot; each elytron with six black spots, 3rd spot far away from suture than 1 and 5, the latter two are equidistant from suture; 3 oval, with tip towards suture; situated on callus; 4 subrounded and touching the elytral margin *boisduvali* (Mulsant)
7. Pronotum generally with five to seven small black spots; number of spots on each elytron vary from six to fourteen, spots simple *septima* (Dieke)
- Pronotum with five black spots, a long median and other two small, round spots one on each side; each elytron with six round black spots surrounded by orange ring or ocelli *ocellata* (Redt.)

75. *Henosepilachna boisduvali* (Mulsant)

1850. *Epilachna boisduvali* Mulsant, *Spec. Trim. Securipalp.*, P. 765 (Type-loc.–Australia?)
1961. *Henosepilachna boisduvali* (Mulsant) : Li & Cook, *Pacif. Ins.*, 3 : (1) 47.

Material studied : 1 ex., mentioned “Sikkim”
No other data available.

Distribution : India : Sikkim. Also known from Australia, Philippines and Indonesia (Sumatra).

Remarks : The material under study belongs to the subsp. *Chabuana Dieke*, which is recorded from Chabua, Assam.

76. *Henosepilachna dodecastigma* (Wiedemann)

1823. *Coccinella dodecastigma* Wiedemann, *Zool. Mag.*, Kiel, 2 : 73-74 (Type-loc.–Bengal)
1850. *Epilachna dodecastigma* (Wied.) : Mulsant, *Ann. Soc.–Agric. Lyon* : 2 : 789
1979. *Henosepilachna dodecastigma* (Wied.) : Hoang, *Entomological Rev.*, 56 (1) : 98-108.

Material studied : 1 ex., Pakyong, E. Sikkim, 19.iv. 1983; 8 exs., Namchi, S. Sikkim, 26.iv. 1983; 2 exs., Ranipool. E. Sikkim, 21.x. 1993, B.N. Das & Party Coll.; 3 exs., Dikchu, E. Sikkim, 21.iv. 1994, S.K. Saha & Party Coll.

Distribution : India : Sikkim, Meghalaya, Tripura, West Bengal and Andaman Islands. Also known from Burma, North-Vietnam and Indonesia.

77. *Henosepilachna indica* (Mulsant)

1850. *Epilachna indica* Mulsant, *Ann. Soc. Agric. Lyon.*, 2 (2) : 776-777. (type-loc. India)
1978. *Henosepilachna indica* (Mulsant) : Hoang, *Entomological Rev.*, 56 (1) : 98-108

Material studied : No material was available for study.

Distribution : India : Sikkim, Meghalaya, Assam and West Bengal. Also known from Burma, China, Malaya, Indonesia (Java) and North-Vietnam.

78. *Henosepilachna ocellata* (Redtenbacher)

1844. *Epilachna ocellata* Redtenbacher, in Hugel, *Kaschmir- undas Reich der Siek IV*, 2, p. 563 (Type-loc. Kashmir)
1967. *Henosepilachna ocellata* (Redt.) : Miyatake, *Trans. Shikoku ent. Soc.* 9 : 70

Material studied : 3 exs. from Sikkim, no other data available.

Distribution : India : Sikkim, West Bengal, Kashmir. Also known from Nepal and Bhutan.

Remarks : New record from Sikkim.

79. *Henosepilachna processa* (Weise)

1908. *Epilachna wismanni* Mulsant ab. *processa* Weise, *Stettin.-ent. ztg.*, **69** : 217 (Type-loc. – Burma)

1961. *Henosepilachna processa* (Weise) : Li & Cook, *Pacif. Ins.*, **3** : 45-46

Material studied : 1ex., Dikchu, E. Sikkim, 21.iv. 1994, S.K. Saha Coll.,

Distribution : India : Sikkim, Meghalaya, Maharashtra, Tripura, Andaman Islands. Also known from Burma, Malaya, Taiwan and Thailand.

Remarks : Recorded for the first time from Sikkim.

80. *Henosepilachna septima* (Dieke)

1947. *Epilachna septima* Dieke, *Smithson, misc. Coll.*, **106** (15) : 58-59 (Type-loc. –Indochina, Annam, Phuc-Son)

1978. *Henosepilachna septima* (Dieke) : Hoang, *Entomological Rev.*, **56** (1) : 98-108.

Material studied : 1ex., Rangpo, 24.ii. 1979 and 2exs., Dikchu, E. Sikkim, S.K. Sahah Coll.; 1ex., Pakyong, 1983 and 1ex., Singtam, 30.ix. 1993, E. Sikkim; 1ex, Namchi, 26.iv. 1983, S. Sikkim, B.N. Das & Party Coll.; 1ex., Sombaria, W. Sikkim, 19.ix. 1993, S.K. Chatterjee Coll.; 1ex., Rangpo, E. Sikkim, 28.v. 1997, S. Biswas Coll.

Distribution : India : Sikkim, Meghalaya, West Bengal, Tripura, Bihar, U.P., M.P., Maharashtra, Punjab, Andhra Pradesh, Tamil Nadu and Andaman Islands. Also known from Sri Lanka, Indonesia and Vietnam.

Remarks : Recorded for the first time from Sikkim.

81. *Henosepilachna sikkimica* (Kapur) Comb. nov.

1963. *Epilachna sikkimica* Kapur, *Bull. Br. Mus. nat. Hist. (Ent.)*, **14** (1) : 7. (Type-loc.–Dikchu, Sikkim)

Material studied : 1ex., Taptapani, W. Sikkim, alt. 379m., 10.vi.1959. A.G.K. Menon Coll.

Distribution : India : Sikkim.

82. *Henosepilachna vigintioctopunctata* (Fabricius)

1775. *Coccinella 28-punctata* Fabricius, *Syst. ent.*, p.-84. (type-loc. Tranquebar)

1850. *Epilachna vigintioctopunctata* (Fab.) : *Spec. Trim. Securipalp.*, P. 834

1980. *Henosepilachna vigintioctopunctata* (Fab.) : Chunram & Sasaji, *Oriental Insects*, **14** (4) 484

Material studied : 1ex., Rangpo, 24.ii.1979 and 1ex., Settippool, 13.iv.1993, S.K. Saha & Party Coll.; 1ex., Rangpo, 14.iv.1994, P.H. Roy Coll., 1ex., Ranipool, 23.v.1994, B.C. Das Coll.; 1 ex., Ranipool, 26.v.1997, S. Biswas coll.; All from E. Sikkim.

Distribution : India : Sikkim, Meghalaya, Tripura, West Bengal, U.P., M.P., Punjab, Haryana, Himachal Pradesh, Goa, Kerala, Tamil Nadu and Andaman Islands. Also known from Bhutan, China, Japan, Formosa, Philippines, Sunda Islands, Thailand, New Guinea, Australia and Tasmania.

Genus 30. *Afidenta* Dieke

1947. *Afidenta* Dieke, *Smithson, misc. Coll.*, **106** (15) : 109

Key to the Species of the Genus *Afidenta* Dieke,

1. Pronotum reddish brown with a transverse row of four black, rounded spots; elytra reddish, each elytron with six rounded black spots ...
..... *mimetica simplex* Dieke
- Pronotum black, except the basal and lateral margin, which is yellowish red, no spots present; elytra black, each elytron with five yellowish rounded spots, two transversely placed at one-third, two at two-thirds and one larger subapical *parvula* (Crotch)

83. *Afidenta mimetica simplex* Dieke

1947. *Afidenta mimetica simplex* Dieke, *Smithson. misc. Coll.*, **106** (15) : 111 (Type-loc.–India, Kooloo)

1996. *Afidenta mimetica simplex* Dieke : Chakraborty *et. al*,
Zool. Surv. India, State fauna series 3 : Fauna of
West Bengal, Part 6B : 481.

Material studied : 2exs., Phodong, E. Sikkim,
10. ix. 1993, S.K. Chatterjee Coll.; 1ex., Rangpo,
E. Sikkim, 14.iv. 1994, P.H. Roy Coll.; 1ex.,
Chungthang, N. Sikkim, 25.iv. 1994, S. Saha Coll.;
and 1ex Chungthang, N. Sikkim, 2.iv. 1996. R.N.
Tiwari Coll.

Distribution : India : Sikkim, Meghalaya, West
Bengal, Himachal Pradesh and Andaman Islands.
Also known from Taiwan, China and Tibet.

Remarks : Recorded for the first time from
Sikkim.

84. *Afidenta parvula* (Crotch)

1874. *Epilachna parvula* Crotch, Revis. Cocc. p. 80. (Type-
loc. – India)

1967. *A. Parvula* (Crotch) : Miyatake, *Trans, Shikoku, ent.*
Soc., 9 : 71.

Material studied : 1ex., Bigton, W. Sikkim,
9.iv. 1959 and 1ex., Rishikhola, alt. 994m., 7.v.
1959, A.G.K. Menon Coll.; 1 ex., Shingbang,
5900m., W. Sikkim, 15.x. 1959. B.K. Tikader Coll.;
3exs., Knyvett, no other data; 1ex., Nanga, alt.,
1425m., 13.v. 1962, S. Ali Coll.

Disribution : India : Sikkim, West Bengal
(Darjeeling). Also known from Nepal.

Remarks : The collections present in Z.S.I.
labelled as *Afissa parvula* (Crotch). All the
materials have a small basal tooth at the base of
claw, and the sixth abdominal sternite in female
not divided longitudinally. So I place those materials
under the genus *Afidenta*, following Li
& Cook, 1961.

Genus 31. *Afidentula* Kapur

1955. *Afidentula* Kapur, *Rec. Indian Mus.*, 53 : 324

Key to the Species of the Genus *Afidentula* Kapur

1. Pronotum with a large quadrangular black spot,
whose basal margin is broadly tricuspid; each

elytron with seven black spots, arranged as 2+
2+ ½+ 2, body length 4.3–5.1mm
..... *himalayana* Kapur

- Pronotum generally without distinct spot; each
elytron with six black spots arranged 2+ 2+
½+ 1, the subapical spot is subquadrate; body
length 3.4 mm *manderstjernae* (Mulsant)

85. *Afidentula himalayana* Kapur

1963. *Afidentula himalayana* Kapur, *Bull. Br. Mus. (Nat.*
Hist.) Ent. 14 (1) : 12-16. (Type-loc.–Sikkim,
Darjeeling)

1979. *Afidentula himalayana* Kapur : Bielawaski,
Entomologica Basiliensia 4 : 84.

Material studied : 1ex., Upper Pelling, W.
Sikkim, 6.v. 1948 A.K. Hazra Coll.

Distribution : India : Sikkim, West Bengal
(Darjeeling). Also known from Bhutan.

86. *Afidentula manderstjernae* (Mulsant)

1853. *Epilachna manderstjernae* Mulsant, *Ann. Soc. Linn.*
Lyon. I.P. 256 (Type-loc.–Asia, Sikkim)

1955. *Afidentula manderstjernae* (Muls.) : Kapur, *Rec.*
Indian Mus. 53 : 325.

Material studied : 1ex., Gangtok, E. Sikkim,
24.iv. 1976 and 1 ex., Singtam, W. Sikkim, 26.iv.
1976, A.R. Bhaumik Coll.; 1ex., Rangy, Nathula
Road, 12.viii. 1979, M. Prasad Coll.; 7exs.,
Gangtok, E. Sikkim, 25.xii. 1980, S.K. Saha Coll.;
and 1ex., 14.iv. 1983, B.N. Das Coll.; 1ex., Singhik,
E. Sikkim, 3.xi. 1992, A.K. Hazra Coll.; and 1ex.,
Yumthung, N. Sikkim, 3xi. 1992, M.S. Shisodia
Coll.; 2exs, Phensang, W. Sikkim, 25.iv. 1994 and
1ex., Detam, 29.iv. 1994, S.K. Saha Coll.; 1ex.,
Legship, W. Sikkim, 7.iv. 1996, R.N. Tiwari Coll.

Distribution : India : Sikkim, West Bengal,
(Darjeeling). Also known from Nepal, Bhutan and
China.

Genus 32. *Afissula* Kapur

1955. *Afissula* kapur, *Rec. Indian Mus.* 53 : 319-20

87. *Afissula sanscrita* (Crotch)

1874. *Epilachna sanscrita* Crotch, *Revis. Cocc.*, P. 82 (Type-loc. – India)

1963. *Afissula sanscrita* (Crotch) : Kapur, *Bull. Br. Mus. (Nat. Hist.) Ent.* **14** (1) : 12.

Material studied : lex., Pakyang, E. Sikkim, 27.iv. 1976, A.R. Bhaumik Coll.

Distribution : India : Sikkim. Also known from Tibet.

SUMMARY

The present paper deals with 1117 exs of eighty seven species under thirty two genera, belonging to twelve tribes under six subfamilies. Of which thirty three species are recorded for the first time from Sikkim and *P. bhaumiki* has been described as new to science. Keys to the sub families, tribes, genera and species have

been provided. Relevant synonymies, collection data and geographical distribution have been included.

ACKNOWLEDGEMENT

Authors are thankful to Dr. J.R.B. Alfred, Director, Zoological Survey of India for facilities of work. We are also thankful to Dr. G.K. Srivastava, Additional Director (retd.) and Dr. S. K. Mitra, (retd.) Joint Director for their valuable suggestions. We are indebted to Dr. P. Mukhopadhyaya, Scientist SD and O/c. Coleoptera Section for kindly going through the manuscript. We are also thankful to our Artist, Mr. Subratra Biswas for kindly drawing the diagram of the new species and to all the sectional staffs for their cordial help. Authors also acknowledge the helps provided by the Forest Officials, Govt. of Sikkim for successfully surveying of the area.

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INSECTA : COLEOPTERA : DISCOLOMIDAE

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INTRODUCTION

The Discolomidae with some 400 species are a sharply defined family of the section Clavicornia under the superfamily Cucujoidea. Species of Discolomidae have been found under bark and on fungi grown upon log. Though the representatives of the family occur in tropical and subtropical parts of both the Old and New worlds but are more diversely represented in the eastern hemisphere. They are known from America, Africa, South-east Asia, China, Japan, Pacific Islands to Australia, but are yet to be recorded from Europe and New Zealand. Horn (1878) established this family for *Discoloma* Erichson, Matthews (1887) proposed a family, Pseudocorylophidae for *Aphanocephalus* Wollaston to exclude it from Corylophidae. Sharp (1895) included *Holophygus* Sharp, *Notiophygus* Gory with *Discoloma* in Discolominae, thence treated under Colydiidae. Scott (1908) considered *Fallia* Erichson, *Discoloma*, *Notiophygus*, *Holophygus* and *Aphanocephalus* together in Discolomidae. John (1944) used the family-name 'Notiophygidae' instead of 'Discolomidae' for the assemblage, and he (1945) characterized the family and distinguished it from related ones. He afterwards (1958 onwards) continued to use the name 'Discolomidae' for the family. John (1959) subdivided the family into five subfamilies. Pal (1992) recorded Discolomidae with two species from Arunachal Pradesh and subsequently in 1997 described three species from Sikkim.

Characters of Family Discolomidae

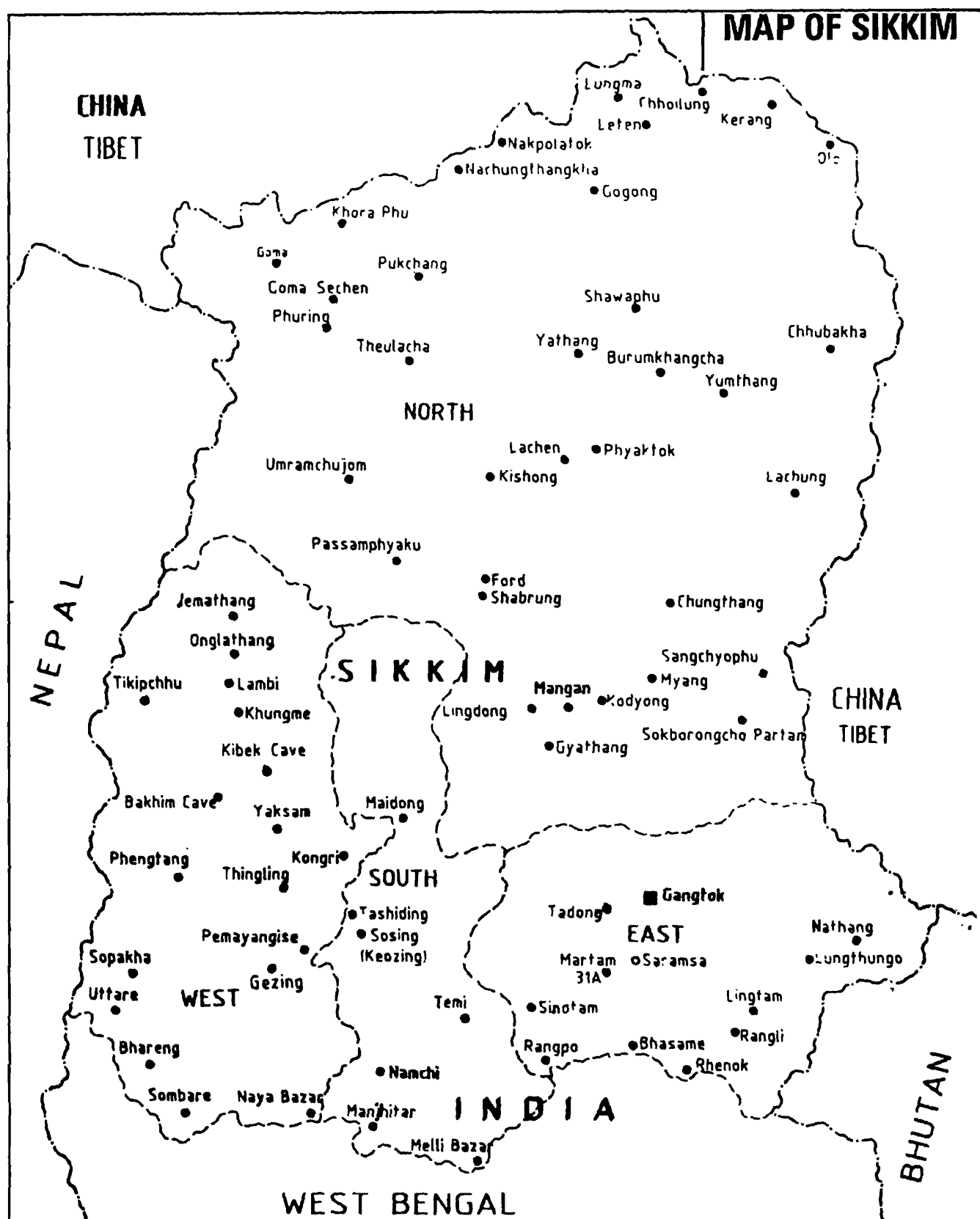
Facies broad, elongate-oblong to oval or rounded; dorsally convex, surface tuberculate or smooth.

Head small in comparison to large prothorax, often inserted under pronotum, eyes small to moderately large, usually with a fronto-clypeal suture, without transverse line on vertex behind eyes, antennal insertions dorso-lateral or dorsal but not hidden under projection of frons, clypeus large and wider anteriorly; on ventral side gular sutures widely separated, no antennal cavities, antenna 8 to 10-segmented with 1-segmented large club. Mandible with 3 apical teeth, prostheca and mola well-developed; maxillary lacinia without apical spine, segment 2 of maxillary palpi markedly larger than segment 3, apical segment of palpi elongate and narrowed towards apex; mentum of labium normal, ligula broadly triangular, segments 2 and 3 of palpi large and elongate.

Prothorax transverse, narrowed in front, sides smooth or wavy, no prebasal impression on pronotum, front coxae rounded, coxal cavities closed or narrowly open.

Elytra broad, convex, punctures irregular, epipleura broad and complete. Species may be apterous or winged, no anal vein on wing, cubitus bifurcate at tip.

Mesocoxae widely separated, mesocoxal cavities closed, sternal fitting between mesocoxae not with knob-like projections, metasternum usually without median impressed line, metendosternite short and represented by two appophyses.



Metacoxae widely separated, rounded, lateral prolongations hidden.

Legs moderately long, trochanters simple or slightly heteromeroid, tarsal formula 3-3-3 in both sexes, tarsi simple or slightly incrassate.

Abdomen short and broad, ventrites freely articulated, ventrite 1 longest and without femoral lines. Aedeagus in resting condition turned on one side, no distinct parameres.

Key to the Subfamilies of DISCOLOMIDAE

1. Body distinctly tuberculate, tubercles often form thick lumps on edges and giving rise to more or less waved contour; edge of pronotum and edge of elytron form an obtuse angle when viewed from side NOTIOPHYGINAE*
- Body smooth or only slightly tuberculate ; edge of pronotum and edge of elytron form almost a straight line or slightly angulate 2
2. Body contour with almost parallel-sided elytra; hair on body partly clubbed or split-tip
..... PONDONATINAE *
- Body contour greatly arched oval with sides of elytra rounded ; hairs if present not like above 3
3. Body strikingly coloured with yellow and black, with two hair forms of different length
..... CAPHALOPHANINAE *
- Body not strikingly bicoloured ; without hair forms as above 4
4. Body greatly convex with narrow ridge or crest-like edge area; surface almost shining bright, hair pits and pseudopores very minute
..... APHANOCEPHALINAE
- Body flat-convex, with wide edge area as well as a smooth contour; tubercles on body not or little raised, their gland ducts often visible
..... DISCOLOMINAE *

* Subfamilies not recorded from sikkim.

LIST OF TAXA

Family DISCOLOMIDAE

Subfamily APHANOCEPHALINAE

1. *Aphanocephalus superbus* Pal
2. *Aphanocephalus convexus* Pal
3. *Aphanocephalus sikkima* Pal

Subfamily APHANOCEPHALINAE

Genus *Aphanocephalus* Wollaston

1873. *Aphanocephalus* Wollaston, *Ent. Mon. Mag.*
9 : 278

[Type species : *Aphanocephalus hemisphaericus*
Wollaston].

Diagnosis : Body broadly ovoid, strongly convex dorsally and flattened ventrally, glabrous vestiture consisting of minute setae not generally visible at lower magnification; transverse head with small eyes, 9-segmented antenna with a large club; strongly transverse prothorax with weakly rounded and smooth lateral sides, front coxal cavities closed behind, mesocoxal cavities closed and sternal fitting in almost a straight line, hind coxae widely separated, femora of legs broadened near middle and devoid of any tooth; abdomen with broad intercoxal process.

Key to the Species of *Aphanocephalus* Wollaston

1. Front margin of prothorax rather deeply and widely emarginate, antero-lateral margin of pronotum not paler than remaining part, a pair of lateral marginal pits of pronotum present near humeral angles and those near basal third absent; fronto-clypeal suture situated considerably in front of antennal bases ; aedeagus with proximal and distal ends of median lobe somewhat pointed, distal edge of tegminal cap spatulate and beset with hairs .
..... *superbus* Pal
- Front margin of prothorax either unemarginate or rather narrowly or slightly emarginate, antero-lateral margin of pronotum paler (reddish-brown) than remaining part (blackish-

brown), two pairs of lateral marginal pits near humeral angles and near basal third present; fronto-clypeal suture situated just in front of antennal bases; aedeagus with proximal and distal ends of median lobe broad, distal edge of tegminal cap bifid and devoid of hairs

..... 2

2. Front margin of prothorax almost unemarginate or indistinctly emarginate; antennal club segment with single preapical annulation. Proximal end of tegminal cap form a broad finger-like projection *convexus* Pal
- Front margin of prothorax rather narrowly and slightly emarginate; antennal club with two preapical annulations. Proximal end of tegminal cap devoid of finger-like projection but produced into spinous projection *sikkima* Pal

1. *Aphanocephalus superbus* Pal

1997. *Aphanocephalus superbus* Pal, *Hexapoda* 8 (1) : 15.

Diagnosis : Body oblong-ovate, finely punctate-pubescent, uniformly dark reddish-brown except antennae and legs. Exposed part of head markedly transverse, largely concealed from above by pronotum, fronto-clypeal suture situated considerably in front of antennal bases, frontal and clypeal part with pubescence denser and more distinct than on pronotum, eyes moderately large and partly visible from dorsal side, antennae little longer than pronotum, club about one-fourth as long as antenna and with single preapical annulation; prothorax 1.9 x as broad as long, narrowed in front, front margin deeply emarginate, front angles broadly pointed, side margins feebly rounded and finely bordered, one pair of lateral pits visible on front angles, posterior angles acute, basal margin convex and deeply sinuate near extremities, pronotum uniformly dark reddish-brown throughout, punctation fine and sparse; elytra about as broad as long and about 2.5 x longer than prothorax, sides evenly rounded and finely bordered, punctures simple, point-like impressions on cuticle and little coarser than on

pronotum. Aedeagus with distal end of median lobe recurved, proximal end recurved and pointed, distal edge of tegminal cap spatulate and beset with hairs.

Length 1.18 mm.

Material : 6 ex. *Holotype* and 5 *Paratypes*, India : Sikkim, East District, Kumre, 600 m., 6 km. O-Rangpo, 17.ix.1993. T.K. Pal, ex. under bark.

Distribution : India : Sikkim

2. *Aphanocephalus convexus* Pal

1997. *Aphanocephalus convexus* Pal, *Hexapoda* 8 (1) : 12.

Diagnosis : Body oblong-ovate, shiny, finely punctate-pubescent, uniformly dark reddish-brown except for paler front margin of pronotum. Exposed part of head transverse, almost concealed from above by pronotum, fronto-clypeal suture situated just in front of antennal bases, clypeus with pubescence denser and more distinct than on pronotum, eyes small and partly visible from dorsal side, antenna shorter than pronotum, club about one-fourth as long as antenna and with single preapical annulation; prothorax twice as broad as long, narrowed in front, front margin unemarginate, lateral and front margin almost circular, lateral margin finely bordered, two pairs of lateral pits situated close to front and hind angles, basal margin convex and deeply sinuate near extremities, antero-lateral border paler than remaining part of pronotum, pale band uninterrupted from one posterior angle to other, punctation fine and sparse, pubescence short and rather indistinct, elytra little transverse and about 2.5 x as long as prothorax, sides evenly rounded and finely bordered, punctures almost similar as on pronotum, pubescence short and rather indistinct. Aedeagus with median lobe forming a tube with distal end (containing median orifice) foot-shaped; tegmen forming a cap-piece enveloping the median lobe, its proximal end forming a broad finger-like projection and distal end characteristically bifid. Length – 2.16 mm.

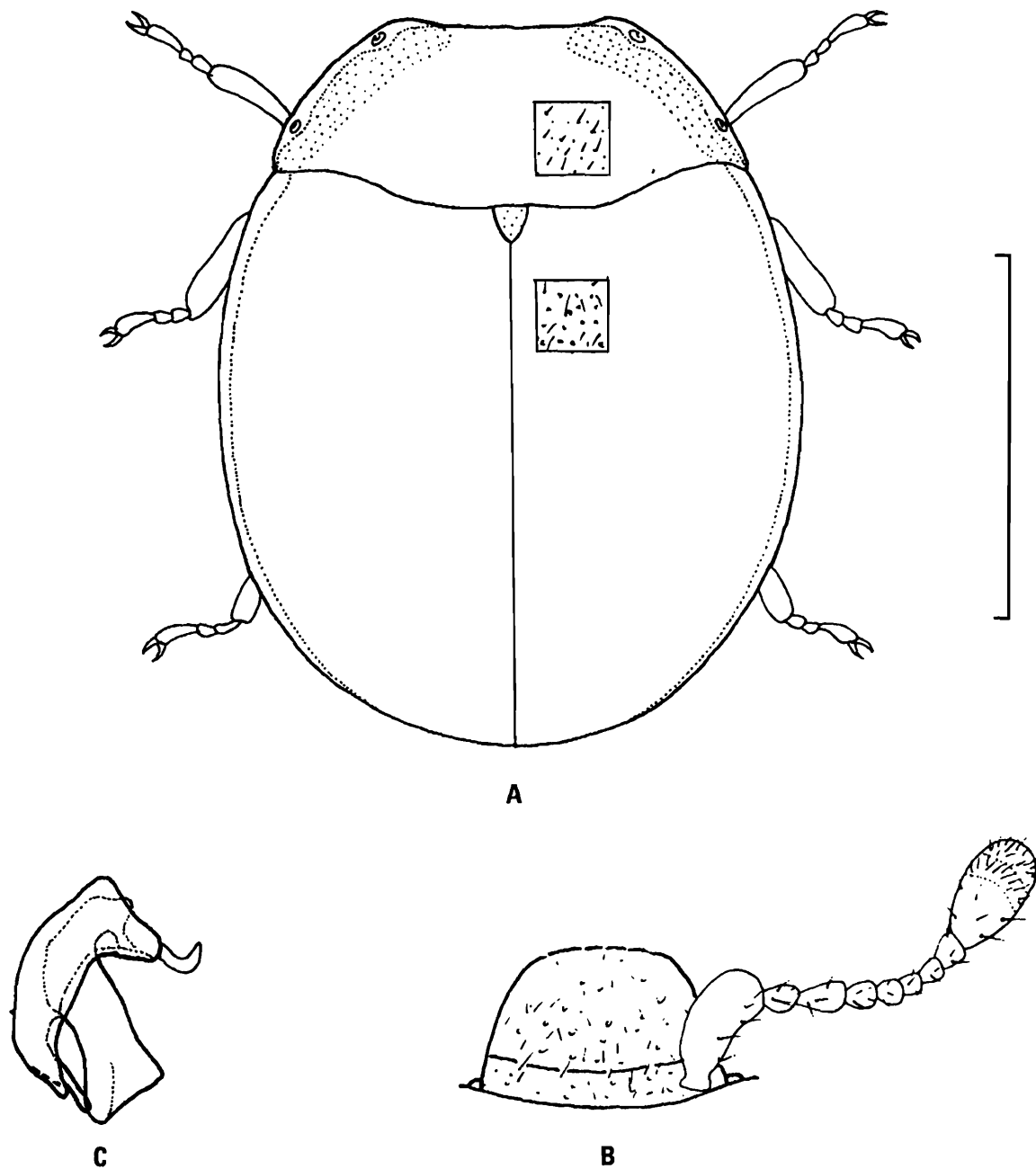


Fig. 1. *Aphanocephalus sikkima* Pal : a) Dorsal view (scale= 1 mm.); b) Exposed part of head and antenna (scale= 0.5 mm.); c) Aedeagus, Lateral view.

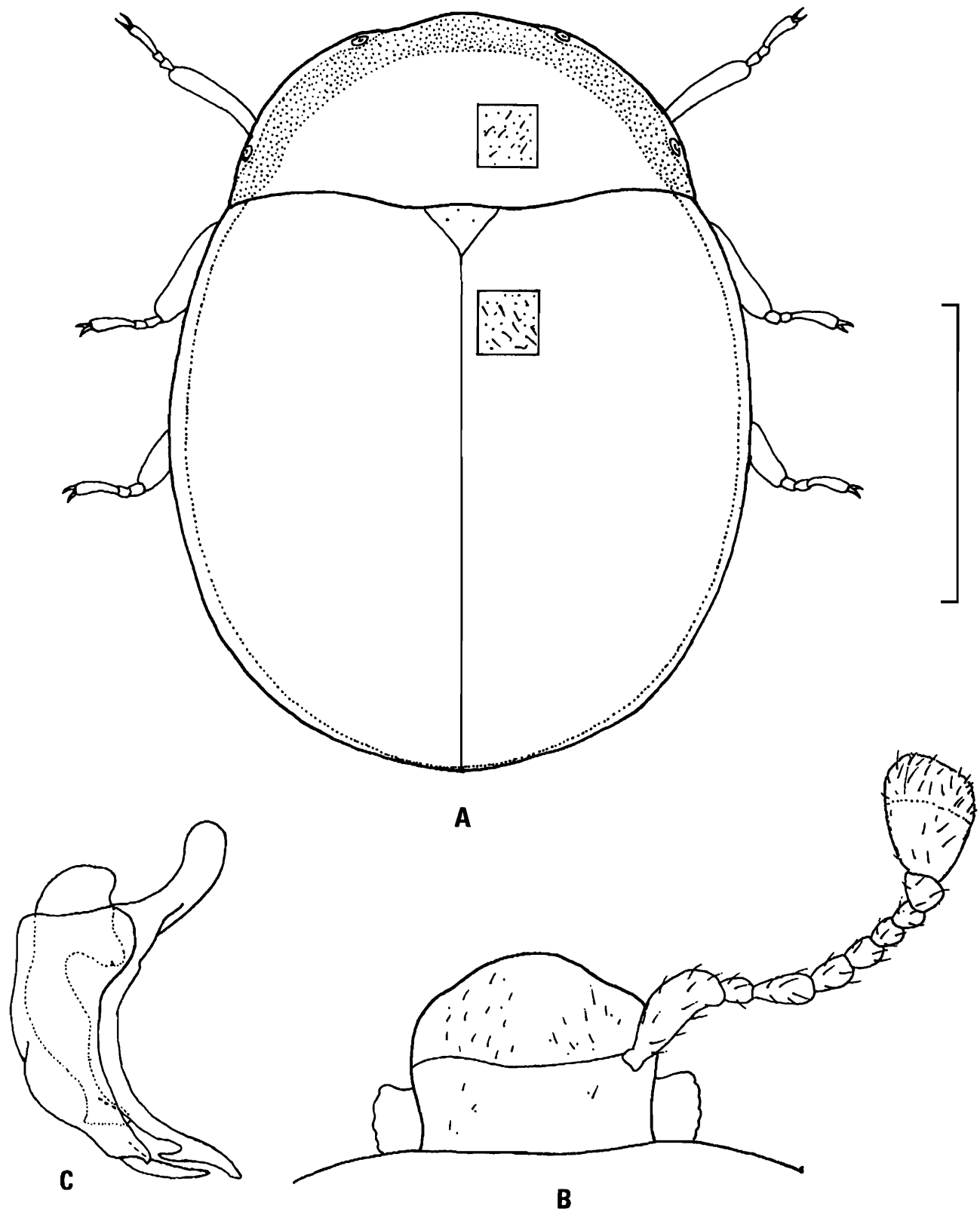


Fig. 2. *Aphanocephalus convexus* Pal : a) Dorsal view (scale= 1 mm.); b) Exposed part of head and antenna (scale= 0.5 mm.); c) Aedeagus, Lateral view.

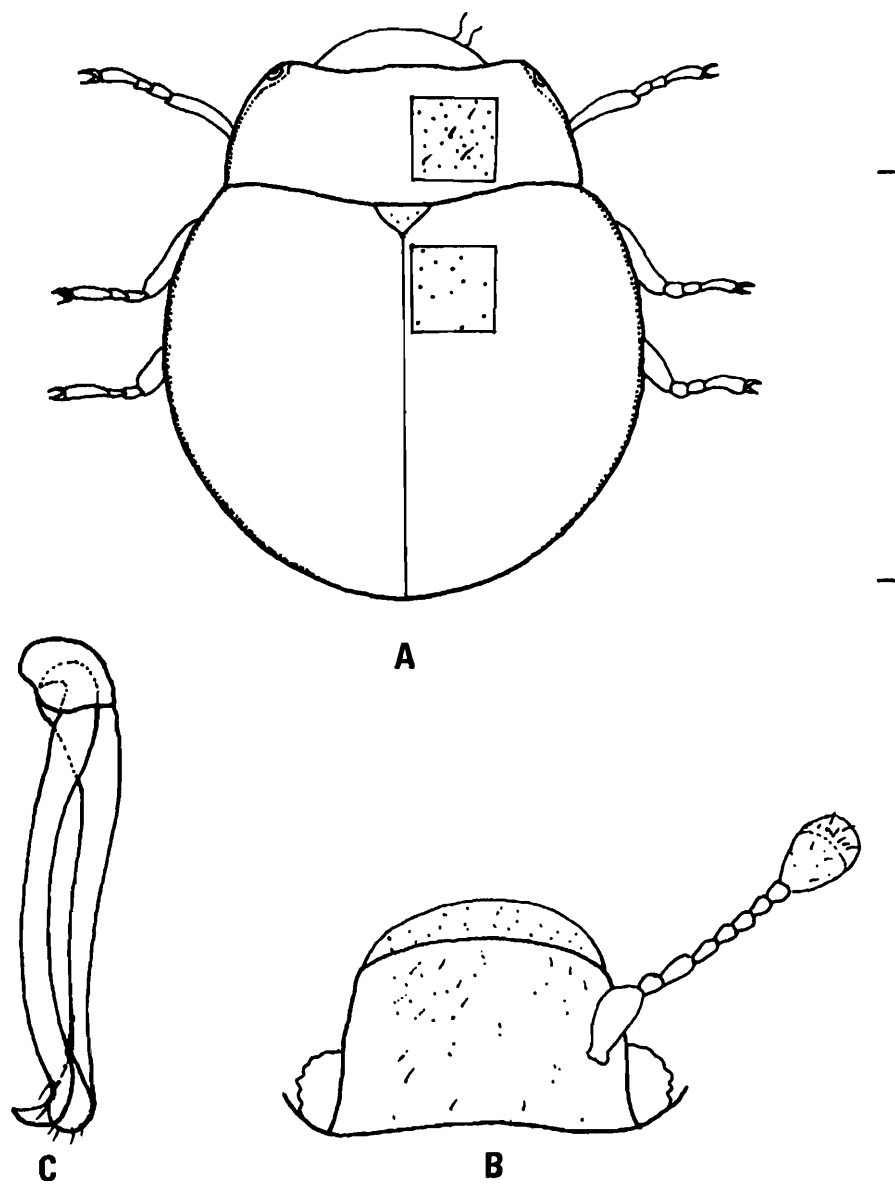


Fig. 3. *Aphanocephalus superbus* Pal : a) Dorsal view (scale= 1 mm.); b) Exposed part of head and antenna (scale= 0.5 mm.); c) Aedeagus, Lateral view.

Material : 15 ex. *Holotype* and 14 *Paratypes*, INDIA : SIKKIM, South district, Melli, 500 m., 18.ix.1993, T.K. Pal, ex. under bark and fungus on legs.

Distribution : India : Sikkim.

3. *Aphanocephalus sikkima* Pal

1997. *Aphanocephalus sikkima* Pal, *Hexapoda* 8 (1) : 10.

Diagnosis : Body oblong-ovate, shiny, finely punctate-pubescent, uniformly dark reddish-brown except for paler front margin of pronotum. Exposed part of head transverse, almost concealed from above by pronotum, fronto-clypeal suture situated just in front of antennal bases, clypeus with pubescence denser and more distinct than on pronotum, eyes small and visible only from ventral side, antenna about as long as pronotum, club about one-fourth as long as antenna and with two preapical annulations ; prothorax more than twice as broad as long, narrowed in front, front margin slightly emarginate, lateral margin feebly rounded and finely bordered, two pairs of lateral pits close to front and hind angles, basal margin convex and deeply sinuate near extremities, antero-lateral border paler than remaining part of pronotum, pale band interrupted near antero-medial portion, punctation fine and

sparse, pubescence short and rather indistinct; elytra about as broad as long and 2.8 x as long as prothorax, sides evenly rounded and finely bordered, punctures, simple, point-like impressions on cuticle, little coarser and denser than on pronotum, pubescence short and rather indistinct. Median lobe of aedeagus forming a tube with distal end broad and blunt; tegmen forming a cap-piece enveloping the median lobe, ventral edge of its proximal end produced into short spinous structure, its distal end bifid. Length—1.96 mm.

Material : 2 ex. *Holotype* and 1 *Paratype*, INDIA : SIKKIM, South District, Karfektar, 400 m., 2 km. O-Jorethang, 20.ix.1993, T.K. Pal, ex. vegetation debris.

Distribution : India : Sikkim.

SUMMARY

The paper deals with 3 species under 1 genus of 1 subfamily from the territory of Sikkim. The species are systematically keyed and characterized.

ACKNOWLEDGEMENTS

The author is indebted to the Director, Zoological Survey of India for providing necessary facilities for the work.

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INSECTA : COLEOPTERA : COLYDIIDAE (*SENSU LATO*)

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INTRODUCTION

The Colydiidae are a moderately large family of the superfamily Cucujoidea, still insufficiently understood at all taxonomic levels, due in large part to the artificiality of the family in classical usage. Over the years the family Colydiidae has been used as a repository of various genera, both Clavicornia and Heteromera, which possessed features like 4-segmented tarsi and clubbed antennae (Lawrence, 1980). The constitution of the family has changed considerably since the publication of Hetschko's Catalogue in 1930. Crowson (1955) made notable changes in the constitution of Colydiidae. He transferred Cerylonini, Murmidiinae and Euxestinae to the Clavicorn family Cerylonidae, and retained the remaining Colydiids under the Heteromera. In recent past there was a consideration by some coleopterists dealing with higher taxa (especially J. F. Lawrence) that Colydiidae as delineated by Crowson (1955) to be an assemblage of both clavicorns and heteromerans. The most recent treatment by Pal and Lawrence (1986) has accepted the genera close to *Bothrideres* (Bothriderinae *sensu* Crowson) as a separate family, Bothrideridae. But in the present account Crowson's treatment of Colydiidae, as regard to the limit of the family, is followed.

The Colydiids are small to moderately large beetles, those occur in both adult and larval stages in dead wood, under bark, leaf litter etc. Several species are predators on wood inhabiting larvae of insects. They are common throughout the world. Since Grouvelle (1908) Pal (1984) and Pal and Slipinski (1984) described three species

from India. The present account is based on some collection made by the author in Sikkim.

Characters of Family Colydiidae (*sensu lato*)

General form elongate-oblong to slender and parallel-sided, markedly flattened to subconvex or cylindrical glabrous or rugose, shiny or dull.

Head elongate to transverse, eyes small to large, usually constricted behind eyes, fronto-clypeal suture present or absent, antennal insertions dorso-lateral or hidden under projection of frons, antenna 10- or 11-segmented with 1- or 2-segmented club, club occasionally of more segments, gular sutures well separated, with or without antennal grooves on ventral side. Mandible large, with 2 or 3 apical teeth, without dorsal mandibular cavity. Maxilla with separate well developed lacinia and galea, lacinia with or without apical spine, apical segments of maxillary palpi elongate. Labium with mentum transverse, apical segment of palpi elongate.

Prothorax strongly elongate to transverse, pronotum with varying grades of sculpture from more or less smooth to bearing ridges and furrows, front coxae separated narrowly to moderately widely, trochantins hidden, coxal cavities open or close.

Mesocoxae usually moderately separated, sternal fitting between mesocoxae in straight line or with a knob from metasternum, mesocoxae closed outwardly, metendosternite well developed with anterior tendons well separated, hind coxae moderately to widely separated.



Elytra fully cover abdomen dorsally, puncturation in regular rows, without scutellary striae, epipleura well developed. Wing with 3 to 4 anal veins, usually with subcubital fleck.

Legs : trochanters short and simple or may be highly reduced and concealed at base of femora, tibiae usually broadened at apex with a few spurs, tarsal formula 4-4-4, tarsal segments usually simple.

Abdomen : 5 visible ventrites, ventrite 1 usually longer than others, intercoxal process narrow-acuminate to broad-truncate, with or without femoral lines, 7 pairs of functional spiracles.

LIST OF TAXA

Family COLYDIIDAE

Subfamily BOTHRIDERINAE

1. *Pseudobothrideres velatus* Grouvelle
2. *Triboderus andrewesi* Grouvelle
3. *Machlotes incisus* Pascoe
4. *Teredolaemus major* Champion

Subfamily COLYDIINAE

5. *Trachypholis hispida* (Weber)
6. *Cerchanotus orientalis* (Slipinski)
7. *Colobicus parilis* Pascoe
8. *Microprius demissus* (Pascoe)
9. *Bitoma siccana* (Pascoe)
10. *Hyberis similis* Grouvelle
11. *Neotrichus afoveicollis* sp. nov.
12. *Pycnomerus nitidicollis* (Reitter)

Key to the subfamilies, tribes, genera and species of Colydiidae from Sikkim

1. Antennal insertions hidden under projection of frons when viewed from above (Colydiinae) 2
- Antennal insertions dorsal and exposed (Bothriderinae) 9

2. Tibiae with large, nonarticulated spine or tooth at outer apical angle ; procoxal cavities closed behind. Dorsally glabrous (Pycnomerini)
..... *Pycnomerus nitidicollis* (Reitter)
- Tibial apex devoid of spine, sometimes with 2 or few simple apical spurs; procoxal cavities open. Dorsally usually dull and setose (Synchitini) 3
3. Pronotum and elytra with prominent longitudinal carinae or costae 4
- Pronotum and elytra without longitudinal carinae 5
4. Pronotum with lateral margins broadly explanate, usually transverse; antennal grooves on ventral side of head long and extending beyond posterior margin of eye
..... *Microprius demissus* (Pascoe)
- Lateral margins of pronotum not explanate, usually subquadrate; antennal grooves on ventral side of head shorter and not extending beyond middle of eyes
..... *Bitoma siccana* (Pascoe)
5. Antenna 10-segmented with 1-segmented club. Head without distinct post-ocular temple before neck constriction; dorsal surface tuberculate; lateral border of pronotum widely explanate and explanate flank at least as wide as eye *Hyberis similis* Grouvelle
- Antenna 11-segmented with 2-segmented club 6
6. Form elongate-elliptical, prothorax markedly transverse 7
- Form elongate, subparallel, prothorax elongate or slightly transverse 8
7. Antennal segment 3 at least as long as segments 4 and 5 together; intercoxal process of first abdominal ventrite angulate apically, antennal groove on ventral side of head long and little convergent posteriorly
..... *Colobicus parilis* Pascoe
- Antennal segment 3 shorter than segments 4 and 5 together; intercoxal process of first abdominal ventrite broad and more or less

- truncate apically; antennal groove on ventral side of head long and divergent posteriorly. All elytral intervals uniformly setose; pronotum with two moderately distinct protuberance *Trachypholis hispida* (Weber)
8. Pronotum little transverse; antennal cavities on ventral side of head long and extending beyond posterior margin of eyes. Sides of pronotum narrowly explanate and rather convergent posteriorly *Cerchantous orientalis* (Slipinski)
- Pronotum elongate to about as broad as long; antennal cavities on ventral side of head shorter and not extending up to posterior margin of eyes. Pronotum devoid of any lateral foveae *Neotrichus afoveicollis* sp. nov.
9. Trochanters highly reduced and concealed within notch at base of femora; protibial spurs usually unequal in length, one being enlarged and strongly curved and hooked; elytra almost always with longitudinal ridges of carinae (Bothriderini) 10
- Trochanters not reduced and easily visible; protibial spurs more or less equal in length, neither greatly enlarged nor hooked; elytra without longitudinal ridges or carinae. Intercostal process of first abdominal ventrite narrow and acuminate apically; front coxal cavities open; antennal club consists of two strongly appressed segments often look like one segment; no antero-median longitudinal process on prosternum. Body blackish (Teredini) *Teredolaemus major* (Champion)
10. Pronotum with a deep transverse fovea interrupting admedian pair of longitudinal carinae. Anterior tibiae expanded towards apices and with well developed external apical teeth; metasternum and first abdominal ventrite with well marked femoral lines *Machlotes incisus* Pascoe
- Pronotum without longitudinal carinae 11
11. Antenna 11-segmented; metasternum and first abdominal ventrite with femoral lines. Pronotal

tubercle (encircled by fovea) nearly rectangular with its anterior border angularly notched ...

..... *Pseudobothrideres velatus* (Grouvelle)

- Antenna 10-segmented; metasternum devoid of femoral lines. Pronotum with elongate impression which widened anteriorly *Triboderus andrewesi* Grouvelle

Family COLYDIIDAE

Subfamily BOTHRIDERINAE

Genus I. *Pseudobothrideres* Grouvelle

1908. *Pseudobothrideres* Grouvelle, *Annls. Soc. ent. Fr.* 77 : 438

[Type-species : *Pseudobothrideres neglectus* Grouvelle].

Diagnosis : Elongate-elliptical to rather parallel-sided, subdepressed. Head with eyes moderately prominent, 11-segmented antenna with 2-segmented club, penultimate segment of antennal club broader and larger than apical one, ventrally antennal groove long, mandible with 2 apical teeth, maxillary lacinia with a bifid apical spine, apical segments of maxillary and labial palpi elongate and fusiform. Prothorax trapezoidal with sides little sinuate before base, pronotum with a rectangular tubercle encircled by well marked sulcus, front coxae moderately widely separated; prosternal process broad, expanded apically and with transverse impressed suture between coxae; mesocoxae moderately widely separated, metasternum with well marked femoral lines; elytra striate-punctate, alternate interstices carinate; tibia of legs with two apical spurs, tarsal segments 1 to 3 subequal in length; intercostal process of first abdominal ventrite broad and truncate apically, with well marked femoral lines.

1. *Pseudobothrideres velatus* Grouvelle

1908. *Pseudobothrideres velatus* Grouvelle, *Annls. Soc. ent. Fr.* 77 : 441.

Diagnosis : Elongate, subparallel, reddish-brown, slightly shiny; eyes about one-third as long as head, anterior clypeal border straight, fronto-clypeal suture straight, punctuation on vertex coarse and dense, antenna short, antennal

segments 3 to 8 more or less transverse and slightly widening anteriorly; elongate prothorax with front angles slightly projected, side margins finely bordered and sinuate before posterior angles, pronotal tubercle nearly rectangular with its anterior margin angularly notched, puncturation on pronotum elongate and finer than on vertex of head; elytra more than twice as long as broad, slightly broadened from shoulders to about middle, carinae more strongly raised on apical part, all carinae joined apically except third one which ends freely, striae punctures minute. Length- 5.2 mm.

Material : 1 ex. India : Sikkim, South District, Melli, 500 m., 18.ix.1993, T.K. Pal, *ex.* under bark.

Distribution : India : Sikkim (new record), Tamil Nadu; Thailand; Vietnam.

Genus II. *Triboderus* Grouvelle

1894. *Triboderus* Grouvelle, *Ann. Soc. Ent. Belg.*, **38** : 463
[Type-species : *Triboderus andrewesi* Grouvelle].

Diagnosis : Elongate-oblong, subdepressed. Head with eyes moderately large, 10-segmented antenna with 2-segmented club, penultimate segment of antennal club larger than apical one, ventrally antennal groove long, mandible with 2 apical teeth, apical segments of maxillary and labial palpi elongate and fusiform. Prothorax trapezoidal with sides little sinuate before bases, median longitudinal impression on pronotal disc, anterior and posterior extremities of impression with deeper depressions, prosternal process broad, expanded apically and with transverse impressed suture between coxae, mesocoxae moderately widely separated, metasternum without femoral lines; elytra striate-punctate, alternate interstices carinate; tarsal segments 1 to 3 subequal in length; intercoxal process of first abdominal ventrite broad and truncate apically, with well marked femoral lines.

2. *Triboderus andrewesi* Grouvelle

1894. *Triboderus andrewesi* Grouvelle, *Ann. Soc. Ent. Belg.*, **38** : 463.

Diagnosis : Elongate-oblong, reddish-brown, slightly shiny; eyes about half as long as head, anterior clypeal border straight, fronto-clypeal suture straight, puncturation on vertex coarse, dense and little elongate, antenna short, antennal segments 3 to 8 more or less transverse and slightly widening anteriorly; elongate prothorax with front angles slightly projected, side margins finely bordered, anterior depression on impressed area of pronotal disc about one-third as wide as pronotum, posterior depression little wider than half as wide as anterior depression, puncturation on pronotum coarser than on vertex of head; elytra about twice as long as wide, carinae of interstices 3 and 5 terminate freely before apical margin, striae punctures small and little coarser anterad. Length 2.60 3.20 mm.

Material : 5 ex. India : Sikkim, South District, Karfektar, Jorethang, 650m., 10.iii. 1996, T.K. Pal, *ex.* *Mangifera indica* log.

Distribution : India : Sikkim (new record), Karnataka.

Genus III. *Machlotes* Pascoe

1863. *Machlotes* Pascoe, *J. Ent.* **2** : 36

[Type-species : *Machlotes porcatus* Pascoe].

Diagnosis : Elongate, subparallel. Head with prominent eyes, 11-segmented antenna with 2-segmented club, ventrally antennal groove moderately long bordering inner margin of eye, mandible with 3 apical teeth, maxillary lacinia with an apical spine, apical segments of maxillary and labial palpi elongate and fusiform. Prothorax more or less elongate, little narrowed posteriorly, pronotum with six longitudinal carinae, admedian pair of carinae interrupted near base by a deep transverse fovea, front coxae moderately widely separated, prosternal process broad, expanded apically and with transversely impressed suture between coxae, mesocoxae moderately widely separated, metasternum with indistinctly marked femoral lines; each elytron with six longitudinal carinae, intervals with large punctures, tibiae of legs with a strong apical spur on inner margin and bidentate on outer margin, tarsal segments 1

to 3 subequal in length; intercoxal process of first abdominal ventrite broad and truncate apically, with indistinctly marked femoral lines.

3. *Machlotes incisus* Pascoe

1863. *Machlotes incisus* Pascoe, *J. Ent.* 2 : 135.

Diagnosis : Elongate, subcylindrical, longitudinally costate, blackish brown, dull ; head with eyes about half as long as head, anterior clypeal border truncate, fronto-clypeal suture little arcuate, clypeal puncturation moderately coarse and separated by less than one diameter, puncturation on frons and vertex coarser than those on clypeus, antenna short, antennal segments 3 to 9 more or less transverse, apical segment of antennal club shorter and narrower than basal one; elongate prothorax (1.3 : 1.0) little convergent posteriorly, anterior border arcuate, lateral borders almost straight and each with a tooth behind middle ; pronotal carinae broad and rounded dorsally, punctures on carinae similar in size to those of clypeus but sparser, outer carina joining lateral border near anterior and posterior angles and also connected with lateral tooth ; elytra more than twice as long as broad, almost parallel-sided and narrowed for apical third, carinae strongly raised but sutural ones little feebly, all carinae except third one joined apically, punctures moderately large and deep. Length – 4.2 mm.

Material : 2 ex. INDIA : Sikkim, South District, Melli, 500m., 1 ex., 18.ix.1993, T.K. Pal, ex. under bark ; East District, Rangpo, 450 m., 1 ex., 19.iv.1976, T.K. Pal, ex. under bark.

Distribution : India : Sikkim (new record); Philippines; Malaysia.

Genus IV. *Teredolaemus* Sharp

1885. *Teredolaemus* Sharp, *J. Linn. Soc. London* 19 : 74
[Type-species : *Teredus politus* Lewis].

Diagnosis : Elongate, subcylindrical; Head with eyes prominent, 11-segmented antenna with 2-segmented club, two club segments so closely appressed appear one, gular region of head devoid of antennal cavities, mandible with 3 apical teeth,

maxillary lacinia with a bifid apical spine, apical segments of maxillary and labial palpi elongate and somewhat fusiform. Prothorax subsquare, sides little arched, pronotum devoid of carinae or foveae, front coxal cavities open, coxae closely situated, prosternal process narrow and rather pointed at apex and not reaching up to posterior border of prosternum, mesocoxae narrowly separated; elytra striate-punctate, devoid of carinae; tibiae of legs with circlet of apical spurs, tarsal segments 1 little longer than segments 2 and 3, segment 4 longest; intercoxal process of first abdominal ventrite not broad and rather pointed apically, devoid of femoral lines.

4. *Teredolaemus major* Champion

1919. *Teredolaemus major* Champion, *Entomologist's mon. Mag.* 55 : 241.

Diagnosis : Elongate, parallel-sided, blackish, shining; eyes larger than half as long as head, clypeal margin and fronto-clypeal suture little arcuate; punctures on vertex moderately coarse, antenna moderately long with a broad-oval club; prothorax about as broad as long, little narrowed posteriorly behind anterior third, punctures on pronotum sparser than on vertex of head : elytra more than twice as long as broad, rounded at apex, apical declivity rather broadly and longitudinally excavate near suture, with some irregular rows of punctures placed between punctate striae. Length 4.4 mm.

Material : 1 ex. India : Sikkim, East District, Rangpo, 450 m., 19.iv.1976, T.K. Pal, ex. under bark.

Distribution : India : Sikkim (new record), Uttar Pradesh.

Subfamily COLYDIINAE

Genus V. *Trachypholis* Erichson

1845. *Trachypholis* Erichson, *Naturg. Ins. Deutschl. Col.* 3 : 257

[Type-species : *Opatrum hispidum* Weber].

Diagnosis : Elongate-elliptical, subdepressed, dorsally with rugose sculptures and covered with

short squamous hairs. Head with prominent eyes, 11-segmented antenna inserted under projection of frons, 3rd antennal segment about as long as segments 4 and 5 together, antennal club 2-segmented, ventrally antennal groove long bordering inner margin of eye, mandible with 2 apical teeth, apical segments of labial and maxillary palpi elongate and somewhat fusiform. Prothorax broader than long, sides more or less rounded, front margin emarginate, front coxae rather closely situated and front coxal cavities open, prosternal process moderately broad and not much expanded apically, mesocoxae separated almost as wide as front coxae, metasternum devoid of femoral lines, elytra striate-punctate, tibiae of legs with no distinct apical spurs, tarsal segments 1 to 3 subequal in length; intercoxal process of first abdominal ventrite broad and broadly angulate apically.

5. *Trachypholis hispida* (Weber)

1801. *Opatrum hispidum* Weber, *Observ. Ent.* 1 : 38.
 1862. *Tarphiodes bowringi* Wallaston, *J. Ent.* 1 : 362.
 1863. *Trachypholis hispida* : Pascoe, *J. Ent.* 2 : 138.
 1863. *Trachypholis aequalis* : Pascoe, *J. Ent.* 2 : 138.
 1877. *Trachypholis erichsoni* Reitter, *Stettin Ent. Ztg.* 38 : 328.
 1908. *Trachypholis hispida* : Grouvelle, *Annls. Soc. ent. Fr.* 77 : 420.

Diagnosis : Broadly oval, surface dark brown, clothed with yellowish-white squamiferous setae; head with shallow longitudinal impressions over antennal bases, eyes shorter than half as long as head, frontal margin above slightly elevated; prothorax strongly transverse, front margin arcuate medially and strongly sinuate on sides near front angles, lateral margins arched, widest behind middle, pronotal sides explanate, two admedial small protuberance on pronotum, pronotal disc with erect setae and on borders directed laterally; elytra little more than one and half times as long as broad, widest near middle and narrowed at apical third, alternate interstices on elytra without setae, setae above two successive rows of

punctures converge towards setal interval giving rise to appearance of linear arrangement of 3 rows of setae at regular intervals. Length—4.5 – 6.4 mm.

Material : 6 ex. India : Sikkim, East District, Singtam, 24. xii. 1980, S.K. Shaha, ex. under bark.

Distribution : India : Sikkim; Sri Lanka; Myanmar; Thailand; Vietnam; Philippines; Indonesia.

Genus VI. *Cerchanotus* Erichson

1845. *Cerchanotus* Erichson, *Naturg. Ins. Deutschl. Col.*, 3 : 257

[Type-species : *Syntarsus asperulus* Fairmaire, by subsequent designation.]

1869. *Syntarsus* Fairmaire, *Annls. Soc. ent. Fr.* (4) 9 : 205.

Diagnosis : Elongated, subparallel, moderately depressed, dull, covered with squamiform setae. Head with prominent eyes, 10-segmented antenna with 2-segmented club, antenna inserted under projection of frons, ventrally antennal groove long reaching below posterior level of eye, mandible with 2 apical teeth, apical segments of maxillary and labial palpi elongate. Prothorax broader than long, sides dentate, front coxae separated by less than diameter of coxae, front coxal cavities open, mesosternal process a little narrower than prosternal apex, metasternum devoid of femoral lines, elytra striate-punctate, tibiae of legs with no distinct apical spurs, tarsal segments 1 to 3 subequal in length and division between segments 1 and 2 not apparently distinct; intercoxal process of first abdominal ventrite narrowed towards apex, no femoral lines.

6. *Cerchanotus orientalis* (Slipinski) comb. nov.

1985. *Syntarsus orientalis* Slipinski, *Annales Zoologici* 39 : 183.

1908. *Cebia rugosa* (nec. Pascoe) : Grouvelle, *Annls. Soc. ent. Fr.* 77 : 412.

1975. *Cebia rugosa* (nec. Pascoe) Dajoz, *Ent. Basel.* 1 : 297.

Diagnosis : Facies as noted above; head transverse, anterior clypeal margin almost straight, surface flat with slightly rugose punctures, punctures with whitish squamiform setae, eyes nearly half as long as head and studded with short whitish setae; transverse prothorax slightly convergent basally, pronotal sides narrowly explanate and dentate, front angles acute, pronotum coarsely punctate and covered with whitish squamiform setae; elytra less than twice as long as broad, parallel-sided and rounded apically, each elytron with 9 rows of deep punctures, with semirecumbent whitish squamiform setae. Length – 2.8 mm.

Material : 2 ex. India : Sikkim, East District, Rangpo, 450 m., 19.iv.1976, T.K. Pal, ex. under bark *Shorea robusta*.

Distribution : India : Sikkim; Bhutan; Nepal; Sri Lanka; Indonesia (Sumatra).

Genus VII. *Colobicus* Latreille

1807. *Colobicus* Latreille, *Genera Crustaceorum et insectorum*, 2 : 9

[Type-species : *Colobicus marginatus* Latreille].

Diagnosis : Elongate-ovoid, subdepressed, covered with short squamiform setae. Head with prominent eyes, 11-segmented antenna inserted under projection of frons, 3rd antennal segment longer than segments 4 and 5 together; antennal club 2-segmented, ventrally antennal groove long and little convergent posteriorly, mandible with 2 apical teeth, apical segments of labial and maxillary palpi elongate and somewhat fusiform. Prothorax broader than long, sides rounded, front margin deeply emarginate, front coxae separated less than diameter of coxae, front coxal cavities open, mesosternal process a little narrower than prosternal apex, metasternum devoid of femoral lines, elytra striate-punctate, tibiae of legs with no distinct apical spurs, tarsal segments 1 to 3 subequal in length; intercoxal process of first abdominal ventrite broadly pointed at apex, no femoral lines.

7. *Colobicus parilis* Pascoe

1860. *Colobicus parilis* Pascoe, *J. Ent.* 1 : 202.

1863. *Colobicus conformis* Pascoe, *J. Ent.* 2 : 124.

1908. *Colobicus parilis* : Grouvelle, *Annl. Soc. ent. Fr.* 77 : 406.

1909. *Colobicus parilis* : Arrow, *Ann. Mag. nat. Hist.* (8) 4 : 193.

Diagnosis : Elongate, oblong, dark brown; head transverse, anterior clypeal margin almost straight, surface flat with slightly rugose punctures and punctures with setae, eyes shorter than half as long as head, antennal segment 3 about as long as three successive segments together; transverse prothorax with anterior margin little arcuate medially and strongly sinuate to produce front angles, widest near posterior third, pronotal sides moderately explanate and margin finely serrulate, transverse striations on explanate portions, pronotum with a prebasal impression, punctures on pronotal disc slightly rugose and setose; elytra about 1.5 times as long as broad, sides narrowly explanate, interstices wider than rows of punctures, with recumbent short squamiform setae. Length – 3.8 mm.

Material : 1 ex. India : Sikkim, East District, Rangpo, 450 m. 19.iv.1976, T.K. Pal, ex. under bark.

Distribution : India : Sikkim (New record), Kerala (Mahe); Myanmar; Philippines; Indonesia (Moluccas); Hawaii Is.

Genus VIII. *Microprius* Fairmaire

1868. *Microprius* Fairmaire, *Annl. Soc. ent. Fr.* (4) 8 : 779

[Type-species : *Microprius terrenus* Fairmaire].

1886. *Trionus* Sharp, *J. Linn. Soc. London* 19 : 70.

Diagnosis : Elongated, subparallel, rather depressed, sparsely pubescent but no squamiform setae, pronotum and elytra longitudinally carinate. Head with prominent eyes, 11-segmented antenna with 2-segmented club, antenna inserted under projection of frons, antennal segments 3 to 9 subequal in length and shorter than scape and

pedicel, ventrally antennal groove long and extended considerably beyond posterior margin of eye, mandible with 2 apical teeth, apical segments of labial and maxillary palpi elongate and somewhat fusiform. Prothorax broader than long, sides crenulate, pronotum convex medially with explanate sides, two pairs of longitudinal carinae with additional carinae near middle of anterior and posterior halves of pronotal disc, front coxae separated not wider than diameter of coxae, front coxal cavities open, mesosternal process little narrower than prosternal apex, metasternum devoid of femoral lines; elytra striate-punctate, alternate interstices carinate, tibiae of legs with no distinct apical spurs, tarsal segments 1 to 3 subequal in length; intercoxal process of first abdominal ventrite narrowed towards apex, with short femoral lines.

15. *Microprius demissus* (Pascoe)

1863. *Phormesa demissus* Pascoe, *J. Ent.* 2 : 33.

1908. *Microprius demissus* : Grouvell, *Annls. Soc. ent. Fr.* 77 : 400.

Diagnosis : Elongated, subdepressed, dark brown and dorsally very dull, finely setose; head transverse, anterior clypeal margin little arcuate, sides of head behind antennal base raised to form carinae-like structure, eyes about half as long as head, antenna about as long as head, no tubercles on dorsum but coarsely punctate; transverse prothorax widest near middle, sides of pronotum widely explanate and concave, margins serrated, an U-shaped additional carina in anterior half and a X-shaped additional carina on posterior half on the midline of pronotum between two pairs of lateral carinae, punctures on pronotum almost similar as on head; elytra about twice as long as broad, sides narrowly explanate and margins serrated, each elytron with five sharp longitudinal carinae not joined either anteriorly or posteriorly. Length — 2.4 mm.

Material : 1 ex. India : Sikkim, East District, Rangpo, 19.iv.1976, T.K. Pal, ex. under bark.

Distribution : India : Sikkim (New record), Tamil Nadu.

Genus IX. *Bitoma* Herbst

1793. *Bitoma* Herbst, *Natursystem der Insekten : Käfer*, 5 : 25

[Type-species : *Tritoma crenata* Fabricius.]

1807. *Ditoma* Illiger, *Magazin für Insektenkunde* 6 : 320.

1857. *Euditoma* Gistel, *Vacuna* 2 : 26.

1863. *Coniophaea* Pascoe, *J. Ent.* 2 : 90.

1873. *Synchytodes* Crotch, *Checklist Col. North Americ* : 45.

1872. *Synchitodes* Reitter, *Best-Tab. eur. Col.* 6 : 130.

Diagnosis : Elongated, subparallel, almost cylindrical, pronotum and elytra longitudinally carinate and body sparsely pubescent. Head with prominent eyes, 11-segmented antenna with 2-segmented club, antenna inserted under projection of frons, antennal segments 4 to 9 subequal in length and shorter than preceding segments, ventrally antennal groove short and extending not beyond middle of eye, mandible with 2 apical teeth, apical segments of labial and maxillary palpi elongate and somewhat fusiform. Prothorax subquadrate, side margins crenulate, pronotum convex medially with sides not explanate, two pairs of longitudinal carinae (sublateral and admedian) on pronotum with a pair of short carinae between admedian carinae, front coxae separated not wider than diameter of coxae, front coxal cavities open, mesosternal process little narrower than prosternal apex, metasternum devoid of femoral lines; elytra striate-punctate, alternate interstices feebly carinate, tibiae of legs with two spurs at outer apical angle and with a single one at inner side, tarsal segments 1 to 3 subequal in length; intercoxal process of first abdominal ventrite narrowed towards apex, no femoral lines.

9. *Bitoma siccana* (Pascoe)

1863. *Xuthia siccana* Pascoe, *J. Ent.* 2 : 128.

1863. *Xuthia rufina* Pascoe, *J. Ent.* 2 : 128.

1863. *Xuthia maura* Pascoe, *J. Ent.* 2 : 128.

1867. *Bitoma lyctiformis* Wollaston, *Col. Hesper-idum* : 63.

1885. *Xuthia parallela* Sharp, *J. Linn. Soc. Lond.* 19 : 70

1892. *Bitoma elongata* Grouvelle, *Annl. Soc. ent. Fr.* **59** : 296.
1898. *Bitoma rufipes*, Kolbe, *Deutsch. Ost-Afr.* **4** Käfer : 111.
1908. *Xuthia siccana* : Grouvelle, *Annl. Soc. ent. Fr.* **77** : 399.
1930. *Bitoma siccana* : Hetschko, *Col. Cat.* **107** : 19.
1980. *Bitoma siccana* : Dajoz, *Faune de Madagascar*, **54** : 28.
1985. *Bitoma siccana* : Slipinski, *Pol. Pismo Ent.* **55** : 485.

Diagnosis : Elongated, subcylindrical reddish-brown to dark brown, not shining and finely setose; head transverse, anterior clypeal margin little emarginate medially, frons and vertex slightly impressed laterally, sides of head behind antennal base raised to form carinae-like structure, eyes about half as long as head, rugose granular punctures on dorsal side; quadrate prothorax with anterior margin arcuate medially, two pairs of well developed carinae on pronotum with the additional carinae in anterior half short and rather parallel, side margins finely sinuate and widest in anterior half, puncturation on pronotum almost similar as on vertex on head; elytra little more than twice as long as broad, each elytron with five feeble longitudinal carinae not joined either anteriorly or posteriorly. Length — 2.5–3.2 mm.

Material : 10ex. India : Sikkim, South District, Melli, 500 m., 9 ex. 18.ix.1993, T.K. Pal, ex. under bark ; West District, Nayabazar, 400 m., 1ex., 21.ix.1993, T.K. Pal, ex. under bark.

Distribution : India : Sikkim (new record), West Bengal, Tamil Nadu; Bhutan; Nepal; Myanmar; Sri Lanka; Japan; Indonesia; Seychelles Is.; Mascarene Is.; New Guinea; New Caledonia; Madagascar; Reunion; Mauritius; Guinea Bissau; South Africa; Saudi Arabia.

Genus X. *Hyberis* Pascoe

1860. *Hyberis* Pascoe, *J. Ent.* **1** : 112
[Type-species : *Hyberis araneiformis* Pascoe].
1883. *Deinosoma* Westwood, *Tijds. Ent.* **26** : 61.

Diagnosis : Elongate-oval, convex, surface dull and tuberculate. Head with moderately large eyes, no distinct post-ocular temple, 10-segmented antenna with 1-segmented club, antennal club with a preapical annulation, antenna inserted under projection of frons, ventrally antennal groove moderately long and reaching almost posterior border of eye, mandible with 2 apical teeth, apical segments of labial and maxillary palpi elongate. Prothorax transverse, sides more or less arched and dentate, pronotum medially convex with sides explanate, front coxae moderately widely separated and mostly concealed by prosternal process, prosternal process rounded apically, front coxal cavities open; mesocoxae a little less widely separated than front coxae, no femoral lines on metasternum; elytra with no distinct puncture but tuberculate; tibiae of legs with no distinct apical spurs, tarsal segments 1 to 3 subequal in length; intercoxal process of first abdominal ventrite broad and truncate apically, no femoral lines.

10. *Hyberis similis* Grouvelle

1913. *Hyberis similis* Grouvelle, *Rec. Indian Mus.* **8** : 106.

Diagnosis : Broadly elongate, blackish-brown, covered with thick setae; head transverse, anterior clypeal margin arcuate, frons little elevated above antennal bases, eyes about one-third as long as head, antenna about as long as prothorax, antennal club slightly elongate, apical part of club about one-third as long as club and densely setose, round tuberculate punctures on dorsal side bearing setae; transverse prothorax with anterior margin arcuate medially and with deeply sinuate on sides, anterior half of lateral margin arcuate and then sinuate and narrowed posteriorly, about 5-7 large teeth on lateral margin in anterior half and smaller teeth in posterior half, explanate lateral flank of pronotum not as wide as eyes, two admedian elevated humps on pronotal disc, punctures on pronotal disc larger and more rugose than those on head; elytra shorter than one and half times as long as broad and gradually narrowed in posterior third, sides dentate, large tuberculate punctures arranged in rows, 2 small admedian elevations near base. Length—4.0-4.4 mm.

Material : 2 ex. India : Sikkim, South District, Melli, 500 m., 18.ix. 1993, T.K. Pal, *ex.* under bark (1ex.) and fungus on log (1ex).

Distribution : India : Arunachal Pradesh, Sikkim (new record).

Genus XI. *Neotrichus* Sharp

1886. *Neotrichus* sharp, *J. Linn. Soc. Lond.* 19 : 61

[Type-species : *Neotrichus hispidus* Sharp].

Diagnosis : Elongated, subparallel, no longitudinal carinae on pronotum and elytra, body covered with squamiform setae. Head with moderately large eyes, temple slightly extended like shelf beneath eye, 11-segmented antenna with 2-segmented club, antenna inserted under projection of frons, antennal segments 4 to 9 subequal in length and shorter than preceding segments, ventrally antennal groove moderately long, little convergent posterad and reaching not up to posterior border of eye, mandible with 2 apical teeth, apical segments of labial and maxillary palpi elongate and somewhat fusiform. Prothorax elongate or subquadrate, side margins denticulate, pronotum more or less convex medially, front coxae separated not wider than diameter of coxae, front coxal cavities open; mesosternal process narrower than prosternal apex, metasternum devoid of femoral lines; elytra striate-punctate, interstices not carinate, tibiae of legs with two small apical spurs, tarsal segments 1 to 3 subequal in length; intercoxal process of first abdominal ventrite narrowed and pointed towards apex, no femoral lines.

11. *Neotrichus afoveicollis* sp. nov.

Facies (Text-fig. 1) rather narrowly elongate, moderately depressed, reddish-brown to dark brown, not shining. Head moderately transverse, anterior margin of clypeus slightly arcuate, shallow longitudinal impressions over antennal bases, eyes about one-third as long as head and not projecting, antenna slightly shorter than length of head, club segments (segments 10 and 11) subequal in length and little transverse, disc of frons and vertex with distinctly raised and

flat-topped round tubercles (rugose punctures), tubercles separated by less than their diameter and each bearing an erect squamiform seta, clypeal apex non-tuberculate. Prothorax about as broad as long, sides almost straight and slightly narrowed from apices to bases, anterior margin strongly arcuate medially and deeply sinuate on sides near front angles, front angles strongly produced and posterior angles not very well marked, pronotum with moderately impressed preapical and prebasal margins, lateral margins very narrowly explanate and distinctly dentate; pronotal disc set with rugose tubercles and larger in size than those on head, tubercles separated by much less than their diameter and each bearing an erect squamiform seta. Scutellum about as broad as long, truncate apically and impunctate. Elytra more than twice as long as broad (2.2 : 1.0), convex and dorsally a bit flattened, rather parallel-sided, narrowed at apical third with rounded apex, sides not explanate, punctures of striae coarse, separated longitudinally by about one diameter, interstices little narrower than diameter of punctures, intervals between punctures on striae feebly tuberculate and each bearing a semierect squamiform seta. Puncturation on ventral side much finer, no squamiform seta.

Measurements of holotype : Total length 2.88 mm., width of head 0.55 mm., length of antenna 0.50 mm., length and width prothorax 0.74 and 0.74 mm., length and width of elytra 1.85 and 0.83 mm.

Holotype : India : Sikkim, North District, Chungthang, 1560 m. 30.ix.1993, T.K. Pal, *ex.* under bark of *Cryptomaria* sp.; **Paratypes** : 4 ex., data same as holotype (Zoological Survey of India, Calcutta).

Distribution : India : Sikkim

Comments : This species shows resemblance with an African species, *N. foveatus* Pope. But this species can be distinguished from the above one by the absence of deep lateral foveae near middle of pronotum and interstices between rows of punctures on elytra little narrower than diameter of punctures.

Genus XII. *Pycnomerus* Erichson

1842. *Pycnomerus* Erichson, *Archiv für Naturgeschichte*, 8 (1) 214

[Type-species : *Ips terebrans* Olivier].

1860. *Penthelispa* Pascoe, *J. Ent.* 1 : 111.

1861. *Endectus* LeConte, *Classif. Col. N. Amer.* 1 : 91.

1899. *Pycnomeroplesius* Ganglbauer, *Die käfer von Mitteleuropa* 3 : 885.

Diagnosis : Elongated, subparallel, moderately depressed, punctate body with ribbed elytra, glabrous and shiny. Head with moderately large eyes, postocular temple may be short or long, 11-segmented moniliform antenna with 2-segmented club (sometimes segments 10 and 11 fused into 1-segmented club), antennal insertions hidden under projection of frons, no distinct antennal groove on ventral side, mandible with 2 apical teeth, apical segments of labial and maxillary palpi elongate and fusiform. Prothorax usually little elongate; sides smooth (rarely finely serrate), pronotum moderately convex, side margins not explanate but finely bordered, front coxae separated wider than diameter of coxae, prosternal process expanded apically, front coxal cavities closed, mesosternal process narrower than prosternal apex, metasternum devoid of femoral lines; elytra striate-punctate, interstices not carinate but ribbed, tibiae of legs with a distinct tooth at outer apical angle and spine at inner apical angle, tarsal segments 1 to 3 subequal in length; intercoxal process of first abdominal ventrite broad and truncate apically, no femoral lines.

12. *Pycnomerus nitidicollis* (Reitter)

1877. *Penthelispa nitidicollis* Reitter, *Stettin Ent. Ztg.* 38 : 305.

1908. *Pycnomerus nitidicollis* : Grouvelle, *Annls. Soc. ent. Fr.* 77 : 428.

Diagnosis : Moderately broadly elongate, reddish-brown, shiny; head transverse, anterior clypeal margin emarginate, frons little elevated above antennal bases, two sublateral small elongate depressions near antennal bases, antenna slightly longer than head, antennal segments 2 to

9 transverse, segments 10 and 11 distinctly separated and more or less transverse, eyes shorter than half as long as head, dorsal surface moderately coarsely punctate; punctures separated by about a diameter or little more; prothorax little elongate; widest in anterior third and little narrower posteriorly, front angles slightly produced and hind angles not prominent, pronotal sides smooth and finely bordered, with two transverse admedian prebasal depressions, punctures on pronotal disc coarse near middle and little finer anterad and posterad; elytra more than twice as long as broad, almost parallel-sided at basal two-thirds and then narrowed to rounded apex, interstices little raised and rounded dorsally, interstices 2 and 4 fused at level of posterior border of fourth abdominal ventrite, interstices 6, 7 and 8 fused at level of posterior border of third abdominal ventrite. Length—2.9–3.1 mm.

Material : 2 ex. India : Sikkim, North District, Chungthang, 1560 m., 30.ix. 1993, T.K. Pal, ex. under bark.

Distribution : India : Sikkim (new record), Tamil Nadu; Sri Lanka;

SUMMARY

The paper deals with 12 species under 12 genera of 2 subfamilies of which 1 species is new (*Neotrichus afoveicollis*) and 1 species (*Machlotes incisus* Pascoe) is recorded first time from India; several new records from the State of Sikkim are made. The species are systematically keyed and characterized.

ACKNOWLEDGEMENTS

The author is indebted to the Director, Zoological Survey of India for providing necessary facilities for the work. He expresses his gratitude to Dr. S.A. Slipinski of Museum & Institute of Zoology, Warsaw, Poland for offering free access to his enormous collection of colydiids and vast literature of the group when he visited the institute in 1986 and 1995.

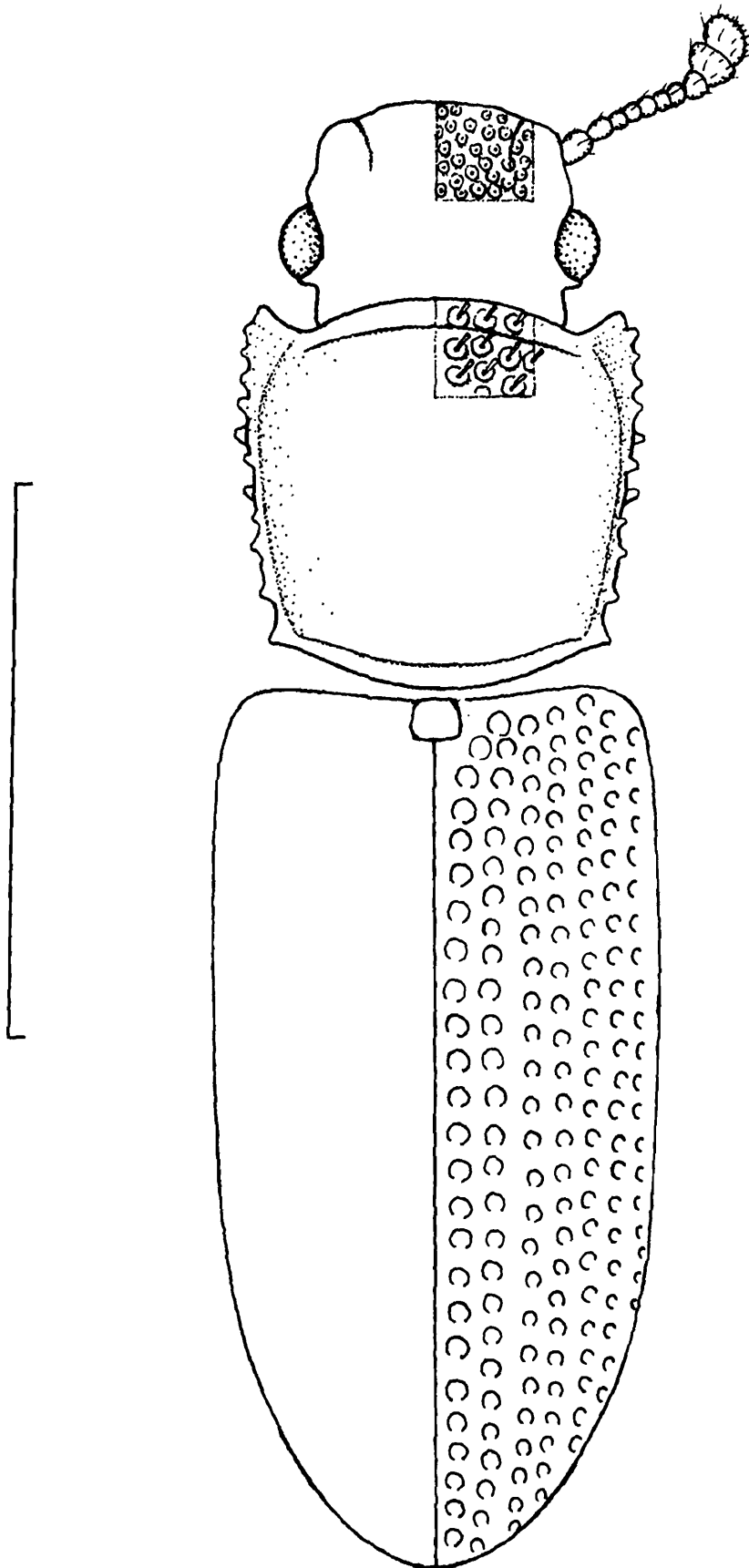


Fig.1. : *Neotrichus afoveicollis* sp. nov., Dorsal view (scale = 1.0 mm.).

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INSECTA : COLEOPTERA : INOPEPLIDAE

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INTRODUCTION

The Inopeplidae are a sufficiently distinct small family of the section Heteromera under the superfamily Cucujoidea. The inopeplids are often broadly elongate, flattened with abbreviated elytra, and are seen under bark or in decaying wood. The representatives of the family are mostly found in the tropical parts of the World. The constitution of the group has undergone changes till Crowson (1955). Hetschko (1930) listed 3 of 52 species under the genus *Inopeplus* Smith from India, while treating it under the family Cucujidae (Cucujinae : Inopeplini). Blackwelder (1942) referred *Inopeplus* to the family Staphylinidae, because of apparent similarity of exposed abdominal segments. Crowson (*op. cit.*) recognised the distinct family status of Inopeplidae and included the genera *Inopeplus*, *Diagrypnodes* Waterhouse and *Aciphus* Oliff in it. Sengupta, Pal and Mukhopadhyay (1977) ascertained its systematic position and described 3 more species from India. Subsequently Pal (1992 a, b) added 3 more species from eastern Himalaya. Till now only 3 species are recorded from the State of Sikkim.

CHARACTERS OF FAMILY INOPEPLIDAE

Body elongated, moderately broadened, largely flattened and galbrous.

Head more or less prognathous, sometimes little rostrate, eyes entire and more or less emarginate, fronto-clypeal suture prominent, 11-segmented antenna without distinct club, antennal insertions partly hidden under frons, ventrally gular

sutures widely separated, without antennal cavities; mandible largely exposed, mola well developed, without any mandibular cavity; maxillary lacinia and galea well developed, palpi long and segments 2-4 elongate; mentum transverse, apical two segments of labial palpi elongate; labrum exposed. Prothorax transverse and narrowed towards base, side margins often with denticles, front coxae somewhat oblique with hidden trochantins, coxal cavities open. Mesothorax moderately large, mesocoxal cavities outwardly closed by sterna, metasternum usually without median impressed line, mesocoxae and hind coxae rather widely separated. Elytra truncate at apex, exposing a few abdominal tergites, epipleura narrow or incomplete; hind wings usually lack radial cell or anal cell. Trochanters not distinctly heteromeroid, tibiae provided with apical spurs, tarsi usually 5-5-4. First two ventrites of abdomen may be connate. Aedeagus trilobed-type, with accessory lobes attached to fused parameres.

LIST OF TAXA

Family INOPEPLIDAE

1. *Inopeplus decius* (Walker)
2. *Inopeplus biocellatus* (Motschulsky)
3. *Inopeplus nitidus* Sengupta, Pal & Mukhopadhyay.

Key to the species of INOPEPLIDAE

1. Head and prothorax reddish 2
- Head and prothorax blackish. Lateral margin of prothorax with two posterior and one



anterior denticles; a whitish longitudinal spot from near base to apex of each elytron

..... *Inopeplus decisus* (Walker)

2. Elytra blackish with a whitish rounded spot on each elytron; abdominal segments 4 and 5 exposed

..... *Inopeplus biocellatus* (Motschulsky)

- Elytra entirely black and without any spot; abdominal segment 2 partly and segments 3 to 5 completely exposed

..... *Inopeplus nitidus* Sengupta, Pal & Mukherjee

Family INOPEPLIDAE

Genus *Inopeplus* Smith

1851. *Inopeplus* Smith, *List. Col. Brit. Mus.* 1 : 4.

1853. *Ino* Castelnau, *Etud. ent.* 1 : 135.

1859. *Euryplatys* Motschulsky, *Etud. Ent.* 8 : 195.

1869. *Pseudino* Fairmaire, *Annls. Soc. ent. Fr.* 9 (4) : 208.

1908. *Inopeplus* : Grouvelle, *Annls. Soc. ent. Fr.* 77 : 461.

1977. *Inopeplus* : Sengupta, Pal & Mukhopadhyay, *Oriental Ins.*, 11 : 397.

Diagnosis : Elongated, flat, soft-bodied, elytra truncate and exposing at least last two abdominal segments. Head transverse with moderately large eyes, distinct fronto-clypeal suture, 11-segmented antenna somewhat moniliform and not clubbed, antennal insertions partly hidden under projection of frons, mandible exposed and with two apical teeth, maxillary lacinia without apical spine, apical segment of maxillary palpi elongate and somewhat fusiform, mentum markedly transverse, apical segment of labial palpi elongate. Prothorax strongly transverse, broader anteriorly and narrowed posteriorly, side margin with or without denticles, front coxal cavities open and coxae moderately widely separated, hind coxae more widely separated than pro- and mesocoxae. Elytral epipleura narrow, puncturation irregular and often indistinct. Legs moderately long, trochanters simple, tibiae normal with two apical spurs, tarsal formula 5-5-4 in both sexes. Intercoxal process of first abdominal ventrite narrowed towards apex.

1. *Inopeplus decisus* (Walker)

1858. *Prognatha decisus* Walker, *Ann. Mag. nat. Hist.* 2 (3) : 205.

1908. *Inopeplus decisus* : *Annls. Soc. ent. Fr.* 77 : 462.

1992. *Inopeplus decisus* : Pal, *Rec. zool. Surv. India*, 91 (3-4) : 349.

Diagnosis : Elongated, flattened, blackish, shiny and last 3 abdominal segments exposed. Head broader than long, eyes moderately large and coarsely faceted, inner margin of eye with a semicircular depression, punctation on vertex moderately dense, antenna moderately long, prothorax transverse, flattened, widest near front margin and narrowed posteriorly, side margin of pronotum with one anterior and two posterior denticles, punctation on pronotum slightly sparser than on vertex; elytra elongate, impunctate, a whitish longitudinal spot near base to apex of each elytron. Length—3.0 mm.

Material : 1 ex. India : Sikkim, South District, Karfektar, Jorethang, 650 m., 10.iii. 1996, T.K.Pal, ex. under bark.

Distribution : India : Arunachal Pradesh, Sikkim, West Bengal, Uttar Pradesh, Kerala, Tamil Nadu; Sri Lanka.

2. *Inopeplus biocellatus* (Motschulsky)

1859. *Euryplatus biocellatus* Motschulsky, *Etud. Ent.* 8 : 98.

1908. *Inopeplus biocellatus* : Grouvelle, *Annls. Soc. ent. Fr.*, 77 : 46.

1992. *Inopeplus biocellatus* : Pal, *Rec. zool. Surv. India*, 91 (3-4) : 343.

Diagnosis : Broadly elongate, flattened, shiny, head and prothorax reddish brown, elytra black with whitish large round spot at middle, last 2 segments of abdomen completely exposed. Head transverse, clypeus truncate at apex with concave invagination, fronto-clypeal suture little concave, a short impressed median line present on vertex, punctation on vertex moderately large and closely arranged, eyes large and rather finely faceted, a short linear groove present below eye, antenna

moderately long, scape and pedicel yellowish brown and segments 3-11 blackish; prothorax transverse, flattened, widest near middle, side margin with four denticles, posterior two denticles closely placed, sides finely bordered; elytra about as broad as long, widest near apex, an outwardly directed metathoracic spine present near middle of elytra, blackish elytra with a large oblong whitish spot. Length—5.3 mm.

Material : 1 ex. India : Sikkim, South District, Melli, 500m., 18.ix. 1993, T.K.Pal, ex. under bark.

Distribution : India : Arunachal Pradesh, Meghalaya, Sikkim, West Bengal (Darjiling district).

3. *Inopeplus nitidus* Sengupta, Pal & Mukhopadhyay.

1977. *Inopeplus nitidus* Sengupta, Pal & Mukhopadhyay, *Oriental Ins.*, **11** : 400.

1992. *Inopeplus nitidus* : Pal, *Rec. zool. Surv. India*. **91** (3-4) : 344.

Diagnosis : Elongated, flattened, shiny, head and prothorax reddish brown, remaining parts blackish brown, last 3 segments of abdomen exposed. Head broader than long, fronto-clypeal suture inwardly curved, punctation on vertex coarse and moderately dense with a small impunctate area at middle, eyes moderately large and coarsely faceted, a semicircular depression surrounding inner margin of eye, antenna

moderately long, scape and pedicel yellowish brown and segments 3-11 blackish; prothorax transverse, flattened, widest across second teeth from anterior side, side margin with four distinct denticles, anterior two denticles comparatively larger, sides narrowly bordered, punctation on pronotum slightly finer than that of vertex; elytra about as broad as long, widest near apex; an outwardly directed metathoracic spine near middle of elytra, punctation on elytra coarse and almost similar as on sides of pronotum, abdominal segment 2 partly and 3-5 completely exposed.

Length — 4.5 mm.

Material : 1 ex. *Holotype*, India : Sikkim, East District, Singtam, 26.iv. 1976, A.R.Bhaumik, ex. under bark.

Distribution : India : Arunachal Pradesh, Sikkim.

SUMMARY

The paper deals with 3 species under 1 genus from the territory of Sikkim. The species are systematically keyed and characterized.

ACKNOWLEDGEMENTS

The author is indebted to the Director, Zoological Survey of India for providing necessary facilities for the work.

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INSECTA : COLEOPTERA : CERAMBYCIDAE

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INTRODUCTION

The family Cerambycidae belongs to the superfamily Chrysomeloidea of the order Coleoptera : Insecta. The members of the family are commonly known as 'longicorn beetles'. They are predominant in tropics and distributed throughout the world. It includes a huge assemblage of phytophagous insects of great economic importance as pests of agricultural, horticultural, forest trees and valuable timbers. This is one of the largest family of the order coleoptera containing 35,000 species under 4000 genera in 11-subfamilies from the world (Lawrence, 1982). Beeson (1941) has recorded 1200 species from Indian region. Later Breuning (1960-66) added a little over 300 species from India. So altogether 1500 species are known from India. Recently Mukhopadhyay and Biswas (1995) has made a consolidated work on the cerambycid fauna of Meghalaya where they recorded 71 species under 44 genera belonging to five subfamilies from Meghalaya. Besides this, the workers like Gahan (1906), Stebbing (1914), Bhasin and Roowal (1954) have made valuable contribution to various aspects of this group.

As regards cerambycid fauna of Sikkim is concerned, our present state of knowledge remains still very incomplete and there is no comprehensive works on the cerambycid fauna of sikkim. However, prior to this study only 41 species under 30 genera belonging to four subfamilies were recorded from Sikkim. The present authors has tried to bring all scattered informations together. Present study is based on a collection made by different survey parties of Zoological Survey of

India during 1912 to 1994 and the old collection present in the section. The study also includes the species reported by earlier workers including the material which are not available during the study to get an uptodate account of longicorn beetles of Sikkim. Altogether 75 species under 49 genera belonging to four subfamilies have been dealt in this paper.

SYSTEMATIC LIST

Family CERAMBYCIDAE
Subfamily I LAMIINAE

Tribe I Monochamini

Genus 1. *Agnoderus* Thoms., 1864

1. *A. desperatus* Thoms.
2. *A. gnomoides* Thoms.

Genus 2. *Polytretus* Gahan, 1893

3. *P. cribripennis* Gah.

Genus3. *Callophora* Thoms., 1864

4. *C. sollii* (Hope)

Genus 4. *Monochamus* Guèr-Meneville, 1826

5. *M. bimaculatus* Gahan
6. *M. versteegi* Rits

Genus 5. *Epepeotes* Pascoe, 1866

7. *E. guttatus* Guer.

8. *E. uncinatus* Gah.

Genus 6. *Macrochenus* Guerin, 1843

9. *M. guerini* White

10. *M. tigrinus* Ol.

Genus 7. *Aristobia* Thomson, 1968

11. *A. clathrator* Thomson

12. *A. horridula* Hope

13. *A. testudo* Voet.

Genus 8. *Blephephaeus* Pascoe, 1866

14. *B. succinator* Chevr.

Genus 9. *Epicedia* Thomson, 1864

15. *E. officinator* White

Genus 10. *Leprodera* Thomson, 1857

16. *L. Officinator* Lacord.

Genus 11. *Dihammus* Thomson, 1864

17. *D. punctifrons* Gahan

Tribe II Agniini

Genus 12. *Paragnia* Gahan, 1893

18. *P. fulvomaculata* Gahan

Tribe III. Batocerini

Genus 13. *Batocera* Cast., 1840

19. *B. parryi* Hope

20. *B. lineolata* Chev.

var. *adelpha* Thoms.

21. *B. numitor* Newman

22. *B. rubus* Linn.

23. *B. tyrannolamia roylei* Hope

Genus 14. *Apriona* Chevr., 1852

24. *A. germari* (Hope)

Tribe IV. Gnomini

Genus 15. *Imantocera* Thomson, 1857

25. *I. penicillata* Hope in Gray

Tribe V Mesosini

Genus 16. *Coptops* Serv. 1835

26. *C. leucostictica* White

Genus 17. *Agelasta* Newman, 1842

27. *A. bifasciata regularis* Br.

Tribe VI. Ceroplesini

Genus 18. *Diastocera* Thomson, 1857

D. Wallichii Hope in Gray

Tribe VII. Petrognathini

Genus 19. *Ithocritus* Lacord, 1872

29. *I. ruber* Hope

Tribe VIII. Xylorhizini

Genus 20. *Xylorhiza* Cast., 1840

30. *X. adusta* wied.

Tribe IX. Nipponini

Genus 21. *Pterolophia* Newm; 1842

31. *P.* sp.

Genus 22. *Lychrosis* Pasc., 1866

32. *L. zebrinus* Pasc.

Genus 23. *Sthenias* Cast, 1840

33. *S. franciscanus* Thoms.

Tribe X. Hippopsini

Genus 24. *Smermus* Lacord, 1842

34. *S. mnischechi* Lacord.

Tribe XI. **Gleneini**Genus 25. *Glenea* Newm., 1842

35. *G.* (S.Str.) *indiana* Thoms.
 36. *G.* (S.Str.) *pulchella* Thoms.
 37. *G.* (S. Str.) *sulphurea* Thoms.
 38. *G.* (stiroglenea) *obesa* Thoms.

Genus 26. *Stibara* Hope, 1840

39. *S.* *tetraspilota* Hope

Tribe XII. **Phytoeciini**Genus 27. *Dasyllinda* Thomson, 1868

40. *D.* *testacea* Saund

Genus 28. *Nupserha* Thomson, 1860

41. *N.* *annulata* Thoms.
 42. *N.* *fricator* Dalm. in Schonh.
 43. *N.* *ventralis* Gah.

Genus 29. *Oberea* Muls., 1839

44. *O.* (*amaurostoma*) *posticata* Gahan

Subfamily II. PRIONINAE

Tribe XIII. **Prionini**Genus 30. *Lophosternus* Guerin, 1844

45. *L.* *indicus* Hope

Genus 31. *Paraphrus* Thomson, 1861

46. *P.* *granulosus* Thmos.

Genus 32. *Ancyloprotus* White, 1853

47. *A.* *bigibbosus* White

Tribe XIV. **Aegosomini**Genus 33. *Aegosoma* Serville, 1832

48. *A.* *costipenne* White

Tribe XV. **Acanthophorus**Genus 34. *Acanthophorus* Serv., 1832

49. *A.* *serraticornis* Oliv

Subfamily III. DISTENIINAE

Genus 35. *Dynamostes* Pascoe, 1857

50. *D.* *audax* Pasc.

Subfamily IV. CERAMBYCINAE

Tribe XVI. **Cerambycini**Genus 36. *Plocâederus* Thoms., 1861

51. *P.* *obesus* Gahan.

Genus 37. *Hoplocerambyx* Thoms., 1864

52. *H.* *spinicornis* Newm.

Tribe XVIII. **Callichromini**Genus 38. *Aphrodisium* Thomson, 1864

53. *A.* *robustum* Bates
 54. *A.* *hardwickianum* White
 55. *A.* *cribricolle* Vande Poll

Genus 39. *Anubis* Thomson, 1864

56. *A.* *inermis* white
 57. *A.* *fimbriatus* Bates
 58. *A.* *bipustulatus* Thoms.

Genus 40. *Polyzonus* Casteln. 1840

59. *P.* *bizonatus* White
 60. *P.* *brevipes* Gahan

Genus 41. *Chloridolum* Thoms., 1864

61. *C.* *nympha* White

Genus 42. *Chelidonium* Thoms., 1864

62. *C.* *sinense* Hope

Genus 43. *Zonopterus* Hope, 1843

63. *Z.* *flavitaris* Hope

Tribe XVIII. Clytini

Genus 44. *Perissus* Chevr., 186364. *P. mutabilis* GahanGenus 45. *Demonax* Thoms, 186165. *D. nigromaculatus* Gah.66. *D. leucoscutellatus* (Hope)Genus 46. *Xylotrechus* Chevr., 186067. *X. smei* Lap et Gory68. *X. incurvatus* Chevr.69. *X. contortus* Gah.70. *X. subdepressus* Chevr.Genus 47. *Caloclytus* Fairm, 186171. *C. annularis* F.Genus 48. *Rhaphuma* Pascoe, 185872. *R. fulgurata* Gahan

Tribe XIX. Rosaliini

Genus 49. *Rosalia* Serville, 183373. *R. hariola* Thoms.74. *R. decempunctata* Westwood75. *R. formosa* Saund.

Family CERAMBYCIDAE

Key to the Sub-families of the family
CERAMBYCIDAE

1. Head in front vertical or bent inwards well below the thorax; last joint of maxillary palpi pointed at apex; fore tibiae usually with a groove beneath LAMIINAE
- Head in front oblique or subvertical; last joint of maxillary palpi not pointed at apex; fore tibiae not grooved beneath 2
2. Inner lobe of maxillae obsolete or very small; gula without mentigerous process; prothorax marginate at sides; front coxae strongly transverse PRIONINAE

- Inner lobe of maxillae well developed; prothorax not marginate at sides; front coxae rarely strongly transverse 3
- 3. Head very short in front, gula with distinct mentigerous process; mandible with molar tooth at base; antennae close to the base of the mandible DISTENIINAE
- Head variable in form but distinctly narrowed behind eyes; gula with or without mentigerous process; mandible never provided with molar tooth at base CERAMBYCINAE

Subfamily LAMIINAE

Key to the tribes of the subfamily
LAMIINAE recorded from Sikkim

1. Metepisternum narrow and not broadened anteriorly 3
- Metepisternum large and broadened anteriorly 2
2. First four visible abdominal sternite equal or decreasing gradually in length; episterna of metathorax wide **Phytoeciini**
- First four visible abdominal sternite unequal; episterna of metathorax comparatively less wide **Glenini**
3. Tarsal claws divergent 4
- Tarsal claws divaricate 7
4. A prominent ciatrix on lateral side of scape making it apparently truncated **Mesosini**
- Scape without such ciatrix 5
5. Middle tibiae without preapical groove, mesocoxal cavity open **Niphonini**
- Middle tibiae with a preapical groove 6
6. Scape especially long and slender **Hippopsini**
- Scape never specially long and slender, front coxae very prominent and conical **Xylorhizini**
7. Dorsal surface of scape strongly granular, form robust, antennae fringed or tuberculated, 3rd segment of antennae longer than 4th **Batocerini**

- Scape of antennae not granular 8
- 8. Scape of antennae with a ciatrix, mesocoxal cavity open 9
- Scape of antennae without a ciatrix, if rarely, with one; mesocoxal cavity closed 10
- 9. Eyes subdivided; length of head and pronotum together either as long as or little less than elytra **Gnomini**
- Eyes emarginate; head and pronotum together much shorter than elytra **Monochamini**
- 10. Middle tibiae without external groove; antennae with a lateral depression on apical part of 4th segment and broad lateral groove on apical part of following segment **Ceroplesini**
- Middle tibiae with external groove; species never so elongated; antennae very strong **Pterognathini**

Subfamily LAMIINAE

Tribe I Monochamini

Genus 1. *Agnoderus* Thoms., 1864

1864. *Agnoderus* Thoms., *Syst. Ceramb.*, P. 83, 383.

1. *Agnoderus desperatus* Thoms.

1857. *Agnoderus desperatus* Thoms., *Archives Ent.* 1 : 295

Material examined : Not Seen.

Distribution : India : Sikkim.

2. *Agnoderus gnomoides* Thoms.

1864. *Agnoderus gnomoides* Thoms., *Syst. Ceramb.*, P. 83.

Material examined : 1 ex, India : Sikkim (N): Mallidhin, 15. VII. 1959, A.G.K. Menon Colln.

Distribution : India : Sikkim.

Genus 2. *Polytretus* Gahan, 1893

1893. *Polytretus* Gahan, *Ann. Mag. nat. Hist.* (6) 9 : 382.

3. *Polytretus cribripennis* Gahan,

1893. *Polytretus cribripennis* Gahan, *Ann. Mag. nat. Hist.* (6) 9 : 383, t. 19. f. 4.

Material examined : Not Seen.

Distribution : India : Sikkim.

Genus 3. *Callophora* Thoms., 1864

1864. *Callophora* Thoms., *Syst. Ceramb.*, P. 76.

4. *Callophora Sollii* (Hope)

1840. *Oplophora Sollii* Hope, *Trans., Linn. Soc. Lond.*, 18 : 438.

1864. *Callophora Sollii* (Hope) : Thomson, *Syst. Ceramb.* P. 362.

Material examined : Not seen.

Distribution : India : Assam, Sikkim.

Elsewhere : Burma. North Vietnam. Laos.

Genus 4. *Monochamus* Guér.-Meneville, 1826

1826. *Monochamus* G.-M., *Diet. Class. His Nat.* 9 : 186.

5. *Monochamus bimaculatus* Gahan

1888. *Monochamus bimaculatus* Gah, *Ann. Mag. Nat. Hist.* (6) 2 : 260.

Material examined : 1 ex; India : Sikkim; 1 ex; Sikkim: E. Himalayas, V. 1912.

Distribution : India : Sikkim, Eastern India.

Elsewhere : Myanmar.

6. *Monochamus versteegi* Rits.

1881 *Monochamus versteegi* Rits., *Notes Leyden*, 3 : 155.

Material examined : 6 ex., India, Sikkim (no other data).

Distribution : India : Assam, Meghalaya, Sikkim,

Elsewhere : Myanmar. Indonesia.

Remarks : This species is recorded here for the first time from Sikkim.

Genus 5. *Epepeotes* Pascoe, 1866

1866. *Epepeotes* Pascoe, *Proc. zool. Soc. Lond.*, P. 290.

7. *Epepeotes guttatus* Guèr

1844. *Epepeotes guttatus* Guèr., *Icon. Regne Anim. Ins.* P. 242.

1888. *Epepeotes guttatus* : Gahan, *Ann. Mag. Nat. Hist.*, (6) 1: 272.

Material examined : 1ex, India : Sikkim (No other data).

Distribution : India : Meghalaya, Sikkim, Himalaya.

Remarks : This species is recorded here for the first time from Sikkim.

8. *Epepeotes uncinatus* Gah.

1888. *Epepeotes uncinatus* Gah. *Ann. Mag. Nat. Hist.*, (6) 1 : 271, t. 16, f. 2.

Material examined : 3ex, India : Sikkim (No other data).

Distribution : India : Meghalaya, Sikkim, North India.

Elsewhere : Myanmar.

Remarks : This species is recorded here for the first time from Sikkim.

Genus 6. *Macrochenus* Guèr., 1843

1843. *Macrochenus* Guèr. *Voyage De less.*, 2 : 59

9. *Macrochenus guerini* White

1858. *Macrochenus guerini* White, *Ann. Mag. Nat. Hist.* (3) 2: 274.

Material examined : 3ex, India : Sikkim (No other data).

Distribution : India : Meghalaya, Sikkim.

Elsewhere : Bangladesh.

Remarks : This species is recorded here for the first time from Sikkim.

10. *Macrochenus tigrinus* Olivier

1792. *Macrochenus tigrinus* ol., *Encycl. méth.* 7 : 468.

Material examined : 2ex., India : Sikkim (No other data).

Distribution : India : Tamil Nadu, Sikkim.

Elsewhere : Sri Lanka.

Remarks : This species is recorded here for the first time from Sikkim.

Genus 7. *Aristobia* Thomson, 1868

1868 : *Aristobia* Thomson, *Physis*, 2 : 178.

11. *Aristobia clathrator* Thomson

1865. *Aristobia clathrator* Thomson, *Syst. Ceramb.*, P. 552.

Material examined : 1ex., India : Sikkim (No other data).

Distribution : India : Meghalaya, Sikkim.

Elsewhere : Bangladesh.

Remarks : This species is recorded here for the first time from Sikkim.

12. *Aristobia horridula* Hope in Gray

1831. *Aristobia horridula* Hope in Gray, *Zool. Misc.*, P. 27.

1848. *Aristobia horridula fasciculata* Redtinb. in Hugel, *Kaschm.*, 4 (2) : 552, t. 27. f. 2.

Material examined : 1ex, India : Sikkim (No other data).

Distribution : India : Meghalaya, Sikkim, Himalaya.

Elsewhere : Myanmar.

Remarks : This species is recorded here for the first time from Sikkim.

13. *Aristobia testudo* Voet

1778. *Aristobia testudo* Voet, *Cat. Col.*, 2 : 12, t. 10, f. 39.

Material examined : 3.ex., India : Sikkim (No other data) : 1ex., Sikkim : Singtam, 30. ix. 93, B.N.Das Colln.

Distribution : India : Meghalaya, Sikkim.

Elsewhere : China.

Remarks : This species is recorded here for the first time from Sikkim.

Genus 8. *Blepephaeus* Pascoe, 1866

1866. *Blepephaeus* Pascoe, *Proc. Zool. Soc. Lond.*, (3) 3 : 249.

14. *Blepephaeus succinator* Chev.

1852. *Blepephaeus succinator* chev., *Revue Zool.*, (2) 4 : 417.

Material examined : 1ex., India : Sikkim : E. Himalaya, V. 1912.

Distribution : India : Assam, Meghalaya, Sikkim.

Elsewhere : China, Malacca, Tenasserim.

Remarks : This species is recorded here for the first time from Sikkim.

Genus 9. *Epicedia* Thoms., 1864

1864. *Epicedia* Thoms., *Syst. Ceramb.*, P. 78 380.

15. *Epicedia officinator* White

1858. *Epicedia officinator* white, *Proc. Zool. Soc. Lond.*, 26 : 409.

Material examined : 3ex., India : Sikkim (No other Data).

Distribution : India : Assam, Sikkim.

Elsewhere : Myanmar.

Remarks : This species is recorded here for the first time from Sikkim.

Genus 10. *Leprodera* Thomson, 1857

1857. *Leprodera* Thomson, *Arich. Ent.* 1 : 177

16. *Leprodera officinator* Lacord.

1869. *Leprodera officinator* Lacord., *Gen. Col.* 9 : 306, no.1.

Material examined : 1.ex, India : Sikkim (No other data).

Distribution : India : Sikkim, Ostinden.

Remarks : This species is recorded here for the first time from Sikkim.

Genus 11. *Dihammus* Thomson, 1864

1864. *Dihammus* Thoms., *Syst. Ceramb.*, P. 80, 381.

17. *Dihammus punctifrons* Gahan

1895. *Dihammus punctifrons* Gahan, *Ann. Mus. Civ. Genova*, 34 : 36.

Material examined : 1ex, India : Sikkim (No Other data).

Distribution : India : Sikkim.

Elsewhere : Myanmar Tenasserim.

Remarks : This species was earlier recorded from Burma and Tenasserim. In the present study it is being recorded for the first time from India (Sikkim).

Tribe II Agniini

Genus 12. *Paragnia* Gahan, 1893

1893. *Paragnia* Gahan, *Ann. Mag. Nat. Hist.*, (6) 11: 384.

18. *Paragnia fulvomaculata* Gahan,

1893. *Paragnia fulvomaculata* Gah, *Ann. Mag. Nat. His.* (6) : 384.

Material examined : Not seen.

Distribution : India : Sikkim.

Tribe III Batocerini

Genus 13. *Batocera* Cast., 1840

1840. *Batocera* Castelnau, *Hist. Nat. Col.* 2 : 470

19. *Batocera Parryi* Hope

1845. *Batocera parryi* Hope, *Trans. Ent. Soc., Lond.*, 4 : 77.

1981. *Batocera Parryi* : Sengupta and Sengupta, *Rec. zool. Surv. India*, 78 : 146-147.

Material examined : Not seen.

Distribution : India : West Bengal, Assam, Meghalaya, Sikkim, Arunachal Pradesh.

Elsewhere : Bangladesh.

20. *Batocera lineolata* Chev. var. *adelpha*
Thomson

1852. *Batocera lineolata* Chevr., *Rev. Zool.* (2) 4 : 417.

1858. *Batocera lineolata* chevr., Var. *adelpha* Thomson,
Archives Ent., 1 : 456, Monogr. P. 77.

Material examined : 2 ex., India, Sikkim (No other data); 1ex., Sikkim : Mangan, 28 v. 1994, B.C.Das Colln.

Distribution : India : West Bengal, Assam, Sikkim.

Elsewhere : China, Japan.

Remarks : This species is recorded here for the first time from Sikkim.

21. *Batocera numitor* Newman

1842. *Batocera numitor* Newman, *Entomol.* 1 : 275.

Material examined : 4ex., India : Sikkim (No other data)

Distribution : India : West Bengal, Meghalaya, Sikkim.

Elsewhere : Nepal, Indonesia, Philippines.

Remarks : This species is recorded here for the first time from Sikkim. Two specimens belong to variety *titana* Thoms.

22. *Batocera rubus* Linn.

1758. *Batocera rubus* Linn., *Syst. Nat.*, ed. 10, p. 390

1845. *Batocera b. rubus* var. *Downesi* Hope, *Trans. Erd. Soc. Lond.*, 4 : 76.

Material examined : 4ex, India : Sikkim (No other data); 1ex., Sikkim : Mangan, 29. V. 1994, B.C. Das Colln., 1 ex., Sikkim : Mangan, 28. v. 1994, B.C. Das Colln.; 1ex., Sikkim : Pakyang, 12. 1x. 93, S. K. Saha Colln.

Distribution : India : West Bengal, Assam, Meghalaya, Sikkim, Himalaya.

Remarks : This species is recorded here for the first time from Sikkim.

23. *Batocera tyrannolamia roylei* Hope

1833. *Batocera tyrannolamia roylei* Hope, *Proc. Zool. Soc., Lond.*, 1 (2) : 64.

1915. *Batocera tyrannolamia roylei* : Kriesche, Monogr., P. 75.

Material examined : 1ex., India : Sikkim (No other data); 1ex., Sikkim : Rongpo, 12. ii. 92, A.K. Hazra Colln.

Distribution : India : West Bengal, Assam, Meghalaya, Kashmir, Sikkim.

Remarks : This species is recorded here for the first time from Sikkim.

Genus 14. *Apriona* Chevr., 1852

1852. *Apriona* Chevr., *Rev. Mag. Zool.*, (2) 4 : 414.

24. *Apriona germari* (Hope)

1831. *Lamia germari* Hope in Gray, *Zool. Miscell.* 1 : 28

1995. *Apriona germari* : Mukhopadhyay and Biswas, *Zool Sevr. India*, State Fauna Series : Fauna of Meghalaya, Part 5, pp. 19.

Material examined : 3ex., India : Sikkim (No other data).

Distribution : India : West Bengal, Meghalaya, Sikkim.

Elsewhere : Pakistan, Bangladesh.

Remarks : This species is recorded here for the first time from Sikkim.

Tribe IV. *Gnomini*

Genus 15. *Imantocera* Thomson, 1857

1857. *Imantocera* Thomson, *Arch. Ent.* 1 : 188.

1866. *Himantocera* Pascoe, *Trans. Ent. Soc. Lond.* (3) 3 : 288.

25. *Imantocera penicillata* Hope in Gray

1831. *Imantocera penicillata* Hope in Gray. *Zool. Misc.*, 1 : 17

1895. *Imantocera penicillata* : Gahan, *Ann. Mus. Civ. Genova*, 34 : 48.

Material examined : 1ex., India : Sikkim (No Other data)

Distribution : India : Meghalaya, Sikkim, N. India

Elsewhere : Myanmar.

Remarks : This species is recorded here for the first time from Sikkim.

Tribe V. Mesosini

Genus 16. *Coptops* Serv., 1835

1835. *Coptops* Serv., *Ann. Soc., ent. Fr.* 4 : 64.

26. *Coptops leucostictica* White

1858. *Coptops leucostictica* white, *Ann. Mag. Nat. Hist.*, (3) 3 : 272.

Material examined : 10ex., India : Sikkim (No other data).

Distribution : India : Assam, Sikkim.

Remarks : This species is recorded here for the first time from Sikkim.

Genus 17. *Agelasta* Newmann, 1842

1842. *Agelasta* Newm., *Ent.*, 1 : 288

27. *Agelasta bifasciata regularis* Br.

Material examined : 1ex., India : Sikkim (No other data).

Distribution : India : Sikkim.

Elsewhere : Banladesh.

Remarks : This species was earlier recorded from Bangladesh; In the present study it is being recorded for the first time from India (Sikkim).

Tribe VI Ceroplesini

Genus 18. *Diastocera* Thomson, 1857

1857. *Diastocera* Thoms., *Arch. Ent.*, 1 : 183.

28. *Diastocera Wallichii* Hope in Gray

1831. *Diastocera Wallichii* Hope in Gray, *Zool. Misc.*, P. 27.

1981. *Diastocera Wallichii* : Sengupta and Sengupta, *Rec. Zool. Surv. India*, 78 : 148-150.

Material examined : 2ex, India : Sikkim.

Distribution : India : West Bengal, Bihar, Meghalaya, Sikkim, Arunachal Pradesh, Himalaya, Uttar Pradesh.

Tribe VII. Petrognathini

Genus 19, *Ithocritus* Lacord, 1872

1872. *Ithocritus* Lacord : *Gen. Col.* 9 : 447-448.

29. *Ithocritus ruber* Hope

1839. *Ithocritus ruber* Hope, *Proc. Linn. Soc., London*, 1 : 43.

Material examined : 8ex, India : Sikkim (No other data).

Distribution : India : West Bengal, Assam, Meghalaya, Sikkim, Himalaya.

Tribe VIII. Xylorhizini

Genus 20 *Xylorhiza* Cast., 1840

1840. *Xylorhiza* Cast., *Hist. Nat. Col.* 2 : 476.

30. *Xylorhiza adusta* Wied.

1819. *Xylorhiza adusta* Wiedem, *Zool. Mag.*, 1 (3) : 182.

1894. *Xylorhiza adusta* : Gahan, *Ann. Mus. Civ. Genova*, (2) 14 : 58

Material examined : 1ex., India : Sikkim (No other data).

Distribution : India : West Bengal, Sikkim.

Elsewhere : Burma Malacca.

Remarks : This species is recorded for the first time from Sikkim.

Tribe IX. Nipphonini

Genus 21. *Pterolophia* Newm., 1842

1842. *Pterolophia* Newm., *Ent.* 1 : 370.

31. *Pterolophia* sp.

Material examined : 1ex., India : Sikkim : Talaymoo, 3 VI. 1959. A.G.K. Menon Colln.

Remarks : This genus is so far recorded from Myanmar, China, Philippines, Sri Lanka and Indonesia. Now the genus is being recorded here for the first time from India. The determination of species will be dealt elsewhere because of lack of availability of literature at present.

Genus 22. *Lychrosis* Pasc., 18661866. *Lychrosis* Pasc., *Linn. Soc. Lond. Zool.*, 9 : 8932. *Lychrosis zebrinus* Pasc.1866. *Lychrosis zebrinus* Pasc., *Linn. Soc. Lond. Zool.*, 9 : 89.*Material examined* : 14ex, India : Sikkim (No other data).*Distribution* : India : West Bengal, Sikkim, Meghalaya, KeralaGenus 23. *Sthenias* Cast., 18401747. *Lamia* Fabricius, *Mant. Inst.*, 1 : 136.1840. *Sthenias* Cast., *Hist. Nat. Cal.*, 2 : 466.33. *Sthenias franciscanus* Thoms.1865. *Sthenias franciscanus* Thoms., *Syst. Ceramb.*, P. 550.*Material examined* : 1ex, India : Sikkim : E. Himalaya, V. 1912.*Distribution* : India : West Bengal, Sikkim.Tribe X. **Hippopsini**Genus 24. *Smermus* Lacord., 18721872. *Smermus* Lacord., *Gen. Col.*, 9 : 692, 696.34. *Smermus mniszewski* Lacord.1872. *Smermus mniszewski* Lacord. *Gen. Col.*, 9 : 696. Nat. 1.*Material examined* : 1ex, India : Sikkim.*Distribution* : India : Sikkim.*Elsewhere* : Bangladesh.*Remarks* : This species is recorded here for the first time from India (Sikkim)Tribe XI. **Gleneini**Genus 25. *Glenea* Newm., 18421842 *Glenea* Newm., *Entomologist*, 1 : 301.1902. Subg. *Macroglenea* Auriv., *Arkiv f. Zool.* 139): 30.1920 : Subg. *Stirolene* Auriv., I.C. P. 31.1922 : *Glenea* : Auriv., in *Junk. Col Cat.*35. *Glenea* (S. Str.) *indiana* Thoms.1857 *Glenea* (S.Str.) *indiana* Thoms., *Archives Entomol.*, 1: 141.*Material examined* : 8ex., India : Sikkim (No other data)*Distribution* : India : Meghalaya, Sikkim,*Elsewhere* : Myanmar*Remarks* : This species is recorded here for the first time from Sikkim.36 *Glenea* (S. Str.) *pulchella* Thoms.1860 *Glenea* (S. Str.) *pulchella* Thoms., *Classif. Ceramb.*, P. 58.*Material examined* : 28ex., India : Sikkim (No other data); 1ex., Sikkim, E.T.A; 1ex., Sikkim $\frac{2951}{3281}$; 3ex., Sikkim, E.T. Atkinson, 1ex., Sikkim, $\frac{8627-28}{7}$ E.T. Atkinson.*Distribution* : India : West Bengal, Meghalaya, Sikkim, Manipur, Karnataka, Tamil Nadu.*Elsewhere* : Myanmar, Bangladesh.37. *Glenea* (S.Str.) *sulphurea* Thoms.1865. *Glenea* (S.Str.) *sulphurea* Thoms., *Syst. Ceramb.*, P. 566.*Material examined* : 1ex., India : Sikkim : E. Himalaya, V. 1912.*Distribution* : India : Meghalaya, Sikkim.*Elsewhere* : Bangladesh. Indonesia, Cambodia.*Remarks* : This species is recorded here for the first time from Sikkim.38. *Glenea* (*Stirolene*) *obesa* Thoms.1857 *Glenea* (*stirolene*) *obesa* Thoms., *Archives Ent.* 1 : 145*Material examined* : 2ex., India : Sikkim (No other data).*Distribution* : India : West Bengal, Assam, Arunachal Pradesh, Sikkim, Uttar Pradesh*Elsewhere* : Bangladesh.

Genus 26. *Stibara* Hope, 1840

1840. *Stibara* Hope, *Proc. Linn., Soc. Lond.*, 1 : 79.

39. *Stibara tetraspilota* Hope

1840. *Stibara tetraspilota*. Hope, *proc. Linn. Soc. Lond.* 1 : 79.

Material examined : 6ex, India : Sikkim (No other data).

Distribution : India : Assam, Meghalaya, Sikkim.

Elsewhere : Myanmar, Thailand, North Vietnam, Laos.

Tribe XII. **Phytoeciini**

Genus 27. *Dasyllinda* Thomson, 1868

1868. *Dasyllinda* Thomson, *Physis*, 2 : 184.

40. *Dasyllinda testacea* Saund

1839. *Dasyllinda testacea* Saund; *Trans. Ent. Soc. Lond.*, 2 : 479, t16; 8.5

Material examined : Not seen.

Distribution : India : Meghalaya, Sikkim.

Genus 28. *Nupserha* Thomson, 1860

1860 : *Nupserha* Thomson, *Classif. Ceramb.*, P. 41, 60.

41. *Nupserha annulata* Thoms.

1857. *Nupserha annulata* Thoms., *Archives Ent.*, 1 : 147.

1894. *Nupserha annulata* : Gahan, *Ann. Mus. Civ. Genova*, 34 : 94.

1995. *Nupserha annulata* : Mukhopadhyay and Biswas, *Zool. Surv., India*, State Fauna Series 4, Fauna of Meghalaya, Part 5, pp. 23.

Material examined : 30ex., India : Sikkim (No other data).

Distribution : India : West Bengal, Meghalaya, Sikkim.

Remarks : This species is recorded for the first time from Sikkim.

42. *Nupserha fricator* Dalm. in Schönh.

1817. *Nupserha fricator* Dalm. in Schönh., *Syst. Ins.* 1 : 3.

1981. *Nupserha fricator* : Sengupta and Sengupta, *Rec. Zool. Surv., India*, 78 : 152-153.

Material examined : 1ex, India : Sikkim (No other data)

Distribution : India : West Bengal, Sikkim, Arunachal Pradesh.

Elsewhere : Indonesia, Malacca; Sri Lanka, Myanmar

43. *Nupserha ventralis* Gah.,

1894. *Nupserha ventralis* Gahan, *Ann., Mus., Civ. Genova*, 34 : 91.

Material examined : 1ex., India: Sikkim; Talaymo, 3. VI. 1959, A.G.K. Menon Colln; 1ex, Sikkim; Singhik, 7. VIII. 1959. A.G.K. Menon Colln.

Distribution : India : West Bengal, Sikkim.

Elsewhere : Myanmar

Remarks : This species is recorded here for the first time from Sikkim.

Genus 29. *Oberea* Muls., 1839

1839. *Oberea* Muls., *Col., France Longic.* P. 192, 194.

1922. *Oberea* : Aurivillius, in *Junks. Col. Cat.*

44. *Oberea Amaurostoma posticata* Gah.

1895. *Oberea A. posticata* Gah., *Ann. Mus. Civ. Genova*, 34 : 94.

Material examined : 1ex., India : Sikkim, E. Himalayas, VI. 1912; 1ex, Sikkim, E. Himalayas, V. 1912.

Distribution : India, West Bengal, Assam, Meghalaya, Sikkim.

Elsewhere : Myanmar.

Subfamily II. PRIONINAE

Key to the tribes of the subfamily
PRIONINAE recorded from Sikkim

1. Met-episternum converging posteriorly, either narrowly truncate or pointed at apex; antennae inserted near the base of the mandible; head sloping in front; third joint of tarsi cleft almost to the base **Aegosomini**
- Met episternum parallel sided, broadly truncate behind. 2
2. First joint of antennae extending one third of the length of the body; Labrum distinct and never triangular **Prionini**
- First joint of antennae short, scarcely longer than broad; labrum triangular **Acanthrophorini**

Tribe XIII. Prionini

Key to the genera of the tribe Prionini
recorded from Sikkim

1. Mandibles long, curving downwards and backwards, narrowing towards apex 2
- Mandibles vertical or oblique, not curved- Pronotum bituberculate *Ancyloprotus* White
2. Antennae usually shorter than body and 11-jointed. Pronotum strongly convex, marginal teeth rather short *Lophosternus* Guer.
- Antennae as long as or longer than body, finely denticulated beneath and 12-jointed. Pronotum feebly convex, marginal teeth long and spiniform *Paraphrus* Thoms.

Genus 30. *Lophosternus* Guérin, 1844

1844. *Lophosternus* Guér. *Icon. Regme-Anim. Ins.* P. 200.
1995. *Lophosternus* : Mukhopadhyay and Biswas, *Zool. Sww. India*, State Fauna series 4 : Fauna of Meghalaya, Part 5, pp. 7-9.

45. *Lophosternus indicus* Hope

1831. *Lophosternus indicus* Hope (*Prionus*), *Gray's Zool. Misc.*, P. 27.

1844. *Lophosternus* (*cyrtosternus*) *hopei* Guér, *Icon. Regne Anim. Ins.*, P. 210.

1995. *Lophosternus indicus* Hope : Mukhopadhyay & Biswas, *Zool. Suvr. India*, State Fauna Series 4 : Fauna of Meghalaya, Part 5, P. 8.

Material examined : 1ex., India: Sikkim, Deraroft, 1915-1916, L. Carmichel Colln.; 2ex, Sikkim, E.T. Atkinson Colln; 2ex., Sikkim (No other data).

Distribution : India : West Bengal, Sikkim.

Elsewhere : Nepal, Bhutan.

Genus 31 *Paraphrus* Thomson, 1861

1861. *Paraphrus* Thoms., *Essai Class. Ceramb.* P. 330.
1869. *Cyrtognathus* (Part) Lacord., *Gen. Coleop.*, 8 : 51.
1906. *Paraphrus* Thoms : Gahan, *Fn. Brit. India incl. Ceylon and Myanmar*, *Coleoptera: Cerambycidae*, 1: 13-14.

46. *Paraphrus granulosus* Thoms. (*Cyrtognathus*)

1861. *Paraphrus granulosus* Thoms. (*Cyrtognathus*) *Essai class. Ceramb.* P. 186
1906. *Paraphrus granulosus* (*cyrtognathus*); Gahan, *Fn. Brit. India incl. Ceylon and Myanmar*, *Col* : *Cerambycidae*, P. 14.

Material examined : Not seen.

Distribution : India : Sikkim.

Elsewhere : Myanmar, Siam.

Genus 32. *Ancyloprotus*, White, 1853

- 1853 *Ancyloprotus* White, *Cat. coleopt. B.M. Longic*, 1 : 19.
1869. *Ancyloprotus* : Lacord, *Gen. Coleopt.*, 8 : 57.
1906. *Ancyloprotus* : Gahan, *Fn. Brit. India incl. Ceylon and Myanmar*, *Col.*; *Cerambycidae*, pp. 18-19.

47. *Ancyloprotus bigibbosus* white

1853. *Ancyloprotus bigibbosus* white, *Cat. Colcopt. B.M. Longic*, 1: 19, pl. 1, fig. 4.
1906. *Ancyloprotus bigibbosus* : Gahan *Fr. Brit. India incl. Cylon and Burma*, *Col.* : *Cerambycide*, pp. 19.

Material examined : 1ex, India : Sikkim; 1ex, Sikkim: Mongphu (No other data).

Distribution : India : Assam, Meghalaya, Sikkim.

Elsewhere : Myanmar.

Remarks : This species is recorded here for the first time from Sikkim.

Tribe XIV. **Aegosomini**

Genus 33. **Aegosoma** Serville, 1832

1832. *Aegosoma* Serville, *Ann. Soc. ent. Fr.*, 1 : 162

1869. *Aegosoma lacertosum* Pasc., *Ann. Mag. Nat. Hist.*, (3) 19 : 413.

1906. *Aegosoma costipenne* White (Megopsis), *Fn. Brit. India incl. Ceylon and Myanmar*, Col : Cerambycidae, p. 49.

Material examined : Not seen.

Distribution : India : Assam, Sikkim, Manipur.

Tribe XV. **Acanthophorini**

Genus 34 **Acanthophorus** Serv., 1832

1832. *Acanthophorus* Serv., *Ann. Soc. ent. Fr.*, 1 : 152.

1869. *Acanthophorus* : Lacord; *Gen. Coleopt.* 8: 69.

1906. *Acanthophorus* : Gahan, *Fn. Brit. India incl. Ceylon and Burma*, Col : Cerambycidae, pp. 23-25

49. **Acanthophorus serraticornis** Oliv.

1795. *Acanthophorus serraticornis* Oliv. (*Prionus*), *Ent.* 4 (No. 66) : 14, pl. 9, fig. 33.

1832. *Acanthophorus serraticornis* : Serville (*Acanthophorus*), *Ann. Soc. ent. Fr.*, 1 : 153.

1906. *Acanthophorus serraticornis* Oliv.: Gahan, *Fn. Brit. India incl. Ceylon and Burma*, Col : Cerambycidae, pp. 23-24.

Material examined : 1ex., India : Sikkim (No other data); 1ex., Sikkim (N): Singhek Dak Bunglow, 18. IX. 1940, B. Prasad & S. L. Hora Colln.

Distribution : India : Sikkim, Tamil Nadu, Karnataka, Kerala.

Remarks : This species is recorded here for the first time from Sikkim.

Sufamily III. **DISTENIINAE**

Genus 35. **Dynamostes** Pascoe, 1857

1857. *Dynamostes* Pascoe, *Trans. Ent. Soc. Lond.* (2) 4: 90, pl. 22, fig. 1.

1869. *Dynamostes* : Lacord; *Gen. Coleopt.* 8 : 196.

1906. *Dynamostes* : Gahan, *Fn. Brit. India incl. Ceylon and Burma* : Col : Cerambycidae, pp. 61-62.

50. **Dynamostes audax** Pasc.

1857. *Dynamostes audax* Pasc., *Trans. Ent. Soc. Lond.* (2) 4 : 90, pl. 22, fig. 1.

1906. *Dynamostes audax* : Gahan, *Fn. Brit. India incl. Ceylon and Myanmar*, Col : Cerambycidae, pp. 61-22.

Material examined : Not seen.

Distribution : India : Sikkim, Manipur.

Subfamily IV. **CERAMBYCINAE**

Key to the tribe of the subfamily **CERAMBYCINAE** recorded from Sikkim

1. Eyes coarsely faceted. Mesocoxal cavity open. Front coxal cavity closed; intercoxal process of prosternum dilated at apex **Cerambycini**
- Eyes finely faceted 2
2. Front coxa not conical, angulated or outerside and its cavities open posteriorly **Rosalini**
- Front coxae rounded and not angulated on outerside..... 3
3. Scutellum large, triangular with acute apex; Front coxal cavities closed or narrowly closed posteriorly **Callichromini**
- Scutellum small and comparatively less acute at apex. Front coxal cavity open posteriorly **Clytini**

Tribe XVI. **Cerambycini**

Genus 36. **Plocâederus** Thomson, 1861

1861. *Plocâederus* Thoms., *Essai Class. ceramb.*, p. 197

1869. *Plocâederus* : Lacord., *Gen. Col. Cat.*, 8 : 254

1872. *Plocâederus* : Gemm. & Harold, *Cat. Col.* 9 : 2799.

1906. *Plocâederus* : Gahan, *Fn. Brit. India incl. Ceylon and Burma*, Col. : Cerambycidae, pp. 120-124.

51. *Plocâederus obesus* Gahan

1890. *Plocâederus obesus* Gahan, *Ann. Mag. Nat. Hist.* (6) 5 : 51.

1906. *Plocâederus obesus* : Gahan, *Fn. Brit. India incl. Ceylon and Burma*, Col. : Cerambycidae, pp. 121-122.

Material examined : Not Seen.

Distribution : India : West Bengal, Assam, Sikkim, Arunachal Pradesh.

Elsewhere : Myanmar, Siam, Sri Lanka.

Genus 37. *Hoplocerambyx* Thomson, 1864

1864. *Hoplocerambyx* Thoms, *Syst. Ceramb.* p. 229.

1906. *Hoplocerambyx* : Gahan *Fn. Brit. India. incl. Ceylon and Myanmar*, Col. Cerambycidae, pp. 131-132.

52. *Hoplocerambyx spinicornis* Newman

1852. *Hoplocerambyx spinicornis* Newm. (*Hemmaticherus*), *Entom.* 1 : 245

1906. *Hoplocerambyx spinicornis* : Gahan, *Fn. Brit. India incl. Ceylon and Myanmar*, Col. : Cerambycidae, pp. 131-132.

1995. *Hoplocerambyx spinicornis* : Mukhopadhyay & Biswas, *Zool Surv. India*, State Fauna Series 4 : Fauna of Meghalaya, Part 5, pp. 11.

Material examined : 1ex., India : Sikkim (No other data).

Distribution : India : West Bengal, Assam, Meghalaya, Sikkim, Uttar Pradesh.

Elsewhere : Nepal, Myanmar, Indonesia, South Afganistan, Penang, Singapore, Philippine.

Remarks : This species is recorded here for the first time from Sikkim.

Tribe XVII. Callichromini

Genus 38. *Aphrodisium* Thomson, 1864

1864. *Aphrodisium* Thomson, *Syst. Ceramb.* p. 173.

53. *Aphrodisium robustum* Bates

1879. *Aphrodisium robustum* Bates (*Leontium*), *Cist. Ent.* 2 : 408.

1906. *Aphrodisium robustum* : Gahan, *Fn. Brit. India incl. Ceylon and Burma*, Col. : Cerambycidae, pp. 209.

Material examined : Not seen.

Distribution : India : West Bengal, Sikkim, N-W-India.

54. *Aphrodisium hardwickianum* white

1853. *Aphrodisium hardwickianum* White (*callichorma*), *Cat. coleopt-B.M. Longic*, P. 162.

Material examined : 1ex, India : Sikkim.

Elsewhere : Nepal.

Remarks : This species is recorded here for the first time from India (Sikkim).

55. *Aphrodisium cribricolle* Van de Poll

1890. *Aphrodisium cribricolle* Van de Poll, *Notes Leyd. Mus.*, 12 : 157.

1906. *Aphrodisium cribricolle* : Gahan, *Fn. Brit. India incl. Ceylon and Burma*, Col. : Cerambycidae, pp. 207.

Material examined : Not seen.

Distribution : India : Sikkim.

Genus 39. *Anubis* Thomson, 1864

1864. *Anubis* Thomson, *Syst. Ceramb.* p. 177

56. *Anubis inermis* White

1853. *Anubis inermis* white (*Polyzonus*), *Cat. Coleopt. B. M. Logic*, P. 171.

1906. *Anubis inermis* : Gahan, *Fn. Brit. India incl. Ceylon and Burma*, Col. : Cerambycidae, pp. 220-221.

Material examined : 1ex, India : Sikkim, E.T. Atkinson.

Distribution : India : West Bengal, Sikkim.

Elsewhere : Myanmar, Siam, Malay- Peninsula, South China.

57. *Anubis fimbriatus* Bates

1879. *Anubis fimbriatus* Bates, *Cist. Exot.* 2 : 412.
 1906. *Anubis fimbriatus* : Gahan, *Fn. Brit. India incl. Ceylon and Burma*, Col; Cerambycidae, pp. 222.
Material examined : 2ex, India : Sikkim, E-T. Atkinson; 2ex, Sikkim. (No other data).

Distributed : India : Sikkim.

Elsewhere : Myanmar, Siam, Cochinchina, Malay-Peninsula.

58. *Anubis bipustulatus* Thomson

1865. *Anubis bipustulatus* Thoms., *Syst. Ceramb.*, P. 569.
 1906. *Anubis bipustulatus* : Gahan, *Fn. Brit. India incl. Ceylon and Burma*, Col : Cerambycidae, pp. 221-222.

Material examined : Not Seen.

Distribution : India : Sikkim.

Elsewhere : Myanmar, Siam, Malay-Peninsula

Genus 40. *Polyzonus* Casteln. 1840

1840. *Polyzonus* Casteln., *Hist. Nat. Cole'opt.* 2 : 438.

59. *Polyzonus bizonatus* White

1853. *Polyzonus bizonatus* White, *Cat. Coleopt. B.M. Longic*, P. 171.
 1906. *Polyzonus bizonatus* : Gahan, *Fn. Brit. India incl. Ceylon and Burma*, Col. Ceramb, pp. 216-217

Material examined : Not seen.

Distribution : India : Sikkim.

Elsewhere : Myanmar, Tenasserim, Siam.

60. *Polyzonus brevipes* Gahan

1906. *Polyzonus brevipes* Gahan, *Fn. Brit. India incl. Ceylon and Burma*, Col. : Cerambycidae, pp-217

Material examined : Not Seen.

Distribution : India : Sikkim

Elsewhere : Myanmar

Genus 41 *Chloridolum* Thomson, 1864

1864. *Chloridolum* Thomson, *Syst. Ceramb.* p. 174.

61. *Chloridolum nympha* white

1853. *Chloridolum nympha* white (Callichroma), *Cat Col. B.M. Longic*, P. 161.

1906. *Chloridolum nympha* : Gahan, *Fn. Brit India incl. Ceylon and Burma*, Col. : Ceambycidae, pp. 201

Material examined : Not seen.

Distribution : India : West Bengal, Sikkim, Manipur.

Genus 42. *Chelidonium* Thomson, 1864

1864. *Chelidonium* Thomson, *Syst. Ceramb.*, P. 175.

62 *Chelidonium sinense* Hope

1841. *Chelidonium sinense* Hope (Promeces), *Proc. Ent. Soc. Lond*; P. 63.

1906. *Chelidonium sinense* : Gahan, *Fn. Brit. India incl Ceylon and Burma*, Col. : Cerambycidae, pp. 212

Material examined : Not Seen.

Distribution : India : Sikkim, Manipur.

Elsewhere : Myanmar, China

Genus 43. *Zonopterus* Hope, 1843

1843. *Zonopterus* Hope, *Trans. Linn. Soc. Lond.*, 19 : 110.

63. *Zonopterus flavitarsis* Hope

1843. *Zonopterus flavitarsis* Hope, *Trans. Linn. Soc.*, 19 : 111, pl. 10, fig. 7

1906. *Zonopterus flavitarsis* : Gahan, *Fn. Brit. India incl. Ceylon and Burma*, Col. : Cerambycidae, pp. 191

Material examined : 1ex., India, Sikkim, E.T. Atkinson.

Distribution : India : Sikkim, Meghalaya.

Elsewhere : Bangladesh.

Remarks : This species is recorded here for the first time from Sikkim.

Tribe XVIII. Clytini

Key to the genera of the tribe Clytini recorded from Sikkim

1. Antennae more or less widely separated at base..... 2

2. Head in front with one to five more or less distinct carinae. First joint of hind tarsus about twice as long as the next two joints together *Xylotrechus* Chevrolat
- Head not carinated in front. First joint of hind tarsus less than twice the length of second & third joints together *Perissus* Chevr.
3. Antennal joints not spined at apex 4
- Third and Fourth joints, sometimes fifth and sixth joints of antennae spined at apex. Third joint of antennae longer than fourth *Demonax* Thomson
4. Antennae rather closely approximated at base, third joint little or not longer than the first. Elytra moderately long, truncated at the apex and its outer angle dentate *Caloclytus* Fairm.
- Antennae sub approximate at the base, third joint distinctly longer than first. Elytra long, very slightly narrowed posteriorly and truncated at the apex *Rhaphuma* Pascoe

Genus 44 *Perissus* Chevr., 1863

1863. *Perissus* Chevr., *Me'm. Soc. R. Sci. de Liege*, 18: 262.

64. *Perissus mutabilis* Gahan

1894. *Perissus mutabilis* Gahan, *Ann. Mus. Civ. Genova*, 34 : 23.

1906. *Perissus mutabilis* : Gahan, *Fn. Brit. India Incl. Ceylon and Burma*, Col. : Cerambycidae) pp. 256-257.

Material examined : Not seen.

Distribution : India : Sikkim.

Elsewhere : Myanmar, Siam.

Genus 45 *Demonax* Thoms, 1861

1861. *Demonax* Thoms., *Essai classif-ceramb.*, P. 226.

65. *Demonax nigromaculatus* Gahan

1906. *Demonax nigromaculatus* Gahan, *Fn. Brit. India incl. Ceylon and Myanmar*, Col. : Cerambycidae, pp 284.

Material examined : Not seen.

Distribution : India : Sikkim.

66. *Demomax leucoscutellatus* (Hope)

1831. *Demonax leucoscutellatus* (Hope) (Clytus) Gray's *Zool. Misc.*, P. 28.

1906. *Demonax leucoscutellatus* : Gahan, *Fn. Brit. India incl. Ceylon and Myanmar*, Col. : Cerambycidae, pp. 286-287.

Material examined : 1ex, India : Sikkim : E. Himalayas., V. 1912, Pillai.

Distribution : India : Assam, Nagaland, Manipur, Sikkim.

Elsewhere : Nepal.

Genus 46. *Xylotrechus* Chevr., 1860

1860. *Xylotrechus* Chevrolat, *Ann. Soc. ent. Fr.* p. 456.

Key to the species of the genus *Xylotrechus* Chevr. recorded from Sikkim

1. Eyes large, the face corresponding contracted in the middle. Vertex of head marked with a fine carina which divides anteriorly into two fine carinae. Disc of pronotum with two rounded dark brown spots with a smaller one on each side *smei* Lap et Gory
- Eyes smaller, face not contracted in the middle 2
2. Head, prothorax and elytra densely covered with luteous yellow pubescence. Prothorax longer than broad and rather feebly rounded at the sides 3
- Head, prothorax and elytra densely covered with ochreous yellow pubescence, varied above with dark brown spots and bands. Prothorax rounded at the sides and almost as wide in the middle as the base of the elytra *subdepressus* Chevr.
3. Elytra with (i) a short narrow band extended backwardly from the shoulder, curved inwardly to the disc and then bent forwards (ii) second band narrow and extended backwardly from suture (iii) third band directed obliquely

forwards to the middle of the disc (iv) fourth band smaller than third with a lateral spot, a little before apex *incurvatus* Chev.

- First elytral band reduced to two spots, one behind the shoulder and other on the disc; second band runs backwardly, third band forms distinct arcuate curve, fourth band reduced to crescentic spots and placed nearly to the third. *contortus* Gahan.

67. *Xylotrechus Smei* Lap et Gory

1841. *Xylotrechus Smei* Lap et Gory (Clytus), *Hist. Nat. et. Iconogr. des Ins. Coleopt.* (Mon-du genre *clytus*), p- 37, pl. 8, fig. 46

1906. *Xylotrechus Smei* : Gahan, *Fn. Brit. India incl. Ceylon & Burma*, col : Cerambycidae, p. 241-242.

Material examined : 1ex, India : Sikkim (No other data).

Distribution : India : West Bengal, Sikkim.

Elsewhere : Bhutan.

Remarks : This species is recorded here for the first time from Sikkim.

68. *Xylotrechus incurvatus* Chev.

1863. *Xylotrechus incurvatus* Chev. (Amauraesthes), *Mém. Soc. R. Sci de Liège*, 18 : 331.

1906. *Xylotrechus incurvatus* : Gahan, *Fn. Brit. India incl. Ceylon and Burma*, Col : Cerambycidae, pp. 248-249.

Material examined : 1ex, India: Sikkim (N), Talay moo, 3.VI. 1959. A.G.K. Memon.

Distribution : India : West Bengal, Sikkim, Manipur.

Elsewhere : Myanmar.

Remarks : This species is recorded here for the first time from Sikkim.

69. *Xylotrechus contortus* Gahan

1906. *Xylotrechus contortus* Gahan, *Fn. Brit. India incl. Ceylon and Burma*, Col. : Cerambycidae, pp. 249.

Material examined : Not seen.

Distribution : India : Sikkim, Manipur.

Elsewhere : Bhutan

70. *Xylotrechus subdepressus* Chev.

1863. *Xylotrechus subdepressus* Chev. (Amauraesthes) *Mém. Soc. R. Sci.-de Liège*, 18 : 339

1906. *Xylotrechus subdepressus* : Gahan, *Fn. Brit. India incl. Ceylon and Burma*, Col. Cerambycidae, pp. 249-250.

Material examined : Not Seen.

Distribution : India : Assam. Manipur. Sikkim.

Elsewhere : Bangladesh.

Genus 47. *Caloclytus* Fairm, 1864

1860. *Anthoboscus* Chev. (in part), *Ann. Soc. ent. Fr.* (8) 8 : 455.

1863. *Chlorophorus* Chev. (nec Robineau-Desvoidy), *Mem. Soc. R.Sci. de Liège*, 18 : 290.

- 1863-64 *Isotomus* Mulsant (nec. Blanch), *Coléopt. e France. Longic*, ed. 2, p. 143.

1864. *Caloclytus* Fairm. in Jac du Val & Fairm, *Gen. Coléopt. d'Europe*, 4 : 145.

1906. *Caloclytus* : Gahan, *Fn. Brit. India incl. ceylon and Burma*, Col. : Cerambycidae pp 260-270.

71. *Caloclytus annularis* F.

1787. *Caloclytus annularis* F. *Mant. Ins.* 1 : 156.

1906. *Caloclytus annularis* : Gahan, *Fn. Brit. India incl. Ceylon and Burma*, Col. : Cerambycidae, pp. 261.

Material examined : 3ex, India : Sikkim (labelled as *Chlorophorus annularis* F) : 5ex, Sikkim (Labelled as *Isotomus annularis* (F)).

Distribution : India : North West to Assam, Sikkim.

Elsewhere : Myanmar, Siam, China, Japan, Malay Peninsula, Archipelago to New Guinea.

Remarks : This species is recorded here for the first time from Sikkim.

Genus 48. *Rhaphuma* Pascoe, 1858

1858. *Rhaphuma* Pascoe, *Trans. Ent. Soc. Lond.*, (2) 4 : 240.

72. *Rhaphuma fulgurata* Gahan

1906. *Rhaphuma fulgurata* Gahan *Fn. Brit. India incl. Ceylon & Burma*, Col. : Cerambycidae, pp. 274.

Material examined : Not seen.

Distribution : India : Sikkim.

Tribe XIX. Rosaliini**Genus 49. *Rosalia* Serville, 1833**

1833. *Rosalia* Serville, *Ann. Soc. ent. Fr.* 2 : 561.

73. *Rosalia hariola* Thoms

1860. *Rosalia hariola* Thoms (Eurybatus) *Essai classif. Ccramb.*

1966. *Rosalia hariola* : Gahan *Fn. Brit. India incl. Ceylon and Burma*, p. 250. Col. : Cerambycidae, pp. 178-179.

Material examined : Not seen.

Distribution : India : West Bengal, Sikkim.

74. *Rosalia decempunctata* Westwood

1848. *Rosalia decempunctata* Westw. (Purpuricenus), *Cab. or. Ent.*, P. 59, pl. 29, fig. 2.

1906. *Rosalia decempunctata* : Gahan, *Fn., Brit. India incl. Ceylon and Myanmar*, Col. : Cerambycidae, pp. 179.

Material examined : Not Seen.

Distribution : India : West Bengal, Assam, Sikkim.

Elsewhere : Indonesia.

75. *Rosalia formosa* Saund

1839. *Rosalia formosa* Saund (Cerambyx), *Trans. Ent. Soc. Lond.*, 2 : 178, pl. 16, fig. 4.

1906. *Rosalia formosa* : Gahan, *Fn. Brit India incl. Ceylon and Burma*, Col., Cerambycidae, pp. 180.

1995, *Rosalia formosa* : Mukhopadhyay & Biswas, *Zool. Surv. India*, State Fauna Series 4, Fauna of Meghalaya, Part 5, PP. 14.

Material examined : 2ex, India: Sikkim (No other data).

Distribution : India : West Bengal, Assam Meghalaya, Sikkim.

Elsewhere : Myanmar, Indonesia.

SUMMARY

The present paper consolidates information available on cerambycid fauna of Sikkim. It deals with 75 species under 49 genera belonging to four sub-families. Of which a total of 31 species under 21 genera belonging to three sub-families are recorded here for the first time from Sikkim and 4 species under four genera of the subfamily Lamiinae and the speices viz. *Aprodisium hardwickianum* white of the sub-family cerambycinae are recorded here for the first time from India. Distributional data of the species has been given from the published records as well as the actual study of the specimens. Key to the subfamilies, tribes, genera and species where necessary have been provided.

ACKNOWLEDGEMENT

Authors are grateful to Dr. J.R.B. Alfred, Director, Zoological Survey of India for providing laboratory facilities. Our thanks are also due to Dr. G.K. Srivastava. Additional Director (retd.) and Dr. S.K. Mitra, Joint Director (retd.) for sugessions and constant encouragement to complete the work.

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INSECTA : COLEOPTERA : CURCULIONIDAE

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INTRODUCTION

The members of the family curculionidae are commonly known as weevils and is one of the largest family of the order coleoptera (Insecta). So far this family includes 50, 000 species under 4500 genera spreading over 72 subfamilies from all over the world. Of which 36 subfamilies are recorded from India. They can be easily distinguished by its pronounced rostrum and geniculate antennae though there are few exceptions where rostrum is so short as to be almost absent.

Four Swedish workers, Schönhers, Boheman, Gyllen and Fahraeus (1833–1845) are the foundation maker of this family. Other workers who deals this family are Laccordiare (1833-66), LeConte (1874), Gemminger and Von Harold (1871), G.A.K. Marshall (1916), Heller (1941) etc. Harold (1871) published their catalogue on the family curculionidae and included 10,150 species under it. Marshall (1916) published The Fauna of British India including Ceylon and Myanmar' Heller and Voss has done most of their taxonomic works on oriental weevils. H.R. Pajni (1990) has published another Fauna of India volume on the subfamily Eremninae after Marshall (1916).

They are entirely vegetable feeders and the larvae are apodus *ie.* legless and some of them are serious pests to stored grains, fruits, agricultural crops and forest trees. They feed on cambium of roots, stems, flowers, seeds and rotton wood. They are also defoliators, leafrollers, leafminers, wood borers and sand dwellers.

SYSTEMATIC LIST

Family CURRICULIONIDAE

Sub Family I. BRACHYDERINAE

1. Cyphides

Genus 1. *Eustalida* Faust, 1892

1. *E. bomfordi* Fst.

Genus 2. *Dermatoxenus* Mshl; 1916

2. *D. indicus* Mshl.

3. *D. helleri* Mshl.

Group 2. TANYMECIDES

Genus 3. *Geotragus* Schönherr, 1855

4. *G. subfasciatus* Desbr.

5. *G. himalayanus* Boh.

Genus 4. *Astycus* Schönh, 1826

6. *A. chrysochlorus* Wied.

Genus 5. *Tanymecus* Schönh., 1826

7. *T. versicolor* Mshl.

Genus 6. *Leptomias* Faust, 1866

8. *L. waltoni* Mshl.

Sub Family II. CLEONINAE

Tribe 1. Cleonini

Genus 7. *Xanthoprochilus* Bedel, 1909

9. *X. faunus* Oliv.

Genus 8. *Nemoxenus* Faust. 1964

10. *N. zebra* chev

Tribe 2. **Lixini**

9. *Hypolixus* Desbrochers, 1898

11. *H. auriculatus* C.R. Sahlbg.

Genus 10. *Lixus* Fabricius, 1801

12. *L. languidus* Faust

13. *L. praeuae* Faust

Subfamily III. HYLOBIINAE

Tribe **Palpalosomini**

Genus 11. *Peribleptus* Schönh., 1843

14. *P. scalptus* Boh.

Sub Family IV. CRYPTORRHYNCHINAE

Tribe **Ithyporini**

Subtribe **Ithyporina**

Genus 12. *Mecocorynus* Schönh., 1826

15. *M. varipes* Wied.

Genus 13. *Desmidophorus* Schönh., 1837

16. *D. branchmanum* Faust

17. *D. confucii* Boh. in Schönh.,

18. *D. hebes* F.

Subfamily V. RHYNCHOPHORINAE

Tribe **Rhynchophorini**

Subtribe **Rhynchophori**

Genus 14 *Cyrtotrachelus* Schönherr, 1838

19. *C. buqueti* Guér. var. *dux* Boh. in Schönh.

20. *C. longimanus* F.

21. *C. himalayanus* Heller

22. *C. rufopectinipes* Chev. Var. *montanus* Heller.

Genus 15. *Otidognathus* Lacord, 1866

23. *O. subfasciatus* Chev.

Genus 16. *Protocerius* Schönh., 1838

24. *P. fervidus* Pasc.

Genus 17. *Tetratopus* Chev., 1882

25. *T. longicollis* Faust

Genus 18. *Cercidocerus* Schönh., 1838

26. *C. Schönherri*. Guér.

27. *C. rufipes* Gunther

Genus 19. *Odoiporus* Chev., 1885

28. *O. longicollis* ol.

**Key to the subfamilies of the family
CURCULIONIDAE recorded from Sikkim**

1. The mentum comparatively large and filling or nearly filling the buccal cavity behind the mandibles, and their palpi; mandible pincer like and obtuse with deciduous cusp or its scar; submentum not pedunculate; scrobes of the rostrum lateral, each forming sublinear furrow curving downwards in the front of the eye..
..... BRACHYDERINAE
- The mentum comparatively small or narrow in relation to buccal cavity and leaving the maxillae entirely or very large exposed; submentum usually with a well marked peduncle supporting the mentum..... 2
2. Pygidium of male divided 3
- Pygidium of both sexes undivided; side piece of metathorax very wide, epimera large
..... RHYNCHOPHORINAE
3. Ungues simple; pygidium not exposed 4
- Ungues appendiculate; toothed or cleft; eyes more or less covered in repose; body oval; pygidium not exposed
..... CRYPTORRHYNCHINAE
4. Lateral angles of first ventral segment uncovered CLENONINAE
- Lateral angles of first ventral segment not visible; mentum transverse, labial palpi large
..... HYLOBIINAE

Family CURCULIONIDAE
Subfamily I. BRACHYDERINAE

Group 1 CYPHIDES

Genus 1, *Eustalida* Faust, 1891

1891. *Eustalida* Faust, *Stett. Ent. Zeit.*, P. 264

1891. *Menostoma* Desbr., *C.R. Ent. Soc., Belg.*, P. 356.

1. *Eustalida bomfordi* Faust

1891. *Eustalida bomfordi* Faust, *Stett. Ent. Zeit.*, p. 264

1891. *Menostoma cardoni* Desbr., *C.R. Ent. Soc. Belg.*, P. 356.

1916. *Eustalida bomfordi* Marshall, *Fauna of British India including Ceylon and Myanmar*, Col. : Rhynchophora : Curculionidae, pp. 57-58

Material examined : 1ex., India : Sikkim, Khydel Colln.,

Distribution : India : West Bengal, Sikkim.

Genus 2. *Dermatoxenus* Mshl. 1916

1916. *Dermatoxenus* Mshl. *Fn. Brit. India incl. Ceylon & Myanmar*, Col : Rhynchophora : Curculionidae, pp. 50-55

2. *Dermatoxenus indicus* Mshl.

1916. *Dermatoxenus indicus*, Mshl. *Fn. Brit. India incl. Ceylon and Myanmar*, Col. : Rhynchophora : Curculionidae, pp. 53-54

Material examined : Not Seen.

Distribution : India : Nagaland, Sikkim.

3. *Dermatoxenus helleri* Mrhl.

1916. *Dermatoxenus helleri* Mshl., *Fn., Brit. India incl. Ceylon and Myanmar*, Col. : Rhynchophora : Curculionidae, pp. 54-55

Material examined : Not seen.

Distribution : India : Meghalaya, Manipur, Sikkim.

Group 2. TANYMECIDES

Genus 3. *Geotragus* Schönherr, 1845

1845. *Geotragus* Schönherr, *Gen. Curc.* 8 : 411, pt.2.

1847. *Taphrorhynchus* Schönh. *Mant. Sec., Curc.*, P. 33.

1863. *Piazomias* (Part), Lacordaire, *Gen. Col.* 6 : 90

1916. *Geotragus* Schönh., *Fn. Brit. India incl. Ceylon & Myanmar*, Col. : Rhynchophora : Curculionidae, pp. 196-201.

4. *Geotragus subfasciatus* Desbr.

1890. *Brachyaspiestes subfasciatus* Desbr., *Journ. As. Soc., Bengal.* P. 211.

1891. *Taphrorhynchus assamensis* Faust, *Stett. Ent. Zeit.*, p. 260.

1916. *Geotragus subfasciatus* Desbr : Mshl., *Fn. Brit. India incl. Ceylon & Myanmar*, Col. : Rhynchophora : Curculionidae, pp. 199.

Material examined : 3ex., India : Sikkim; 1ex., Sikkim : Mongphu (no other data).

Distribution : India : West Bengal, Bihar, Sikkim.

Elsewhere : Bhutan

5. *Geotragus himalayanus* Boh.

1845. *Geotragus himalayanus* Boheman in Schönh., *Gen. Curc.*, 8 : 412, pt. 2.

1916. *Geotragus himalayanus* : Mshl. *Fn. Brit. India incl. Ceylon and Myanmar*, Col. : Rhynchophora : Curculionidae, pp. 197-198.

Material examined : Not Seen.

Distribution : India : West Bengal, Sikkim.

Genus 4. *Astycus* Schönh., 1826

1826. *Astycus*. Schönh., *Disp. Meth.*, P129.

1840. *Brochyaspistes* Schonh. *Gen. Curc.* 6 : 249, pl. 1.

6. *Astycus chrysochlorus* Wied.

1823. *Curculio chrysochlorus* Wied., *Zool. Mag.*, 2 (1) : 122

1834. *Astycus Variabilis* Gyllenhal, Schönh., *Gen. Curc.*, 2 : 91.

1894. *Astycus adultus* Faust (Olivier), *Ann. Mus. Civ. Genova*, 34 : 173.

1916. *Astycus chrysochlorus* Wied : Mshl., *Fn. Brit. India incl. Ceylon and Myanmar*, Col. : Rhynchophora : Curculionidae, pp. 133-134.

Material examined : Not Seen.

Distribution : India: Bihar, Orissa, Assam, Sikkim

Elsewhere : Myanmar, Bangladesh.

Genus 5. *Tanymecus* Schönherr, 1826

1826. *Tanymecus* Schönh., *Disp. Meth.*, p. 127.

1880. *Esamus* Chevrolat, *Ann. Soc. ent. Fr.*, P. 255

1916. *Tanymecus*, Schönherr : *Mshl. Fn. Brit. India incl. Ceylon & Myanmar*, Col. : Rhynchophora : Curculionidae, pp. 68-118.

7. *Tanymecus versicolor* Mshl.

1916. *Tanymecus versicolor*, Mshl., *Fn. Brit. India incl. Ceylon and Myanmar*, col : Rhynchophora : Curculionidae, pp. 93-94.

Material examined : Not Seen.

Distribution : India : Bihar, Assam, Meghalaya, Sikkim, Uttar Pradesh.

Elsewhere : Bangladesh.

Genus 6. *Leptomias* Faust, 1866

1866. *Leptomias* Faust, *Stett. Ent. Zeit.*, P. 132.

1897. *Heteromias* Faust, *Dunt. Ent. Zeit.* P. 344.

1863. *Piazomias* (Part) Lacordaire, *Gen. Col.* 6 : 90

8. *Leptomias Waltoni* Mshl.

1916. *Leptomias Waltoni* Mshl., *Fn. Brit. India incl. Ceylon and Myanmar*, Col : Rhynchophora : Curculionidae, p. 189.

Material examined : Not Seen.

Distribution : India : Sikkim.

Elsewhere : Tibet

Subfamily II. CLEONINAE

Key to the tribe of the subfamily CLEONINAE recorded from sikkim

1. Antennae with placoid sensilla; Rostrum usually short, scaly; scrobes reaching upto apex and visible anteriorly from above, usually with rostral

carina or furrow. Body with scales.....
..... **Cleonini**

- Antennae without placoid sensilla; Rustrum cylindrical more or less shining; scrobes not reaching upto apex and not visible anteriorly from above; usually without rostral carina or furrow **Lixini**

Tribe I Cleonini

Genus 7. *Xanthoprochilus* Bedel, 1909

1909. *Xanthoprochilus* Bedel, *Bull. Soc. Ent. Egypte*, 2 : 100.

9. *Xanthoprochilus faunus* Oliv.

1807. *Xanthoprochilus faunus* ol. *Ent.* 5 (nr. 83) : 267, t 24, f. 242.

Material examined : 4ex, India : Sikkim (No other Data)

Distribution : India : West Bengal, Bihar, Assam, Meghalaya, Sikkim, Orissa, Tamil Nadu, Uttar Pradesh.

Elsewhere : Indonesia. Cochin-china. Japan.

Remarks : This species is recorded here for this first time from Sikkim.

Genus 8. *Nemoxenus* Faust, 1904.

1904. *Nemoxenus* Faust, *Dentsche Ent. Zeit.* P. 188, 232.

10. *Nemoxenus zebra*, Chevr.

1873. *Nemoxenus zebra*, Chevr, *Mèm. Soc. Sc. Liège*, (2) 5 : 73, 109.

Material examined : 1ex., India : Sikkim : Mungphu; 1ex., Sikkim (No other data)

Elsewhere : Sri Lanka, Myanmar.

Remarks : This species is recorded here for the first time from Sikkim.

Tribe 2. Lixini

Genus 9. *Hypolixus* Desbrochers, 1898

1898. *Hypolixus* Desbrochers, *Frelon*, 7 : 54.

1904. *Hypolixus* : Petri, *Wien Ent. Zeit.*, 23 : 188

1916. *Hypolixus* : Reitt, *Fauna Germ.*, 5 : 90.

1963. *Hypolixus* : Aslam, *Bull. Brit Mus. (Nat. Hist.) London, Entomology*, 13 (3) : 47-56.

11. *Hypolixus auriculatus* C.R. Sahlbg.

1823. *Hypolixus auriculatus* Sahlbg. *Peric. ent. Spec. Ins.*, 3 : 40.

Material examined : 1ex., India: Sikkim.

Distribution : India : West Bengal, Sikkim, Tamil Nadu

Elsewhere : Indonesia, Myanmar, Hanoi.

Genus 10. *Lixus* Fabricius, 1801.

1801. *Lixus* Fabricius, *Syst. Eleuth.*, 2 : 498.

1820. *Phorus* Billberg, *Enum. Ins. Mur. Billburg*, P. 41.

1860. *Dicranthus* Motsch., *Bull. Acad. Sc. St. Pétersb.*, 2 : 541

1893. *Eututomatus* Desbr., *Frelon*, 3 : 12

12. *Lixus languidus* Faust

1891. *Lixus languidus*, Faust, *Ent. Zeit. Stett.*, 52 : 275.

Material examined : 16 ex, India : Sikkim (No other data).

Distribution : India : West Bengal. Sikkim.

Elsewhere : China.

Remarks : This species is recorded here for the first time from Sikkim.

13. *Lixus pracuae* Faust

1891. *Lixus pracuae*, Faust, *Ent. Zeit. Stettin*, 52 : 276.

Material examined : 4ex, India : Sikkim : Mungphu; 3ex., Sikkim.

Distribution : India : West Bengal, Sikkim.

Elsewhere : Myanmar.

Remarks : This species is recorded here for the first time from Sikkim.

Subfamily III. HYLOBIINAE

Tribe **Paepalosomini**

Genus 11. *Peribleptus*. Schönh., 1843

1843. *Peribleptus* Schönh., *Gen. Spec., Curc.*, 7 (2) : 192.

14. *Peribleptus scalptus* Boh in Schönh.

1843. *Peribleptus scalptus* Boh. in Schönh., *Gen. Spec. Curc.*, 7 (2) : 193.

Material examined : 3ex, India : Sikkim (No other data).

Remarks : This species is recorded here for the first time from Sikkim.

Subfamily IV. CRYPTORRHYNCHINAE

Tribe **Ithyporini**

Subtribe **Ithyporina**

Genus 12. *Mecocorynus* Schönh., 1826.

1826. *Mecocorynus* Schönh., *Curc. Disp. Meth.* P 283.

15. *Mecocorynus varipes* Wied.

1819. *Mecocorynus varipes* Wied. *Zool. Mag.*, 1 (3) : 178

Material examined : 4ex., India : Sikkim. Knyvett Colln.

Distribution : India : West Bengal, Assam, Sikkim.

Genus 13. *Desmidophorus* Schönh., 1837

1837. *Desmidophorus* Schönh., *Gen. Spec. Curc.*, 4 (1) : 360

1893. *Desmidophorus* : Faust, *Stett. Ent. Zeit.*, 54 : 234

16. *Desmidophorus brachmanum* Faust

1894. *Desmidophorus brachmanum* Faust, *Ann. Mus. Civ. Genova*, (2) 14 (34) : 263.

Material examined : 7ex, India: Sikkim. 1ex., Sikkim, Mongphu.

Distribution : India : West Bengal, Sikkim.

Elsewhere : China.

17. *Desmidophorus confucii* Boh. in Schönh.1837. *Desmidophorus confucii* Boh. in Schönh., *Gen. Spec. Curc.*, 4 (1) : 362.1917. *Desmidophorus confucii* : Hubenth, Ent. Blätt., 13 : 109, 12.*Material examined* : 1ex., India : Sikkim (No other data).*Distribution* : India : Sikkim.*Elsewhere* : Myanmar, China*Remarks* : This species is recorded here for the first time from India (Sikkim)18. *Desmidophorus hebes* F.1781. *Desmidophorus hebes* F., *Spec. Ins.*, 1 : 174.*Material examined* : 1ex, India : Sikkim.*Distribution* : India : West Bengal, Assam, Sikkim.*Elsewhere* : Myanmar, China, Philippines, Cambodia.*Remarks* : This species is recorded here for the first time from Sikkim.

Subfamily V RHYNCHOPHORINAE

Tribe Rhynchophorini

Subtribe Rhynchophori

Genus 14. *Cyrtotrachelus* Schönherr, 18381838. *Cyrtotrachelus* Schönh., *Gen. Spec. Curc.* 4 (2) : 833.19. *Cyrtotrachelus buqueti* Guer. Var. *dux* Boh. in Schönh.,1845. *Cyrtotrachelus buqueti* Guér. var *dux* Boh. in Schönh., *Gen Spec. Curc.*, 8 (2) : 221.1866. *Cyrtotrachelus buqueti* Guér. var *dux* : Laccordaire, *Gen Col.*, 7 : 271.*Material examined* : 1ex., India : Sikkim.*Distribution* : India : West Bengal, Assam, Sikkim.*Elsewhere* : Myanmar.20. *Cyrtotrachelus longimanus* F.1775. *Cyrtotrachelus longimanus* F., *Syst. Ent. App.* P. 822.1797. *Cyrtotrachelus longimanus* : Thunbg., *Kgl. Vet. Acad. Handb.*, 18 : 48.1807. *Cyrtotrachelus longimanus* : Olivier, *Ent.* 5 : 78, Nr. 83, t-15, f. 191 G, t-2, f-16 E.*Material examined* : 1ex., India : Sikkim; 2ex., Sikkim, Indian Museum Colln. Niceville.*Distribution* : India : Sikkim.*Elsewhere* : Myanmar, China21. *Cyrtotrachelus himalayanus* Heller1923. *Cyrtotrachelus himalayanus* Heller, *Wien. Ent. Zeit.*, 40 : 155.*Material examined* : Not seen.*Distribution* : India : Sikkim.22. *Cyrtotrachelus rufopectinipes* chev. Var. *montanus* Heller1882. *Cyrtotrachelus rufopectinipes* Chev., *Ann. Soc. ent. Fr.* (6) 2 : 556.1923. *Cyrtotrachelus rufopectinipes* chev. var. *montanus* Heller, *Wien. Ent. Zeit.*, 40 : 154.*Material examined* : Not seen.*Distribution* : India : Assam, Sikkim.Genus 15. *Otidognathus* Lacord., 18661866. *Otidognathus* Lacord. *Gen. Col.* 7 : 273, 273.23. *Otidognathus subfasciatus* chev.1882. *Otidognathus subfasciatus* Chev.; *Ann. Soc. ent. Fr.*, (6) 2, Bull p. 111.*Material examined* : India : Sikkim (No other data)*Distribution* : India : Assam, Sikkim.*Remarks* : This species is recorded here for the first time from Sikkim.Genus 16. *Protocerius* Schönh., 18381838. *Protocerius* Schönh., *Gen. Spec. Curc.*, 4 (2) : 828.24. *Protocerius fervidus* Pasc.1871. *Protocerius fervidus* Pasc., *Journ., Linn. Soc. Lond.*, 11 : 216.

Material examined : 3ex, India : Sikkim; 2ex., Sikkim : Mungphu.

Distribution : India : Sikkim.

Elsewhere : Malacca, Indonesia.

Remarks : This species is recorded here for the first time from India (Sikkim)

Genus 17 *Tetratopus* Chevr., 1882

1882. *Tetratopus* Chevr., *Ann. Soc., ent. Fr.*, (6) 2 : 569.

25. *Tetratopus longicollis* Faust

1894. *Tetratopus longicollis* Faust, *Ann. Mus., Civ., Geneva*, 34 : 332.

Material examined : 2ex., India : Sikkim, VI. 1913; 1ex. Sikkim : Mungphu.

Distribution : India : Sikkim.

Genus 18. *Cercidocerus* Schönh., 1838.

1838. *Cercidocerus* Schönh., *Gen. Spec. Curc.*, 4 (2) : 350.

26. *Cercidocerus Schönherri* Guér.

1829. *Cercidocerus Schönherri* Guér., *Iconogr. Règne anim.*, pp. 179

1894. *Cercidocerus Schönherri* : Faust, *Ann. Mus. Civ. Geneva*, 34 : 343.

Material examined : 2ex, India : Sikkim : Mungphu; 1ex., Sikkim.

Distribution : India : Sikkim.

Elsewhere : Myanmar, Indonesia

Remarks : This species is recorded here for the first time from India (Sikkim).

27. *Cercidocerus rufipes* Günther

1935. *Cercidocerus rufipes* Günther, *Zool. Mededeel. Leiden*, 18 : 166, fig. 4.

Material examined : Not Seen.

Distribution : India : Assam, Sikkim.

Genus 19. *Odoiporus* Chevr., 1885

1885. *Odoiporus*, Chevr. *Ann. Soc. ent. Fr.*, (6) 5 : 238.

28. *Odoiporus longicollis* Oliv.

1807. *Odoiporus longicollis* ol., *Ent.* 5 (Nr. 83) : 86, t. 28, f. 413.

1882. *Odoiporus longicollis* : Chevr, *Ann. Soc. ent. Fr.* (6) 2 : 140.

1894. *Odoiporus longicollis* : Faust, *Ann. Mus. Civ. Genova*, 34 : 333.

Distribution : India : Sikkim, Andaman Island.

Elsewhere : Sri Lanka, Myanmar.

Remarks : This species is recorded here for the first time from Sikkim.

SUMMARY

The Present paper consolidates the information available on weevils fauna from Sikkim. It includes 28 species under 19 genera belonging to five sub families viz. Brachyderinae, cleoninae, hylobiinae, cryptorrhynchinae and rhynchophorinae. Of which 3 species under 3 genera are recorded for the first time from India and 8 species under 7 genera belonging to four subfamilies are recorded for the first time from Sikkim. Distributional data of the species has been given from the published records as well as actual study of the specimens. Key to the subfamilies, tribes where necessary have also been provided.

ACKNOWLEDGEMENTS

Authors are grateful to Dr. J.R.B. Alfred, Director, Zoological Survey of India for providing laboratory facilities to complete the work. Our thanks are also due to Dr. G.K. Srivastava, Additional Director (retd.) and Dr. S.K. Mitra, Joint Director (retd.) for suggestions and constant encouragement to complete the work.

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INSECTA : COLEOPTERA : PLATYPODIDAE

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INTRODUCTION

The members of the family Platypodidae are commonly known as 'Pin hole borer or shot hole borer or ambrosia beetle. They are known as ambrosia beetle because of its dark brown or black in colour caused due to presence of the peculiar fungus known as ambrosia growing in the tunnel made by themselves.

They live exclusively in the wood of the trees feeding on the sap of the tree. They attack both the living as well as dead trees, felled logs and the logs present in timber depot causing considerable damage to the timber industry. They mostly live in or favoured the injured tissues that are in the process of dying. They complete on regeneration in the host tissues having sufficient moisture for further generation. Their geographical history shows that they evolved in a similar environment early in the differentiation of Rhynchophorus stock.

The classification of the family has not yet been satisfactorily constructed. Several taxonomists has placed the family platypodidae together with scolytidae. Sharp has considered that only four families viz. Anthribidae, curculionidae, scolytidae including platypodidae can be accepted under the division of Rhynchophora. He has also showed that the family platypodidae is the most aberrant of all Rhynchophora. However, the classification of this group made by schedel (1972) is followed here for the present study of this group.

They can be easily distinguished by its body being very slender and its first tarsal joint is almost

as long as all the remaining joints taken together, six segmented antennae, side of the prothorax emarginate for the reception of legs and head is remarkably short, flat and broader than prothorax and there is no trace of rostrum.

So far only 85 species under 6-genera belonging to three subfamilies viz. Diaporinae, Crossotarsinae and Platypodenae are known from India. The present study is basad on the materials collected from Sikkim by different survey parties of Zoological Survey of India. This include five species under two genera belonging to two subfamilies. A list of host plants so far recorded for various species are also provided in this work. A key to the subfamilies and species have also been included.

SYSTEMATIC ACCOUNT : LIST OF TAXA

Order COLEOPTERA

Family PLATYPODIDAE

Subfamily I. PLATYPODINAE

Genus 1. *Platypus* Herbst, 1793

1. *Platypus solidus* walker
2. *P. indicus* Strohmeier
3. *P. secretus* Sampson
4. *P. cupulatus* Chapuis

Subfamily II. DIAPORINAE

Genus 2. *Diacavus* Schedl, 1933

5. *D. furtivus* Sampson

Key to the subfamilies of the family PLATYPODIDAE

1. Front coxae contiguous 2
- Front coxae widely separated
..... DIAPORINAE
2. In male outer face of the fore tibia marked by transverse carina but in female transverse carina is reduced and at least partly reduced by granules; (not recorded from Sikkim)
..... CROSSOTARSINAE
- In both sexes, the outer face of fore tibia marked by a variable number of transverse carina PLATYPODINAE

Subfamily I. PLATYPODINAE

Genus 1. *Platypus* Herbst, 1793

1793. *Platypus* Herbst, *Natursyst. Ins.* 5 : 128, 129.
1825. *Cylindra* Illiger, *Fauna Austr.*, 3 : 87.
1914. *Stenoplatypus* Strohmeyer, *Gen. Ins. Fam. Platypodidae*. 163 : 35.
1938. *Platypinus* Schedl, *Verh. VII. Int. Kong.* pp. 397 (1939)
1938. *Platypinus* Schedl, *Verh. VII. Int. Kong.* 397 (1939)
1957. *Platyscapulus* Schedl, *Ann. Mus. Congo Belg. Sci. Zool.*, 56 (8) : 125-126.
1963. *Costaroplatus* Nunberg, *Wiscons. Acad. Sci.*, 52 : 109-110.

Herbst (1793) first established the genus *Platypus* for the type species *Bostrichus Cylindrus* F. from Germany. The validity of the genus was in doubt for a long time. This genus is for the most part exotic but represented by several species in the Indian region, particularly from Sri Lanka. So far 47 species are recorded from India and 9 species from Sri Lanka. The members of the species cause a considerable damage to the timber of various species of forest trees belonging to the families like Leguminosae, Rubiaceae, Combretaceae, Bombacaceae, Dipterocarpaceae, Bignoniaceae, Moraceae, Euphorbiaceae, Urticaceae, Sterculiaceae, Sapindaceae, Myrtaceae, Verbanaceae etc.

This genus can be easily distinguished by its (i) head as wide as thorax in male, and a little less in female (ii) segments of maxillary palps more or less compressed and membranous (iii) mentum in male with its base dilated or linear (iv) femoral grooves of pronotum angulate at both extremities except the species *quercivorus* Murayama (v) apex of elytra varies in sexes and (vi) pygidium covered up in both sexes.

Distribution : It is distributed in all zoogeographical regions but in tropical America it acquires the maximum diversity.

Key to the male species of *Platypus* Herbst recorded from Sikkim

1. Apex of elytra not truncate but terminating into a greatly narrowed end
..... *solidus* Walker
- Apex of elytra truncate and not terminating into a narrowed end 2
2. Elytral declivity without spine or tubercle
..... 3
- Elytral declivity with spine or tubercle and with oblique depression
..... *indicus* Strohmeyer
3. No depression on elytra. Prothorax subquadrangulate *secretus* Sampson
- Elytra with more or less circular depression. Prothorax oblong with a median line in front
..... *cupulatus* Chapuis

1. *Platypus solidus* Walker, 1858

1858. *Platypus solidus* Walker, *Ann. Mag. nat. Hist.*, (3) 2 : 286.
1863. *Platypus caudatus* Motschulsky, *Bull. Soc. Imp. Nat. de Moscow*, 36 : 509.
1866. *Platypus pilifrons* Chapuis, *Monograph platyp.* : 265.
1972. *Platypus solidus* : Schedl, *Monogr. Platyp.* : 199.

Material examined : India : Sikkim : Rongpo : Mamrin, altitude 300m, 5.IV. 1982, R.K. Varshney and Party.

Distribution : India : West Bengal, Assam, Orissa, Uttar Pradesh, Madhya Pradesh,

Maharashtra, Tamil Nadu, Karnataka, Kerala, Andamans, Sikkim.

Elsewhere : Indonesia, Myanmar, Malaya, Philippines, Formosa.

Remarks : This species is widely distributed in India and reported from the various host plants viz. *Acacia catechu*, *Acrocarpus fraxinifolia*, *Albizia lebbek*, *A. odoratissima*, *A. procera* (Mimosae : Leguminosae); *Adina cordifolia*, *Adina sessilifolia*, *Anthocephalus cadamba* (Rubiaceae); *Anogeissus latifolia* wall., *Terminalia beleria* (combretaceae); *Bombax malabaricum* (Bombacaceae); *Buchanania latifolia*, *Lannea grandis*, *Mangifera indica*, *Semecarpus heterophylla* (Anacardiaceae); *Butea frondosa*, *Dalbergia sissoo*, (papilionaceae); *Chloroxylon*, *swlietenia* (Meliaceae); *Cinnamomum cecidodaphne* (Lauraceae); *Dipterocarpus pilosus*, *Shorea robusta* (Dipterocarpaceae); *Dolichandrone stipulata*, *Stereo spermum cheleniodes* (Bignoniaceae); *Ficus religiosa*, *Ficus tsiela* (Moraceae); *Hevea brasiliensis*, *Mallotus albus* (Euphorbiaceae), *Holoptelea integrifolia* (Urticaceae), *Pterospermum acerifolium*, *Sterculia villosa* (Sterculiaceae), *Schleichera trijuga* (Sapindaceae); *Tectona grandis* (Verbenaceae). In the present study the species has been collected from the sap portion of fire wood which are abundant in this locality.

2. *Platypus indicus* Strohmeyer, 1910

1910. *Platypus indicus* Strohmeyer, *Entom. Blatt.*, 6 : 131-132.

1972. *Platypus indicus* : Schedl, *Mong. Platyp.* : 206.

Material examined : 1♂, 1♀ ; India : Sikkim : Rongpo : Mamrin, altitude 300 m., 5.IV.1982, R. K. Varshney and Party.

Distribution : India : Assam, Sikkim, Tamil Nadu.

Remarks : This species were collected in daytime while attacking on fire wood. This species were recorded from the host plants like *Bombax insigne*, *Bombax malabaricum* (Bombacaceae), *Dalbergia assamica* (Papilionaceae),

Dipterocarpus pilosus (Dipterocarpaceae), *Ficus asperrima*, *Ficus bengalensis*, *Ficus infectoria*, *Ficus glomerata* (Moraceae), *Poinciana elata* (Leguminosae : Caesalpinieae), *Spondias mangifera* (Anacardiaceae) etc.

3. *Platypus secretus* Sampson, 1921

1921. *Platypus secretus* Sampson, *Ann. Mag. Nat. Hist.*, 7 : 25, 26.

1972. *Platypus secretus* : Schedl, *Monogr. Platyp.* : 191

Material examined : 8♂♂, 3♀♀ India : Sikkim : Rongpo : Mamrin, altitude 300 m, 5.IV.1982, R. K. Varshney and party.

Distribution : India : West Bengal, Assam, Sikkim. *Elsewhere* : Laos; Myanmar; Bhutan; Malaya.

Remarks : This species is distributed throughout Indomalayan region and recorded from the host plants like *Albizia ucidal*, *Albizia stipulate* (Mimosae : Leguminosae); *Anthocephalus cadamba* (Rubiaceae); *Dalbergia assamica* (Papilionaceae); *Dipterocarpus pilosus* (Dipterocarpaceae); *Lannea grandis* (Anacardiaceae); *Sterculia ornata* (Sterculiaceae) *Terminalia belerica* (Combretaceae) etc.

4. *Platypus cupulatus* Chapuis, 1865

1865. *Platypus cupulatus* Chapuis, *Monogr. Platyp.* 27, 39, 278-279, fig. 167, a-d.

1972. *Platypus cupulatus* : Schedl, *Monogr. Platyp.* : 209

Material examined : 10♂♂, 6♀♀ India : Sikkim : Rongpo : Mamrin, altitude 300m., 5.IV.1982, R. K. Varshney and Party.

Distribution : India : West Bengal, Sikkim, Tamil Nadu, Andaman Island.

Elsewhere : Myanmar, Bhutan, Indonesia, Malacca.

Remarks : This species is found throughout Indomalayan region to New Guinea and recorded from the host plants like *Bombax malabaricum* (Bombacaceae); *croton* sp. (Euphorbiaceae); *Dipterocarpus stipulata*, *Shorea. eximia*, *shorea leprosula*, *Shorea robusta*, *Shorea rugosa*

(Dipterocarpaceae); *Dolichandrone stipulata* (Bignoniaceae); *Dyera costulata* (Apocynaceae); *Eugenia glomerata*, *Eugenia jambolana* (Myrtaceae); *Lannae grandis* (Anacardeaceae); *Pterocarpus dalbergioides* (Papilionaceae); *Xylia dolabriformis* (Mimosae : Leguminosae); *Tectona grandis* (Verbanaceae); *Terminalia belerica* (Combretaceae).

Subfamily II. DIAPORINAE

Genus *Diacavus* Schedl, 1933

1933. *Diacavus* Schedl. Journ. Fed. Mal. St. Mus., 18 : 363.

Schedl (1933) first established the genus *Diacavus* for the type species *Diapus frontalis* Strohmeier. This genus can be easily distinguished by its body being slender, head wider than prothorax; male frons simple having a median carina and female frons usually with conspicuous ornamental hairs; pronotum usually with numerous pores near base in both sexes; elytra in male without declivity but horizontal and the alternate interstices ending into short processes or spines

and in female the elytra simple with its slightly convex apex; last abdominal sternite in male very large and deeply concave but in female last abdominal sternite rather large and convex.

Distribution : India, Malay, Vietnam and Philippines.

5. *Diacavus furtivus* Sampson, 1923

1923. *Diacavus furtivus* Sampson, Ann. Mag. Nat. Hist., (12) 9 : 450-451.

1972. *Diacavus furtivus* : Schedl, Mong. Platyp. : 207.

Material examined : 2♂♂, 2♀♀. INDIA : Sikkim : Marthan, 20 km N. of Rongpo, altitude 625 m, 7.IV.1982, R.K. Varshney & Party.

Distribution : India : Assam, Sikkim, Madhya Pradesh. Elsewhere : Vietnam.

Remarks : It is observed in the field that this species attack both standing as well as recently felled log, particularly main trunks and large branches. This species is so far recorded from the host plants like *Dipterocarpus indicus*, *Shorea robusta* (Dipterocarpaceae) and *vertica lanceaefolia*.

List of Platypodid species associated with host plants

Name of the species	Name of the Host plants	Name of the species
1. <i>Platypus solidus</i> Walker	Leguminosae : Minosae	<i>Accacia catechu</i> , <i>A. crocarpus</i> <i>fraxinifolia</i> , <i>Albizzia</i> , <i>lebbek</i> , <i>A.</i> <i>odoratissima</i> , <i>A. procera</i> ;
	Leguminosae : Papilionaceae Rubiaceae	<i>Butea frondosa</i> , <i>Dalbargia</i> ¹ <i>sissoo</i> . <i>Adina cordifolia</i> , <i>Adina sessilifolia</i> , <i>Anthocephalus cadamba</i> .
	Combretaceae	<i>Anogeissus latifolia</i> wall., <i>Terminalia</i> <i>belerica</i> .
	Bombacaceae Anacardiaceae	<i>Bombax malabaricum</i> <i>Buchanania lalifolia</i> , <i>Lannea grandis</i> , <i>Mangifera indica</i> , <i>Semecarpus</i> <i>heterophylla</i> ,
	Meliaceae	<i>Chloroxylon swietenia</i> ,
	Lauraceae	<i>Cinnamomum cecidodaphne</i>
	Dipterocarpaceae	<i>Dipterocarpus pilosus</i> , <i>shorea robusta</i>
	Bignoniaceae	<i>Stereospermum chelenoides</i>
	Moraceae	<i>Ficus religiosa</i> , <i>Ficus tsiela</i> .

Name of the species	Name of the Host plants	Name of the species
	Euphorbiaceae	<i>Hevea braziliensis</i> , <i>Mallotus albus</i>
	Urticaceae	<i>Holoptelea integrifolia</i>
	Sterculiaceae	<i>Sterculia villosa</i>
	Sapindaceae	<i>Schleichera trijuga</i>
	Verbenaceae	<i>Tectona grandis</i> ,
2. <i>Platypus indicus</i> Strohmeyer	Bombacaceae	<i>Bombax insigne</i> , <i>Bombax malaboricum</i>
	Leguminosae : Papilionaceae	<i>Dalbergia assamica</i>
	Leguminosae : Calsalpinicae	<i>Poinciana elata</i>
	Moraceae	<i>Ficus asperrima</i> <i>F. bengalensis</i> , <i>F. infectoria</i> <i>F. glomerata</i> .
	Anacardiaceae	<i>Spondias mangifera</i> .
3. <i>Platypus secretus</i> Sampson	Leguminosae : Mimosae	<i>Albizia ucidal</i> , <i>A. stipulata</i>
	Leguminosae : Papilionaceae	<i>Dalbergia assamica</i>
	Rubiaceae	<i>Anthocephalus cadamba</i>
	Dipterocarpaceae	<i>Dipterocarpus pilosus</i>
	Anacardiaceae	<i>Lannea grandis</i>
	Sterculiaceae	<i>Sterculia ornata</i>
	Combrataceae	<i>Terminalia belerica</i>
4. <i>Platypus cupulatus</i> Chapuis	Bombacaceae	<i>Bombyx malabaricum</i> ,
	Euphorbiaceae	<i>Croton</i> sp.
	Dipterocarpaceae	<i>Dipterocarpus</i> <i>Stipulata</i> , <i>shorea eximia</i> <i>Shorea leprosula</i> , <i>S. robusta</i> <i>S. rugosa</i>
	Bignoniaceae	<i>Dolichandrone stipulata</i>
	Apocynaceae	<i>Dyera costulata</i>
	Myrtaceae	<i>Eugenia glomerata</i> , <i>Eugenia jambolana</i>
	Anacardeaceae	<i>Lannea grandis</i>
	Leguminosae : Papilionaceae	<i>Pterocarpus dalbergioides</i>
	Leguminosae : Mimosae	<i>Xylia dolabrififormis</i>
	Verbanaceae	<i>Tectona grandis</i>
	Combretaceae	<i>Terminalia belerica</i>

Subfamily II. : Diaporinae

5. <i>Diacavus furtivus</i> Sampson	Dipterocarpaceae	<i>Dipterocarpus indicus</i> , <i>Shorea robusta</i>

Species of Platypodiidae recorded from Sikkim attacked the plants belonging to the following families

Name of the family of the infested plants	Genus				Genus
	<i>Platypus</i> Herbst				<i>Diacavus</i> Schedl
	<i>solidus</i> Walker	<i>indicus</i> Strohmeyer	<i>secretus</i> Sampson	<i>cupulatus</i> Chapuis	<i>furtivus</i> Sampson
1. Leguminosae	+	+	+	+	—
2. Anacardiaceae	+	+	+	+	—
3. Dipterocarpaceae	+	—	+	+	+
4. Combretaceae	+	+	—	+	—

Name of the family of the infested plants	Genus <i>Platypus</i> Herbst		Genus <i>Diacavus</i> schedl		
	<i>solidus</i> Walker	<i>indicus</i> Strohmeyer	<i>secretus</i> Sampson	<i>cupulatus</i> Chapuis	<i>furtivus</i> Sampson
5. Bombacaceae	+	+	—	+	—
6. Bignoniaceae	+	+	—	+	—
7. Rubiaceae	+	—	+	—	—
8. Moraceae	+	+	—	—	—
9. Euphorbiaceae	+	—	—	+	—
10. Sterculiaceae	+	—	+	—	—
11. Verbanaceae	+	—	—	+	—
12. Meliaceae	+	—	—	—	—
13. Lauraceae	+	—	—	—	—
14. Urticaceae	+	—	—	—	—
15. Sapindaceae	+	—	—	—	—
16. Apocynaceae	—	—	—	+	—
17. Myrtaceae	—	—	—	+	—

REMARKS

If we considered the species of platypodidae recorded from the plants, particularly in family level, it is observed that all the four species of *Platypus* Herbst are recorded from the plants belonging to the families like Laguninoseae and Anacardiaceae and the species *Platypus solidus* walker is the only species recorded from the plants of the families like Meliaceae, Lauraceae, urticaceae and sapindaceae. Further all the four species of the genus *Platypus* are recorded from different plant species belonging to the papilionaceae of Leguminosae but the species *solidus* walker, *indicus* strohmeyer and *secretus* sampson from the plant species belonging to the same genus viz. *Dalbergia* and the latter two species are from the same plant species viz. *Dalbergia assamica*. The speceis *solidus* walker and *cupulatus* chapuis are recorded also from *Butea forndosa* and *pterocarpus dalbergioides* respectively. Of the four species of *Platypus*, three species except *indicus* strohmeyer are recorded from the plants belonging to Mimosae of Leguminosae. The species *solidus* walker, *indicus* strohmeyer, and *cupulatus* chapuis are recorded from the three plant families viz. Cambretceae, Bombaceae and Bignoniaceae.

It has also been observed that the *Platypus solidus* walker is the species damaging maximum plant species belonging to 15 families and *Diacavus furtivus* sampson is the only species found to damage the plants belonging to the family Dipterocarpaceae.

SUMMARY

The Paper deals with 5 species belonging to 2 genera under two subfamilies. All the species are recorded here for the first time from Sikkim. Key to the subfamilies, genera and species have been provided, wherever necessary. Relevant references, collection and distributional data along with diagnostic character of the genera are also provided. In addition a list of host plants including remarks are also incorporated.

ACKNOWLEDGEMENT

The authors are highly indebled to Dr. J.R.B. Alfred, Director, Zoological Survey of India for giving the opportunity to work on the group. Thanks are also due to Dr. G. K. Srivastava, Scientist SG (retd.) and Dr. S. K. Mitra, Scientist SF, (retd.) Zoological Survey of India for offering valuable suggestions for its improvement.

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INSECTA : COLEOPTERA : ELATEROIDEA : ELATERIDAE)

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INTRODUCTION

Elateridae is one of the largest family of the order Coleoptera under the super-family Elateroidea. The adult members of the family are commonly known as click beetles. They can be easily distinguished by its body being mostly elongated, heavily sclerotized and its head being sunk in the large prothorax; pointed posterior angle of prothorax; a pointed process on the undersurface of prothorax which fits into a cavity on the mesosternum; short and serrated antennae, the serration may be much prolonged; elytra hard and cover the abdomen and their size varied from few millimeters to 5-6 cm. The larvae of the these beetles are commonly known as 'wire worms' and are mainly rootfeeders. They usually damage the roots of maize, wheat, small grasses, deodar seedlings etc. and are widely distributed throughout the world. More than 9000 species under 400 genera were recorded from the world (Lawrence, 1982). Candeze in his catalogue (1891) has recorded 200 species under 40 genera from India. Other major workers on this family are Candeze (1860-1898), Fleutiaux (1910-1950), Schwarz (1990-1907), Von Hayek (1973-1979), Platia and Schimmel (1990 onwards). Very recently a comprehensive work on the Indian Fauna of Elateridae have been attempted by L. K. Vats (1991 onwards) with special emphasis on the materials of North East India.

So far the fauna of Sikkim is concerned, Westwood (1848) first recorded the species *Alaus sordidus* from Sikkim. Later Candeze (1891) in his catalogue has recorded 3 species viz. *Alaus sordidus* Westwood, *Adelocera collisa* Candeze

and *Silesis sericeus* Candeze from Sikkim. Further Candeze (1892) described the species *Agonischius atkinsoni* from Sikkim, Later Stibick (1968) recorded two new species from Sikkim. Recently Schimmel and Platia (1991) has published seven new species under the genus *Silesis* Candeze, five new species of *Penia* Hope and one new species of *Parassikia* Schimmel & Platia from Sikkim. In 1993, Schimmel has recorded three species under the genus *Ampedus* Dejean from Sikkim of which two species described as new to science.

The present work of the family Elateridae is based on a total collection of 211 examples made from different districts of Sikkim by various parties of Zoological Survey of India including the national collection present in Zoological survey of India. This include 45 species under 16 genera belonging to 9 sub families with description of one new species each under the genera *Meristhus* Candeze and *Cardiophorus* Eschscholtz respectively. Besides this, materials of some species which were recorded from Sikkim but not available for study has also been included in the classified list of Elateridae with * marks to make a complete list of species recorded from Sikkim. Altogether 77 species under 23 genera belonging to the 12 sub-family are recorded from Sikkim, of which 10 species are recorded for the first time from India, 28 species are recorded for the first time from Sikkim with description of two new species. It also include key to the subfamilies, genera and species with distributional data of each species from published records as well as from actual study of the specimens.

CLASSIFIED LIST OF ELATERIDAE RECORDED FROM Sikkim

Subfamily AGRYPNINAE

I. Genus *Lanelater* Arnett.

1. *L. cinereus* (Candeze)
2. *L. fuscipes* (Fabricius)
3. *L. luridus* (Fabricius)
4. *L. robustus* (Fleutiaux)
5. *L. sp.*

II. Genus *Agrypnus* Eschscholtz

6. *A. argillaceus* (Solsky)
7. *A. bipapulatus* (Candeze)
8. *A. brunneipennis* (Candeze)
9. *A. coenosus* (Hope)
10. *A. costicollis* (Candeze)
11. *A. jurulosus* (Candeze)
12. *A. lapideus* (Candeze)
13. *A. lutosus* (Candeze)
14. *A. planus* Vats & Kashyap
15. *A. serrula* (Candeze)
16. *A. truncatus* (Herbst)
17. *A. tuberculosus* Vats & Kashyap

III. Genus *Adelocera* Latreille

- *18. *A. collisa* Candeze
19. *A. adspersus* (Candeze)
20. *A. Sp.*

IV. Genus *Meristhus* Candeze

21. *M. crenulatus* n.sp.

2. Subfamily HEMIRRHIPINAE

V. Genus *Calais* Castelnau

22. *C. berus* (Leconte)
23. *C. sculptus* (Westwood)
24. *C. sordidus* (Westwood)

3. Subfamily ADRASTINAE

VI. Genus *Silesis* Candeze

- *25. *S. fruhstorferi* Schimmel & Platia
- *26. *S. humilis* Schimmel & Platia
- *27. *S. incognitus* Schimmel & Platia
- *28. *S. parvulus* Schimmel & Platia
- *29. *S. pasangi* Schimmel & Platia
- *30. *S. schawalleri* Schimmel & Platia
- *31. *S. sericeus* Candeze
- *32. *S. wittmeri* Schimmel & Platia

4. Subfamily OXYNOPTERINAE

VII. Genus. *Pectocera* Hope

33. *P. cantori* Hope
34. *Pectocera* sp.

5. Subfamily CAMPSOSTERNINAE

VIII. Genus. *Campeosternus* Lareille

35. *C. dohrni* Westwood
36. *C. stephensi* Hope.
37. *C. sp.*

6. Subfamily SENDONINAE

IX. Genus *Penia* Hope

- *38. *P. concolor* Schimmel & Platia
39. *P. eschscholtzi* Hope
- *40. *P. girardi* Schimmel & Platia
- *41. *P. holzschuhi* Schimmel & Platia
- *42. *P. longiuscula* Schimmel & Platia
- *43. *P. marmorata* Schwarz
- *44. *P. martensi* Schimmel & Platia
- *45. *P. opatroides* Candeze
- *46. *P. plagiata* Candeze
- *47. *P. raii* Schimmel & Platia
- *48. *P. rugosa* Schimmel & Platia
49. *P. sachtlebeni* Dolin & Suzuki
50. *P. wittmeri* Dolin & Suzuki

X. Genus *Sendonia* Castelnau

*51. *S. emodi* (Candeze)

7. Subfamily DENTICOLLINAE

XI. Genus *Plectrosternus* Lacordaire

52. *P. rufus* Lacordaire

XII. Genus *Hemiops* Castelnau

53. *H. crassa* Gyllenhal

54. *H. flava* Castelnau

XIII. Genus *Tropihyonus* Reitter

*55. *T. namsooa* Stibick

*56. *T. rungbongi* Stibick

8. Subfamily DIMINAE

XIV. Genus *Paracsikia* Schimmel & Platia

*57. *P. parvula* Schimmel & Platia

9. Subfamily ELATERINAE

XV. Genus *Agonischius* Candeze

*58. *A. altus* Candeze

*59. *A. atkinsoni* Candeze

XVI. Genus *Aphanobius* Eschscholtz

60. *A. longithorax* Wiedemann.

XVII. Genus *Ampedus* Dejean

*61. *A. (S. Str.) brancuccii* Schimmel

*62. *A. (S. Str.) (Parelater) coccineus* (Candeze)

*63. *A. (S. Str.) skkimensis* Schimmel

XVIII. Genus *Chiagosnius*

*64. *C. metallicus* (Candeze)

*65. *C. longus* (Candeze)

XIX. Genus *Dicronychus* Castelnau

*66. *D. cinnamomeus* Candeze

10. Subfamily MELANOTINAE

XX. Genus *Melanotus* Eschscholtz

67. *M. fuscus* (Fabricius)

68. *M. longicornis* Candeze

69. *M. sp.*

XXI. Genus *Neodiploconus* Candeze

70. *N. angulatus* Candeze

*71. *N. prominens* (Erichson)

72. *N. ornatus* Candeze

11. Subfamily CARDIOPHORINAE

XXII. Genus *Cardiophorus* Eschscholtz

73. *C. aequabilis* Candeze

74. *C. manulectus* Candeze

75. *C. moori* Candeze

76. *C. serratus* n. sp.

w12. Subfamily NEGASTRINAE

XXII. Genus *Quasimus* Gozis

77. *Q. (S.Str.) brancucci* Dolin.

Key to the Indian Subfamilies of the family ELATERIDAE from Sikkim

1. Prosternal suture opened or deeply grooved for receiving the antennae at rest. Some times these grooves are for tarsi..... AGRYPNINAE.
- Prosternal suture closed or narrowly grooved. 2
2. Frontal carina entire, often with a hole on the top of the anterior border 3
- Frontal carina faint/weak in the middle (between the eyes) 5
3. Pronotum more or less globular with the lateral margin reduced to a fine suture, Scutellum cordiform CARDIOPHORINAE
- Pronotum more or less convex, Scutellum differs in shape but never cordiform 4

4. Mesocoxae open to both mesepimeron and mesepisternum, mouth parts prognathous, claws simple DENTICOLLINAE
- Mesocoxae open to mesepimeron but closed to mesepisternum, mouth parts inferior, claws pectinate MELANOTINAE.
5. Setae present at the base of the claw
..... HEMIRRHIPINAE
- Setae absent at the base of the claw 6
6. Meso and metasternum distinct, joined by a definite suture 7
- Meso and metasternum connate, suture indistinct or absent 8
7. Tarsi with 2, 3 and 4 or 3 and 4 articles dilated or lamellated, mouthparts prognathous
..... SENDONINAE
- Tarsi normally simple, without pads, mouthparts inferior ELATERINAE
8. Elytra very broad to apex, non-striate, notched and spinose at apex OXYNOPTERINAE
- Elytra acuminate to apex, striate, spinose and usually mucronate at apex
..... CAMPSOSTERNINAE

Subfamily AGRYPNINAE

Key to the genera of the subfamily AGRYPNINAE known from Sikkim

1. Mesepisternum forming part of margin of middle coxal cavity, tibial spurs present
..... *Lanelater* Arnett.
- Mesepisternum not forming part of margin of middle coxal cavity, tibial spurs absent 2
2. Mesepimeron not forming part of margin of mesocoxal cavity, antennal groove may or may not extending beyond the anterior half of the prosternopleural suture 3
- Mesepimeron forming part of margin of mesocoxal cavity, antennal groove not extending beyond the anterior half of the prosternopleural suture
..... *Adelocera* Latreille

3. Scutellum with longitudinal carina, propleurae with tarsal groove *Meristhus* Candeze.
- Scutellum simple, without carina, tarsal groove may or may not be present
..... *Agrypnus* Eschscholtz.

I. Genus *Lanelater* Arnett

1829. *Agrypnus* sensu auct., nec Eschscholtz
Misinterpretation. In Thon, *Entomol. Archiv.* **2(I)** : 31-35.
1952. *Lanelater* Arnett, R. H. *Wasmann J. Biol.* **10** : 105.
1973. *Lanelater* Von Hayek *Bull. Br. Mus. Nat. Hist. (Ent.)*
suppl. **20** : 240.

Arnett (1952) erected the genus *Lanelater* for the species *Agrypnus schotti* Le Conte and designated the species as a type species of the genus by original designation and transferred the species *Agrypnus cinereus* Candeze, *A. robustus* Fleutiaux, *Elater fuscipes* F., *E. luridus* F. under the genus *Lanelater*. In the present paper we have recorded 5 species from Sikkim.

Key to the species of genus *Lanelater* Arnett recorded from Sikkim

1. Body blackish or blackish brown in colour 2
- Body muddy brown in colour
..... *cinereus* (Candeze)
2. Antennae not extended beyond the middle of the prothorax 3
- Antennae extended beyond the middle of the prothorax 4
3. Body blackish, shining and comparatively thinner, apex of posterior angles of pronotum strongly pointed *fuscipes* (Fabricius)
- Body brownish black, dull and comparatively robust and stouter, apex of pronotum pointed
..... *robustus* (Fleutiaux)
4. Elytral apex rounded *Lanelater* sp. 1
- Elytral apex subrounded
..... *luridus* (Fabricius)

1. *Lanelater cinereus* (Candeze)

1857. *Agrypnus cinereus* Candeze, *Mem. Soc. r. Sci. Liege* 12 : 40.

1952. *Lanelater cinereus* Arnett, Wasmann *J. Biol.* 10 : 105.

1973. *Lanelater cinereus*, Von Hayek *Bull. Br. Mus. Nat. Hist. (Ent.)* Suppl. 20 : 246.

Material Examined : 5 exs.; 3 ex., India : Sikkim, Date and Collector not known; 1ex., India : Sikkim, Knyvelt Collector, Date not known; 1ex., India : Sikkim : E. Sikkim : Singtam, 14. IX. 1993, S. K. Chatterjee Coll.

Distribution : India : Sikkim. The published locality of this species is 'des Indes Orientales'

Remark : In the present study this species is recorded for the first time from Sikkim.

2. *Lanelater fuscipes* (F.)

1775. *Elater fuscipes* Fabricius, *Systema entomologies* : 211.

1952. *Lanelater fuscipes* Arnett, Wasmann *J. Biol.* 10 : 105.

1996. *Lanelater fuscipes*, Biswas, S. *et al.*, *Rec. Zool. Surv. Ind., State fauna Series 6*; Fauna of Delhi State; Coleoptera : 346.

Material Examined : 1 ex, India : Sikkim; Date and Collector has not been recorded.

Distribution : India : Sikkim, Delhi Rajasthan, Uttar Pradesh, Karnataka, Tamil Nadu, West Bengal.

Elsewhere : Madagascar, Sri Lanka, Reunion Island, Indo-China, Comores, Cochin China, Sechelles.

Remark : This species is widely distributed in many states of India but it is for the first time recorded from Sikkim.

3. *Lanelater luridus* (Fabricus)

1781. *Elater luridus* Fabricius : 265.

1952. *Lanelater luridus* Arnett, Wasmann *J. Biol.* 10 : 105.

1973. *Lanelater luridus*, Von Hayek, *Bull. Br. Mus. Nat. Hist. (Ent.)* suppl. 20 : 253.

Material Examined : 12 exs; 2ex., India : Sikkim : E. Himalaya, May, 1912 Collector not recorded; 1ex, India : Sikkim : S. Sikkim : Jorethang, 30. IV. 1994; S. K. Saha & Pty. Coll., at light; 1ex., India : Sikkim : E. Sikkim, Rangpo, 29. IV. 1983 B. N. Das & Pty. Coll, at light; 3 ex, India : Sikkim : E. Sikkim : Rangpo; 27. V. 1997, Miss P. Chakraborty Coll, at light; 1 ex., India : Sikkim : E. Sikkim : Rangpo, 29. V. 1997, S. Biswas Coll, at light; 1 ex., India : Sikkim : E. Sikkim : Rangpo, 30. V. 1997; Miss P. Chakraborty Coll, at light; 1ex; India : Sikkim : Jorethang, 29. IV 1983, B. N. Das & Pty. Coll, under loose stone in side of the hill; 1 ex, India : Sikkim : E. Sikkim : Rangpo, 27 V. 1997, P. Chakraborty Coll, on bush., 1 ex, India : Sikkim : E. Sikkim : Ranipool; 20. IV. 1983, S. K. Chatterjee Coll., from rose plant.

Distribution : India : Sikkim, S. India.

Elsewhere : Java, Ethiopia, Kenya, Arabia, Uganda and Baluchistan.

Remark : This species is recorded from Sikkim for the first time.

4. *Lanelater robustus* (Fleutiaux)

1902. *Agrypnus robustus* Fleutiaux, *Bull. Soc. ent. Fr.* : 163.

1952. *Lanelater robustus* Arnett, Wasmann *J. Biol.* 10 : 105.

1973. *Lanelater robustus*, Von Hayek, *Bull. Br. Mus. (Nat. Hist.)* Suppl. 20 : 261.

Material Examined : 1 ex; India : Sikkim Date of Collector not found.

Distribution : India : Sikkim, Elsewhere : Java.

Remark : This species is recorded for the first time from India.

5. *Lanelater* sp. 1

Material Examined : 1ex; India : Sikkim E. Sikkim : Ranipool, 24 V. 1997, Miss P. Chakraborty Coll.; at light.

Remark : This species is very similar to *L. luridus* but differ in certain characters like, size

of the antennae, shape of the eleytral apex and size of the punctures on pronotum. But, due to the presence of single specimen, its specific determination has not been attempted here. It will be done separately later on.

II Genus *Agrypnus* Eschscholtz

1829. *Agrypnus* Eschscholtz, *In thon. Ent. Archiv.* 2(1) : 32.

1973. *Agrypnus*, von Hayek *Bull. Br. Mus. Nat. Hist. (Ent.)* 20 : 113.

Eschscholtz (1829) first established the genus *Agrypnus* with 12 species, the type species was designated as *Elater murinus* Linnaeus by Arnett in 1952. Von Hayek (1973, 1979) has recorded 501 species of *Agrypnus* from the World, of which 46 are from India. Vats & Kashyap (1992) has recorded 40 new species of this genus from India. In this paper, we have recorded 12 species from Sikkim.

Key to the species of genus *Agrypnus* from Sikkim

1. Lateral margin of the pronotum entire 2
 - Lateral margin of the pronotum crenulate 3
2. Propleurae and metasternum with grooves... 4
 - Propleurae and metasternum without grooves *brunneipennis* (Candeze)
3. Propleural grooves either distinct or indistinct 9
 - Propleural grooves absent 10
4. Prosternopleural suture groove approaches to the middle of prosternum 5
 - Prosternopleural suture groove extended beyond the middle of prosternum 6
5. Apex of posterior angles of prothorax either pointed or subpointed 7
 - Apex of posterior angles of prothorax truncated ... *tuberculosis* (Vats & Kashyap)
6. Lateral margin of prothorax sinuate 8

- Lateral margin of prothorax straight..... *jurulosus* (Candeze)
- 7. Prothorax is longer than broad *costicollis* (Candeze)
 - Prothorax is broader than long *coenosus* (Hope)
- 8. Apex of posterior angles of prothorax truncated *truncatus* (Herbst)
 - Apex of posterior angles of prothorax subpointed *lutosus* (Candeze)
- 9. Apex of posterior angles of prothorax rounded *planus* Vats & Kashyap
 - Apex of posterior angles of prothorax subrounded *serrula* (Candeze)
- 10. Prosternopleural suture grooved even beyond the middle of prosternum 11
 - Prosternopleural suture grooved upto the middle of the prosternum *argillaceus* (Solsky)
- 11. Punctuation on pronotum double *bipapulatus* (Candeze)
 - Punctuation on pronotum simple *lapideus* (Candeze)

6. *Agrypnus argillaceus* (Solsky)

1871. *Lacon argillaceus* Solsky, *Horae Soc. ent. ross* 7 (1870) : 360.

1973. *Agrypnus argillaceus*, Von. Hayek, *Bull. Br. Mus. (Natn. Hist.)* Suppl. 20 : 127

Material Examined : lex., India : Sikkim 1915-16, Carmichael Coll.

Distribution : India : Sikkim

Elsewhere : Vladivostock.

Remark : This species is recorded for the first time from India.

7. *Agrypnus bipapulatus* (Candeze)

1865. *Lacon bipapulatus* Candeze ; *Mem. Cour. Acad. r. Sci. Belg.* (in 8°) 17 ; no. I : 11.

1955. *Agrypnus bipapulatus*, Nakane & Kishii, *Bull. Osaka Mus. Nat. Hist.* 2 : 4, Comb. Nov.

1973. *Agrypnus bipapulatus*, Von. Hayek, *Bull. Br. Mus. (Nat. Hist.)* Suppl. 20 : 132.

Material Examined : lex., India : Sikkim : N. Sikkim : Yumthang; 8. VII. 1989; S. S. Saha Coll.

Distribution : India : Sikkim. Elsewhere Japan and China.

Remark : This species is recorded for the first time from India.

8. *Agrypnus brunneipennis* (Candeze)

1857. *Lacon brunneipennis* Candeze, *Mem. Soc. r. Sci. Liege* 12 : 133.

1973. *Agrypnus brunneipennis*, Von. Hayek, *Bull. Br. Mus. Nat. Hist. (Ent.)* Suppl. 20 : 134 ; Comb Nov.

Material Examined : lex., India : Sikkim Date and Collector not recorded.

Distribution : India : Sikkim, North India.

Remark : This species is recorded for the first time from Sikkim.

9. *Agrypnus coenosus* (Hope)

1831. *Elater coenosus* Hope, J. E. Grey, *Zoological Miscellany*, part I : 25.

1843. *Agrypnus coenosus*, Hope. *Ann. Mag. nat. Hist. (I)* 11 : 63.

1973. *Agrypnus coenosus*, von. Hayek, *Bull. Br. Mus (Nat., Hist.)* Ent. suppl. 20 : 140, Comb. nov.

Material Examined : 8 exs., 4ex, India : Sikkim : date & Collector not recorded; 3ex, India : Sikkim; Manghpu, date and Collector not recorded; lex; India : Sikkim : N. Sikkim; Lachung, alt. 2727 m., 30. VI. 1959, A. G. K. Menon Coll.

Distribution : India : Sikkim

Elsewhere : Nepal.

Remark : This species is for the first time recorded from India.

10. *Agrypnus costicollis* (Candeze)

1857. *Lacon costicollis* Candeze, *Mem. Soc. r. Sci. Liege* 12 : 116.

1973. *Agrypnus costicollis*, von. Hayek, *Bull. Br. Mus (Nat., Hist.)* suppl. 20 : 144; Comb. nov.

Material Examined : 2exs; lex, India : Sikkim : N. Sikkim : Mallidhin, alt. 2672m, 14. VII. 1959, A. G. K. Menon Coll.; lex, India : Sikkim : N. Sikkim : Lachung, alt. 2727 m., 9. VII. 1958, A.G.K. Menon Coll.

Distribution : India : Sikkim Assam, North India.

Elsewhere : Yunnan, Cambodia and Tonkin.

Remark : This species is for the first time recorded from Sikkim.

11. *Agrypnus jurulosus* (Candeze)

1889. *Lacon jurulosus* Candeze, *Annls. Soc. Ent. Belg.* 33 : 73.

1973. *Agrypnus jurulosus*, von. Hayek, *Bull. Br. Mus (Nat. Hist.)* suppl. 20 : 127; sp. rev., comb. n.

Material Examined : lex., India : Sikkim, Date and Collector not recorded.

Distribution : India : Sikkim, Himachal Pradesh, Bihar Tripura.

Remark : This species is recorded from Sikkim for the first time.

12. *Agrypnus lapideus* (Candeze)

1857. *Lacon lapideus* Candeze, *Mem. Soc. r. Sci. Liege* 12 : 141.

1973. *Agrypnus lapideus*, Von. Hayek, *Bull. Br. Mus (Nat., Ent.)* Suppl. 20 : 174; Comb. nov.

Material Examined : lex., India : Sikkim : N. Sikkim, A. G. K. Menon Coll, date of collection not recorded.

Distribution : India : Sikkim Kashmir,

Elsewhere : Nepal, Laos and Tonkin.

Remark : This species is recorded for the first time recorded from Sikkim.

13. *Agrypnus lutosus* (Candeze)

1857. *Lacon lutosus* Candeze, *Mem. Soc. r. Sci. Liege* 12 : 119.

1973. *Agrypnus lutosus*, Von. Hayek, *Bull. Br. Mus. Nat.*,
Hist. (Ent.) Suppl. **20** : 179. Comb. nov.

Material Examined : 1 ex., India : Sikkim Date
and Collector not found.

Distribution : India : Sikkim, Punjab.

Remark : This species is recorded from Sikkim
for the first time.

14. *Agrypnus planus* Vats & Kashyap.

1992. *Agrypnus planus* Vats & Kashyap, *J. Ent. Res.*,
16 (2) : 111.

Material Examined : 2 ex., 1 ex., India ; Sikkim,
N. Sikkim; Thernleu, alt. 3167m., 13. VI. 1959;
A. J. K. Menon Coll., 1 ex., India : Sikkim : N.
Sikkim : Lachung; alt 2727 m.; 2. VII. 1959; A.
G. K. Menon Coll.

Distribution : India : U. P., Sikkim.

Remark : This species is also recorded from
Sikkim for the first time.

15. *Agrypnus serrula* (Candeze)

1857. *Lacon serrula* Candeze, *Mem. Soc. r. Sci. Liege*
12 : 122.

1973. *Agrypnus serrula*, Von. Hayek, *Bull. Br. Mus. Nat.*
Hist. (Ent.) Suppl. **20** : 210, comb. nov.

Material Examined : 2 exs., 1 ex., India :
Sikkim : E. Sikkim : Rangpo; alt. 1400 ft., 16. IX.
09, Museum Collection; 1 ex.: India Sikkim : E.
Himalaya; v. 1912; Collector not recorded.

Distribution : India : Sikkim

Elsewhere : Yunan.

Remark : The published locality of this species
is in India border; but it is recorded from Sikkim
for the first time.

16. *Agrypnus truncatus* (Herbst)

1806. *Elater truncatus* Herbst, *Kafer.* **10** : 95, pl. 166, fig. 2

1973. *Agrypnus truncatus*, Von. Hayek, *Bull. Br. Mus. Nat.*,
Hist. suppl. **20** : 223.

Material Examined : 1 ex., India : Sikkim : E.
Sikkim : Ranipool, 20. IV. 1983; B. N. Das &
Pty. Coll.

Distribution : India : Sikkim N. India.

Remark : This species is for the first time
recorded from Sikkim.

17. *Agrypnus tuberculosus* Vats & Kashyap

1992. *Agrypnus tuberculosus* Vats & Kashyap, *J. Ent. Res.*,
16 (2) : 100.

Material Examined : 1 ex., India : Sikkim :
Singtam, 15. IV 1994; P. H. Roy & Pty Coll.

Distribution : India : Sikkim, Uttar Pradesh.

Remark : This species is for the first time
recorded from Sikkim.

III. Genus. *Adelocera* Latreille

1829. *Adelocera* Latreille, *Le regna animal. Nouvelle*
edition **4** : 151.

1973. *Adelocera*, Von. Hayek, *Bull. Br. Mus. Nat.*, *Hist.*
(Entom.) Suppl. **20** : 13.

The genus *Adelocera* was established
by Latreille 1829 and *Elater ovalis* Germar was
designated as type species of this genus. Von
Hayek (1973) included 75 species under this genus
from the world of which 12 are recorded from
India. Later in 1992, seven species as a new to
science were added by Vats and Kashyap, which
are widely distributed in North West India.

Key to the species of genus *Adelocera* recorded from Sikkim

1. Body blakish *Adelocera* sp.
- Body blackish with yellowish patches
..... *adpersus* (Candeze)

18. *Adelocera adpersus* (Candeze)

1857. *Lacon adpersus* Candeze, *Mem. Soc. r. Sci. Liege*
12 : 115.

1973. *Adelocera adpersus*, Von. Hayek, *Bull. Br. Mus*
Nat. Hist. (Ent.) Suppl. **20** : 22.

Material Examined : 3 exs., India : Sikkim :
E. Sikkim : Rhenok; 1130 m alt; 10. III. 1979; S.
K. Saha Coll.

Distribution : India : Sikkim, Delhi.

Remark : The species is recorded for the first time from Sikkim.

19. *Adelocera* sp. 1

Material Examined : 1 ex., India : Sikkim : E. Sikkim : Rangpo : Melli; 19. V. 1995, P. H. Roy & Pty Coll.

Remark : The material is an interesting, but due to lack of necessary literatures and the presence of single specimen the specific determination has not been attempted here.

IV. Genus. *Meristhus* Candeze. 1857

1857. *Meristhus* Candeze, *Monogr. Elat.* Vol. 1. p. 162.

1973. *Meristhus*, Von. Hayek, *Bull. Br. Mus. Natn. Hist. (Ent.)* Suppl. 20 : 231.

The genus *Meristhus* was established by Candeze in 1857 and designated *Elater lepidotus* Beauvois (by original designation) as type species of this genus. von Hayek (1973) has recorded 8 species of the genus *Meristhus* from the world, of which only one was from Indian border and one from Sri Lanka. Ohira & Becker (1973) has recorded two new species of this genus from Nepal. In this paper, we have described a new species from Sikkim.

20. *Meristhus crenulatus* n. sp. (Figs 1,2.)

Body moderately elongate and more or less convex above; surface a little shining; blackish brown except around margins of pronotum, basal area of elytra with a pair of poorly defined, a pale yellow spots at the posterior third, these spots variable; vestiture of two types, one of thick, erect, scales sparsely spaced on head and pronotum and arranged in a row on elytral intervals; the other type consisting of smaller, decumbent, setae on head and pronotum, and semi-erect, setae in a row on elytral intervals.

Head small, shallowly impressed at middle; surface coarsely and deeply punctate; clypeal margin prominent over antennal insertions. Antennae short, ending before the anterior margin of prothorax; basal segment robust and subcylindrical; second segment small,

subcylindrical, and clearly longer than wide; third segment shortest, subclavate and clearly shorter than fourth one, fourth to tenth segments distinctly serrate at first then changing to moniliform, each segment slightly wider than long; last segment oblong, ovate and weakly pointed apically.

Pronotum 1.4 times wider than long, narrowest at anterior angles, widest near middle; sides crenulate and clearly sinuate just before posterior angles, weakly rounded at middle, disc gently convex, with a very shallow, median, longitudinal groove rather sparse on disc than base and lateral sides; posterior angles very short and truncated, without any carina. Scutellum very slightly longer than wide with a longitudinal/Prosternal carina at middle suture deeply grooved on anterior half, tarsal groove on proepisternum rather deep, well defined on posterior edge, tarsal groove on metasternum shallow, not clearly defined.

Elytra about 1.5 times longer than width; sides gradually wider towards middle then rounded and gradually narrowing towards apex; striae unimpressed with scales, puncturation usually small and scattered; few are large and deep; intervals flattened and with small punctures. First and second abdominal segments with very vague tarsal depression. Legs slender, tarsi simple; claws simple.

Male Genitalia (Fig 2.)— Phallobase rounded with two small apical processes at two sides, parameres with subapical process; aedeagus longer than parameres, tubular, apex pointed, furcae reaching the anterior margin of paramere.

Female : Cannot be distinguished externally from male.

Material Examined : Total length of the body 2.80 mm, breath 1 mm; length of head 0.3 mm, width of the head across the middle 0.8 mm, length of antenna, 1.2 mm; length of prothorax 0.7 mm, width of prothorax across the middle 1 mm, length of elytra 1.8 mm, width of elytron across the middle 1.2 mm.

Holotype : ♂, India : Sikkim : E. Sikkim : Rangpo : 26. XII. 1980, S. K. Saha and Pty. coll. ex. river bed. Paratype 31 exs. Sikkim : E.

Distribution : India : Sikkim, Tamil Nadu.

Elsewhere : Sri Lanka, Laos, Myanmar, Nepal, Vietnam, China.

3. Subfamily OXYNOPTERINAE

VI. Genus. *Pectocera* Hope

1872. *Pectocera* Hope, *Proc. Zool. Soc. London*, 79

1921. *Pectocera*, Hyslop *Proc. U. S. Natn. Mus. Vol. LVIII*; 663.

This genus was established by Hope in 1872 and designated *Pectocera cantori* Hope (Present designation) as type species of this genus. Candeze (1891) has recorded 6 species from the world, of which 2 are from India. In the present paper 2 species of the genus *Pectocera* are recorded from Sikkim. Both are recorded for the first time from Sikkim.

Key to the species of genus *Pectocera* Hope from Sikkim

1. The antennae is pectinate, no carina on the pronotum *cantori* Hope.
- The antennae is serrated, two longitudinal carina on the mid dorsal surface of the pronotum *Pectocera* sp.

24. *Pectocera cantori* Hope

1872. *Pectocera cantori* Hope, *Proc. Zool. Soc. Lond.* : 79

1973. *Pectocera cantori*, Ohira and Becker, *Ori. Ins.* 7 (4) : 456.

Material Examined : 3exs., 2exs., India : Sikkim : W. Sikkim; 5. IV. 1959; A. G. K. Menon Coll.; 1ex., India : Sikkim : W. Sikkim; 10.iii. 1959; A.G.K. Menon Coll.

Distribution : India : Sikkim, Assam.

Elsewhere : Tibet.

Remark : This species is recorded from Sikkim for the first time.

25. *Pectocera* sp.

Material Examined : 1ex., India : Sikkim, 25.IV.1959; A.G.K. Menon Coll.

Remarks : This specimen does not possess the lamellated antennae as that of *Pectocera cantori*, but the other characters help it to come under the genus *Pectocera*. But, due to the lack of other specimens and necessary literature, this material has not been treated as a new species. The specimen will be studied later specifically.

4. Subfamily CAMPSOSTERNINAE

VI. Genus. *Campsosternus* Latreille

1834. *Campsosternus* Latreille, *Ann. Soc. Ent. France Vol 3* : 141.

1921. *Campsosternus*, Hyslop, *Proc. U. S. Natn. Mus. Vol. 58* : 632.

The genus was originally established by Latreille, 1834. The type species of the genus was designated as *Elater fulgens* Fabricius (Monobasic). In Candeze's Catalogue (1891) 46 species from the world including 10 species from India has been recorded. In this paper, 3 species of this genus have been recorded from Sikkim.

Key to the species of genus *Campsosternus* Latreille for Sikkim

1. Pronotum bicoloured, red and black 2
- Pronotum unicoloured, black *Campsosternus* sp.
2. Size small (16-18 mm), pronotum finely and densely punctured *dohrni* Westwood.
- Size larger (35-37 mm.), pronotum finely but sparsely punctured *stephensi* Hope.

26. *Campsosternus dohrni* Westwood

1848. *Campsosternus dohrni* Westwood, *Cabinet Orient. Ent.* : 17 ; pl. 35, f. 3.

1906. *Campsosternus dohrni*, Schwarz, In Wytsmann. *Gen. Inst.* 46a : 50-51.

Material Examined : 1ex. ; India : Sikkim : E. Himalaya; May, 1912; Collector not recorded.

Distribution : India : Sikkim.

Elsewhere : Annam.

Remark : This species is for the first time recorded from India.

27. *Campsosternus stephensi* Hope

1831. *Campsosternus stephensi* Hope; *Zool. Miscel.* 25

1891. *Campsosternus stephensi*, Candeze, *Catalog. Method. des. Elat.* : 44.

Material Examined : lex.; India : Sikkim; N. Sikkim : Linthoke; alt 1394m; 6.V. 1959; A. G. N. Menon Coll.

Distribution : India : Sikkim, Bengal.

Remark : This species is recorded from Sikkim for the first time.

28. *Campsosternus* sp.

Material Examined : 2 ex.; India : Sikkim : S. Sikkim; Jorethang; 2.v.1994; S. K. Saha & Pty. Coll.; ex. at light.

Remark : The material differs from *C. stephensi* Hope, by the colour of the body and length of antennae. But, due to lack of necessary literature the specific determination has not been attempted here. It will be studied separately later.

5. Subfamily SENDONINAE

VIII. Genus. *Penia* Hope, 1831

1831. *Penia* Hope, *Synop. Ins. Nepaul, Gray's zool. Misc.* : 21-23

1921. *Penia*, Hyslop, *Proc. U.S. Natn. Mus.* 58 : 663.

The genus was established by Hope in 1831 and the type species was designated as *Penia eschscholtzi* Hope (Monobasic) Candeze (1891) has recorded 16 species of this genus from the world but all from Asia. Out of the 13 species of *Penia* recorded from Sikkim by Schimmel and Platia (1991) we have recorded only 2 species in this paper.

Key to the species of genus *Penia* Hope from Sikkim

1. Body with combination of two colours yellowish brown and blackish brown, prothorax clearly

broader than long, antennae not extended upto the mesocoxae *eschscholtzi* Hope

- Body unicoloured, blackish brown, prothorax longer than broad, antennae extended beyond the mesocoxae *wittmeri* Dolin & Suzuki

29. *Penia eschscholtzi* Hope

1831. *Penia eschscholtzi* Hope, in Gray, *zool. Miscell* : 26

1991. *Penia eschscholtzi*, Schimmel & Platia, *Ent. Basil.* 14 : 320.

Material Examined : lex., India : Sikkim; date and Collector not known.

Distribution : India : Sikkim; N. India.

Elsewhere : Nepal.

Remark : This species is recorded from Sikkim for the first time.

30. *Penia wittmeri* Dolin & Suzuki

1984. *Penia wittmeri* Dolin & Suzuki, *Ent. Basil.* 2 : 168-172.

1991. *Penia wittmeri*, Schimmel & Platia, *Ent. Basil* 14 : 356-357.

Material Examined : lex.; India : Sikkim : Nathula Road, 25. VI. 1989; S. S. Saha Coll.

Distribution : India : Sikkim, West Bengal.

Elsewhere : Nepal.

Remark : This species was recorded from Sikkim for the first time by Schimmel & Platia (1991).

6. Subfamily DENTICOLLINAE

Key to the genera of the subfamily DENTICOLLINAE from Sikkim

1. Antennae pectinate, starting from 4th antenomere *Plectrosternus* Lacordaire
- Antennae serrate *Hemiops* Castelnau

IX. Genus. *Plectrosternus* Lacordaire

1857. *Plectrosternus* Lacordaire, *Gen. Col.* Vol. 4 : 227

1921. *Plectrosternus*, Hyslop. *Proc. U. S. Natn. Mus.* Vol. 58 : 665.

The genus was established by Lacordaire in 1857 and designated *Plectrosternus rufus* Lacordaire (Monobasic and by original designation) as type species of this genus. Candeze in his catalogue (1891) has recorded, only a single species *P. rufus* from 'Indes-Orientales'. In this present paper only one species has been recorded from Sikkim.

31. *Plectrosternus rufus* Lacordaire

1957. *Plectrosternus rufus* Lacordaire, *Gen. Col.* IV : 228

1971. *Plectrosternus rufus* Chira. *Annls. Hist. Nat. Mus. Natn. Hung.* : 209.

Material Examined : 6 exs., India : Sikkim; date and Collector not recorded.

Distribution : India : Sikkim, Bengal, Assam.

Elsewhere : Srilanka, Bangladesh, Myanmar, Cochin-China, Formosa.

Remark : This species has been recorded from Sikkim for the first time.

X. Genus. *Hemiops* Castelnau

1833. *Hemiops* Castelnau, *Dejean Cat.* ed. 3 : 95

1921. *Hemiops*, Hyslop. *Proc. U. S. Natn. Mus.* Vol. 58 :

The genus was established by Castelnau in 1833 and the type species was designated as *Hemiops flava* Castelnau designated by Hyslop, 1921. In Candeze's Catalogue (1891) 7 species of this genus was recorded from the world but all from Asia, of which single species was from India. In the present paper 2 species of the genus *Hemiops* has been recorded from India.

Key to the species of the genus *Hemiops* Castelnau from Sikkim.

1. Pronotum with a narrow depression on the mid-dorsal part *flava* Castelnau
- Pronotum without any depression *crassa* Gyllenhal

32. *Hemiops flava* Castelnau

1836. *Hemiops flava* Castelnau, in *Silber, Rev. Ent.* 4 : 15

1971. *Hemiops flava*, Ohira, *Annls. Hist. Natur. Mus. Nat. Hung.* : 209.

Material Examined : 1ex., India : Sikkim; 1915-16, Carmichael Coll.

Distribution : India : Sikkim, Assam, West Bengal.

Elsewhere : Myanmar, Malay Pen., Indonesia, China, Phillippines. Formosa, Indo-China, South Asia, Laos, Siam.

Remark : This species is recorded from sikkim for the first time.

33. *Hemiops crassa* Gyllenhal

1817. *Hemiops crassa* Gyllenhal, in *Schöneerr Synon. Insector.* Appendix 1817 : 155.

1906. *Hemiops crassa*, Schwarz, In. *Wystmann Gen. Insect.* 46 : 305.

Material Examined : 11 exes., 6exs, India; Sikkim; Date and Collector not recorded; 4 ex., India : Sikkim; Knyvett Coll, date of collection not recorded; 1ex., India : Sikkim : N. Sikkim; 1959, A. G. K. Menon Coll.

Distribution : India : Sikkim

Elsewhere : Indonesia.

Remark : This species has been recorded from India for the first time.

7. Subfamily ELATERINAE

Key to the genera of the subfamily ELATERINAE from Sikkim

1. Lateral sutures of pronotum inflexed infront *Agonischius* Candeze
- Lateral sutures of pronotum is normal 2
2. Posterior coxae broader exteriorly, mesosternum inclined *Aphanobius* Eschscholtz
- Posterior coxae narrow, mesosternum normal *Dicronychus* Castelnau

10 were from India. In the present paper 3 species of the genus *Melanotus* has been recorded from Sikkim.

Key to the species of the genus *Melanotus* Eschscholtz recorded from Sikkim

1. Antennae long, extended upto the middle coxae 2
- Antennae short, extended only beyond the middle of the pronotum *Melanotus* sp.
2. The carina on the posterior angle of pronotum long, extended upto the middle of the pronotum *fuscus* (Fabricius)
- The carina on the posterior angle of pronotum short *longicornis* Candeze

37. *Melanotus fuscus* (Fabricius)

1801. *Elater fuscus* Fabricius, *Syst. El.* 2 : 228

1970. *Melanotus fuscus*, Ohira. *Ann. Hist. Natn. Mus. Hung.* 62 : 220.

Material Examined : 18 exs.; 1 ex., India : Sikkim, date and collector not known. lex.; India : Sikkim, v. 1912; collector not found. 4exs., India : Sikkim : E. Sikkim : Ranipool; 26.V.1997; Miss. P. Chakraborty Coll. 2 exs; India : Sikkim : E. Sikkim : Rangpo; 29.V.1997; Miss P. Chakraborty coll.; 1ex; India : Sikkim : Ranipool; 26.IV. 1994; S. K. Saha & Pty. Coll., 3exs; India ; Sikkim : Ranipool, 18.IV 1983; B. N. Das & Pty. Coll. 2exs., India : Sikkim : S. Sikkim : Namchi; 1.VI. 1997; Miss P. Chakraborty Coll.; 1ex., India : Sikkim : Rangpo; 29.IV. 1983 ; B.N. Das & Pty Coll.; 1ex.; India : Sikkim : Rangpo; 15.IV. 1994; P.H. Roy & Pty. Coll.; 2exs, India : Sikkim : Jorethang : 30.IV.2.V. 1994, S. K. Saha & Pty. Coll.

Distribution : India : Sikkim, Inohin.

Remark : This species is recorded from Sikkim for the first time and it is found that this species is widely distributed in all districts of Sikkim.

38. *Melanotus longicornis* Candeze

1880. *Melanotus longicornis* Candeze, *Mon. Elat.* 3 : 332.

1906. *Melanotus longicornis*, Schwarz, In Wytstmann *Gen. Insect. Fasc.* 46 A-C : 188 :

Material Examined : 2exs; 1ex, India : Sikkim, date and Collector not known; 1ex; India : Sikkim : N. Sikkim : Singhik; 7. VIII. 1959; A. G. K. Menon Coll.

Distribution : India : Sikkim, India Border.

Remark : This species is recorded from Sikkim for the first time.

39. *Melanotus* sp.

Material Examined : lex., India : Sikkim; E. Sikkim : Ranipool : 18.IV.1993; B. N. Das & Pty.

Remark : This species is closely related to *M. fuscus* (Fabricius) but differs by its size of antenna and punctation. But due to lack of more materials and literatures the specific determination has not been attempted here. It will be done later on.

XIV. Genus. *Priopus* Castelnau

1840. *Priopus* Castelnau, *Hist. Nat. Anim. Art.* 1 : 251

1857. *Neodiploconus* Candeze, *Mon. Elat.* 1 : 118.

1995. *Priopus*, Platia & Schimmel, 1995, *Lavor-Soc. Ven. SC. Nat.* 20 : 53-65.

The genus was established by Candeze in 1857 and the type was designated as *Diploconus peregrinus* Candeze. 2 species has been recorded, in the present study.

Key to the species of the genus *Priopus* Candeze from Sikkim

1. Body reddish brown, pronotum with a black longitudinal line on the mid-dorsal part *ornatus* (Candeze)
- Body blackish brown, pronotum unicoloured, without any longitudinal markings *angulatus* (Candeze)

40. *Priopus angulatus* (Candeze)

1857. *Diploconus angulatus* Candeze, *Mon. Elat.* 1 : 118.

1944. *Neodiploconus angulatus*, Jagemann *Sborn. Ent. odd. zensk. Mus. Praze.* 21-22 : 335.

1990. *Priopus ornatus*, von. Hayek. *Bull. Br. Mus. Nat. Hist. (Ent.)* 59 (1) : 77-84.

Material Examined : 1ex., India : Sikkim, Moti Ram Coll; Date of Collection not known.

Distribution : India : Sikkim.

Elsewhere : Srilanka, Tonkin, Cambodia, Singapore, Vientnam, Hongkong, Formosa and Annam.

Remark : This species is for the first time recorded from India.

41. *Priopus ornatus* (Candeze)

1857. *Diploconus ornatus* Candeze *Mon. Elat.* I : 118.

1944. *Neodiploconus ornatus*. Jagemann, *Sborn. Ent. odd. Zensk. Mus. Praze.* 21-22 : 335.

1990. *Priopus ornatus*, Von Hayek, *Bull. Br. Mus. Nat. Hist. (Ent.)* 59 (1) : 83, Comb. Nov.

Material Examined : 1ex., India : Sikkim, Date and Collector not recorded.

Distribution : India : Sikkim.

Remark : This species is also recorded from India for the first time.

9. Subfamily CARDIOPHORINAE

XVI. Genus. *Cardiophorus* Eschscholtz.

1829. *Cardiophorus* Eschscholtz., *In Thon. Arch.* 2 : 34

1941. *Cardiophorus*, Hyslop. *Proc. U. S. Natn. Mus.*, 58 : 633

Cardiophorus was originally described by Eschscholtz. in 1829 and the type species was designated as *Elater ruficollis* Fabricius. Candeze (1891) has recorded 307 species from the world including 41 species of this genus from India. In the present paper 3 species of this genus has been included. from Sikkim.

Key to the species of the genus *Cardiophorus* Esch. recorded from Sikkim

1. Elytra with four yellow, rounded spots
..... *moori* Candeze
- Elytra unicoloured, without any spot 2

2. Pronotum with double punctuation, punctures are sparse *aequabilis* Candeze
- Pronotum with single punctuation, punctures are dense *tibialis* Erichson

42. *Cardiophorus aequabilis* Candeze

1860. *Cardiophorus aequabilis* Candeze, *Mon. Elat.* 3 : 209.

1906. *Cardiophorus aequabilis*, Schwarz. *In Wytsmann. Gen. Insect.* 46b : 167.

Material Examined : 8 exs.; 2 exs., India : Sikkim : E. Sikkim; Ranipool, 26.V.1997; Miss. P. Chakraborty, at light; 2 ex., India : Sikkim : E. Sikkim : Rangpo; 29-30 V. 1997; Miss P. Chakraborty Coll Ex. from maize leaf; 1ex. India : Sikkim : E. Sikkim : Ranipool, 24.V.1997; S. K. Ghosh Coll, at light; 1ex, India : Sikkim : Pakyong, 19.IV.1983, B. N. Das Coll, from foliage ; 1ex. India : Sikkim : Nayabazar; 20.IX, 1993, S. K. Chatterjee Coll. 1ex, India : Sikkim : Namchi, 26.IV.83 S. K. Chatterjee Coll.

Distribution : India : Sikkim, Haryana.

Remark : First time recorded from Sikkim.

43. *Cardiophorus moori* Candeze

1860. *Cardiophorus moori* Candeze, *Mon. Elat.* 3 : 206; pl. 3.f.20.

1906. *Cardiophorus moori*, Schwarz. *In Wytsmann Gen. Insect.* 46b : 167.

Material Examined : 12 exs.; 1ex, India : N. Sikkim : Chungthang; 25.IV.1994, S. K. Saha & Pty Coll; 9 ex., India : Sikkim, Es Sikkim : Rangpo, 27-29, v. 1997 : Miss P. Chakraborty Coll, on leaf; 1ex, India. Sikkim : E. Sikkim : Rangpo : 27.V.97, S. K. Ghosh Coll, on Tagar leaf; India : Sikkim : Rangpo : Melli, 19.v.1995; P.H. Roy & Pty. Coll, under leaves.

Distribution : India : Sikkim, Tamil Nadu.

Remark : This species is for the first time recorded from Sikkim.

44. *Cardiophorus tibialis* Erichson.

1991. *Cardiophorus tibialis*, Vats and Chauhan; *Res. Bull. (sci.) Pun. Uni.* 42 (I-IV) : 11-13.

Material Examined : 5exs., India : Sikkim : Gangtok; 1704 m alt, 24.IV 1976, A. R. Bhowmik Coll.

Distribution : India : Sikkim, Uttar Pradesh.

Elsewhere : Greece and Spain.

Remark : This species is for the first time recorded from Sikkim.

45. *Cardiophorus serratus* n. sp. (Figs.3-4).

Body elongated and more or less convex above; surface little shining; blackish brown except the sides of the elytra which is reddish brown; antennae and legs are brown, pubescence whitish, evenly distributed allover the body. Claws brown and simple.

Head small, blackish brown, slightly broader than long, surface depressed anteriorly; frons with anterior margin almost straight, pubescence whitish, punctation simple, dense and small. Antennae brown, short, ending before the anterior margin of procoxae; basal segment robust, second segment distinctly shorter than the third; fourth to tenth segments distinctly serrate, last segment ovate, constricted near apex.

Pronotum blackish brown, as long as broad, narrowest at anterior angles; sides almost straight and slightly sinuate just before the posterior angles, pronotal disc convex, sub-marginal line extending much beyond the middle of the prothorax; pubescence whitish, punctures unevenly spaced, simple, dense and small; posterior angles pointed, without any carina. Scutellum blackish brown, cordiform. Prosternum reddish brown, punctation simple, dense, prosternal spine margined in front of coxae. Metasternum slightly emarginate between mesocoxae.

Elytra about 2.2 times longer than width, sides gradually widening to near middle then rounded and gradually widening to near middle then rounded and gradually narrowing towards acute apex; pubescence whitish, dense, striae punctures small; interstriae slightly convex, more convex towards anterior; sides subparallel. Legs slender, tarsi and claws simple.

Male genitalia Fig. 4 – Phallobase with round anterior margin, parameres divergent, gently curved outwards, distal part with a very small subapical process, aedeagus longer than parameres, slender, gradually narrows posteriorly, apex pointed.

Female : Cannot be distinguished externally from male.

Measurements : Total length of the body 9.8 mm; length of the head 0.8 mm; width of the head across the middle 5.0 mm; length of the antennae 1.8 mm; length of prothorax 2.7 mm; width of the prothorax across the middle 2.7 mm; length of the elytra 6.2 mm, width of the elytra at middle 2.8 mm.

Holotype : ♂ India : Sikkim : Phungla; 27.IV.1983; B. N. Das & Pty Coll; on leaf. mounted on pin (deposited in Z.S.I. Calcutta) Paratypes : 47 exs., India : Sikkim : Phungla; 27.IV.1983 : B.N. Das & Pty Coll.; on leaf.

Distribution : India : Sikkim.

The species *C. serratus* sp. nov. is closely related to *C. doggeri* Vats and Chauhan described from Himachal Pradesh, but can be easily separated by its frons being almost straight at its anterior margin, punctation simple, prosternal spine margined in front of coxae and the anterior margin of scutellum is not indented and antennal segments from 4th to 10th distinctly serrated.

SUMMARY

The present paper is based on the study of the total collection made by different survey parties of Zoological Survey of India from different districts of Sikkim including the National Collection present in the Coleoptera Section. Besides this, the materials of some species which were recorded from Sikkim, but not available for study has also been included here to make a complete list of species recorded from Sikkim. This includes a total of 77 species belonging to 23 genera under 12 subfamilies, with descriptions of two new species viz. *Meristhus crenulatus* sp. nov. and *Cardiophorus serratus* sp. nov. from Sikkim.

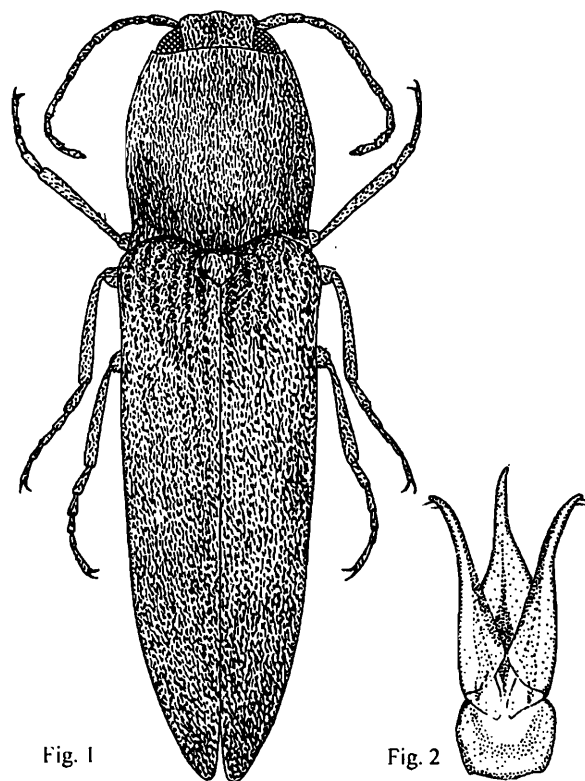


Fig. 1. Dorsal view of *Meristhus crenulatus* n. sp.

Fig. 2. Dorsal view of aedeagus of *Meristhus crenulatus* n. sp.

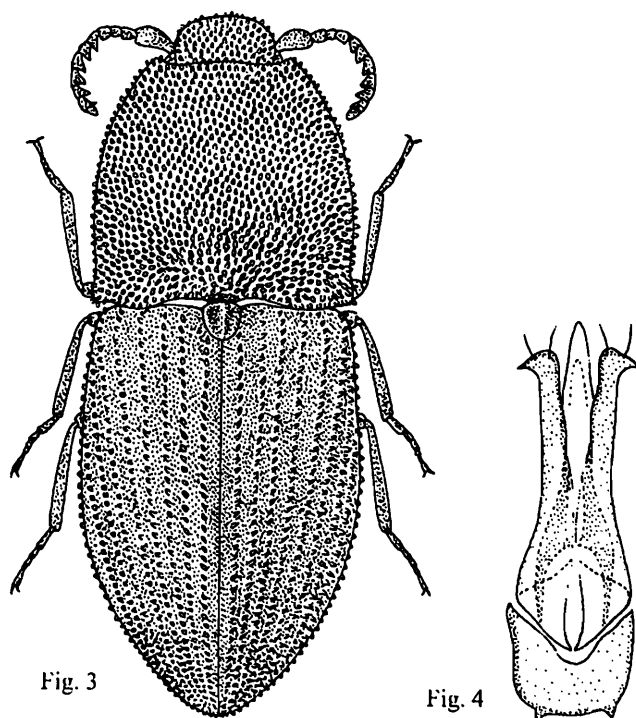


Fig. 3. Dorsal view of *Cardiophorus serratus* n. sp.

Fig. 4. Dorsal view of aedeagus of *Cardiophorus serratus* n. sp.

Besides this 10 species are recorded here for the first time from India and 28 species also recorded for the first time from Sikkim. First reference and recent valid names of the genera and species have also been given. It also includes the distributional data of each species from published records and actual study of the specimen. Key to the subfamilies, genera and species have been provided. Illustrations of the dorsal figure and genitalia of the new species are also given.

ACKNOWLEDGEMENT

Authors are grateful to Dr. J. R. B. Alfred, Director, Zoological Survey of India, for providing the the necessary facilities to complete the work. Thanks are also due to Dr. G. K. Srivastava, Additional Director (retd.) and Dr. S. K. Mitra, Joint Director (retd.) for their encouragement and valuable suggestions. Thanks are also due to to Dr. S. Biswas, ex O/C Coleoptera Section, Z.S.I. for his kind help and co-operation.

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INSECTA : COLEOPTERA : STAPHYLINIDAE

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INTRODUCTION

The Staphylinidae is one of the largest families of the superfamily Staphylinoidea, distributed throughout the World. About 30,000 species are known from the world and more than 2000 species have been recorded so far from India. Bernhauer (1915), Fauvel (1895), Kraatz (1859) and Motschulsky (1858) are the pioneer workers of the family Staphylinidae. Prior to Cameron's work on fauna of British India series (1930, 1931, 1932, 1939, 1943-1945) no comprehensive work on Indian fauna of Staphylinidae have been done by any authors.

Cameron in his fauna of British India series recorded 51 species from Sikkim. Besides work of Cameron, in recent times Biswas and Sengupta (1980, 1983 and 1989) described seven species from Sikkim.

In this present work 85 species are newly recorded from Sikkim of which 9 species are for the first time recorded from India and last another 11 species are recorded as new to science from Sikkim. Thus the total number of species known from Sikkim comes to 143.

The present work on the family Staphylinidae is based on the collection brought from different districts of Sikkim by various recent survey parties from Zoological Survey of India, and other oldest collections present in the National Zoological Collection. Materials of some species recorded from Sikkim were not available for study, however for the sake of completeness these species are also included in this work. This study is based on 407 examples comprising 143 species under 59

genera and 7 subfamilies. Key to the subfamilies, tribes, genera and species, and distributional data of each species of the family Staphylinidae for Sikkim have been provided. Under systematic account arrangement of the taxa have been done after Cameron.

The specimens dealt with in this paper are deposited in the collection of Zoological Survey of India, Kolkata.

SYSTEMATIC ACCOUNT

(* denotes new records from Sikkim and

** new records from India)

Subfamily (I) : OXYTELINAE

Tribe I. **Piestini**

1. *Apatetica* Westwood
 1. *sikkimi* Fauvel
2. *Eupiestus* Kraatz
 2. *sculpticollis* Kraatz
3. *Holusus* Motschulsky
 3. **olisthaeriformis* Fauvel
 4. **brevipennis* Fauvel
 5. **longipennis* Cameron
 6. *aberrans* Fauvel
4. *Lispinus* Erichson
 7. *bhaumiki*, sp. nov.
 8. **iyeri* Bernhauer
 9. **coriaceus* Fauvel

Tribe II. **Eleusiini**5. *Eleusis* Castelnau10. **andrewesi* Cameron11. *sikkimensis*, sp. nov.12. *biswasi*, sp. nov.13. ***feae* Fauvel14. **humilis* ErichsonTribe III. **Leptochirini**6. *Borolinus* Bernhauer15. *sikkimensis* Bernhauer16. *minutus* Castelnau7. *Priochirus* Sharp17. (*Triacanthochirus*) *apicalis* Eppelsheim18. (*T.*) *bipunctatus* (Fauvel)19. (*Plastus*) *eucerus* Cameron20. (*Cephalomerus*) *bifoveatus* Eppelsheim21. (*C.*) *rubiginosus* Cameron22. (*C.*) *sanguinosus* MotschulskyTribe IV. **Omaliini**8. *Anthobium* Stephens23. **(Eusphalerum) indicum* Champion24. (*E.*) *sikkimi* Fauvel9. *Omalius* Gravenhorst25. **cariosum* Cameron10. *Phloeonomus* Heer26. (*Phloeostiba*) *gangtokensis*, sp. nov.27. (*P.*) *basui*, sp. nov.28. (*P.*) *bhaumiki*, sp. nov.Tribe V. **Oxytelini**11. *Coprophilus* Latreille29. *** (Zonophilus) subplagiatus* Cameron12. *Oxytelopsis* Fauvel30. *pseudopsina* Fauvel13. *Oxytelus* Gravenhorst31. **(Caccoporus) varipennis* Kraatz32. **(C.) incisus* Motschulsky33. **(C.) bengalensis* Erichson34. (*Tanycraerus*) *hingstoni* Cameron14. *Anotylus* Thomson35. **micans* (Kraatz)36. ***rufus* (Kraatz)15. *Bledius* Leach37. (*Pucerus*) *ranglicus* Biswas & Sengupta38. (*P.*) *teestaius* Biswas & Sengupta39. (*P.*) *bali* Biswas & Sengupta40. (*P.*) *suravius* Biswas & Sengupta41. (*P.*) *niloticus* Erichson42. (*P.*) *gracilicornis* KraatzTribe VI. **Osoriini**16. *Osorius* Latreille43. *Calvus* Eppelsheim

Subfamily (II) : STENINAE

17. *Stenus* Latreille44. **(Hypostenus) birmanus* Fauvel45. **(H.) kurseonginus* Bernhauer46. **(H.) wasmanni* Fauvel47. **(H.) rajpurianus* Cameron48. **(H.) barbatus* Neit.49. **(H.) ventricosus* Fauvel50. **(H.) decanus* Biswas51. **(H.) rufoplagiatus* (Champion)52. **(H.) millepunctus* Fauvel53. (*H.*) *sikkimensis*, sp. nov.54. **(Mesostenus) virgula* Fauvel18. *Dianous* Samouelle55. *obliquenotatus* Champion

Subfamily (III) : **EUAESTHETINAE**19. *Stenaesthetus* Sharp56. **sunioides* SharpSubfamily (IV) : **PAEDERINAE**Tribe VII. **Pinophilini**20. *Palaminus* Erichson57. **monticola* cameron58. **indicus* Kraatz59. **andrewesi* CameronTribe VIII **Paederini**21. *Paederus* fabricius60. **fuscipes* Curtis61. **nigricornis* Bernhauer22. *Dibelonetes* Sahlberg62. *sikkimensis* Biswas & Sengupta23. *Astenus* Stephens63. **bispinus* (Motschulsky)64. **gracilentus* Fauvel65. *sikkimensis*, sp. nov.66. *asitus* Biswas & Sengupta67. *jhopus* Biswas & Sengupta68. **indicus* (Kraatz)24. *Stilicopsis* Sachse69. **trinotata* Kraatz70. **pallida* Cameron25. *stilicus* Latreille71. **rufescens* Sharp72. **ceylonensis* Kraatz73. **gracilis* Eppelsheim74. **parvus* Cameron26. *Acanthoglossa* Kraatz75. **testaceipennis* Kraatz27. *Medon* Stephens76. *birmanus* Fauvel77. ***breviusculus* (Kraatz)78. **planatus* Bernhauer79. *rangpoensis*, sp. nov.28. *Lithocharis* Boisd.80. *nigriceps* Kraatz29. *Lobochilus* Bernhauer81. *nigerrimus* Kraatz30. *Charichirus* Sharp82. **chinensis* (Boh.)31. *Scopaeus* Erichson83. **germanus* Cameron84. **puncticeps* Kraatz85. ***micrus* Kraatz86. **humilis* Cameron87. **nitidulus* Motschulsky88. *gangtokensis*, sp. nov.32. *Lathrobium* Gravenhorst89. *semicaeruleum* Cameron90. *brunneum* Cameron33. *Cryptobium* Mannerheim91. *sikkimense* Cameron92. *bernhaueri* var. *distinctum* CameronSubfamily (V) : **STAPHYLININAE**Tribe IX. **Xantholinini**34. *Metolinus* Cameron93. *leucocnemis* (Kraatz)35. *Leptacinus* Erichson94. **gracilis* Fauvel95. *parumpunctatus* Gyll.36. *Pachycorynus* Motschulsky96. **dimidiatus* Motschulsky37. *Mitomorphus* Kraatz97. **indicus* Kraatz38. *Indoscitalinus* Heller98. *rudis* (Eppelsheim)99. **anachoreta* (Fauvel)39. *Othius* Stephens100. *ruficornis* Cameron

Tribe X. **Staphylinini**

40. *Neobisnius* Ganglb.
101. **praelongus* Gemm.
41. *Philonthus* Curtis
102. *industanus* Fauvel
103. *azuripennis* Cameron
104. *distincticornis* Cameron
105. *obsoletus* Eppelsheim
106. *subjectus* Cameron
107. *nigricoxis* Cameron
108. *rivularis* Cameron
109. **convalescens* Eppelsheim
110. *sikkimensis*, sp. nov.
111. ***poephagus* Cameron
112. **assamensis* Cameron
113. **maindroni* Fauvel
42. *Stevensis* Cameron
114. *longipennis* Cameron
43. *Paratolmerus* Cameron
115. *pilosiventris* Cameron
44. *Staphylinus* Linnius
116. (*Goerius*) *olivaceus* Cameron
117. (*G.*) *prinae* Eppelsheim
118. (*Pseudocypus*) *aereus* Cameron
45. *Rhyncochilus* Sharp
119. ***argenteus* Fauvel
46. *Craspedomerus* Bernhauer
120. *violaceipennis* Cameron
121. *caeruleipennis* Cameron
47. *Creophilus* Mannerheim
122. *sikkimensis* Wendeler
- Tribe XI. **Quediini**
48. *Quedius* Stephens
123. (*Microsaurus*) *stevensi* Cameron
124. (*Sauridus*) *ripicola* Cameron
125. (*Raphirus*) *himalayicus* Bernhauer

49. *Indoquedius* Cameron
126. *sikkimensis* (Cameron)
127. *aberrans* (Cameron)
128. *filicornis* (Eppelsheim)

Subfamily (VI) : TACHYPORINAE

Tribe XII. **Tachyporini**

50. *Conosoma* Kraatz
129. *hemisphaericum* Bernhauer
51. *Tachinus* Gravenhorst
130. **lugubris* Cameron
52. *Tachyporus* Gravenhorst
131. **flavopictus* Fauvel
132. *triangulum* Cameron
133. *himalayicus* Bernhauer
53. *Tachinomorphus* Kraatz
134. *fulvipes* (Erichson)
54. *Coproporus* Kraatz
135. **fasciipennis* Kraatz
136. **melanarius* (Erichson)

Tribe XIII. **Symmixini**

55. *Symmixus* Bernhauer
137. *sikkimensis* Bernhauer

Subfamily (VII) : ALEOCHARINAE

Tribe XIV. **Myrmedoniini**

56. *Cordalia* Jacobs
138. **vestita* (Boh.)
57. *Falagria* Mannerheim
139. **(Stenagria)* *granulata* Cameron
140. **(S.Str.) vicina* cameron
58. *Amaurodera* Fauvel
141. *opacicollis* (Eppelsheim)
142. **elegans* Cameron
59. *Astilbus* Stephens
143. *stevensi* Cameron

**Key to the subfamilies of the family
STAPHYLINIDAE from Sikkim**

1. Prothoracic spiracles concealed [except in *Platystethus* and *Thinobius* (but then the suture dehiscent) and *Lithocharis* and *Cryptobium*] by the triangular epimera, which externally are fused with the pronotal epipleura 2
- Prothoracic spiracles exposed, or, if concealed, the epimera are free 5
- 2(1). 1st segment of the maxillary palpi elongate. Posterior coxal conical 3
- 1st segment of the maxillary palpi very short 4
- 3(2). Tarsi 5, 5, 5 STENINAE
- Tarsi 4, 4, 4 or 5, 5, 4 EUAESTHETINAE
- 4(2). Antennae inserted under a thickened marginal border of the head. Tarsi variable OXYTELINAE
- Antennae inserted under the prominent anterior angles of the front margin of the head. Tarsi 5, 5, 5. PAEDERINAE
- 5(1). Antennae inserted on the front margin of the head. Prothoracic spiracles exposed STAPHYLININAE
- Antennae inserted at the inner border of the eye. Prothoracic spiracles exposed or covered by a free-lying epimeron 6
- 6(5). Elytra not extending beyond the metathorax; the prothoracic spiracles exposed ALEOCHARINAE
- Elytra usually extending beyond the metathorax; the epipleura separated by a fine sharp keel from the dorsal surface. The prothoracic spiracles usually exposed, but covered by free-lying epimera in *Tachinus*, *Tachinomorphus* and *Tachinoderus* TACHYPORINAE

Subfamily OXYTELINAE

**Key to the tribes and genera of the
subfamily OXYTELINAE**

1. Head with two ocelli (except occasionally in *Hygrogeus*). First ventral segment of the abdomen keeled in the middle. The posterior trochanters large **Omalini** 10
- Head without ocelli 2
- 2(1). Anterior coxal cavities close behind **leptochirini** 9
- Anterior coxal cavities open behind 3
- 3(2). First ventral segment of the abdomen keeled in the middle 4
- First ventral segment not keeled (except in *Apocellagria* and 3-segmented tarsi) **oxytelini** 12
- 4(3). Anterior coxae very small, not prominent. Tongue at least in part membranous 5
- Anterior coxae large, prominent. Tongue entirely corneous; more or less cylindrical species **Osoriini** (*Osorius* Latreille)
- 5(4). Anterior trochantin exposed as a long tongue-shaped process behind the posterior margin of the prosternum and separated from the epipleura by a suture. Parallel depressed species. Tarsi 5-segmented **Eleusiini** (*Eleusis* Castelnau)
- Anterior trochantin small, not or but slightly exposed **Piestini** 6
- 6(5). Abdomen bordered 7
- Abdomen not bordered 8
- 7(6). Thorax keeled **Eupiestus** Kraatz
- Thorax not keeled **Apatetica** Westw.
- 8(6). Abdomen striate at the sides. Fourth segment of the maxillary palpi elongate. More or less convex species with the facies of certain Tachyporinae **Holosus** Motschulsky
- Abdomen rarely striate at the sides. Fourth segment of the maxillary palpi less elongate.

More or less parallel, depressed or sub-depressed species **Lispinus** Erichson.

9(2). Anterior coxae separated; the prosternal process dilated behind at its apex
..... **Leptochirus** Germar

– Anterior coxae contiguous; the prosternal process concealed and not expanded behind
..... **Borolinus** Bernhauer

10(1). All the tarsi dilated and clothed with long hairs at the sides **Anthobium** Stephens

– All the tarsi simple without long hairs at the sides 11

11(10). Last segment of the posterior tarsi much longer than the four preceding together. Mesosternum not keeled
..... **Phloeonomus** Heer.

– Last segment of the posterior tarsi only as long as or shorter than the four preceding together **Omalium** Gravenhorst

12(3). Tarsi 3-segmented 13

– Tarsi 5-segmented. Anterior and middle tibiae spinose **Coprophilus** Latreille

13(12). Anterior and middle tibiae strongly spinose externally 14

– Anterior and middle tibiae ciliate, at most with two small spines before the apex 15

14(13) Cylindrical species with geniculate antennae **Bledius** Leach

Species not cylindrical, antennae normal
..... **Oxytelus** Gravenhorst

15 (13). Tibia with distinct longitudinal grooves; pronotum with lateral margin strongly explanate and hypomeron extremely deflexed
..... **Oxytelopsis** Fauvel

– Tibia without distinct longitudinal grooves; if grooves present, then poorly developed and pronotum not strongly explanate and hypomeron not extremely deflexed
..... **Anotylus** Thomson

Genus *Apatetica* Westwood

1848. *Apatetica* Westwood, *Cab. Or. Ent.*, : 86.

1. *Apatetica sikkimi* Fauvel

1895. *Apatetica sikkimi* Fauvel, *Rev. d'Ent.*, **14** : 193.

1930. *Apatetica sikkimi* : Cameron, *Fauna British India*, **1** : 28.

Material examined : 1 ex., India : Sikkim, Singtam, 1 ex., 26. iv. 1976, A.R. Bhaumik Coll.

Distribution : India : Sikkim.

Other Indian State : West Bengal.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from sikkim.

Genus *Eupiestus* Kraatz

1859. *Eupiestus* Kraatz, *Arch. Naturesch.*, **25** (1) : 182.

2. *Eupiestus sculpticollis* Kraatz

1859. *Eupiestus sculpticollis* Kraatz, *Arch. Naturesch.*, **25** (1) : 38-39.

Material examined : 1 ex., India : Sikkim, Rangpo, 1 ex, 29. v. 1997, S. Biswas & party Coll.

Distribution : India : Sikkim.

Other Indian States : Tamil Nadu, Sikkim.

Elsewhere : Sri Lanka, Myanmar and Lombok.

Genus *Holusus* Motschulsky

1857. *Holusus* Motschulsky, *Bull. Soc. Mosc.*, **30** (4) : 496.

Key to the species of the genus *Holusus*

1. Thorax not deeply impressed at the posterior angles. Facies of *Olisthaerus*
..... *Olisthaeriformis* Motschulsky

– Thorax with deep impression at the posterior angles 2

2 (1). Thorax not transversely impressed before the base 3

- Thorax transversely impressed before the base *brevipennis* Fauvel
- 3 (2). Penultimate segments of antennae fully as long as broad *longipennis* Cameron.
- Penultimate segments of antennae distinctly transverse *aberrans* Fauvel

3. *Holosus olisthaeriformis* Motschulsky

1857. *Holosus olisthaeriformis* Motschulsky, *Bull. Mosc.* 30 (4) : 500.

1930. *Holosus olisthaeriformis* : Cameron, *Fauna British India*, 1 : 47.

Material examined : 2 exs., India : Sikkim, Paykong, 2 exs., 12.xii. 1994, D.N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian State : Tripura

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from sikkim.

4. *Holosus brevipennis* Fauvel

1904. *Holosus brevipennis* Fauvel, *Rev. d'ent.*, 23 : 77.

1925. *Holosus transversus* cameron, *E.M.M.*, 61 : 234.

1930. *Holosus brevipennis* : Cameron, *Fauna British India*, 1 : 50.

Material examined : 1ex., India : Sikkim, Gangtok, 1ex., 24. iv. 1976, S. K. Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian State : Uttar Pradesh.

Elsewhere : Sumatra, Hong-Kong, 'Tonkin, Hue.

Remark : In the present study this species is recorded for the first time from Sikkim.

5. *Holosus longipennis* Cameron

1925. *Holosus longipennis* Cameron, *Entomologist Monthly Magazine*, 61 : 235.

1930. *Holosus longipennis* Cameron, *Fauna British India*, 1 : 49-50.

Material examined : 1ex., India : Sikkim, Rangpo, 1 ex 19. iv. 1976, A.R. Bhaumik & Party Coll.

Distribution : India : Sikkim.

Other Indian State : Tamil Nadu.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

6. *Holosus aberrans* Fauvel

1904 *Holosus aberrans* Fauvel, *Rev. d'Ent.*, 23 : 78.

1930. *Holosus aberrans* : Cameron, *Fauna British India*, 1 : 51.

Material examined : 1ex., India : Sikkim, Rangpo, 1ex., 29. v. 1997, S. Biswas & Party Coll.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Sri Lanka.

Remark : In the present study this species is recorded for the first time from India (Sikkim).

Genus *Lispinus* Erichson

1840. *Lispinus* Erichson, *Gen. et spec. Staph.*, 828.

Key to the species of the genus *Lispinus*

1. Thorax without median impression before the base *bhaumiki*, sp. nov.
- Thorax with more or less distinct median impression 2
- 2(1). Larger, 3.2 mm.; darker and more coarsely punctured species *coriaceus* Fauvel
- Smaller, 2.2 mm., lighter and more finely punctured species *iyeri* Bernhauer

7. *Lispinus bhaumiki*, sp. nov.

General appearance rather narrow, elongate, depressed, finely coriaceous; black, moderately shining. The apex of the abdomen reddish. Antennae and legs reddish-brown.

Head on each side in front feebly impressed, rather finely and closely punctured. Antennae with the segments 3-6 distinctly longer than broad, segment 7-9 slightly longer than broad, segment 10 as long as broad. Thorax as long as broad, median slightly impressed. The sides slightly rounded in front, a little narrowed before rectangular posterior angles, in the middle with a very fine impressed line, adjacent to the posterior angle, with a deep and rather narrow sulcus, extending to the middle of the length, surface densely and strongly punctured including the sulcus also. Elytra distinctly longer than thorax, on each side of the anterior margin broadly impressed semicircularly, the puncturation as on the thorax. Abdomen elongate, the sides distinctly striate and punctured. Posterior margin of sternite 6 of male deeply and broadly emarginate, the apex rounded.

Measurements of holotype : Total length 6.50 mm.; width of head across the eyes 0.70 mm.; length of thorax 0.80 mm. and width of thorax 0.80 mm.; length of elytra 1.10 mm. and width of elytra 1.10 mm.

Holotype : ♂, India : Sikkim, Gangtok, 24. iv. 1976, A.R. Bhaumik Coll.; *Paratype* 1 ex., Janakmukh, 600 ft., Abor Expedition, 17. xi. 1911, S.W. Kemp Coll. Ex. under bark. (Specimens are deposited in the Zoological Survey of India, Kolkata).

Discussion : The new species is closely related to *Lispinus quadrinotatus* Fauvel but can be easily separated from the latter species by its antennal segments 6-10 not transverse; thorax with slight median impression and the sulcus densely punctured; elytra longer than thorax; not vermiform, larger in size.

8. *Lispinus iyeri* Bernhauer

1914. *Lispinus iyeri* Bernhauer, W.Z.B., 64 : 82.

1930. *Lispinus iyeri* : Cameron, *Fauna British India*, 1 : 63.

Material examined : 7 exs., India : Sikkim, Gangtok, 7 exs., 24. iv. 1976, A. R. Bhaumik and Party Coll.

Distribution : India : Sikkim.

Other Indian State : Uttar Pradesh.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

9. *Lispinus coriaceus* Fauvel

1895. *Lispinus coriaceus* Fauvel, *Rev.d'Ent.*, 14 : 185.

1930. *Lispinus coriaceus* : Cameron, *Fauna British India*, 1 : 82.

Material examined : 1 ex., India : Sikkim, Rangpo, 1 ex., 24. v. 1997, S. Biswas and Party Coll.

Distribution : India : Sikkim.

Other Indian States : West Bengal and Meghalaya.

Elsewhere : Myanmar, Java and Borneo.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Eleusis* Castelnau

1835. *Eleusis* Castelnau, *Etud, Ent.*, 1 : 131.

Key to the species of the genus *Eleusis*

1. Thorax on either side with two small teeth ..
..... *biswasi*, sp. nov.
- Thorax on either side with or without a single tooth 2
- 2 (1). Species in great part reddish or reddish testaceous *feae* Fauvel
- Species dark, the disc of the elytra often reddish or reddish testaceous 3
- 3 (2). Sides of the thorax with a distinct tooth.
..... *andrewesi* Cameron
- Sides of the thorax without or with-very obsolete tooth 4
- 4 (3). Elytra yellow, the posterior margin rather narrowly and rather sharply black
..... *humilis* Erichson

- Elytra brownish-testaceous with greenish-reflexion, the base, suture and sides narrowly and posterior margin broadly infusate
..... *sikkimensis*, sp. nov.

10. *Eleusis andrewesi* Cameron

1930. *Eleusis andrewesi* Cameron, *Fauna British India*, 1 : 79

Material examined : 15exs., India : Sikkim, Gangtok, 15exs., 4.iii. 1970, S. K. Saha and Party Coll.

Distribution : India : Sikkim.

Other Indian state : Tamil Nadu.

ELsewhere : nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

11. *Eleusis sikkimensis*, sp. nov.

General appearance rather black, shining, parallel, elytra brownish - testaceous with greenish reflexion, the base, suture and sides narrowly and posterior margin broadly in fuscate. Antennae redish-brown. Legs reddish-brown, the tarsi testaceous.

Head sub-quadrate orbicular, slightly transverse, as broad as thorax, superficially sinuate between the antennal tubercles and the truncated anterior margin, the temples slightly rounded, in the ♂ the temples about twice as long as the eye, juxta ocular sulcus rather deep and broad, not reaching the base, surface densely and coarsely punctured, ground-sculpture strigose only near the juxta-ocular and anterior margin, in the ♀ the head is smaller and less quadrate than in the ♂, the eye is prominent and diameter of the eye is as long as the temples. Antennae rather short and stout, segments 4-5 longer than broad, segments 6-7 as long as broad, segments 8-10 transverse. Thorax transverse, conical, widest in front, the sides fully rounded for the anterior half, strongly contracted and scarcely rounded to the base, the disc flattened, in the middle with a fine shot sulcus, anterior margin on left side with single punctate

impression and right with bipunctate impression, finely and densely punctured, on the middle devoid of any gound-sculpture. Elytra longer and broader than thorax, finely and densely punctured and with a setiferous puncture in the middle of the disc, ground-sculpture longitudinal strigose for the most part. Abdomen with the usual setiferous punctures and transverse strigose ground-sculpture.

Measurements of holotype : Total length 5.50 mm., width of head across the eyes 1.20 mm.; length of thorax 0.80 mm. and width of thorax 1.20 mm.; length of elytra 1.40 mm. and width of elytra 1.30 mm.

Holotype ♂, India : Sikkim, Gangtok, 3.iii.1979, S. K. Saha & Party coll.; Paratype 1 ex., Gangtok, 7. iii. 1979, S. K. Saha & party Coll. (Materials are deposited in the Zoological Survey of India, Kolkata).

Distribution : India : Sikkim.

Discussion : The new species is closely related to *Eleusis viridans* Fauvel but can be easily separated from the latter species by its surface of head densely and coarsely puncture, ground-sculpture not for the most part, antennal segmental pattern different, thorax devoid of any dentate and anterior margin on the left side with single punctate impression, ground-sculpture different, tarsi-testaceous.

12. *Eleusis biswasi*, sp. nov.

General appearance rather shining, head and thorax pitchy, elytra reddish testaceous with a large yellow mark occupying the posterior region from near to the anterior margin to the posterior-external angle, abdomen pitchy. Antennae ferruginous red, the first two segments reddish testaceous. Legs pitchy, the tarsi testaceous.

Head transverse, subquadrate, the temples parallel, slightly longer than the diameter of the eyes, these rather large and prominent, surface densely and coarsely punctured. Antennae rather short and stout, segment 3 longer than segment 2, segments 4 to 10 as long as broad. Thorax transverse, as broad as head, cupuliform, lateral

side with one pair of tooth at posterior third and fully rounded for the anterior one fourth, strongly contracted and scarcely rounded to the base, in the middle before the base feebly impressed, surface densely and finely punctured. Elytra broader and about twice longer than thorax, densely and superficially punctured. Abdomen with usual setiferous punctures.

Measurements of the holotype : Total length 3.50 mm.; width of head across the eyes 0.85 mm.; length of thorax 0.50 mm. and width of thorax 0.85 mm.; length of elytra 1.15 mm. and width of elytra 1.40 mm.

Holotype : India : Sikkim, Rangpo, 29. v. 1997, S. Biswas and Party Coll. (Material is deposited in the Zoological Survey of India, Kolkata).

Distribution : India : Sikkim.

Discussion : The new species is closely related to *Eleusis nilgiriensis* Cameron but can be easily separated from it by the colour pattern of elytra; antennal segments 1 and 2 and tarsi reddish-testaceous, head not longer than broad, Punctuation of head dense and coarse. Elytra is distinctly more than twice longer than thorax.

13. *Eleusis feae* Fauvel

1805. *Eleusis feae* Fauvel, *Rev. d'Ent.*, **14** : 188.

1930. *Eleusis feae* : Cameron, *Fauna British India*, **1** : 78.

Material examined : 1 ex., India : Sikkim, Gangtok, 1 ex., 4.iii.1979, S. K. Saha and party coll.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Myanmar and Java.

Remark : In the present study this species is recorded for the first time from India (Sikkim).

14. *Eleusis humilis* Erichson

1840. *Eleusis humilis* Erichson, *Gen. Spec. Staph.*, : 839.

1930. *Eleusis humilis* : Cameron, *Fauna British India*, **1** : 83-84.

Material examined : 6 exs., India : Sikkim, Rangpo, 6 exs., 29. v. 1997, S. Biswas and Party coll.

Distribution : India : Sikkim.

Other Indian States : Andamans, Tamil Nadu, Uttar Pradesh, Meghalaya and Tripura.

Elsewhere : Sri Lanka, Myanmar, Japan and generally distributed throughout the tropics.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Borolinus* Bernhauer

1903. *Borolinus* Bernhauer, *D.E.Z.*, : 133.

Key to the species of the genus *Borolinus*

1. Right mandible behind the apex with a strong simple tooth *sikkimensis* Bernhauer
- Right mandible behind the apex with a bicuspid tooth *minutus* Castelnau

15. *Borolinus sikkimensis* Bernhauer

1919. *Borolinus sikkimensis* Bernhauer, *D.E.Z.*, : 359.

1930. *Borolinus Sikkimensis* : Cameron, *Fauna British India*, **1** : 94.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian States : West Bengal and Arunachal Pradesh.

Elsewhere : Myanmar.

Remark : It was early recorded from Sikkim.

16. *Borolinus Minutus* (Castelnau)

1840. *Leptochirus minutus* Castelnau, *Hist. Nat.*, **1** : 186.

1840. *Leptochirus bispinus* Erichson, *Gen. Spec. Staph.*, : 827.

1930. *Borolinus minutus* : Cameron, *Fauna British India*, **1** : 94-95.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian States : West Bengal, Nagaland and Arunachal Pradesh.

Elsewhere : Myanmar, Siam, Sumatra, Java, Lombok and Borneo.

Genus *Priochirus* sharp

1887. *Priochirus* Sharp, *Biol. Cent.-Amer., Col.*, 1 (2) : 740.

Key to the subgenera

1. Front margin of the head with a more or less distinct tooth in the middle
..... *Triacanthochirus* Bernhauer 3
- Front margin of the head without tooth in the middle 2
- 2(1). Head in front divided by a deep, narrow, median impression into two larger lobes, often themselves dentate
..... *Cephalomerus* Bernhauer 4
- Head with a frontal impression which is at least as broad as long
..... *Plastus* Bernhauer (*eucerus* Cameron)

Key to the species of subgenus *Triacanthochirus*

- 3 (1). Broader species, the median tooth cylindrical with rounded apex *apicalis* (Eppelsheim.)
- Narrower species, the median tooth narrowed before the apex, which is pointed
..... (*bipunctatus* Fauvel.)

17. *Priochirus* (*Triacanthochirus*) *apicalis* (Eppelsheim)

1895. *Leptochirus apicalis* Eppelsheim, *W.E.Z.*, 14 : 68.

1930. *Priochirus* (*Triacanthochirus*) *apicalis* : Cameron, *Fauna British India*, 1 : 97.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian States : Nil.

Elsewhere : Nil.

Remark : It was early recorded from sikkim.

18. *Priochirus* (*Triacanthochirus*) *bipunctatus* (Fauvel)

1895. *Leptochirus bipunctatus* Fauvel, *Rev.d'Ent.*, 14 : 160.

1930. *Priochirus* (*Triacanthochirus*) *bipunctatus* : Cameron, *Fauna British India*, 1 : 97-98.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian States : Arunachal Pradesh, Assam, Meghalaya and West Bengal.

Elsewhere : Myanmar.

Subgenus *Plastus* Bernhauer

1903. *Plastus* Bernhauer, *D.E.Z.* : 142

19. *Priochirus* (*Plastus*) *eucerus* Cameron

1930. *Priochirus* (*plastus*) *eucerus* Cameron, *Fauna British India*, 1 : 114.

Material examined : Not Studied

Distribution : India : Sikkim.

Other Indian state : West Bengal.

Elsewhere : Nil.

Remark : It was early recorded from Sikkim.

Key to the species of subgenus *Cephalomerus*

- 4(2). Large species 16 to 23 mm
..... *bifoveatus* Eppelsheim.
- Smaller species 6 to 10.5 mm 5
- 5(4). Species in great part bright red
..... *sanguinosus* Motschulsky
- Species dark ferruginous red, the elytra black with the base narrowly reddish
..... *rubiginosus* Cameron.

20. *Priochirus* (*Cephalomerus*) *bifoveatus* (Eppelsheim)

1895. *Leptochirus bifoveatus* Eppelsheim, *W.E.Z.*, 14 : 69

1920. *Priochirus (Cephalomerus) major* Cameron, *Entomologist Monthly Magazine*, **56** : 142.

1930. *Priochirus (Cephalomerus) bifoveatus* : Cameron, *Fauna British India*, **1** : 102-103.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian State : Tamil Nadu.

Elsewhere : Nil.

Remark : It was early recorded from Sikkim.

21. *Priochirus (Cephalomerus) rubiginosus*
Cameron

1930. *Priochirus (Cephalomerus) rubiginosus* Cameron, *Fauna British India*, **1** : 105-106.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian States : Nagaland, Meghalaya and West Bengal.

Elsewhere : Nil.

Remark : It was early recorded from Sikkim.

22. *Priochirus (Cephalomerus) sanguinosus*
(Motschulsky)

1857. *Leptochirus sanguinosus* Motschulsky, *Bull. Mose.*, **30** (4) : 501.

1930. *Priochirus (Cephalomerus) sanguinosus* : Cameron, *Fauna British India*, **1** : 103.

Material examined : Not Studied.

Distribution : India : Sikkim.

Other Indian State : West Bengal.

Elsewhere : Myanmar.

Remark : It was early recorded from Sikkim.

Genus *Anthobium* Stephens

1832. *Anthobium* Stephens, III. *British Ent.*, **5** : 335.

Key to the species of the subgenus
Eusphalerum

1. Smaller (2 mm.). Angles of the thorax all rounded *sikkimi* Fauvel

– Larger (2 to 3 mm.). Angles of the thorax obtuse *indicum* Champion.

23. *Anthobium (Eusphalerum) indicum*
Champion

1920. *Anthobium indicum* Champion, *E.M.M.*, **56** : 243.

1930. *Anthobium (Eusphalerum) indicum* : Cameron, *Fauna British India*, **1** : 136.

Material examined : 1ex., India : Sikkim, Gangtok, 1ex., 7.iii.1979, S. K. Saha and party Coll.

Distribution : India : Sikkim.

Other Indian State :

Elsewhere : Nil.

Remarks : In Fauna (1930) Cameron mentioned locality data only Kurram valley : Parachinar. In the Present study this species may be first time recorded from Sikkim.

24. *Anthobium (Eusphalerum) sikkimi* Fauvel

1904. *Anthobium sikkimi* Fauvel, *Rev. d'Ent.*, **23** : 88.

1930. *Anthobium (Eusphalerum) sikkimi* : Cameron, *Fauna British India*, **1** : 135.

Material examined : 1ex., India : Sikkim, Nagi Upper Madhya Pokhri, 1ex., 15. ix. 1995.

Distribution : India : Sikkim.

Other Indian State : West Bengal.

Elsewhere : Nil.

Remarks : In the present study this species is recorded for the first time from Sikkim.

Genus *Omalium* Gravenhorst

1802. *Omalium* Gravenhorst, *Col. Micr.*, : 111.

25. *Omalium cariosum* Cameron

1924. *Omalium cariosum* Cameron, *Trans. Ent. Soc. Lond.*, : 167.

1930. *Omalium cariosum* Cameron, *Fauna British India*, **1** : 140.

Material examined : 1ex., India : Sikkim, Gangtok, 1ex., 4. iii. 1979, S. K. Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian State : Uttar Pradesh.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Phloeonomus* Heer

1838-42. *Phloeonomus* Heer, *Faun Helv.*, 1 : 184.

Key to the species of the subgenus *Phloeostiba*

1. Temples scarcely visible; thorax strongly transverse 2
 - Temples slightly longer than the half diameter of the eye; thorax as long as broad
..... *basui*, sp. nov.
 - 2(1). Ground-sculpture of head, thorax and elytra are granulated; elytra more than twice as long as thorax *gangtokensis*, sp. nov.
 - Ground-sculpture of head, thorax and elytra are more or less strong longitudinal striat; elytra one and half times longer than thorax
..... *bhaumiki*, sp. nov.
26. *Phloeonomus (Phloeostiba) gangtokensis*, sp. nov.

This species is closely related to *Phloeonomus (Phloeostiba) pinicola* Champion but can be easily separated from the latter species by its ground-sculpture of head, thorax and elytra are granulated, elytra more than twice as long as thorax, antennal segments 6-11, elytra and abdominal segments (visible) 5-7 reddish testaceous, antennal segments 1-5 and legs testaceous, head, thorax and abdominal segments 1-4 brown, thorax with only an impressed area along the middle from the posterior margin to 3/4 length of the thorax. Posterior margin of sternite

6 of male deeply and broadly emarginate, before the emargination with two small oblong keel.

Measurements of holotype : Total length 2.25 mm.; width of head across the eyes 0.45 mm.; length of thorax 0.30 mm. and width of thorax 0.55 mm.; length of elytra 0.70 mm. and width of elytra 0.70 mm.

Holotype ♂, INDIA : Sikkim, Gangtok, 3. iii. 1979, S. K. Saha and Party Coll.; Paratypes 16exs., 5exs. Collection data same as holotype, 1ex., Gangtok, 24. iv. 1976, A. R. Bhaumik and Party Coll., 8exs., Gangtok, 4. iii. 1979 S. K. Saha and Party Coll, 2exs., Gangtok, 7. iii. 1979 S. K. Saha and Party Coll, (Specimens are deposited in the Zoological Survey of India, Kolkata).

Distribution : India : Sikkim.

27. *Phloeonomus (Phloeostiba) basui*, sp. nov.

General appearance rather elongate, narrow, depressed, moderately shining, reddish-testaceous. Antennal segments 1-5 testaceous, the rest reddish. Legs testaceous.

Head as broad as the thorax, subtriangular, the temples slightly longer than the half diameter of the eye; vertex flat, before each ocellus with a long, broad sulcus, between two sulcus there is another broad impressed line from base whose length is equal the length of the sulcus, the posterior angles obtuse, surface finely, densely punctures and with a more or less strong longitudinal striat ground-sculpture. Thorax as long as broad, the sides in front almost straight and converging backwards to a little behind the middle, from thence almost parallel to the posterior angles; anterior border on each side with a small fovea, in the middle with a very fine raised line from posterior margin to anterior margin, finely and moderately densely punctured and with a more or less fine longitudinal striate ground-sculpture. Elytra a little broader and about twice longer than thorax, less finely and closely punctured, ground-sculpture as like as the thorax. Abdomen coriaceous, nearly impunctate.

Measurements of holotype : Total length 1.80 mm.; width of head across the eyes 0.35 mm.; length of thorax 0.25 mm. and width of thorax 0.35 mm.; length of elytra 0.50 mm. and width of elytra 0.40 mm.

Holotype : India : Sikkim, Gangtok, 27. iv. 1976, A. R. Bhowmik and C. R. Basu Coll., Paratypes 5exs.; Gangtok, 3exs.; 24. iv. 1976, A. R. Bhaumik and C. R. Basu Coll., Phensung 2exs.; 25. iv. 1976, A. R. Bhaumik and C. R. Basu Coll. (Specimens are deposited in the Zoological Survey of India, Kolkata).

Distribution : India : Sikkim.

Discussion : This species is closely related to *Phloeonomus (Phloeostiba) temporalis* Cameron but can be easily separated from the latter species by the following characters : head not broader than thorax, temples longer than the half diameter of the eye, a broad impressed line between two sulcus, sulcus broad, surface strongly punctured, ground-sculpture not retiform. Thorax not broader, posterior angles not rounded. Elytra about twice as long as the thorax. Colouration different.

28. *Phloeonomus (Phloeostiba)*
bhaumiki, sp. nov.

This species is closely related to *Phloeonomus (phloeostiba) gangtokensis*, sp. nov. but can be easily separated from the latter species by its ground sculpture of head, thorax and elytra are more or less strong longitudinal striate, thorax more or less as long as broad and anterior angles broadly rounded and posterior angles obtuse, elytra one and half times longer than thorax. Posterior margin of sternite 6 of male semicircularly emarginate.

This species is also closely related to *Phloeonomus (Phloeostiba) basui*, sp. nov but can be easily separated from its temples scarcely visible.

Measurements of holotype : Total length 2.55 mm.; width of head across the eyes 0.55 mm.; length of thorax 0.45 mm. and width of thorax 0.60 mm.; length of elytra 0.65 mm. and width of elytra 0.80 mm.

Holotype ♂, India : Sikkim, Pakyang, 27. iv. 1976, A. R. Bhaumik and party Coll.; Paratypes, 6exs.; 3exs.; collection data same as holotype; 2exs.; Gangtok, 24. iv. 1976, A. R. Bhaumik and Party Coll., 1ex., Gangtok, 2. iii. 1979, S. K. Saha and Party Coll. (Specimens are deposited in the Zoological Survey of India, Kolkata).

Distribution : India : Sikkim.

Genus *Coprophilus* Latreille

1829. *Coprophilus* Latreille, Regne Anim., 4 : 439.

29. *Coprophilus (Zonoptilus) subplagiatus*
Cameron

1928. *Coprophilus (Zonoptilus) Subplagiatus* Cameron, *Ann. Mag. Nat.Hist.*, 2 (10) : 558.

1930. *Coprophilus (Zonoptilus) Subplagiatus* Cameron, *Fauna British India*, 1 : 173.

Material examined : 3exs., India : Sikkim, Nagi Lower Lake, 3 exs., 15. ix. 1995.

Distribution : India : Sikkim.

Other Indian State : Nil

Elsewhere : Tibet.

Remark : In the present study this species is recorded for the first time from India (Sikkim).

Genus *Oxytelopsis* Fauvel

1895. *Oxytelopsis* Fauvel, *Rev. d'Ent.*, 14 : 199.

30. *Oxytelopsis pseudopsina* Fauvel

1895. *Oxytelopsis pseudopsina* Fauvel, *Red. d'Ent.*, 14 : 201.

1930. *Oxytelopsis pseudopsina* : Cameron, *Fauna British India*, 1 : 206-207.

1980. *Oxytelopsis pseudopsina* : Biswas & Sengupta, *Oriental Insects*, 14 (3) : 392.

Material examined : 1ex., India : Sikkim, Rangpo, 1ex., 14. xii. 1994, D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian States : West Bengal, Uttar Pradesh, Meghalaya and Tripura.

Elsewhere : Myanmar, Malay Peninsula, Sumatra, Java and Borneo.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Oxytelus* Gravenhorst

1802. *Oxytelus* Gravenhorst, *Col. Micr. Brunsv.*, : 101.

Key to the subgenera of the genus *Oxytelus*

1. Eyes with fine facets
..... *Tanycraerus* (hingstoni) Cameron)
- Eyes with coarse facets *Caccoporus* 2
- 2 (1). Upper surface entirely micro-reticulate and consequently dull; larger species, length 5 mm.
..... *bengalensis* Erichson.
- Upper surface at least moderately shining in part; the elytra and much of the pronotum lacking micro-reticulation, smaller species, length 2. 2 to 5 mm 3
- 3 (2). Head black; thorax pitchy to reddish brown; elytra brownish-yellow, darker around scutellum and suture, length 4 to 5 mm
..... *varipennis* Kraatz
- Head and thorax ferruginous red; elytra testaceous, more or less broadly infuscate on the disc, length 3 mm
..... *incisus* Motschulsky

31. *Oxytelus (Caccoporus) varipennis* Kraatz

1859. *Oxytelus varipennis* Kraatz, *Arch. Naturgesch.*, 25 (1) : 172.

1930. *Oxytelus (Caccoporus) varipennis* : Cameron, *Fauna British India*, 1 : 234-35.

1973-75. *Oxytelus varipennis* : Hammond, *Ent. Scand. Suppl.*, 4 : 154-155.

Material examined : 4 exs.; India : North Sikkim, Phodong, 2exs.; 24.iv. 1994. S. K. Saha Coll., Damthang, 2exs.; 4.v.1994, S. K. Saha Coll.

Distribution : India : Sikkim.

Other Indian States : Uttar Pradesh Tripura.

Elsewhere : Sri Lanka.

Remark : In the present study this species is recorded for the first time from Sikkim.

32. *Oxytelus (Caccoporus) incisus* Motschulsky

1857. *Oxytelus incisus* Motschulsky, *Bull. Soc. Nat. Mosc.*, 30 : 504.

1858. *Oxytelus ferrugineus* kraatz, *Arch. Naturgesch.* 25 (1) : 173.

1930. *Oxytelus (Caccoporus) ferrugineus* : Cameron, *Fauna British India*, 1 : 235-236.

1973-75. *Oxytelus incisus* : Hammond, *Ent. Scand. Suppl.*, 4 : 152-153.

Material examined : 3 exs.; India : North Sikkim, Phodong, 2 exs.; 24.iv. 1994. S. K. Saha Coll., Singtam, 1 ex.; 28.ii.1979, S. K. Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian States : Bihar, Andaman Is., Meghalaya and Tripura.

Elsewhere : Sri Lanka, Hawaii, Japan, Seychelles, Aden, E. Africa and West Indies.

Remark : In the present study this species is recorded for the first time from Sikkim.

33. *Oxytelus (Caccoporus) bengalensis* Erichson

1840. *Oxytelus bengalensis* Erichson, *Gen.Spec.Staph.*, : 789.

1859. *Oxytelus bicolor* Walker, *Ann.Mag.Nat.Hist.*, 3 (3) : 52.

1930. *Oxytelus (Caccoporus) Bengalensis* : Cameron, *Fauna British India*, 1 : 232-233.

1973-75. *Oxytelus Benglensis* : Hammond, *Ent.Scand.Suppl.*, 4 : 155-156.

Material examined : 1ex.; India : Sikkim. Jorethang, 1ex., 6.vi.1997, S. Biswas and party Coll.

Distribution : India : Sikkim.

Other Indian States : Uttar Pradesh and Tripura.

Elsewhere : Sri Lanka, Malay Peninsula.

Remark : In Fauna (1930) Cameron mentioned in locality data only Bengal. In the present study this species is recorded for the first time from Sikkim.

Subgenus *Tanycraerus* Thomson

1861. *Tanycraerus* Thomson, *Skand. Col.*, 3 : 120.

34. *Oxytelus* (*Tanycraerus*) *hingstoni* Cameron

1928. *Oxytelus* (*Tanycraerus*) *hingstoni* Cameron, *Ann. Mag. Nat. Hist.*, 2 (10) : 559.

1930. *Oxytelus* (*Tanycraerus*) *hingstoni* Cameron, *Fauna. British India*, 1 : 226.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Nil.

Remark : It was early recorded from Sikkim.

Genus *Anotylus* Thomson

1861. *Anotylus* Thomson, *Skand. Col.*, 3 : 130.

Key to the species of the genus *Anotylus* Thomson

1. Protibia with abrupt constriction in outer third; anterior margin of clypeus with moderately deep median incision, so that on each side of the clypeus projects forward as a blunt horn *micans* (Kraatz)
- Protibia with abrupt constriction in outer third, at most with sinuation; anterior margin of clypeus without horn *rufus* (Kraatz)

35. *Anotylus micans* (Kraatz)

1859. *Oxytelus micans* Kraatz, *Arch. Naturgesch.*, 25 (1) : 175.

1930. *Oxytelus* (*Tanycraerus*) *foetidus* Cameron, *Fauna British India*, 1 : 228-230.

1973-75. *Anotylus micans* : Hammond, *Ent.Scand.Suppl.*, 4 : 164.

Material examined : 16 exs.; India : Sikkim, Gangtok, 16 exs.; 19.iii.1979, S. K. Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian States : Uttar Pradesh and Maharashtra.

Elsewhere : Sri Lanka.

Remark : In the present study this species is recorded for the first time from Sikkim.

36. *Anotylus rufus* (Kraatz)

1859. *Oxytelus rufus* Kraatz, *Arch. Naturgesch.*, 25 (1) : 174.

1930. *Oxytelus* (*Anotylus*) *rufus* : Cameron, *Fauna British India*, 1 : 254-255.

1973-75. *Anotylus rufus* : Hammond, *Ent.Scand. Suppl.*, 4 : 165-166.

Material examined : 2 exs.; India : Sikkim, Rangpo, 2 exs., 19.iv.1976, A. R. Bhaumik & Party Coll.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Sri Lanka.

Remark : In the present study this species is recorded for the first time from India (Sikkim).

Genus *Bledius* Leach

1819. *Bledius* Leach, *The entomologist's useful Compendium*, London : 496.

Key to the Indian species of the subgenus *Pucerus*

1. First segment of antennae markedly long ... 2
- First segment of antennae normal 3
- 2(1). Elytra markedly longer than prothorax
..... *gracilicornis* Kraatz
- Elytra slightly longer than prothorax
..... *suravius* Biswas & Sengupta
- 3(1). Mandibles tridentate
..... *ranglicus* Biswas & Sengupta

– Mandibles bidentate 4

4 (3). Species small (3.50 mm.), front margin of clypeus with single simple tooth, antennal segment 7 slightly transverse, posterior margin of sternite 6 of male rather broadly emarginate, on each side of middle line forming a median lobe *niloticus* Erichson

– Species large (4.5 mm.). apex of median tooth of front of clypeus distinctly dentate, antennal segment 7 slightly longer than broad, median lobe of posterior margin of sternite 6 of male broad and its apex truncated 4

4 (3) Clypeal tooth broad and apical dentation more prominent and distinctly bifurcated, elytra yellow, its sutural line and base narrowly reddish, abdominal segments 1-5 yellow and 6-7 reddish, posterior margin of sternite 7 of male straight with a median small and rather pointed lobe *bali* Biswas & Sengupta

– Clypeal tooth narrow and small and its apical dentate slightly bifurcated, elytra yellowish, abdominal segments 1-7 brownish, posterior margin of sternite 7 of male broadly emarginate on each side of median lobe
..... *teestaius* Biswas & Sengupta

37. *Bledius (Pucerus) ranglicus* Biswas & Sengupta

1989. *Bledius (Pucerus) ranglicus* Biswas & Sengupta, *Rec. Zool. Surv. India*, Occasional paper No. 122 : 13-14, figs. 56-60.

Material examined : Holotype ♂, India : Sikkim, Rangli, 23. xii. 1975, G. K. Srivastava Coll.; Paratype ♀ collection data same as holotype.

Distribution : India : Sikkim.

Other Indian State : Nil

Elsewhere : Nil.

38. *Bledius (Pucerus) teestaius* Biswas & Sengupta

1989. *Bledius (Puerus) Teestaius* Biswas & Senguta, *Rec. Zool. Surv. India*, occasional paper No. 122, 16-17, figs. 79-83.

Material examined : Holotype ♂, India : Sikkim, Rangpo, Teesta River Bed, 26. xii. 1980, D. N. Biswas Coll.; Paratypes, 13exs., Collection data same as holotype.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Nil.

39. *Bledius (Pucerus) bali* Biswas & Sengupta

1989. *Bledius (Pucerus) bali* Biswas & Sengupta, *Rec. Zool. Surv. India*, Occasional paper No. 122, : 17-18, figs. 84-87.

Material examined : Holotype ♂, India : Sikkim, Rangpo Teesta River Bed, 19. xii. 1980, D. N. Biswas Coll., Paratypes, 11 exs., Collection data same as holotype.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Nil.

40. *Bledius (Pucerus) suravius* Biswas & Sengupta

1989. *Bledius (Pucerus) suravius* Biswas & sengupta, *Rec. Zool. Surv. India*, occasional paper No. 122, : 10-11, figs. 42-44 and 77-78.

Material examined : Paratype ♀, India : Sikkim, Rangpo, Teesta River Bed, 19. xii. 1980, D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian States : West Bengal and Tamil Nadu

Elsewhere : Nil.

41. *Bledius (Pucerus) niloticus* Erichson

1939-40. *Bledius (Pucerus) niloticus* Erichson, *Gen. Spec. staph.*, : 776.

1989. *Bledius (Pucerus) niloticus* : Biswas & Sengupta, *Rec. Zool. Surv. India*, occasional paper No. 122, 16, fig. 70-74.

Material examined : 3 exs., India : Sikkim, Rangpo, Teesta River Bed, 3 exs., 19.xii. 1980, D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian States : West Bengal, Bihar and Punjab.

Elsewhere : Nil.

42. *Bledius (Pucerus) gracilicornis* Kraatz

1859. *Bledius (Pucerus) gracilicornis* Kraatz, *Arch. Naturgesch.*, 25 (1) : 169.

1930. *Bledius (Pucerus) gracilicornis* : Cameron, *Fauna British India*, 1 : 276-277.

1989. *Bledius (Pucerus) gracilicornis* : Biswas & Sengupta, *Rec. Zool. surv. India*, Occ. Paper No. 122 : 10, figs. 29, 38 and 41.

Material examined : 2 exs., India : Sikkim, Jorethang, 2 exs., 5. v. 1994, S. k. Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian State : Tamil Nadu.

Elsewhere : Sri Lanka.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Osorius* Latreille

1829. *Osorius* Latreille, *Regne Anim.*, 4 : 438.

43. *Osorius calvus* Eppelsheim

1895. *Osorius calvus* Eppelsheim, *D.E.Z.*, 406.

1930. *Osorius calvus* : Cameron, *Fauna British India*. 1 : 295-296.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Nil.

Subfamily STENINAE

Key to the genera of the subfamily STENINAE

1. Eyes very large, occupying the entire side of the head, temples wanting; seventh abdominal segment with a short spine or short bunch of hairs on each side *Stenus* Latreille

- Eyes not occupying the entire side of the head, temples present; seventh abdominal segments with a tuft of long fine hairs on each side ..
..... *Dianous* Samouelle

Genus *Stenus* Latreille

1796. *Stenus* Latreille, *Prec. Car. gen. Ins.*, : 77

Key to the subgenera and species

1. Abdomen not, or very indistinctly, margined on 1st, 5th and 6th segments only
..... *Hypostenus* Rey 2
- Abdomen completely and distinctly margined
Mesostenus Rey (*virgula* Fauvel)
- 2(1). Elytra dark, with yellow or orange markings 3
- Elytra unicolorous 5
- 3(2). Elytra each with a large round spot
..... *rufoplagiatus* Champion.
- Elytra other wise marked 4
- 4(3). First three segments of antennae reddish testaceous, the rest infusate; posterior femora infusate *ventricosus* Fauvel
- Antennae reddish-testaceous, the club infusate, femora testaceous
..... *rajpurianus* Cameron
- 5(2). Base of the antennae black or pitchy
..... *decanus* Biswas
- Base of the antennae testaceous or reddish testaceous 6
- 6(5). Antennae short, the penultimate segments not or but little longer than broad
..... *birmanus* Fauvel
- Antennae long and slender, the penultimate segments much longer than broad 7
- 7(6). Head uniformly punctured all over
..... *wasmanni* Fauvel
- Head with more or less distinct shining median space or line 8
- 8(7). Larger (6 to 7 mm). Apex of femora broadly infusate *kurseonginus* Bernhauer

- Smaller (5 to 6 mm). Legs entirely testaceous 9

9(8). Very narrow, slender species, the abdomen not very closely punctured
..... *barbatus* Neit.

- More robust, abdomen closely punctured 10

10(9). More closely and finely punctured species
..... *millepunctus* Fauvel

- Less closely and less finely punctured species
..... *sikkimensis*, sp. nov.

44. *Stenus (Hypostenus) birmanus* Fauvel

1895. *Stenus birmanus* Fauvel, *Rev. d. Ent.*, **14** : 213.

1930. *Stenus (Hypostenus) birmanus* : Cameron, *Fauna British India*, **1** : 363-364.

Material examined : 1ex., India : Sikkim, Singtam, 1ex., 28.ii. 1979, S. K. Saha Coll.

Distribution : India : Sikkim.

Other Indian States : Nil.

Elsewhere : Myanmar.

Remark : In the present study this species is recorded for the first time from India (Sikkim).

45. *Stenus (Hypostenus) kurseonginus*

Bernhauer

1911. *Stenus (Hypostenus) kurseonginus* Bernhauer, *Ent.Blatt.*, **7** : 58.

1930. *Stenus (Hypostenus) kurseonginus* : Cameron, *Fauna British India*, **1** : 362-363.

Material examined : 2exs., India : Sikkim, Singtam, 2 exs., 28. ii. 1979, S. K. Saha Coll.

Distribution : India : Sikkim.

Other Indian States : West Bengal and Uttar Pradesh.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

46. *Stenus (Hypostenus) wasmanni* Fauvel

1895. *Stenus wasmanni* Fauvel, *Rev. d'Ent.*, **14** : 214

1930. *Stenus (Hypostenus) wasmanni*: Cameron, *Fauna British India*, **1** : 376-377.

Material examined : 1ex., India: Sikkim, Chakung, 1ex., 19. xii. 1994, D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian States : West Bengal, Himachal Pradesh, Uttar Pradesh and Nagaland.

Elsewhere : Myanmar.

Remark : In the present study this species is recorded for the first time from Sikkim.

47. *Stenus (Hypostenus) rajpurianus*

Cameron

1930. *Stenus (Hypostenus)rajpurianus* Cameron, *Fauna British India*, **1** : 353-354.

Material examined : 1ex., India : Sikkim, Singtam, 1ex., 28. ii. 1979, S. K. Saha Coll.

Distribution : India : Sikkim.

Other Indian States : Uttar Pradesh and Bihar.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

48. *Stenus (Hypostenus) barbatus* Niet.

1857. *Stenus barbatus* Niet., *Ann.Mag. Nat. Hist.*, **19** (2) 381.

1902. *Stenus arachnipes* Bernhauer, *D. E. Z.*, **42**.

1930. *Stenus (Hypostenus) barbatus* : Cameron, *Fauna British India*, **1** : 373-374.

Material examined : 57exs., India : Sikkim, Singtam, 53exs., 28.ii.1979, S.K. Saha Coll., Rangpo, Teesta Bazar, 4exs., 23.ii.1979, S.K. Saha Coll.

Distribution : India : Sikkim.

Other Indian State : West Bengal.

Elsewhere : Sri Lanka

Remark : In the present study this species is recorded for the first time from Sikkim.

49. *Stenus (Hypostenus) ventricosus* Fauvel1904. *Stenus ventricosus* Fauvel, *Rev. d. 'Ent.*, 33 : 48.1930. *Stenus (Hypostenus) ventricosus* : Cameron, *Fauna British India*, 1 : 354.

Material examined : 2 exs., India : Sikkim, Ranipool 1 ex., 11.xii.1994, D. N. Biswas Coll., Soreng, 1 ex., 20.xii.1994, D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Nil.

Remarks : In the present study this species is recorded for the first time from Sikkim. In fauna (1930) Cameron mentioned locality Dugeli, Khandesh.

50. *Stenus (Hypostenus) decanus* Biswas1986. *Stenus (Hypostenus) decanus* Biswas, *Rec. Zool. Surv. India*, 84 (1-4) : 122-123.

Material examined : 3 exs., India : Sikkim, Rangpo River Bed, 1 ex., 25.ii.1979, S. K. Saha Coll., Jorethang, 1 ex., 19.xii.1994, D. N. Biswas Coll., Soreng, 1 ex., 20.xii.1994, D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian State : Kerala.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

51. *Stenus (Hypostenus) rufoplagiatus* (Champion)1924. *Hypostenus rufoplagiatus* Champion, *Entomologist Monthly Magazine*, 60 : 160.1930. *Stenus (Hypostenus) rufoplagiatus* : Cameron, *Fauna British India*, 1 : 355-356.

Material examined : 3exs., India : Sikkim, Singtam, 3exs., 28. ii. 1979, S. K. Saha Coll.

Distribution : India : Sikkim.

Other Indian State : Uttar Pradesh.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

52. *Stenus (Hypostenus) millepunctus* Fauvel1904. *Stenus millepunctus* Fauvel, *Rev. d. 'Ent.*, 23 : 49.1930. *Stenus (Hypostenus) millepunctus* : Cameron, *Fauna British India*, 1 : 368-369.

Material examined : 4exs., India : Sikkim, Rangpo, 4 exs., 14. xii. 1994, D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian State : Tamil Nadu.

Elsewhere : Nil

Remark : In the present study this species is recorded for the first time from Sikkim.

53. *Stenus (Hypostenus) sikkimensis*, sp. nov.

General appearance rather broad, elongate, red, shining. Antennae, palpi and legs pale testaceous.

Head a little broader than the base of the elytra, completely excavated, without median elevation, rather coarsely and closely punctured except the vertex impunctate. Antennae long and slender, all the segments distinctly longer than broad. Thorax narrow, cylindrical, longer than broad, scarcely widened at the middle, along the middle with a very fine impunctate line, the rest of the surface more closely and rather more coarsely punctured than the head. Elytra as long as broad and at the suture as long as the thorax, puncturation same as on the thorax. Abdomen cylindrical, all the segments more closely and coarsely punctured as on the head, segment 6 more finely and more sparingly. The whole insect covered with a short, white, decumbent pubescence. First segment of posterior tarsi longer than the four following together. Posterior margin of sternite 6 of male deeply, moderately narrowly, triangularly excised, the sides not bordered. Posterior margin of sternite 5 of male deeply and broadly circularly impressed, the impressed area glabrous and before the impressed area densely and finely punctured, the fundus more finely and thickly pubescent, the margin subcarinate. Posterior margin of sternite 4 of male slightly and narrowly impressed nearly

half of its length. Posterior margin of sternites 3 and 2 of male slightly impressed.

Measurements of holotype : Total length 4.25 mm; width of head across the eyes 0.90 mm; length of thorax 0.80 mm and width of thorax 0.65 mm.; length of elytra 1.00 mm and width of elytra 1.00 mm.

Holotype : India : Sikkim, Gangtok, 1704 m, 24. iv. 1976, A. R. Bhaumik and Party Coll.; Paratype lex., Collection data same as holotype (Specimens are deposited in the Zoological Survey of India, Kolkata).

Distribution : India : Sikkim.

Discussion : This species is closely related to *Stenus (Hypostenus) andrewsi* Fauvel but can be easily separated from the latter species by its colour being red, antennae pale yellow, puncturation of head less coarser and thorax distinctly coarser than that of head, puncturation of elytra as on the thorax. Posterior margin of sternite 5 of male impressed circularly and glabrous. Posterior margin of sternite 4 of male slightly and narrowly impressed nearly the half of its length.

54. *Stenus (Mesostenus) virgula* Fauvel

1895. *Stenus virgula* Fauvel, *Rev. d.'Ent.*, 14 : 210.

1930. *Stenus (Mesostenus) virgula* : Cameron, *Fauna British India*, 1 : 394-395.

Material examined : lex., India : Sikkim, Singtam, lex., 19. ii. 1979, S. K. Saha Coll.

Distribution : India : Sikkim.

Other Indian States : West Bengal and Uttar Pradesh.

Elsewhere : Myanmar.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Dianous* Samouelle

1819. *Dianous* Samouelle, *Ent. Comp.*, : 173.

55. *Dianous obliquenotatus* Champion.

1921. *Dianous obliquenotatus* Champion, *Entomologist Monthly Mag.*, 57 : 183.

1930. *Dianous obliquenotatus* : Cameron, *Fauna British India*, 1 : 414.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Nil.

Remark : It was early recorded from Sikkim.

Subfamily EUAESTHETINAE

Genus *Stenaesthetus* Sharp

1874. *Stenaesthetus* Sharp, *Trans. ent. Soc. Lond.*, : 79.

56. *Stenaesthetus sunioides* Sharp

1874. *Stenaesthetus sunioides* Sharp, *Trans. ent. soc. Lond.*, : 80.

1930. *Stenaesthetus sunioides* : Cameron, *Fauna British India*, 1 : 446.

Material examined : 3exs., India : Sikkim, Gangtok, 1 ex., 13.iv.1983, B.N. Das & Party Coll., North Sikkim, Phodong, 1ex., 24.iv.1994, S. K. Saha Coll., Renok, 1 ex., 10.iii.1979, S. K. Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian States : Uttar Pradesh, West Bengal, Tripura and Meghalaya.

Elsewhere : Sri Lanka and Sierra Leone.

Remark : In the present study this species is recorded for the first time from Sikkim.

Subfamily PAEDERINAE

Key to the tribes and genera of the Subfamily PAEDERINAE

1. 4th segment of the maxillary palpi large and more or less fusiform or securiform
..... *Pinophilini* (*Palaminus* Erichson)

- 4th segment of the maxillary palpi small, subulate or papilose *Paederini*
- 2(1). Antennae strongly geniculate
..... *Cryptobium* Mannerheim
- Antennae not geniculate 3
- 3(2). Fourth tarsal segment bilobed 4
- Fourth tarsal segment simple 7
- 4(3). Fourth segment of maxillary palpi short, broad, and wart like
..... *Paederus* Fabricius
- Fourth segment of maxillary palpi very slender, subulate 5
- 5(4). Labrum emarginate in the middle, the fundus with two small teeth. Head oblong
..... *Astenus* Stephens
- Labrum produced in the middle 6
- 6(5). The produced part of the labrum with two long teeth *Dibelonetes* Sahlberg
- The produced part of the labrum with two short teeth *Stilicopsis* Sachse
- 7 (3). Neck very slender 8
- Neck at least a fourth as broad as the base of the head 9
- 8(7). Labrum 4-dentate; tongue corneous, trifid
..... *Scopaeus* Erichson
- Labrum 2-dentate; tongue membranous, bilobed
..... *Stilicus* Latreille
- 9(7). Eyes very large, temples scarcely indicated. Labrum feebly emarginate in front, endentate
..... *Lobochilus* Bernhauer
- Eyes normal, temples well-developed 10
- 10(9). First segment of the posterior tarsi not longer than the second; thorax oblong
..... *Lathrobium* Gravenhorst
- First segment of the posterior tarsi longer than the second; thorax transverse 11
- 11(10). 5th tarsal segment inserted near the base of the 4th segment, and overlying it that the latter appears bilobed when seen from above
..... *Acanthoglossa* Kraatz

- 5th tarsal segment normally inserted at the apex of 4th segment 12
- 12(11). Labrum bidentate in the middle or at least trisinate; prosternal epimera present, the stigma concealed. Eyes shorter than the temples *Medon* Stephens
- Labrum unidentate in the middle; prosternal epimera absent, the stigma exposed 13
- 13(12). Prosternal process very short; abdomen not keeled at the middle of the sternite
..... *Lithocharis* Boised
- Prosternal process moderately long; abdomen distinctly keeled at the middle of the sternite
..... *Charichirus* Sharp

Genus *Palaminus* Erichson

1839-40. *Palaminus* Erichson, *Gen. Spec. Staph.*, : 681.

Key to the species of the genus *Palaminus*

- 1. Elytra $1\frac{1}{2}$ times as long as thorax and narrower
..... *andrewesi* Cameron
- Elytra twice as long as thorax and broader .
..... 2
- 2 (1). Larger (4 to 5 mm). Elytra more closely and coarsely punctured *indicus* Kraatz
- Smaller (3 mm). Elytra less closely punctured
..... *monticola* Cameron

57. *Palaminus monticola* Cameron

1931. *Palaminus monticola* Cameron, *Fauna British India*, 2 : 24.

Material examined : 3 exs., India : Sikkim, Chakung, 2 exs., 19.xii.1994, D. N. Biswas Coll., Soreng, 1 ex., 20.xii.1994, D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian State : West Bengal.

Elsewhere : Sri Lanka.

Remark : In the present study this species is recorded for the first time from Sikkim.

58. *Palaminus indicus* Kraatz

1858. *Palaminus indicus* Kraatz, *Arch. Naturgesch.*, 25 (1): 153.

1931. *Palaminus indicus* Cameron, *Fauna British India*, 2 : 24.

Material examined : 1ex., India : Sikkim, Soreng, 1ex., 20.xii.1994, D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian States : Tamil Nadu and West Bengal.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

59. *Palaminus andrewesi* Cameron

1931. *Palaminus andrewesi* Cameron, *Fauna British India*, 2 : 24.

Material examined : 2exs., India : Sikkim, Rangpo, 2 exs., 24.ii.1979, S. K. Saha and Party Coll.

Distribution : India : Sikkim.

Other Indian State : Tamil Nadu.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Paederus* Fabricius

1775. *Paederus* Fabricius *Syst. Ent.*, : 268.

Key to the species of the genus *Paederus*

1. Legs (including the coxae) dark; 1st visible segment of abdomen black
.....*nigricornis* Bernhauer
- Legs (in part at least) testaceous; 1st visible segment of abdomen red *fuscipes* Curtis

60. *Paederus fuscipes* Curtis

1823-40. *Paederus fuscipes* Curtis, *Ent. Brit.*, 3 : 108.

1839-40. *Paederus aestuans* Erichson, *Gen. Spec. Staph.*, 655.

1843. *Paederus angolensis* Erichson, *Arch. Naturgesch.*, 9 (1) : 222.

1931. *Paederus fuscipes* : Cameron, *Fauna British India*, 2 : 40-41.

Material examined : 8 exs., India : Sikkim, Soreng, 1ex., 20.xii.1994, D. N. Biswas Coll., Rangpo, Teesta River bed, 2 exs., 28.v.1997, S. Biswas Coll., Jorethang, 3 exs. 2.v.1994, S. K. Saha and Party Coll., Jorethang, 2 exs., 4.v.1994, S. K. Saha and Party Coll.

Distribution : India : Sikkim.

Other Indian States : Bihar, Karnataka, Madhya Pradesh, West Bengal, Maghalaya and Tripura.

Elsewhere : Sri Lanka and also rest of the World except America.

Remark : In the present study this species is recorded for the first time from Sikkim.

61. *Paederus nigricornis* Bernhauer

1911. *Paederus nigricornis* Bernhauer, *Ent. Blatt.*, 7 : 61.

1931. *Paederus nigricornis* : Cameron, *Fauna British India*, 2 : 47-49.

Material examined : 3 exs., India : Sikkim, Naya Bazar, 1ex., 11.iii.1989, Dr. Y. Chaturvedi Coll., Ranipool Power Rest House, 1ex., 26.v.1997, S. Biswas Coll., Rangpo, 1ex., 23.xii.1975, G. K. Srivastava Coll.

Distribution : India : Sikkim.

Other Indian States : Himachal Pradesh, Uttar Pradesh and West Bengal.

Elsewhere : Nepal.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Dibelonetes* Sahlberg

1844. *Dibelonetes* Sahlberg, *Acta Soc. Fenn.*, 2 : 791.

62. *Dibelonetes sikkimensis* Biswas & Sengupta

1980. *Dibelonetes sikkimensis* Biswas & Sengupta, *Oriental Insects*, **14** (2) : 253-262.

Material examined : 2exs., India : Sikkim, Soreng, 2 exs., 20. xii. 1994, D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian State : West Bengal.

Elsewhere : Nil.

Genus *Astenus* Stephenson

1832. *Astenus* Stephenson, III *Brit. Ent. Mand.*, **5** : 275.

Key to the species of the genus *Astenus*

1. Antennal segment 11 about 4 times longer than segment 10 *asitus* Biswas & Sengupta
 - Antennal segment 11 slightly longer than segment 10 2
- 2 (1). Species dark, entirely or in greater part black or brown *bispinus* Motschulsky
 - Species entirely or in greater part reddish-testaceous 3
- 3 (2). Elytra with the suture very narrowly blackish in front and then bulging in the middle *sikkimensis*, sp. nov.
 - Elytra otherwise marked or concolorous 4
- 4 (3). Sides of the elytra with black setae either outstanding or decumbent *gracilentus* Fauvel
 - Sides of the elytra without black setae 5
- 5 (4). Larger (3.60 mm) and distinctly narrower, antennal segment 3 distinctly longer than segment 2, lateral margins of prothorax with 4 long black setae, abdominal segments 5-7 completely black *jhopus* Biswas & Sengupta

Smaller (3 mm) and slightly narrower, antennal segment 3 slightly longer than segment 2, lateral margins of prothorax with 5 long black setae, abdominal segment 7 only completely black .
..... *indicus* (Kraatz)

63. *Astenus bispinus* (Motschulsky)

1858. *Sunius bispinus* Motschulsky, *Bull. Mosc.*, **31** (2) : 636.

1859. *Sunius major* Kraatz, *Arch. Naturgesch.*, **25** (1) : 146.

1931. *Astenus bispinus* : Cameron, *Fauna British India*, **2** : 70.

Material examined : 1ex., India : Sikkim, Soreng, 1ex., 20. xii. 1994, D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian State : Tamil Nadu.

Elsewhere : Sri Lanka, Myanmar, Sumatra and Annam.

Remark : In the present study this species is recorded for the first time from Sikkim.

64. *Astenus gracilentus* Fauvel

1879-80. *Astenus gracilentus* Fauvel, *Ann. Mus. Civ. Gen.*, **15** : 83.

1931. *Astenus gracilentus* : Cameron, *Fauna British India*, **2** : 84-85.

Material examined : 4 exs., India : Sikkim, Soreng, 4 exs., 20. xii. 1994, D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian States : Meghalaya, Tamil Nadu, Uttar Pradesh, West Bengal and Tripura.

Elsewhere : Bangladesh and Singapore.

Remark : In the present study this species is recorded for the first time from Sikkim.

65. *Astenus sikkimensis*, sp. nov.

General appearance rather narrow, elongate, shining, reddish-testaceous, antennae, legs yellowish, body covered with dense gray pubescence mixed with some erect black setae.

Head longer than broad, vertex distinctly convex, postocular region rather straight and posterior angles briefly rounded, dorsal surface of head covered with reticulate umblicate punctures. Eyes moderately large. Antennae slender, but

shorter than head and thorax combined. Thorax oval, longer than broad and narrower than head, anterior angles broadly rounded and slightly narrowed posteriorly, the lateral with two long black setae, sculpture on pronotum similar as on head. Elytra slightly longer and broader than thorax, covered with densely and coarsely setiferous punctures. Abdomen parallel sided, densely and finely punctured.

Holotype : ♂, India : Sikkim, Jorethang, near the Jorethang Bridge, 20.xii.1994, D. N. Biswas Coll. (Material is deposited in the Zoological Survey of India, Kolkata).

Measurements of Holotype : Total length 3.60 mm; width of head across the eyes 0.80; length of thorax 0.65 mm. and width of thorax 0.50 mm.; length of elytra 0.70 mm. and width of elytra 0.70 mm.

Distribution : India : Sikkim.

Discussion : This species is closely related to *Astenus taprobanus* Cameron but can be easily separated from the latter species by its elytra being slightly longer than thorax and the suture of the elytra very narrowly blackish in front and then bulging in the middle; the abdominal segment 5 (visible) black and its posterior margin narrowly yellowish; posterior margin of sternite 6 of male with deep narrow, acute triangular excision, the apex rounded; posterior margin of sternite 5 of male with broad shallow emargination closely set with long black pectination, in front of emargination with a narrow impression extending nearly the whole length of the segment and glabrous.

66. *Astenus asitus* Biswas & Sengupta

1983. *Astenus asitus* Biswas & Sengupta, *Bull. Zool. Surv. India*, 5 (1) : 1-3.

Material examined : Holotype : ♂, India : Sikkim, Rangpo, 23.ii.1979, D. N. Biswas Coll., Paratypes, 2 ♂♂, 1 ♀, collection date same as holotype.

Distribution : India : Sikkim.

Other Indian State : West Bengal.

Elsewhere : Nil.

67. *Astenus jhopus* Biswas & Sengupta

1983. *Astenus jhopus* Biswas & Sengupta, *Bull. Zool. Surv. India*, 5 (1) : 5.

Material examined : Holotype : ♂, India : Sikkim, Mansong, 33 km. from Rangpo, 24.ii.1979, D.N. Biswas coll., Paratypes : 15 exs., 1 ♂, 2 ♀♀, collection data same as holotype, 6 ♂, 6 ♀♀, Sikkim, Singtam, 12 km. from Rangpo, 24.ii.1979, D.N. Biswas Coll., Ex. Beating the bush.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Nil.

68. *Astenus indicus* (Kraatz)

1859. *Sunius indicus* Kraatz, *Arch. Naturgesch.*, 25 (1) : 148.

1874. *Sunius oculatus* Sharp, *Trans. ent. Soc. Lond.*, : 72.

1864. *Sunius pallidulus* Wollaston, *A Catalogue of the Coleopterous Insects from the Canaries in the Collection of the British Museum*, 8 : 648.

1931. *Astenus indicus* : Cameron, *Fauna British India*, 2 : 88.

1983. *Astenus indicus* : Biswas & Sengupta, *Bull. Zool. Surv. India*, 5 (1) : 8-9.

Material examined : 3 exs., India : Sikkim, Rangpo, 1 ex., 23.ii.1979, D.N. Biswas Coll., Mansong, 35 km. from Rangpo, 24.ii.1979, 1 ex., D.K. Biswas Coll., Phungla, 25 km. from Rangpo, 1 ex. 26.ii.1979, D.N. Biswas. Coll.

Distribution : India : Sikkim.

Other Indian States : West Bengal, Uttar Pradesh and Maharashtra.

Elsewhere : Sri Lanka, Myanmar, widely distributed in the oriental Region, also in the Mediterranean, Canaries, East and West Africa.

Genus *Stilicopsis* Sachse

1852. *Stilicopsis* Sachse, *Stett. Ent. Zeit.*, 22 : 144.

Key to the species of the genus *Stilicopsis*

1. Elytra reddish-yellow, each with a triangular black spot at the lateral border extending obliquely towards the suture and with a common spot on the latter behind, black, often the apex of the lateral spot joins the suture *trinotata* (Kraatz)
- Elytra more shining, yellow with obscure brownish discal mark on each *Pallida* Cameron

69. *Stilicopsis trinotata* (Kraatz)

1858. *Sunius trinotata* Kraatz, *Arch. Naturgesch.*, **25** (1) : 149.

1931. *Stilicopsis trinotata* : Cameron, *Fauna British India*, **2** : 95-96.

Material examined : 3exs., Sikkim, Singtam, 3exs., 10.xii.1994, D.N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian States : Tamil Nadu and Tripura.

Elsewhere : Sri Lanka.

Remark : In the present study this species is recorded for the first time from Sikkim.

70. *Stilicopsis pallida* Cameron

1931. *Stilicopsis Pallida* Cameron, *Fauna British India*, **2** : 98.

Material examined : 1ex., India : Sikkim, Singtam, 1ex., 10.xii.1994, D.N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian States : Uttar Pradesh, West Bengal and Tripura.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Stilicus* Latreille

1825. *Stilicus* Latreille, *Encyc. Meth.*, **10** : 495.

Key to species of the genus *Stilicus*

1. Elytra with larger and smaller punctures 2
- Elytra uniformly punctures 3
- 2 (1). Larger (4.3 mm.). Elytra in great part dark *rufescens* sharp
- Smaller (2.4 mm.). Elytra brownish- yellow *parvus* Cameron
- 3 (1). Elytra unicolorous *gracilis* Eppelsheim
- Elytra bicolorous *ceylanensis* Kraatz

71. *Stilicus rufescens* Sharp

1874. *Stilicus rufescens* Sharp, *Trans. Ent. Soc. Lond.*, : 61.

1885. *Stilicus rubellus* Eppelsheim, *D.E.Z.*, : 121.

1931. *Stilicus rufescens* : Cameron, *Fauna British India*, **2** : 108-109.

Material examined : 1ex., India : Sikkim, Gangtok 1ex., 7. iii. 1779, S. K. Saha Coll.

Distribution : India : Sikkim.

Other Indian States : Meghalaya, Tamil Nadu, Tripura and Uttar Pradesh.

Elsewhere : Sri Lanka, Myanmar, Japan, West and East Coasts of Africa.

Remark : In the present study this species is recorded for the first time from Sikkim.

72. *Stilicus ceylanensis* Kraatz

1859. *Stilicus ceylanensis* Kraatz, *Arch. Naturgesch.*, **25**(1) : 126.

1931. *Stilicus ceylanensis* : Cameron, *Fauna British India*, **2** : 105-106.

Material examined : 1ex., India : Sikkim, Rhenok, 1ex., 18.iii.1979, S.K. Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian States : Tamil Nadu, Uttar Pradesh and Nagaland.

Elsewhere : Sri Lanka.

Remark : In the present study this species is recorded for the first time from Sikkim.

74. *Stilicus gracilis* Eppelsheim

1895. *Stiliculus gracilis* Eppelsheim, *W.E.Z.*, 14 : 63.
 1924. *Stiliculus praelongus* Comeron, *Trans. Ent. Soc. Lond.*,
 : 182.
 1931. *Stiliculus gracilis* : Cameron, *Fauna British India*, 2 :
 104-105.

Material examined : lex., India : North Sikkim, Phedong, 1 ex., 24.iv.1994, S. K. Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian State : Himachal Pradesh.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Acanthoglossa* Kraatz

1859. *Acanthoglossa* Kraatz, *Arch. Naturgesch.*, 25 (1) :
144.

75. *Acanthoglossa testaceipennis* Kraatz

1859. *Acanthoglossa testaceipennis* Kraatz, *Arch. Naturgesch.*, **25** (1) : 145.
1931. *Acanthoglossa testaceipennis* : Cameron, *Fauna British India*, **2** : 121-122.

Material examined : 48 exs., India : Sikkim, Rangpo, 31 exs., 19.iv.1976, A. R. Bhaumik coll., Rangpo River Bed, 1 ex., 19.xii.1980, S. K. Saha & Party Coll., Mamring, 10 exs., 20.xii.1980, S. K. Saha & D. N. Biswas Coll., Soreng, 1 ex., 10.xii.1994, D. N. Biswas Coll., Chakung, 1 ex., 19.xii.1994, D. N. Biswas Coll., Damthong, 2 exs., 4.v.1994, S. K. Saha Coll., Gangtok, 2 exs., 7.iii.1979, S. K. Saha Coll.

Distribution : India : Sikkim.

Other Indian States : Tamil Nadu, Uttar Pradesh, Meghalaya, West Bengal and Tripura.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Medon* Stephenson

1832. *Medon* Stephenson, III. *Brit. Ent. Mand.*, 5 : 273.

Key to the species of the genus *Medon*

1. Sculpture of the thorax consisting of asperate punctures of granules 2
- Sculpture of the thorax consisting of simple or umbilicate punctures 3
- 2 (1). Thorax and elytra ferruginous red
..... *rangpoensis*, sp. nov.
- Thorax black or pitchy *birmanus* Fauvel
- 3 (1). Sides of thorax before the middle with distinct emergination *planatus* Bernhauer
- Sides of thorax straight
..... *breviusculus* Kraatz

76. *Medon birmanus* Fauvel

1895. *Medon birmanus* Fauvel, *Rev. d. 'Ent.*, **14** : 228.
1924. *Medon asperulus* Cameron, *Trans. Ent. Soc. Lond.*,
: 186.
1931. *Medon birmanus* : Cameron, *Fauna British India*, **2**
: 135-136.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian State : Uttar Pradesh.

Elsewhere : Myanmar.

77. *Medon brevisculus* (Kraatz)

1874. *Lithocharis brevisculus* Kraatz, *Arch. Naturgesch.*,
25 (1) : 137.
1931. *Medon brevisculus* : Cameron, *Fauna British India*,
2 : 149.

Material examined : lex., India : Sikkim, Chandmari Basti, Nathula, lex., 17.xii.1975, G. K. Srivastava Coll.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Sri Lanka.

Remark : In the present study this species is recorded for the first time from India (Sikkim).

78. *Medon planatus* Bernhauer

1916. *Medon planatus* Bernhauer, *W.E.Z.*, 66 : 419.

1931. *Medon planatus* : Cameron, *Fauna British India*, 2 : 142-143.

Material examined : 7 exs., India : Sikkim, Rangli, 5 exs., 23.xii.1975, G. K. Srivastava Coll., Maya Bazar, 2 exs., 5.1.1976, G. K. Srivastava Coll.

Distribution : India : Sikkim.

Other Indian States : Bihar, Nagaland and West Bengal.

Elsewhere : Philippines.

Remark : In the present study this species is recorded for the first time from Sikkim.

79. *Medon rangpoensis*, sp. nov.

General appearance rather robust, subconvex, head reddish brown, thorax, elytra and abdomen ferruginous-red. Antennae and legs reddish-yellow. Elytra and abdomen densely pubescent.

Head as broad as long, subquadrate, eyes moderately long, the temples parallel and as long as eyes, the posterior angles rather briefly rounded, base emarginate, the whole surface very closely covered with small granules, each with a minute puncture. Antennae rather short, segment 3 distinctly longer than segment 2, segments 4-8 longer than broad, gradually decreasing in length, segments 9 and 10 as long as broad. Thorax as long as broad, sides are parallel, scarcely narrowed behind, smooth shining median line only trace before the base, ground sculpture on pronotum similar as on head. Elytra distinctly longer and slightly broader than thorax, sculpture same as on thorax. Abdomen densely and finely punctured. Posterior margin of sternite 6 of male more deeply and broadly subtriangularly excision; posterior margin of sternite 5 of male broadly emarginate, the emargination furnished with rather long and slender pectinations.

Holotype : ♂, Inida : Sikkim, Rangpo, Rangpo River bed, 19.xii.1980, D. N. Biswas Coll. (The specimen is deposited in the Zoological Survey of India, Kolkata).

Measurements of holotype : Total length 4.70 mm.; width of head across the eyes 0.80 mm.; length of thorax 0.80 mm. and width of thorax 0.85.; length of elytra 1.00 mm. and width of elytra 1.10 mm.

Distribution : India : Sikkim.

Discussion : This new species is closely related to *Medon opacellus* Fauvel and *Medon rufoferrugineus* Cameron but can be easily separated from *opacellus* by its antennal segments not transverse and posterior margin of sternites 6 and 5 of male are different and also separated from *rufoferrugineus* by its elytra distinctly longer than thorax and posterior margin of sternites 6 and 5 male are different.

Genus *Lithocharis* Boised

1835. *Lithocharis* Boised and Lacord, *Fauna Ent. Par.*, 1 : 431.

80. *Lithocharis nigriceps* Kraatz

1859. *Lithocharis nigriceps* Kraatz, *Arch. Naturgesch.*, 25 (1) : 139.

1874. *Lithocharis parviceps* Sharp, *Trans. Ent. Soc. Lond.*, : 66.

1931. *Lithocharis nigriceps* : Cameron, *Fauna British India*, 2 : 159.

Material examined : 1 ex., India : Sikkim, Mamring, 2 km. from Rangpo, 1 ex., 20.xii.1980, D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian States : Bihar, Himachal Pradesh, Uttar Pradesh, West Bengal and Tripura.

Elsewhere : Sri Lanka, Singapore, Sumatra, South China and Japan.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Lobochilus* Bernhauer

1918. *Lobochilus* Bernhauer, *Arch. Naturgesch.*, **84**(A) : 179.

1924. *Neosclerus* Cameron, *Trans. Ent. Lond.*, : 188.

81. *Lobochilus nigerrimus* Kraatz

1859. *Lobochilus nigerrimus* Kraatz, *Arch. Naturgesch.*, **25** (1) : 141.

1931. *Lobochilus nigerrimus* : Cameron, *Fauna British India*, **2** : 124-125.

Material examined : 2exs., India : Sikkim, Rangpo, Rangpo River bed, Mamring, 2exs., 24. xii. 1980, S. K. Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Sri Lanka.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Charichirus* Sharp

1889. *Charichirus* Sharp, *Ann. Mag. Nat. Hist.*, **2** (6) : 262.

82. *Charichirus chinensis* (Boh.)

1858. *Lathrobium chinensis* Boh., *Resa. Eugen.*, : 32.

1858. *Lithocharis dimidiatus* Motschulsky, *Bull. Mosc.*, **31** (2) : 645.

1859. *Lithocharis obliquus* Walker, *Ann. Mag. Nat. Hist.*, **3** (3) : 52.

1859. *Lithocharis spectabilis* Kraatz, *Arch. Naturgesch.*, **25** (1) : 135.

1931. *Charichirus chinensis* : Cameron, *Fauna British India*, **2** : 167-168.

Material examined : 1ex., India : Sikkim, Rangpo, 1ex., 19.xii.1994, D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian States : West Bengal and Tripura.

Elsewhere : Sri Lanka and Japan.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Scopaeus* Erichson

1839-40. *Scopaeus* Erichson, *Gen. Spec. Staph.*, : 604.

Key to the species of the genus
Scopaeus Erichson

1. Head subquadrate, the posterior angles briefly rounded, sometimes a little widened behind.. 2
- Head suborbicular, the posterior angles broadly rounded, never widened behind 5
- 2 (1). Fore-parts very shining; extremely sparingly punctured *nitidulus* Motschulsky
- Fore-parts less shining; much more closely punctured 3
- 3 (2). Minute species (2 mm. or less)..... 4
- Larger species *germanus* Cameron.
- 4 (3). Head below deeply, not closely punctured; elytra longer *puncticeps* Kraatz
- Head below finely and closely punctured; elytra shorter *micrus* Kraatz
- 5 (1). Elytra black, the posterior margin narrowly yellow *gangtokensis*, sp. nov.
- Elytra reddish-yellow; obscurely infuscate about the scutellum *humilis* Cameron

83. *Scopaeus germanus* Cameron

1931. *Scopaeus germanus* Cameron, *Fauna British India*, **2** : 179-180.

Material examined : 4exs., India : Sikkim, Rangpo River bed, 4exs., 26. xii. 1980, S. K. Saha & D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian States : Uttar Pradesh and West Bengal.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

84. *Scopaeus puncticeps* Kraatz

1859. *Scopaeus puncticeps* Kraatz, *Arch. Naturgesch.*, **25** (1) : 132.

1931. *Scopaeus puncticeps* : Cameron, *Fauna British India*, 2 : 182-183.

Material examined : 7exs., India : Sikkim, Rangpo River Bed, 7exs., 19. xii. 1980, S. K. Saha & D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian States : Nil.

Elsewhere : Singapore and Malay Peninsula.

Remark : Cameron (1931) locality data mentioned only India. May be first time recorded from Sikkim.

85. *Scopaeus micrus* Kraatz

1859. *Scopaeus micrus* Kraatz, *Arch. Naturgesch.*, 25 (1) : 132.

1931. *Scopaeus micrus* : Cameron, *Fauna British India*, 2 : 183.

Material examined : 2 exs., India : Sikkim, Rangpo River Bed, Mamring, 2 exs., 20.xii.1980, S. K. Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian States : Nil.

Elsewhere : Sri Lanka.

Remark : In the present study this species is recorded for the first time from India (Sikkim).

86. *Scopaeus humilis* Cameron

1931. *Scopaeus humilis* Cameron, *Fauna British India*, 2 : 196-197.

Material examined : 11 exs., India : Sikkim, Rangpo River Bed, 11 exs., 19.xii.1980, S. K. Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian State : Uttar Pradesh.

Elsewhere : Malay Peninsula.

Remark : In the present study this species is recorded for the first time from Sikkim.

87. *Scopaeus nitidulus* Motschulsky

1858. *Scopaeus nitidulus* Motschulsky, *Bull. Mosc.*, 31 (2) : 643.

1859. *Scopaeus subfasciatus* Kraatz, *Arch. Naturgesch.*, 25 (1) : 129.

1931. *Scopaeus nitidulus* : Cameron, *Fauna British India*, 2 : 174-175.

Material examined : 1ex., India : Sikkim, Rangpo, Teesta River Bed, 1ex., 20.xii.1980, S. K. Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian States : Nagaland and West Bengal.

Elsewhere : Sri Lanka, Malay Peninsula, Sumatra and Philippines.

Remark : In the present study this species is recorded for the first time from Sikkim.

88. *Scopaeus gangtokensis*, sp. nov.

General appearance rather short and elongate, shining, head, thorax and abdomen brown, elytra black, the posterior margin narrowly yellow. Antennae and legs reddish yellow.

Head suborbicular, slightly longer than broad, post-ocular region broadly rounded to the neck, dorsal surface of head very finely and closely punctured. Antennae elongate, all the segments slightly longer than broad. Thorax oval, before the base with short median keel and a little fovea on each side, along the middle with a very fine more shining line, the puncturation as on the head. Elytra little longer and broader than the thorax, less finely and closely punctured. Abdomen extremely finely and closely punctured.

Holotype : ♂, India : Sikkim, Gangtok, Assembly House Compound, 25.xii.1980, D. N. Biswas Coll. (Specimen is deposited in the Zoological Survey of India, Kolkata).

Measurements of Holotype : Total length 3.40 mm.; width of head across the eyes 0.60 mm.; length of thorax 0.70 mm. and width of thorax 0.55 mm.; length of elytra 0.70 mm. and width of elytra 0.60 mm.

Distribution : India : Sikkim.

Discussion : This species is closely related to

the species *Scopaeus monticola* Cameron but can be easily separated from the latter species by its posterior margin of sternite 4 of male feebly impressed along the middle; sternites 2 and 3 of male with fine transverse impressed line near the posterior margin; head, thorax and abdomen brown in colour; elytra finely punctured; body covered with dense gray pubescence.

Genus *Lathrobium* Gravenhorst

1802. *Lathrobium* Gravenhorst, *Col.Micr.Brunsv.*, : 51.

Key to the species of the genus *Lathrobium* Gravenhorst

1. Smaller (7 mm.); fore-parts blue
..... *semicaeruleum* Cameron
- Larger (11 mm.); dark brown
..... *brunneum* Cameron

89. *Lathrobium semicaeruleum* Cameron

1921. *Lathrobium semicaeruleum* Cameron, *Entomologist Monthly Mag.*, 57 : 271.

1922. *Lathrobium semicaeruleum* var. *ochreonotatum* Champion, *Entomologist Monthly Mag.*, 58 : 34.

1931. *Lathrobium semicaeruleum* Cameron, *Fauna British India*, 2 : 204- 205.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian State : Uttar Pradesh.

Elsewhere : Nil

Remark : It was early recorded from Sikkim.

90. *Lathrobium brunneum* Cameron

1931. *Lathrobium brunneum* Cameron, *Fauna British India*, 2 : 252.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian States : Nil.

Elsewhere : Nil

Remark : It was early recorded from Sikkim.

Genus *Cryptobium* Mannerheim

1839. *Cryptobium* Mannerheim, *Brach.*, : 38.

Key to the species of *Cryptobium* Mannerheim

1. Posterior third or more of the elytra sharply red *sikkimense* Cameron
- Elytra narrowly red behind, or more broadly but indeterminately reddish
..... *bernhaueri* var. *distinctum* Cameron

91. *Cryptobium sikkimense* Cameron

1931. *Cryptobium sikkimense* Cameron, *Fauna British India*, 2 : 240.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian State : West Bengal.

Elsewhere : Nil

92. *Cryptobium bernhaueri* var. *distinctum* Cameron

1924. *Cryptobium bernhaueri* Cameron, *Trans. Ent. Soc. Lond.*, 196.

1924. *Cryptobium bernhaueri* var. *distinctum* Cameron, *Trans. Ent. Soc. Lond.*, : 197.

Material examined : 1ex., India : Sikkim, Jorethang, 1ex., 20.xii.1994, D. N. Biswas Call.

Distribution : India : Sikkim.

Other Indian State : Uttar Pradesh.

Elsewhere : Nil

Remark : In the present study this species is recorded for the first time from Sikkim.

Subfamily : STAPHYLININAE

Key to the tribes and genera of the subfamily STAPHYLININAE

1. Prosternum with a transverse plate usually united to it by membrane; sometimes fused with it, but in that case the head is scarcely constricted behind, and the 3rd segment of the

labial palpi is dilated towards apex and truncate.
Antennae at base less distant from each other
than from the eye, mostly geniculate

..... **Xantholinini**

- Posternum without such plate. Antennae at base to the eyes than to each other, rarely geniculate 2

2 (1). Anterior angles of the pronotum not or scarcely extending beyond the anterior angles of the prosternum; pronotal epipleura moderately reflexed, more or less horizontal. Infra-orbital crest absent or rudimentary

..... **Staphylinini** 8

Anterior angles of the pronotum distinctly produced beyond the anterior angles of the prosternum; pronotal epipleura strongly well developed, at least behind **Quediini** 15

- 3 (1). Suture of the elytra straight, not imbricate; antennae slightly geniculate

..... **Othius** Stephens

- Suture of the elytra more or less imbricate; antennae strongly geniculate 4

4 (3). Mandibles externally with a sulcus extending from the base nearly to the apex 5

- Mandibles at the base externally with a short sulcus or small fovea only

..... **Indoscitalinus** Heller

5 (4). Frontal sulci very short, foveate 6

Frontal sulci long, more or less parallel 7

6 (5). 5th segment of the posterior tarsi as long as the four preceding together; lateral sulci distinct; anterior tarsi dilated

..... **Metolinus** Cameron

- 5th Segment of the posterior tarsi much shorter than the four preceding together; lateral sulci feeble; anterior tarsi simple

..... **Mitomorphus** Kraatz

7 (5). 5th Segment of the posterior tarsi as long as the four preceding together; posterior tibiae not spinose

..... **Pachycorynus** Motschulsky

- 5th segment of the posterior tarsi shorter than the four preceding together; posterior tibiae

spinose. Thorax with at least a dorsal row of punctures on each side

..... **Leptacinus** Erichson

Key to the subtribes of the tribe

Staphylinini

8(2). Superior lateral line of thorax deflexed and united to the inferior lateral line before reaching the anterior angle **Staphylini** 10

- Superior lateral line not deflexed, either not united with the inferior or meeting it under the anterior angle 9

9(8). Pronotal epipleura crossed by an oblique line which unites the superior and inferior lateral lines

... **Craspedomeri** (*Craspedomerus* Bernhauer)

- Pronotal epipleura without such line

..... **Xanthopygi** (*Creophilus* Mannerheim)

10(8). Antennae strongly geniculate; facies of *Tolmerinus* **Paratolmerus** Cameron

- Antennae not geniculate 11

11(10). 3rd segment of labial palpi securiform ..
..... **Staphylinus** Linnius

- 3rd segment of labial palpi cylindrical or pointed 12

12(11). All the tibiae pubescent, without spines
..... **Rhynchochilus** Sharp

- At least the posterior tibiae spinose 13

13(12). Tongue simple 14

- Tongue emarginate or more or less bilobed
..... **Stevensia** Cameron

14(13). Superior lateral line of thorax strongly deflexed, the large anterior setiferous puncture distant from it..... **Neobisnius** Ganglb.

- Superior lateral line of thorax slightly deflexed, the large anterior setiferous puncture on near it **Philonthus** Curtis.

15(2). Two or three setiferous punctures between anterior and posterior frontal punctures situated directly at median margin of eye. Dorsal rows of pronotum each with two punctures

..... **Indoquedius** Cameron

- No setiferous punctures between anterior and posterior frontal punctures. Dorsal rows of punctures on pronotum absent
..... **Quedius** Stephens.

Genus **Metolinus** Cameron

1920. *Metolinus* Cameron, *Entomologist Monthly Mag.*,
56 : 147.

93. **Metolinus leucocnemis** (Kraatz)

1859. *Metoponcus leucocnemis* Kraatz, *Arch. Naturgesch.*,
25 (1) : 107.

1859. *Metoponcus exiguus* Kraatz, l.c.p. 108.

1932. *Metolinus leucocnemis* : Cameron, *Fauna British India*,
3 : 5.

Material examined : Not examined.

Distribution : India : Sikkim.

Other Indian States : Tamil Nadu and Uttar Pradesh.

Elsewhere : Sri Lanka. Widely distributed in the Oriental region.

Genus **Leptacinus** Erichson

1839. *Leptacinus* Erichson, *Kaf.Mark Brand.*, : 429.

**Key to the species of the genus
Leptacinus Erichson**

1. Larger (5.5 to 6.5 mm.) and more robust; the lateral sulci of the front long and extending backwards beyond the end of the median ...
..... *parumpunctatus* (Gyll.)
- Smaller (3.5 to 4 mm.) and narrower; lateral sulci of the front short and ill defined, the median long, distinct *gracilis* Fauvel.

94. **Leptacinus gracilis** Fauvel

1895. *Leptacinus gracilis* Fauvel, *Rev.d.'Ent.*, 14 : 240.

1932. *Leptacinus gracilis* : Cameron, *Fauna British India*,
3 : 9-10.

Material examined : lex., India : Sikkim, Rangpo, lex., 4.xii.1995, D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian States : Tamil Nadu, Nagaland and Uttar Pradesh.

Elsewhere : Java.

Remark : In the present study this species is recorded for the first time from Sikkim.

95. **Leptacinus parumpunctatus** (Gyll.)

1827. *Staphylinus parumpunctatus* (Gyll.).

1858. *Leptacinus pallidipennis* Motschulsky, *Bull.,Mosc.*,
31 (2) : 206.

1878. *Leptacinus papuensis* Fauvel, *Ann.Mus.civ.Gen.*,
12 : 242.

1932. *Leptacinus parumpunctatus* : Cameron, *Fauna British India*, 3 : 8-9.

Material examined : lex., India : Sikkim, Sambaria, lex., 2.v.1994, S. K. Saha Coll.

Distribution : India : Sikkim.

Other Indian State : Tripura.

Elsewhere : Nil

Remark : Cameron (1932) mentioned only widely distributed throughout India.

Genus **Pachycorynus** Motschulsky

1858. *Pachycorynus* Motschulsky, *Bull.Mosc.*, 31 (3) : 204.

1859. *Holisomorphus* Kraatz, *Arch.Naturgesch.*, 25 (1)
101, tab. 2, fig. 6a-c.

96. **Pachycorynus dimidiatus** Motschulsky

1858. *Pachycorynus dimidiatus* Motschulsky, *Bull.Mosc.*,
31 (3) : 205, tab., fig. n.

1859. *Holisomorphus ceylanensis* Kraatz, *Arch.Naturgesch.*,
25 (1) : 101, tab. 2, fig. 8a-c.

1858. *Xantholinus cinctus* Walk., *Ann.Mag.Nat.Hist.*, 2 (3) :
205.

Material examined : lex., India : Sikkim, Rangpo, lex., 29.v.1997, S. Biswas Coll.

Distribution : India : Sikkim.

Other Indian States : Tamil Nadu and Uttar Pradesh.

Elsewhere : Sri Lanka.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Mitomorphus* Kraatz

1859. *Mitomorphus* Kraatz, *Arch. Naturgesch.*, **25** (1) : 105.

97. *Mitomorphus indicus* Kraatz

1859. *Mitomorphus indicus* Kraatz, *Arch. Naturgesch.*, **25** : 107, tab. 2, fig. 5a-b.

1932. *Mitomorphus Indicus* : Cameron, *Fauna British India*, **3** : 19.

Material examined : 1 ex., India : Sikkim, Rangpo, 1 ex., 24.ii.1979, S. K. Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian States : Naga land.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Indoscitalinus* Heller

1900. *Indoscitalinus* Heller, *Abh. Mus. Dresd.*, **9** (5) : 5.

**Key to the species of the genus
Indoscitalinus Heller**

- 1. Elytra red *rudis* (Eppelsheim)
- Elytra in part testaceous or brownish testaceous *anachoreta* (Erichson)

98. *Indoscitalinus rudis* (Eppelsheim)

1895. *Eulissus rudis* Eppelsheim, *W.E.Z.*, **19** : 62.

1895. *Xantholinus gestroi* Fauvel, *Rev. d'Ent.*, **14** : 243.

1914. *Eulissus eppelsheimi* Bernhauer, *Cat. Col.*, **4** : 302.

1932. *Indoscitalinus rudis* : Cameron, *Fauna British India*, **3** : 39.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian States : Uttar Pradesh.

Elsewhere : Myanmar.

99. *Indoscitalinus anachoreta* (Erichson)

1839-40. *Xantholinus anachoreta* Erichson, *Gen. Spec. Staph.*, : 316.

1867. *Xantholinus hongkongensis* Redtb., *Reise Novara*, **2** : 28.

1858. *Xantholinus morio* Motschulsky, *Bull. Mosc.*, **31** (3) : 207.

1932. *Indoscitalinus anachoreta* : Cameron, *Fauna British India*, **3** : 37.

Material examined : 1 ex., India : Sikkim, Rangpo, 1 ex., 23.ii.1997, S. K. Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Sri Lanka, S. China, Nauritius, Reunion and Madagascar.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Othius* Stephenson

1832. *Othius* Stephenson, III, *Brit. Ent.*, **5** : 253.

100. *Othius ruficornis* Cameron

1928. *Othius ruficornis* Cameron, *Ann. Mag. Nat. Hist.*, **2**(10) : 561.

1932. *Othius ruficornis* Cameron, *Fauna British India*, **3** : 44.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian States : Nil.

Elsewhere : Nil.

Genus *Neobisnius* Ganglb.

1895. *Neobisnius* Ganglb., *Kaf. Mitt. Eur.*, **2** : 464.

101. *Neobisnius praelongus* (Gemm. et Har.)

1868. *Philonthus praelongus* Gemm. et. Har., *Cat. Col.*, **2** : 591.

1859. *Philonthus longulus* Kraatz, *Arch. Naturgesch.*, **25**(1) : 99.

1932. *Neobisnius praelongus* : Cameron, *Fauna British India*, 3 : 57.

Material examined : 1ex., India : Sikkim, Singtam, 1ex., 28.ii.1979, S. K. Saha and Party Coll.

Distribution : India : Sikkim.

Other Indian States : Bihar, Nagaland and Uttar Pradesh.

Elsewhere : Penang, Singapore, Java and the Philippines.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Philonthus* Curtis

1825. *Philonthus* Curtis, *Brit.Ent.*, 13 : 610.

Key to the species of the genus *philonthus* Curtis

1. Throax with dorsal row of 2 punctures
.....*sikkimensis*, sp.nov.
- Thorax with dorsal row of more than 2 punctures 2
- 2 (1). Throax with dorsal row of 3 punctures 3
- Thorax with dorsal row of more than 3 punctures 4
- 3 (2). Elytra of a beautiful metallic purple red
.....*poephagus* Camereon
- Elytra greenish-bronze or copperry
.....*industanus* Fauvel
- 4 (2). Thorax with dorsal row of 4 punctures ..
..... 5
- Thorax with dorsal row of more than 4 punctures 8
- 5 (4). Thorax red or reddish-brown
.....*assamensis* Cameron
- Thorax black or metallic 6
- 6 (5). Penultimate segments of the antennae distinctly longer than broad
.....*maindroni* Fauvel

- Penultimate segments of the antennae as long as broad or transverse 7
- 7 (6). Head and thorax with blue or greenishblue reflex*distincticornis* Cameron.
- Head and thorax brassy or bronze
.....*azuripennis* Cameron
- 8 (4). Thorax with dorsal row of 5 punctures ..
..... 9
- Thorax with dorsal row of more than 5 punctures*rivularis* Cameron.
- 9 (8). Elytra concolours, black with metallic reflex 10
- Elytra otherwise*nigricoxis* Cameron.
- 10 (9). Abdomen with metallic reflex; antennae black*convalescens* Eppelsheim
- Abdomen without metallic reflex 11
- 11 (10). 1st segment of posterior tarsi longer than the last; abdomen not more coarsely punctured at the base of the segments than elsewhere
.....*obsoletus* Eppelsheim.
- 1st segment of posterior tarsi not longer than the last; abdomen more coarsely punctured at the base of the anterior segments
.....*subjectus* Cameron.

102. *Philonthus industanus* Fauvel

1903. *Philonthus industanus* Fauvel, *Rev.d'Ent.*, 22 : 158.

1932. *Philonthus industanus* : Cameron, *Fauna British India*, 3 : 78.

Material examined : Not examined.

Distribution : India : Sikkim.

Other Indian States : Tamil Nadu, West Bengal.

Elsewhere : Nil.

103. *Philonthus azuripennis* Cameron.

1928. *Philonthus azuripennis* Cameron, *Ann.Mag.Nat.Hist.*, 2 (10) : 563.

1932. *Philonthus azuripennis* Cameron, *Fauna British India*, 3 : 81-82.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian States : Nil.

Elsewhere : Tibet.

104. ***Philonthus distincticornis*** Cameron.

1932. *Philonthus distincticornis* Cameron, *Fauna British India*, 3 : 87.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian States : Nil.

Elsewhere : Nil.

105. ***Philonthus obsoletus*** Eppelsheim.

1895. *Philonthus obsoletus* Eppelsheim W.E.Z., 14 : 61.

1932. *Philonthus obsoletus* : Cameron, *Fauna British India*, 3 : 106-107.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian States : Nil.

Elsewhere : Tibet.

106. ***Philonthus subjectus*** Cameron.

1932. *Philonthus subjectus* Cameron, *Fauna British India*, 3 : 108.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian States : Nil.

Elsewhere : Nil.

107. ***Philonthus nigricoxis*** Cameron.

1928. *Philonthus nigricoxis* Cameron, *Ann.Mag.Nat.Hist.*, 2 (10) : 562.

1932. *Philonthus nigricoxis* Cameron, *Fauna British India*, 3 : 129

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian States : Nil.

Elsewhere : Tibet.

108. ***Philonthus rivularis*** Cameron.

1926. *Philonthus rivularis* Cameron, *Trans.Ent.Soc.Lond.*, : 358.

1932. *Philonthus rivularis* Cameron, *Fauna British India*, 3 : 138-139.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian States : Uttar Pradesh and Himachal Pradesh.

Elsewhere : Nil.

109. ***Philonthus convalescens*** Eppelsheim.

1890. *Philonthus convalescens* Eppelsheim, W.E.Z., 9 : 276.

1932. *Philonthus convalescens* : Cameron, *Fauna British India*, 3 : 109-110.

Material examined : 3exs., India : Sikkim, Gangtok, 3 exs., 7.iii.1979, S. K. Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian States : Himachal Pradesh and Uttar Pradesh.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

110. ***Philonthus sikkimensis***, sp. nov.

Head black, transversely subquadrate, narrower than the thorax, with the median interocular punctures widely separated and 4 large and 1 small punctures behind the eyes. Antennae with 1-3 segments reddish testaceous and rest of the segments testaceous, segments 2 and 3 longer than broad and equal, segments 4 and 5 as long as broad, segments 6-10 slightly transverse. Throat pitchy, as long as broad, convex, disc with a row of two punctures on either side, the sides with one puncture and near the anterior angles are two others. Scutellum closely and finely punctured. Elytra pitchy, as long as broad, broader than thorax, near the suture a yellow oval shaped marking entire the suture and the postero-external

angle also a yellow marking, surface rather finely and closely and few with a large punctures, with a fine, rather close, brownish pubescence. Abdomen parallel, entirely black, posterior margin of abdominal segments narrowly reddish, very finely and moderately closely punctured. Legs testaceous.

Measurements of holotype : Total length 7.2 mm; width of head across the eyes 1.5mm; length of thorax 1.25 mm and width of thorax 1.15 mm; length of elytra 1.6 mm and width of elytra 2.3 mm.

Holotype : India : Sikkim. 1ex., 3. v. 1994, S. K. Saha & Party Collection (Specimen is deposited in the Zoological Survey of India, Kolkata).

Distribution : India : Sikkim.

Discussion : This species is closely related to *Philonthus pubipennis* Cameron but can be easily separated from the latter species by its antennae testaceous, segments 2 and 3 equal, segments 4 and 5 as long as broad, segments 6-10 slightly transverse; sides of thorax with one puncture and near the anterior angles with two others; near the suture of elytra with a yellow oval shaped marking entire the suture and postero-external angles also yellow.

111. *Philonthus poephagus* Cameron.

1928. *Philonthus poephagus* Cameron, *Ann.Mag.Nat.Hist.*, 2 (10) : 562.

1932. *Philonthus poephagus* Cameron, *Fauna British India*, 3 : 79-80.

Material examined : 1ex., India : Sikkim, Gangtok, 1ex., 3.iii. 1979, S. K. Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian States : Nil.

Elsewhere : Tibet.

Remark : In the present study this species is recorded for the first time from India (Sikkim).

112. *Philonthus assamensis* Cameron.

1932. *Philonthus assamensis* Cameron, *Fauna British India*, 3 : 100.

Material examined : 2ex., INDIA : Sikkim, Gangtok, 1ex., 7.iii. 1979, S. K. Saha & Party Coll., Singtam, 1ex., 26.iv.1976, A. R. Bhaumik & Party Coll.

Distribution : India : Sikkim.

Other Indian States : Meghalaya, Tripura and Manipur.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

113. *Philonthus maindroni* Fauvel.

1903. *Philonthus maindroni* Fauvel, *Rev.d'Ent.*, 22 : 158.

1924. *Philonthus maindroni* Cameron, *Rec.Ind.Mus.*, 26 : 118.

1932. *Philonthus maindroni* : Cameron, *Fauna British India*, 3 : 88.

Material examined : 2ex., India : Sikkim, Chakung, 2ex., 17.xii. 1994, S. K. Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian States : Tamil Nadu, Meghalaya and Uttar Pradesh.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Stevensia* Cameron

1932. *Stevensia* Cameron, *Fauna British India*, 3 : 162.

114. *Stevensia longipennis* Cameron.

1932. *Stevensia longipennis* Cameron, *Fauna British India*, 3 : 162-163.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian States : Nil.

Elsewhere : Nil.

Genus *Paratolmerus* Cameron

1932. *Paratolmerus* Cameron, *Fauna British India*, 3 : 169.

115. *Paratolmerus pilosiventris* Cameron

1932. *Paratolmerus pilosiventris* Cameron, *Fauna British India*, 3 : 170.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Nil.

Genus *Staphylinus* Linnius

1758. *Staphylinus* Linn., *Syst.Nat.ed.*, 10 : 421.

Key to the subgenera and species of the genus *Staphylinus* Linn.

1. Temples longer than the eyes
..... *Goerius* Steph. 2
- Temples shorter than the eyes.....
..... *Pseudocypus* Muls. et Rey. [*aereus* (Cameron)]
- 2 (1). Abdomen with one or more large transverse tomentose golden patches
..... *prainae* (Eppelsheim)
- Abdomen without such patches, at most with narrow triangular patches.....
..... *olivaceus* Cameron.

117. *Staphylinus (Goerius) prainae* (Eppelsheim)

1895. *Trichocosmetes prainae* Eppelsheim, *W.E.Z.*, 14 : 58.

1932. *Staphylinus (Goerius) prainae* : Cameron, *Fauna British India*, 3 : 201-202.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian States : West Bengal and Meghalaya.

Elsewhere : Nil.

117. *Staphylinus (Goerius) olivaceus* Cameron

1928. *Staphylinus olivaceus* Cameron, *Ann.Mag.Nat.Hist.*, 2 (10) : 564.

1932. *Staphylinus (Goerius) olivaceus* Cameron, *Fauna British India*, 3 : 202.

Material Examined : Not studied

Distribution : India : Sikkim

Other Indian State : Nil

Elsewhere : Nil

118. *Staphylinus (Pseudocypus) aereus* (Cameron)

1928. *Ocypus (Pseudocypus) aereus* Cameron, *Ann. Mag. Nat. Hist.*, 2 (10) : 565.

1932. *Staphylinus (Pseudocypus) aereus* Cameron, *Fauna British India*, 3 : 204-205.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian State : Nil

Elsewhere : Nil.

Genus *Rhyncochilus* Sharp

1889. *Rhyncochilus* Sharp, *Ann.Mag.Nat.Hist.*, 3 (6) : 120.

1895. *Rhyncochilus* Fauvel, *Rev. d'ent.*, 14 : 120.

119. *Rhyncochilus argenteus* Fauvel

1895. *Rhyncochilus argenteus* Fauvel, *Rev.d'Ent.*, 14 : 249.

1932. *Rhyncochilus argenteus* : Cameron, *Fauna British India*, 3 : 231-232.

Material examined : 3exs., India : North Sikkim, Zema, 2620m., 3exs., 28.vii.1989, S.K. Saha. Coll.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Myanmar.

Remark : In the present study this species is recorded for the first time from India (Sikkim).

Genus *Craspedomerus* Bernhauer1911. *Craspedomerus* Bernhauer, *Ent. Blatt.*, 7 : 88.**Key to the species of the genus
Craspedomerus Bernhauer**

1. Antennae with the 8th to 10th segments yellow, the 11th blackish, fore-parts with distinct wavy ground-sculpture ... *violaecipennis* Cameron.
Antennae with the last five segments yellow; fore-parts without such ground-sculpture
..... *caeruleipennis* Cameron.

120. *Craspedomerus violaecipennis* Cameron1928. *Craspedomerus violaecipennis* Cameron, *Ann. Mag. Nat. Hist.*, 2 (10) : 566.1932. *Craspedomerus violaecipennis* Cameron, *Fauna British India*, 3 : 250.*Material examined* : Not studied*Distribution* : India : Sikkim.*Other Indian State* : Nil.*Elsewhere* : Tibet.121. *Craspedomerus caeruleipennis* Cameron1932. *Craspedomerus caeruleipennis* Cameron, *Fauna British India*, 3 : 250-251.*Material examined* : Not studied.*Distribution* : India : Sikkim.*Other Indian State* : Nil.*Elsewhere* : NilGenus *Creophilus* Mannerheim1830. *Creophilus* Mannerheim, *Brachel.*, 16.122. *Creophilus sikkimensis* Wendeler1830. *Creophilus* Mannerheim, *Brachel.*, 16.1927. *Creophilus sikkimensis* Wendeler, *Neue Beitr. Syst. Insekt.*, 4 : 8.1932. *Creophilus sikkimensis* : Cameron, *Fauna British India*, 3 : 260-261*Material examined* : Not studied.*Distribution* : India : Sikkim*Other Indian State* : Nil*Elsewhere* : NilGenus *Quedius* Stephens1832. *Quedius* Stephens, III, *Briti. Ent.*, 5 : 214**Key to the subgenera and species of the
genus *Quedius* Stephens**

1. Eyes shorter or only slightly longer than the temples, the labrum bilobed
..... *Microsaurus (stevensi)* Cameron
- Eyes much longer than the temples 2
- 2 (1). Eyes large, occupying about three quarters of the side of the head
..... *Sauridus (ripicola)* Cameron
- Eyes very large and prominent, occupying nearly the whole side of the head
..... *Raphirus (himalayicus)* Bernh.)

123. *Quedius (Microsaurus) stevensi*
Cameron1932. *Quedius (Microsaurus) stevensi* Cameron, *Fauna British India*, 3 : 288*Material examined* : Not studied.*Distribution* : India : Sikkim.*Other Indian State* : Nil*Elsewhere* : Nil124. *Quedius (Sauridus) ripicola* Cameron1926. *Quedius (Sauridus) ripicola*, Cameron, *Trans. Ent. Soc. Lond.*, : 369.1932. *Quedius (Sauridus) ripicola* Cameron, *Fauna British India*, 3 : 291.*Material examined* : Not studied.*Distribution* : India : Sikkim.*Other Indian States* : West Bengal and Uttar Pradesh.*Elsewhere* : Nil

125. *Quedius (Raphirus) himalayicus* Bernhauer1915. *Quedius (Sauridus) himalayicus* Bernhauer, *Col. Rundsch.*, 4 : 55.1932. *Quedius (Raphirus) himalayicus* : Cameron, *Fauna British India*, 3 : 293*Material examined* : Not studied.*Distribution* : India : Sikkim.*Other Indian States* : Uttar Pradesh and Nagaland.*Elsewhere* : NilGenus *Indoquedius* (Cameron)1932. *Quedius* subg. *Indoquedius* Cameron, *Fauna British India*, 3 : 300.**Key to the species of the genus
*Indoquedius***

1. Lateral pronotal groove smooth and shiny, without any microsculpture. Anterior angles of pronotum impunctate; dorsal surface of head and pronotum without micropunctuation 2.
- Lateral pronotal groove with dense, almost granulose microsculpture. Anterior angles of pronotum finely punctate, dorsal surface of head and pronotum with micropunctuation
.....*aberrans* Cameron
- 2 (1). Large lateral puncture of pronotum situated close to lateral pronotal groove, but distinctly not touching it *sikkimensis* Cameron
- Large lateral puncture of pronotum situated very close to lateral pronotal groove, distinctly touching it *filicornis* (Eppelsheim)

126. *Indoquedius sikkimensis* (Cameron)1932. *Quedius sikkimensis* Cameron, *Fauna British India*, 3 : 294.1977. *Quedius akalita* smetana, *Entomologica Basiliensia*, 2 : 246.1982. *Algon cyanipensis* Coiffait, *Entomologica Basiliensia*, 7 : 273.1988. *Indoquedius sikkimensis* : Smetana, *Quaestiones Entomologicae*, 24 (2) : 302-304.*Material examined* : Not studied.*Distribution* : India : Sikkim.*Other Indian State* : Arunachal Pradesh.*Elsewhere* : Bhutan.127. *Indoquedius aberrans* (Cameron)1932. *Quedius aberrans* Cameron, *Fauna British India*, 3 : 299.1988. *Indoquedius aberrans* : Smetana, *Quaestiones Entomologicae*, 24 (2) : 311-314.*Material examined* : Not studied.*Distribution* : India : Sikkim.*Other Indian State* : Nil.*Elsewhere* : Nil.128. *Indoquedius filicornis* (Eppelsheim)1895. *Quedius filicornis* Eppelsheim, *Wiener Entomologische Zeitung*, 14 : 55.1922. *Quedius conicus* Champion, *Entomologist's Monthly Magazine*, 58 : 33.1988. *Indoquedius filicornis* : Smetana, *Quaestiones Entomologicae*, 24 (2) : 309-310.*Material examined* : Not studied.*Distribution* : India : Sikkim.*Other Indian State* : Uttar Pradesh.*Elsewhere* : Nepal.

Subfamily : TACHYPORINAE

**Key to the tribes and genera of the
subfamily TACHYPORINAE**

1. Tarsi 4-segmented
..... **Symmixini** (symmixus Bernhauer).
- Tarsi 5-segmented Tachyporini 2
- 2 (1). Last segment of the maxillary palpi as long as or longer than the preceding 3
- Last segment of the maxillary palpi small and subulate 5
- 3 (2). Mesosternum keeled or tuberculate in the middle 4

– Mesosternum not keeled; posternal epimera present **Tachinus** Gravenhorst

4 (3). Prosternal epimera present; facies of Tachinus **Tachinomorphus** Kraatz

– Prosternal epimera absent; short and usually small species **Coproporus** Kraatz

5 (2). Abdomen finely and indistinctly bordered, the whole surface very finely and closely pubescent; anterior tibiae with comb of fine teeth externally **Conosoma** Kraatz

– Abdomen broadly and distinctly bordered; the head and thorax at least glabrous; anterior tibiae without comb **Tachyporus** Gravenhorst

Genus **Conosoma** Kraatz

1856-58. *Conosoma* Kraatz, *Nat. Ins. Deutschl.*, 2 : 431.

129. **Conosoma hemisphaericum** Bernhauer

1915. *Conosoma hemisphaericum* Bernhauer, *Col. Rundsch.*, 4 : 57.

1932. *Conosoma hemisphaericum* : Cameron, *Fauna British India*, 3 : 361.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Nil.

Genus **Tachinus** Gravenhorst

1802. *Tachinus* Gravenhorst, *Col. Mier. Brunsv.*, 134.

130. **Tachinus lugubris** Cameron

1928. *Tachinus lugubris* Cameron, *Ann. Mag. Nat. Hist.*, 10 (2) : 568.

1932. *Tachinus lugubris* Cameron, *Fauna British India*, 3 : 391.

Material examined : 1 ex., India : Sikkim, Negi, Upper Madhay Porri, 1 ex., 15.ix.1995.

Distribution : India : Sikkim.

Other Indian State : West Bengal.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus **Tachyporus** Gravenhorst

1806. *Tachyporus* Gravenhorst, *Col. Micr.*, 1.

Key to the species of the genus **Tachyporus** Gravenhorst

1. Species entirely or in greater part yellowish or reddish-testaceous 2

– Species in greater part black *flavopictus* Fauvel

2 (1). Each elytron with distinct oval blackish spot on the middle, convex, shining *himalayicus* Bernhauer

– Each elytron with a large well defined triangular marking, extending from the middle of the base to the apex of the suture *triangulum* Cameron

131. **Tachyporus flavopictus** Fauvel

1895. *Tachyporus flavopictus* Fauvel, *Rev. d'Ent.*, 14 : 282.

1932. *Tachyporus flavopictus* : Cameron, *Fauna British India*, 3 : 379.

Material examined : 2 exs., India : Sikkim, Singtam, 2 exs., 28.ii.1979, S.K. Saha Coll.

Distribution : India : Sikkim.

Other Indian States : West Bengal and Uttar Pradesh.

Elsewhere : Myanmar.

Remark : In the present study this species is recorded for the first time from Sikkim.

132. **Tachyporus triangulum** Cameron

1928. *Tachyporus triangulum* Cameron, *Ann. Mag. Nat. Hist.*, 2(10) : 567.

1932. *Tachyporus triangulum* Cameron, *Fauna British India*, 3 : 381.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Nil.

133. *Tachyporus himalayicus* Bernhauer

1918 (1920). *Tachyporus himalayicus* Bernhauer, *Arch. Naturgesch.*, **84** : 187.

1926. *Tachyporus nigromaculatus* Cameron, *Trans.Ent.Soc. Lond.*, : 183.

1932. *Tachyporus himalayicus* : Cameron, *Fauna British India*, **3** : 382.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian States : West Bengal and Uttar Pradesh.

Elsewhere : Nil.

Genus *Tachinomorphus* Kraatz

1859. *Tachinomorphus* Kraatz., *Arch. Naturgesch.*, **25** (1) : 54.

134. *Tachinomorphus fulvipes* (Erichson)

1839-40. *Tachinus fulvipes* Erichson, *Gen.Spec.Staph.*, : 921.

1932. *Tachinomorphus fulvipes* : Cameron, *Fauna British India*, **3** : 399-400.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian State : Uttar Pradesh

Elsewhere : Widely distributed in the Oriental Region.

Genus *Coproporus* Kraatz

1858. *Coproporus* Kraatz, *Bull.Soc.Ent.Fr.*, p. exc.

Key to the species of the genus
Coproporus Kraatz

1. Thorax entirely, elytra in great part bright reddish yellow *fasciipennis* Kraatz
- Thorax black, pitchy or dark red, the sides often lighter *melanarius* Erichson

135. *Coproporus fasciipennis* Kraatz

1859. *Coproporus fasciipennis* Kraatz, *Arch. Naturgesch.*, **25** (1) : 59.

1932. *Coproporus fasciipennis* : Cameron, *Fauna British India*, **3** : 419-420.

Material examined : 2 exs., India : Sikkim, Soreng, 2exs., 20.xii.1994, D.N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian State : Uttar Pradesh.

Elsewhere : Sri Lanka and Singapore.

Remark : In the present study this species is recorded for the first time from Sikkim.

136. *Coproporus melanarius* (Erichson)

1839-40. *Tachinus melanarius* Erichson, *Gen. Spec. Staph.*, : 252.

1859. *Coproporus subdepressus* Kraatz., *Arch.Naturgesch.*, **25** (1) : 57.

1904. *Erchomus subpunctulatus* Motschulsky, *Et.Ent.*, **8** : 81.

1932. *Coproporus melanarius* : Cameron, *Fauna British India*, **3** : 413-414.

Material examined : 4exs., India : Sikkim, Paykong, 4exs., 12.xii.1994, D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian States : Meghalaya and Bihar.

Elsewhere : Sri Lanka, Malaya Peninsula, Sumatra, Philippines and New Guinea.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Symmixus* Bernhauer

1915. *Symmixus* Bernhauer, *Col.Rundsch.*, : 56.

137. *Symmixus sikkimensis* Bernhauer

1915. *Symmixus sikkimensis* Bernhauer, *Col.Rundsch.*, 57.

1932. *Symmixus sikkimensis* : Cameron, *Fauna British India*, **3** : 426.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian State : Manipur.

Elsewhere : Myanmar.

Subfamily ALEOCHARINAE

Key to the genera of the Subfamily

Aleocharinae

1. Prosternum behind the coxal cavities completely chitinized; thorax cordiform or strongly constricted behind 2
- Prosternum behind the coxal cavities at least partly membranous 3
- 2 (1). Elytra at the base between the shoulders and scutellum with a fovea; sides and base of thorax immarginate; Pronotal epipleura not visible from the side *Cordalia* Jacobs.
- Elytra without basal fovea; sides and base of thorax distinctly bordered; pronotal epipleura visible from the side *Falagria* Mannerheim.
- 3 (1). Neck narrow *Amaurodera* Fauvel.
- Neck broad *Astilbus* Stephens.

Genus *Cordalia* Jacobs

1924. *Cordalia* Jacobs, *Ent.Zeitschr.* (Frankfurt) : 38 : 82.

138. *Cordalia vestita* (Boh.)

1858. *Falagria vestita* Boh., *Eugen. Resa. Ins. Col.*, 25.

1939. *Cordalia vestita* : Cameron, *Fauna British India*, 4 (1) : 237-238.

Material examined : 9exs., India : Sikkim, Singtam, 8 exs., 28.ii.1979, S. K. Saha & Party Coll., Tarku, 1 ex., 11.iii.1994, D. N. Biswas Coll.

Distribution : India : Sikkim.

Other Indian States : Uttar Pradesh, Tripura and Assam.

Elsewhere : Myanmar, China, Malay Peninsula, Sumatra.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Falagria* Mannerheim

1830. *Falagria* Mannerheim, *Mem.Acad.Sci.St.Petersb.*, 1 : 14-18.

Key to the subgenera and species of the genus *Falagria* Mannerheim

1. Scutellum deeply sulcate along the middle, the sides of the sulcus raised as strong keels; posterior angles of the thorax rounded, not prominent *Falagria* s. str. (vicina Cameron)
- Scutellum with a fine median keel; posterior angles of the thorax acute, everted and prominent *Stenagria* Sharp (*granulata* Cameron)

139. *Falagria* (*Stenagria*) *granulata* Cameron

1939. *Falagria* (*Stenagria*) *granulata* Cameron, *Fauna British India*, 4 (1) : 252.

Material examined : 10exs, India : Sikkim, Paykong, 8exs., 12.xii.1994, D.N. Biswas & S.K.Saha Coll., Gangtok, 2exs., 7.iii.1979, S.K.Saha Coll.

Distribution : India : Sikkim.

Other Indian State : Tamil Nadu.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

140. *Falagria* (S. Str.) *vicina* Cameron

1939. *Falagria* (S.Str.) *Vicina* Cameron, *Fauna British India*, 4 (1) : 244.

Material examined : 3exs., India : Sikkim, Gangtok, 1ex., 6.iii.1979, S.K.Saha & Party Coll., 1ex., 7.iii.1979, S.K.Saha & Party Coll., Phodong, 1ex., 24.,iv.1994, S.K.Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian States : Uttar Pradesh and Andaman Islands (Port Blair).

Elsewhere : Pulo Condore and Hong-kong.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Amaurodera* Fauvel

1905. *Amaurodera* Fauvel, *Rev.d'Ent.*, **24** : 142.

Key to the species of the genus *Amaurodera* Fauvel

1. Species in greater part dark
..... *opacicolis* (Eppelsheim)
- Species in greater part reddish
..... *elegans* Cameron

141. *Amaurodera opacicolis* (Eppelsheim)

1895. *Astilbus opacicolis* Eppelsheim, *D.E.Z.* : 385.

1939. *Amaurodera opacicolis* : Cameron, *Fauna British India*, **4** (2) : 454-455.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Nil.

142. *Amaurodera elegans* Cameron

1939. *Amaurodera elegans* Cameron, *Fauna British India*, **4** (2) : 456-457.

Material examined : Iex., India : Sikkim, Rangpo, Iex., 26.ii. 1979, S.K.Saha & Party Coll.

Distribution : India : Sikkim.

Other Indian State : Uttar Pradesh.

Elsewhere : Nil.

Remark : In the present study this species is recorded for the first time from Sikkim.

Genus *Astilbus* Stephens

1832. *Astilbus* Stephens, III. *Brit.Ent.Mandib.*, **5** : 106.

143. *Astilbus stevensi* Cameron

1939. *Astilbus stevensi* Cameron, *Fauna British India*, **4** (2) : 465-466.

Material examined : Not studied.

Distribution : India : Sikkim.

Other Indian State : Nil.

Elsewhere : Nil.

SUMMARY

407 examples consisting of 143 species under 59 genera distributed in 7 subfamilies are represented in this paper, 85 species are newly recorded from Sikkim of which 9 species are first time recorded from India and 11 species are also recorded as new to Science. Key to the subfamilies, tribes, genera, species and distributional data of each species of the family Staphylinidae for Sikkim have also been provided.

ACKNOWLEDGEMENTS

The Author is thankful to Dr J.R.B. Alfred, Director, Zoological Survey of India for facilities of work. I am also thankful to Dr. G.K. Srivastava, Additional Director (retd.) and Dr. S.K. Mitra, Joint Director (retd.) for their valuable suggestions. I am indebted to Dr. P. Mukhopadhyay, Sc-SD, O/C., Coleoptera Section for kindly going through the manuscript. I am also grateful to the members of Coleoptera Section, Zoological Survey of India, Kolkata, for their co-operation and help.

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INSECTA : DIPTERA

M. DATTA AND P. PARUI

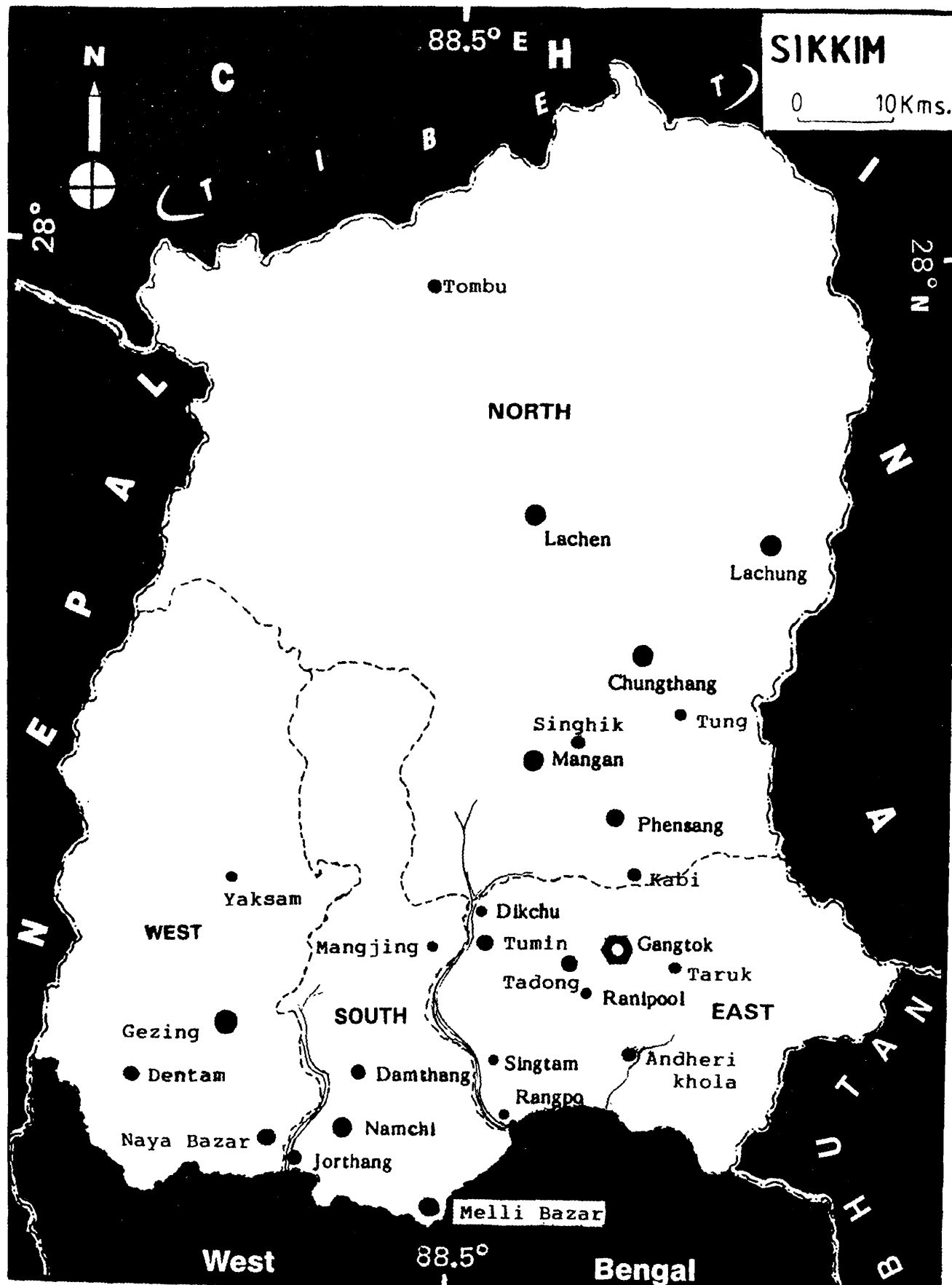
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INTRODUCTION

The erstwhile Himalayan Kingdom of Sikkim came into being as the twenty-second state of the Republic of India in 1975. It is a tiny state (covering an area of 7,096 sq. km., approximately within 27°3' - 28°20' N latitude and 88°0' - 88°58' E longitude) in the eastern India, bounded by the Tibetan region of China on the north and on the east too close with Bhutan, by Nepal on the west and by the Darjiling district of West Bengal on the south (Map 1). The main chain of the Himalaya in Sikkim projects southwards and gradually decreases in height exhibiting the greatest elevation to 8,598 m in the north-west as the Kanchenjunga Peak, the third highest mountain in the world. The state is entirely mountainous, and full of gorges and valleys where innumerable streams spring up to form rivers like Tista, Lachen, Lachung, Chala, Rangit, etc., of which the Tista, a tributary of the Brahmaputra, is the main river flowing through the heart of the state. The lower slopes of the mountains and valleys are generally hot in summer but the higher reaches are always cold and snowy. The rainfall is heavy and occurs predominantly during the summer season. Heavy rains in Sikkim cause to grow dense luxuriant vegetation of a great diversity. In concurrence with the topographic characteristics Sikkim harbours an excellent assemblage of insect lives beside variegated plants under the influence of its climate.

Sikkim deserves to have faunal elements as good as in the Darjiling district of West Bengal because of like physiographical features and nearness but the Diptera fauna known in the state is inadequate due to lack of systematic exploration.

It stands to reason that the lion's share of the Himalayan Kingdom remained inaccessible to the people who undertook to collect any sample of Nature in the early days of civilization when it was much easier in the neighbouring "Bengal Himalaya" Evidently, collecting began in the Kingdom much later than in "Bengal" and the role was taken not only by the British but also by the Danish, the French, the German and the Austrian Collectors. However, the earliest record of collecting dipterous insects from Sikkim is very obscure. Relevant records reveal that the first collection was made before 1849 either by Rev. J. Stainforth himself or by somebody else who might have contributed to the Rev. Stainforth's Collection housed in the then British Museum (Natural History), London. The museum also holds Sir J. D. Hooker's Collection made between May and July, 1849. Indeed, the Sikkimese diptera collected and gathered during the last decades of the nineteenth century by Dr. F. Stoličzka (in 1871), H. Frühstorfer (? in 1887), F. C. Möller (?), Col. C. T. Bingham (in May, 1894), L. W. Hinxman (in June-July, 1895), A. V. Knyvett (?), W. E. Clarke (1895) and C.L.A. de Nicéville (before 1896) remain scatteredly deposited nearly throughout the European Museums like Zoologisk Museum, Copenhagen; Muséum d' Histoire Naturelle, Genève; Muséum National d' Histoire Naturelle, Paris; Zoologisch Museum, Amsterdam; Természettudományi Múzeum, Budapest; Naturhistorisches Museum, Vienna; Swedish Museum of Natural History, Stockholm; Museum Für NaturKunde der Humboldt-Universität zu Berlin, Berlin and Stettin Zoological Museum



Map 1. Sikkim showing its location, districts and recorded places of occurrence of the dipterous species dealt with.

besides the Natural History Museum, London, However, a small fraction of these age-old materials in due course was taken over to the Indian Museum, Calcutta and thereafter to the Zoological Survey of India at Calcutta.

Subsequent to the close of the nineteenth century, C. Lynch of the Indian Museum, collected a few specimens from Sikkim during September, 1909. After a lapse of half a century, A.G.K. Menon (in 1959), B.K. Tikader (in 1959), S. Ali (in 1962), G. Ramakrishnan (in 1966), H.S. Sharma (in 1973), G.K. Srivastava (in 1975), T. D. Soota (in 1977), M.S. Shishodia (in 1979) and B.C. Das (in 1980) of this institute undertook collecting in the state in order to enrich the National Zoological Collection.

The story of describing the first species from Sikkim is relied upon the work by Walker (1849) who not only described a species of the Syrphidae from the Rev. J. Stainforth's Collection (Datta, *in press*) but also recorded a few other species of Diptera from the state. Apparently, the next species described by him in 1854 was of the Tabanidae located in the Hooker's Collection (*vide* Ricardo, 1911 a). Indeed, our knowledge on the Sikkimese fauna is greatly attributable to the credit of Walker (1849, 1854, 1858), Giles (1901), Kertész (1901, 1923), Brunetti (1907, 1908, 1910, 1911, 1913, 1915, 1920, 1923, 1925), de Meijere (1908), Ricardo (1911, 1921), Enderlein (1912, 1914, 1920, 1921, 1922, 1924, 1926, 1942), Bezzi (1913), Hendel (1914), Kröber (1915, 1916, 1940), Edwards (1916, 1921, 1932), Becker (1922), Szilády (1926), Schuurmans Stekhoven (1932), Munro (1938), Hering (1941), Alexander (1960-1974), Das Gupta (1963), Hackman (1965), Schmid (1970), Philip (1970), Stone and Philip (1974), Joseph and Sharma (1976), Datta (1978, 1991), Datta and Chakraborti (1986), Joseph and Parui (1987) and Hipa (1990). It is worthy of mention that most of the European workers made good use of the age-old collections deposited in different museums of their continent exhibiting an essential array of the Diptera fauna in Sikkim.

With a view to adding and to tending the faunal elements for furtherance of our knowledge, some collecting trips were organized recently by this institute in all 4 districts of Sikkim. The trips that brought the dipterous material for this study are tabulated below with reference to the district under survey, the personality leading the trip and the time of the survey.

East Sikkim

V. C. Agarwal	September, 1988
A. R. Lahiri	April-May, 1992
B. N. Das	September-October, 1993
L. K. Ghosh	March, 1994
S. Chattopadhyay	May, 1994
B. C. Das	May-June, 1994
S. K. Saha	September, 1994

West Sikkim

L. K. Ghosh	March, 1994

North Sikkim

S. Chattopadhyay	July, 1989
A. R. Lahiri	April-May, 1992
M. S. Shishodia	November, 1992
T. K. Pal	September, 1993

South Sikkim

M. S. Shishodia	November, 1992
L. K. Ghosh	March, 1994
B. C. Das	May-June, 1994
P. H. Roy	June, 1997

This report embodies the material belonging to the following families : Bibionidae, Stratiomyidae, Tabanidae, Bombyliidae, Sciomyzidae, Sepsidae, Calliphoridae and Sarcophagidae. The families : Asilidae, Syrphidae, Muscidae and Tachinidae are, however, dealt with separately by different authors. The species recorded for the first time from Sikkim are marked with an asterisk.

MATERIALS AND METHODS

An overview of the general methods of collecting dipterous specimens from their habitats and of preserving them perfectly for taxonomic studies was set down by Datta, Parui and Mukherjee (1997). Subsequently, Datta (1998), and Datta and Parui (1998) reviewed the methods indispensable for capturing fly-groups (adults) treated in this paper.

MORPHOLOGY AND TERMINOLOGY

An account of morphology and terminology of Diptera in general was presented by Datta *et al.* (1997) in order to acquaint the reader with their taxonomic characteristics. However, the significant features used in the description and key to the various taxa of the families dealt with here can be had in Datta (*op. cit.*) and Datta and Parui (*op. cit.*).

LIST OF TAXA

Family BIBIONIDAE
Subfamily BIBIONINAE

- *1. *Bibio fuscitibia* Brunetti
- 2. *B. hortulanoides* Brunetti
- 3. *B. tenebrosus* Coquillett

Subfamily Pleciinae

- 4. *Penthetria japonica* Wiedemann

Family STRATIOMYIDAE
Subfamily SARGINAE

- 5. *Ptecticus aurifer* (Walker)
- 6. *P. australis* Schiner
- *7. *Sargus metallinus* F.

Subfamily CLITELLARIINAE

- 8. *Epanastasis fumipennis* Kertész

Subfamily PACHYGASTERINAE

- 9. *Ptilocera amethystina* Sn. v. Voll.

- 10. *Stratiophecomyia variegata* Brunetti

Subfamily HERMETIINAE

- *11. *Hermetia illucens* (Linnaeus)

Family TABANIDAE
Subfamily PANGONIINAE

- 12. *Philoliche longirostris* (Hardwicke)

Subfamily CHRYSOPSINAE

- 13. *Chrysops dispar* (F.)

Subfamily TABANINAE

Tribe Tabanini

- 14. *Atylotus agrestis* (Wiedemann)
- 15. *Tabanus (Tabanus) acallus* Szilády
- 16. *T. (T.) albofasciatus* Ricardo
- 17. *T. (T.) explicatus* Walker
- 18. *T. (T.) flavicornis subflavicornis* Philip
- 19. *T. (T.) flaviscutellus* Philip
- 20. *T. (T.) fuscomaculatus* Ricardo
- 21. *T. (T.) jucundus* Walker
- 22. *T. (T.) monotaeniatus* (Bigot)
- 23. *T. (T.) orientis* Walker
- 24. *T. (T.) parafuscomaculatus* Sch. Stekh.
- 25. *T. (T.) pullomaculatus* Philip
- *26. *T. (T.) rubidus* Wiedemann
- 27. *T. (T.) scutellus* Philip
- 28. *T. (T.) striatus* Fabricius

Tribe Haematopotini

- *29. *Haematopota annandalei* Ricardo
- 30. *H. sikkimensis* Stone & Philip

Tribe Diachlorini

- 31. *Cydistomyia aberrans* Philip

Family BOMBYLIIDAE
Subfamily BOMBYLIINAE

- 32. *Systoechus socius* (Walker)

33. *Bombylisoma resplendens* (Brunetti)

Subfamily ANTHRACINAE

Tribe Anthracini

34. *Anthrax distigma* Wiedemann

Tribe Exoprosopini

35. *Ligyra chrysolampis* (Jaennicke)

36. *L. oenomaus* (Rondani)

*37. *L. tantalus* (F.)

Family SCIOMYZIDAE

Subfamily SCIOMYZINAE

Tribe Tetanocerini

*38. *Sepedon plumbella* Wiedemann

Family SEPSIDAE

Subfamily SEPSINAE

39. *Decachaetophora aeneipes* (de Meijere)

40. *Dicranosepsis bicolor* (Wiedemann)

41. *Sepsis himalayensis* Brunetti

42. *S. indica* Wiedemann

*43. *S. neocynipsea* Melander & Spuler

44. *S. rufa* Macquart

Family CALLIPHORIDAE

Subfamily CALLIPHORINAE

45. *Calliphora (Calliphora) vicina* Robineau-Desvoidy

46. *C. (C.) vomitoria* (L.)

*47. *Lucilia porphyria* (Walker)

48. *Melinda scutellata* (Senior-White)

Subfamily CHRYSOMYINAE

49. *Chrysomya megacephala* (F.)

Subfamily RHINIINAE

50. *Idiella euidielloides* Senior-White

51. *I. tripartita* (Bigot)

52. *Idiellopsis xanthogaster* (Wiedemann)

53. *Metallea notata* van der Wulp

Family SARCOPHAGIDAE

Subfamily SARCOPHAGINAE

54. *Bercaea cruentata* (Meigen)

55. *Boettcherisca peregrina* (Rob.-Desv.)

56. *Parasarcophaga (Curranea) kalimpongensis* Nandi

57. *P. (Parasarcophaga) albiceps* (Meigen)

58. *P. (P.) macroauriculata* (Ho)

59. *P. (P.) misera* (Walker)

60. *P. (P.) sericea* (Walker)

61. *Robineauella coei* Rohdendorf

62. *Rosellea khasiensis* (Senior-White)

63. *Seniorwhitea reciproca* (Walker)

Key to the Families*

1. Adult antennae with more than 5 segments (8-16), closely apposed but never fused into a solid structure BIBIONIDAE
- Adult antennae either with fewer than 5 segments (generally 3), or with segments of flagellum fused into a solid structure, usually surmounted by a style or an arista. 2
2. Adult head without a frontal lunule or a ptilinum 3
- Adult head with a distinct frontal lunule and ptilinum. 7
3. Wings with a spurious vein between veins R and M; antennal arista usually dorsal SYRPHIDAE *
- Wings without any spurious vein; antennal arista, if present, invariably terminal 4
4. Arolium pad-like, nearly or quite as large as two pulvilli. 5
- Arolium replaced at least by a rudimentary hair-like empodium. 6
5. Wings with costa ending at or near wing tip; squamae small; tibiae without spurs STRATIOMYIDAE

* Families with an asterisk are treated separately by various authors.

- Wings with costa continuing well past wing tip, often around posterior margin; mid-tibiae invariably with spurs TABANIDAE
- 6. Flies with dense hairs or scales; vertex between eyes a little depressed; proboscis usually long but not adapted for piercing BOMBYLIIDAE
- Flies with long bristles; vertex markedly excavated between eyes; proboscis stout and adapted for piercing. ASILIDAE*
- 7. Antennal segment 2 above without a distinct external groove; theca not developed at the base of proboscis; squamae small or vestigial. 8
- Antennal segment 2 above with a distinct external groove; theca developed at the base of proboscis; squamae well-developed. 9
- 8. Oral vibrissae present; antennal segment 2 much smaller than 3; tibiae without pre-apical bristles. SEPSIDAE
- Oral vibrissae absent; antennal segment 2 often massive, as large as 3; tibiae with pre-apical bristles. SCIOMYZIDAE
- 9. Pteropleural and hypopleural bristles present 10
- Pteropleural bristles absent; hypopleura at most with weak, scattered hairs only but never with strong bristles below spiracle MUSCIDAE *
- 10. Post-scutellum noticeably developed; sternites more or less hidden by overlapping tergites TACHINIDAE *
- Post-scutellum not conspicuously developed; at least basal sternite exposed 11
- 11. Flies with metallic blue or green body; antennal arista usually feathered to tip; thorax nearly always with 2 notopleural bristles CALLIPHORIDAE
- Flies with dull black or striped grey and black body; antennal arista pubescent or feathered usually not much beyond middle; thorax almost invariably with 3 or 4 notopleural bristles. SARCOPHAGIDAE

SYSTEMATIC ACCOUNT

Family BIBIONIDAE

Contribution on the fauna of Sikkim : Pal, 1989.

A total of 4 species under 2 genera of 2 subfamilies are hitherto known in Sikkim vis-à-vis 38 species and 1 subspecies under 4 genera of 2 subfamilies in India.

Key to the Subfamilies

1. Wing with unbranched radial sector; fore tibia with a pair of strong apical spurs or with a ring of apical spines and a set of 4 transverse spines just beyond mid-length BIBIONINAE
- Wing with forked radial sector; fore tibia without spurs or spines PLECIINAE.

Subfamily BIBIONINAE

Genus *Bibio* Geoffroy

1762. *Bibio* Geoffroy, *Hist. abrégé Ins. Paris*, 2 : 568.

Type-species : *Tipula hortulana* L.

Diagnosis : Wing with simple radial sector, basal section being equal to or longer than radio-median cross-vein; fore tibia with strong apical spurs.

Key to the Species

1. Wing with cross-vein r-m sub-equal to basal portion of radial sector; hind tibia reddish yellow *fuscitibia* Brunetti
- With cross-vein r-m about a half or one-third as long as basal portion of radial sector; all tibiae black 2
2. Thorax black except 3 brown, broad rugose areas extending longitudinally down mesonotum in both sexes; wing with r-m cross-vein nearly equal in length to vein M_{1+2} beyond cross-vein; abdominal tergum 9 in males with a deep V-shaped cleft beyond half of segment *tenebrosus* Coquillett

- Thorax entirely black except yellow humeral ridges in males but mesonotum and abdomen yellow to rufous in females; wing with vein M_{1+2} beyond cross-vein r-m nearly thrice as long as cross-vein; abdominal tergum 9 in males with a U-shaped cleft less than half as long as segment. *hortulanoides* Brunetti

* 1. *Bibio fuscitibia* Brunetti

1911. *Bibio fuscitibia* Brunetti, *Rec. Indian Mus.*, 4 : 279.

Material examined : 2 ♂♂ North Sikkim, Lachen, 2706 m, 25.v. 1959, Coll.; A.G.K. Menon; 8 ♂♂, Lachen nr Junior High School, 2700 m, 26.iv. 1992. Coll.; R.S. Mridha.

Distribution : Sikkim (North), and Arunachal Pradesh, Uttar Pradesh and West Bengal; Nepal.

2. *Bibio hortulanoides* Brunetti

1911. *Bibio hortulanoides* Brunetti, *Rec. Indian Mus.*, 4 : 274.

Material examined : 1♂ North Sikkim, Singhik, 1570 m, 10.viii. 1959, Coll.; A.G.K. Menon; 1♂, Sikkim (no other data), Coll. A.G.K. Menon.

Distribution : Sikkim (North), and Himachal Pradesh and West Bengal.

3. *Bibio tenebrosus* Coquillett

1898. *Bibio tenebrosus* Coquillett, *Proc. U.S. natn. Mus.*, 21 : 307.

1904. *Bibio obscuripennis* de Meijere, *Bijdr. Diërk.*, 18 : 86.

Material examined : 2 ♀♀, North Sikkim, Singhik, 1570 m, 10.viii. 1959, Coll.; A.G.K. Menon.

Distribution : Sikkim (North), and Arunachal Pradesh, Assam, Himachal Pradesh, Uttar Pradesh and West Bengal; Bangladesh, China, Myanmar and Nepal; Japan.

Subfamily PLECIINAE

Genus *Penthetria* Meigen

1803. *Penthetria* Meigen, *Magazin Insektdkde*, 2 : 264. Type-species : *Penthetria holosericea* Meigen.

Diagnosis : Wing with vein R_{2+3} elongate and horizontal in position, nearly parallel to vein R_{4+5} ; forking of both veins very close to cross-vein r-m; clasper of male genitalia large and lateral in position.

4. *Penthetria japonica* Wiedemann

1830. *Penthetria japonica* Wiedemann, *Aussereurop. zweifl. Insekt.*, 2 : 618.

1912. *Pleciomyia melanaspis* Wiedemann : Brunetti, *Fauna Br. India, Dipt. Nematocera* : 161.

Material examined : 7♂♂ East Sikkim, Tumin, 1800 m, 29. ix. 1988, Coll. V. C. Agarwal ; 8♂♂ 1♂ North Sikkim, Mangan, 1200 m, 28.ix. 1993, Coll.; T.K. Pal; 3♂♂ East Sikkim, Tadong, 1500 m. 10-15. iii. 1994, Coll.; L.K. Ghosh; 2♂♂ South Sikkim, Damthang, 500 m, 18.iii. 1994, Coll.; L.K. Ghosh; 1♂, East Sikkim, Singtam, 750 m, 23.iii. 1994, Coll. L.K. Ghosh ; 1♂ 2♂♂ Rangpo, 300 m, 23.iii. 1994, Coll.; L.K. Ghosh.

Diagnosis : Antenna 12-segmented, last segment (probably made up of 2 segments fused) nearly twice as long as wide; face with a distinct pit in middle beneath antenna; mesonotum anteriorly velvety black but posteriorly orange to rufous; wing with vein M_1 joined directly to cross-vein r-m and vein R_{2+3} originating just beyond r-m cross-vein; hind tibiae and tarsi slightly swollen in males but rather slender in females; male abdominal sternite 9 with a deep U-shaped cleft posteriorly; claspers short and broad, twice as long as wide, curved inward and ending in a short point.

Distribution : Sikkim (East, North and South), and Arunachal Pradesh, Assam, Himachal Pradesh, Meghalaya, Tripura, Uttar Pradesh and West Bengal; China, Myanmar, Nepal and Taiwan; Japan and Siberia.

Family STRATIOMYIDAE

Contributions on the fauna of Sikkim : Brunetti, 1920; Kertész, 1923.

A total of 7 species under 6 genera of 4 subfamilies are hitherto known in Sikkim vis-à-vis

73 species under 34 genera of 6 subfamilies in India.

Key to the Subfamilies

1. Wing-vein M with only 2 endings
..... PACHYGASTERINAE
- Wing-vein M with 3 endings 2
2. Anterior cross-vein (r-m) joining prefurca to discal cell SARGINAE
- Anterior cross-vein (r-m) joining R to discal cell 3
3. Vein M_4 originating from discal cell; antennal flagellum usually with 6 flagellomeres.
..... CLITELLARIINAE
- Vein M_4 forming a part of discal cell; antennal flagellum comprising 8 flagellomeres
..... HERMETIINAE

Subfamily SARGINAE

Key to the Genera

1. Antennal segment 2 with a thumb-like expansion over segment 3, latter being short, broad and without annulations
..... *Ptecticus* Loew
- Antennal segment 2 not thumb-like, segment 3 not broad and with 4 annulations
..... *Sargas* F.

Genus *Ptecticus* Loew

1855. *Ptecticus* Loew, *Verh. zool.-bot. Ges. Wien.*, 5 : 142.

Type-species : *Sargas testaceus* Fabricius.

Key to the Species

1. Abdominal segments 1-4 orange, with or without darker transverse spots or bands, all usually similarly marked; remainder of abdomen black; hind tibiae brown on apical half; hind tarsi blackish brown
..... *aurifer* (Walker)
- Abdominal segments 1-4 orange, normally with a transverse deep blue or violet band just behind anterior margin; segment 5 mainly blue-

black except anterior margin; hind tibiae all black; hind tarsi almost entirely white.....
..... *australis* Schiner

5. *Ptecticus aurifer* (Walker)

1854. *Sargas aurifer* Walker, *List Dipt. Colln Br. Mus.*, 5 : 96.

Material examined : 1♂ East Sikkim, Taruk, 1595 m, 24.ix. 1994, Coll. S.K. Saha.

Distribution : Sikkim (East), and Arunachal Pradesh, Assam, Meghalaya, Uttar Pradesh and West Bengal; China, E Malaysia, Kalimantan, Malay and Taiwan.

6. *Ptecticus australis* Schiner

1868. *Ptecticus australis* Schiner, *Reise der österreichischen Fregatte Novara, Dipt.*, 2 : 65.

Distribution : Sikkim (East), and Assam, Bihar, Karnataka, Madhya Pradesh, Meghalaya, Nicobar Is., Punjab, Tamil Nadu and West Bengal; China, Philippines, Sri Lanka, Taiwan and Thailand; Japan.

Genus *Sargas* Fabricius

1798. *Sargas* Fabricius, *Suppl. ent. Syst.* : 549, 566.

Type-species : *Musca cupraria* Linnaeus.

* 7. *Sargas metallinus* Fabricius

1805. *Sargas metallinus* Fabricius, *Syst. Antliat.* : 258.

Material examined : 1♀, South Sikkim, Damthang, 500 m, 18. iii. 1994., Coll.; L.K. Ghosh.

Diagnosis : Thoracic dorsum and scutellum shining green or bluish green, with dense fine whitish pubescence in females; abdomen shining violet or blue, with short white pubescence, a little longer laterally in females; legs pale yellow with white pubescence in females.

Distribution : Sikkim (South), and Andaman Is., Arunachal Pradesh, Bihar, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Meghalaya, Orissa, Uttar Pradesh and West Bengal; China,

Indonesia, Malaysia, Myanmar, Nepal and Sri Lanka; Australian region.

Subfamily CLITELLARIINAE

Genus *Epanastasis* Kertész

1923. *Epanastasis* Kertész, *Annls hist.-nat. Mus. natn. hung.*, **20** : 109. Type-species : *Epanastasis fumipennis* Kertész.

Diagnosis : Antennal flagellum and 2-segmented slender apical style sub-equal in length; scutellum with 2 strong straight spines; wing with vein R_4 , discal cell with 2 oblique veins in middle; abdomen oval, broader than thorax.

8. *Epanastasis fumipennis* Kertész

1923. *Epanastasis fumipennis* Kertész, *Annls hist.-nat. Mus. natn. hung.*, **20** : 111.

Diagnosis : Frons shining black, with dark brown hairs; presence of 2 triangular green spots laterally above antennae; antenna dark brown, style at base and at apex brown; scutellum black, with a row of green spots at margin, spines black; mesonotum bluish black, with 2 indistinct lines; leg excepting yellowish metatarsus of middle and hind pair, black; abdomen excepting bluish segment 5, bluish black.

Distribution : Sikkim (East).

Subfamily PACHYGASTERINAE

Key to the genera

1. Antenna branched; scutellum with 4 spines ; abdomen somewhat broad and rounded, and not longer than thorax
..... *Ptilocera* Wiedemann
- Antenna filiform and unbranched; scutellum unspined; abdomen elongate, linear and much longer than thorax
..... *Stratiosphecomyia* Brunetti

Genus *Ptilocera* Wiedemann

1820. *Ptilocera* Wiedemann, *Nova Dipt. Gen.* : 7. Type-species : *Stratiomys quadridentata* Fabricius.

9. *Ptilocera amethystina* Sn. v. Voll.

1857. *Ptilocera amethystina* Snellen van Vollenhoven. *Tijdschr. Ent.* **1** : 92.

Diagnosis : Frons on upper half and vertex rather sparsely punctate and haired; thorax usually with 4 stripes of coloured scales; abdominal Segment 5 with 2 broad hair bands.

Distribution : Sikkim (East); Jawa, Philippines, Sulawesi and Sumatera.

Genus *Stratiosphecomyia* Brunetti

1913. *Stratiosphecomyia* Brunetti, *Rec. Indian Mus.* **9** : 261. Type-species : *Stratiosphecomyia variegata* Brunetti.

10. *Stratiosphecomyia variegata* Brunetti

1913. *Stratiosphecomyia variegata* Brunetti, *Rec. Indian Mus.*, **9** : 262.

Diagnosis : Antennal scape twice as long as pedicel, flagellum with 4 flagellomeres; thorax black with some lemon yellow marks; fore femur yellowish, hind one brownish yellow; wing pale grey basally, darker apically.

Distribution : Sikkim (East), and Meghalaya and West Bengal.

Subfamily HERMETIINAE

Genus *Hermetia* Latreille

1804. *Hermetia* Latreille, *Nouv. Dict. Hist. nat.*, **24** (Tab. Méth. Ins.) : 192.

Type-species : *Musca illucens* (Linnaeus)

Diagnosis : Antenna longer than head; scape long, rod-like, 4-5 times as long as pedicel; flagellum ending in a flattened flagellomere; scutellum devoid of spines; all but vein M_4 among wing-veins M evanescent apically; abdomen slender, considerably longer than thorax.

*11. *Hermetia illucens* (Linnaeus)

1758. *Musca illucens* Linnaeus, *Syst. Nat.*, Ed. **10** : 589.

Material examined : 2 ♀♀ East Sikkim, Tadong, 1500m, 15.iii. 1994, Coll.; L.K. Ghosh.

Diagnosis : A large, black species with bare eyes having uniformly small facets; face black, with a median white stripe anteriorly; antennal flagellum 8-segmented, with a sensory field ventrally on flagellomeres 4-6; scutum shining black, with humeral calli; post-alar calli and posterior margin of scutellum brown; wing dark brown, M_4 touching discal cell; leg black except white basal half of hind tibia and tarsus; abdomen black, with a pair of translucent white oblong spots on posterior margin of tergum 1 and 2; cerci long, 2-segmented; sub-genital plate long and pointed distally.

Distribution : Sikkim (East), and Tamil Nadu; Malaysia, Philippines, Sri Lanka and Sumatera; nearly cosmopolitan.

Family TABANIDAE

Contributions on the fauna of Sikkim : Walker, 1854; Szilády, 1926; Schuurmans Stekhoven 1932; Philip, 1970; Stone & Philip, 1974; Datta, 1991.

A total of 19 species and 1 subspecies under 6 genera of 3 subfamilies are hitherto known in Sikkim vis-à-vis 197 species and 4 subspecies under 12 genera belonging to 3 subfamilies in India.

Key to the subfamilies

1. Proboscis greatly elongate, longer than head and thorax together or more; antennal style with more than 5 annulations Pangoniinae
Proboscis nearly as long as head; antennal style with fewer than 5 annulations 2
2. Vertex with well-developed ocelli; hind tibia with 2 apical spurs CHRYSOPSINAE
Vertex with rudimentary or no ocelli; hind tibia without apical spurs TABANINAE

Subfamily PANGONIINAE

Genus *Philoliche* Wiedemann

1828. *Philoliche* Wiedemann, *Aussereurop. zweifl. Insekt.*, 1 : 95. Type-species : *Tabanus rostratus* Linnaeus.

Diagnosis : Eye bare; ocelli absent; antennal

style with 8 annulations; wing longer than body, posterior cell 1 very narrowly open at margin, vein R_4 with long appendix, anal cell closed; hind tibia with spurs.

12. *Philoliche longirostris* (Hardwicke)

1823. *Pangonia longirostris* Hardwicke, *Trans. Linn. Soc. Lond.*, 14 : 135.

Material examined : 1 ♀, East Sikkim, Tadong, 1500m, 15.iii. 1994, Coll.; L.K. Ghosh.

Diagnosis : Face black, with greyish tomentum; proboscis nearly 3 times as long as body; antennal segment 3 quite black; mesonotum brownish, with pale brown hairs, laterally giving impression of 2 indistinct stripes; leg entirely yellow, tarsomeres 1 and 2 of fore leg in both sexes prolonged and wider in a peculiar form; abdominal tergites brownish medially but reddish laterally with spots at least up to 3.

Distribution : Sikkim (East), and Assam, Himachal Pradesh, Kerala, Meghalaya, Uttar Pradesh and West Bengal, China, Nepal; Tibet.

Subfamily CHRYSOPSINAE

Genus *Chrysops* Meigen

1803. *Chrysops* Meigen, *Magazin InsektKde.*, 2 : 267.
Type-species : *Tabanus caecutiens* Linnaeus.

Diagnosis : Small slender and greatly patterned flies, with colourfully maculate eyes in life; slender antenna, much longer than width of head; face highly developed; wing with cross-bands.

13. *Chrysops dispar* (Fabricius)

1798. *Tabanus dispar* Fabricius, *Ent. Syst. Suppl.* : 567.

Diagnosis : Wing with posterior cell 5 having a large hyaline area up to hind margin; tibia never swollen; abdomen extensively yellowish, with a distinct inverted black V-marking on tergum 2 or often extending to 3 or even to 4.

Distribution : Sikkim (East), and Arunachal Pradesh, Assam, Bihar, Karnataka, Kerala, Meghalaya, Orissa, Tripura and West Bengal; Bangladesh, China, Jawa, Kalimantan, Laos,

Malaysia, Myanmar, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Sumatera, Taiwan, Thailand and Vietnam.

Subfamily TABANINAE

Key to the tribes

1. Frons in females much longer than broad; antenna short, flagellum usually with broad basal plate and 4 annuli; wing hyaline or smoky entirely or locally 2
- Frons in females broader than long; antenna long and slender, flagellum with slender base and 3 annuli; wing patterned with pale marks Haematopotini
2. Frons markedly higher than wide, usually with gradual broadening towards vertex; vertex rarely with a rudimentary tubercle but always without traces of ocelli; frontal callus usually longitudinal, when present; wing with basicosta having strong setae as dense as adjoining costa Tabanini
- Frons moderately higher than wide, often parallel-sided or broadened towards base but rarely towards vertex; vertex having a well-developed tubercle with ocelli; frontal callus usually without upward extension; wing with basicosta free from strong setae or at most having 3-4 hairs only Diachlorini

Tribe Tabanini

Key to the genera

1. Frons with 2 distinct spot-like denuded callosities or none in females; in males, head relatively larger than thorax, strongly rounded and posteriorly hollowed *Atylotus* Osten Sacken
- Frons usually with a well-developed basal callosity having a median extension in females; in males, head relatively smaller than thorax, usually not strongly rounded and posteriorly hollowed *Tabanus* Linnaeus

Genus *Atylotus* Osten Sacken

1876. *Atylotus* Osten Sacken, *Mem. Boston Soc. nat. Hist.*, 2 : 426 (as subgenus of *Tabanus* L.).

Type-species : *Tabanus bicolor* Wiedemann.

14. *Atylotus agrestis* (Wiedemann)

1828. *Tabanus agrestis* Wiedemann, *Aussereurop. zweifl. Insekt.*, 1 : 557.

1911. *Tabanus ditaeniatu*s Macquart : Ricardo, *Rec. Indian Mus.*, 4. 134.

Material examined : 1 ♀, East Sikkim, Rangpo, 300 m, 22.iii. 1994, Coll.; L.K. Ghosh.

Diagnosis : Spot-like callosities distinct on female frons; antenna yellowish; leg also yellowish; abdomen yellowish with median and lateral greyish stripes uniting apically.

Distribution : Sikkim (East), and Bihar, Orissa, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal; China, Pakistan and Sri Lanka; Ethiopian and Palearctic regions.

Genus *Tabanus* Linnaeus

1758. *Tabanus* Linnaeus, *Syst. Nat. Ed.*, 10 : 601. Type-species : *Tabanus bovinus* L.

Subgenus *Tabanus* Linnaeus

Diagnosis : Head hemispherical; vertex smoothly flat or slightly concave; postocular rim present; banding on eyes often present; frons usually much narrow; antennal scape nearly as long as its width, hairy.

Key to the species

1. Subcallus bare and shining; femur and tibia contrastingly of dark and light colour 2
- Subcallus covered with tomentum; femur and tibia never with such dark and light colour combination. 4
2. Thorax yellowish, with golden hairs; abdomen predominantly reddish dorsally; femur orange and tibia pale straw yellow; body hairs

- predominantly golden
.....*flaviscutellus* Philip
- Thorax brownish to blackish, with inconspicuous yellow and black hairs; abdomen reddish brown basally, darkening on last 3-4 segments; femur blackish and tibia pale yellow; body hairs predominantly blackish 3
3. Subcallus brownish; abdominal incisures of tergites 3 and 4 with bright yellow hairs widened medially as triangles reaching half across these tergites *scutellus* Philip
 - Subcallus red; abdominal incisures narrowly pale with a few yellow hairs and not widened on tergites 3 and 4
.....*flavicornis subflavicornis* Philip.
 4. Frons with indefinite or no callus
..... *acallus* Szilády
 - Frons with clearly defined callus 5
 5. Abdomen with distinct bands or apical incisures but never with stripes or spots 6
 - Abdomen either with distinct median stripe (and occasionally also with lateral stripes) or with spots only or both 8
 6. Brownish species, with long and narrow frontal callus, and pale greyish basal band on scutellum; wing yellowish on basal half and brownish on apical half, having posterior cell 1 very narrowly open at margin; abdomen blackish brown, having narrow white tomentose bands
..... *albofasciatus* Ricardo
 - Species with different combination of characters. 7
 7. Reddish yellow species, with 3-banded eyes; nearly clear wings and abdomen reddish yellow up to segment 3, having incisures of yellow tomentum *orientis* Walker
 - Blackish species, with wings tinged anteriorly and blackish abdomen entirely having narrow reddish incisures *explicatus* Walker
 8. Very large species (20-23 mm.), with a conspicuously enlarged dorso-basal tooth on antennal plate; abdomen dorsally without stripes but with large median spots at least on tergites 2 and 3 along with incisures 9
 - Smaller species (10-19 mm), with small antennal tooth; abdomen dorsally with a median stripe (occasionally with lateral stripes also) besides spots or incisures 11
 9. Abdomen brownish, with a series of elongate black median spots on tergites 2-5; venter black brown *parafuscomaculatus* Sch. Stk.
 - Abdomen reddish, blackish apically in stark contrast with preceding tergites; black median spots never extended to tergite 5, occasionally not even to 4; venter coloured otherwise
..... 10
 10. Abdominal spot larger on tergite 2 and smaller on tergite 3, and so on tergite 4, if at all visible; sternites 1-4 at least partly yellow
..... *fuscomaculatus* Ricardo
 - Abdominal tergites 2-4 with small spots; venter usually brownish, with dark red incisures up to sternite 4 *pullomaculatus* Philip
 11. Mesonotum with distinct lateral stripes over entire scutum and scutellum; abdomen with a grey median stripe on tergites 3-6 and two lateral stripes on tergites 1-2 only
..... *jucundus* Walker
 - Mesonotum with indistinct lateral stripes never continuous on scutellum; abdomen patterned otherwise 12
 12. Abdomen with a median stripe of white tomentum and hairs on tergites 1-5; lateral stripes or spots of any kind absent
..... *monotaeniatus* (Bigot)
 - Abdomen with a median and two lateral tomentose and / or haired equilateral stripes or truncated confluent median triangles and / or lateral spots 13
 13. Median pale tomentose stripe present on tergites 1-6, sometimes as a series of confluent triangles; lateral pale spots present on tergites 2-5 diagonally *rubidus* Wiedemann
 - Median strongly white tomentose and white-haired stripe present from base of tergite 3 to

somewhere on tergite 6; lateral white tomentose and white-haired stripe present from tergite 1 to somewhere on tergite 4

..... *striatus* Fabricius

15. *Tabanus (Tabanus) acallus* Szilády

1926. *Tabanus acallus* Szilády, *Biol. hung.*, 1 : 14.

Distribution : Sikkim (East), and West Bengal.

16. *Tabanus (Tabanus) albofasciatus* Ricardo

1911. *Tabanus albofasciatus* Ricardo, *Rec. Indian Mus.*, 4 : 146.

Distribution : Sikkim (East), and Meghalaya.

17. *Tabanus (Tabanus) explicatus* Walker

1854. *Tabanus explicatus* Walker, *List Dipt. Colln Br. Mus.*, 5 : 328.

Distribution : Sikkim (East), and Meghalaya and Tamil Nadu.

18. *Tabanus (Tabanus) flavicornis subflavicornis* Philip

1970. *Tabanus flavicornis* subsp. *subflavicornis* Philip, *H.D. Srivastava Commem. Vol., Ind. Vet. Res. Inst. Izatnagar* : 446.

Distribution : Sikkim (North).

19. *Tabanus (Tabanus) flaviscutellus* Philip

1962. *Tabanus flaviscutellus* Philip, *Pacif. Insects*, 4. 300.

Distribution : Sikkim (East); Kalimantan and Vietnam.

Remarks : This record is as per Philip (1970 : 449) who himself has, however, observed departure of certain characters of the only specimen from those of the type specimen deposited in the Bishop Museum. According to Burton (1978 : 151), the distributional pattern of the species is questionable.

20. *Tabanus (Tabanus) fuscomaculatus* Ricardo

1911. *Tabanus fuscomaculatus* Ricardo, *Rec. Indian Mus.*, 4 : 183.

Distribution : Sikkim (East), and Arunachal Pradesh; Myanmar.

21. *Tabanus (Tabanus) jucundus* Walker

1848. *Tabanus jucundus* Walker, *List Dipt. Colln Br. Mus.*, 1 : 187.

Distribution : Sikkim (East), and Arunachal Pradesh, Assam, Maharashtra and Uttar Pradesh ; China, Pakistan, Philippines and Sri Lanka.

22. *Tabanus (Tabanus) monotaeniatus* (Bigot)

1892. *Atylotus monotaeniatus* Bigot, *Mém. Soc. Zool. Fr.*, 5 : 655.

Distribution : Sikkim (East), and Arunachal Pradesh, Assam, Meghalaya and West Bengal; China and Myanmar.

23. *Tabanus (Tabanus) orientis* Walker

1848. *Tabanus orientis* Walker, *List Dipt. Colln Br. Mus.*, 1 : 152.

Distribution : Sikkim (East); Nepal and Pakistan.

Remarks : The range of distribution for this species is restricted to Nepal upon resurrection of *T. fulvimedius* Walker (*vide* Stone, 1975) by Burton (1978). Subsequent records of this species from Pakistan and India (Sikkim) are, however, added to it after Burger (1984) and Datta (1991) respectively.

24. *Tabanus (Tabanus) parafuscomaculatus* Sch. Stekh.

1932. *Tabanus parafuscomaculatus* Schuurmans Stekhoven, *Arch. Naturgesch (n.s.)*, 1 : 80.

Distribution : Sikkim (East).

25. *Tabanus (Tabanus) pullomaculatus* Philip

1970. *Tabanus pullomaculatus* Philip, *H.D. Srivastava Commem. Vol., Ind. Vet. Res. Inst. Izatnagar* : 449.

Distribution : Sikkim (West and South), and Arunachal Pradesh and Manipur.

*26. *Tabanus (Tabanus) rubidus* Wiedemann1821. *Tabanus rubidus* Wiedemann, *Dipt. exot.*, 1 : 69.

Material examined : 1 ♀, South Sikkim, Namchi, 550 m, 19. iii. 1994, Coll. L. K. Ghosh ; 2 ♀ ♀, East Sikkim, Ranipool, 1400 m, 22. v. 1994, Coll. B. C. Das.

Distribution : Sikkim (East and South), Arunachal Pradesh, Assam, Bihar, Delhi, Haryana, Jammu & Kashmir, Kerala, Maharashtra, Meghalaya, Orissa, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal; Bangladesh, Cambodia, China, Jawa, Laos, Malay, Myanmar, Nepal, Nias Is., Pakistan, Singapore, Sri Lanka, Sumatera, Thailand and Vietnam.

27. *Tabanus (Tabanus) scutellus* Philip

1970. *Tabanus scutellus* Philip, H. D. Srivastava *Common. Vol., Ind. Vet. Res. Inst. Izatnagar* : 447.

Distribution : Sikkim (East, North and South)

28. *Tabanus (Tabanus) striatus* Fabricius1787. *Tabanus striatus* Fabricius, *Mantissa Insect.*, 2 : 356.

Material examined : 2 ♀ ♀ East Sikkim, Tadong, 1500 m, 30.iv. 1992, Coll. A.R. Lahiri ; 2 ♀ ♀, South Sikkim, Damthang, 500 m, 18.iii. 1994, Coll.; L.K. Ghosh.

Distribution : Sikkim (East, North and South), and Arunachal Pradesh, Assam, Bihar, Delhi, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Orissa, Punjab, Tamil Nadu, Tripura, Uttar Pradesh and West bengal; Bangladesh, Bhutan, Cambodia, China, Laos, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand and Vietnam.

Tribe **Haematopotini**Genus *Haematopota* Meigen1803. *Haematopota* Meigen, *Magazin InsektKde*, 2 : 67.

Type-species : *Tabanus pluvialis* Linnaeus.

Diagnosis : Generally small and slender flies of blackish grey colour; eyes with several undulating bands in life; frons with a velvety black

spot on either side just above frontal callus and often a midfrontal spot above these; wing usually dark, with a pattern of pale spots; mid tibia and often hind tibia also usually with pale rings.

Key to the species

1. Frontal callus nearly four times as wide as high, with virtually straight upper and lower margins; antennal scape black, much thicker and larger than flagellum; sub-apical band of wing not reaching hind margin in cell R_4 *annandalei* Ricardo
- Frontal callus crown-shaped, more than twice as wide as high, with virtually straight lower margin but upper margin having a median projection and gradually retreated sides; antennal scape yellowish brown, thinner and shorter than flagellum, sub-apical band of wing reaching vein R_3 *sikkimensis* Stone & Philip

*29. *Haematopota annandalei* Ricardo

1911. *Haematopota annandalei* Ricardo, *Rec. Indian Mus.*, 4 : 335.

Material examined : 2 ♀ ♀, East Sikkim, Singtam, 750 m, 23.iii. 1994, Coll.; L.K. Ghosh ; 2 ♀ ♀, East Sikkim, Dikchu, 600 m, 18.v. 1994, Coll.; S. Chattopadhyay.

Distribution : Sikkim (East), and Arunachal Pradesh, Maharashtra, Meghalaya and West Bengal ; China and Myanmar.

30. *Haematopota sikkimensis* Stone & Philip

1974. *Haematopota sikkimensis* Stone and Philip. *U. S. Dept. Agr. Tech. Bull.*, 1489 : 174.

Distribution : Sikkim (North).

Tribe **Diachlorini**Genus *Cydistomyia* Taylor1911. *Cydistomyia* Taylor, *Proc. Linn. Soc. N.S.W.*, 44 : 47.

Type-species : *Cydistomyia doddi* Taylor (= *albithorax* Ricardo).

Diagnosis : Slender flies with bare and

unbanded eyes, males with enlarged upper facets; frons tomentose and slightly converging; callosity usually well-developed; subcallus tomentose; with vein R_4 as a rule lacking appendix; legs generally light in colour.

31. *Cydistomyia aberrans* Philip

1970. *Cydistomyia aberrans* Philip, H. D. Srivastava
Commen Vol., Ind. Vet. Res. Inst. Izatnagar : 445.

Diagnosis : A brownish-yellow species with a prominent ocelligerous tubercle, annulus as long as or even longer than rest of antenna, yellowish appendages, unusually long hyaline wings and transversely banded abdomen.

Distribution : Sikkim (North).

Family BOMBYLIIDAE

Contributions on the fauna of Sikkim : Brunetti 1920; Bowden 1975.

A total of 6 species under 4 genera of 2 subfamilies are hitherto known in Sikkim vis-à-vis 86 species under 22 genera of 8 subfamilies in India.

Key to the subfamilies*

1. Eye-margin simple or very rarely with a deep sinosity posteriorly, but never indented; eyes as a rule without bisecting line or if divided, in males only; antennae usually approximate at base, with or without apical style; wing-vein R_{2+3} arising before level of cross-vein r-m at an acute angle BOMBYLIINAE
- Eye-margin with distinct indentation posteriorly; eyes with a more or less distinct bisecting line in both sexes; antennae wide apart at base, with apical style; wing vein R_{2+3} arising opposite to cross-vein r-m or nearly so, and always at right angle ANTHRACINAE

*The subfamily Systropodinae characterized by slender and pedunculate abdomen is excluded after Rohdendorf (1964), Hall and Evenhuis (1980), and Evenhuis (1982).

Subfamily BOMBYLIINAE

Key to the genera

1. Wing with 2 subequal basal cells due to cross-vein r-m being near base of discal cell; cell R_5 closed *Systoechus* Loew
- Wing with basal radial cell distinctly longer than basal medial cell due to cross-vein r-m being towards middle of discal cell; cell R_5 open *Bombylisoma* Rondani

Genus *Systoechus* Loew

1855. *Systoechus* Loew, *Progr. K. realsch. Meseritz*, 1855 :
34. Type-species : *Bombylius sulphureus* Mikan.

32. *Systoechus socius* (Walker)

1852. *Bombylius socius* Walker, *Insecta Saundersiana*,
1 : 201.

Diagnosis : Head posteriorly with very dense long, pale to bright yellow bristle-like scales; eye-margin below with whitish scales; antenna black, scape with long dark brown bristles; scutellum entirely covered with dense long, whitish to deep yellow scales turning reddish brown posteriorly, with a row of yellow spines; wing brownish; leg practically black; abdomen black, densely covered with bristle-like scales similar to those of thorax; abdominal segments each from 3 onwards with a row of black spines posteriorly.

Distribution : Sikkim (South), and Himachal Pradesh, Karnataka, Kashmir, Tamil Nadu, Uttar Pradesh and West Bengal; Nepal, Pakistan and Sri Lanka.

Genus *Bombylisoma* Rondani

1856. *Bombylisoma* Rondani, *Dipterol. ital. Prodr.*, 1 : 164.
Type-species : *Bombylius minimus* Schrank.

33. *Bombylisoma resplendens* (Brunetti)

1909. *Dischistus resplendens* Brunetti, *Rec. Indian Mus.*,
2 : 481.

Diagnosis : Head posteriorly with a thick fringe of long soft yellowish grey hairs and a single row

of long black hairs on the extreme ocular orbit in males, whereas in females numerous small brilliant emerald-green and rose-pink scales present amidst moderately thick fringe of pale yellow hairs; antenna black, very long, segment 1 (scape) much longer than 2 (pedicel), but 3 (flagellum) longest of all, flat and parallel-sided and with a minute white style apically; thorax and scutellum dorsally and laterally with a number of bright green scales and a few rose-pink scales amidst light grey hairs; wing rather dark grey; leg black except brownish yellow tibia and tarsomere 1; abdomen black, with similarly coloured scales as on thorax.

Distribution : Sikkim (East), and Assam, Himachal Pradesh and Uttar Pradesh; Myanmar, Nepal and Sri Lanka.

Subfamily ANTHRACINAE

Key to the tribes

1. Antennal style with a brush of setae apically; metapleuron bare; squama with a hairy fringe.
..... **Anthracini**
- Antennal style destitute of hairs apically; metapleuron hairy; squama with a scaly fringe **Exoprosopini**

Tribe Anthracini

Genus *Anthrax* Scopoli

1763. *Anthrax* Scopoli, *Ent. Carniolica* : 358. Type-species : *Musca morio* Linnaeus, misidentification, = *anthrax* (Schrank).

Diagnosis : Body scales usually decumbent, often silvery or shining black, ground colour dark brown to black; antenna usually with subspherical pedicel, being loosely attached to scape and flagellum, latter comprising 2 flagellomeres not aberrantly enlarged as bulb at base; anal cell often open in wing margin; spur vein usually present at bases of veins R_{2+3} and R_4 ; female genitalia with distinct ejection apparatus; vaginal apodeme L-shaped.

34. *Anthrax distigma* Wiedemann

1828. *Anthrax distigma* Wiedemann, *Aussereurop. zweifl. Insekt.*, 1 : 309.

Diagnosis : Wing nearly clear, with dark brown baso-costal oblique band limited to cross-vein r-m and bases of discal and posterior cell 4 (Cu_1); a distinct round brown spot on fork of vein R_{2+3} reaching up to R_{4+5} and a smaller indistinct spot on posterior cell 2 (M_1) present; anal cell open at margin.

Distribution : Sikkim (South), and Arunachal Pradesh, Bihar, Karnataka, Kerala, Meghalaya, Tamil Nadu, Uttar Pradesh and West Bengal; Bangladesh, Jawa, Myanmar, Philippines, Sri Lanka, Sulawesi and Sumatera.

Tribe Exoprosopini

Genus *Ligyra* Newman

1841. *Ligyra* Newman, *Entomologist*, 1 : 220. Type-species : *Anthrax bombyliiformis* Macleay.

Diagnosis : Antennal flagellum with terminal style bearing a minute appendage; wing with 4 submarginal cells and an inter-radial cross-vein between veins R_{2+3} and R_4 ; tarsal claw with a short, blunt basal tooth.

Key to the species

1. Wing entirely dark brown, with a violet tinge; antenna partly reddish brown or black 2
- Wing with apical part and a considerable portion of posterior half entirely or practically clear; antenna entirely black *oenomaus* (Rondani)
2. Abdominal segments 6 and 7 each with a basal spot of silvery white scales on each side of mid-line; a median stripe of long, fine hairs on venter bright yellow; antennal scape reddish brown *chrysolampis* (Jaenicke)
- Abdominal segments 6 and 7 each with silvery white spots nearly attaining side-margins; a median stripe of white scaly hairs on venter; antenna entirely black *tantalus* (F.)

35. *Ligyra chrysolampis* (Jaennicke)

1867. *Exoprosopa chrysolampis* Jaennicke, *Abh. senckens. naturf. Ges.*, 6 : 344.

Distribution : Sikkim (East and South), and Tamil Nadu and Uttar Pradesh; Bhutan, Cambodia, Hainan Is., Jawa, Kalimantan, Malaysia, Sulawesi and Sumatera.

36. *Ligyra oenomaus* (Rondani)

1875. *Hyperalonia oenomaus* Rondani, *Annali Mus. civ. Stor. nat. Giacomo Doria*, 7 : 453.

Distribution : Sikkim (East), and Arunachal Pradesh, Assam and West Bengal; Kalimantan, Malaysia and Philippines.

***37. *Ligyra tantalus* (Fabricius)**

1794. *Anthrax tantalus* Fabricius, *Ent. Syst.*, 4 : 260.

Material examined : 1 ♀, Rangpo, 300 m, East Sikkim 3.x. 1993. Coll.; B.N. Das.

Distribution : Sikkim (East), and Arunachal Pradesh, Assam, Tamil Nadu, Uttar Pradesh and West Bengal; China, Jawa, Kalimantan, Malaysia, Myanmar, Nepal, Philippines, Sulawesi, Sumatera and Taiwan; Japan; Papua New Guinea.

Remarks : The species appears to be widespread and is believed to exist throughout India (cf. Bowden, 1975).

Family SCIOMYZIDAE

The family was heretofore unknown from Sikkim. However, a single species occurring widely not only in the Orient but also in the Australian region, is known from the state vis-à-vis 10 species under 4 genera of the subfamily Sciomyzinae in India.

Subfamily SCIOMYZINAE

Diagnosis : Wing with bare vein R_1 ; veins R_{4+5} and M_{1+2} parallel or only slightly converging apically; anal cell without triangular extension ventro-apically; mid and hind tibiae without median setae.

Tribe Tetanocerini

Diagnosis : Propleuron without strong seta above base of coxa but often with fine hairs.

Genus *Sepedon* Latreille

1804. *Sepedon* Latreille, *Nouv. Dict. Hist. nat.*, 24 : 196.

Type-species : *Syrphus spegeus* Fab.

Diagnosis : Slender flies with a median longitudinal depression in lieu of mid-frontal stripe; anterior orbital and ocellar setae absent; antennal segment 2 nearly rod-shaped; thorax without humeral, presutural, 1 postalar, 1 or both dorsocentrals, prescutellar acrostichal and 1 pair of scutellar setae; prosternum haired and all parts of pleura with short hairs; subalar setae absent; hind coxa short-haired at inner posterior margin; cerci in male genitalia usually long and exposed.

***38. *Sepedon plumbella* Wiedemann**

1830. *Sepedon plumbellus* Wiedemann, *Aussereurop. zweifl. Insekt.*, 2 : 577.

Material examined : 7 ♂♂, 2 ♀♀ South Sikkim, Melli Bazar forest area, 270 m, 13.vi. 1997, Coll.; P.H. Roy.

Diagnosis : Antennal scape reddish yellow, remainder nearly or quite black; wing with clear basal half and dark apical half or so; hind femur usually reddish on apical half.

Distribution : Sikkim (South), and Bihar, Himachal Pradesh, Tripura and West Bengal; China, Jawa and other parts of the Oriental region; Australia, New Caledonia, New Guinea and Solomon Islands.

Family SEPSIDAE

Contribution on the fauna of Sikkim : Brunetti, 1910.

A total of 6 species under 3 genera of 1 subfamily are hitherto known in Sikkim vis-à-vis 21 species under 8 genera of 2 subfamilies in India.

Subfamily SEPSINAE

Diagnosis : Medium or small in size, with reddish to black body and at least mesopleuron glossy; inner vertical bristles present; mid-femur normal and not bent at middle.

Key to the genera

1. Humeral bristles absent
..... *Decachaetophora* Duda
- Humeral bristles present 2
2. Abdomen of both sexes without distinct macrochaetae; wing without a dark spot in vein R_{2+3} apically; hypopygial process bifurcate apically. *Dicranosepsis* Duda
- Abdomen in males and often in females also, with distinct macrochaetae; wing with or without a dark spot on vein R_{2+3} apically; hypopygial process never bifurcate apically..
..... *Sepsis* Fallén

Genus *Decachaetophora* Duda

1926. *Decachetophora* Duda, *Annln naturh. Mus. Wein*, 39 (1925) : 27. Type-species : *Sepsis aeneipes* de Meijere.

39. *Decachaetophora aeneipes* (de Meijere)

1913. *Sepsis aeneipes* de Meijere, *Annls hist.-nat. Mus. natn. hung.*, 11 : 119.

Material examined : 3♂♂, East Sikkim, Tumin, 1800 m, 28.ix. 1988, Coll.; V.C. Agarwal; 1♂, East Sikkim, 7th Mile, 8 Km off Gangtok, 1600 m, 6.v. 1994, Coll.; S. Chattopadhyay.

Diagnosis : A blackish fly, with duplicate vibrissae; supra-alar and outer vertical bristles present; fore femur in males with complicated setae and fore tibia with ventral emargination beset with a scraper-like tooth in mid-line; abdomen normal and not constricted between segments 2 and 3.

Distribution : Sikkim (East), and Assam, Himachal Pradesh, Meghalaya, Punjab, Tripura, Uttar Pradesh and West Bengal; China, Nepal,

Pakistan, Sri Lanka and Taiwan; Japan and Nearctic region.

Genus *Dicranosepsis* Duda

1926. *Dicranosepsis* Duda, *Annln naturh. Mus. Wein*, 39 (1925) : 43 (As subgenus of *Sepsis* Fallén). Type-species : *Sepsis bicolor* Wiedemann.

40. *Dicranosepsis bicolor* (Wiedemann)

1830. *Sepsis bicolor* Wiedemann, *Ausserurop. zweifl. Insekt.*, 2 : 468.

Material examined : 8♂♂, East Sikkim, Andheri Khola, 750 m, 21.v. 1994, Coll.; S. Chattopadhyay.

Diagnosis : Sternopleuron shining antero-ventrally; fore femur without a postero-ventral seta sub-basally, hind tibia without a distinct osmeterium and metatarsus without antero-ventral setae in males.

Distribution : Sikkim (East), and Andhra Pradesh, Arunachal Pradesh, Assam, Maharashtra, Meghalaya, Punjab, Tripura, Uttar Pradesh and West Bengal; other parts of the Oriental region; Japan and Australian region.

Genus *Sepsis* Fallén

1810. *Sepsis* Fallén, *Sp. Ent. nov. Dipt.* : 17. Type-species : *Musca cynipsea* Linnaeus.

Key to the species

1. Wing with a dark spot on vein R_{2+3} apically 2
- Wing without a dark spot on vein R_{2+3} apically 3
2. Wing-spot shaped angular; male fore femur much enlarged, ventrally with 2 emarginations, large proximal one bearing 3 strong long spines and small distal one bearing 4 or 5 short spines
..... *himalayensis* Brunetti
- Wing spot shaped round; male fore femur not enlarged, with a single ventral emargination beset with 3 short spines
..... *neocynipsea* Melander & Spuler

3. Thorax entirely reddish yellow, with a broad black dorsal stripe; male fore femur enlarged, with 2 ventral emarginations, large proximal one bearing 3 strong spines and distal one bearing 2 or 3 weak spines

..... *indica* Wiedemann

- Thorax entirely black, without dorso-median stripe but apparently with reddish lateral stripes; male fore femur with a single ventral emargination beset with 3 short spines

..... *rufa* Macquart

41. *Sepsis himalayensis* Brunetti

1910. *Sepsis himalayensis* Brunetti, *Rec. Indian Mus.*, 3 (1909) : 345.

Distribution : Sikkim (East), and Arunachal Pradesh, Meghalaya and West Bengal; Myanmar, Nepal and Pakistan.

42. *Sepsis indica* Wiedemann

1824. *Sepsis indica* Wiedemann, *Analecta Ent.* : 57.

Material examined : 7 ♂♂, East Sikkim, Andheri Khola, 750 m, 21.v. 1994, Coll.; S. Chattopadhyay.

Distribution : Sikkim (East), and Assam, Bihar, Karnataka, Kerala, Maharashtra, Orissa, Tamil Nadu and West Bengal; Bangladesh, China, Jawa, Kalimantan, Lesser Sunda Is., Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Sulawesi, Sumatera, Taiwan and Vietnam; Australian and Palearctic (Japan, Russia and South Korea) regions.

*43. *Sepsis neocynipsea* Melander and Spuler

1917. *Sepsis neocynipsea* Melander and Spuler, *Bull. Wash. agric. exp. Stn*, 143 : 28.

Material examined : 3 ♂♂, South Sikkim, Jorthang, 300 m, 5.vi. 1994, Coll.; B.C. Das.

Distribution : Sikkim (South); Holarctic region and Nepal.

Remarks : The species is expected to occur elsewhere (at least the northern summit) in India.

44. *Sepsis rufa* Macquart

1850. *Sepsis rufa* Macquart, *Dipt. exot. Suppl.*, 4 : 269.

1910. *Sepsis rufa* Macquart : Brunetti, *Rec. Indian Mus.*, 3 : 359.

Material examined : 2 ♂♂, East Sikkim, Ranipool, 1400 m, 22.v. 1994, Coll.; B. C. Das.

Distribution : Sikkim (East), and Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Meghalaya, Orissa, Tripura, Uttar Pradesh and West Bengal; Myanmar and Nepal.

Family CALLIPHORIDAE

Contributions on the fauna of Sikkim : Senior-White, Aubertin and Smart, 1940; James, 1977.

A total of 9 species under 7 genera of 3 subfamilies are hitherto known in Sikkim vis-à-vis 97 species and 1 subspecies under 26 genera of 4 subfamilies in India.

Key to the subfamilies

1. Base of stem vein of wing bare dorsally CALLIPHORINAE
- Base of stem vein of wing with long fine setulae dorsally 2
2. Thoracic squama bare dorsally; subcostal sclerite with fine pubescence RHINIINAE
- Thoracic squama haired dorsally; subcostal sclerite setulose CHRYSOMYINAE

Subfamily CALLIPHORINAE

Key to the genera

1. Thoracic squama bare 2
- Thoracic squama at least partially haired *Calliphora* Rob.-Desv.
2. Antennal arista entirely plumose; parafacialia on upper half bare *Lucilia* Rob.-Desv.
- Antennal arista plumose up to one-third of its length; parafacialia on upper half pilose *Melinda* Rob.-Desv.

Genus *Calliphora* Rob.-Desv.

1830. *Calliphora* Robineau-Desvoidy, *Mém. prés. div. Sav. Acad. Sci. Inst. Fr.* : 433. Type-species : *Musca vomitoria* L.

Subgenus *Calliphora* s. str.

Diagnosis : Body bluish black; presutural intra-alar bristles present; lower squama entirely with hair on upper surface.

Key to the species

1. Buccae yellow or orange excepting dark posterior part, predominantly with black hair; male eyes close together; basicosta of wing yellow *vicina* Rob.-Desv.
- Buccae entirely black, predominantly with reddish hair on ventral and posterior parts; male eyes very narrowly separated; basicosta of wing black *vomitoria* (L.)

45. *Calliphora (Calliphora) vicina* Rob.-Desv.

1830. *Calliphora vicina* Robineau-Desvoidy, *Mém. Prés. div. Sav. Acad. Sci. Inst. Fr.* : 435.

1940. *Calliphora erythrocephala* (Meigen) : Senior-White, Aubertin & Smart, *Fauna Br. India, Dipt.*, 6 : 33.

Material examined : 2♂♂, 1♀, East Sikkim, Tadong, 1500 m, 10.iii. 1994, Coll.; L.K. Ghosh.

Distribution : Sikkim (East), and Himachal Pradesh, Uttar Pradesh and West Bengal; China, Nepal and Pakistan; Australian, Nearctic and Neotropical regions.

46. *Calliphora (Calliphora) vomitoria* (L.)

1758. *Musca vomitoria* Linnaeus, *Syst. Nat. Ed.*, 10 : 595.

Distribution : Sikkim (East), and Jammu & Kashmir, Himachal Pradesh, Uttar Pradesh and West Bengal; Holarctic region.

Genus *Lucilia* Robineau-Desvoidy

1830. *Lucilia* Robineau-Desvoidy, *Mém. Prés. div. Sav. Acad. Sci. Inst. Fr.* : 452. Type-species : *Musca caesar* Linnaeus.

*47. *Lucilia porphyryna* (Walker)

1856. *Musca porphyryna* Walker, *J. Proc. Linn. Soc. Lond., Zool.*, 1 : 24.

Material examined : 1♀, East Sikkim, Singtam, 750 m, 30. ix. 1993, Coll. B. N. Das.

Diagnosis : Antenna reaching upper margin of epistome, segment 3 more than 4 times as long as broad; postsutural acrostichal bristles lying in front of corresponding dorso-central bristles; upper and lower squamae infuscated; basicosta of wing blackish; leg dark brown, with 1 antero-dorsal bristle in either sex; abdominal tergite 3 lacking long and thick bristles at hind margin.

Distribution : Sikkim (East), and Arunachal Pradesh, Assam, Jammu & Kashmir, Himachal Pradesh and West Bengal; China, Malay, Nepal, Philippines, Sri Lanka and Thailand.

Genus *Melinda* Robineau-Desvoidy

1830. *Melinda* Robineau-Desvoidy, *Mém. Prés. div. Sav. Acad. Sci. Inst. Fr.* : 439. Type-species : *Musca cognata* Meigen = *Musca caerulea* Meigen (pre-occupied).

48. *Melinda scutellata* (Senior-White)

1923. *Paradichosia scutellata* Senior-White, *Spolia zeylan.*, 12 : 312.

Diagnosis : Parafacialia with numerous fine setulae on upper third; scutellum dark basally, reddish towards apex; leg orange-yellow excepting dark brown tarsus, hind tibia with 5 very long bristles among piles; abdomen blackish-grey, with patches of silvery tomentum.

Distribution : Sikkim (East), and West Bengal; Malay, Myanmar and Nepal.

Subfamily CHRYSOMYINAE

Genus *Chrysomya* Robineau-Desvoidy

1830. *Chrysomya* Robineau-Desvoidy, *Mém. prés. div. Sav. Acad. Sci. Inst. Fr.* : 444. Type-species : *Chrysomya regalis* Rob.-Desv. = *Musca marginalis* (Wiedemann).

Diagnosis : Generally medium-sized flies of

metallic green, blue or purple colour; eyes large and bare, usually holoptic and upper facets enlarged in males but dichoptic and with small uniform facets in females; presutural acrostichal bristle absent; propleuron and prosternum hairy; supra-squamosal ridge usually with anterior parasquamosal tuft; subcostal sclerite hairy; tergum 5 with fine erect bristles on disc.

49. *Chrysomya megacephala* (Fabricius)

1794. *Musca megacephala* Fabricius, *Syst. Ent.*, 4 : 317.

Material examined : 1♂, 1♀, South Sikkim, Namchi, 1250 m, 10.xi. 1992, Coll.; M.S. Shishodia.

Diagnosis : Eyes in males with markedly enlarged facets on upper 2/3, lower 1/3 with small facets; parafacialia and genae yellowish orange, both covered with yellowish-white hairs; antennal segment 3 entirely orange; mesonotum with 2 short, narrow longitudinal black stripes anteriorly and a small black triangle on humeral callus; abdomen greenish blue with purple reflection; male hypopygium slightly projecting; superior clasper much reduced and lightly chitinized.

Distribution : Sikkim (South), and also other states in India and other parts of the Oriental region; North China and Japan of the Palaearctic region; Australasian region; Malagasy sub-region of the Ethiopian region.

Subfamily RHINIINAE

Key to the Genera

1. Antennal arista microscopically pubescent; wing cell R_5 well open
..... *Metallea* van der Wulp.
- Antennal arista pectinated, *i.e.*, ciliate on upper side only; wing cell R_5 closed or narrowly open.
..... 2
2. Facial carina rather narrow; male frontalia broadly persistent throughout; wing cell R_5 closed or narrowly open
..... *Idiella* Brauer & Bergenstamm
- Facial carina well-developed, widely isolating

antennae; male frontalia completely obliterated; wing cell R_5 short-petiolate
..... *Idiellopsis* Townsend

Genus *Idilela* Brauer & Bergenstamm

1889. *Idiella* Brauer and Bergenstamm, *Denkschr. Akad. Wiss., Wien*, 56 : 154. Type-species : *Idia mandarina* Wiedemann.

Key to the species

1. Antenna and palpus black; pleuron with long whitish yellow hair, arising from black dots; femur black, with greenish reflection but tibia yellow, with black apex
..... *euidielloides* s.-w.
- Antenna and palpus brown; pleuron with stripe of thick golden pile; femur and tibia entirely brownish yellow *tripartita* (Bigot)

50. *Idiella euidielloides* Senior-White

1923. *Idiella euidielloides* Senior-White, *Mém. Dep. Agric. India (ent. Ser.)*, 7 : 166.

Distribution : Sikkim (East), and Kerala, Meghalaya, Orissa and West Bengal; Indonesia (Jawa, Timor), Malaysia (Malay), Philippines (Palawan), Sri Lanka, Taiwan and Thailand.

51. *Idiella tripartita* (Bigot)

1874. *Idia tripartita* Bigot, *Annls Soc. ent. Fr.*, (5) 4 : 236.

Material examined : 1♀, South Sikkim, Namchi, 550 m, 19.iii. 1994, Coll.; L.K. Ghosh.

Distribution : Sikkim (East and South), and West Bengal; China, Myanmar, Nepal and Philippines (Palawan, Tawi Tawi).

Genus *Idiellopsis* Townsend

1917. *Idiellopsis* Townsend, *Rec. Indian Mus.*, 13. 190.

Type-species : *Idiellopsis similis* Townsend = *Idia xanthogaster* (Wiedemann).

52. *Idiellopsis xanthogaster* (Wiedemann)

1820. *Idia xanthogaster*, Wiedemann, *N. Dipt. Gen.* : 21.

1917. *Idiellopsis similis* Townsend, *Rec. Indian Mus.*, 13 : 190.

Diagnosis : Frons with a black stripe, parafrontalia white, with black spots; mesonotum and scutellum entirely dark green; pleuron with profuse golden hair; wing yellow, with slight apical infuscation; abdomen reddish orange, with a black median stripe and darkened segments 3 and 4 posteriorly in males.

Distribution : Sikkim (East), and Assam, Bihar, Madhya Pradesh and Uttar Pradesh; Jawa and Malay; Australia and Maluku.

Genus *Metallea* van der Wulp

1880. *Metallea* van der Wulp, *Tijdschr. Ent.*, 23 : 174.

Type-species : *Metallea notata* van der Wulp.

53. *Metallea notata* van der Wulp

1880. *Metallea notata* van der Wulp, *Tijdschr. Ent.*, 23 : 175.

Diagnosis : Generally metallic green species; antennal arista pubescent; all femora black; abdominal segments 1 and 2 yellowish, 3 with greenish band posteriorly and remainder with greenish patches laterally.

Distribution : Sikkim (East), and Andaman Is., Assam, Bihar, Meghalaya, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal; China, Indonesia (Jawa), Malaysia (Malay) and Sri Lanka.

Family SARCOPHAGIDAE

Contributions on the fauna of Sikkim : Senior-White, Aubertin and Smart, 1940; Nandi and Ray, 1982.

A total of 10 species under 6 genera of the subfamily Sarcophaginae are hitherto known in Sikkim vis-à-vis 101 species under 32 genera of 3 subfamilies in India.

Subfamily SARCOPHAGINAE

Diagnosis : Antennal arista pubescent to plumose on basal two-thirds; notopleurals invariably 3 or 4; stem-vein of wing setulose on posterior upper side of its basal section.

Key to the Genera

1. Acrostichal bristles absent.....2
Acrostichal bristles present 3
2. Paraphallus long, apically bifurcated and without any lateral process
.....*Robineauella* End.
– Paraphallus short, blunt and with a short lateral process*Bercaea* Rob.-Desv.
3. Propleuron bare.....4
– Propleuron haired 5
4. Sternite 4 with profusely thick and long hair; apical plate of paraphallus rounded and entirely membranous..... *Seniorwhitea* Rohdendorf
– Sternite 4 sparsely haired; apical plate of paraphallus shaped otherwise and partially sclerotized, but never becoming gradually pointed, even if long and slender
.....*Parasarcophara* Johnston & Tiesg
5. Sternite 5 with a prominent conical protuberance in middle part; hind tibia of male fringed*Rosellea* Rohdendorf
– Sternite 5 without protuberance in middle part ; hind tibia of male devoid of fringe
.....*Boettcherisca* Rohdendorf

Genus *Bercaea* Robineau-Desvoidy

1863. *Bercaea* Robineau-Desvoidy, *Hist. nat. Dipt. Paris*, 2 : 549. Type-species : *Musca haemorrhoidalis* Fallén.

54. *Bercaea cruentata* (Meigen)

1816. *Musca haemorrhoidalis* Fallén, *Vetensk. Akad. Handl.*: 237 (pre-occupied).

1826. *Sarcophaga cruentata* Meigen, *Syst. Besch. europ. zweifl. Insekt.*, 5 : 28.

Diagnosis : Antenna and palpus black; propleuron bare; posterior dorsocentral 6, anterior 4 weak; wing costal segment iii and v equal; mid femur with comb but no basal fringe; hind tibia double-fringed; abdominal segment 2 without marginal bristles; genital tergites orange.

Distribution : Sikkim (East, West, North, South), and Arunachal Pradesh, Bihar, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Uttar Pradesh and West Bengal; Nepal and Thailand; Africa, Americas, Europe, Hawaii, Korea and Seychelles.

Genus *Boettcherisca* Rohdendorf

1937. *Boettcherisca* Rohdendorf, *Fauna USSR, Dipt.*, **19** (1) : 270. Type-species : *Myophora peregrina* Robineau-Desvoidy.

55. *Boettcherisca peregrina* (Rob.-Desv.)

1830. *Myophora peregrina* Robineau-Desvoidy, *Mém. prés. Acad. Sci. Inst., Fr.*, (2) **2** : 356.

Material examined : 2♂♂, North Sikkim, Mangan, 1200 m, 2.iv. 1994, Coll.; P.H. Roy.

Diagnosis : Frons in males half width of an eye; lateral vertical absent; costal segment iii longer than v; hind femur with postero-ventral macrochaetal row, mid tibia bare, hind tibia with apical fringe; spines on apical part of inner forceps not extending to dorsal side.

Distribution : Widely distributed in India including Sikkim (North, West); Hainan Is., Indonesia, Malaysia, Myanmar, Nepal, South China, Sri Lanka, Taiwan and Thailand; Australia, Fiji, Gilbert Is., Hawaii, Japan, Korea, Mariana Is., New Britain, New Guinea, Ogasawa, Samoa, Seychelles and Society Is.

Genus *Parasarcophaga* Johnston & Tiegs

1921. *Parasarcophaga* Johnston and Tiegs, *Proc. R. Soc. Qd.*, **33** : 86. Type-species : *Sarcophaga omega* Johnston & Tiegs.

Key to the subgenera

1. Lateral plate of paraphallus in form of narrow stout process extending forward
..... *Curranea* Rohdendorf
- Lateral plate of paraphallus in form of an unpaired pedunculate process
..... *Parasarcophaga* Johnston & Tiegs

Subgenus *Curranea* Rohdendorf

1937. *Curranea* Rohdendorf, *Fauna USSR, Dipt.*, **19** (1) : 255, 452. Type-species : *Sarcophaga tibialis* Macquart.

56. *Parasarcophaga (Curranea) kalimpongensis* Nandi

1978. *Parasarcophaga (Curranea) kalimpongensis* Nandi, *Rev. Brasil Biol.*, **39** (2) : 457.

Diagnosis : Thorax with 5+5 dorsocentral bristles, posterior 2 well-developed; hind tibia without tuft of hair; apical plate of paraphallus with 1 median and 3 lateral apical processes; lateral plate of paraphallus short, chitinous and bifurcate; styli of glans devoid of serrations; ventralia nearly membranous, with a hook-like process.

Distribution : Sikkim (North), and West Bengal.

Subgenus *Parasarcophaga* Johnston & Tiegs

1921. *Parasarcophaga* Johnston and Tiegs, *Proc. R. Soc. Qd.*, **33** : 86.

Key to the species

1. Posterior dorsocentrals 5-6. Inner forceps swollen at two-thirds its length, with a few spines on it; apex of paraphallus long, curved, with 2 knobs at basal part on outer surface *macroauriculata* (Ho)
- Posterior dorsocentrals only 4 2
2. Acrostichal 1 : 1; apical process of paraphallus well-curved 3
- Only posterior acrostichal distinct; apical process of paraphallus slightly curved
..... *sericea* (Walker)
3. Sternite 5 with uniformly wide arms; mid femur with comb and sparse basal fringe; segment iii of costa longer than v
..... *misera* (Walker)
- Sternite 5 without uniformly wide arms; mid femur with comb and long basal fringe; segment

iii of costa twice as v
 *albiceps* (Mg.)

57. *Parasarcophaga* (*Parasarcophaga*)
albiceps (Meigen)

1826. *Sarcophaga albiceps* Meigen, *Syst. Besch. europ. zweifl. Insekt.*, 5 : 22.

Material examined : 2♂♂, East Sikkim, Tadong, 1500 m, 25. ix. 1993, Coll. B. N. Das.

Distribution : Sikkim (East, West, North, South), and also common in other parts of India ; China, Kalimantan, Malaysia, Nepal, Philippines, Ryukyu Islands, Taiwan and Thailand; Bismarck Archipelago, Europe, Hawaii, Israel, Japan, Korea, New Britain, New Guinea, Solomon Island and Turkey.

58. *Parasarcophaga* (*Parasarcophaga*)
macroauriculata (Ho)

1932. *Sarcophaga macroauriculata* Ho, *Bull. Fan. meml. Inst. Biol.*, 3 : 347.

Distribution : Sikkim (East, West, North), and Manipur, Meghalaya, Nagaland, Uttar Pradesh and West Bengal.

59. *Parasarcophaga* (*Parasarcophaga*)
misera (Walker)

1849. *Sarcophaga misera* Walker, *List Dipt. Br. Mus.*, 4 : 829.

1913. *Sarcophaga orchidea* Böettcher, *Annl. hist.-nat. Mus. natn. hung.*, 11 : 375.

Material examined : 1♂, East Sikkim, Tadong, 1500 m, 25.ix. 1993. Coll.; B.N. Das.

Distribution : Sikkim (East, West), and widely occurring in other parts of India; Bangladesh, China, Malaysia, Hainan Is., Jawa, Kalimantan, Myanmar, Nepal, Philippines, Ryukyu Islands, Sri Lanka, Sulawesi, Sumatera, Taiwan and Thailand ; Afganistan, Korea and Japan; widespread in the Pacific Islands to New Guinea and Australia.

60. *Parasarcophaga* (*Parasarcophaga*)
sericea (Walker)

1852. *Sarcophaga sericea* Walker, *Insecta saundersiana*, 4 : 326.

1917. *Sarcophaga knabi* Parkar, *Proc. U. S. natn. Mus.*, 54 : 66.

Material examined : 1♂, South Sikkim, Damthang, 500 m, 18.iii. 1994. Coll.; L.K. Ghosh.

Distribution : Sikkim (South, West), and other parts of India; Bangladesh, China, Hainan Is., Indonesia, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Taiwan and Thailand; Australia, Caroline Is., Korea, Mariana Is., Marshall Is., New Guinea, Society Is. and the erstwhile U.S.S.R.

Genus *Robineauella* Enderlein

1928. *Robineauella* Enderlein, *Arch. Klass. phyl. Ent.*, 1 (1) : 23. (as subgenus of *Parasarcophaga* Johnston & Tiegs). Type-species : *Sarcophaga scoparia* Pandellé.

61. *Robineauella coei* Rohdendorf

1966. *Robineauella (Jantiella) coei* Rohdendorf, *Bull. Br. Mus. nat. Hist. (Ent.)*, 17 (10) : 458.

Diagnosis : Apical plate of paraphallus strongly sclerotized, apically bifurcate; lateral plate short, apically pointed; styli of glans somewhat short; genital tergites devoid of marginal bristles.

Distribution : Sikkim (East, North), and Arunachal Pradesh, Manipur and West Bengal.

Genus *Rosellea* Rohdendorf

1937. *Rosellea* Rohdendorf, *Fauna USSR, Dipt.*, 19 (1) : 242 (as subgenus of *Parasarcophaga* Johnston & Tiegs). Type-species : *Sarcophaga aratrix* Pandellé.

62. *Rosellea khasiensis* (Senior-White)

1924. *Sarcophaga khasiensis* Senior-White, *Rec. Indian Mus.*, 26 : 246.

Diagnosis : Frons more than half of eye width; antennal segment 3 brownish; presutural acrostichal absent, notopleural 3, disc and lateral margin of scutellum each with 1 pair of bristles; costal segment iii longer than v; fore femur with 2 rows of bristles postero-dorsally and hind femur with 2 rows of bristles antero-dorsally; apical plate of

paraphallus curved downward and its lateral plate curved upward.

Distribution : Sikkim (East, North), and Assam, Kashmir, Manipur and Meghalaya; China, Nepal and Thailand.

Genus *Seniorwhitea* Rohdendorf

1937. *Seniorwhitea* Rohdendorf *Fauna USSR, Dipt.*, 19 (1) : 297. Type-species : *Sarcophaga orientaloidea* Senior-White = *Sarcophaga krameri* Böettcher = *Sarcophaga reciproca* Walker.

63. *Seniorwhitea reciproca* (Walker)

1856. *Sarcophaga reciproca* Walker, *J. Proc. Linn. Soc. Lond., Zool.*, 1 : 22.

1912. *Sarcophaga krameri* Böettcher, *Ent. Mitt.*, 1 : 165.

Material examined : 2♂♂, South Sikkim, Namchi, 550 m, 19.iii. 1994, Coll. L.K. Ghosh.

Diagnosis : Head with weak lateral vertical bristle or none; antenna black, segment 3 more than thrice as long as 2; abdominal tergite 2 only with marginal bristles; mid femur with strong comb and basal fringe; hind femur well-fringed; mid and hind tibiae fringed.

Distribution : Sikkim (West, South), and nearly everywhere in India; China, Hainan Island, Laos, Malay, Myanmar, Nepal, Singapore, Sri Lanka, Taiwan and Thailand; Hawaii.

ZOOGEOGRAPHICAL REMARKS

Sikkim comprises four districts : North, South, East and West, of which the north occupies more than the half of the area with the greatest elevations as well as the marvellous landscape that the state holds and shares with the Darjiling district of West Bengal, the only neighbouring state in India. Because of rather well-known Diptera fauna in West Bengal and the like physiography of the adjoining Darjiling terrain, the fauna is discussed in the light of that in West Bengal (*vide* Datta, Parui and Mukherjee, 1997). The pattern of distribution exhibited by the species (as per serial no.) is simultaneously accentuated by the

diagrams 1-9 appended here as visual aids.

The Bibionidae are known to occur in Sikkim by 4 species, of which *Bibio fuscitibia* is now recorded from the state, conforming to the Himalayan bias as shown by 3 other species (Diag. 2). So far, *B. hortulanoides* remains unknown from outside India but the other 3 species are known at least from Nepal (Diag. 6). Indeed, *B. tenebrosus* and *Penthetria japonica* are the two well-known Oriental species that extend their range of distribution northward as far as Japan and even Siberia (in case of the latter species) in the Palaearctic region (Diags. 2 & 6).

The Stratiomyidae are represented by 7 species, of which *Epanastasis fumipennis* is known from Sikkim only (Diag. 1), and *Sargas metallinus* and *Hermetia illucens*, the lone species of the Hermetiinae here, are now recorded from the state despite their wide occurrence almost throughout the Orient (Diag. 6). The former species is, however, widely known in India but the latter, though nearly cosmopolitan around the globe between 45°N and 40°S, is poorly known in this country (Diag. 2). The other 2 species along with *metallinus*, namely, *Ptecticus aurifer* and *P. australis* of the Sarginae do occur in the Himalaya, certainly colonizing elsewhere in India and abroad (*vide* Datta and Parui, 1998) (Diags. 2 & 6). Of the two pachygasterines, *Stratiosphecomyia variegata* is limited to the east and the north-east of India, whereas *Ptilocera amethystina* is known only from Sikkim in India and far beyond at the eastern and the southern fringes of the Oriental region. The latter species is, therefore, likely to occur not only in the eastern part of India but also everywhere in those countries regarded as the probable pathway of dispersal (Datta and Parui, *op. cit.*).

The Tabanidae in Sikkim are not only significant in quality but also in quantity, outnumbering many other kinds of Diptera. Altogether 19 species and 1 subspecies are known under 6 genera belonging to 3 subfamilies and *Tabanus* overwhelmingly surpass the remaining genera : *Philoliche*, *Chrysops*, *Atylotus*, *Haematopota* and *Cydistomyia* taken together in magnitude. The

dominant genus *Tabanus* comprises 13 species and 1 subspecies (70% of the fauna) and *Haematopota* 2 species, whereas a single species pertains to each of the rest. *Philoliche longirostris* certainly indicates the Himalayan bias, extending its range of distribution westward to Nepal and northward to China and Tibet (Palearctic region) (Diag. 6). However, its existence in the central, western and southern India as far as Karnataka and Tamil Nadu is unknown. Likewise, it is not shown beyond Assam and Meghalaya in the eastend of this country (Diag. 2). *Chrysops dispar*, a widespread Oriental species, is supposed to occur not only throughout India (presently unknown in the northern, central and western states) but also everywhere in the Orient as far as the Weber's Line (*vide* Datta, 1998) (Diags. 2 & 6). The distributional pattern exhibited by *Atylotus agrestis* makes us admit that the seat of origin of the species is somewhere in the Palearctic region and in course of time it has radiated southward both in the Ethiopian and Oriental regions (*vide* Burger, 1981). Indeed, its occurrence in most of the territories (excepting certain parts of India, China, Pakistan and Sri Lanka) is still unknown because it has not established itself well in the entire region. The only species of *Cydistomyia*, viz., *aberrans* and one of *Haematopota*, viz., *sikkimensis* are not known elsewhere (Diag. 1) but *H. annandalei*, a newly recorded species, most likely occur everywhere in India despite its disjunct records in several states (Diag. 3). The latter species is also known from China northward and Myanmar southward, forming a confluent landmass for easy dispersal (Diag. 7). Of the *Tabanus* species, *scutellus* and *parafuscomaculatus*, and *flavicornis subflavicornis* are unknown elsewhere (Diag. 1) but *orientis* extends its range of distribution furthermore to Nepal and Pakistan westward (Diag. 7), giving a clear indication of its existence at least in the northern fringe of India along the Himalayan belt and *flaviscutellus* with a long bound over to Vietnam and Kalimantan (Indonesia) leaving no records of occurrence in the intervening territories (Diag. 6). Although *acallus*, *albofasciatus* and *pullomaculatus* are

limited to the east and/or north-east of India (Diag. 3), *explicatus* exhibits also in Tamil Nadu (South India) (Diag. 3). Among the remaining 5 species, *fuscomaculatus* is known from Myanmar and *monotaeniatus* also from China besides certain states in the north-east India (Diags. 3 & 7), whereas *jucundus* is known from parts of the western and northern India along with the north-east, and outside from China northward, Sri Lanka southward, the Philippines eastward and Pakistan westward, all close to one another giving thoroughfare for easy migration (Diags. 3 & 7). Indeed, both *rubidus* (recorded now) and *striatus* unlike others as cited above, are the only 2 species that are widespread in the Oriental region (*vide* Datta, *op. cit.*) (Diags. 3 & 7). Curiously, none of these tabanids has encroached anywhere beyond the Orient.

The bombyliid fauna in Sikkim is known to contain 6 species, of which 3 species belong to *Ligyra*. Although none of them is well-known in India, they definitely exist everywhere in the Oriental region despite their apparent absence from certain territories used as thoroughfares for migration (Diags. 3, 4 & 7). Indeed, *tantalus*, a species now recorded from the state, extends its range of distribution to Japan (Palearctic region) via China and to New Guinea (Australian region) either of two ways or both via Indonesia or the Philippines (Diag. 8). Of the remaining 3 species under 3 different genera, *Anthrax distigma* is more well-known not only in India but also in certain other parts of the Orient (*vide* Datta and Parui, *op. cit.*) than the other two that seem to occur at least in all adjoining countries even though unrecorded in Bangladesh, Bhutan and China along with Myanmar in case of *Systoechus socius* and those countries with Pakistan in case of *Bombylisoma resplendens* (Diags. 3 & 7).

The family Sciomyzidae is registered in Sikkim by a single species, *Sepedon plumbella* that is widespread in the Orient (excepting India) and the Australian region as well (Diags. 4 & 8) (*vide* Datta and Parui, 1999).

Of the six species of the Sepsidae, 4 are *Sepsis*. *S. neocynipsea*, a Holarctic species, is now recorded from Sikkim alongside Nepal but is unknown from any other states of this country (Diags. 1 & 8). Indeed, *S. indica* is much more widely displayed than the other two, viz., *himalayensis* and *rufa* (*vide* Datta and Parui, 1998; 1999) in that the species is known almost in all parts of India and the rest of the Orient. Besides, the northern limit of distribution of the species is marked off to Russia, S Korea and Japan (Palearctic region) and the southern limit to New Guinea (Australian region) (Diags. 4 & 8). *Dicranosepsis bicolor* also exhibits its existence both in the Palearctic and Australian regions (Diags. 4 & 8) but *Decachaetophora aeneipes* does it far and far away in the Nearctic region in lieu of the nearer Australian region (*vide* Datta and Parui, *op. cit.*) (Diags. 4 & 8).

Although all the three subfamilies of the family Calliphoridae are known to occur in Sikkim, these are impoverished in species against its conducive topography, climate and host-animal assemblage. The Calliphorinae comprise 4 species and all these species show excellent Himalayan bias (Diag. 4) and, therefore, their occurrence in the central, western and southern parts of this country leans on doubt. Of the two species of *Calliphora*, *vomitaria* is essentially a species of the Holarctic region (Diag. 8), whereas *vicina* has colonized well not only in the Australian region but also in the New World (Diag. 8). According to Zumpt (1965), this was probably a Holarctic species in origin that subsequently found its way to several places of the Oriental, Australian, Nearctic and Neotropical regions by means of human traffic. Obviously, the species is still unknown in the far-off countries or territories of the Orient because it might have not been introduced so far by any means. *Melinda scutellata* is at present very poorly known in India but is expected to encounter at least in the Himalayan states and others in the eastern India (Diag. 4). The species extends its range outside the country westward to Nepal and southward to Malay through Myanmar and Thailand (unrecorded), the normal pathway of

migration (Diag. 8). *Lucilia porphyryna*, a newly recorded species is, however, known almost in all the Himalayan states with a mere settlement in Assam eastward (Diag. 4) in India, and exhibits migratory radiation northward to China and southward to Malay, certainly via Myanmar (unrecorded) and Thailand. The species might have intruded in the Philippines from China and/or Taiwan (unrecorded) but its way to Sri Lanka remains beyond speculation (Diag. 8). The extremely widespread species of the Chrysomyinae, viz., *Chrysomya megacephala* is a well-known economic species occurring through a vast stretch of territories under the Oriental, Palearctic, Australian and Ethiopian regions (Datta and Parui, 1998, 1999) (Diags. 5 & 9). The Rhiniinae are known by 4 species under 3 genera, of which two are *Idiella* and one each in *Idiellopsis* and *Metallea*. The *Idiella* species are widely distributed but confined to the Oriental region only despite their deficient representation in India (Diag. 5). Although *euidielloides* has its north-south distributional range from Taiwan to Timor (extreme south of Indonesia) (*vide* Datta and Parui, 1998), *tripartita* is limited to its distribution in Nepal on the west, China on the north, Myanmar on the south and the Philippines precisely on the south-east (Diag. 9). The latter species in all likelihood dispersed towards the Philippines from China. Likewise, *Metallea notata* does not extend its range of distribution beyond the Orient (*cf.* Datta and Parui, *op. cit.*), but *Idiellopsis xanthogaster* does it crossing over the Weber's line to the Australian region (Diag. 9). However, our knowledge on its existence in the east-end of this country as well as in Myanmar, Thailand and, North and East Indonesia, and probable means for getting into Australia interlinking Malay and Jawa (only records) is lacking.

The Sikkimese Sarcophagidae are represented by 10 species under 6 genera and nearly all of them occur in West Bengal. Of the five *Parasarcophaga* species, *kalimpongensis* is known only from West Bengal alongside Sikkim, and *macroauriculata* extends its range westward

to Uttar Pradesh and eastward to Meghalaya, Nagaland and Manipur (*vide* Datta and parui, *op. cit.*) (Diag. 5), eventually showing its existence at least in Myanmar in the long run. The other 3 species, *viz.*, *albiceps*, *misera* and *sericea* occur probably not only throughout India but also in the entire Oriental region, and some or other parts of the Palaearctic and Australian regions (*vide* Datta and parui, 1998; 1999) (Diags. 5 & 9). Indeed, *albiceps* extends its range of distribution still far beyond to the Hawaiian Islands. However, *Bercaea cruentata* unlike *Boettcherisca peregrina* is not that much known in the Orient, despite both of their occurrence far and wide either in the Palaearctic, Ethiopian, Nearctic and Neotropical regions (e. g. *cruentata*) or in the Palaearctic, Ethiopian and Australian regions, (e. g. *peregrina*), with an encroachment in the Hawaiian Islands by both the species (*vide* Datta and Parui, *op. cit.*) (Diags. 5 & 9). Although *Seniorwhitea reciproca* is known well in India as well as some other parts of the Orient and also in the Hawaiian Islands (Diags. 5 & 9) but with disjunct records in the intervening territories (Datta and Parui, *op. cit.*), *Rosellea khasiensis* and *Robineauella coei* are only from the north-east of India (Diag. 5). The former species, however, exhibits its range up to China on the north, Nepal on the west and Thailand on the east via Myanmar (unrecorded) regarded as the most probable pathway of dispersal (Datta and Parui, 1998).

To conclude, it may be re-called that Sikkim exhibits 62 species and 1 subspecies under the families : Bibionidae, Stratiomyidae, Tabanidae, Bombyliidae, Sciomyzidae, Sepsidae, Calliphoridae and Sarcophagidae. Out of 14 species and 1 subspecies that are confined to India, 5 species

and the subspecies are not known elsewhere in the country, and 3 species only from Sikkim in India, extend their range of distribution to certain other parts of the Orient where other 22 species are spread over, but there are 23 species more that intrude across the Orient. Curiously, one of them is known nowhere else in India and another known only in this country but nowhere else in the Orient.

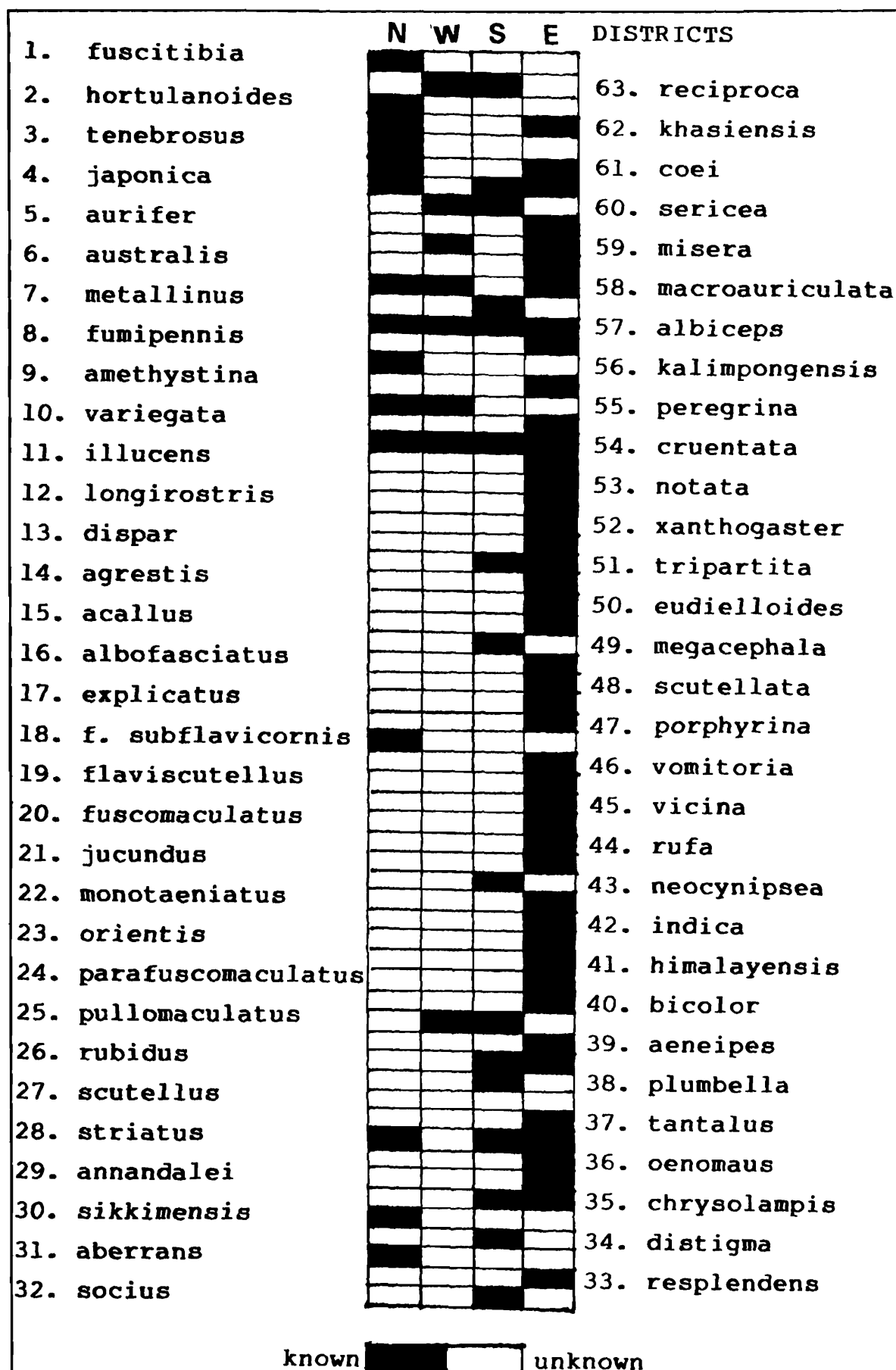
SUMMARY

The paper introduces the early history of collecting and describing Diptera from Sikkim and concludes with the zoogeographical comments on the Sikkimese fauna of 62 species and 1 subspecies under 35 genera belonging to 8 families of Diptera : Bibionidae, Stratiomyidae, Tabanidae, Bombyliidae, Sciomyzidae, Sepsidae, Calliphoridae and Sarcophagidae, of which the family Sciomyzidae with a single species plus 9 other species are recorded for the first time from the state.

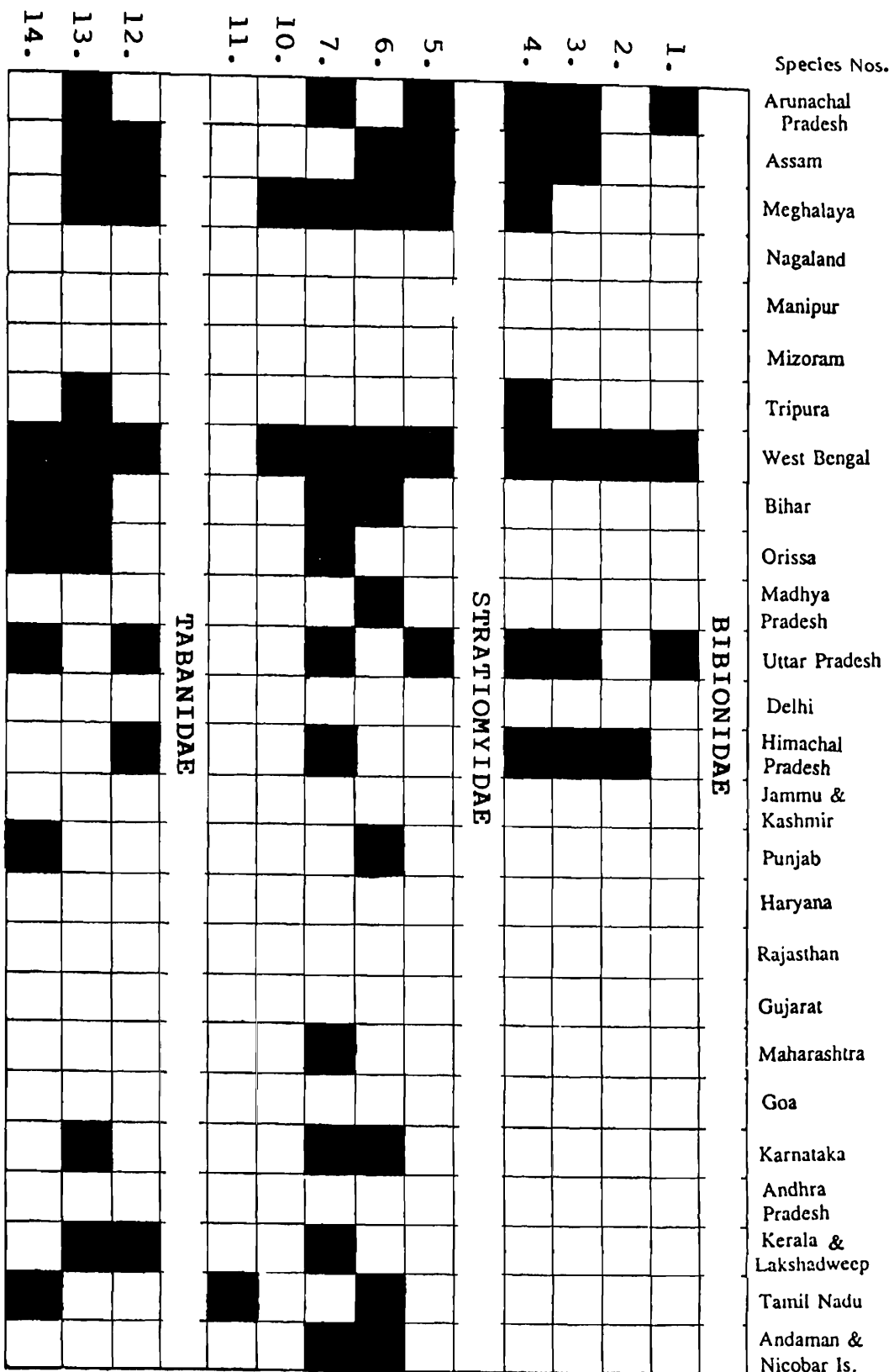
ACKNOWLEDGEMENTS

We express our thanks to Dr. J. R. B. Alfred, Director and Dr. S. K. Mitra, Scientist-SF of the Entomology Division, Zoological Survey of India, Calcutta, for their kind co-operation in working out the material from the state at our disposal. Thanks are also due to Messrs. Anil Kumar Bhattacharya and Haradhan Das of this institute for their help in finalizing the MS of the paper.

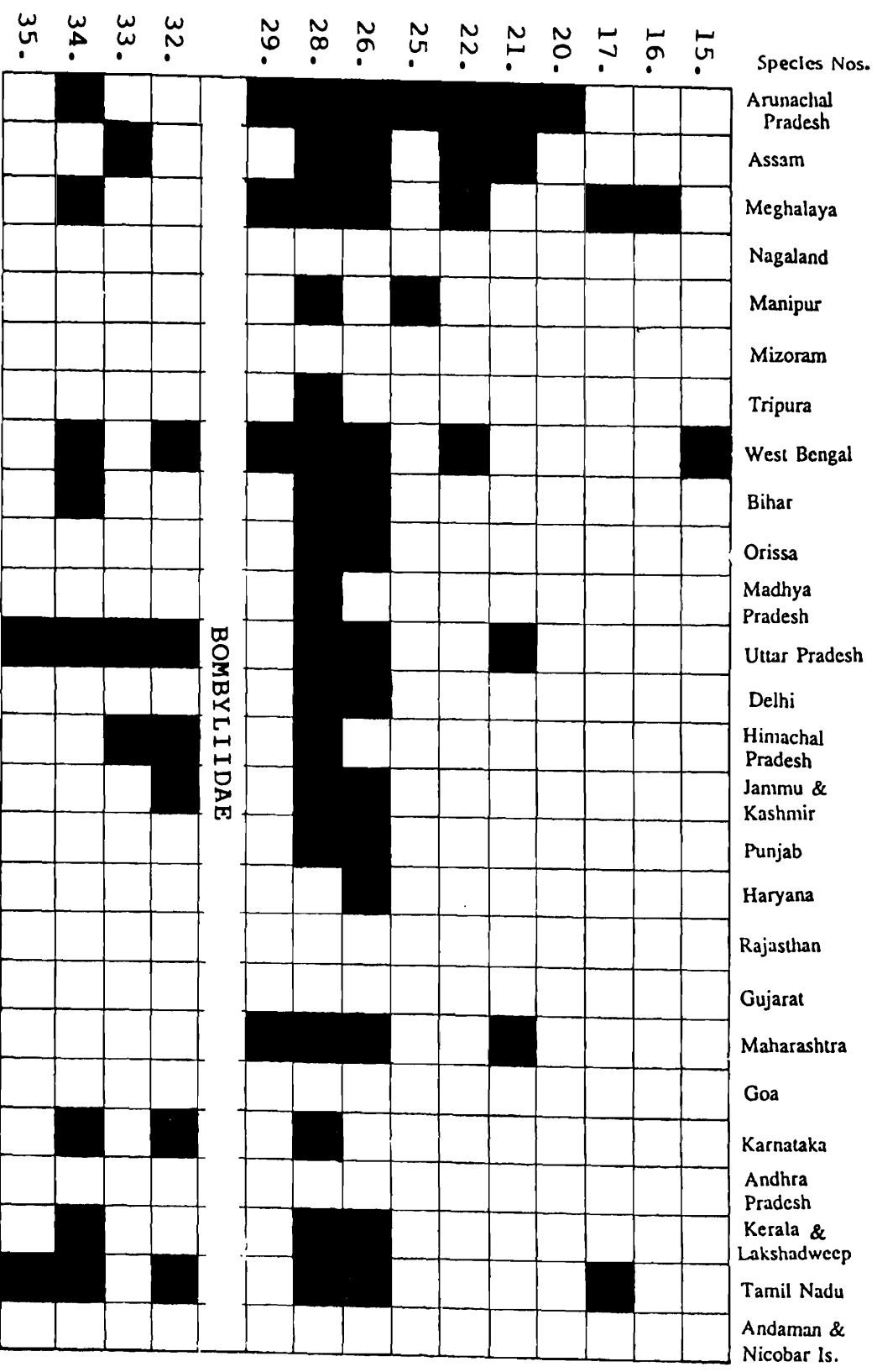
We especially owe to Prof. Dr. Rudolf Rozkošný of the Purkyně University, Czech Republic, for kindly providing us with an old pertinent literature of the Stratiomyidae, without which we might have been in trouble.



Diag. 1 : Recorded districts of occurrence of the dipterous species (as per serial number) in Sikkim (in black shade).



Diag. 2 : Distribution of the dipterous species (as per serial number) in other parts of India (in black shade).



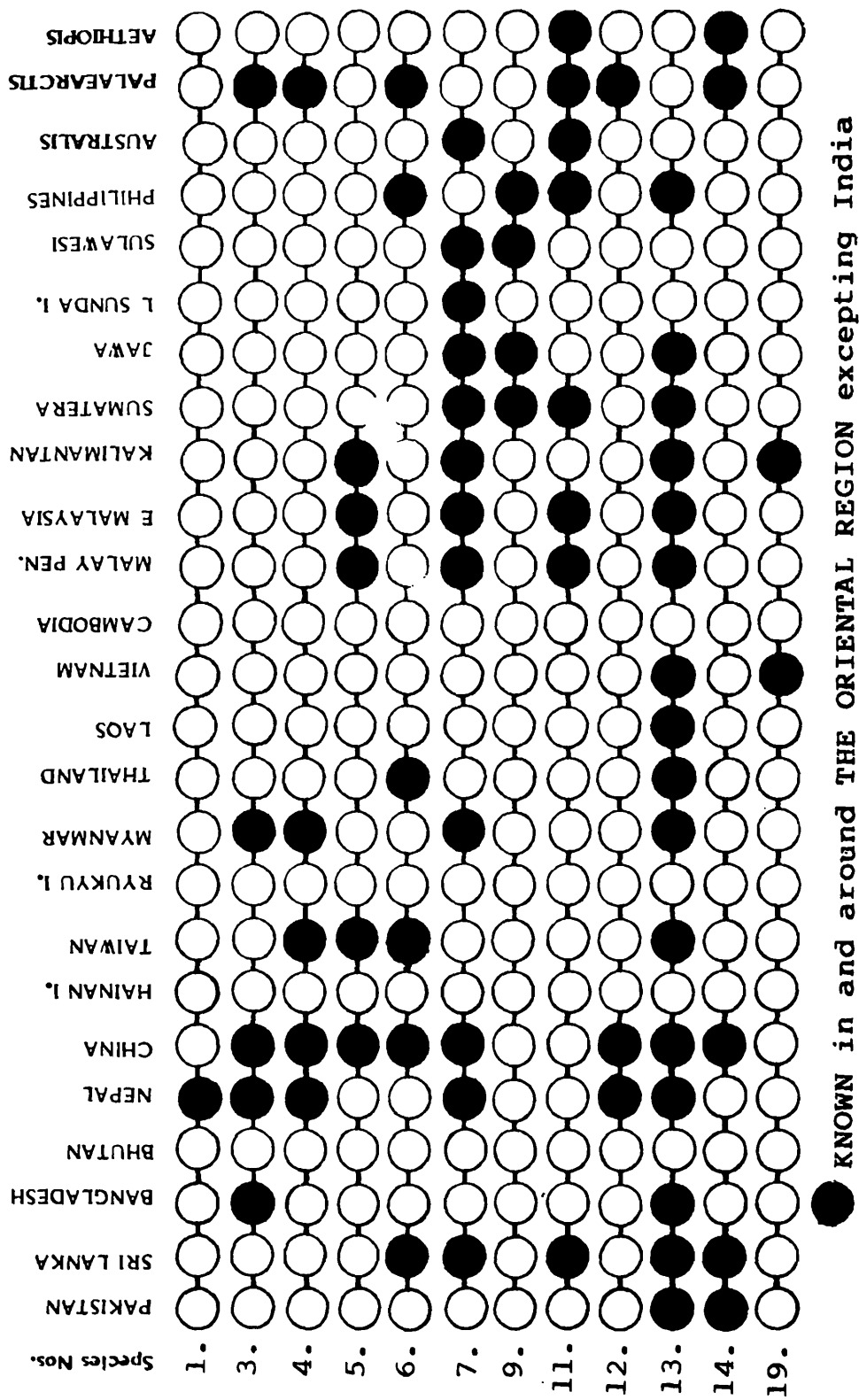
Diag. 3 : Distribution of the dipterous species (as per serial number) in other parts of India (in black shade).

Species Nos.	Arunachal Pradesh	Assam	Meghalaya	Nagaland	Manipur	Mizoram	Tripura	West Bengal	Bihar	Orissa	Madhya Pradesh	Uttar Pradesh	Delhi	Himachal Pradesh	Jammu & Kashmir	Punjab	Haryana	Rajasthan	Gujarat	Maharashtra	Goa	Karnataka	Andhra Pradesh	Kerala & Lakshadweep	Tamil Nadu	Andaman & Nicobar Is.
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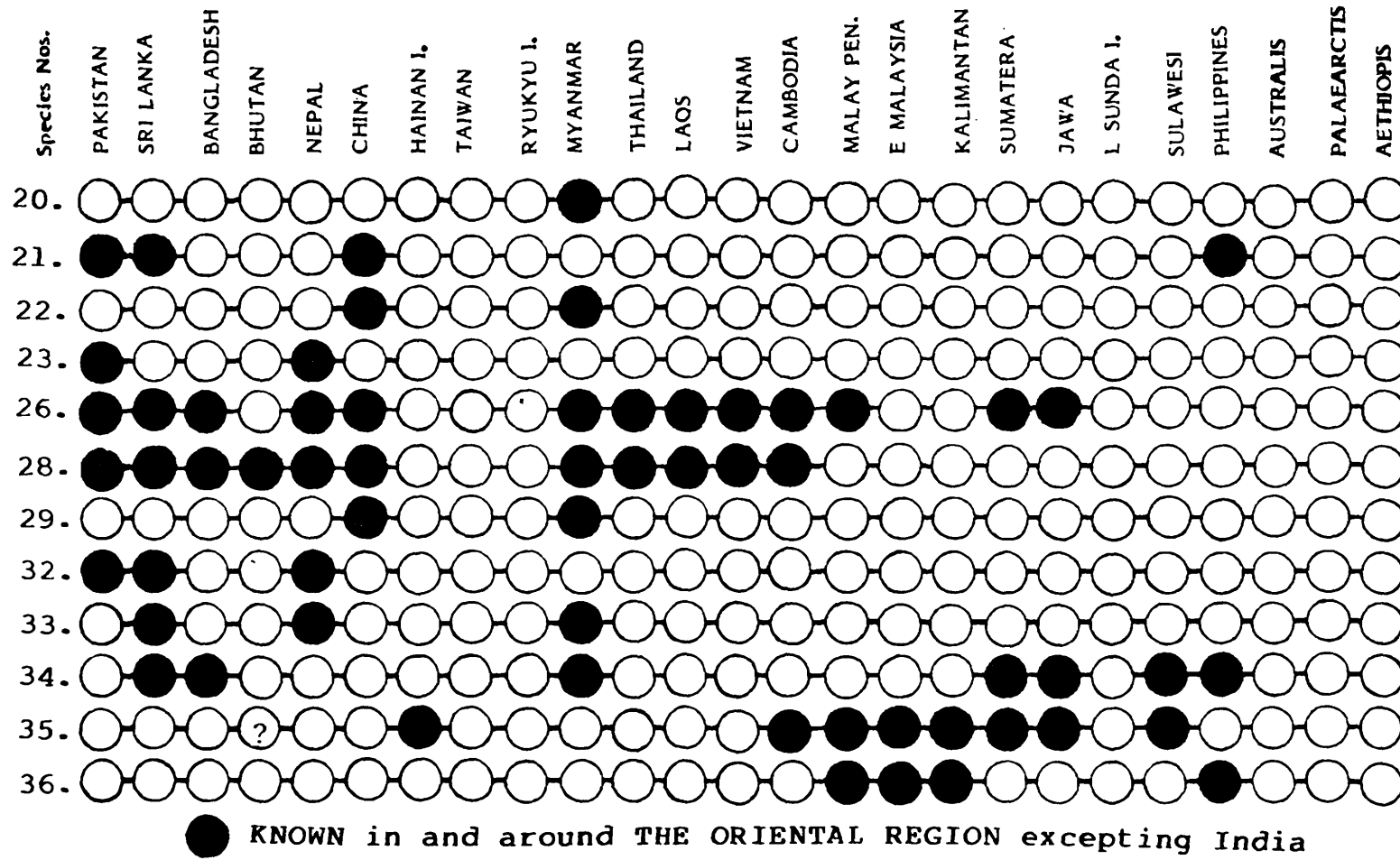
Diag. 4 : Distribution of the dipterous species (as per serial number) in other parts of India (in black shade).

Species Nos.	Arunachal Pradesh	Assam	Meghalaya	Nagaland	Manipur	Mizoram	Tripura	West Bengal	Bihar	Orissa	Madhya Pradesh	Uttar Pradesh	Delhi	Himachal Pradesh	Jammu & Kashmir	Punjab	Haryana	Rajasthan	Gujarat	Maharashtra	Goa	Karnataka	Andhra Pradesh	Kerala & Lakshadweep	Tamil Nadu	Andaman & Nicobar Is.
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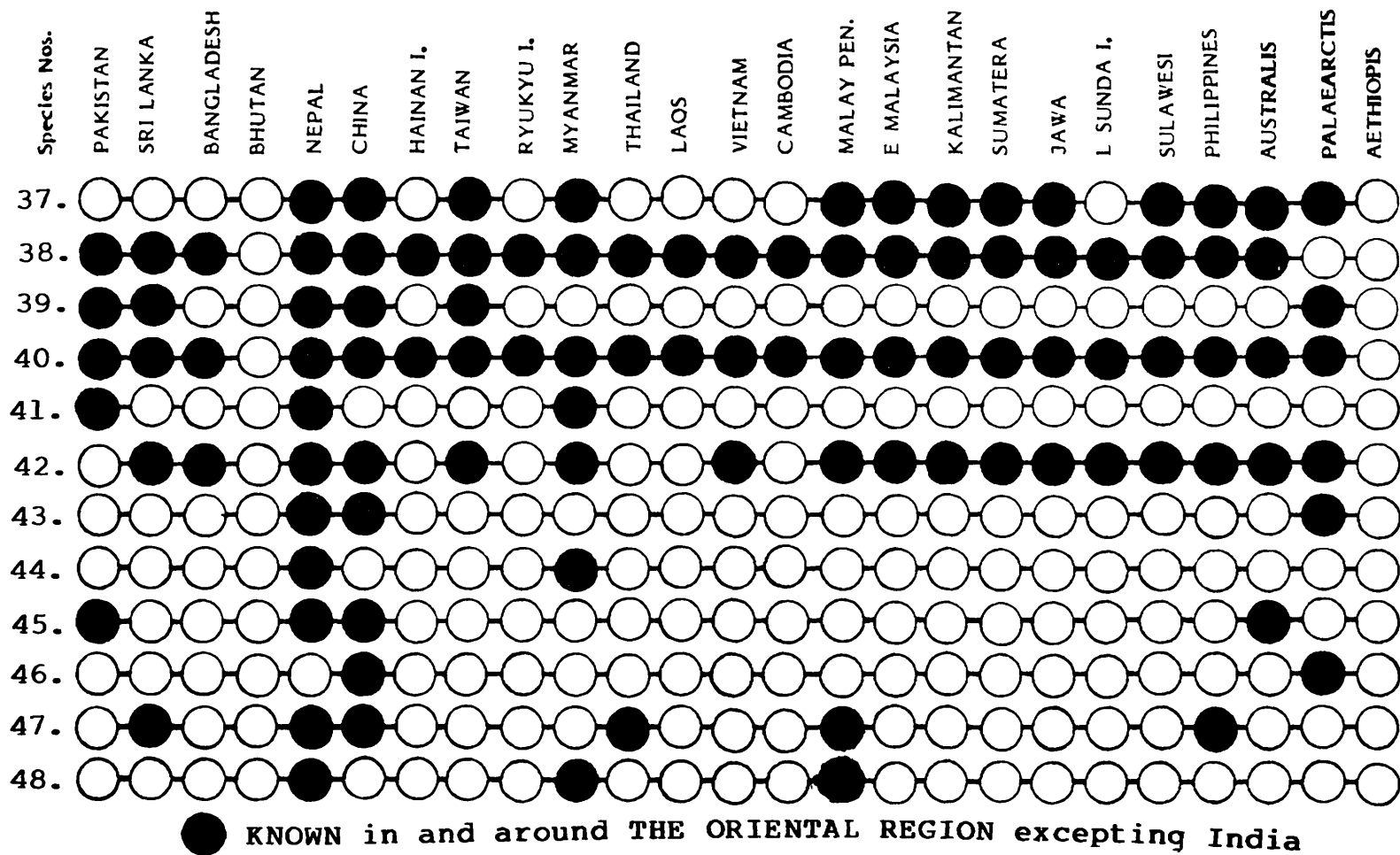
Diag. 5 : Distribution of the dipterous species (as per serial number) in other parts of India (in black shade).



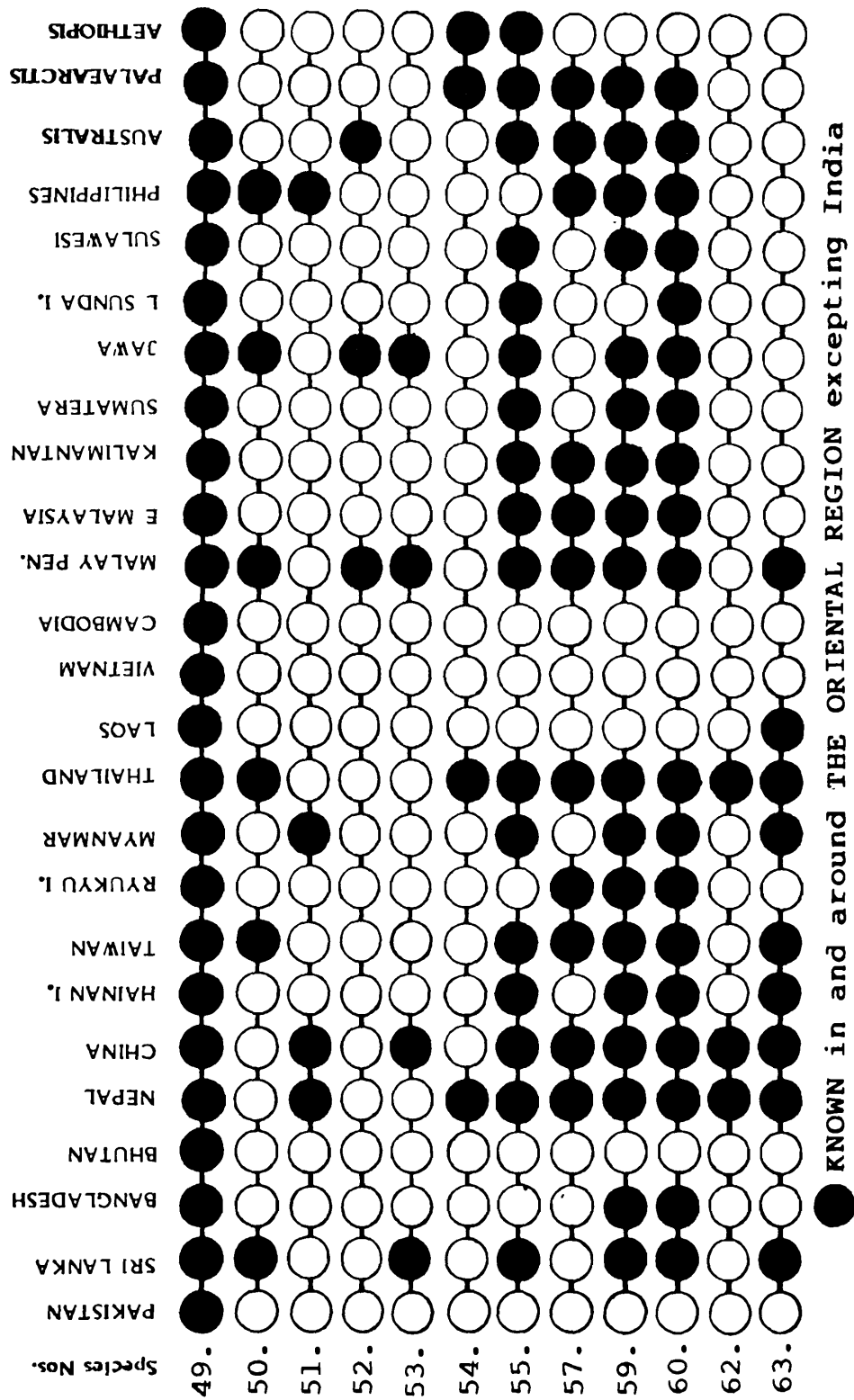
Diag. 6 : Distribution of the dipterous species (as per serial number) in and around the Oriental region (excepting India).



Diag. 7 : Distribution of the dipterous species (as per serial number) in and around the Oriental region (excepting India).



Diag. 8 : Distribution of the dipterous species (as per serial number) in and around the Oriental region (excepting India).



Diag. 9 : Distribution of the dipterous species (as per serial number) in and around the Oriental region (excepting India).

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APPENDIX : Diptera fauna known from Sikkim (up to 1998)

<i>SUBORDER/Family</i> (No. / Name)	Subfamily (No.)	Genus (No.)	Species (No.)	Subspecies (No.)
(3/45)	(72)	(230)	(625)	(11)
NEMATOCERA	(21)	(81)	(366)	(8)
Trichoceridae	—	2	6	—
Tipulidae	3	39	261	4
Tanyderidae	—	1	2	—
Psychodidae	2	2	3	—
Nymphomyiidae	—	1	1	—
Deuterophlebiidae	—	1	1	—
Culicidae	2	5	15	4
Thaumaleidae	—	1	3	—
Ceratopogonidae	3	5	21	—
Chironomidae	3	4	12	—
Simuliidae	1	1	7	—
Anisopodidae	1	1	2	—
Bibionidae	2	2	4	—
Mycetophilidae	2	6	11	—
Sciaridae	—	3	9	—
Scatopsidae	1	1	1	—
Cecidomyiidae	1	6	7	—
BRACHYCERA	(14)	(36)	(75)	(1)
Coenomyiidae	—	1	1	—
Solvidae	—	1	5	—
Stratiomyidae	4	6	7	—
Tabanidae	3	6	19	1
Asilidae	3	15	28	—
Bombyliidae	2	4	6	—
Systropodidae	—	1	7	—
Dolichopodidae	2	2	2	—
CYCLORRHAPHA	(37)	(113)	(184)	(2)
Pipunculidae	1	1	2	—
Syrphidae	2	34	60	—
Conopidae	2	4	10	1
Micropezidae	2	2	2	—
Megamerinidae	—	1	1	—
Pyrgotidae	1	2	5	—
Tephritidae	2	10	11	—
Platistomatidae	2	6	12	1
Sciomyzidae	1	1	1	—
Sepsidae	1	3	6	—
Agromyzidae	1	2	2	—
Chloropidae	2	4	7	—
Heleomyzidae	1	1	1	—
Sphaeroceridae	2	2	2	—
Scathophagidae	1	1	2	—
Anthomyiidae	—	1	1	—
Muscidae	6	11	22	—
Calliphoridae	3	7	9	—
Sarcophagidae	1	6	10	—
Tachinidae	4	12	16	—
Oestridae	2	2	2	—

INSECTA : DIPTERA : ASILIDAE

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INTRODUCTION

Sikkim contained mountain ranges, rivers and streams, and deep forests and bushes with wet atmosphere (c.f. Datta and Parui, 2002). These situations favours the population of robberflies. The asilid fauna of the state comprises a total of 28 species spread over 15 genera, of which only three species namely *Merodontina sikkimensis* Enderlein (1914), *Promachus binghamensis* Ricardo (1921) and *Astochia pseudoguptai* Joseph and Parui (1987) were described from Sikkim and *Philonicus albiceps* Meigen (1849) recorded here from Sikkim, is the first record of the species from India. However, it appears that many more species can be discovered from the state if intensive surveys are undertaken in future.

Recently several trips were undertaken by various tour parties of Zoological Survey of India, Calcutta (Datta and Parui 2002). The following are some of them who collected asilids for study. V. C. Agarwal (September 1988), B. N. Das and P. Parui (October 1993), P. H. Roy (April, 1994) and B. C. Das (June, 1994). The present report includes also the specimens present in the old collections of the Survey. The species marked with asterisk are recorded for the first time from the state.

MATERIAL AND METHOD

Adult robberflies are caught by the butterfly net. For further details the reader may be referred to "The fauna of India and adjacent countries, Diptera, Asilidae Part I. by Joseph and Parui, (1998).

MORPHOLOGY AND TERMINOLOGY

For details of it the reader may be referred to "The Fauna of India and adjacent countries, Diptera, Asilidae Part I (1998).

SYSTEMATIC ACCOUNT

Key to the subfamilies

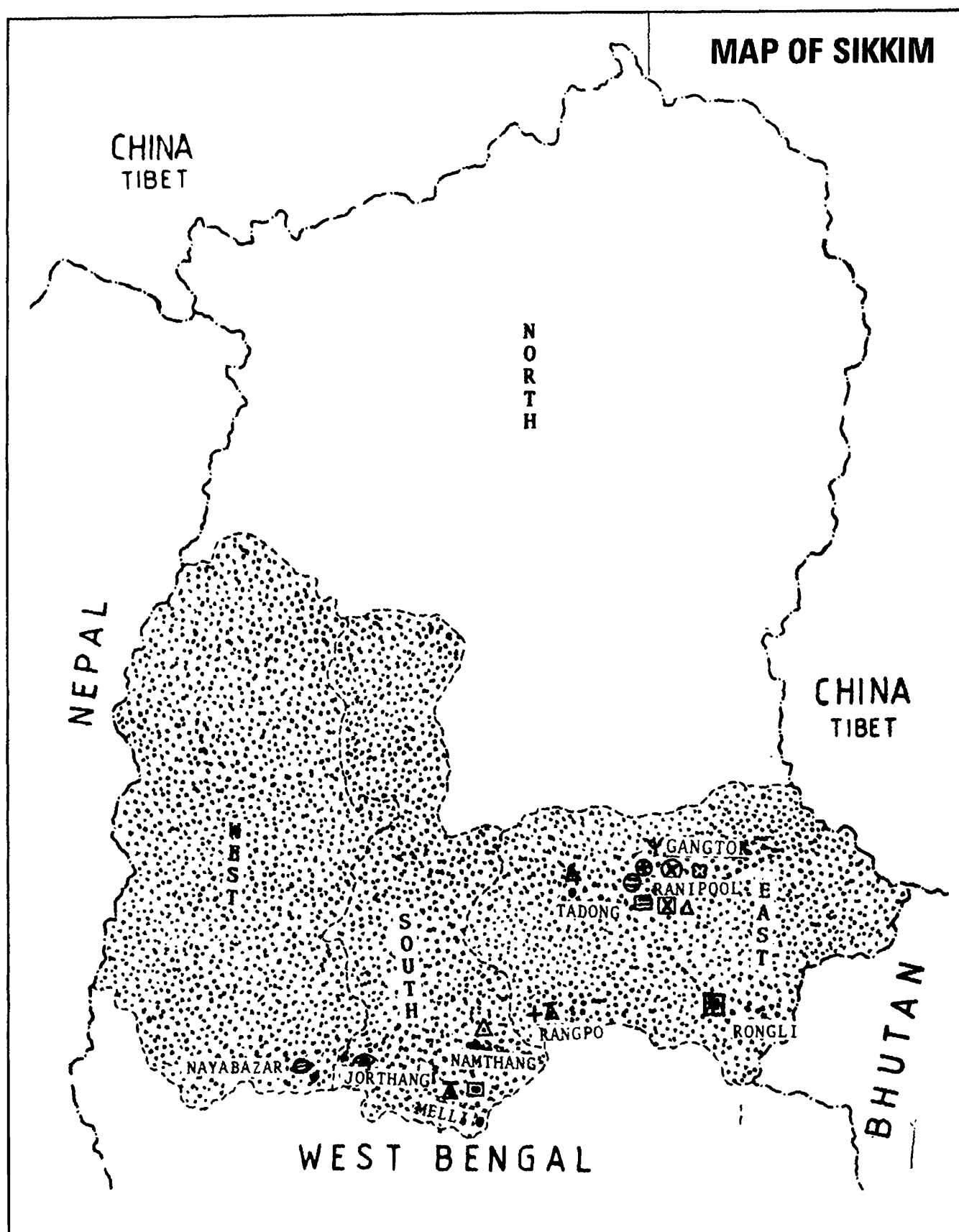
1. Palpus one segmented 2
- Palpus two segmented 3
2. Elongate and very slenderflies; marginal cell open; alula absent; first flagellomere short, ovoid with a long bristle-like style
..... LEPTOGASTERINAE
- Slender or robust species ; marginal cell closed; first flagellomere long and slender with microsegment bearing short, bristle-like style
ASILINAE
3. Marginal cell open ; first flagellomere spindle-shaped with apical microsegment; fourth posterior cell generally open or closed at the margin; females usually with circlet of spines on acanthophorites DASYPOGONINAE
- Marginal cell closed; first flagellomere rod-like or clavate with apical pit; fourth posterior cell generally closed and stalked
..... LAPHRIINAE

The species of the subfamily Leptogasterinae is not so far recorded from Sikkim state.

Subfamily LAPHRIINAE

Tribe Laphriini

Marginal cell closed, vein M_3 curved, not



Explanation of Map : EAST DISTRICT : + *Astochia philus*, ⊞ *A. pseudoguptai*, ⊗ *A. ranipoolensis*, ⊕ *Machimus nilgiriensis*, ⊖ *Microstylum albolimpatum*, ⊞ *M. imbutum*, ⊠ *M. trimelas*, Δ *Ommatius indicus*, Δ *Philodicus femoralis*, ⊞ *Philonicus albiceps*, ⊞ *Promachus leoninus*, √ *Trichomachimus orientalis*, WEST DISTRICT : ⊖ *Cophinopoda chinensis* SOUTH DISTRICT : + *Astochia Philus* ⊖ *Astachia gapae*, ⊞ *Machimus rufipes*, Δ *Philodicus femoralis*, ⊞ *Promachus leoninus*

parallel with outer margin of discal cell, and far from being in line with it except in *Orthogonis*.

Genus *Laphria* Meigen

1803. *Laphria* Meigen, *Magazin Insektdkde*, 2 : 270. Type-species : *Asilus gibbosus* Linnaeus.

Diagnosis : Hairy flies, facial gibbosity well produced; abdomen metallic; anterior branch of third vein strongly arched, sigmoid and ending above wing apex.

1. *Laphria luteopilosa* Joseph and Parui

1981. *Laphria luteopilosa* Joseph and Parui, *Ent. Scand.*, 12 (2) : 216.

Material examined : 2 ♀, Sikkim, Coll. Knyvett, no other data.

Diagnosis : Mystax golden yellow; antenna black; scutum and scutellum covered with golden yellow pile; metapleuron with black bristle; coxae and trochanter black; femur black with yellowish-brown apex; tibia yellowish-brown; wing uniformly brown; tergites 1–6 black pilose, remaining tergites black and golden-yellow pilose.

Distribution : Sikkim and Assam.

Subfamily DASYPOGONINAE

Tribe Saropogonini

Marginal cell open; prosternum isolated and surrounded by membrane; females with ninth tergite divided into two spinebearing plates (acanthophorites).

Key to the genera

1. Front tibia with a short protuberance and a spine at apex; metanotal slopes micropubescent only; abdomen elongate, club-shaped *Pegesimallus* Loew

(1-species only)

– Front tibia without protuberance or spine at apex; metanotal slopes with bristles or stiff piles; abdomen long, slender *Microstylum* Macquart (4-species only)

Genus *Microstylum* Macquart

1838. *Microstylum* Macquart, *Dipt. exot.*, 1 (2) : 26. Type-species : *Dasygogon venosum* Wiedemann.

Key to the species

1. Fore femur uniformly dark-brown to black 2
- Fore femur yellowish; wing with coppery purple lustre. *imbutum* (Walker)
2. Wing dark brown with coppery purple lustre; mesonotum with two pairs of stripes *trimelas* (Walker)
- Wing without eridescens 3
3. Wing uniformly brownish-yellow *strigatum* Enderlein
- Wing blackish-grey *albolimbatum* Wulp

*2. *Microstylum albolimbatum* van der Wulp

1898. *Microstylum albolimbatum* Wulp, *Tijdschr. ent.*, 41 : 118.

Material examined : 1 ex (abdomen lost), E. Sikkim : Ranipool, 25. vi. 1994, Coll. B. C. Das.

Distribution : Sikkim (East), Meghalaya and West Bengal.

*3. *Microstylum imbutum* (Walker)

1851. *Dasygogon imbutum* Walker, *Insecta Saundersiana*, 1 : 96.

Material examined : 1 ♀, E. Sikkim : Ranipool, 14. vi. 1994, Coll. B.C. Das.

Distribution : Sikkim (East) and "East India"

4. *Microstylum strigatum* Enderlein

1914. *Microstylum strigatum* Enderlein, *Wein. ent. Ztg.*, 33 : 171.

Material examined : Reported from literature.

Distribution : Sikkim and West Bengal.

5. *Microstylum trimelas* (Walker)

1851. *Dasygogon trimelas* Walker, *Insecta Saundersiana*, 1 : 97.

Material examined : 1 ♀ East Sikkim : Ranipool, 24.vi. 1994, Coll. B.C. Das.

Distribution : Sikkim (East) and "East India"

Genus *Pegesimallus* Loew

1858. *Pegesimallus* Loew, *Ofvers. Svenske Vet-Akad. Forhand*, 14 : 344. Type-species : *Pegesimallus ursinus* Loew.

6. *Pegesimallus volcatus* (Walker)

1849. *Dasypogon volcatus* Walker, *List. Dipt. Colln. Br. Mus.*, 2 : 346.

Material examined : Reported from literature.

Diagnosis : Frons with two yellow bristles along with some yellow setae; antennal segment yellowish-brown to dull brown; scutum brownish yellow with yellow lateral margins; wing pale yellow tinged; legs reddish brown; abdomen dark red brown and pale orange brown basally.

Distribution : Sikkim, Andhra Pradesh, Assam, Karnataka, Kerala, Uttar Pradesh and West Bengal ; Myanmar, Pakistan, Sulawesi, Taiwan.

Subfamily ASILINAE

Key to the tribes

1. Antennal style plumose **Ommatini**
- Antennal style bare **Asilini**

Tribe Ommatini

Key to the genera

1. Attenuate third antennal segment nearly 3-times the basal two segments together ; hind femur with a teeth-like projection near base *Merodontina* Enderlein (1 species only)
- Third antennal segment very short, usually much shorter than basal two segments together 2
2. Arista plumose in one row, a tuft of stiff hairs medial to the haltere and below the metanotal callosity; epandrium bears a long, sigmoid

apically hooked process
..... *Cophinopoda* Hull (1 species only)

- Arista plumose in one or two rows, no such tuft of hairs present; epandrium well developed, curved and apposed apically
..... *Ommatius* Wiedemann (1 species only)

Genus *Cophinopoda* Hull

1958. *Cophinopoda* Hull, *Proc. ent. Soc. Wash.*, 60 : 251.
Type-species : *Asilus chinensis* Fabricius.

7. *Cophinopoda chinensis* (Fabricius)

1794. *Asilus chinensis* Fabricius, *Ent. Syst.*, 4 : 383

Material examined : 1 ♀, West Sikkim : Naya Bazar, 9.iv. 94, Coll. P.H. Roy and party.

Diagnosis : Mystax pale-yellow; scape and pedicel yellowish-brown, first flagellomere blackish; thorax black with golden yellow tomentum; femur black, tibia orange yellow except hind tibia with dark brown apex; wing almost wholly infuscated; abdomen golden-yellow with tergum 2 basally black, tergites 3-4 medially black ; male genitalia yellowish-brown with pale yellow setae.

Distribution : Sikkim, Andhra Pradesh, Assam, Bihar, Kerala, Orissa, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal; China, Japan, Korea, Sri Lanka, Sumatera.

Genus *Merodontina* Enderlein

1914. *Merodontina* Enderlein, *Zool. Anz.*, 44 : 262. Type-species : *Merodontina sikkimensis* Enderlein.

8. *Merodontina sikkimensis* Enderlein

1914. *Merodontina sikkimensis* Enderlein *Zool. Anz.*, 44 : 262.

Material examined : Reported from literature.

Diagnosis : Head black, grey tomentose; mystax white with a few black bristles; antenna black, first flagellomere longer than pedicel; scutum with two indistinct mediolongitudinal stripes, laterally with two black spots; scutellar border with four black bristles; fore and mid femora

dorsally and anteriorly dark, rest pale yellow, hind femur wholly dark brown; wing basally hyaline, distally infuscated; hind border of tergites 2 and 3 pale yellow, rest of abdomen dark brown, secondary excrescence of aedeagus tridentate.

Distribution : Sikkim and Uttar Pradesh.

Genus *Ommatius* Wiedemann

1821. *Ommatius* Wiedemann, *Dipt. exot.*, 1 : 219. Type-species : *Asilus marginellus* Fabricius.

* 9. *Ommatius indicus* Joseph and Parui

1983. *Ommatius indicus* Joseph and Parui, *Ent. scand.*, 14 : 86.

Material examined : 1♂, East Sikkim : Ranipool, 23. vi. 1994, Coll. B. C. Das.

Diagnosis : Head black with golden-yellow to grey tomentum, mystax golden-yellow to grey; scutum with two faint mediolongitudinal stripes extending the entire length; leg pale-yellow, hind femur dorsally and tibia almost wholly brownish; wing infuscated, but base hyaline; abdomen black except apex of tergites 2–5 yellowish brown; male genitalia black with black pile and bristles, proctiger with pale yellow pile.

Distribution : Sikkim, Andhra Pradesh, Karnataka, Kerala and Tamil Nadu.

Tribe Asilini

Key to the genera

1. Wing with three submarginal cells 2
 - Wing with two submarginal cells 3
2. Radial fork longer than second posterior cell; antennae closed together; apex of marginal cells bulbous; in female apical terga with numerous short spines, the apical pair longer and stouter *Philodicus* Loew (2 species only)
 - Radial fork shorter than second posterior cell; antennae wide apart; apex of marginal cells not bulbous; in female apical terga without spine *Promachus* Loew (1 species only)
3. Basitarsi of all legs well developed, at least equal to the length of following two segments 4
 - Basitarsi not so developed 5
4. Male genitalia pedunculata, epandrium long, arched upwards and hypandrium arched downwards forming a distinct gap ; basitarsus of foreleg highly swollen *Astochia* Becker (4 species only)
 - Male genitalia not so pedunculate ; epandrium not long, broad at base and with a deep lateral constriction; basitarsus of foreleg not so swollen *Neoitamus* Osten Sacken (1 species only)
5. Epandrium elongate and slender, curved apically inward with a spur; ovipositor with two upturned spines *Philonicus* Loew (1 species only)
 - No enclosed space between epandrium ovipositor without upturned spines 6
6. Disc of scutellum and abdominal tergites from 2–5 matted with stiff pile; antennal style quite short and stout *Trichomachimus* Engel (4 species only)
 - .. Scutellum and abdomen not densely pilose 7
7. Facial tubercle highly developed extending almost up to antenna; aedeagus three pronged; eighth sternum round at apex *Machimus* Loew (3 species only)
 - Facial tubercle less developed; aedeagus without prongs 8
8. Each sternite with 2-pairs of subpostmarginal stout bristles; first posterior cell narrowed by the swelling of the second posterior cell; epandrium notched at apex *Neomochtherus* Osten Sacken (1 species only)
 - Each sternite with long bristly pile; second submarginal cell narrowed by the expansion of the first posterior cell; epandrium with processes *Orophotus* Becker (1 species only)

Genus *Astochia* Becker

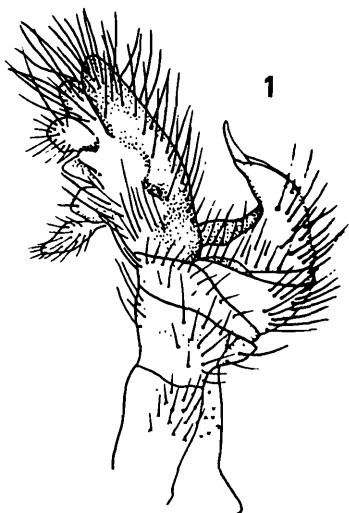
Key to the species

1. Fore femur wholly black 2
- Fore femur reddish-yellow with dorsal black stripe; scutum wholly bright reddish yellow tomentose; abdominal tergites 1–2 with reddish yellow pile *philus* (Walker)
2. Hind femur golden-yellow with black apical region 3
- Hind femur uniformly dark brown; disc of scutellum with predominant white pile and a few black ones; male genitalia with mixed black and white pile *pseudoguptai* Joseph and Parui
3. Fore femur with black and pale yellow bristles ventrally on basal half; male genitalia with wholly black pile and bristles *gopae* n. sp.
- Fore femur with white bristly pile ventrally on basal half; male genitalia with pale yellow pile on epandrium *ranipoolensis* n. sp.

10. *Astochia gopae* n. sp. (Fig. 1)

A medium-sized black species with yellow and black legs; hyaline wing and densely black pilose epandrium of male genitalia. Male length 16 mm; wing 10 mm.

Head broader than thorax, black, densely silver white tomentose; mystax pale yellow, frontoorbital pile pale-yellow; ocellarium white pilose; postocular



bristles weak, pale yellow; postcranium and postgena white pilose. Antenna black, scape and pedicel with concolourous bristles, scape one and half times of pedicel; first flagellomere shorter than the combined length of scape and pedicel, style much longer than penultimate segment. Palpi and proboscis black with pale yellow pile.

Thorax black, greyish-white tomentose, pronotum covered with long pale yellow pile; scutum with a mediolongitudinal black stripe divided by a narrow pale stripe and three black lateral spots on each side; chaetotaxy- notopleurals 2, supraalar 1, postalar 1; bristles and vestiture black; scutellum dense grey tomentose with pale yellow pile on disc, border bare of bristle; pleura heavily greyish-yellow tomentose; propleuron with sparse pale yellow pile, sternopleuron with a few pale yellow pile dorsally, pleurotergite with pale yellow pile. Haltere brownish-yellow with knob darker.

Wing lightly infuscated.

Leg black and golden yellow; coxa black, greyish yellow tomentose with pale yellow pile and bristles; trochanter black; fore and mid femora black with brownish-yellow base, hind femur golden-yellow with about apical third black, fore femur with black and pale yellow bristles ventrally up to basal half, mid femur with a few pale yellow bristles at base, hind femur entirely with pale yellow bristles ventrally, fore and mid tibiae golden yellow except black apex, hind tibia black ventrally and golden-yellow dorsally up to middle, rest black; tarsi more or less black.

Abdomen black with brownish-yellow tomentose spots dorsally and whitish spots laterally on hind borders, tergum I laterally with long pale-yellow bristles at posterior corner, sternum 2 bears long pale yellow pile. Genitalia black with black piles and bristles.

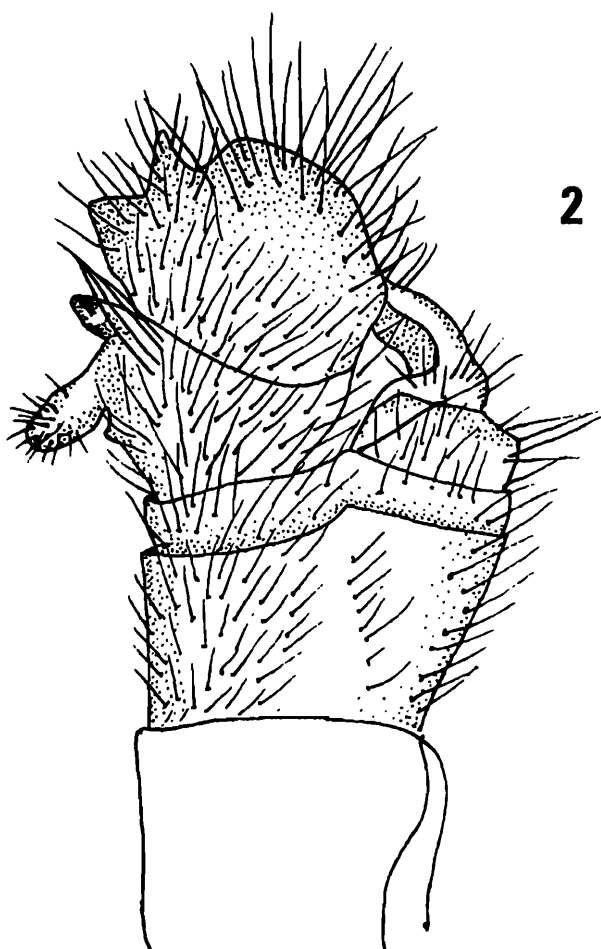
Holotype ♂, Reg. No. 83231H6 South Sikkim: Jorhang, 4. vi. 1994, Coll. B. C. Das.

Discussion : As regards male genitalia it resembles *Astochia femorata* Joseph and Parui (*in press*) but differs from it by the wholly white

mystax; yellow hind femur with black apex, absence of stout bristles on mid femur and in the details of male genitalia. The species is named after my wife Smt. Gopa Parui, who helps me in various ways.

11. *Astochia ranipoolensis* n. sp. (Fig. 2)

A medium-sized black species with black and yellow leg, hyaline wing and yellow pilose epandrium of male genitalia. Male length 17 mm., wing length 9 mm.



Head broader than thorax, black, densely greyish-yellow tomentose, mystax pale yellow reaching upto base of antenna; fronto-orbital pile white, ocellarium whitish, postocular bristles pale yellow, postcranium and postgena white pilose. Antenna black, scape and pedicel with pale yellow pile and bristles, proportional length of segments 1 : 0.8 : 1.4, style longer than the combined length of all the segments. Palpi and proboscis black with pale yellow pile.

Thorax black, greyish-white tomentose; pronotum white pilose; scutum with a medio-longitudinal black stripe extending its whole length and with three lateral black spots on either side; chaetotaxy : notopleurals 2, supraalar 1, postalar 1; vestiture black except white pile on posterior one-fourth; scutellum greyish-white tomentose with sparse white pile on disc, border bare of bristles. Haltere brownish-yellow.

Leg black and golden yellow, coxa and trochanter black, greyish-white tomentose with white pile and bristles; fore and mid femora black, hind femur golden-yellow with black apical region, fore femur bare of bristles, only bristly pile on basal half ventrally, mid femur with one row of anterolateral, anteroventral and posteroventral bristles ventrally, hind femur with only a row of anterodorsal bristles; tibiae golden yellow with black apex, the black colour extends up to half of its length in hind tibia; tarsi black.

Wing hyaline

Abdomen black with grey tomentum, tergum I with lateral pale yellow pile and bristles, other terga with lateral pale-yellow pile, in addition tergum 5 with a few pale yellow spinous bristles laterally. Genitalia (Fig. 2) black with pale yellow pile on epandrium.

Holotype ♂, Reg No. 8324/H6, East Sikkim : Ranipool, 26. vi. 1994, Coll. B. C. Das.

Discussion : The species resembles *Astochia gapae* n. sp. but can be readily distinguished by the proportionately smaller in length of the first flagellomere, wholly black fore and mid femora and the structural details of male genitalia.

12. *Astochia philus* (Walker)

1849. *Asilus philus* Walker, *List. Dipt. Colln. Br. Mus.*, 2 : 393

Material examined : 1 ♂, East Sikkim : Ranipool, 1 ex, tip of abdomen lost, South Sikkim, Tadong, 5.x. 1993, Coll. B. N. Das.

Distribution : Sikkim (East & South), Assam, Tripura and West Bengal; Bangladesh, Bhutan, Myanmar, Nepal.

13. *Astochia pseudoguptai* Joseph and Parui

1987. *Astochia pseudoguptai* Joseph and Parui, *Bull. Zool. Surv. India*, 8 (1-3) : 100.

Material examined : 1 ♂ East Sikkim : Rangli, 810 m., 2. v. 1962, Coll. S. Ali.

Distribution : Sikkim (East), Gujarat and Rajasthan.

Genus *Machimus* Loew

1849. *Machimus* Loew, *Linn. Ent.* 4 : 1. Type-species : *Asilus chrystis* Meigen.

Key to the species

1. Eighth sternite produced and ends in two-teeth bearing white piles; all tibiae reddish with dark apex *rufipes* Ricardo
- Eighth sternite not produced 2
2. Epandrium with a dorsal projection; mystax black with pale-yellow bristles in the middle *nilgiriensis* Joseph and Parui
- Epandrium without dorsal projection; mystax pale yellow with some black bristles above *ricardoi* (Bromley)

* 14. *Machimus nilgiriensis* Joseph and Parui

1994. *Machimus nilgiriensis* Joseph and Parui, *Rec. zool. Surv. India*, 94 (2-4) : 197-198.

Material examined : 1 ♂, 1 ♀, East Sikkim : Ranipool, 1.x.1993, Coll. B. N. Das and P. Parui.

Distribution : Sikkim (East) and Tamil Nadu.

15. *Machimus ricardoi* (Bromley)

1935. *Asilus ricardoi* Bromley, *Rec. Indian Mus.*, 37 : 219.

Material examined : Recorded from literature.

Distribution : Sikkim, Himachal Pradesh, Meghalaya, Uttar Pradesh and West Bengal.

* 16. *Machimus rufipes* Ricardo

1922. *Machimus rufipes* Ricardo, *Ann. Mag. nat. Hist.*, (9) 10 : 69.

Material examined : 2 ♂, 2 ♀, South Sikkim : Melli, 19 km. off Rangpo, (river bed), 13. iv. 1994, Coll. P. H. Roy and party.

Distribution : Sikkim (South), Punjab, Uttar Pradesh and West Bengal.

Genus *Neoitamus* Osten Sacken

1878. *Neoitamus* Osten Sacken, *Smithson. misc. Collns.*, 16 : 82, 235, (n. name for *Itamus* Loew, 1849). Type-species : *Asilus cyanurus* Loew.

17. *Neoitamus grandis* Ricardo

1919. *Neoitamus grandis* Ricardo, *Ann. Mag. nat. Hist.*, (9) 3 : 61

Material examined : Reported from literature.

Diagnosis : Mystax yellowish-white; scutellar disc yellow pilose; fore femur reddish-yellow with a broad black stripe; hind femur uniformly reddish or black; basal five abdominal segments yellow.

Distribution : Sikkim and Uttar Pradesh; Nepal.

Genus *Neomochtherus* Osten Sacken

1878. *Neomochtherus* Osten Sacken, *Smithson, misc. Collns.*, 16 : 82, 235 (n. name for *Mochtherus* Loew, 1849). Type-species : *Asilus pallipes* Meigen.

18. *Neomochtherus gnavus* (van der Wulp)

1872. *Mochtherus gnavus* (van der Wulp), *Tijdschr. Ent.*, 15 : 243.

Material examined : Reported from literature.

Diagnosis : Mystax yellow; antenna yellowish-brown; thorax black, grey tomentose, humeri with pale pile; scutellum black; leg yellow, hind femur and tibia with a black area at apex; wing infuscated at apex which extends up to fifth posterior cell; abdomen black with lateral pale yellow pile and bristles; male genitalia black, epandrium bifurcate with upper arm small and truncate.

Distribution : Sikkim, Assam, Arunachal Pradesh, Meghalaya and Uttar Pradesh; Kalimantan, East Malaysia, Sulawesi, Jawa, Thailand, Sri Lanka.

Genus *Orophotus* Becker

1925. *Orophotus* Becker, *Ent. Mitt.*, **14** : 137. Type-species : *Orophotus univittatus* Becker.

19. *Orophotus montanus* (Ricardo)

1922. *Asilus montanus* Ricardo, *Ann. Mag. nat. Hist.*, (9) **10** : 47.

Material examined : Reported from literature.

Diagnosis : Mystax white; antenna yellow and brown; leg reddish-yellow, knees darker; wing clear, apex and posterior border infuscated; abdomen blackish-brown with yellow pile, epandrium bifid and the two teeth widely separated, hypandrium small, eighth sternite fringed with yellow pile.

Distribution : Sikkim, Meghalaya and West Bangal.

Genus *Philodicus* Loew

1848. *Philodicus* Loew, *Linn. Ent.*, **3** : 391. Type-species : *Asilus javanus* Wiedemann.

Key to the species

1. Leg black and red; mystax yellow and black *javanus* (Wiedemann)
– Leg black, mystax white *femoralis* Ricardo

* 20. *Philodicus femoralis* Ricardo

1921. *Philodicus femoralis* Ricardo, *Ann. mag. nat. Hist.*, (9) **8** : 190.

Material examined : 2♂, 2♀, East Sikkim : Ranipool, 1.x.1993 ; 3♂, 3♀, Ranipool, 2.x.1993; 2♂, 2♀, East Sikkim ; 5.x.1993; 1♂, South Sikkim : Namthang, 6.x.1993, all Coll. B. N. Das and party.

Distribution : Sikkim (East and South), Assam, Arunachal Pradesh, Bihar, Goa, Gujarat, Himachal Pradesh, Karnataka, Kerala, Maghalaya, Orissa, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal; Myanmar.

21. *Philodicus javanus* (Wiedemann)

1819. *Asilus javanus* Wiedemann, *Zool. Mag.* (Wied.) **1**(3) : 4.

Material examined : Reported from literature.

Distribution : Sikkim, Assam, Arunachal Pradesh, Bihar, Goa, Himachal Pradesh, Karnataka, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal; Bangladesh, Jawa, Myanmar, Pakistan, Sri Lanka, Sumatera, Timor Islands.

Genus *Philonicus* Loew

1849. *Philonicus* Loew, *Linn. Ent.*, **4** : 144. Type-species : *Asilus javanus* Meigen.

* 22. *Philonicus albiceps* (Meigen)

1849. *Asilus albiceps* Meigen, *Linn. Ent.*, **4** : 44.

Material examined : 1♂, 1♀, East Sikkim : Ranipool, river bed, 30.ix.1993, Coll. B. N. Das and party.

Diagnosis : Head covered with white tomentum ; mystax consists of black bristles above and white bristles below; thorax black, white tomentose both dorsally and laterally; scutellum black, disc black pilose, border with two black bristles; leg wholly black, covered with white piles; wing faintly and uniformly smoky; abdomen black, posterior borders of tergites brownish, and with black bristles laterally ; vestiture black.

Distribution : This is a moderately distributed Palaearctic species. It is the first record of the genus from India.

Genus *Promachus* Loew

1848. *Promachus* Loew, *Linn. Ent.*, **3** : 390. Type-species : *Asilus maculatus* Fabricius.

Key to the species

1. Leg wholly black; male genitalia without white pile tuft; eighth sternite with a tuft of black pile *binghamensis* Ricardo

- Tibia wholly reddish-yellow; male genitalia with white pile tuft; eighth sternite without any pile tuft..... *leoninus* Loew

23. *Promachus binghamensis* Ricardo

1921. *Promachus binghamensis* Ricardo, *Ann. Mag. nat. Hist.*, (9) 5 : 215.

Material examined : Reported from literature.

Distribution : Sikkim and West Bangal.

* 24. *Promachus leoninus* Loew

1848. *Promachus leoninus* Loew, *Linn. Ent.*, 3 : 404.

Material examined : 5 ♂, 1 ♀, South Sikkim : Melli, 13. iv. 1994 ; 2 ♂, 2 ♀, East Sikkim : Rangpo, ITI College Compound, 14. iv. 1994, all Coll. P. H. Roy and party.

Distribution : Sikkim (East and South), Arunachal Pradesh, Tamil Nadu and West Bengal.

Genus *Trichomachimus* Engel

1933. *Trichomachimus* Engel, *Ark. Zool.*, (A) 25 (22) : 10. Type-species : *Machimus pubescens* Ricardo.

Key to the species

1. Tibiae dull red with black patches; whole of abdomen covered with pale yellow pile
..... *excelsus* (Ricardo)
- Tibiae entirely black 2
2. Abdominal tergites 2–4 with dense, curved white pile; mystax white in the middle surrounded by black ones
..... *rubisetosus* Oldroyd
- All abdominal tergites with reddish-yellow pile 3
3. Disc of scutellum with long yellow pile; male genitalia with pale yellow pile
..... *pubescens* (Ricardo)
- Disc of scutellum with long, black pile; male genitalia with black and yellow pile
..... *orientalis* (Ricardo)

25. *Trichomachimus excelsus* Ricardo

1922. *Machimus excelsus* Ricardo, *Ann. Mag. nat. Hist.*, (9) 10 : 46.

Material examined : Reported from literature.

Distribution : Sikkim; Tibet.

* 26. *Trichomachimus orientalis* (Ricardo)

1922. *Asilus orientalis* Ricardo, *Ann. Mag. nat. Hist.*, (9) 10 : 46.

Material examined : 1 ♂, East Sikkim : Gangtok, 20. ix. 1978, Coll. Joseph and Parui; 1 ♀, East Sikkim : Tumin, 29. ix. 1988, Coll. V. C. Agarwal.

Distribution : Sikkim (East), Assam, Delhi, Kashmir, Meghalaya, Orissa, Uttar Pradesh and West Bengal.

27. *Trichomachimus pubescens* (Ricardo)

1920. *Asilus pubescens* Ricardo, *Ann. Mag. nat. Hist.*, (9) 10 : 67.

Material examined : Reported from literature.

Distribution : Sikkim, Arunachal Pradesh, Meghalaya, Uttar Pradesh and West Bengal.

28. *Trichomachimus rubisetosus* Oldroyd

1964. *Trichomachimus rubisetosus* Oldroyd, *Ann. Mag. nat. Hist.*, (13) 7 : 495.

Material examined : Reported from literature.

Distribution : Sikkim; Tibet.

SUMMARY

It is the first detailed report of Asilidae from Sikkim. A total of 28 species are reported of which 11 species are recorded for the first time from the state, and *Astochia gopae* and *A. ranipoolensis* are new to science. 12 species are exclusively known from the northern part of India and the remaining are common to some other states. *Trichomachimus excelsus* and *T. rubisetosus* consequently recorded from Sikkim after being described from Tibet and till today they are endemic to Sikkim in India.

Key to subfamilies, tribes and genera are provided; in case where more than single species are present under a genus, key to the species is included. In case of single genus and species diagnostic characters are provided.

ACKNOWLEDGEMENT

The author is indebted to Dr. A. K. Ghosh, former Director, Zoological Survey of India, for facilities and encouragements. The author is extremely thankful to Dr. M. Datta, Scientist-SE for constant help in preparing the manuscript.

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INSECTA : DIPTERA : SYRPHIDAE

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INTRODUCTION

The state of Sikkim (Map 1), captive on the Himalaya, is bounded on the north by the Tibetan region of China on the east by Bhutan, on the west by Nepal and on the south by the Darjiling district of West Bengal, lying in the eastern India. The state is progressively elevated from its southernmost slope at 75m to its north-western summit at 8598m exhibiting a splendid assemblage of evergreen and flowering plants along with several hundred different kinds of orchids that entertain various floriphilic insects like flower flies. Indeed, the Syrphidae find their ideal abode in Sikkim because of its most favourable physiography (*cf.* Datta and Parui, 2002) that calls for richness of the fauna. An account of their habits and habitats introduced in the 'Fauna of Meghalaya' by Datta 1998 may be re-called for comprehensive knowledge.

The syrphid fauna in Sikkim is fairly known and has significant semblance with that of the Darjiling district in West Bengal for the cause of its like physiographical features and nearness (*cf.* Datta and Chakraborti, 1986). Never-the-less, those who undertook to collect any sample of Nature from the so-called Himalayan kingdom in the early days of civilization, often did not attempt to do so from the neighbouring 'Bengal Himalaya' or *vice versa*, possibly due to political reasons. The history says that the collecting began in the kingdom much later than in 'Bengal' yet the Danish, the French, the German and the Austrian collectors apart from the British paid visits to collect insects from there. The earliest record of collecting these flies from Sikkim is very obscure

but it was certainly before 1849 when Walker described a species, viz., *Eristalis andraemon* (now a junior synonym of *Phytomia* (*Phytomia*) *zonata* (F.) from the Rev. J. Stainforth's Collection housed in the then British Museum (Natural History), London. However, it is true to the fact that the European collectors, such as, Dr. F. Stoličzka (in 1871), H. Frühstorfer (?), F. C. Möller (?), Col. C. T. Bingham (in May, 1894), L. W. Hinxman (in June-July, 1895), A. V. Knyvett (?), C. L. A. de Nicéville (before 1896) and W. E. Clarke (in 1895) took part in collecting these flies from Sikkim during the last decades of the nineteenth century. Subsequent to the close of the century, C. Lynch (in September, 1909) of the Indian Museum, Calcutta, collected a few specimens from the state. The National Collection held now by the Zoological Survey of India, Calcutta, was also significantly enriched with the Sikkimese syrphids by the following collectors since then : A. G. K. Menon (in 1959), B. K. Tikader (in 1959), S. Ali (in 1962), G. Ramakrishnan (in 1966), H. S. Sharma (in 1973), G. K. Srivastava (in 1975), T. D. Soota (in 1977), M. S. Shishodia (in 1979) and B. C. Das (in 1980) of this institute.

In fact, after a lapse of half a century, Kertész (1901) described two species from Sikkim followed by Walker (1849). Thereafter, de Meijere (1908) described another two species. It was Brunetti who (1907, 1908, 1915 and 1923) not only described eleven species but also recorded a large number of species from Sikkim. Joseph and Sharma (1976), and Datta and Chakraborti (1986) are referred to as the contributions towards the enrichment of our knowledge on distributional records.

Recently, some collecting trips (*vide* Datta and Parui, *op. cit.*) were organized by this institute in all 4 districts of Sikkim for the purpose of addition and revaluation of the faunal components in aid of our comprehensive knowledge. Those trips that brought the syrphid material for this study were led by the following personalities : S. Chattopadhyaya (July, 1989 & May, 1994), A.R. Lahiri (April-May, 1992), M. S. Shishodia (November, 1992), L.K. Ghosh (March, 1994), P.H. Roy (April, 1994) and B.C. Das (May-June, 1994). By the way, the earlier rich collection held by our institute is taken into consideration only for re-examination and comparison.

The species marked with an asterisk and the species with the genus with double asterisks are recorded for the first time from Sikkim. However, as a result of these studies till December, 1995, 60 species under 34 genera are hitherto known from the state *vis-à-vis* 264 species and 5 subspecies under 62 genera belonging to 2 subfamilies in India.

MATERIALS AND METHODS

The methods described by Datta (1998) were employed here for collecting, killing and preserving adult syrphid flies and, therefore, it is needless to dilate upon the subject.

MORPHOLOGY AND TERMINOLOGY

While dealing with the syrphid fauna of Meghalaya, Datta (1998) presented an account of morphology and terminology of nearly all the genus-groups that occur in Sikkim. I, therefore, like to review here the essential features of certain additional genera in the light of the description made by Brunetti (1923), Hull (1949), Vockeroth (1969) and Thompson (1972).

Head : The configuration of the head consequent mainly upon the shape and size of eyes often bears importance as the triangular head in *Pseudovolucella* unlike the globose head in *Spheginobaccha* and several others in profile. As a rule, males have holoptic eyes nearly in all

syrphines, and *Triglyphus*, *Cheilosia*, *Pseudovolucella*, *Catacores*, etc. but certain species of *Graptomyza*, *Mallota*, *Eristalinus*, *Criorhina*, etc. have narrowly to moderately dichoptic eyes. However, an intermediate condition is evident in these genera like *Sericomyia* in which eyes touch for a very short distance only. Eyes are bare in *Pseudovolucella*, *Sericomyia*, *Sphiximorpha*, *Catacores*, etc. and are haired in *Eriozona*, *Triglyphus*, etc. but *Syrphus*, *Cheilosia*, *Graptomyza*, etc. have either of these conditions in certain species. The frons shows more inflation and broadening in *Sceava*, *Volucella*, *Phytomia*, etc. than the condition found in *Catacores* with a little protuberance only. This is further marked with crescentic creases in *Graptomyza*, and several species of *Volucella* and *Cheilosia*. The face is usually flat (e.g. *Triglyphus*, etc.) or produced a trifle forward (e.g. a few *Cheilosia*) and downward (e.g. some *Cheilosia*, *Pseudovolucella*, *Sericomyia*, *Sphiximorpha*, etc.), often with a tubercle of some degree of prominence (e.g. *Eriozona*, *Syrphus*, *Catacores*, etc.). The face is either predominantly yellow (e.g. *Eriozona*, *Syrphus*, *Cheilosia*, *Triglyphus*, *Catacores*, etc.) or ornamented by a dark median stripe (e.g. *Pseudovolucella*, *Sphiximorpha*, etc.), and may either be bare (e.g. *Pseudovolucella*, *Sericomyia*, *Sphiximorpha*, etc.) or pollinose with sparse pubescence (e.g. *Syrphus*, *Triglyphus*, *Cheilosia*, etc.) or prominently pilose (e.g. *Eriozona*, *Catacores*, etc.). The antenna is much longer in *Sphiximorpha* like *Monoceromyia* than in *Pseudovolucella*, *Sericomyia*, *Catacores*, etc., and is placed on a well-developed antennal prominence. The segment 3 is normally oval or oblong with rounded tip bearing a basal or sub-basal arista in all genera cited above excepting *Monoceromyia* and *Sphiximorpha* that have very narrow elongate-oval third segment with the pointed tip holding a terminal style. The arista in *Pseudovolucella* and *Sericomyia* is remarkably plumose but in a few species of *Syrphus* and *Cheilosia*, it is only sparsely pilose, if not otherwise bare as in *Eriozona*, *Triglyphus*,

Catacores and *Milesia*.

Thorax : The thorax owns great importance because of its certain areas with different hairs of taxonomic value. In addition, the colour pattern often stands significant in some groups. The pronotum or humerus is usually bare in the Syrphinae unlike the Milesinae. The pronotal colouration in the milesine species is variable and hence it is unimportant. The propleuron is usually pilose excepting *Triglyphus*, *Monoceromyia* and *Sphiximorpha* among the Milesinae. Although the pubescence on the mesonotum does not have much significance, its texture as well as ornamentation is often useful. The mesonotal stripes (as in *Syrphus*, *Eriozona*, *Eristalinus*, *Milesia*, etc.) or otherwise various colours (as in *Triglyphus*, *Catacores*, *Sericomyia*, *Sphiximorpha*, etc.) with dull, sub-shining or shining texture are accountable. The scutellum is generally concolourous with the mesonotum and may not be differential as in some species of the Cerioidini. The posterior margin of the scutellum may be provided with a distinct subscutellar fringe (e.g. *Triglyphus*, *Cheilosia*, *Rhingia*, *Pseudovolucella*, *Sericomyia*, etc.) or such a ventral fringe is lacking as in *Syrphus*, *Sphiximorpha*, *Eristalinus*, etc. Moreover, in the *Milesia* species, the scutellum has an apical emarginate rim above the fringe. The mesopleuron in respect of its piles is a very useful taxonomic structure. The convex posterior portion of the mesopleuron is invariably haired but its anterior flat portion is usually bare. Indeed, the latter is microscopically pubescent in *Syrphus*, *Eriozona*, *Betasyrphus*, etc. and distinctly haired in *Episyrphus*, *Baccha*, *Volucella*, *Graptomyza*, etc. To the contrary, the pteropleuron is always pilose anteriorly but often bare posteriorly. The sternopleural hair-patches have some generic value in the syrphines in contrast to the milesines with such patches. The barrette (upper convex edge of meropleuron) with or without piles is very important in the milesines. Whereas it is pilose in *Triglyphus*, *Volucella*, *Phytomia*, *Eristalis*, etc., bare in *Cheilosia*, *Rhingia*, *Graptomyza*, *Milesia*, etc. The remainder of the hypopleuron

(*sensu* Vockeroth) is generally bare or with a few hairs only anywhere below or in front of the metathoracic spiracle in the Syrphini. Indeed, a patch of long hairs in front of the spiracle is evident in some milesines like *Graptomyza*, *Volucella*, *Phytomia* and a few *Rhingia*. The most important part of the metathorax is, however, its sternum (*i.e.* metasternum) lying between mid- and hind coxae. It is almost unanimously used for generic segregation based on the presence or absence of its distinct piles. *Syrphus* have the metasternum bare but *Eriozona* have only a few hairs anteriorly. In the most milesine genera, it is pilose with exceptions like *Triglyphus*, etc.

The wing in the Cerioidini is exceptionally narrow and elongate, and pointed at apex. The wing membrane, characteristic of certain genera, is almost entirely trichose in *Eriozona* and some milesines unlike *Syrphus* and *Eristalis*. The infuscation on the wing, if present, usually remains restricted to the anterior margin extending posteriorly up to the subcostal areas. This clouding occasionally appears useful in diagnosis (*cf.* Cerioidini and others). The fact that the costa and the third vein (R_{4+5}) in the Milesinae end usually behind the apex of the wing, is an absolute departure from that in *Rhingia*. The third vein is straight or nearly so in *Syrphus*, *Eriozona*, etc. but forms a shallow to deep loop in the first posterior cell (R_5) in the Sericomyni, Cerioidini and Eristalini. The marginal cell (R_1) may either be open as the sub-marginal cell (R_3) in *Syrphus*, *Triglyphus*, *Graptomyza*, *Cheilosini*, *Sericomyini*, etc. or closed and petiolate in *Volucella*, *Phytomia*, *Milesia*, etc. Likewise, the first posterior cell (apical cell) may also be closed and petiolate as in the above genera. The apical cross-vein may either be straight and perpendicular or oblique with acute or obtuse angles. The anterior cross-vein (r-m) on the discal cell is located behind (e.g. *Syrphus*, *Eriozona*, *Triglyphus*, *Cheilosia*, etc.) or at or beyond the middle of the discal cell (e.g. *Sericomyini*, *Cerioidini*, *Eristalini*, etc.). This cross-vein may be straight as in the former groups or oblique as in *Volucella*, *Milesia*, etc. The apical cell or the discal cell or both may have a spur at

its posterior angle, *i.e.* the anterior or the posterior cross-vein is continuous (*cf. Eristalis* and *Milesia*). The anal cell (1A) with the petiole usually forms an acute angle in most genera unlike *Milesia*. The spurious vein may be indistinct as in *Triglyphus*, *Sericomyia*, etc. The radial sector may be with (e.g. *Volucellini*) or without (e.g. *Triglyphus*, etc.) bristles. The squamal hair-fringe at times has some diagnostic value (e.g. *Syrphus*, etc.) as much as the trichose condition of the alula.

The leg, especially the hind leg with certain features provide good taxonomic characters. The postero-median apical angle of the hind coxa bears a tuft of hairs in *Syrphus*, etc. but this pilosity does not have any significance in the milesines. The extent of thickness of the hind femur (such as, greatly swollen and arcuate, especially in *Pseudovolucella* males) sometimes offers help in diagnosis. The femur may be armed with (e.g. *Catacores*, *Eristalinus*, *Phytomia*, etc.) or without (e.g. *Triglyphus*, *Cheilosini*, *Sericomyini*, etc.) a basal patch of setulae. Moreover, the hind femur may have (e.g. *Ceriodini*, *Eristalinus*, *Milesia*, etc.) or not (e.g. *Triglyphus*, *Cheilosini*, *Sericomyini*, etc.) apical ventral spines. It may be re-called that the *Eristalini* have basal setal patches on all other femora and that *Milesia* have an apical ventral spur in addition to spines on the femur. The presence or absence of an apical ventral spur on any femur, trochanter or tibia, especially in males may be characteristic to any species.

Abdomen : The abdomen, based on the shape as well as its ornamentation in the form of transverse bands, spots or stripes, is distinguishable in several genera and species, especially in the *Syrphinae*. It is normally of 5 or 6 distinct segments excepting the case of *Triglyphus* that is said to have 4 visible segments only. However, the tergites in the most *Syrphinae* including *Syrphus* and *Eriozona*, and *Rhingia* exhibit weak to strong emargination that is lacking nearly in all *Milesinae*.

The male terminalia deserve vast importance for help in identifying a species. The main features

of the terminalia have already been reviewed (*vide* Datta, *op. cit.*). Therefore, only the essential characters pertaining to the genera treated here, need to be noted. The surstyli in shape and size exhibit tremendous variations among different genera and species but they usually afford intergeneric as well as interspecific distinction. Each surstylus is typically erect and somewhat compressed bilaterally, showing convex outer surface with long, sparse hairs at least up to its middle and concave inner surface with short, abundant and stiff hairs towards its apical end. This is the kind of surstylus found in *Syrphus*, *Chrysotoxum*, etc. Indeed, it is too remarkably variable among the *Milesinae* to describe vividly. Likewise, the tergite 9 to which the surstyli and cerci remain attached, is of different shape and size, and claims some importance in diagnosis. The cerci are normally simple appendages but in *Eristalinus*, *Eristalis*, etc. they are nearly as prominent as the surstyli. The sternite 9 carries significance in respect of its shape, its emargination, its texture as well as presence or absence of the lingula. The superior lobes like surstyli undergo endless modifications. They appear to be highly developed in *Paragus*, *Cheilosia*, *Rhingia*, etc. However, these lobes are occasionally provided with serrations and these serrations take the form of a structure called ctenidium as in *Cheilosia*, *Rhingia*, etc. Besides these superior lobes, *Paragus*, *Cheilosia*, etc. have two horn-like inferior lobes at the apico-lateral corner of the sternite 9. It may be recalled that the *Cheilosini* and a few genera of the *Milesini* have highly specialized two-segmented aedeagus as in the most *Syrphini*. The aedeagal base is variously modified into different structural forms that provide valuable characters in diagnosing a genus or even a species. It is with the depressed anterior end that is usually much broader than the posterior end in *Syrphus* unlike *Eriozona*, but both of them antero-ventrally have a pair of teeth-like (in *Syrphus*) or spine-like (in *Eriozona*) processes at apex. In the milesines, it is usually pyriform or fusiform in contrast to cylindrical form in the syrphines. Likewise, the

aedeagal apodeme varies in configuration in different genera. It may be short cylindrical (e.g. *Baccha*, etc.) or long compressed (e.g. *Milesia*, etc.) or expanded medially (e.g. *Sericomyia*, etc.) or expanded apically (e.g. *Paragus*, *Platycheirus*, etc.) or sword-shaped (e.g. *Melanostoma*, etc.) or tongue-shaped (e.g. *Chrysotoxum*, *Eristalis*, etc.). While the distal portion of the aedeagus in *Syrphus* is subtriangular and flattened postero-dorsally, and subcarinate antero-ventrally, with its flared apex bearing many minute spicules anteriorly, it is subcylindrical, with expanded apex bearing abundant spicules anteriorly in *Eriozona*. The distal portion of the aedeagus is said to be lacking in *Cheilosia*, etc. and is not demarcated in other milesines despite the apico-dorsal lobe of the aedeagus being regarded as valuable as it in diagnosis.

LIST OF TAXA

Subfamily SYRPHINAE

Tribe Syrphini

1. *Allograpta javana* (Wiedemann)
2. *Asarkina* (*Asarkina*) *ericetorum* (Fabricius)
3. *Betasyrphus serarius* (Wiedemann)
4. *Dideoides ovatus* Brunetti
- **5. *Dideopsis aegrotus* (Fabricius)
6. *Episyrphus balteatus* (De Geer)
7. *Eriozona analis* Kertész
- **8. *Ischiodon scutellaris* (Fabricius)
9. *Meliscaeva cinctella* (Zetterstedt)
- **10. *Metasyrphus* (*Metasyrphus*) *confrater* (Wiedemann)
- **11. *Scaeva selenitica* (Meigen)
12. *Sphaerophoria indiana* Bigot
13. *S. viridaenea* Brunetti
14. *Syrphus torvus* Osten Sacken
15. *S. vitripennis* Meigen

Tribe Bacchini

16. *Baccha* (*Allobaccha*) *amphithoe* Walker

17. *B. (A.) triangulifera* Austen
- *18. *B. (Baccha) maculata* Walker

Tribe Melanostomatini

19. *Melanostoma orientale* (Wiedemann)
- *20. *M. univittata* (Wiedemann)
21. *Platycheirus himalayensis* Brunetti

Tribe Chrysotoxini

- **22. *Chrysotoxum quadrifasciatum* Brunetti

Tribe Paragini

23. *Paragus* (*Paragus*) *serratus* (Fabricius)
24. *P. (Pandasyophthalmus) rufiventris* Brunetti
- *25. *P. (P.) tibialis* (Fallén)

Subfamily MILESINAE

Tribe Pipizini

26. *Triglyphus cyaneus* (Brunetti)

Tribe Cheilosini

27. *Cheilosia nigroaenea* Brunetti
- **28. *Rhingia laticincta* Brunetti

Tribe Volucellini

29. *Graptomyza nigripes* Brunetti
30. *G. sexnotata* Brunetti
31. *Volucella lividiventris* Brunetti
32. *V. ruficauda* Brunetti
33. *V. trifasciata* Wiedemann

Tribe Spheginobacchini

34. *Spheginobaccha macropoda* (Bigot)

Tribe Sericomyini

35. *Pseudovolucella hingstoni* Coe
36. *Sericomyia himalayensis* Brunetti

Tribe Cerioidini

37. *Monoceromyia fenestrata* (Brunetti)

- Subfamily SYRPHINAE

(Modified after Vockeroth, 1969)

1. Tergite 1 well-developed and distinctly extended well beyond scutellum; scutellum at its posterior margin inconspicuously or strongly denticulate; abdomen robust and usually oval.... **Paragini**
- Tergite 1 small and practically covered by scutellum (excepting some Bacchini with petiolate abdomen); scutellum posteriorly smooth and not denticulate; abdomen usually slender..... 2
2. Antenna porrect, elongate and occasionally longer than head; abdomen very strongly convex dorsally **Chrysotoxini**
- Antenna drooping and usually short ; abdomen scarcely convex 3
3. Abdomen distinctly petiolate; anterior flat portion of mesopleuron at its postero-dorsal corner with a few distinct, erect and coarse hairs; metasternum bare; face usually flat and with very weak tubercle **Bacchini**
- Abdomen usually equilateral or oval; mesopleural hairing, if present, different or disposed otherwise; metasternum bare or haired; face neither distinctly produced nor narrowed below but usually with well-developed tubercle 4
4. Face and scutellum entirely black; anterior flat portion of mesopleuron with only microscopic pubescence; aedeagus undivided, strongly swollen basally and slender tube-like apically **Melanostomatini**
- Face and scutellum usually yellow or yellowish brown; mesopleural hairing variable; aedeagus nearly always 2–segmented, with complex associated structures **Syrphini**

Key to the subfamilies

1. Pronotum bare (excepting a few long hairs occasionally in *Baccha*); abdomen in males with 5 pregenital segments..... SYRPHINAE
- Pronotum pilose; abdomen in males with 4 pregenital segments..... MILESINAE

Tribe **Syrphini****Key to the genera**

(Modified after Vockeroth, 1969)

1. Mesopleuron at its anterior flat portion with long, fine, erect or sub-erect hairs, at least postero-dorsally 2
- Mesopleuron at its anterior flat portion with only microscopic pubescence or pollinose... .. 3
2. Metasternum haired; male terminalia with broad and somewhat flat surstylus, superior lobe with a short stout tooth apically
..... *Episyrphus* Matsumura & Adachi
- Metasternum bare; male terminalia with slender and somewhat curved surstylus, superior lobe with a small obscure tooth apically
Meliscaeva Frey
3. Wing with distinct transverse brown band at mid-length extending from costa at least across posterior cross-vein 4
- Wing without transverse dark band, unmarked except for stigmal darkening or rarely with costal darkening longitudinally and dark spot antero-apically 5
4. Flies sparsely haired; eye bare; wing band broad, wing membrane partially trichose; abdomen with broad transverse yellow bands; male terminalia with short superior lobe (less than distal portion of aedeagus) without a lateral process apically
..... *Dideopsis* Matsumura
- Flies pilose; eye densely haired; wing band narrow, wing membrane entirely trichose; abdomen bright red or reddish yellow apically, with blackish tergites 1–3; male terminalia with long and slender superior lobe with a lateral process bearing a stout spine
..... *Eriozona* Schiner
5. Metasternum haired 6
- Metasternum bare 10
6. Face produced rather strongly forward and oral opening more than 3–4 times as long as broad; hair-tuft present in front of and just below ventral end of metathoracic spiracle (on meso-katepimeron) and a second tuft on lower end of spiracle postero-ventrally (on meta-epimeron) *Asarkina* Macquart
- Face usual or moderately produced forward and oval opening usually below 3 times as long as broad; hypopleuron bare below metathoracic spiracle and in front of its lower end 7
7. Eye densely haired; hind coxa with tuft of hairs at postero-median apical angle
..... *Dideoides* Brunetti
- Eye entirely or predominantly bare or with short sparse hairs; hind coxa without tuft of hairs at postero-median apical angle 8
8. Abdomen strongly margined from middle of tergite 2 to end of tergite 5; male terminalia small but never inconspicuous, retracted under apex of abdomen
..... *Metasyrphus* Matsumura
- Abdomen unmargined; male terminalia shaped otherwise 9
9. Sub-scutellar fringe complete and moderately dense; male terminalia inconspicuous; cerci set in a deep U-shaped notch of tergite 9; tergite 9 much narrower than pre-abdomen
..... *Allograpta* Osten Sacken
- Sub-scutellar fringe absent or nearly so on at least median third and sparse laterally; male terminalia greatly enlarged, globose; cerci almost always entirely surrounded by tergite 9; tergite 9 as broad as pre-abdomen
..... *Sphaerophoria* Lep. & Serv.
10. Eye with long dense hairs, at least as much as anterior half 11
- Eye bare or with very short hairs (as in some *Syrphus*) 12
11. Wing membrane almost densely and uniformly trichose at least beyond level of end of spurious vein; male eye without distinctly demarked area of larger facets above
..... *Betasyrphus* Matsumura

- Wing membrane with very sparse microtrichia scattered over entire surface; male eye with distinctly demarked area of larger facets above *Scaeva* Fabricius

12. Antennal segment 3 twice as long as broad, subacute apically; sternopleuron at its upper margin with distinct yellow spot; wing with vein R_{4+5} ending well before wing-apex; lower lobe of squama with only microscopic pile; hind trochanter in males with spine-like process ventrally *Ischiodon* Sack

- Antennal segment 3 short, oval and broadly rounded apically; sternopleuron without any yellow spot at its upper margin; wing with vein R_{4+5} ending at wing-apex; lower lobe of squama with abundant coarse, long, erect yellow hairs above; hind trochanter unarmed *Syrphus* Fabricius

Genus *Allograpta* Osten Sacken

1875. *Allograpta* Osten Sacken, *Bull. Buffalo Soc. nat. Sci.*, 3 : 49.

Type-species : *Scaeva obliqua* Say.

1. *Allograpta javana* (Wiedemann)

1824. *Syrphus javanus* Wiedemann, *Analecta Ent.* : 34.

Diagnosis : Eye bare; face with black median stripe in females, sometimes brown in males; antenna orange, segment 3 as broad as long; mesonotum shining black, with sharply defined bright yellow lateral margin at least presuturally; scutellum black-haired; hind femur more or less blackish on apical third, hind tibia black or blackish brown on basal and apical third, rest of legs yellow; aedeagal base in male terminalia strongly sclerotized cylinder with round apex, posteriorly beset with small spicules.

Distribution : Sikkim (North), Andhra Pradesh, Arunachal Pradesh, Assam, Delhi, Karnataka, Manipur, Meghalaya, Tamil Nadu, Tripura and West Bengal; China, E Malaysia, Jawa, Kalimantan, Malay, Philippines, Sumatera, Sri Lanka, Taiwan and Thailand; Australia, Fiji, Guadalcanal, Hawaii, Japan, Korea and New Guinea (Map 2 and Diags. 1 & 2).

Genus *Asarkina* Macquart

1842. *Asarkina* Macquart, *Dipt. exot.*, 2 (2) : 77 (137). Type-species : *Scaeva rostrata* Wiedemann.

Subgenus *Asarkina* Macquart

Diagnosis : Mesonotum with dense anterior collar of long erect hairs; vein R_{4+5} distinctly dipped into cell R_{4+5} ; surstylus strongly convergent and nearly transverse in position.

2. *Asarkina (Asarkina) ericetorum* (Fabricius)

1781. *Syrphus ericetorum* Fabricius, *Spec. Insect.*, 2 : 425.

Diagnosis : Male frons bright sulphur yellow with long black erect hairs, a semi-circular shining blackish brown spot on upper side of small antennal prominence; female frons at vertex about one-ninth of head rather rapidly widening to double that width at level of antenna; surstylus broad basally, only slightly narrowed to subtruncate apex.

Distribution : Sikkim (East and North), Arunachal Pradesh, Assam, Jammu & Kashmir, Meghalaya, Tamil Nadu, Tripura and West Bengal, and other parts of the Oriental region; Africa, Australia, Fiji, Maluku, New Guinea and Samoa (Map 3 and Diags. 1 & 2).

Genus *Betasyrphus* Matsumura

1917. *Betasyrphus* Matsumura, *Ent. Mag. Kyoto*, 2 : 143.

Type-species : *Syrphus serarius* Wiedemann.

3. *Betasyrphus serarius* (Wiedemann)

1830. *Syrphus serarius* Wiedemann, *Aussereurop. zweifl. Insekt.*, 2 : 128.

Diagnosis : Eye densely haired; face orange with blackish tinge; antenna black, base of antennal segment 3 dull orange; mesonotum shining black, yellow-haired anteriorly and black-haired posteriorly at wing-base along lateral margin; scutellum dull yellow with yellow hairs basally and rest black; lower lobe of squama with few erect, fine, white hairs above; greyish-pollinose abdominal markings;

aedeagus in male terminalia tubular, not produced apically and not with setulae.

Distribution : Sikkim (East and North), Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Karnataka, Meghalaya, Uttar Pradesh and West Bengal, and other parts of the SE Asia; Australia, Japan, Korea and New Guinea (Map 4 and Diags. 1 & 2).

Genus *Dideoides* Brunetti

1908. *Dideoides* Brunetti. *Rec. Indian Mus.*, 2 : 54. Type-species : *Dideoides ovatus* Brunetti.

4. *Dideoides ovatus* Brunetti

1908. *Dideoides ovatus* Brunetti, *Rec. Indian Mus.*, 2 : 54.

Material examined : 1 ♀, Gangtok, 1548 m, East Sikkim, 21. v. 1994, Coll. B. C. Das.

Diagnosis : Eye densely haired ; mesonotum dull black ; wing with nearly straight vein R_{4+5} ; scutellar disc with black hairs; abdomen black, tergite 2 with a pair of transversely placed elongate orange spots and 3 with a broad orange band across centre, tergite 9 of male terminalia strongly produced antero-ventrally.

Distribution : Sikkim (East), Meghalaya and West Bengal; Laos (Map 5 and Diags. 1 & 2).

Genus *Dideopsis* Matsumura

1917. *Dideopsis* Matsumura, *Ent. Mag. Kyoto*, 2 : 142. Type-species : *Eristalis aegrotus* F.

** 5. *Dideopsis aegrotus* (Fabricius)

1805. *Eristalis aegrotus* F., *Syst. Antliat.* : 243.

Material examined : 1 ♂, ♀, Ranipool, 1500 m, East Sikkim, 22. v. 1994, Coll. B. C. Das.

Diagnosis : Eye bare; frons black with black hairs; face black with yellow hairs; a black stripe extending from bases of antennae to central bump; mesonotum black with brownish hairs except yellowish humerus with yellow hairs, mesonotum with anterior collar of long erect hairs; vein R_{4+5} indistinctly dipped into cell R_{4+5} ; upper and lower sternopleural hair-patches widely separated

throughout; postero-median apical angle of hind coxa with a strong tuft of hairs; abdomen oval, with broad yellow bands; sternite 9 in male terminalia with short but distinct setae laterally; distal portion of aedeagus with broad flattened apically rounded postero-dorsal process.

Distribution : Sikkim (East), Assam, Karnataka, Kerala, Meghalaya, Tripura and West Bengal; Nepal and other parts of the SE Asia; Australia, Maluku and New Guinea (Map 6 and Diags. 1 & 2).

Genus *Episyrphus* Matsumura & Adachi

1917. *Episyrphus* Matsumura and Adachi, *Ent. Mag. Kyoto*, 2 : 134. Type-species : *Musca balteata* De Geer.

6. *Episyrphus balteatus* (De Geer)

1776. *Musca balteata* De Geer, *Mém. pour. serv. Hist. Ins.*, 6 : 116.

Material examined : 1 ♂, Damthang, 500 m, South Sikkim, 18. iii. 1994, Coll. L.K. Ghosh; 2 ♂♂, 1 ♀, Phensang, 1150 m, North Sikkim, 3. iv. 1994, Coll. P. H. Roy ; 2 ♀♀, Ranipool, 1400 m, East Sikkim, 22. v. 1994, Coll. B.C. Das; 1 ♀ Ranipool, 26. v. 1994, Coll. B.C. Das; 2 ♀♀, Jorthang, 300 m, South Sikkim, 5. vi. 1994, Coll. B.C. Das.

Diagnosis : Eye bare; face orange with orange hairs ; base of antenna with a black dot above; mesonotum black, with a narrow median and 2 lateral greyish stripes; posterior margin of wing with a series of sclerotized dots; abdomen linear, orange, tergites 3 and 4 mostly yellow with narrow sub-basal and broad apical black bands; surstylus in male terminalia, straight, not more than twice as long as broad; superior lobe stout, with ventro-laterally directed tooth apically; distal portion of aedeagus not expanded apically.

Distribution : Sikkim (East, West, North and South), Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Manipur, Meghalaya, Orissa, Tamil Nadu, Tripura and West Bengal; China, Malay and other parts of the Oriental region; Australia, Bonin Islands

and Palaearctic region (Map 7 and Diags. 1 & 2).

Genus *Eriozona* Schiner

1860. *Eriozona* Schiner, *Wien. ent. Mschr.*, **4** : 214.

Type-species : *Syrphus oestriformis* Meigen (= *Scaeva syrphoides* Fallén).

7. *Eriozona analis* Kertész

1901. *Eriozona analis* Kertész, *Természetr. Füzet.*, **24** : 414.

1908. *Eriozona ruficauda* Brunetti, *Rec. Indian Mus.*, **2** : 56.

Diagnosis : Antennal segment 3 more than twice as long as deep ; wing with a distinct brown band across middle from costa to about base of discal cell; abdominal segments 3 and 4 orange ; segments 1 and 2 with black hairs excepting corners.

Distribution : Sikkim (East); Nepal (Diags. 1 & 2).

Genus *Ischiodon* Sack

1913 *Ischiodon* Sack, *Ent. Mitt.*, **2** : 5.

Type-species : *Ischiodon trochanterica* Sack (= *Scaeva scutellaris* Fabricius).

** 8. *Ischiodon scutellaris* (Fabricius)

1805. *Scaeva scutellaris* Fabricius, *Syst. Antliat.*, : 252.

Material examined : 1 ♂, Dharmdin, 650 m, West Sikkim, 18. i. 1994, Coll. L. K. Ghosh.

Diagnosis : Wing with vein R_{4+5} upcurved apically and ending well before wing-apex ; hind femur with a sub-apical black ring ; surstylus in male terminalia elongate, broadened beyond base, dorsally curved and serrate, ventrally straight and smooth; aedeagal base very large and strongly sclerotized.

Distribution : Sikkim (West), Andhra Pradesh, Assam, Delhi, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Manipur, Meghalaya, Orissa, Punjab, Rajasthan, Tamil Nadu, Tripura and West Bengal; Jawa, Philippines, Taiwan and

other parts of the SE Asia ; Australia, Hawaii, Japan and Micronesia (Map 8 and Diags. 1 & 2).

Genus *Meliscaeva* Frey

1946. *Meliscaeva* Frey, *Notul. ent.*, **25** : 164 (as subgenus of *Epistrophe* Walker).

Type-species : *Scaeva cinctella* Zetterstedt.

9. *Meliscaeva cinctella* (Zetterstedt)

1843. *Syrphus cinctellus* Zetterstedt, *Dipt. Scandinaviae*, **2** : 742.

Diagnosis : Eye bare ; frons in males shining chrome yellow with a dark spot above antennae, in females frons above shining black; mesopleuron at its anterior flat portion extensively haired; posterior margin of wing with a series of sclerotized dots ; abdomen slender and parallel-sided; tergites 2–4 each with a pair of yellow spots; distal portion of aedeagus in male terminalia almost tubular in shape.

Distribution : Sikkim (North), Himachal Pradesh, Meghalaya and West Bengal; Nepal, Sri Lanka and Taiwan; Palaearctic region (Map 9 and Diags. 1 & 2).

Genus *Metasyrphus* Matsumura

1917. *Metasyrphus* Matsumura, *Ent. Mag. Kyoto*, **2** : 147.

Type-species : *Scaeva corollae* F.

Subgenus *Metasyrphus* Matsumura *

Diagnosis : Wing with vein R_{4+5} straight or nearly so; sternite 9 in male terminalia without lateral and dorso-lateral grooves.

** 10. *Metasyrphus (Metasyrphus) confrater* (Wiedemann)

1830. *Syrphus confrater* Wiedemann, *Aussereurop. zweifl. Insekt.*, **2** : 120.

Material examined : 1 ♂, Damthang, 500 m, South Sikkim, 18. iii. 1994, Coll. L.K. Ghosh.

Diagnosis : Eye bare : scutellum with black

* The occurrence of *M. nitens* (Zetterstedt) recorded by Joseph and Sharma (1976) is dubious.

hairs; abdomen with 3 entire bands lying across middle of segments, nearer anteriorly; surstylus in male terminalia short and broad, and produced postero-ventrally.

Distribution : Sikkim (South), Arunachal Pradesh, Assam, Bihar, Delhi, Himachal Pradesh, Jammu & Kashmir, Karnataka, Meghalaya, Punjab, Uttar Pradesh and West Bengal; China and other parts of the Oriental region; Japan and New Guinea (Map 10 and Diags. 1 & 2).

Genus *Scaeva* Fabricius

1805. *Scaeva* Fabricius, *Syst. Antliat.* : 248.

Type-species : *Musca pyrastris* Linnaeus.

** 11. *Scaeva selenitica* (Meigen)

1822. *Syrphus seleniticus* Meigen, *Syst. Besch. europ. zweifl. Insekt.*, 3 : 304.

Material examined : 1 ♀ Yumthang, 2975 m, North Sikkim, 18. iv. 1992, Coll. A.R. Lahiri.

Diagnosis : Eye densely haired, sparser posteriorly; antenna black except yellowish segment 1 and base of 3; mesonotum shining black, with dense yellowish brown hairs; wing clear; leg predominantly bright yellow; hind tibia with a dark brown ring; abdomen black, tergites 2–4 each with a pair of bright yellow spots being lunulate on 3–4.

Distribution : Sikkim (North), Delhi, Himachal Pradesh, Meghalaya and Uttar Pradesh; Cambodia, China, Laos and Vietnam; Europe (Map 11 and Diags. 1 & 2).

Genus *Sphaerophoria* Lep. & Serv.

1828. *Sphaerophoria* Lepeletier and Serville, *Encycl. méth. (Ins.)*, 10 : 513 (as subgenus of *Syrphus* F.).

Type-species : *Musca scripta* L.

Key to the species

1. Face entirely yellow and unstriped; thoracic dorsum nearly always with 2 more or less distinct greyish median stripes at least anteriorly; tergum 9 in male terminalia sclerotized between

cerci and its posterior margin *indiana* Bigot

- Face yellowish with a distinct black median stripe; thoracic dorsum blackish, without sign of greyish median stripes; tergum 9 in male terminalia membranous between cerci and its posterior margin *viridaenea* Brunetti

12. *Sphaerophoria indiana* Bigot

1884. *Sphaerophoria indiana* Bigot, *Annls Soc. ent. Fr.*, (6) 4 : 99.

1915. *Sphaerophoria nigratarsis* Brunetti, *Rec. Indian Mus.*, 11 : 216 (as form).

Material examined : 2 ♂♂, Rongram, 1150 m, North Sikkim, 12. iv. 1992, Coll. A. R. Lahiri; 4 ♀♀ Chungthang, 1550 m, North Sikkim, 14–15. iv. 1992, Coll. A. R. Lahiri; 1 ♂, Tadong, 1500 m. East Sikkim, 10. iii. 1994, Coll. L. K. Ghosh; 1 ♂, Rangpo, 300m, East Sikkim, 22. iii. 1994, Coll. L. K. Ghosh; 2 ♂♂, 1 ♀, Phensang, 1150 m, North Sikkim, 3. iv. 1994, Coll. P. H. Roy; 1 ♂, 1 ♀, Dikchu, 600 m, East Sikkim, 18. v. 1994, Coll. S. Chattopadhyaya.

Distribution : Sikkim (East and North), Arunachal Pradesh, Bihar, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Meghalaya, Tripura, Uttar Pradesh and West Bengal; China and ? Sri Lanka; Korea and eastern part of the erstwhile U.S.S.R. (Map 12 and Diags. 1 & 2).

13. *Sphaerophoria viridaenea* Brunetti

1915. *Sphaerophoria viridaenea* Brunetti, *Rec. Indian Mus.*, 11 : 216 (as form).

Distribution : Sikkim (East and North), Himachal Pradesh and West Bengal (Map 13 and Diag. 1).

Genus *Syrphus* Fabricius

1775. *Syrphus* Fabricius, *Syst. Ent.* : 762.

Type-species : *Musca ribessi* L.

Key to the species

1. Eye with short dense hairs; antenna blackish brown, segment 3 reddish ventrally; distal

portion of aedeagus in male terminalia with cone-like apex *torvus* Ost. Sack.

- Eye with sparse hairs; antenna orange, a little darker dorsally; distal portion of aedeagus in male terminalia with sharply slender apex
..... *vitripennis* Meigen

14. *Syrphus torvus* Osten Sacken

1875. *Syrphus torvus* Osten Sacken, *Proc. Boston Soc. nat. Hist.*, 18 : 139.

Material examined : 1 ♂, Lachen, 2700 m, North Sikkim, 24. iv. 1992, Coll. A. R. Lahiri.

Distribution : Sikkim (North), and Himachal Pradesh; Nepal, Taiwan and Thailand; Holarctic (Map 14 and Diags. 1 & 3).

15. *Syrphus vitripennis* Meigen

1822. *Syrphus vitripennis* Meigen, *Syst. Besch. zweifl. Insekt.*, 3 : 308.

Distribution : Sikkim (West) ; Taiwan ; Europe (Diags. 1 & 3).

Tribe **Bacchini**

Genus *Baccha* Fabricius

1805. *Baccha* Fabricius, *Syst. Antliat.* : 199.

Type-species : *Syrphus elongatus* Fabricius.

Diagnosis : Flies with head broader than thorax and more than hemispherical, hollowed behind; eye practically bare; frons slightly prominent; antenna short, with bare dorsal arista; wing with rudimentary or almost no alula, squama inconspicuous; leg long and thin, hind femur much longer than others and slender; abdomen very much longer than thorax, segments 2 and 3 very long and narrow, succeeding segments widening gradually before apex.

Key to the subgenera

1. Humerus with a row of hairs behind or almost half haired *Allobaccha* Curran
- Humerus entirely bare *Baccha* Fabricius

Subgenus *Allobaccha* Curran

.1928,. *Allobaccha* Curran, *J. fed. Malay St. Mus.*, 14 : 251
(as subgenus of *Baccha* F.).

Type-species : *Baccha rubella* van der Wulp.

Key to the species

1. Thorax with 2 elongate spots, 1 from humerus to suture and 1 on mesopleuron, and 1 round spot on sternopleuron on either side; abdomen mainly yellow, with black bands across segments 3 and 4 *amphithoe* Walker
- Thorax with similar kinds of spots; abdomen mainly reddish brown, with a large yellow spot at or towards end of segment 3
..... *triangulifera* Austen

16. *Baccha (Allobaccha) amphithoe* Walker

1849. *Baccha amphithoe* Walker, *List Dipt. Br. Mus.*, 3 : 549.

1913. *Baccha flavopunctata* Brunetti, *Rec. Indian Mus.*, 8 : 165.

Material examined : 1 ♀, Rangpo, 300 m, East Sikkim, 22.iii. 1994, Coll. L.K. Ghosh; 1 ♂, Ranipool, 1400 m, East Sikkim, 26.v. 1994, Coll. B. C. Das.

Distribution : Sikkim (East), Assam, Meghalaya, Tripura and West Bengal; Sri Lanka and Taiwan south to Flores Islands (Indonesia) (Map 15 and Diags. 1 & 3).

17. *Baccha (Allobaccha) triangulifera* Austen

1893. *Baccha triangulifera* Austen, *Proc. zool. Soc. Lond.*, 1839 : 138.

1915. *Baccha elegans* Brunetti, *Rec. Indian Mus.*, 11 : 220.

Distribution : Sikkim (East), Karnataka and West Bengal; Myanmar, Nepal and Sri Lanka (Map 16 and Diags. 1 & 3).

Subgenus *Baccha* Fabricius

* 18. *Baccha (Baccha) maculata* Walker

1852. *Baccha maculata* Walker, *Insecta Saundersiana*, 1 : 223.

Material examined : 1 ♀, Singtam, 750 m, East Sikkim, 23.iii. 1994, Coll. L.K. Ghosh.

Diagnosis : Antenna bright yellow; antennal process shining black in males, bluish black in females; humerus and a short longitudinal stripe on mesopleura in front of wing-base cupreous in males, yellowish in females; leg predominantly yellowish, hind femur with a sub-apical brownish ring and hind tibia with an indistinct dark median band; abdomen mainly shining brown, sometimes with pale spots.

Distribution : Sikkim (East), Himachal Pradesh, Meghalaya, Uttar Pradesh and West Bengal; Jawa, Kalimantan, Malaysia, Nepal, Philippines, Sumatera and Taiwan; Japan and Korea (Map 17 and Diags. (1 & 3).

Tribe *Melanostomatini*

Key to the genera

1. Males devoid of dilated fore tarsi; surstylus usually not bifid; superior lobe usually triangular
Melanostoma Schiner
- Males with dilated fore tarsi; surstylus bifid; superior lobe sickle-shaped
..... *Platycheirus* Lep. & Serv.

Genus *Melanostoma* Schiner

1860. *Melanostoma* Schiner, *Wien. ent. Mschr.*, 4 : 213.

Type-species : *Musca mellina* L.

Key to the species

1. Face with 2 distinct small bumps
..... *orientale* (Wiedemann)
- Face nearly flat forming a single angle only on lower end
..... *univittata* (Wiedemann)

19. *Melanostoma orientale* (Wiedemann)

1824. *Syrphus orientalis* Wiedemann, *Analecta Ent.* : 36.

Material examined : 3 ♀ ♀, Namchi, 550 m, South Sikkim, 19. iii. 1994, Coll. L.K. Ghosh; 1 ♀, Tarku, 525m, West Sikkim, 19. iii. 1994, Coll. L.K.

Ghosh; 1 ♂, 1 ♀, Singtam, 750 m, East Sikkim, 23. iii. 1994, Coll. L.K. Ghosh.

Distribution : Sikkim (East, West, North and South), Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Karnataka, Meghalaya, Punjab, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal; Bhutan, Nepal, Pakistan, Sri Lanka and other parts of the Oriental region; Palaearctic region (Map 18 and Diags. 1 & 3).

* 20. *Melanostoma univittata* (Wiedemann)

1824. *Syrphus univittatus* Wiedemann, *Analecta Ent.*, 36.

Material examined : 1 ♂, Ranipool 1400 m, East Sikkim, 22. v. 1994, Coll. B. C. Das.

Distribution : Sikkim (East), Assam, Bihar, Karnataka, Kerala, Meghalaya, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal; E Malaysia, Myanmar, Nepal, Sri Lanka, Sumatera and other parts of the SE Asia; ? Australian and Palaearctic regions (Map 19 and Diags. 1 & 3).

Genus *Platycheirus* Lepeletier & Serville

1828. *Platycheirus* Lepeletier and Serville, in Latreille et al., *Encycl. Méth.* (Ins.) 10 (2) : 513.

Type-species : *Syrphus scutatus* Meigen.

21. *Platycheirus himalayensis* Brunetti

1915. *Platycheirus himalayensis* Brunetti, *Rec. Indian Mus.*, 11 : 209 (as variety of *manicatus* Meigen, 1822).

Diagnosis : In males, antenna entirely black; face very conspicuously produced to a distance equal to, or more than greatest width of eye in profile; mesonotum black with greenish tinge; fore femur broadly, hind femur narrowly, basal half of fore tibia and first 3 segments of mid tarsus orange; fore tarsus with first 2 segments remarkably dilated, segment 1 three times as wide as apex of tibia and both 1 and 2 at least three times as wide as 3 narrow remaining segments; abdominal spots bright yellow.

Distribution : Sikkim (North), and Uttar Pradesh ; Nepal (Map 20 and Diags. 1 & 3).

Tribe **Chrysotoxini**Genus **Chrysotoxum** Meigen

1803. *Chrysotoxum* Meigen, *Magazin InsektKde*, 2 : 275.

Type-species : *Musca bicincta* L.

Diagnosis : Rather large flies with semi-circular head as broad as thorax; eye haired; frons and face prominent; long antennae placed inbetween produced frons and face, arista sub-basal, bare; mesonotum finely punctate, with a pair of faint greyish stripes anteriorly in addition to yellowish lateral lines; leg predominantly yellowish; wing yellowish anteriorly; abdomen mainly ovate, finely punctate and usually with a pair of curved yellow spots on tergites 2–5.

** 22. *Chrysotoxum quadrifasciatum* Brunetti

1923. *Chrysotoxum quadrifasciatum* Brunetti, *Fauna Br. India, Dipt.*, 3 : 300.

Material examined : 1 ♀, Tadong, 1500 m, East Sikkim, 30. iv. 1992, Coll. A. R. Lahiri; 1 ♂, Rangpo, 300 m, East Sikkim, 22. iii. 1994, Coll. L. K. Ghosh.

Diagnosis : Eye with long whitish hairs; face brownish orange, with a wide black median stripe and an indistinct spot towards cheek; abdominal tergites 2 and 3 each with a pair of arcuate spots on or just behind anterior margin; tergites 3 and 4 with narrowly brown posterior margin; tergite 5 with a large orange spot centrally.

Distribution : Sikkim (East), Meghalaya and West Bengal; Laos (Map 21 and Diags. 1 & 3).

Tribe **Paragini**Genus **Paragus** Latreille

1804. *Paragus* Latreille, *Nouv. Dict. Hist. nat.*, 24 : 94.

Type-species : *Syrphus bicolor* F.

Diagnosis : Head slightly flattened and broader than thorax; eye pilose; face produced to a large central bump; antennal arista bare; thorax quadrate and arched; mesonotum striped; wing with veins M_{1+2} and $M_3 + Cu_1$ undulating apically and cross-vein r-m distinctly before middle of discal

cell; abdomen as wide as thorax, nearly equilateral; aedeagus in male terminalia undivided, simple and tubular medially with a complex lateral lobe at base on either side.

Key to the subgenera

1. Eye with bicolourous pile, with alternating vittae of pale and dark hairs; spurious vein shorter, not extending beyond discal (r-m) cross-vein
Paragus Latreille
- Eye with unicolourous pile; spurious vein long, extending beyond discal (r-m) cross-vein
..... *Pandasyophthalmus* Stuckenburg

Subgenus *Paragus* Latreille23. *Paragus (Paragus) serratus* (Fabricius)

1805. *Mulio serratus* Fabricius, *Syst. Antliat.*, : 186.

Diagnosis : Eye with 3 longitudinal vittae of white hairs; scutellum conspicuously serrate on posterior margin; abdominal colouration variable and mainly yellow with brown markings on tergites, punctate.

Distribution : Sikkim (East), Assam, Bihar, Delhi, Goa, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Orissa, Punjab, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal; Jakarta, Jawa, E Malaysia, Nepal, Pakistan and Sri Lanka; Africa and Papua (Map 22 and Diags. 1 & 3).

Subgenus *Pandasyophthalmus* Stuckenberg

1954. *Pandasyophthalmus* Stuckenberg, *Revue Zool. Bot. afr.*, 49 : 100.

Type-species : *Paragus longiventris* Loew.

Key to the species

1. Abdomen entirely shining black, male terminalia with short and broad surstylus, even broader apically; superior lobe short, slightly longer than surstylus *tibialis* (Fallén)
- Abdomen bluish black anteriorly and bright reddish brown posteriorly; male terminalia with

long and slender surstylus gradually tapering apically; superior lobe robust, even longer than tergite 9 and surstylus together *rufiventris* Brunetti

24. *Paragus (Pandasyophthalmus) rufiventris*

Brunetti

1913. *Paragus rufiventris* Brunetti, *Rec. Indian Mus.*, 8 : 157.

1975. *Paragus (Pandasyophthalmus tibialis rufiventris* Brunetti : Knutson, Thompson and Vockeroth, *A Catalog of Diptera of the Oriental region*, 2 : 328.

1983. *Paragus (Pandasyophthalmus) rufiventris* Brunetti : Datta and Chakraborti, *Rec. zool. Surv. India*, 81 : 245.

Distribution : Sikkim (East), Assam, Bihar, Jammu & Kashmir, Tripura, Uttar Pradesh and West Bengal; Bhutan, Nepal, Pakistan and Sri Lanka (Map 23 and Diags. 1 & 3).

*** 25. *Paragus (Pandasyophthalmus) tibialis* (Fallén)**

1817. *Pipiza tibialis* Fallén, *Syrphici Sveciae* : 60.

1983. *Paragus (Pandasyophthalmus) tibialis* (Fallén) : Datta and Chakraborti, *Rec. zool. Surv. India*, 81 : 244.

Material examined : 1 ♂, 1 ♀ Singtam, 750 m, East Sikkim, 23. iii. 1994, Coll. L.K. Ghosh.

Distribution : Sikkim (East), Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Meghalaya, Punjab, Tripura, Uttar Pradesh and West Bengal; Nepal and other parts of the Oriental region; Palaearctic region (Map 24 and Diags. 1 & 3).

Subfamily MILESINAE

Key to the tribes

(Modified after Thompson, 1972)

1. Hind femur with well-developed anterior basal patch of setulae; anterior portion of mesopleuron bare **Eristalini**
- Hind femur without basal patch of setulae;

anterior portion of mesopleuron pilose, if with basal patch of setulae on hind femur 2

2. Wing usually with perpendicular anterior cross-vein (r-m) before middle of discal cell, neither greatly slanted nor extended to outer third of cell ; if located at mid-point of cell, then either thorax with bristles or fore and mid femur with ventral spines or hind femur with basal patch of setulae 3
- Wing always with slanted anterior cross-vein, usually beyond middle of discal cell, often greatly slanted and extended to outer third or more of cell; if located at mid-point of cell, then either thorax without bristles, or fore and mid femur without ventral spines, or hind femur without basal patch of setulae 6
3. Oral margin evenly rounded, not notched apically; eye and face pilose; facial grooves reduced to pits; subscutellar fringe present; hind femur unarmed **Pipizini**
- Oral margin notched anteriorly; eye and face bare or pilose; facial grooves elongate; subscutellar fringe absent or present; hind femur with or without ventral spines 4
4. Eye rarely pilose, and face bare; propleuron greatly swollen and produced dorso-ventrally, with a vertical row of long stiff hairs; subscutellar fringe absent ; hind femur with ventral spines **Spheginobacchini**
- Eye and face pilose (except some cheilosines); propleuron neither greatly swollen nor produced and without a row of hairs; subscutellar fringe absent or present; hind femur without ventral spines 5
5. Arista plumose ; subscutellar fringe absent : wing with apical cross-vein (apex of M_{1+2}) either strongly recessive or straight ; presence of a distinct patch of hairs in front of metathoracic spiracle **Volucellini**
- Arista bare or with microscopic pubescence; subscutellar fringe present; wing with apical cross-vein usually not recessive or straight, if recessive or straight, then metathoracic spiracle without hair-patch at its front **Cheilosini**

6. Antenna long, at least as long as face; segment 3 tapering to a point, always with a terminal style **Ceriodini**
 – Antenna short, always shorter than face; segment 3 orbicular or elongate, with an arista 7
 7. Arista distinctly pilose **Sericomyini**
 – Arista bare **Milesini**

Tribe Pipizini

Genus *Triglyphus* Loew

1840. *Triglyphus* Loew, *Isis (Oken's)* 1840 : 512.

Type-species : *Triglyphus primus* Loew.

Diagnosis : Face short, virtually straight, retreating, and non-tuberculate; eye densely haired ; antennal segment 3 elongate, arista bare, nearly basal in position ; wing with anterior cross-vein (r-m) very near base of discal cell; apical cross-vein (apex of M_{1+2}) long and slightly angular at its middle, as apical cell sized nearly twice as wide as discal cell distally; posterior cross-vein (apex of $M_3 + Cu_1$) quite straight; spurious vein indistinct; abdomen visibly of 4 segments only.

26. *Triglyphus cyaneus* (Brunetti)

1915. *Psilota cyanea* Brunetti, *Rec. Indian Mus.*, 11 : 202.

Diagnosis : Frons and face brilliantly shining violet-black, with sparse white hairs; vertex with some erect brown hairs; vertical triangle demarcated by an impressed line; antenna brownish yellow, segment 3 paler below; mesonotum and scutellum shining black, with short sparse white hairs; abdomen black, with very narrow segment 1, subequal 2, 3, and 4.

Distribution : Sikkim (East), and West Bengal (Map 25 and Diag. 1).

Tribe Cheilosini

Key to the genera

1. Face produced strongly forward to a porrect snout ; costa and third vein (R_{4+5}) ending well beyond wing-apex *Rhingia* Scopoli

- Face without a snout; costa and third vein (R_{4+5}) ending at or before wing-apex
 *Cheilosia* Meigen

Genus *Cheilosia* Meigen

1822. *Cheilosia* Meigen, *Syst. Besch. europ. zweifl. Insekt.*, 3 : 296.

Type-species : *Eristalis scutellatus* Fallén.

27. *Cheilosia nigroaenea* Brunetti

1915. *Cheilosia nigroaenea* Brunetti, *Rec. Indian Mus.*, 11 : 204.

Diagnosis : Eye with yellowish grey hairs; face with distinct, round, black-haired central knob ; antenna brownish grey, arista bare; mesonotum and scutellum shining black, with brownish yellow hairs; wing very pale grey; abdomen black, with plumbeous tinge, hairs entirely yellowish grey.

Distribution : Sikkim (North), and Himachal Pradesh ; Nepal (Map 26 and Diags. 1 & 4).

Genus *Rhingia* Scopoli

1763. *Rhingia* Scopoli, *Ent. Carniolica* : 358.

Type-species : *Conops rostrata* L.

** 28. *Rhingia laticincta* Brunetti

1908. *Rhingia laticincta* Brunetti, *Rec. Indian Mus.*, 2 : 58.

Material examined : 1 ♀, Ranipool, 1500 m, East Sikkim, 22. v. 1994, Coll. B.C. Das.

Diagnosis : Eyes quite contiguous as far as vertex ; mesonotum with 4 blackish longitudinal stripes, inner ones close together anteriorly but wide apart posteriorly; scutellum unicolourous with a row of stiff black hairs on posterior margin above a fringe of soft pale yellow hairs on it; femur in females nearly all pale brown and a blackish ring on hind tibia less distinct than in males; abdominal tergites 2, 3 and 4 each with a black band posteriorly in addition to a vertical long black spot dorsally over each tergite forming a stripe.

Distribution : Sikkim (East), Himachal

Pradesh, Punjab, Uttar Pradesh and West Bengal (Map 27 and Diag. 1).

Tribe Volucellini

Key to the genera

1. Wing without spurious vein between R and M ; marginal cell (R_1) open; apex of vein M_{1+2} strongly divergent from wing-margin *Graptomyza* Wiedemann
- Wing with spurious vein between R and M; marginal cell (R_1) closed; vein M_{1+2} strongly recurrent at tip *Volucella* Geoffroy

Genus *Graptomyza* Wiedemann

1820. *Graptomyza* Wiedemann, *Nova Dipt. Gen.* : 16.

Type-species : *Graptomyza longirostris* Wied.

Key to the species

1. Abdominal tergite 2 with a large median transverse spot, and tergites 3 and 4 each with a pair of large spots very closely apposed together *nigripes* Brunetti
- Abdominal tergites 2, 3 and 4 each with a pair of large but well-separated spots *sexnotata* Brunetti

29. *Graptomyza nigripes* Brunetti

1913. *Graptomyza nigripes* Brunetti, *Rec. Indian Mus.*, 8 : 167 (as variety of *G. ventralis* Wiedemann).

Distribution : Sikkim (East), Arunachal Pradesh, Assam, Himachal Pradesh, Meghalaya and West Bengal; Malay (Map 28 and Diags. 1 & 4).

30. *Graptomyza sexnotata* Brunetti

1908. *Graptomyza sexnotata* Brunetti, *Rec. Indian Mus.*, 2 : 63.

Distribution : Sikkim (East), and Meghalaya (Map 29 and Diag. 1).

Genus *Volucella* Geoffroy

1762. *Volucella* Geoffroy, *Hist. Insect. Paris*, 2 : 540.

Type-species : *Musca pellucens* L.

Key to the species

1. Bare flies, without tufts of long hairs on any part of body ; abdomen with 2 narrow pale bands dorsally on segments 2–3 and 3–4..... *trifasciata* Wiedemann
- Flies of dense and long hairs on certain parts of body; abdomen dorsally black, without any cross-bands 2
2. Dorsum of abdomen with yellowish red hairs posteriorly on segment 3 and entirely on segments 4 and 5; venter entirely black with black hairs *ruficauda* Brunetti
- Dorsum of abdomen with greyish hairs; venter with segments 2 and 3 livid *lividiventrtris* Brunetti

31. *Volucella lividiventrtris* Brunetti

1908. *Volucella lividiventrtris* Brunetti, *Rec. Indian Mus.*, 2 : 62.

Distribution : Sikkim (East); Tibet (Diag. 1 & 4).

32. *Volucella ruficauda* Brunetti

1908. *Volucella ruficauda* Brunetti, *Rec. Indian Mus.*, 2 : 61.

Distribution : Sikkim (East) (Diag. 1).

33. *Volucella trifasciata* Wiedemann

1830. *Volucella trifasciata* Wiedemann, *Aussereurop. zweifl. Insekt.*, 2 : 196.

Distribution : Sikkim (East), and Meghalaya; Cambodia, China, Jawa, Kalimantan, Malaysia, Myanmar, Philippines, Sulawesi, Taiwan, Thailand and Vietnam (Map 30 and Diags 1 & 4).

Tribe Spheginobacchini

Genus *Spheginobaccha* de Meijere

1908. *Spheginobaccha* de Meijere, *Tijdschr. Ent.*, 51 : 327.

Type-species : *Sphegina macropoda* Bigot.

Diagnosis : Eye pilose or bare; face with weak tubercle; occiput produced on upper half, with a

deep crease on upper two-thirds; antennal arista bare; scutellum without a rim and hair-fringe; mesopleuron at its anterior portion bare; metathoracic spiracle without hair-patch; metasternum pilose; wing with vein R_{4+5} straight, apical cross-vein directed outward, a distinct spur on vein M_{1+2} and marginal cell open at margin; hind femur with ventral spines.

34. *Spheginobaccha macropoda* (Bigot)

1883. *Sphegina macropoda* Bigot, *Annls Soc. ent. Fr.*, (6) 3 : 331.

Diagnosis : Eye pilose ; anterior ocellus not sunken into a cleft and divided, wing with basal cell 2 microtrichose on apical third ; abdominal pattern always with more extensive dark areas except 2 pairs of yellow lateral spots on tergites 2 and 3 and 1 pair of silvery spots on 4 ; sternite 9 in male terminalia pilose on dorso-lateral surface posteriorly ; superior lobe apically like a hook.

Distribution : Sikkim (East), Meghalaya and West Bengal ; Anambas Is., China, Hainan Is., Jawa, Kalimantan, Laos, Malaysia, Myanmar, Thailand and Vietnam (Map 31 and Diags. 1 & 4).

Tribe Sericomyni

Key to the genera

1. Head much shortened, with flattish and deep face descending well below eyes ; hind femur greatly thickened (remarkable in males) and arcuate ; hind tibia greatly shortened
..... *Pseudovolucella* Shiraki
- Head comparatively enlarged, with a moderately descending face but not deep conically ; hind femur normally slender and straight ; hind tibia not noticeably shortened
..... *Sericomyia* Meigen

Genus *Pseudovolucella* Shiraki

1930. *Pseudovolucella* Shiraki, *Mem. Fac. Agric. Taihoku imp. Univ.*, 1 : 39.

Type-species : *Pseudovolucella mimica* Shiraki.

35. *Pseudovolucella hingstoni* Coe

1964. *Pseudovolucella hingstoni* Coe, *Bull. Br. Mus. nat. Hist. (Ent.)*, 15 : 270.

Diagnosis : Frons in males very short, with a narrow central greyish line, but in females with a broad yellow band ; face flattish, with a bare central prominence ; antennal segment 3 dark brown, arista nearly twice its length, fringed with fine close-set black hairs ; coxae and femora black, latter broadly pale at tip ; fore tibia dark except at base ; fore tarsi entirely dark ; hind femur in males slightly convex above and with a projection just beyond middle in addition to one on apical third ; abdominal tergites 2, 3 and 4 each with a reddish orange narrow arcuate band.

Distribution : Sikkim (East) ; Nepal (Diags. 1 & 4).

Genus *Sericomyia* Meigen

1803. *Sericomyia* Meigen, *Magazin InsektKde*, 2 : 274.

Type-species : *Musca lappona* L.

36. *Sericomyia himalayensis* Brunetti

1908. *Sericomyia himalayensis* Brunetti, *Rec. Indian Mus.*, 2 : 89.

Diagnosis : Face nearly non-tuberculate ; frons and lower part of head bright yellow, with a few yellow hairs below eyes ; antenna small and entirely black ; abdominal tergites 2, 3 and 4 each with a black band, interrupted in middle, on hind margin.

Distribution : Sikkim (East) (Diag. 1).

Tribe Cerioidini

Key to the genera

1. Antenna placed on an elongate peduncle ; wing with vein R_{4+5} strongly curved in cell R_5
..... *Monoceromyia* Shannon
- Antennal peduncle practically absent, showing only antennal prominence on frons; wing with vein R_{4+5} weakly curved in cell R_5
..... *Sphiximorpha* Rondani

Genus *Monoceromyia* Shannon

1922. *Monoceromyia* Shannon, *Bull. Brooklyn ent. Soc.*,
17 : 32 (as subgenus of *Ceriodes* Rondani).

Type-species : *Ceria tricolor* Loew.

Key to the species

1. Abdominal segment 2 short and distinctly contracted at base or about middle (1/3 as wide as greatest width of abdomen) ; segment 3 always longer than 2 2
 - Abdominal segment 2 very long and slender (less than 1/4 of greatest width of abdomen) ; segment 3 always shorter than 2 3
2. Thorax with 2 longitudinal yellow post-sutural stripes near side-margins and 1 on pleura from wing-base downwards in addition to a yellow spot on upper part of sternopleura on either side *himalayensis* (de Meijere)
 - Thorax without any stripes or spots and almost entirely black *fenestrata* (Brunetti)
3. Thorax with 2 longitudinal yellow post-sutural stripes and a median spot in front of hind margin *trinotata* (de Meijere)
 - Body black and without any pale marks excepting slight brownish or yellowish tinge on humeri and hind margins of abdominal segments *obscura* (Brunetti)

37. *Monoceromyia fenestrata* (Brunetti)

1923. *Ceria fenestrata* Brunetti, *Fauna Br. India, Dipt.*,
3 : 333.

Distribution : Sikkim (South) (Diag. 1).

38. *Monoceromyia himalayensis* (de Meijere)

1908. *Ceriodes himalayensis* de Meijere, *Tijdschr. Ent.*,
51 : 195.

Distribution : Sikkim (South) (Diag. 1).

39. *Monoceromyia obscura* (Brunetti)

1908. *Ceria obscura* Brunetti, *Rec. Indian Mus.*, 2 : 94.

Distribution : Sikkim (North and South), and Assam; Nepal (Map 32 and Diags. 1 & 4).

40. *Monoceromyia trinotata* (de Meijere)

1904. *Ceria trinotata* de Meijere, *Bijdr. Dièrk.*, 18 : 97.

Material examined : 1 ♀, Jorthang, 300 m, South Sikkim, 5. vi. 1974, Coll. B.C. Das.

Distribution : Sikkim (South), Assam, Maharashtra and West Bengal ; Cambodia, Laos, Malay, Myanmar and Vietnam (Map 33 and Diags. 1 & 4).

Genus *Sphiximorpha* Rondani

1850. *Sphiximorpha* Rondani, *Annls Soc. ent. Fr.*, (2) 8 : 212.

Type-species : *Ceria subsessilis* Illiger.

Key to the species

1. Humerus black ; scutellum without yellow margin ; abdominal tergite 2 with yellow hind margin, remaining tergites entirely black
..... *fruhstorferi* (de Meijere)
- Humerus yellow ; scutellum with distinct yellow margin ; abdominal tergites 2, 3 and 4 with yellow hind margins
..... *triangulifer* (Brunetti)

41. *Sphiximorpha fruhstorferi* (de Meijere)

1908. *Ceriodes fruhstorferi* de Meijere, *Tijdschr. Ent.*,
51 : 196.

Distribution : Sikkim (East) (Diag. 1).

42. *Sphiximorpha triangulifera* (Brunetti)

1913. *Ceria triangulifera* Brunetti, *Rec. Indian Mus.*, 9 : 273.

Distribution : Sikkim (South), Assam and West Bengal ; Myanmar (Map 34 and Diags. 1 & 4).

Tribe **Eristalini**

Key to the genera

1. Wing with marginal cell (R_1) open 2
 - Wing with marginal cell (R_1) closed 3
2. Brilliantly metallic species with slightly flattened hind femur *Catacores* Hull

- Non-metallic but densely haired species with greatly swollen and arcuate hind femur
..... *Mallota* Meigen
- 3. Eye bare; wing with normal submarginal cell (R_3) due to normal length of anterior cross-vein (r-m); metathoracic spiracular pile-patch present *Phytomia* Guérin-Ménéville
- Eye at least partially pilose; if bare, then submarginal cell narrowed basally due to longer anterior cross-vein; metathoracic spiracular pile-patch usually absent 4
- 4. Antennal arista practically bare; if with microscopic pubescence at base, then abdominal tergites with transversely located spots *Eristalinus* Rondani
- Antennal arista plumose at least on basal half; if bare, then eye invariably with 2 distinct bands of dense, dark-coloured piles
..... *Eristalis* Latreille

Genus *Catacores* Hull

1944. *Catacores* Hull, *Ent. News*, **55** : 205.

Type-species : *Axona cyanea* Brunetti.

** 43. *Catacores cyaneus* (Brunetti)

1913. *Axona cyanea* Brunetti, *Rec. Indian Mus.*, **9** : 272.

Material examined : 1 ♀, Namchi, 550 m, South Sikkim, 19.iii. 1994, Coll. L.K. Ghosh.

Diagnosis : A violet-blue species with head, thorax and abdomen approximated; antennal segment 3 rounded, with arista beset with a few hairs only at base; wing with marginal cell very narrowly open; anterior cross-vein just beyond mid-point of discal cell; anal vein running nearly to wing-margin; hind femur without spines or bristles; hind tibia barely curved and slightly thickened in middle.

Distribution : Sikkim (South), Arunachal Pradesh, Meghalaya and West Bengal (Map 35 and Diag. 1).

Genus *Eristalinus* Rondani

1845. *Eristalinus* Rondani *Nuovi Annali Sci. nat. Bologna*, **2** (2) : 453.

Type-species : *Musca sepulchralis* L.

Key to the subgenera

1. Eye with brown or black spots or with dark irregular markings; metathoracic spiracle at its front without any patch of hairs
..... *Eristalinus* Rondani
- Eye with distinct stripes; metathoracic spiracle at its front with a distinct patch of hairs
..... *Eristalodes* Mik

Subgenus *Eristalinus* Rondani

1897. *Eristalodes* Mik, *Wien. ent. Ztg.*, **16** : 114.

Type-species : *Eristalis taeniops* Wiedemann.

Key to the species

1. Femur normally orange or brownish orange; tarsi of similar colour, at most a little darker apically *arvorum* (Fabricius)
- Femur black, at most narrowly pale apically; tarsi of similar colour, at most pale basally ..
..... *obscuritarsis* (de Meijere)

44. *Eristalinus (Eristalinus) arvorum* (Fabricius)

1787. *Syrphus arvorum* Fabricius, *Mantissa Insect.*, **2** : 335.

Distribution : Sikkim (North), Arunachal Pradesh, Jammu & Kashmir, Meghalaya, Orissa, Tripura and West Bengal; China and other parts of the SE Asia; Australia, Hawaii, Japan and Micronesia (Map 36 and Diags. 1 & 4).

45. *Eristalinus (Eristalinus) obscuritarsis* (de Meijere)

1908. *Eristalis obscuritarsis* de Meijere, *Tijdschr. Ent.*, **51** : 250.

1986. *Eristalinus (Eristalinus) obscuritarsis* de Meijere :
Datta & Chakraborti, *Rec. zool. Surv. India*, **83** : 58.

Distribution : Sikkim (East), Gujarat, Karnataka, Kashmir, Kerala, Maharashtra, Orissa and West Bengal; Bangladesh, Jawa, Malay and Singapore (Map 37 and Diags. 1 & 4).

Subgenus *Eristalodes* Mik1897. *Eristalodes* Mik, *Wien. ent. Ztg.*, **16** : 114.Type-species : *Eristalis taeniops* Wiedemann.

Key to the species

1. Thorax yellowish with 4 distinct black stripes; abdominal segment 3 mainly or entirely black *paria* (Bigot)
- Thorax dull yellowish grey, with 4 but indistinct black stripes; abdominal segment 3 predominantly bright yellow *taeniops* (Wiedemann)

46. *Eristalinus* (*Eristalodes*) *paria* (Bigot)1880. *Eristalomyia paria* Bigot, *Annls Soc. ent. Fr.* (5) **10** : 218.1923. *Eristalis quinquelineatus* var. *orientalis* Brunetti, *Fauna Br. India, Dipt.*, **3** : 183.

Distribution : Sikkim (East), Himachal Pradesh, Jammu & Kashmir, Karnataka, Meghalaya, Tamil Nadu, Uttar Pradesh and West Bengal; Jawa, Laos, Malay, Nepal, Sri Lanka and Taiwan; Japan and Maluku (Map 38 and Diags. 1 & 4).

* 47. *Eristalinus* (*Eristalodes*) *taeniops* (Wiedemann)1818. *Eristalis taeniops* Wiedemann, *Zool. Mag.*, **2** : 42.

Material examined : 1 ♀, Damthang, 500 m, South Sikkim, 18.iii. 1994, Coll. L.K. Ghosh.

Distribution : Sikkim (South), Himachal Pradesh, Meghalaya and West Bengal; Nepal and Pakistan; Ethiopian and Palaearctic regions (Map 39 and Diags. 1 & 4).

Genus *Eristalis* Latreille1804. *Eristalis* Latreille, *Nouv. Dict. Hist. nat.*, **24** : 194.Type-species : *Musca tenax* L.

Key to the subgenera

1. Meropleuron at its upper edge (barrette) pilose; antennal arista bare *Eristalis* Latreille

- Meropleuron entirely bare; antennal arista usually plumose on basal half *Eoseristalis* Kanervo

Subgenus *Eristalis* Latreille48. *Eristalis* (*Eristalis*) *tenax* (L.)1758. *Musca tenax* Linnaeus, *Syst. Nat. Ed.*, **10** : 591.

Material examined : 2 ♀♀, Thanggu, 3750 m, North Sikkim, 13. vii. 1989, Coll. S. Chattopadhyaya; 1 ♀, Rongram, 1150 m, North Sikkim, 12. iv. 1992, Coll. A. R. Lahiri; 3 ♂♂, 5 ♀♀, Chungthang, 1550 m, North Sikkim, 14. iv. 1992, Coll. A. R. Lahiri; 1 ♂, 7 ♀♀, Lachung, 2730 m, North Sikkim, 20 – 22. iv. 1992, Coll. A. R. Lahiri; 3 ♂♂, 3 ♀♀, Yungi, 10 km N of Lachen, 2750 m, North Sikkim, 22. iv. 1992, Coll. A. R. Lahiri; 1 ♀, Chungthang, 1550 m, North Sikkim, 4. xii. 1992, Coll. M. S. Shishodia; 1 ♂, Mangan, 1200 m, North Sikkim, 2. iv. 1994, Coll. P. H. Roy; 1 ♂, Phensang, 1150 m, North Sikkim, 3. iv. 1994, Coll. P. H. Roy; 1 ♂, Kyongnosla, 3300 m, East Sikkim, 7. v. 1994, Coll. S. Chattopadhyaya.

Diagnosis : Eye brown-haired, with 2 longitudinal bands of dense hairs; antenna usually brownish black, arista bare; mesonotum shining brownish black; scutellum brownish yellow; subscutellar fringe absent; abdominal colouration bright reddish yellow to black.

Distribution : Sikkim (East and North); nearly cosmopolitan (Map 40 and Diags. 1 & 5).

Subgenus *Eoseristalis* Kanervo1938. *Eoseristalis* Kanervo, *Annls Univ. fenn. abo. (A)*, **6** : 12.Type-species : *Eristalis cerealis* F.

Key to the species

1. Wing with a large brown suffusion filling about middle third of anterior half *himalayensis* Brunetti
- Wing nearly clear excepting suffused stigma and at most, costal area but never extensive as above 2

2. Considerably pubescent species ; abdominal segment 1 entirely and 2 basally, with long yellowish hairs, and rest of abdomen with reddish hairs *intricarioides* Brunetti
 - Comparatively bare species ; abdomen entirely with short yellowish hairs 3
3. Mesonotum without any transverse stripe; abdominal tergite 3 with a black spot filling half of anterior margin, tergite 4 shining black like 5 *arbustorum* (L.)
 - Mesonotum with a transverse stripe of greyish pubescence along suture; abdominal tergite 3 in males with a triangular or oblong spot on anterior margin, reaching laterally, in females spots smaller and narrower but always on anterior margin *cerealis* Fabricius

* 49. *Eristalis (Eoseristalis) arbustorum* (L.)

1758. *Musca arbustorum* Linnaeus, *Syst. Nat. Ed.*, 10 : 591.

Material examined : 2 ♂♂, 5 ♀♀, Thanggu, 3750 m, North Sikkim, 13. vii. 1989, Coll. S. Chattopadhyaya; 1 ♂, Chungthang, 1550 m, North Sikkim, 14. iv. 1992, Coll. A.R. Lahiri; 1 ♀, Lachung, 2730 m, North Sikkim, 22. iv. 1992, Coll. A. R. Lahiri; 1 ♂, Tadong, 1500 m, East Sikkim, 30. iv. 1992, Coll. A. R. Lahiri; 1 ♂, Sirwani, 750 m, East Sikkim, 22. ii. 1994, Coll. P. K. Ghosh; 1 ♂, Namchi, 550 m, South Sikkim, 19. iii. 1994, Coll. L. K. Ghosh; 1 ♂, Rangpo, 300 m, East Sikkim, 22. iii. 1994, Coll. L. K. Ghosh.

Distribution : Sikkim (East, North and South), Jammu & Kashmir, Meghalaya and West Bengal; Holarctic (Map 41 and Diags. 1 & 5).

50. *Eristalis (Eoseristalis) cerealis* Fabricius

1805. *Eristalis cerealis* Fabricius, *Syst. Antliat.*, : 232.

1849. *Eristalis solitus* Walker, *List Dipt. Colln Br. Mus.*, 3 : 619.

Material examined : 1 ♂, Thanggu, 3750 m, North Sikkim, 13. vii. 1989, Coll. S. Chattopadhyaya; 1 ♂, 2 ♀♀, Chungthang, 1550 m, North Sikkim, 14. iv. 1992, Coll. A.R. Lahiri.

Distribution : Sikkim (East and North), Assam,

Himachal Pradesh, Jammu & Kashmir, Meghalaya and West Bengal; China, Myanmar and other parts of the Oriental region; Japan, Korea and Sakhalin (Map 42 and Diags. 1 & 5).

51. *Eristalis (Eoseristalis) himalayensis*
Brunetti

1880. *Eristalis ursinus* Bigot, *Annl. Soc. ent. Fr.* (5) 10 : 215 (pre-occupied, Jaenicke 1867).

1908. *Eristalis himalayensis* Brunetti, *Rec. Indian Mus.*, 2 : 70 (nov. nom.).

Material examined : 2 ♀♀, Kyongnosla, 3300 m, East Sikkim, 7. v. 1994, Coll. S. Chattopadhyaya; 2 ♀♀, Hanzpokhri, 4450 m, East Sikkim, 13. v. 1994, Coll. S. Chattopadhyaya.

Distribution : Sikkim (East), Himachal Pradesh, Kashmir, Uttar Pradesh and West Bengal; China, Myanmar and Nepal (Map 43 and Diags. 1 & 5).

52. *Eristalis (Eoseristalis) intricarioides*
Brunetti

1923. *Eristalis intricarioides* Brunetti, *Fauna Br. India, Dipt.*, 3 : 171.

Distribution : Sikkim (East); Nepal (Diags. 1 & 5).

Genus *Mallota* Meigen

1822. *Mallota* Meigen, *Syst. Besch. europ. zweifl. Insekt.*, 3 : 377.

Type-species : *Syrphus fuciformis* Fabricius.

53. *Mallota orientalis* (Wiedemann)

1824. *Eristalis orientalis* Wiedemann, *Analecta Ent.* : 38.

Diagnosis : Eye densely pilose at least anteriorly; antennal arista bare; wing greyish; abdomen black, tergite 2 with a large triangular spot of yellowish hairs on either side; tergites 3 and 4 each with a broad band of dense yellow hairs anteriorly.

Distribution : Sikkim (East), Meghalaya and West Bengal; Jawa, Laos, Malay and Taiwan (Map 44 and Diags. 1 & 5).

Genus *Phytomia* Guérin-Ménéville

1834. *Phytomia* Guérin-Ménéville, in Belanger, *Voyage Ind.-Orient.*, 7 : 509.

Type-species : *Eristalis chrysopygus* Wiedemann.

Key to the subgenera

1. Hind femur with a conspicuous sub-apical tooth on front side; scutellum with apical rim.....
..... *Dolichomerus* Macquart
- Hind femur unarmed; scutellum without apical rim..... *Phytomia* Guérin-Ménéville

Subgenus *Phytomia* Guérin-Ménéville

Key to the species

1. Wing at its basal half diagonally all black; subscutellar fringe absent
..... *chrysopyga* (Wied.)
- Wing yellowish grey, with dark brown suffusion anteriorly, extending to apex of basal cell 1 and base of submarginal cell (R_3); sub-scutellar fringe present *zonata* (F.)

54. *Phytomia (Phytomia) chrysopyga* (Wied.)

1819. *Eristalis chrysopygus* Wiedemann, *Zool. Mag.*, 1 : 15.

1923. *Megaspis chrysopygus* Wiedemann : Brunetti, *Fauna Br. India, Dipt.*, 3 : 200.

Distribution : Sikkim (East), Assam and Meghalaya; Jawa, Laos, Malay, Myanmar, Sumatera and Thailand (Map 45 and Diags. 1 & 5).

55. *Phytomia (Phytomia) zonata* (Fabricius)

1787. *Syrphus zonatus* Fabricius, *Mantissa Insect.*, 2 : 337.

1923. *Megaspis zonatus* Fabricius : Brunetti, *Fauna Br. India, Dipt.*, 3 : 203.

Material examined : 1 ♂, Kyongnosla, 3300m, East Sikkim, 7.v. 1994, Coll. S. Chattopadhyaya.

Distribution : Sikkim (East), Arunachal Pradesh, Assam, Karnataka, Kerala, Meghalaya, Tamil Nadu, Tripura and West Bengal; Bangladesh,

China, Philippines and other parts of the SE Asia; Japan, Korea and Manchuria (Map 46 and Diags. 1 & 5).

Subgenus *Dolichomerus* Macquart

1850. *Dolichomerus* Macquart, *Dipt. exot. Suppl.*, 4 : 131.

Type-species : *Syrphus crassus* Fabricius.

56. *Phytomia (Dolichomerus) crassa* (F.)

1787. *Syrphus crassus* Fabricius, *Mantissa Insect.*, 2 : 334.

1923. *Megaspis crassus* Fabricius : Brunetti, *Fauna Br. India, Dipt.*, 3 : 197.

Material examined : 1 ♂, Namchi, 550 m, South Sikkim, 19.iii. 1994, Coll. L.K. Ghosh.

Diagnosis : Frons and face together nearly parallel-sided ; antenna black, arista orange; wing clear at base except an oblique line from stigma across outer side of basal cell 2 and thence middle of anal cell to alula; femora bright reddish brown, blackish apically; hind pair with a fringe of coarse hairs on apical half of front side; abdomen shining black, tergites 2, 3 and 4 each with a deep impression of a large circle, touching anterior margin.

Distribution : Sikkim (East and South), Andhra Pradesh, Assam, Bihar, Goa, Karnataka, Kerala, Meghalaya, Tamil Nadu, Uttar Pradesh and West Bengal; Laos, Malay, Nepal, Sri Lanka, Sulawesi and Thailand (Map 47 and Diags. 1 & 5).

Tribe **Milesini**

Genus *Milesia* Latreille

1804. *Milesia* Latreille, *Nouv. Dict. Hist. nat.*, 24 : 194.

Type-species : *Syrphus crabroniformis* Fabricius.

Diagnosis : Eye bare, narrowly holoptic in males; antenna short, about half as long as face; segment 3 quadrate with slightly rounded apex; face strongly concave, facial stripes indistinct, pilose; meso-anepisternum pilose on upper half anteriorly; metasternum greatly developed, pilose; wing with marginal cell petiolate and apical cell petiolate, both petioles markedly long; anterior cross-vein at outer fourth or more of discal cell

greatly oblique; apical and posterior cross-vein continuous, without spurs at their bases; hind femur slightly swollen, with a small ventral spur apically; abdomen elongate and equilateral.

Key to the species

1. Abdominal tergites with only pale transverse bands 2
- Abdominal tergites with distinct pairs of spots as well as transverse bands 3
2. Legs predominantly blackish; abdominal tergite 2 with very wide band along anterior margin, reaching middle or beyond *balteata* Kertész
- Legs predominantly yellow or orange, with bright yellow femora, only blackish basal half of hind pair; abdominal tergite 2 with very narrow band anteriorly, never filling even 1/4 of tergite *ferruginosa* Brunetti
3. Surstylus in male terminalia gradually narrowed to apex; superior lobe not produced apico-dorsally *variegata* Brunetti
- Surstylus in male terminalia abruptly narrowed to apex forming a right angle on inner side; superior lobe produced apico-dorsally *illustris* Hippa

57. *Milesia balteata* Kertész

1901. *Milesia balteata* Kertész, *Természetr. Füzet.*, **24** : 414.

1908. *Milesia himalayensis* Brunetti, *Rec. Indian Mus.*, **2** : 82.

Distribution : Sikkim (South), Assam, Meghalaya and West Bengal ; Hainan Is., Laos, Malay, Myanmar, Nepal and Thailand (Map 48 and Diags. 1 & 5).

58. *Milesia ferruginosa* Brunetti

1913. *Milesia ferruginosa* Brunetti, *Rec. Indian Mus.*, **9** : 268.

Material examined : 1 ♀, Tadong, 1500 m, East Sikkim, 30. iv. 1992, Coll. A.R. Lahiri.

Distribution : Sikkim (East and South), Assam, Meghalaya, Uttar Pradesh and West Bengal;

China, Laos, Myanmar, Nepal and Thailand (Map 49 and Diags. 1 & 5).

59. *Milesia illustris* Hippa

1990. *Milesia illustris* Hippa, *Acta zool. fenn.*, **187** : 129.

Distribution : Sikkim (South), Assam, Meghalaya and West Bengal ; Laos (Map 50 and Diags. 1 & 5).

60. *Milesia variegata* Brunetti

1908. *Milesia variegata* Brunetti, *Rec. Indian Mus.*, **2** : 80.

Distribution : Sikkim (South), Assam, Meghalaya and West Bengal ; Laos, Myanmar and Thailand (Map 51 and Diags. 1 & 5).

ZOOGEOGRAPHICAL COMMENTS

Sikkim, comprising four districts : North, South, East and West (Map 1), is entirely mountainous. The mountains rise to various elevations (highest being Kanchenjunga at 8598 m) and create areas like valleys, foothills and high peaks with differential weather conditions growing variegated vegetation that the rich ascent of the Syrphidae depends upon. Indeed, as many as 60 species under 34 genera make up the Sikkimese fauna that accounts for over 20% of the species India holds (*cf.* Brunetti, 1923; Knutson, Thompson and Vockeroth, 1975; Joseph and Sharma, 1976 ; Datta and Chakraborti, 1986, and Hippa, 1990). It may be re-called that the only state in India as a close neighbour is West Bengal that (especially the district of Darjiling with like physiography) is to have the most identical elements and, therefore, the fauna is discussed in the light of the content in West Bengal (*vide* Appendix). By the way, the Meghalayan fauna (Datta, 1998) and the Tripuri fauna (Datta, Parui and Mukherjee, *in press*) are taken into account to touch up the distributional pattern of certain species.

The dominant genus in the state appears to be *Eristalis* Latreille comprising 5 species, *i.e.*, over 8% of the fauna, followed by *Monoceromyia* Shannon, *Eristalinus* Rondani and *Milesia*

Latreille each with 4 species. The genera *Baccha* Fabricius, *Paragus* Latreille, *Volucella* Geoffroy and *Phytomyia* Guérin-Ménéville are represented by 3 species each and 2 pertain to each of *Sphaerophoria* Lep. & Serv., *Syrphus* Fabricius, *Melanostoma* Schiner, *Graptomyza* Wiedemann and *Sphiximorpha* Rondani, whereas each of the remaining 21 genera contains a single species. However, *Eristalis*, *Eristalinus*, *Monoceromyia* and *Milesia* can be considered practically equiponderant concerning the species-richness.

The Sikkimese fauna contains 5 species, namely, *Volucella ruficauda* Brunetti, *Sericomyia himalayensis* Brunetti, *Monoceromyia fenestrata* (Brunetti), *M. himalayensis* (de Meijere) and *Sphiximorpha fruhstorferi* (de Meijere) which are neither known elsewhere in India nor abroad (Diag. 1). The 5 other species are also known but confined to this country with extended range of distribution. Thus, the sole representative of the Pipizini, viz., *Triglyphus cyaneus* (Brunetti) extends to the nearest state West Bengal (Map 25) and one of 2 *Graptomyza*, viz., *sexnotata* Brunetti to Meghalaya only (Map 29). The only *Catacores* species : *cyaneus* (Brunetti) has been known from both the above states in addition to Arunachal Pradesh (Map 35) in the eastern India. However, *Sphaerophoria viridaenea* Brunetti (Map 13) and the only *Rhingia*, viz., *laticincta* Brunetti (Map 27) extend their range of distribution not only to West Bengal but also to the northern India (e.g. Himachal Pradesh), and to Punjab and Uttar Pradesh too in case of the latter, with the possibility of being discovered at least from the intervening states.

However, the remaining other species are known to spread over other parts of the Orient or even beyond it over the Palaearctic, Australian and Ethiopian or other regions in certain instances. The probable route of dispersal to and fro in these regions has already been indicated by Datta (*op. cit.*). There are 5 species that are still known from Sikkim only in India, and abroad. Of them, the shortest range so far exhibited, are by *Eriozona analis* Kertész (Diags. 1 & 2), *Pseudovolucella hingstoni* Coe (Diags. 1 & 4)

and *Eristalis intricarioides* Brunetti (Diags. 1 & 5) that cross over only to Nepal westward, and *Volucella lividiventris* Brunetti (Diags. 1 & 4) only to Tibet northward. But *Syrphus vitripennis* Meigen is known to occur as far east as in Taiwan in the Orient and as far north-west as in the continent of Europe in the Palaearctic region despite disjunct record in the vast stretch of intervening territories (Diags. 1 & 3).

The tribe Syrphini is represented in Sikkim by 15 species, of which 7, viz., *Allograpta javana* (Wiedemann), *Asarkina ericetorum* (Fabricius), *Betasyrphus serarius* (Wiedemann), *Dideopsis aegrotus* (Fabricius), *Episyrphus balteatus* (De Geer), *Ischiodon scutellaris* (Fabricius) and *Metasyrphus confrater* (Wiedemann) are extremely widespread, almost throughout the Orient with an encroachment in the neighbouring regions or beyond the limit in certain instances (Datta, *op. cit.*). However, *Dideoides ovatus* Brunetti (Map 5 & Diag. 2), *Meliscaeva cinctella* (Zetterstedt) (Map 9 & Diag. 2) and *Scaeva selenitica* (Meigen) (Map 11 & Diag. 2) are mostly unknown not only from India but also from the Orient (Datta, *op. cit.*). Whereas *Sphaerophoria indiana* Bigot (Map 12) is widely known (*cf.* Datta, *op. cit.*), *S. viridaenea* Brunetti implies its Himalayan affinity only (as stated above). Finally, Sikkim is known to have 2 species of the genus *Syrphus* Fabricius, viz., *torvus* Osten Sacken and *vitripennis* Meigen (latter as stated above), that West Bengal does not have hitherto registered even from the Himalayan areas where the Syrphidae abound due to their Himalayan bias (*vide* Appendix). *S. torvus* does occur in the Himalayan belt in India (Map 14), extending its range further northward to the Holarctic region across Nepal and China mainland, eastward to Taiwan and southward to Thailand with disjunct records of its occurrence all along (Diag. 3).

The Bacchini comprise 3 species, viz., *amphithoe* Walker, *triangulifera* Austen and *maculata* Walker, that occur also in West Bengal (*vide* Appendix), but only the first and the last are known from Meghalaya (*cf.* Datta, *op. cit.*). *B. triangulifera* is, however, known not only from

West Bengal but also from Karnataka in India (Map 16), and extends its range westward to Nepal, southward to Sri Lanka and eastward to Myanmar without continuous distribution across the north-east India or Bhutan or China (Diag. 3).

The Melanostomatini are also known by 3 species, of which *Melanostoma orientale* (Wiedemann) and *M. univittata* (Wiedemann) are widespread not only in India but also in the Orient or even beyond it (cf. Datta, *op. cit.*), but *Platycheirus himalayensis* has shown restriction to the Himalaya (Sikkim and Uttar Pradesh in India, and Nepal) (Map 20 & Diag. 3). Likewise, the 3 species of the Paragini certainly have the Himalayan bias despite their occurrence in other areas too (cf. Datta, Parui and Mukherjee, *in press*). The sole representative of the Chrysotoxini is *Chrysotoxum quadrifasciatum* Brunetti, that is known to occur in West Bengal and Meghalaya in India as well as in Laos exhibiting no continuity across Myanmar or Thailand, the most probable pathway of radiation (Datta, *op. cit.*).

The Milesine tribes : Pipizini (as already stated above) and Spheginobacchini (cf. Datta, *op. cit.*) each is represented by a solitary species. The Cheilosini include 2 genera, viz., *Cheilosia* Meigen and *Rhingia* Scopoli with 1 species each, colonizing mainly the Himalayan belt. Although *R. laticincta* Brunetti is unknown from outside India (as already stated above), *C. nigroaenea* Brunetti is known to occur in Nepal (Diag. 4).

The Volucellini comprise 5 species under 2 genera, viz., *Graptomyza* Wiedemann and *Volucella* Geoffroy in Sikkim. Both the species of the former genus and only one, viz., *trifasciata* Wiedemann of 3 species of the latter genus do occur in Meghalaya (Datta, *op. cit.*), but the other 2 species are, however, unknown from any other states in India (as stated above). Likewise, the 2 species, viz., *P. hingstoni* Coe and *S. himalayensis* Brunetti of the Sericomyni remain unrecorded elsewhere in India (as stated above). In fact, this tribe is hitherto known to occur only in Sikkim and Arunachal Pradesh in India (cf. Knutson *et al.*, 1975).

The tribe Cerioidini with 6 species under 2 genera in Sikkim in respect of 5 species under 3 genera in West Bengal (*vide* Appendix) can be considered rather rich. Whereas *Sphiximorpha fruhstorferi* (de Meijere) so far remains confined to Sikkim only, *S. triangulifera* (Brunetti) is known not only from adjoining West Bengal but also from neighbouring Assam, extending its range of distribution as far as in Myanmar either across the eastern fringe of India or China or both (unrecorded) (Map 34 & Diag. 4). Of the 4 species of *Monoceromyia* Shannon, *fenestrata* (Brunetti) and *himalayensis* (de Meijere) are known only from Sikkim (Diag. 1), and *obscura* (Brunetti) from Assam too in India and adjoining Nepal (Map 32 & Diag. 4). But *trinotata* (de Meijere) is known to colonize a vast stretch of territories till the peninsular Malay of the Orient across Myanmar and Thailand (latter unrecorded) (Diag. 4) despite our deficient knowledge on its occurrence in India (Map 33).

The Eristalini are represented by 14 species under 5 genera, viz., *Catacores* Hull, *Eristalinus* Rondani, *Eristalis* Latreille, *Mallota* Meigen and *Phytoma* Guérin-Méneville, and all but *Eristalis intricarioides* Brunetti (as stated above) and *Phytomia chrysopyga* (Wiedemann) are known from West Bengal (*vide* Appendix). The latter species has, however, been reported from Meghalaya where 2 other species under the genus, viz., *zonata* (F.) and *crassa* (F.) also do occur (cf. Datta, *op. cit.*). The only Sikkimese species that are unknown from Meghalaya, are *Eristalinus obscuritarsis* (de Meijere), *Eristalis himalayensis* Brunetti and *E. intricarioides* Brunetti (cf. Datta, *op. cit.*). However, *obscuritarsis* (de Meijere) somewhat like *laetus* (Wiedemann) is known from certain areas of the northern, southern, eastern and western India (Map 37), and exhibits its range of distribution outside the country southward up to the far Jawa through Bangladesh and the Malay Peninsula, with disjunct record of its occurrence in the intervening territories (Diag. 4). Indeed, with the Himalayan bias *Eristalis himalayensis* Brunetti is distributed all along the northern edge of India (Map 43)

crossing over to Nepal on the west and China on the north but still advances southward up to Myanmar showing discontinuous distribution across Assam Hills and Bangladesh (Diag. 5).

The genus *Milesia* Latreille, the sole representative of the Milesini in Sikkim, comprises 4 species only, all of which exist not only in West Bengal (*vide* Appendix) but also in Meghalaya (*cf.* Datta, *op. cit.*) together with certain other species of the genus. By the way, these species are unknown from outside the Orient.

To conclude, Sikkim harbours 60 species under 34 genera, of which 5 species are hitherto known only from the state, and 10 species, inclusive of these 5, are confined to India. Of the remaining 50 species, 25 spread over other parts of the Orient only and 25 extend their range of distribution beyond the region.

SUMMARY

The treatise accounts for 60 species under 34 genera, of which 7 genera each with a lone species, and 5 species under 5 known genera are recorded for the first time from Sikkim. The species are systematically keyed and characterized, and are discussed, if and when necessary, in the light of their zoogeographical distribution.

ACKNOWLEDGEMENTS

I am grateful to Dr. J.R. B. Alfred, the Director and to Dr. J. K. Jonathan, Scientist 'SF' of the Entomology Division, Zoological Survey of India, Calcutta, for kindly placing the material at my disposal and for extending laboratory facilities during the course of this study. I am especially thankful to Dr. H. Hippa of the Swedish Museum of Natural History, Stockholm, for kindly providing me with some pertinent literature.

Finally, I like to thank Mrs. M. Mukherjee and, Messrs. Anil K. Bhattacharyya, Haradhan Das and P. K. Bala of this institute for their valuable assistance in finalizing the manuscript.

APPENDIX

Syrphid fauna known from West Bengal
(Revised up to 1995)

Subfamily SYRPHINAE

Tribe Syrphini

- * 1. *Allograpta javana* (Wiedemann)
2. *Asarkina* (*Asarkina*) *ericetorum* (Fabricius)
- *3. *A. (A.) porcina porcina* (Coquillett)
4. *Betasyrphus serarius* (Wiedemann)
- *5. *Citrogramma citrinum* (Brunetti)
6. *Dasysyrphus brunettii* (Hervé-Bazin)
7. *D. orsua* (Walker)
8. *Dideoides ovatus* Brunetti
9. *Dideopsis aegrotus* (Fabricius)
10. *Epistrophe* (*Epistrophella*) *horishana* (Matsumura)
11. *Episyrphus balteatus* (De Geer)
- *12. *Ischiodon scutellaris* (Fabricius)
13. *Meliscaeva cinctella* (Zetterstedt)
14. *M. darjeelingensis* Datta & Chakraborti
15. *Metasyrphus* (*Metasyrphus*) *confrater* (Wiedemann)
16. *M. (M.) corollae* (Fabricius)
- *17. *Sphaerophoria bengalensis* Macquart
18. *S. indiana* Bigot
19. *S. viridaenea* Brunetti

Tribe Bacchini

- *20. *Baccha* (*Allobaccha*) *amphithoe* Walker
21. *B. (A.) apicalis* Loew
22. *B. (A.) triangulifera* Austen
23. *B. (Baccha) maculata* Walker

Tribe Melanostomatini

24. *Melanostoma orientale* (Wiedemann)
25. *M. univittata* (Wiedemann)
26. *Platycheirus albimanus* (Fabricius)

Only the species marked (*) are unknown from the Darjiling district of the state

Tribe **Chrysotoxini**

- *27. *Chrysotoxum baphyrus* Walker
- 28. *C. quadrifasciatum* Brunetti
- 29. *C. violaceum* Brunetti

Tribe **Paragini**

- *30. *Paragus (Paragus) auritus* Stuckenberg
- 31. *P. (P.) serratus* (Fabricius)
- *32. *P. (P.) yerburiensis* Stuckenberg
- *33. *P. (Pandasyophthalmus) atratus* de Meijere
- 34. *P. (P.) rufiventris* Brunetti
- 35. *P. (P.) tibialis* (Fallén)

Subfamily MILESINAE

Tribe **Pipizini**

- 36. *Triglyphus cyaneus* (Brunetti)

Tribe **Cheilosini**

- 37. *Cheilosia hirticincta* Brunetti
- 38. *Rhingia angusticincta* Brunetti
- 39. *R. binotata* Brunetti
- 40. *R. cincta* de Meijere
- 41. *R. laticincta* Brunetti
- 42. *R. laticincta fasciata* Brunetti

Tribe **Volucellini**

- *43. *Graptomyza nigripes* Brunetti
- 44. *G. tinctovittata* Brunetti
- 45. *Volucella basalis* Brunetti
- 46. *V. ursina* de Meijere

Tribe **Chrysogasterini**

- 47. *Sphegina (Sphegina) asciiformis* Brunetti
- 48. *S. (Asiosphegina) bispinosa* Brunetti
- 49. *S. (A.) javana* de Meijere

Tribe **Spheginobacchini**

- 50. *Spheginobaccha macropoda* (Bigot)

Tribe **Eumerini**

- 51. *Azpeytia bifascia* Brunetti
- *52. *Eumerus aeneithorax* Brunetti
- 53. *E. halictoides* Brunetti
- 54. *E. pulcherrimus* Brunetti
- 55. *E. rufoscutellatus* Brunetti
- *56. *Merodon tuberculatus* (Brunetti)
- 57. *M. varicolor* Walker

Tribe **Ceriodini**

- 58. *Ceriana ornatifrons* (Brunetti)
- *59. *Monoceromyia eumenioides* (Saunders)
- 60. *M. javana* (Wiedemann)
- 61. *M. trinotata* (de Meijere)
- 62. *Sphiximorpha triangulifera* (Brunetti)

Tribe **Eristalini**

- 63. *Catacores cyaneus* (Brunetti)
- 64. *Eristalinus (Eristalinus) arborum* (Fabricius)
- 65. *E. (E.) laetus* (Wiedemann)
- *66. *E. (E.) obliquus* (Wiedemann)
- *67. *E. (E.) obscuritarsis* de Meijere
- *68. *E. (E.) polychromatus* (Brunetti)
- 69. *E. (E.) quinquestriatus* (Fabricius)
- 70. *E. (Eristalodes) paria* (Bigot)
- *71. *E. (E.) taeniops* (Wiedemann)
- *72. *E. (Merodonoides) multifarius* (Walker)
- 73. *Eristalis (Eristalis) tenax* (Linnaeus)
- *74. *E. (Eoseristalis) arbustorum* (Linnaeus)
- 75. *E. (E.) cerealis* Fabricius
- 76. *E. (E.) himalayensis* Brunetti
- 77. *Mallota curvigaster* (Macquart)
- 78. *M. orientalis* (Wiedemann)
- 79. *M. rufipes* Brunetti
- *80. *Mesembrius bengalensis* (Wiedemann)
- 81. *M. quadrivittatus* (Wiedemann)
- 82. *Phytomia (Phytomia) argyrocephala* (Macquart)
- 83. *P. (P.) errans* (Fabricius)

84. *P. (P.) zonata* (Fabricius)
 85. *P. (Dolichomerus) crassa* (Fabricius)
 *86. *Pseuderistalis nigra* (Wiedemann)

Tribe **Milesini**

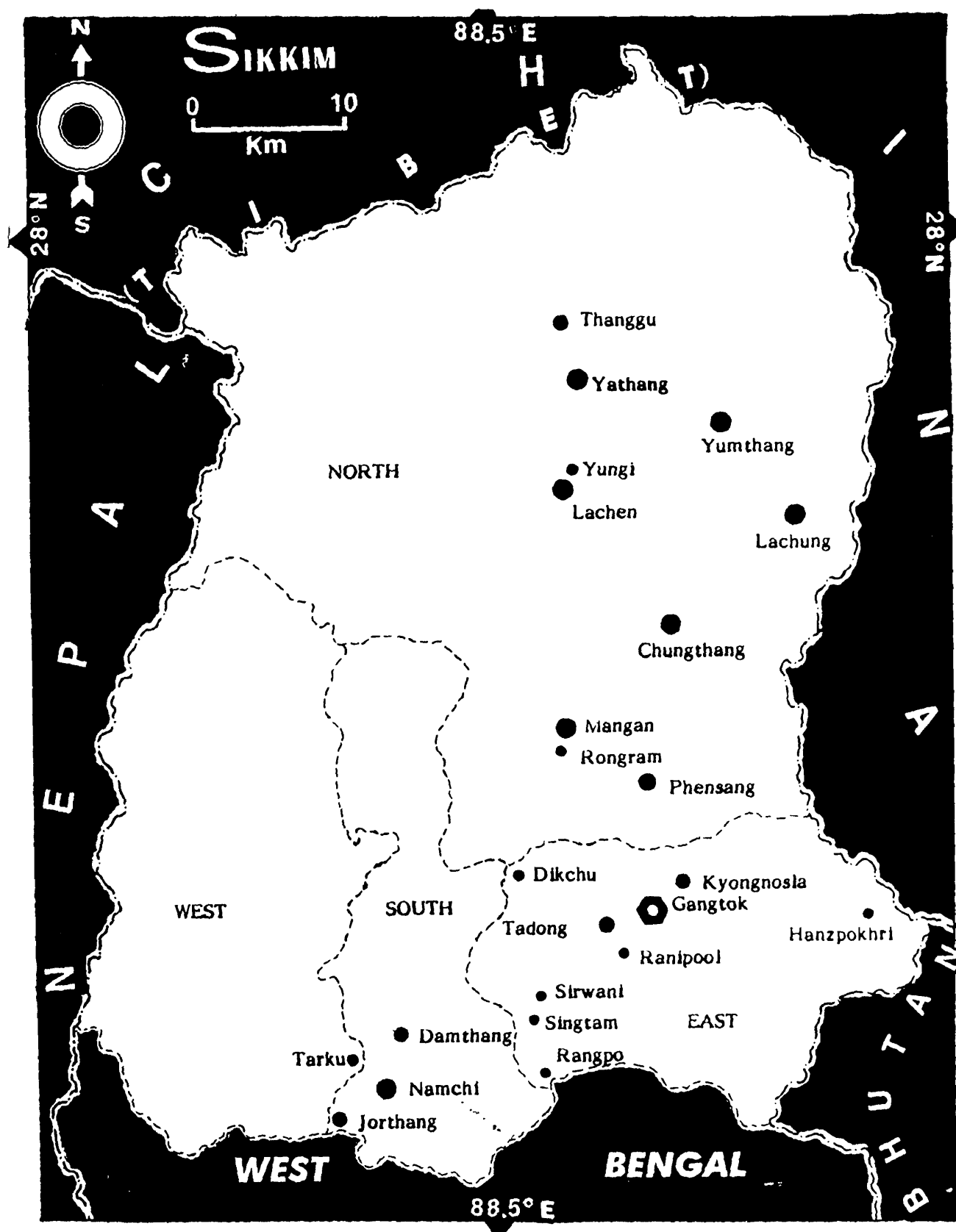
87. *Lycastris albipes* Walker
 88. *L. austeni* Brunetti
 89. *L. flavohirta* Brunetti
 90. *Milesia balteata* Kertész
 91. *M. brunneonigra* Hippa
 92. *M. ferruginosa* Brunetti

93. *M. illustris* Hippa
 94. *M. semifulva* de Meijere
 95. *M. sexmaculata* Brunetti
 96. *M. variegata* Brunetti
 *97. *Syritta indica* (Wiedemann)
 98. *S. orientalis* Macquart
 *99. *S. pipiens* (Linnaeus)
 100. *Xylota annulata* Brunetti
 101. *X. cupreiventris* Brunetti
 102. *X. nursei* Brunetti
 (A total of 100 species and 2 subspecies under
 43 genera of 2 subfamilies in the Syrphidae)

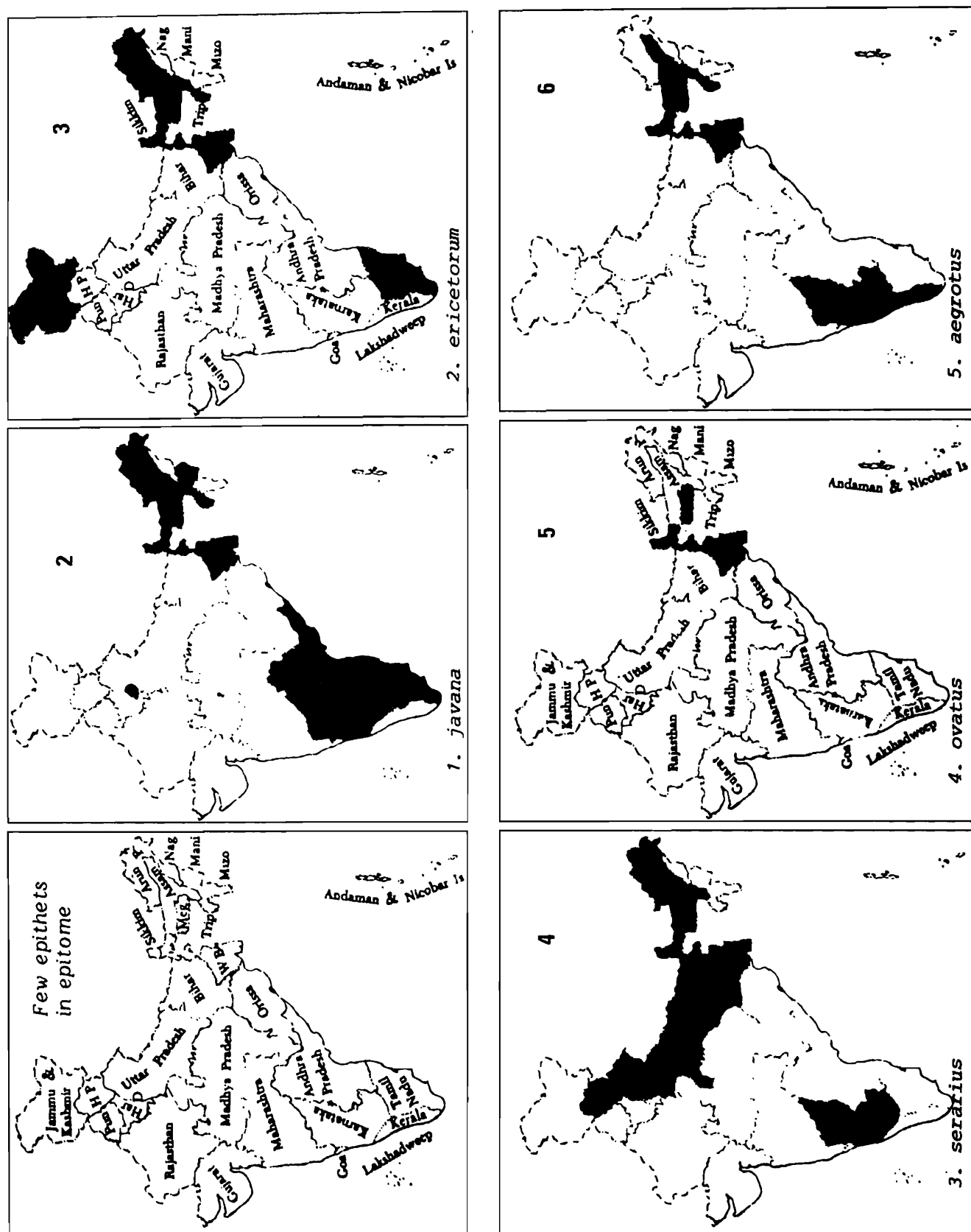
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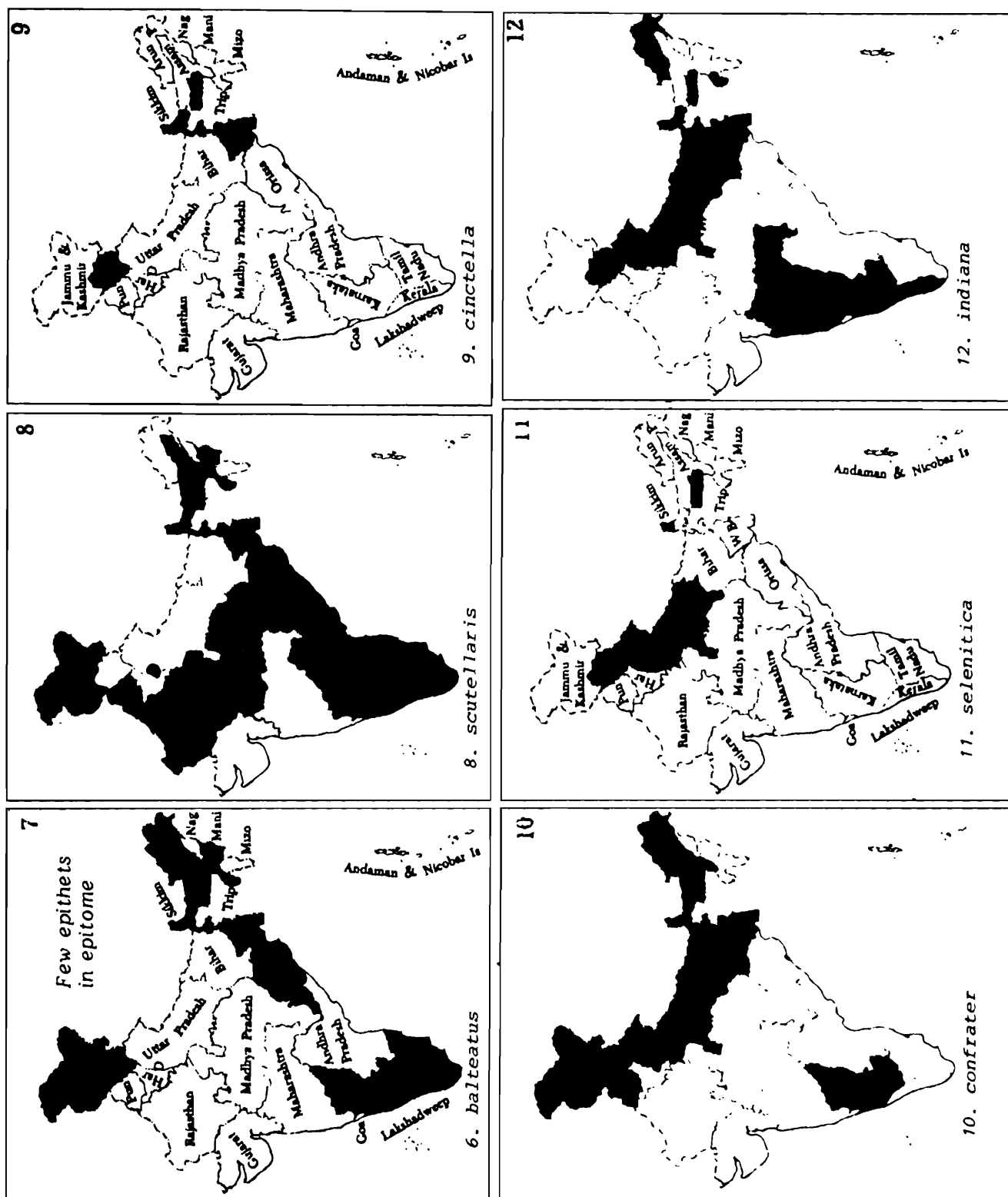
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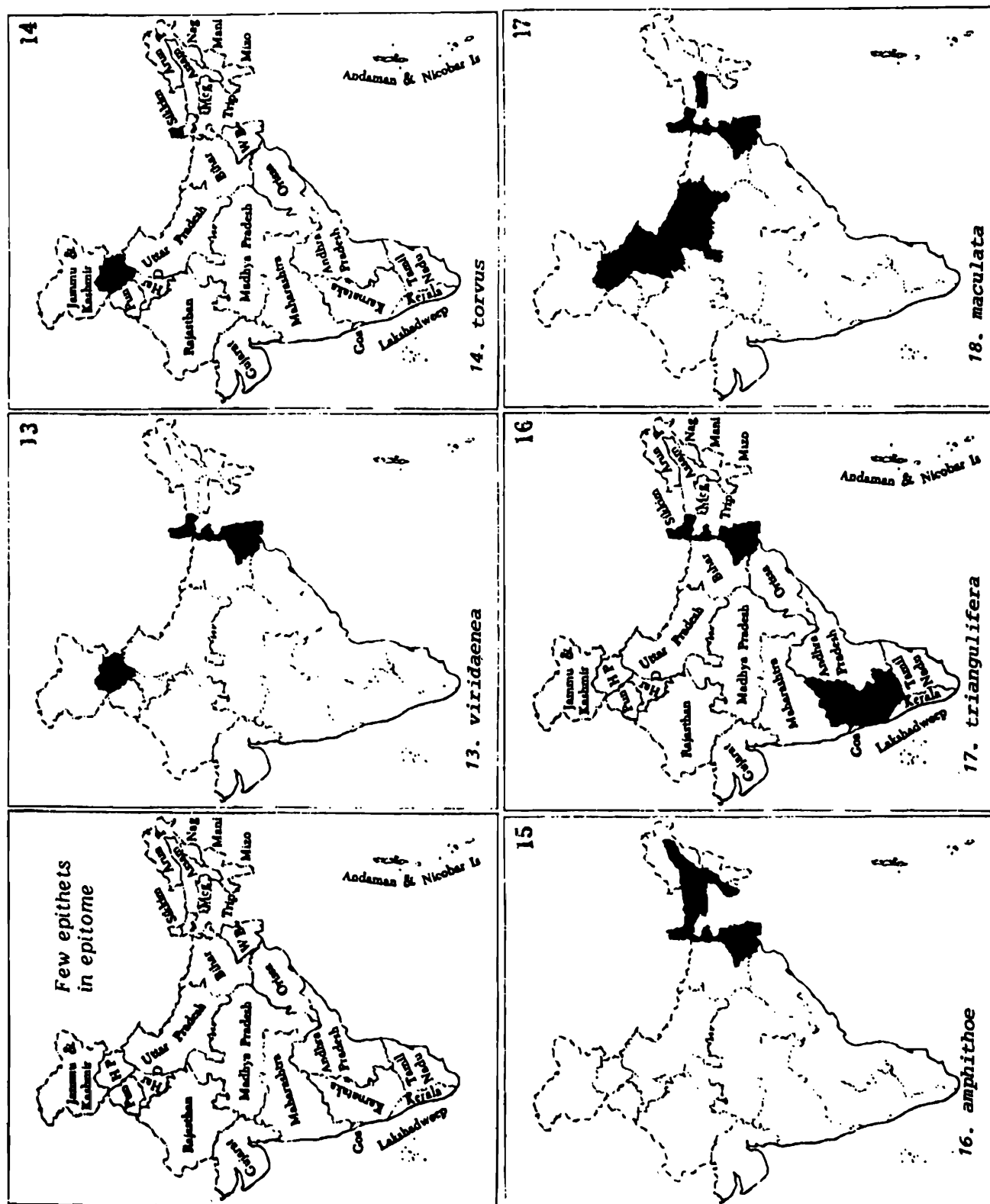
Map 1. Sikkim showing its location, districts and recorded places of occurrence of the Syrphidae dealt with



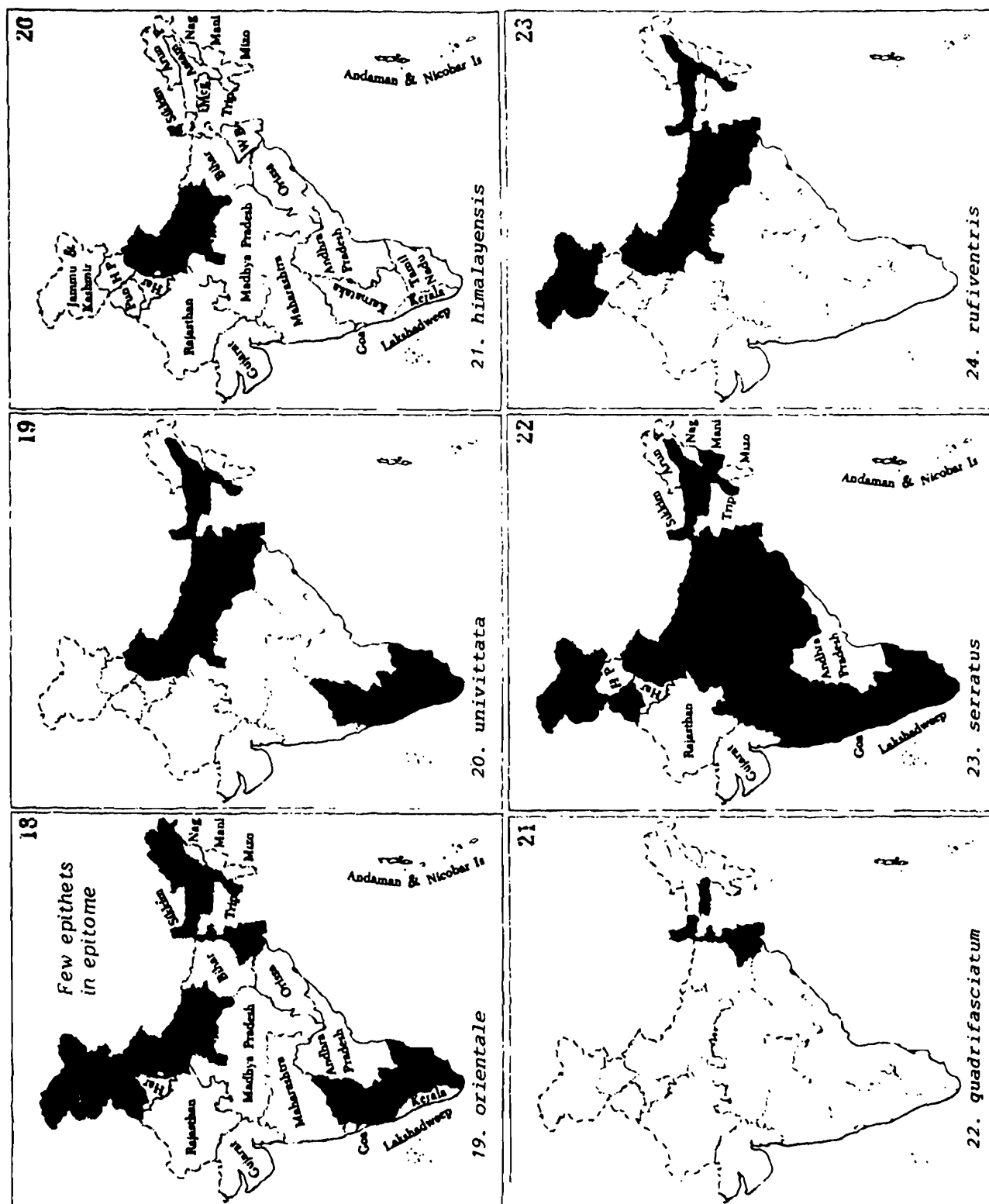
Maps 2-6. : Distribution of (1) *Allograpta javana*, (2) *Asarkina ericetorum*, (3) *Betasyrphus serarius*, (4) *Dideoides ovatus* and (5) *Dideopsis aegrotus* in India (in black shade).



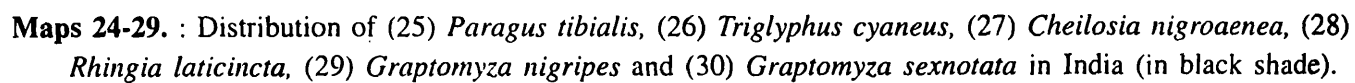
Maps 7-12. : Distribution of (6) *Episyrphus balteatus*, (8) *Ischiodon scutellaris*, (9) *Meliscaeva cinctella*, (10) *Metasyrphus confrater*, (11) *Scaeva selenitica* and (12) *Sphaerophoria indiana* in India (in black shade).

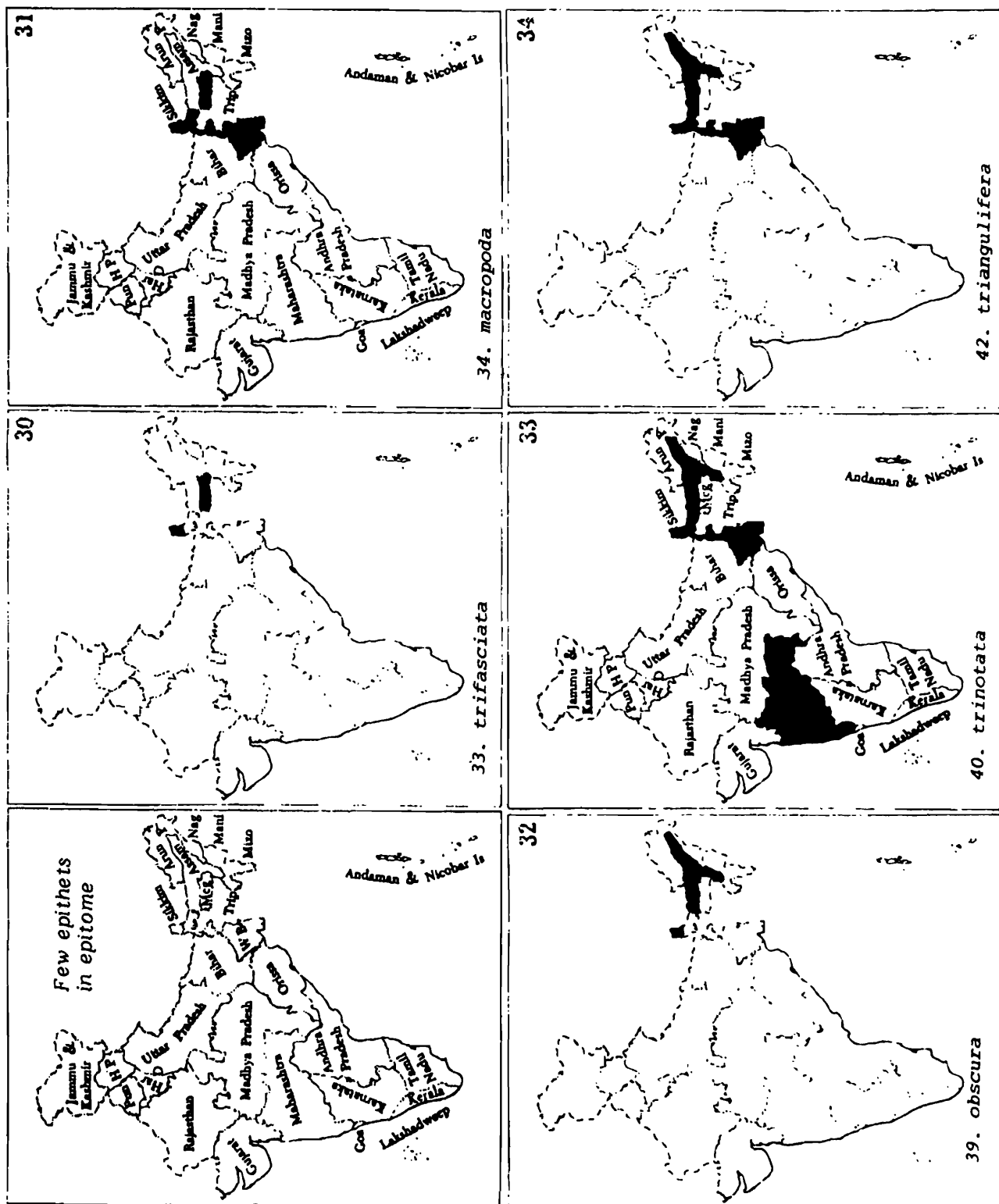


Maps 13-17. : Distribution of (13) *Sphaerophoria viridaenea*, (14) *Syrphus torvus*, (16) *Baccha amphithoe*, (17) *Baccha triangulifera* and (18) *Baccha maculata* in India (in black shade).

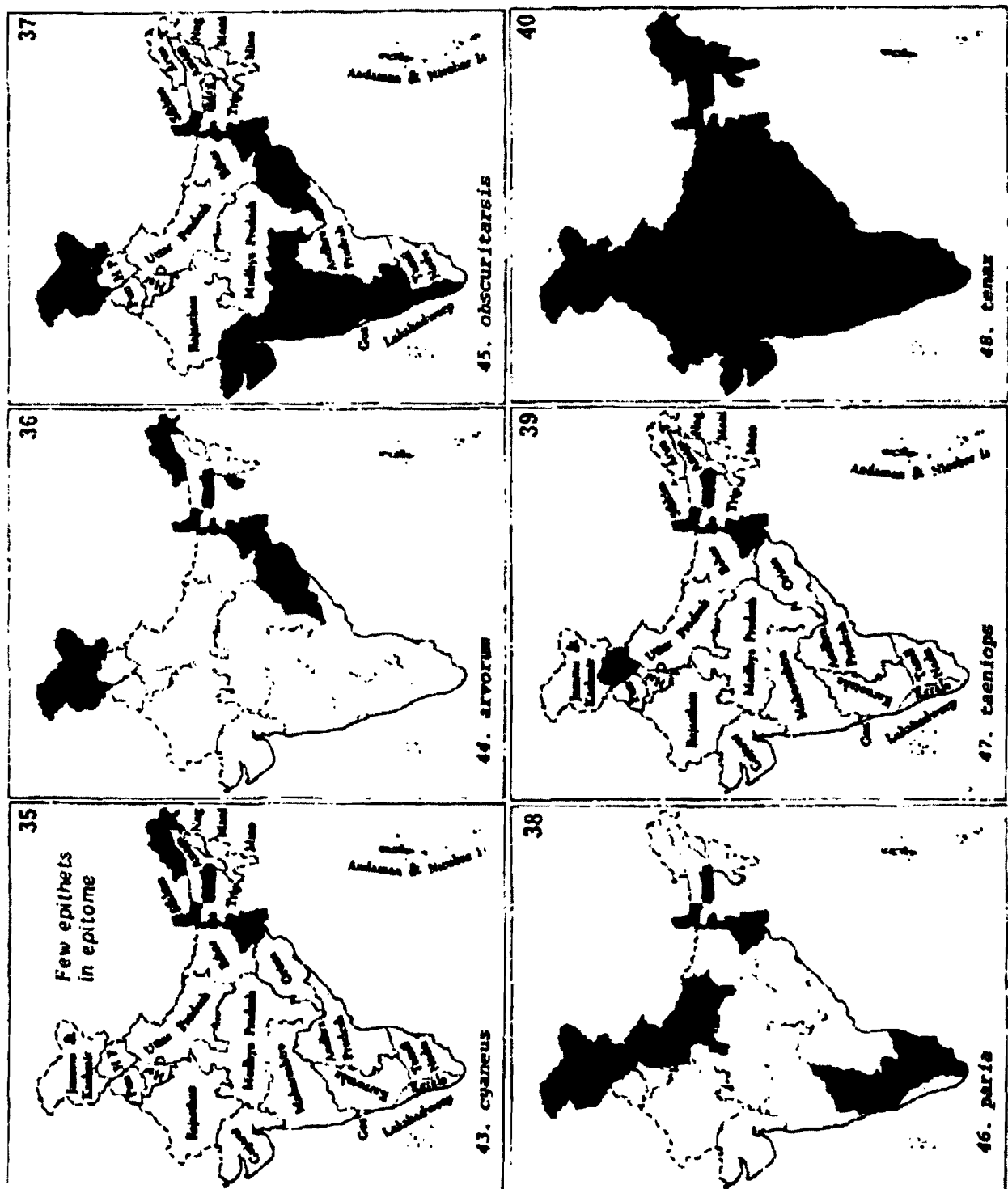


Maps 18-23. : Distribution of (19) *Melanostoma orientale*, (20) *Melanostoma univittata*, (21) *Platycheirus himalayensis*, (22) *Chrysotoxum quadrifasciatum*, (23) *Paragus serratus* and (24) *Paragus rufiventris* in India (in black shade).

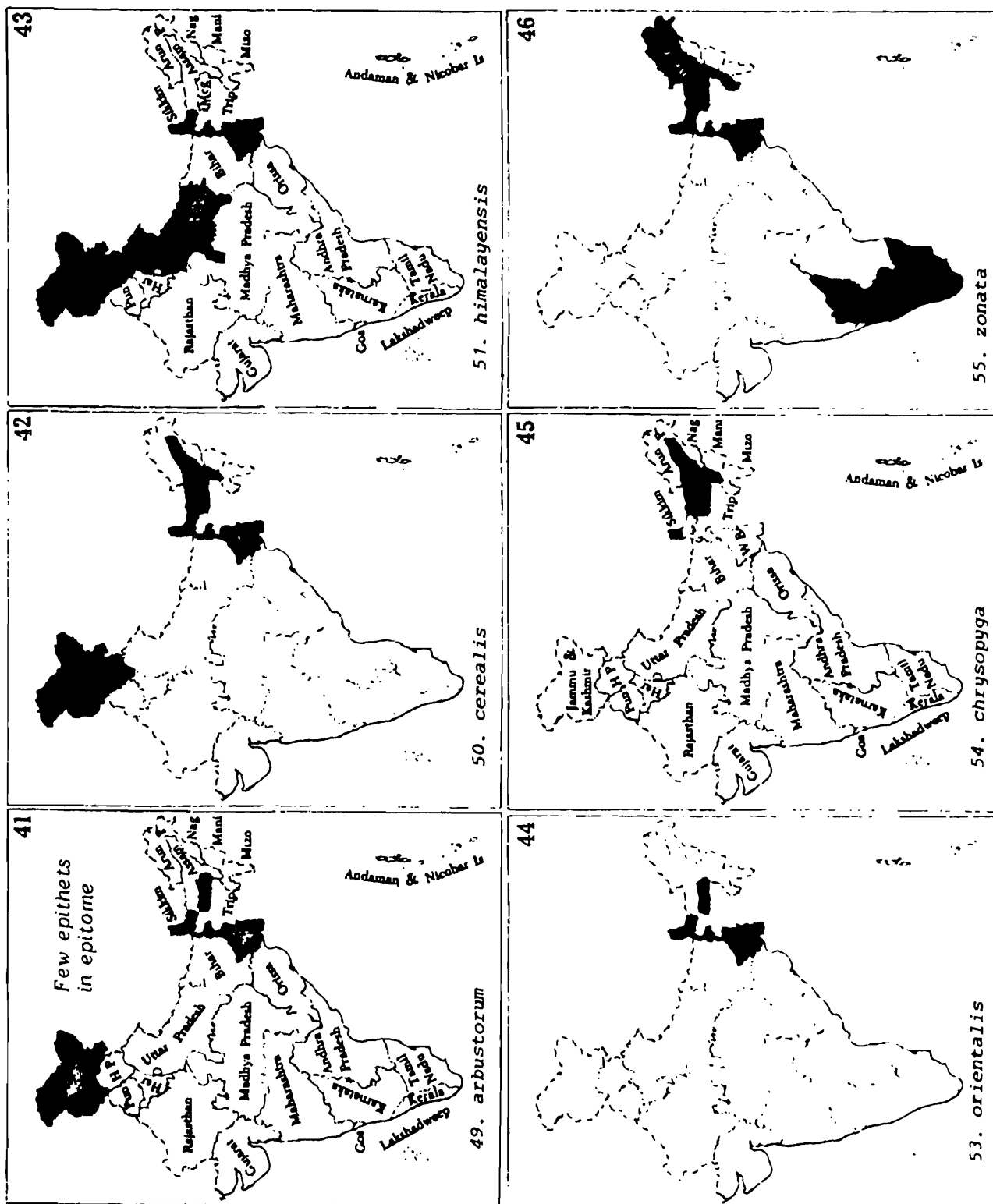




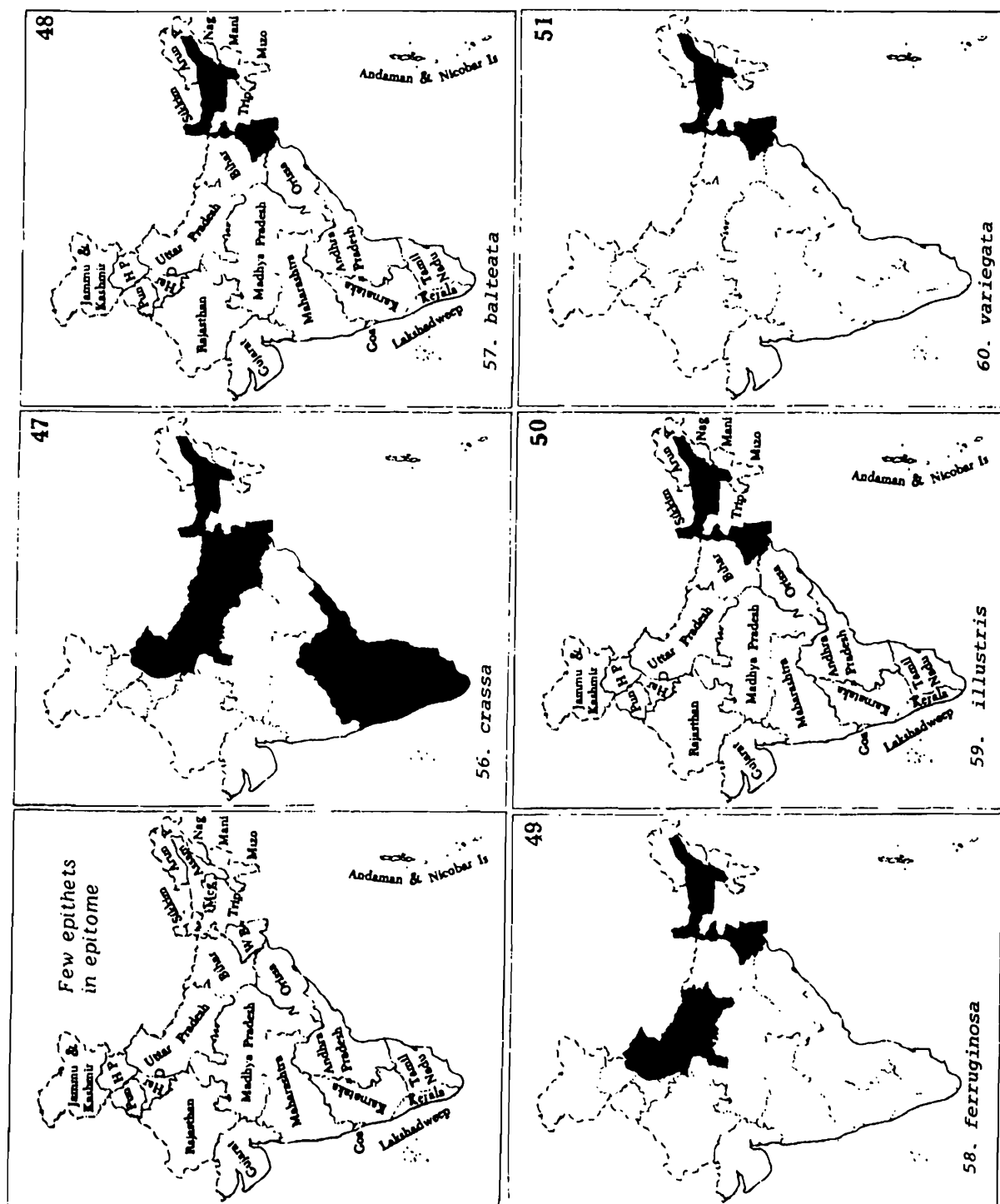
Maps 30-34. : Distribution of (33) *Volucella trifasciata*, (34) *Spheginobaccha macropoda*, (39) *Monoceromyia obscura*, (40) *Monoceromyia trinotata* and (42) *Spiximorpha triangulifera* in India (in black shade).



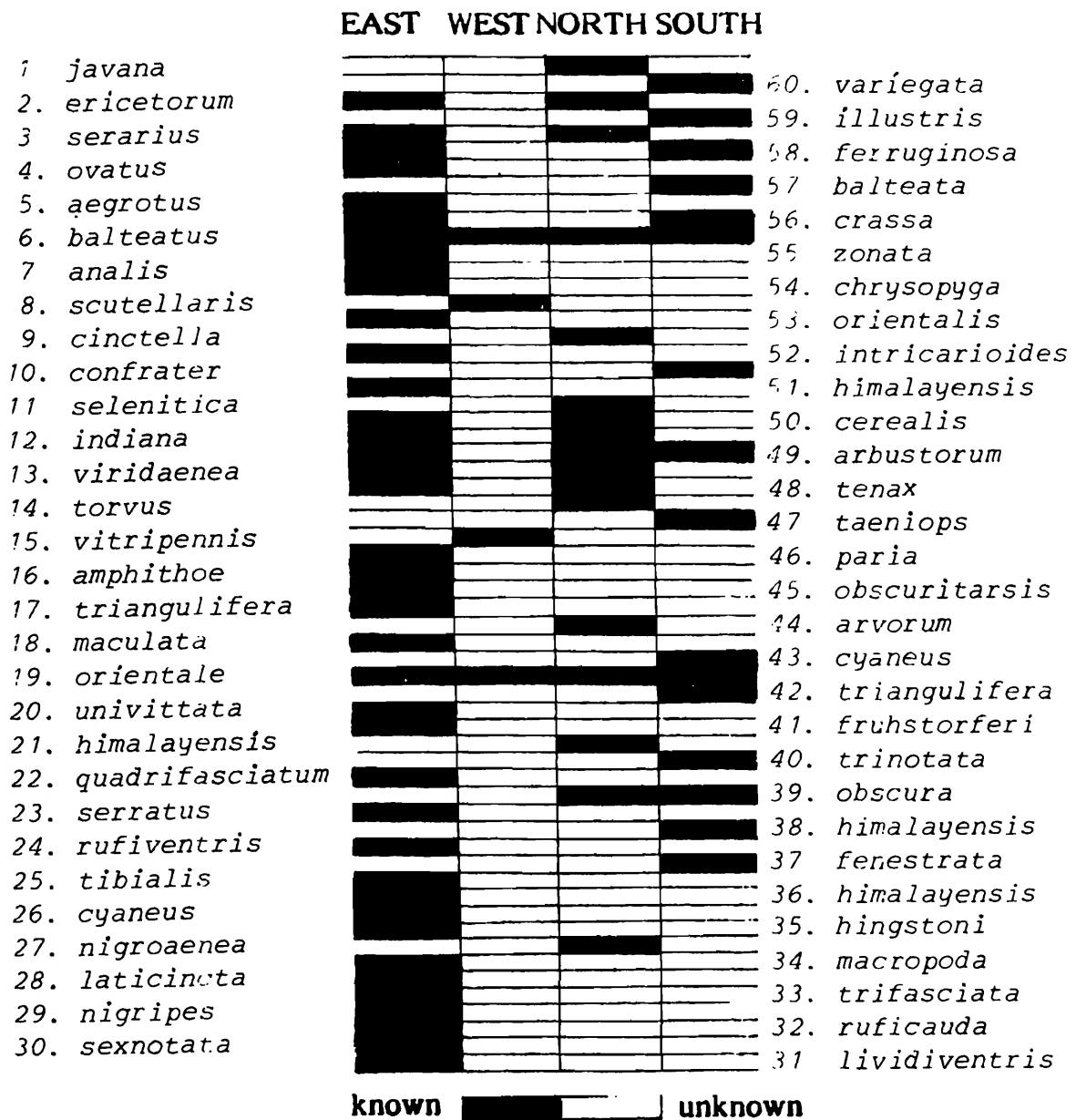
Maps 35-40. : Distribution of (43) *Catacores cyaneus*, (44) *Eristalinus arvorum*, (45) *Eristalinus obscuritarsis*, (46) *Eristalinus paria*, (47) *Eristalinus taeniops* and (48) *Eristalis tenax* in India (in black shade).



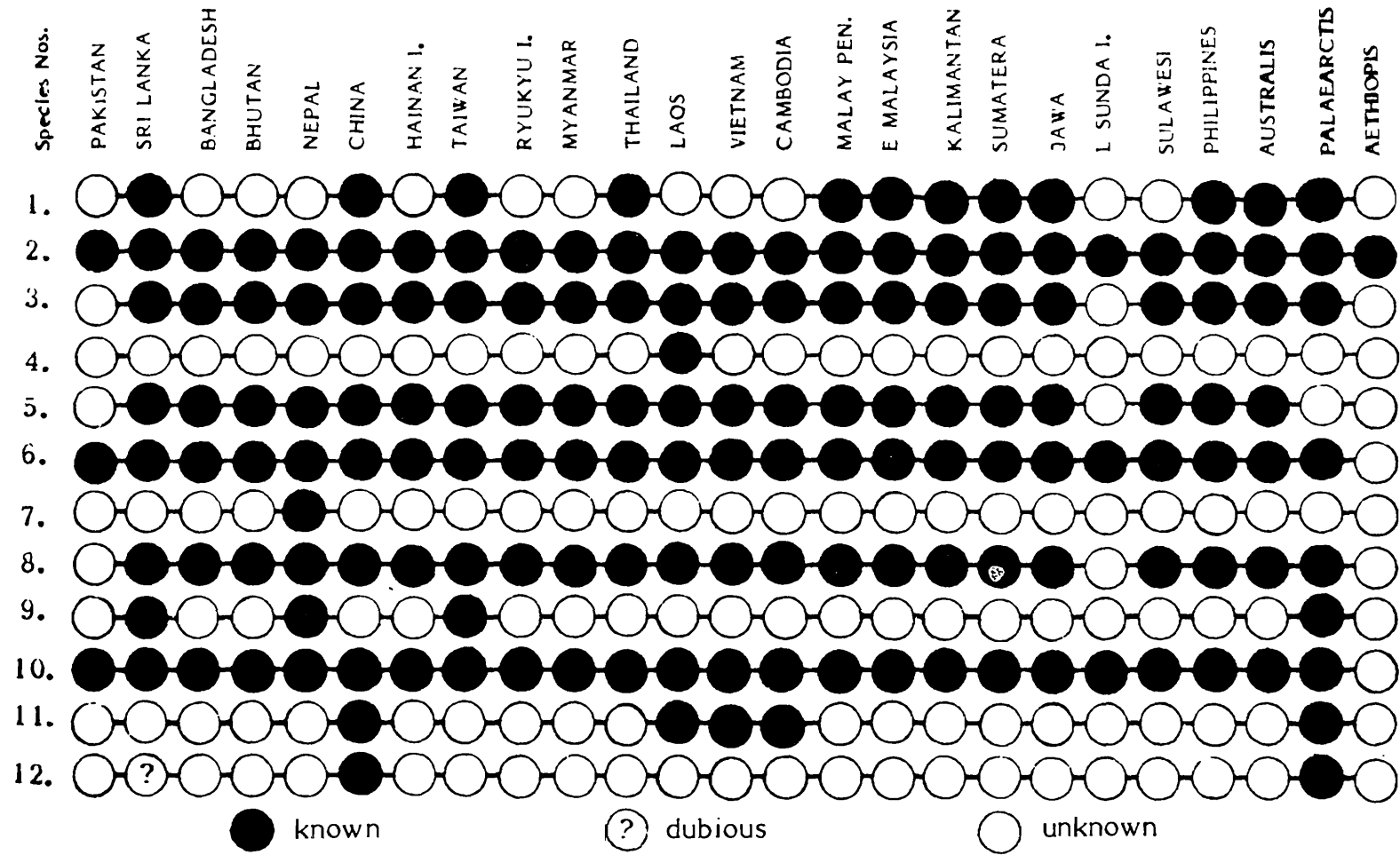
Maps 41-46. : Distribution of (49) *Eristalis arbustorum*, (50) *Eristalis cerealis*, (51) *Eristalis himalayensis*, (53) *Mallota orientalis*, (54) *Phytomyia chrysopyga* and (55) *Phytomyia zonata* in India (in black shade).



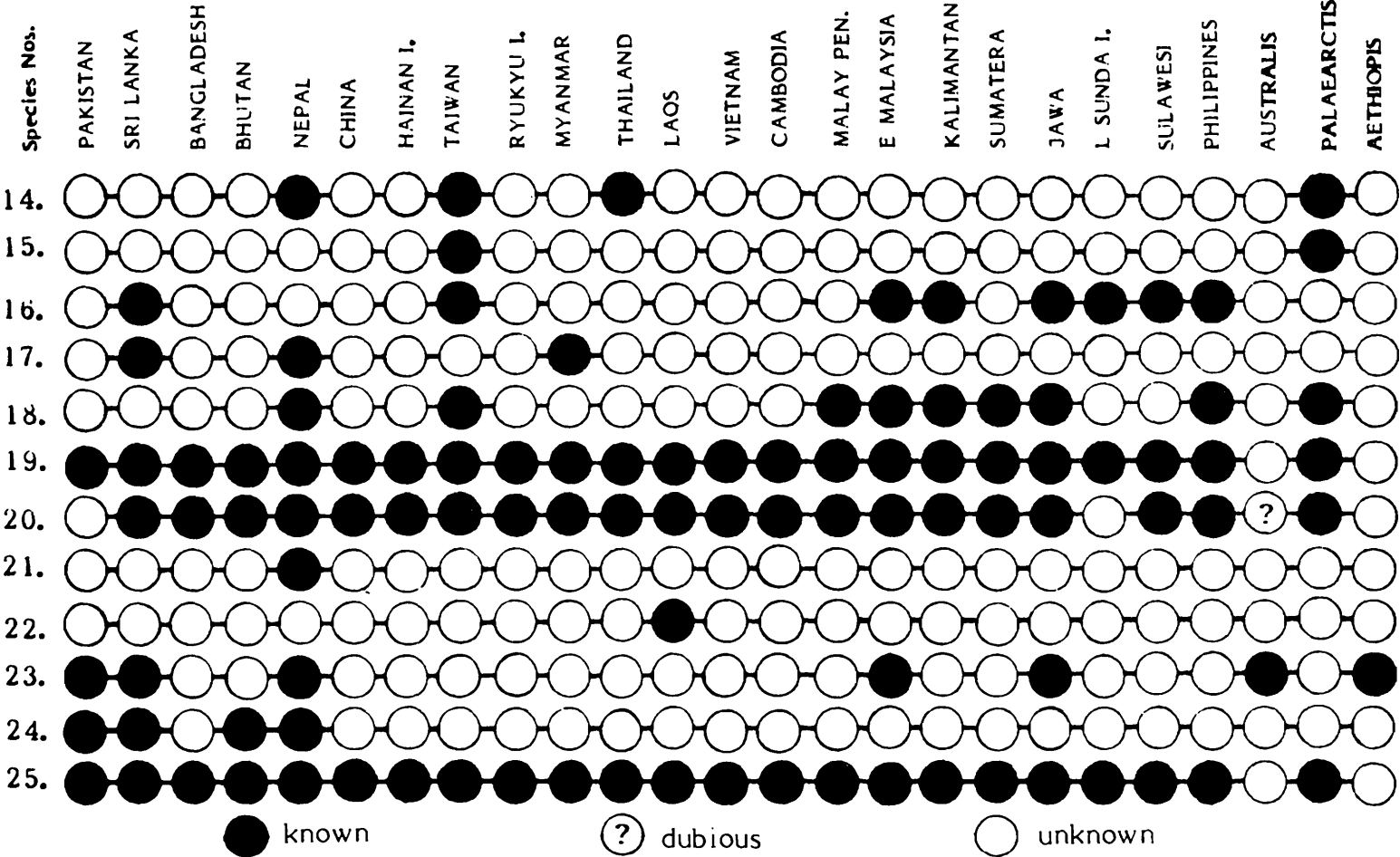
Maps 47-51. : Distribution of (56) *Phytomia crassa*, (57) *Milesia balteata*, (58) *Milesia ferruginosa*, (59) *Milesia illustris* and (60) *Milesia variegata* in India (in black shade)



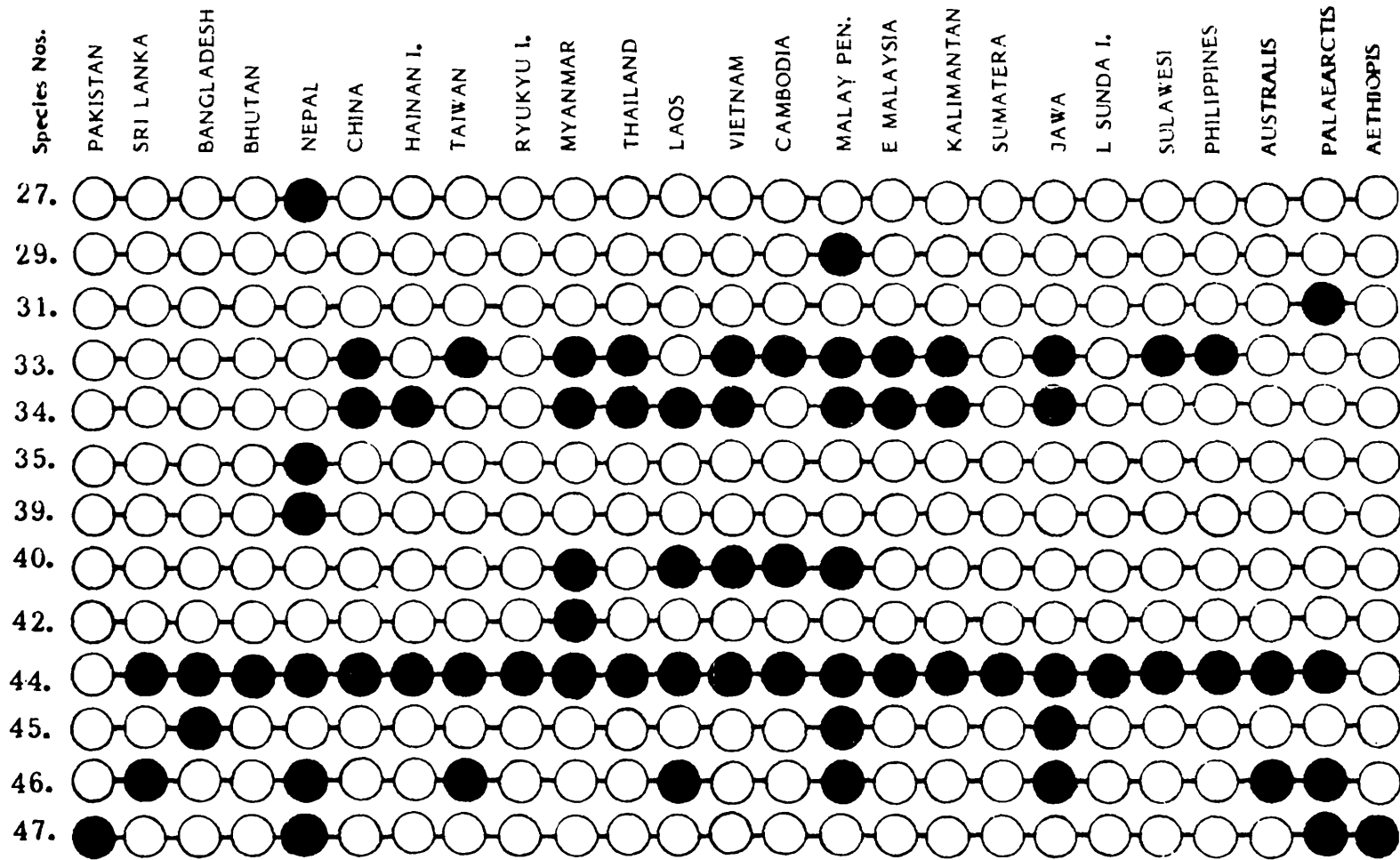
Diag. 1. : Recorded districts of occurrence of the species (as per serial number) in Sikkim (in black shade)



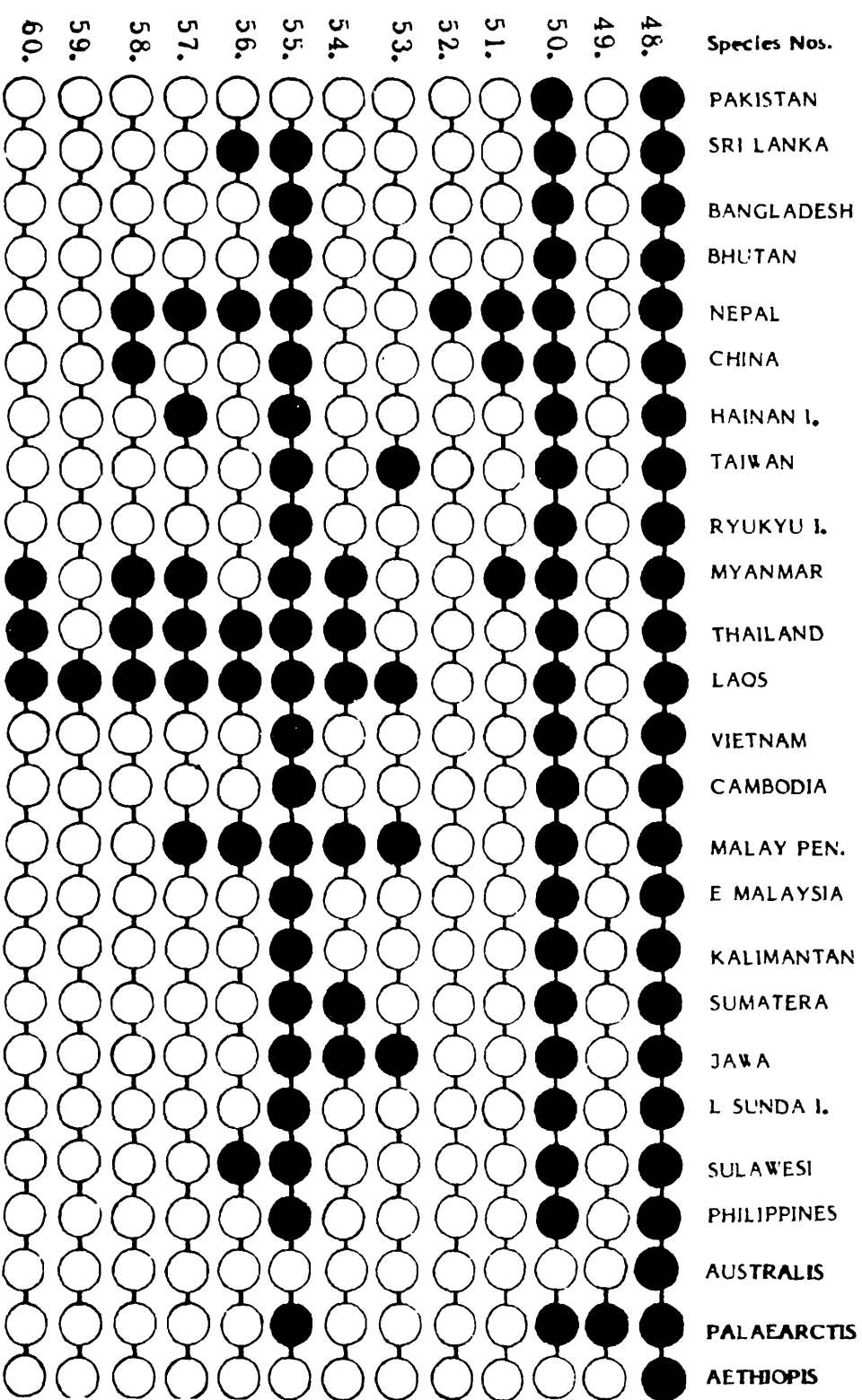
Diag. 2. : Distribution of species (as per serial number) of *Allograpta*, *Asarkina*, *Betasyrphus*, *Dideoides*, *Dideopsis*, *Episyrphus*, *Eriozona*, *Ischiodon*, *Meliscaeva*, *Metasyrphus*, *Scaeva* and *Sphaerophoria* in and around the Oriental region excepting India.



Diag. 3 : Distribution of species (as per serial number) of *Syrphus*, *Baccha*, *Melanostoma*, *Platycheirus*, *Chrysotoxum* and *Paragus* in and around the Oriental region excepting India.



Diag. 4. : Distribution of species (as per serial number) of *Cheilosia*, *Graptomyza*, *Volucella*, *Spheginobaccha*, *Pseudovolucella*, *Monoceromyia*, *Spiximorpha* and *Eristalinus* in and around the Oriental region excepting India.



Diag. 5 : Distribution of species (as per serial number) of *Eristalis*, *Mallora*, *Phyomyia* and *Milesia* in and around the Oriental region excepting India.

INSECTA : DIPTERA : TACHINIDAE

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INTRODUCTION

Occurrence of five tachinid species in Sikkim state of the Indian union was reported by Crosskey (1976) without information about their actual places of occurrence in the state.

The present study is based on tachinid material available in the collection of the Zoological Survey of India, Calcutta. These include old Indian museum collection procured by L. de Nieceville, A. V. Knyvett, unknown museum collector and F. H. Gravely (May, 1916) and those procured in course of ten faunistic survey undertaken by the department under the leadership of Dr. A.N.T. Joseph (April, 1978; October, 1978), Dr. V.C. Agarwal (September, 1986; October, 1988), Dr. A.R. Lahiri (April, 1992), Shri S. K. Saha (April, 1992), Dr. M.S. Shishodia (October-November, 1992), Dr. T.K. Pal (October, 1993) Dr. L.K. Ghosh (March, 1994) and Shri P. H. Roy (April, 1994)

MATERIAL AND METHOD

Adult tachinid flies were collected, set, pinned and processed by methods prescribed by Datta, and Mukherjee (1997).

Lahiri (in press) in "Tachinid (Diptera) fauna of Tripura" provided a general account of tachinid flies, a summary of principal contribution on tachined fauna of the world at large and that of India together with a brief account of general morphology of these insects.

* (Species marked with * are recorded for the first time from the state)

CLASSIFIED LIST OF TACHINID SPECIES KNOWN FROM SIKKIM¹

Subfamily PROSENINAE

- * 1. *Estheria (Parestheria) intermedia* sp. nov.
- 2. *E. (P.) magna* Baranov.

Subfamily PHASIINAE

Tribe Cylindromyiini

- *3. *Hermia beelzebul* (Wiedemann)
- *4. *Lophosia felderi* (Brauer and Bergenstamm)

Subfamily TACHININAE

Tribe Tachinini

- 5. *Mikia tapens* (Walker)
- *6. *Servilia sobria* Walker
- *7. *S. subcinerea* Walker.

Tribe Linnaemyini

- *8. *Linnaemya picta* Meigen.

Tribe Ernestiini

- *9. *Eurithia indica* sp. nov.
- *10. *Gymnocheta prophyrophora* Zimin.
- 11. *Janthinomyia felderi* (Brauer and Bergenstamm)

Subfamily GONIINAE

Tribe Carcellini

- *12. *Carcelia sumatrana* Townsend

Tribe **Sturmiini**

- *13. *Blepharella lateralis* Mc Quart.
- 14. *Blepharipa fusiformis* (Walker).
- *15. *B. jacobsoni* Townsed.
- *16. *B. zebina* (Walker).

SYSTEMATIC ACCOUNTFamily **TACHINIDAE****Key to the subfamilies**

1. Prosternum setose
.....GONIINAE (Major part)
- Proternum bare 2
2. Facial ridge strongly setose on their whole height GONIINAE (part, only genus *Blepharella* Macquart)
- Facial ridge bare but for a few hairs around vibrissae 3
3. Presutural intra-alar setae absent; 0-2 post intra-alar setae PHASIINAE
- Presutural intra-alar setae present; 2 or 3 post intra-alar setae 4
4. Genal depth as great as the third antennal segment or more; arista pubescent or plumose; antennal axis at or below the level of eye-middle; usually three scutellars
..... PROSENINAE (Dexiinae)
- Such combination of characters not present simultaneously TACHININAE.

Subfamily **PROSENINAE (DEXIINAE)**Genus ***Estheria*** Robineau-Desvoidy

1830. *Estheria* Robineau-Desvoidy, *Mem. pres. div. Sav. Acad. Sci. Inst. Fr.*, 2 : 305.

1984. *Estheria*, Herting, *Stuttgart Beitr. Naturk (A)*, 369 : 11

Diagnostic characters : Head with a facial carina that is narrow between antennae but widening towards ventral end and then contracting again to epistome; palpi longer than third antennal

segment and not clubbed at apex ; interforntal area obliterated in male and frons at its narrowest not more than twice as wide as anterior ocellus. Pteropleural seta distinct; pleural region of thorax with blackish hairs; three or more *prst dc*; strong acrostichal and pre-alar setae present. 2nd costal sector bare ventrally, more than half as long as the 1st sector and longer than m-cu; bend of M closer to wing margin than m-cu; R_{4+5} and M ending as usual based to wing apex; cell R_5 open. T_{1+2} excavated to hind margin. Large, at least 8 mm in length.

Distribution : Palaearctic, Oriental.

Subgenus ***Paraestheria*** Stein

1924. *Parestheria* Stein, *Arch. Naturgesch.*, 90(A) 6 : 233.

1984. *Parestheria*, Herting, *Stuttgart Beitr. Naturk (A)*, 369 : 54.

Diagnostic characters : Parafacial naked ; haustellum smaller than head height and 2-8 times as long as thick. Margin of lower calypter entirely covered with hairs longer than those of upper calypter and the diameter of haltars head.

Distribution : Palaearctic; Oriental.

Key to the species

1. Labella shorter (0.12-0.22 times of haustellum length). Front claw longer (1.7-2.25 of last tarsal segment) *intermedia* sp. nov.
- Labella longer (0.50-0.55 times of haustellum length). Front claw shorter (1.15-1.25 of last tarsal segment) *magna* Baranov.

1. ***Estheria (Paraestheria) intermedia*** sp. nov.

Description : Male : Frons 0.90-0.17 times as broad as an eye, in its middle 0.83-0.14 times as broad as adjacent parafrons; number of frontal setae 10-14; inner vertical setae 0.15-0.26 as long as head height; height of face (over vibrissae) 0.46-0.70 times the length of frons; median ridge strong, little convex and in profile visible upto vibrissae; antenna as long as 0.47-0.83 of facial height; 3rd segment 1.1-1.6 times as long as the 2nd and 1.3-2.0 times as long as broad; breadth

of arista with hairs 1.0-2.3 times of that of the 3rd antennal segment; longest hair on arista 2.2-5.7 times of its stout base; parafacial naked, from antennal base downwards enlarging 1.3-1.8 times and is 1.3-3.2 times as broad as the 3rd antennal segment; facial border below 2/5th of its height with 10-17 hairs; epistome slightly raised; difference of height between epistome with vibrissae amount to 0.18-0.65; horizontal distance of vibrissae from one another 0.41-0.69 of facial height about it; gena in profile as high as 0.33-0.52 of the vertical diameter of eye; ventral length of head 1.0-1.7 of head height; width of occiput 0.14-0.34 of head height; palpi as long as 0.23-0.42 of head height; haustellum without labella as long as 0.39-0.73 of head height and is 4.6-7.0 times as long as thick; labella as long as 0.12-0.22 of haustellum. Mesonotum with 2+3(2) *acr*, 3+3(4) *dc* and 1+3(2) *ia*; prealar setae 0.15-0.18 of the strong supraalar; 3-5 humeral setae, the 3 strong stand in triangle; the rest being borne on the anterior arm of the same; barrette with scanty hairs; scutellar total 4, but the subapical variably developed, being subequal to or about half the length of apicals or even absent; apical crossing, 0.87-1.40 of the lateral. Wing : costal spine insignificantly small; 3rd costal sector (CS_3) 1.7-2.2 times as long as CS_2 and 2.1-3.1 times as long as CS_4 ; R_5 open; distance of M-bending from nearest wing margin 0.34-0.46 of M_1 , 0.62-1.0 times as big as its distance from m-cu and 0.62-0.88 of CS_4 ; m-cu from r-m 1.7-2.1 times as far as the distance of m-cu to M-bending; last setation of Cu_1 0.44-0.78 times as long as m-cu. Legs : midtibia with 0-1 *ad*, 0 *pd*, 0-2 *av* and 1 *pv*; hindtibia with 1-2 *ad*, 0-4 *pd*, 1-3 *av* and 0-1 *pv*; front claw 1.7-2.5 times as long as last tarsal segment. 2nd abdominal segment excavated without marginal setae; only segments III and IV with middorsal setae while segment V entirely bare with large setae. Head blackish gray, but shining white when viewed from certain angle; interfrons and ocellar triangle dark brown, proboscis blackish brown; thorax blackish marked with a pair of ashywhite complete sublateral stripe that covers entire humeral callus in front and vestige of another pair of similarly coloured stripes

in between the former pair but restricted only to humeral region; scutellum on dorsum variably shiny white while abdomen also variably marked with similar or shiny yellow stripes, sublateral proximally, but turning lateral apically; thorax and abdomen of more mature specimens almost entirely appear shiny white; legs blackish brown with flexor surfaces of tibiae paler; squamae pale yellowish, veins yellow but costa blackish along anterior margin; epaulette and basicosta blackish. Body type blackish gray.

Body length : 10.0-13.0 mm.

Material studied : Extra limital : Holotype ♂ : West Bengal : Darjeeling (Rangiroom), 2. x. 1978, coll. A.N.T. Joseph (Regd. No. 8366/H6); Paratypes : 11♂♂ : 3 exs, same data as the Holotype (Regd. No. 8367-8369/H6); 1ex, 30. ix. 1978 (Regd. No. 8374/H6) and 4 exs, 3. x. 1978 (Regd. No. 8370-8373/H6); other date as for the Holotype; 1 ex, Darjeeling (Lava), 9. x. 1978, coll. A. N. T. Joseph (Regd. No. 8375/H6); 2 exs, Sikkim; 1 ex, Ramtek, 21. ix. 1978, coll. A.N.T. Joseph (Regd. No. 8376/H6); 1 ex, Rabangla, 8. x. 1988, coll. V. C. Agarwal (Regd. No. 8377/H6)

Comparison : The present species comes close to *Estheria (Parestheria) magna* Baranov and *E. (P.) flavipennis* Herting. It differs from the former in the shape proboscis [narrower and more elongated haustellum, both in relation to width of haustellum (4.6-7.0 vs 0.38-4.5 times) and head height (0.39-0.73 vs 0.32-0.35 times) and much shorter labella (0.12-0.22 vs 0.50-0.55 times of haustellum length)], situation of m-cu (being closer to M-bending than m-cu) and in having longer front claw (1.7-2.5 vs 1.15-1.25 of last tarsal segment). It differs from *E. (P.) flavipennis* in having shorter labella (0.12-0.22 vs 0.32-0.40 times of haustellum length), blackish brown (vs brownish yellow or yellowish brown) proboscis, epaulette and basicosta, blackish (vs yellowish) gray body type and nature of the abdominal markings.

Distribution : India : Sikkim (east) and West Bengal.

2. *Estheria (Parestheria) magna* Baranov

1935. *Myostoma magnum* Baranov, *Vet. Arch.*, **5** : 557.

1960. *Myostoma magnum*, Crosskey, 1960, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.); 180.

1984. *Estheria (Parestheria) magna* Baranov : Herting, *Stuttgart, Beit. Beitr. Naturk (A)*, **369** : 60.

Remark : Originally described from Japan, the species was reported from Sikkim by Crosskey (1960).

Distribution : India : Sikkim, Assam. Outside India : Japan, Nepal, Thailand.

Subfamily PHASIINAE

Tribe *Cylindromyiini*

Diagnostic characters : Head with broad frons and proclinate orbital setae in either sex; facial carina not developed. Pre-alar and second supra-alar setae usually present; 3 *dc* and 1 or 2 *ia*; 2 or 3 pairs of scutellar marginals; wings not marked with black bands; lower calypter evenly rounded on hind margin; bend of vein M sharply and strongly curved; femora without ventral spine combs; hind coxae widely separated from abdominal base. Abdomen variably elongated, subcylindrical; abdominal sternites 2-4 concealed or partially exposed.

Key to the genera

1. Vibrissae weak or hair like. Abdominal tergites T_3 , T_4 and T_5 with a pair of erect, median discal setae each *Hermya* Robineau-Desvoidy
- Vibrissae very strong. Abdominal tergites without median discal erect setae *Lophosia* Meigen.

Genus *Hermya* Robineau-Desvoidy

1830. *Hermya* Robineau-Desvoidy, *Mem. pes. div. Sav. Acad. Sic. Inst. Fr.*, **2** : 226.

1976. *Hermya*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 171.

Distribution : China, India, Japan, Malaysia,

Myanmar, Nepal, Philippines, Sri Lanka, Taiwan, Thailand, Vietnam (North).

3. *Hermya beelzebul* (Wiedemann)

1830. *Tachina beelzebul* Wiedemann, *Aussereuropaische zweiflugelige Insekten*, **2** : 301.

1976. *Hermya beelzebul*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 171.

Material examined : 1ex, Rongpo, 6. ix. 1909 coll Museum collector.

Diagnostic characters : Median size. Glossy blackish brown; face, paraface, genae and parafrons shiny golden yellow; sides of thorax, flexor surface of femora and abdomen laterally ashy white while front part of thorax and dorsum of abdomen viewed from certain angle, also appear similar; wings blackish brown except along hind margin being pale, almost colourless; epaulette creamy white. Antenna very long, third segment thrice as long as the remaining segments together and more than twice as long as the palpi; 2 *pr. cl.* orbitals; parafacial bare. 3 humerals situated in a curve; 3 sternopleurals arranged in a triangle; 3+3 *Ac*, 3+3 *dc* and 0+2 *ia*; scutellar marginals total 3, apicals longest, crossing; T_{1+2} excavated at hind margin. Length : Body : 8.00 mm; wing : 12.00 mm.

Distribution : India : Sikkim (East), Assam, Himachal Pradesh, Tamil Nadu, Uttar Pradesh. Outside India : China, Japan, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand, Vietnam (North).

Genus *Lophosia* Meigen

1824. *Lophosia* Meigen, *Systematische Beschreibung der bekannten europäischen zweiflugeligen insekten*, **5** : 216.

1978. *Lophosia*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 172.

Distribution : 'Bengal' China, India, Indonesia, Laos, Malaysia, Philippines, Taiwan.

4. *Lophosia felderi* Brauer & Bergenstamm

1893. *Macrolophosia felderi* Brauer & Bergenstamm. *Dunkschr. Akad. Wiss., Wien* **60** : 144.

1976. *Lophosia felderi*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 273.

Material examined : 2 exs, no other data, coll. A. V. Knyvett.

Diagnostic characters : Large in size. Black, face and frons shiny silvery white and basolateral spots of similar colour on abdominal segments T_2 and T_3 extending nearly half way to apex and narrowly confluent ventrally. One *prcl* orbital setae. Two humerals, three sternopleurals forming a triangle, *O+O acr*, *2+3 dc*, *1 post ia*, and 3 scutellar marginal setae; a tuft of hairs on metapleuron immediately above the base of hind coxae. Squamae creamy yellow adorned with fine hairs; cell 5 open Abdominal tergites with fine black coating but without large discal or marginal setae.

Length : body : 16.00-18.00 mm; wing : 14.00-16.00 mm.

Distribution : India : Sikkim.

Subfamily TACHININAE

Key to the genera

1. Hind caxae with fine soft hairs on posterodorsal surface *Tachinini*
- Hind caxae bare on posterodorsal surface ...
..... 2
2. Palpi fully developed and longer than third antennal segment. 3 or 4 *post dc*; M_2 appendix present or absent. Usually with metallic, blue, green or violet colouring *Ernestiini*
- Palpi vestigial or absent. 3 *post dc*; M_2 appendix present. No metallic colouring
..... *Linnaemyini*

Tribe Tachinini

Key to the genera

1. Scutellum without semierect bunch of discal, subapical setae. T_{1+2} without a bunch of marginal setae on either side of mid-dorsum *Mikia* Kowarz

- Scutellum with semierect bunch of discal, subapical setae. T_{1+2} with bunch of marginal setae on either side of mid-dorsum
..... *Servillia* Robineau-Desvoidy

Genus *Mikia* Kowarz

1884. *Mikia* Kowarz. *Wien. ent. Ztg.*, **4** : 51.

1976. *Mikia*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 206.

Distribution : Bangladesh, Bhutan, Canada, China, India, Indonesia, Japan, Malaysia, Myanmar, Taiwan, Thailand, Vietnam.

5. *Mikia tapens* Walker

1849. *Mikia tapens* Walker, *List of the specimens of dipterous insects in the collection of the British Museum*, **4** : 723.

1976. *Mikia tapens*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 206.

Material examined : 1 ex, no other data, coll L de Niceville; 1 ex, Rangat valley (alt. 700'-800'), 21.v. 1916, coll F.H. Gravely; 1 ex, no other date, coll E. T. Atkinson.

Diagnostic characters : Massive in built. Ferruginous; face, frons, genae and vertex suffused with varying amount of yellow; thorax on dorsum and venter, legs, but for basal segments, an indistinct mid-dorsal stripe and venter of abdomen black; abdomen on dorsum shiny and may be suffused with red; wings marked by a semi opaque yellowish triangular area extending from base and gradually narrowing along costal border to a point half way to apex. Proboscis shorter than head height; antennae with second segment the longest; frons very broad; orbital setae : *pr.*, *cl.* 3. *re. cl.* 1; ocellar setae *pr. cl.*; beneath head covered with tuft of yellowish hairs. Thorax and abdomen covered with fine black hairs. Humeral setae 4-8 arranged in two rows; posthumeral callus with 2 strong setae; scutellar marginals total 5; the apicals crossing and shorter than the subapicals; subapical row of scutellar almost as large as the apicals; 3 sternopleural setae; M_2 appendix very short and stumpy, but

continued into a dark fold; a few setulae confined to basal node of R_{4+5} ; cell 5 open. T_4 with 3/4 large spines on either side; T_5 with many such large spines; sternites on each abdominal segment furnished with a crown of 7-8 large, erect spines.

Length : body 17.50-19.00 mm; wing : 15.50-18.00 mm.

Distribution : Sikkim (west and south), West Bengal. Outside India : Bangladesh, Bhutan, China, Malaysia, Nepal Vietnam, southern U.S.S.R.

Genus *Servillia* Robineau-Desvoidy

1830. *Servillia* Robineau-Desvoidy, *Mem. pres. div. Sav. Acad. Sci. Inst. Fr.*, 2 : 49.

1976. *Servillia*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, 26 (Suppl.) : 207.

Distribution : Afghanistan, China, India, Indonesia, Malaysia, Myanmar U.S.S.R., Vietnam.

Key to the species

1. Abdomen subovate, marked with black rings on yellow background; pollinosity on terminal segments thin and marked with some black hairs *sobria* Walker
- Abdomen ovate marked with mid-dorsal black stripes on yellow background; pollinosity on terminal segments thick and composed only of yellow hairs *subcinerea* Walker

6. *Servillia sobria* Walker

1852. *Tachina sobria* Walker, *Insecta saundersiana or characters of undescribed insects in the collection of William Wilson Saundere, Esq., F. R. S., & c., I (Diptera, pt iv)* : 222.

1976. *Servillia sobria*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, 26 (Suppl.) : 209.

Material examined : 1 ex, Gangtok, 20. iv. 1978, coll. A.N.T. Joseph.

Distribution : India : Sikkim (east), Assam, Himachal Pradesh, Kashmir and Tripura. Outside India : China, Indonesia, Malayasia, Myanmar and Pakistan.

7. *Servillia subcinerea* Walker

1852. *Tachina subcinerae* Walker, *Insecta Saundersiana : or characters of undercribed insects in the collection of William Wilson Saundere, Esq., F. R. S., & c., I (Diptera, pt iv)* : 272.

1976. *Servillia subcinerea*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, 26 (Suppl.) : 208.

Material examined : 1 ex, no other data, coll. A. V. Knyvett; 1 ex, no other data, coll. L. de Nieceville.

Distribution : India : Sikkim. Outside India : Nepal.

Tribe Linnaemyini

Genus *Linnaemya* Robineau Desvoidy

1830. *Linnaemya* Robineau Desvoidy, *Mem. pres. div. Sav. Acad. Sci. Inst. Fr.*, 2 : 52.

1976. *Linnaemya*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, 26 (Suppl.) : 203.

Diagnostic characters : Eyes hairy; palpi vestigial and if present, much shorter than third antennal segment. Hsd coxae entirely bare on posterodorsal surface; 3 post dc; setulae on R_{4+5} confined to basal node or extending half way to r-m; bend of vein M usually with an M_2 appendix.

Distribution : Palaearctic, Oriental, Philippines.

8. *Linnaemya picta* Meigen

1824. *Tachina picta* Meigen, *Systematische Beschreibung der bekannten europäischen zweiflügeligen Insekten*, 4 : 261.

1976. *Linnaemya picta*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, 26 : (Suppl.) : 204.

Material examined : 1 ex, Chungthang, coll. T.K. Pal, 1. x. 1993.

Diagnostic characters : Size medium. Blackish, face and genae pale, ferruginous; thorax and abdomen with pruinose white patches; scutellum yellowish. Proboscis shorter than head height; palpi very small and much smaller than third antennal segment, clubbed; antennae with third segment the longest; arista simple; reclinate

orbital setae undifferentiated. Humeral setae 5; posthumeral callus with 3 large setae; scutellar marginals total 6, the apical crossing and shorter than subapicals; 3 sternopleural setae; scutellar pollinostity largely yellowish. Setulae at the basal node of R_{4+5} continued along the vein both dorsally and ventrally for about one third to r-m; cell 5 open; bend of vein M with a well developed M_2 appendix. T_3 , T_4 and T_5 each burnished with two pairs of sublateral (median and apical) relatively long setae; T_4 and T_5 also provided with additional such setae. Apex of cercus in the form of swollen recurved knob.

Length : 13.00 mm (body), 10.00 mm (wing).

Distribution : India : Sikkim (North) and West Bengal. Outside India : Europe, Japan and U.S.S.R.

Tribe Ernestiini

Key to the genera

1. Non metallic forms; blackish in colour
..... *Eurithia* Robineau-Desvoidy
- Metallic green, blue or blue-violet forms, often with coppery red tinges 2
2. 1 posthumeral seta; bend of vein M without an M_2 appendix
..... *Janthinomyia* Brauer & Begenstamm
- 2 posthumeral setae; bend of vein M with a well developed M_2 appendix
..... *Gymnocheta* Robineau-Desvoidy.

Genus *Eurithia* Robineau Desvoidy

1844. *Eurithia* Robineau Desvoidy, *Annls Soc. ent. Fr.* (2), 2 : 134.

1981. *Eurithia*, Chao & Shi, *Sinozoologia*, 1 : 75.

Distribution : Palaearctic, Oriental.

9. *Eurithia indica* sp. nov. (Figs. 1-5)

Description : Male : Eyes, antennae, palpi and proboscis blackish brown as also are legs, thorax and abdomen; rest of head shiny whitish, thorax

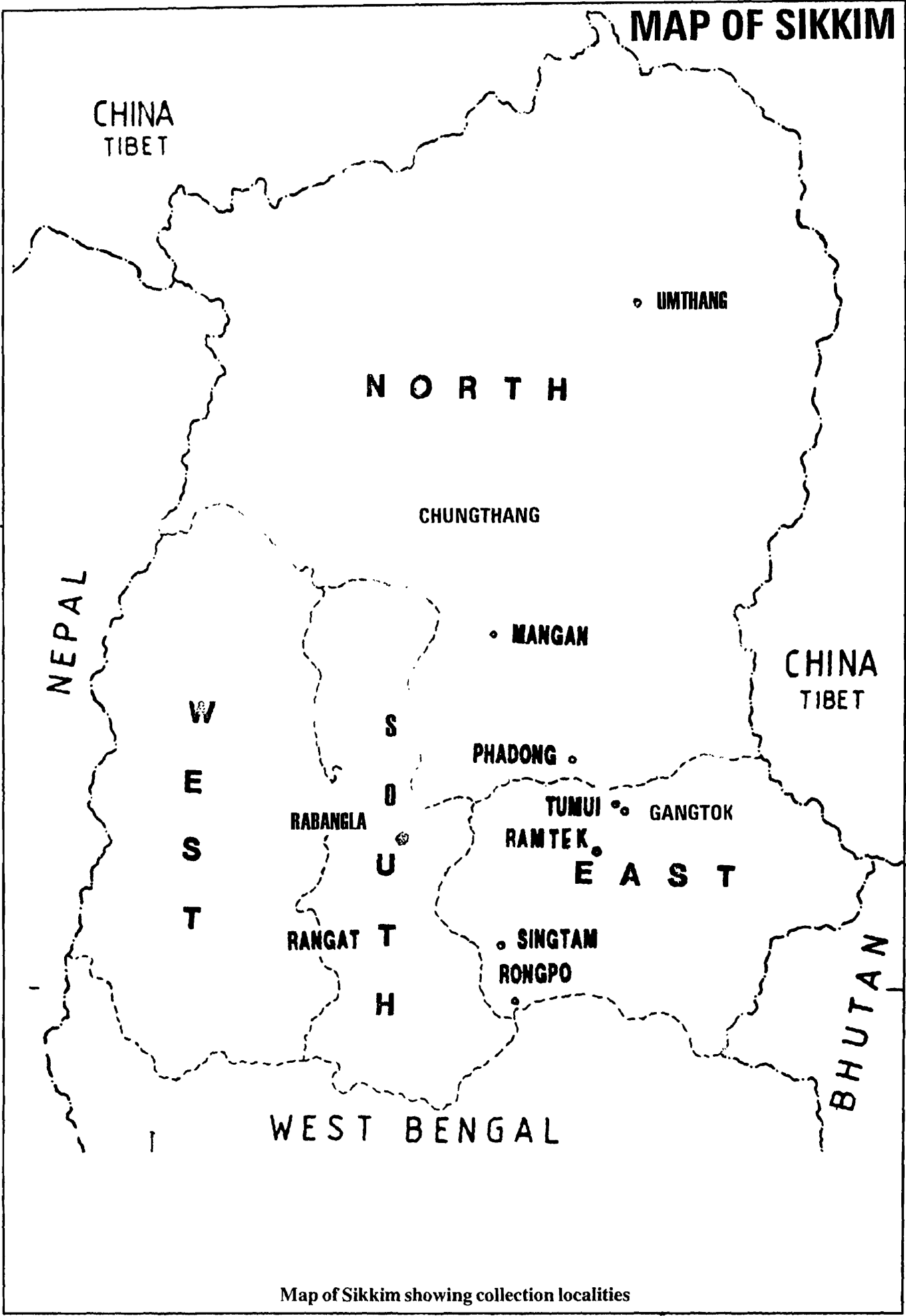
and basal half of T_3 very thinly pruinose white. Palpi not widened, nearly twice as long as third antennal segment; haustellum is nearly thrice as long as labella; third antennal segment is less than parafacial in width and is longer than the second; epistome markedly raised and vibrissae situated far above epistomal margin; eyes hairy and about one and half times as wide as frons in dorsal view; about 12 frontal setae; orbitals absent; outer vertical setae very prominent and a row of prominent black post orbital setae; face and frons naked, genae and palpi hairy; longer, close hairs beneath head. 3+3 *acr*, 3+3 *dorso* and 1+3 *ia*; 1 posthumeral; 4 large and a few small humeral setae, of which main 3 are arranged in a triangle; prealar setae similar to 1st *post ia* but much smaller than the supraalars; sternopleurals 3, set in a triangle; scutellar total 4; apicals crossing; laterals much stronger and nearly twice as long as apicals; few strong and many fine scutellar discals; prosternum bare; hind coxae bare on posterior surface; mid tibia with 1 V seta; claws strong, subequal to last tarsal segment. Wings : epaulette black, basicosta yellowish, costa black; cell 5 open; no M_2 appendix. Cu_2 appendix extending nearly to wing margin; apical part of wing as in Fig. 5; squamae creamy white with fine hairs along hind margin. T_{1+2} excavated, excavation reaching apical margin of the segment; T_{1+2} with 3 pairs of discals, T_3 with 1 pair of discals and a row of marginal setae; apical segments with increased number of discal and marginal setae. Genitalia as in Figs. 1 and 2. 5th abdominal sternite (Fig. 3) deeply notched, black and furnished with a bunch of hairs.

Length : body : 14.00 mm

Female : Thorax and abdomen darker, blackish. 2 *prcl* and 1 *recl* orbital setae. T_3 and T_4 with variably developed faint sublateral spot at base.

Length : body : 10.5 – 14.0 mm.

Material examined : Holotype ♂, Sikkim, no other data, coll. Niceville (Regd. No. 8362/H6); Paratype ♂, same data as the Holotype (Regd. No. 8363/H6); Allotype ♀, Sikkim, no other data,



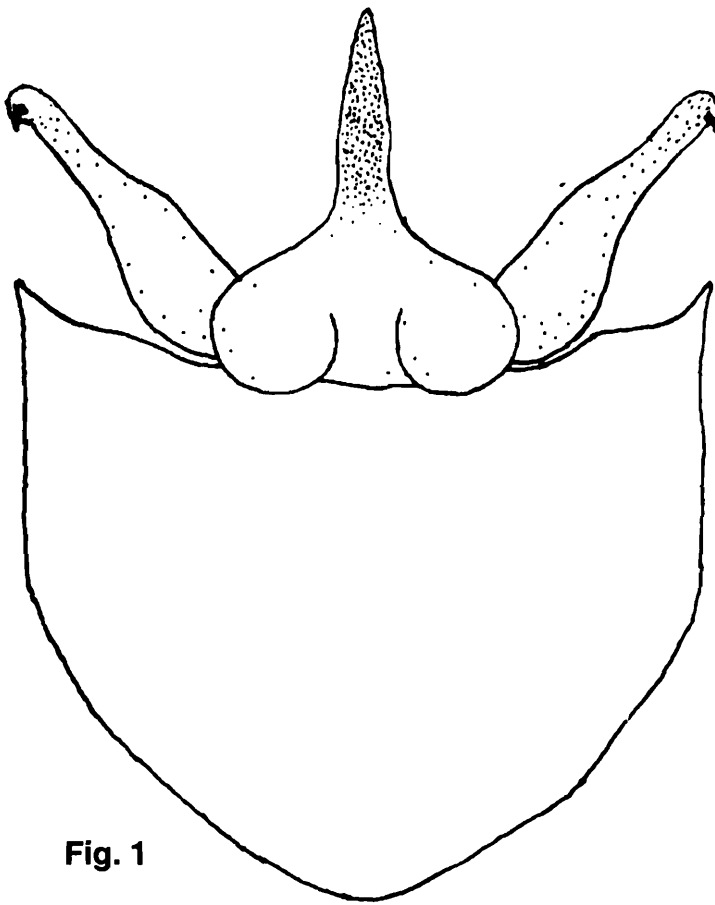


Fig. 1

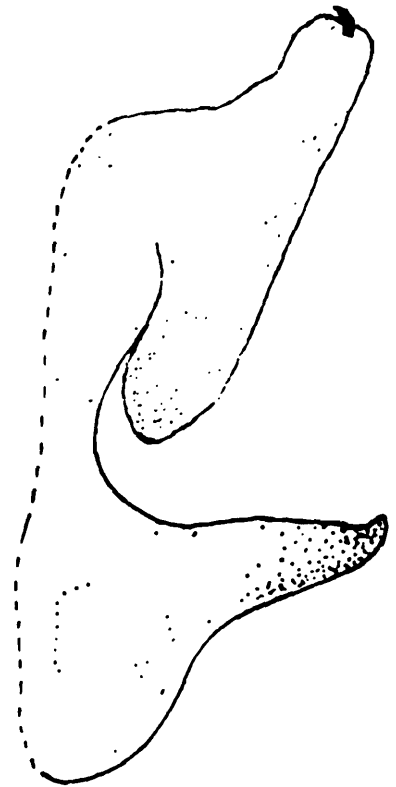


Fig. 2

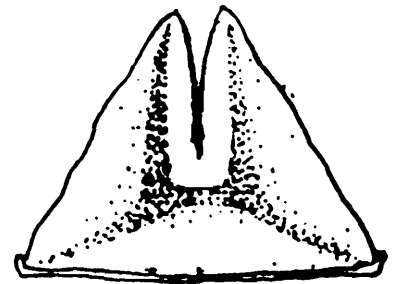


Fig. 3

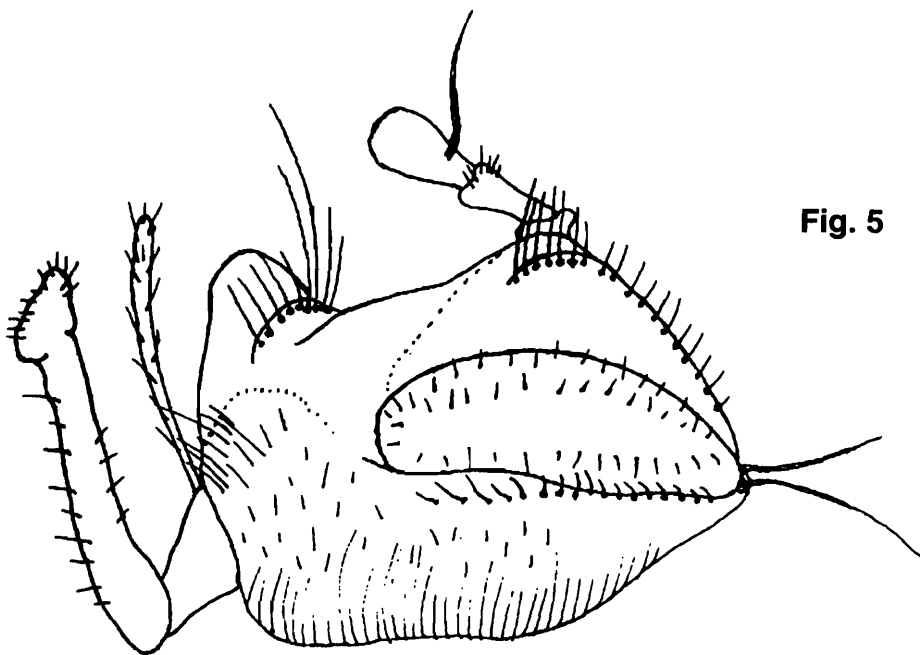


Fig. 4



Fig. 5

Figs. 1-5 : *Eurithia irdica* sp. nov., male; Figs. 1 and 2 genitalia, in dorsal and lateral view respectively; Fig. 3, fifth abdominal sternite; Fig. 4, head in lateral view; Fig. 5, apex of wing.

coll. A. V. Knyvett (Regd. No. 8364/H6); Paratype ♀, extra limital, Darjeeling (West Bengal), 27. ix. 1978, coll. A. N. T. Joseph (Regd No. 8365/H6).

Comparison : This species differs from other species of the genus in the nature of male genitalia; specially the unique shape of cercus and surstylus and also in that of 5th abdominal sternite. Combination of characters, e.g., parafacial wider than third antennal segment, creamy white squamae without black hairs and pollinose abdomen will also help in distinguishing this species from other allied species.

Distribution : India : Sikkim and West Bengal.

Genus *Gymnocheta* Robineau-Desvoidy

1830. *Gymnocheta* Robineau-Desvoidy, *Mem. pres. div. Sav. Acad. Sic. Inst. Fr.*, **2** : 371.

1976. *Gymnocheta*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 202.

Distribution : Palaearctic, Oriental.

10. *Gymnocheta prophyrophora* Zimin

1958. *Gymnocheta prophyrophora* Zimin, *Sb. Rab. Inst. - orikl. Zool. Filopat.*, **5** : 57.

1976. *Gymnocheta prophyrophora*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 202.

Material examined : 1ex, Umtham, 18. iv. 1992, coll. A. R. Lahiri.

Diagnostic characters : Size medium. Metallic green, abdomen coppery; face and paraface silvery white; genae, frons, vertex and behind head paler metallic green. Eyes hairy; proboscis shorter than head height; palpi clubbed, longer than third antennal segment; antenna with third segment the longest; arista simple; ocellar setae not prominent. Humeral setae 4-5; 2 posthumeral setae; scutellar marginals total 4; 2 sternopleurals; 4 pst dc. Bend of vein M with M_2 appendix; cell 5 open; setulae at basal node of R_{4+5} continued along the vein for about one third to r-m. T_{1+2} excavated to hind margin; T_3 and T_4 with 3/4 pairs of middorsal setae disposed from base to apex.

Length : body : 10.50 mm; wing : 9.50 mm.

Distribution : India : Sikkim (North). Outside India : China.

Genus *Janthinomyia* Brauer & Bergenstamm

1893. *Janthinomyia* Brauer & Begenstamm, *Verh. zool. bot. Ges. Wien.*, **43** : 141.

1976. *Janthinomyia*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 203.

Distribution : China, North India, Taiwan.

11. *Janthinomyia felderi* Brauer & Bergenstamm

1893. *Janthinomyia felderi* Brauer & Bergenstamm, *Verh. zool. bot. Ges. Wien.*, **43** : 141.

1976. *Janthinomyia felderi*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 203.

Material examined : 1ex, Mangan (Horticulture garden), 29.x.1992, coll. M. S. Shishodia; 1ex, Singtam, 1.xi. 1992, coll. M. S. Shishodia.

Diagnostic characters : Size medium. Metallic blue, palely so on genae, frons, vertex and behind head; face and frons silvery white. Eyes hairy; proboscis shorter than head height; palpi clubbed, longer than third antennal segment; antenna with third segment the longest; ocellar setae strong; proclinate. Humeral setae 3, arranged in a triangle; scutellar marginals total 5, of which the apicals are crossing and shorter than subapicals; 1 posthumeral seta; 3 sternopleurals; 4 *post dc*. Excavation of T_{1+2} barely reaching the hind margin; T_3 and T_4 with large, posteriorly directed spines on mid dorsum and along posterior margin. Bend of vein M without M_2 appendix; cell 5 open; setulae on R_{4+5} confined to basal node.

Length : body : 12.00 15.00 mm; wing : 11.00-11.50 mm.

Distribution : India : Sikkim (North and East) Uttar Pradesh and West Bengal. Outside India : China and Taiwan.

Subfamily GONIINAE

Key to the tribes

1. Eyes very large in profile; gena narrow, its

width equal to or even short of the width of the third antennal segment **Carcellini**

- Eyes only moderately large in profile; gena moderately wide, its width greater than the width of the third antennal segment.....
..... **Sturmiini**.

Tribe **Carcellini**

Genus **Carcelia** Robineau-Desvoidy

1830. *Carcelia* Robineau-Desvoidy, *Mém. pres. div. Sav. Acad. Sic. Inst. Fr.*, 2 : 176.

1976. *Carcelia*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, 26 (Suppl.) : 228.

Diagnostic characters : Eyes hairy. 3 or 4 *post dc*; scutellum with apical setae horizontal or directed upwards; scutellar discal pre-apical setae present; 2 or 3 sternopleural setae; hind coxae bare or even hairy on posterodorsal surface.

Distribution : Australia, China, India, Indonesia, Malaysia, Myanmar, Philippines, Sri Lanka, Taiwan, Tanzania, Thailand.

Subgenus **Carcelia** Robineau-Desvoidy

Diagnostic characters : Humeral callus with the 3 main setae usually standing in a line, the middle one sometimes placed slightly forwards; scutellum with lateral setae weaker than basal setae; apical scutellar setae horizontal or directed upwards; subapical scutellar setae widely spaced, distance between their base subequal to that between a subapical seta and its corresponding basal seta; hind coxae with 1 or more fine setulae on the posterodorsal surface; mid tibia usually with one submedian anterodorsal seta, rarely with a second one further basad. Intermediate abdominal segments without discal setae.

Distribution : Australia, India, Indonesia, Malaysia, Myanmar, Sri Lanka, Taiwan, Thailand.

11. **Carcelia carcelia sumatrana** Townsend

1927. *Carcelia carcelia sumatrana* Townsend, *Supplta ent.*, 16 : 65.

1976. *Carcelia carcelia sumatrana*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, 26. (Suppl.) : 228.

Material examined : 1ex, Tumui, 24.ix. 1986, coll. V.C. Agarwal; 1ex., Phadong, 24.iv. 1994, coll. S.K. Saha.

Diagnostic characters : Size medium. Blackish grey, yellowish on face, interfrons, scutellum, tibiae and abdomen, latter marked by a broad, mid-dorsal black stripe somewhat obscure on T_3 and T_4 , but on T_5 covering the segment almost entirely. Eyes very broad and densely hairy; genae narrow, barely subequal to third antennal segment; proboscis shorter than height of head; palpi clubbed, shorter than third antennal segment; parafrontals not approximated. 3 humeral setae disposed in a curve; 4 *post dc*; pre-apical setae strong and longer than first *post dc*; scutellar total 4 or 5, the apical crossing, directed a little upwards, shorter than subparallel subapicals; 3 sternopleural setae. Cell 5 open; bend of vein M without M_2 appendix; setulae on R_{4+5} confined to basal node. Abdomen rather short, suboval, furnished with small and irregularly disposed large setae; T_{1+2} excavated at hind margin.

Length : body : 10.00 mm; wing 9.00 mm.

Distribution : India : Sikkim (East and North). Outside India : Sri Lanka, Indonesia, Malaysia.

Tribe **Sturmiini**

Key to the genera

1. Facial ridge setose on most of its height. Prosternum bare *Blepharella* Macquart
- Facial ridge bare but for a few setulae near vibrissae. Prosternum setulose
..... *Blepharipa* Rondani

Genus **Blepharella** Macquart

1851. *Blepharella* Macquart, *Mem. Soc. Sci. Agric. Lille.*, 1850 : 176.

1976. *Blepharella*, Crosskey, *Bull. Brit. Mus. (nat. Hist.) Ent.*, 26 (Suppl.) : 234.

Distribution : Australia, China, India, Indonesia, Malaysia, New Guinea, Sri Lanka, Solomons, Taiwan and Vietnam.

12. *Blepharella lateralis* Macquart

1851. *Blepharella lateralis* Macquart. *Mem. Soc. Sci. Agric. Lille*, 1850 : 177.

1976. *Blepharella lateralis*, Crosskey. *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 234.

Material examined : 1 ex, Mangan, 3. iv. 1994, coll. P. H. Roy.

Diagnostic characters : Size medium. Blackish; scutellum, ferruginous; face, frons, fine basal rings on T_3 and T_4 and basal half of T_5 pruinose. Proboscis shorter than head height; palpi subequal to third antennal segment; antenna with third segment the longest; eyes large; genal depth greater than width of the third antennal segment; facial ridge setose on most of its height; ocellar setae undifferentiated; 2 reclinate orbital setae. 4 humeral setae, of which main 3 situated almost in a line, the fourth one placed a little forward; 4 *post dc*; 3 sternopleural setae; preapical setae strong and longer than first *post dc*; prosternum bare; scutellar total 5, the apical short, stumpy; subapical much longer, subparallel and quite close to each other, their distance shorter than the distance between one subapical and its corresponding basal setae; no scutellar discal setae; mid-tibiae with a series of anterodorsal setae of which 3 or 4 longer than the rest. Cell 5 open; bend of vein M without appendix; setulae on R_{4+5} confined to basal node. T_{1+2} excavated at hind margin; abdomen mostly covered with fine setae, but on T_5 the setae are large and closely set.

Length : body : 12.00 mm; wing : 9.00 mm.

Distribution : India : Sikkim (North), Andhra Pradesh, Assam, Kerala, Karnataka, Pondicherry, Tamil Nadu and Uttar Pradesh. Outside India : Australia, China, Indonesia, Malaysia, Solomons, Sri Lanka, Taiwan and Vietnam.

Genus *Blepharipa* Rondani

1856. *Blepharipa* Rondani. *Dipterologiae italicae prodrum*, **1** : 71.

1976. *Blepharipa*, Crosskey. *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 235.

Distribution : Palaearctic, Oriental, Molucca, New Guinea, Philippines.

Key to the species

1. Size large, abdomen 18.00 mm or more in length *fusiformis* (Walker)
- Size small or medium, abdomen 16.50 mm or less in length 2
2. Proboscis short, about one third the head height *jacobsoni* Townsend
- Proboscis relatively large and more than half the head height *zebina* Walker

13. *Blepharipa fusiformis* (Walker)

1849. *Tachina fusiformis* Walker, *List of the specimens of dipterous insects in the collection of the British Museum*, **4** : 1161.

1976. *Blepharipa fusiformis*, Crosskey. *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 235.

Distribution : India : Sikkim, West Bengal. Outside India : China, Myanmar and Nepal.

14. *Blepharipa jacobsoni* Townsend

1927 *Oginyia jacobsoni* Townsend. *Supplta. ent.*, **16** : 70.

1976. *Blepharipa jacobsoni*, Crosskey. *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 235.

Material examined : 1 ex, Rongpo, 6.ix. 1909, coll. Museum collector.

Distribution : India : Sikkim (East). Outside India : China, Japan and Indonesia (Sumatra).

15. *Blepharipa zebina* (Walker)

1849. *Tachina zebina* Walker, *List of the specimens of dipterous insects in the collection of the British Museum*, **4** : 772.

1976. *Blepharipa zebina*, Crosskey. *Bull. Brit. Mus. (nat. Hist.) Ent.*, **26** (Suppl.) : 236.

Material examined : 1 ex, Rangit, 22.iii.1994, coll. L. K. Ghosh.

Distribution : India : Sikkim (North), Assam, Bihar, Kerala, Punjab, Tamil Nadu and Uttar Pradesh.

ACKNOWLEDGEMENT

The author is thankful to the director, Zoological Survey of India, for his kind permission to undertake the present study. Thankful acknowledgement is due to Dr. S.K. Mitra, Sc F and Dr. M. Datta, Sc. E, for their encouragement and various guidance in course of carrying out the work. The author also thankfully acknowledges the assistance provided by Dr. B. Herting, stuttgart, Germany and Dr. C. Chao, Beijing, China with supply of important literature and Dr. H. Shima of Kyushu University, Japan for his considered opinion on the identity of various species reported in this paper.

SUMMARY

Two new species, viz., *Estheria (Parestheria) intermedia* and *Eurithia indica* are described from the Sikkim state of the Indian union and another nine species, viz., *Hermya beelzebul* (Wiedemann), *Lophosia felderi* (Brauer and Bergenstamm), *Servilia sobria* Walker, *S. subcinerea* Walker, *Linnaemya picta* Meigen, *Carcelia sumatrana* Townsend, *Blepharella latealis* Mc. Quart., *Blpharipa jacobsoni* Townsend and *B. zebina* (Walker) are recorded for the first time from the area. A comprehensive list of all the 15 tachinid species know from the state is provided in the text together with collection data for the species studied, keys for identification of various taxa and their outline distribution.

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INSECTA : DIPTERA : MUSCIDAE

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INTRODUCTION

The family Muscidae is one of the most diversified and economically important group of the Calyptrate Diptera belonging to the suborder Cyclorrhapha. Adult Muscidae are generally small to medium sized flies and seldom exhibit any striking developments of colour or form (Pont, 1972). Adults may be predaceous (subfamilies Coenosiinae and Limnophorinae), saprophagous (subfamily Muscinae), pollenophagous (most of the subfamilies) or haematophagous (subfamily Stomoxyinae). Females are typically oviparous, few are also larviparous. Larvae have varied habits being saprophagous, parasitic and phytophagous.

Muscid fauna from Sikkim has not been known in detail. Emden (1965) recorded 8 species in the "Fauna of India and the adjacent countries" Pont (1981) reported 20 species in 'A catalogue of Diptera of the Oriental region' and his subsequent publication.

However, the present paper is based on the collections of the scientists of the Zoological Survey of India, Calcutta as well as the previously available information. The collections were made by A.K. Hazra (1992), A.R. Lahiri (1992), M. Sil (1992), R.S. Mridha (1992), S.R. Banerjee (1992), S.K. Saha (1993), B.C. Das (1994) and B. Mitra (1998).

The present paper reports twenty two species belonging to 11 genera under 6 subfamilies, of which two species under two genera reported for the first time from this state. The taxonomical keys of subfamilies, genera, etc. have been

followed after Vockeroth (1972), Shinonaga and Singh (1994).

GENERAL MORPHOLOGY

Morphological characters of taxonomic importance are dealt in detail in the 'Fauna of Tripura' by B. Mitra (*in press*).

SYSTEMATIC LIST

Subfamily MUSCINAE

1. *Musca (Byomya) sorbens* Wiedemann
2. *Musca (Eumusca) hervei* Villeneuve
3. *Musca (Musca) domestica* Linnaeus
4. *Musca (Viviparomusca) bezzi* Patton and Cragg
5. *Musca (Viviparomusca) convexifrons* Thomson
6. *Orthellia claripennis* Malloch
7. *Orthellia gavis* (Walker)
8. *Orthellia indica* (Robineau-Desvoidy)
9. *Orthellia timorensis* (Robineau-Desvoidy)
10. *Orthellia viridis* (Wiedemann)
11. *Muscina pascuorum* (Meigen)

Subfamily PHAONIINAE

12. *Atherigona (Atherigona) alpha* Pont
13. *Atherigona (Atherigona) reversura* Villeneuve
14. *Dichaetomyia bibax* Wiedemann
15. *Dichaetomyia quadrata* (Wiedemann)
16. *Gymnodia lasiopa* Emden

Subfamily MYDAIENAE

17. *Myospila bina* (Wiedemann)

Subfamily LIMNOPHORINAE

18. *Lispe orientalis* Wiedemann19. *Lispe sericipalpis* Stein

Subfamily COENOSIINAE

20. *Coenosia humilis* Meigen21. *Orchisia costata* (Meigen)

Subfamily STOMOXYINAE

22. *Stomoxys calcitrans* (Linnaeus)

MATERIAL AND METHOD

Material and method of collections are also dealt in Fauna of Tripura by B. Mitra (in press).

SYSTEMATIC ACCOUNT

Key to the subfamilies

1. Proboscis elongate, strongly sclerotized, adapted for piercing, tapering from a broad base to a slender apex and with atrophied labella; pteropleuron haired; vein M_{1+2} gradually curved forward apically from about middle of last section STOMOXYINAE
- Proboscis moderately weakly sclerotized, not distinctly tapering to apex and with well developed and often fleshy labella; pteropleuron haired or bare; vein M_{1+2} variable, often straight or sharply curved forward near middle of last section 2
2. Pteropleuron at least with a few fine hairs.. 3
- Pteropleuron bare..... 6
3. Pteropleuron with strong hairs along upper margin below base of wing, often with distinct hairs on lower half also; parafacial bare 4

- Pteropleuron with only a row or tuft of a few fine rather short hairs on posterior part of lower half above posterior sternopleural bristle; parafacial usually with fine short hairs throughout its length LIMNOPHORINAE
- 4. Vein M_{1+2} with apical portion curved strongly forward at about middle length; body colour grey to black and often metallic MUSCINAE
- Vein M_{1+2} straight or curved only slightly forward; body non-metallic in colour 5
- 5. Pteropleuron with hairs confined to upper margin below wing base; prosternum bare; hind spiracle without strong black setae in marginal fringe MYDAEINAE
- Pteropleuron with hairs on lower as well as on upper half, prosternum haired, hind spiracle with few to many strong black setae in marginal fringe PHAONIINAE (*Dichaetomyia*)
- 6. Hind tibia with 2 posterodorsal bristles at about $1/3$ rd and $2/3$ rd tibial length; lower stigmatic bristle directed downward; at least 1 presutural and 3 postsutural dorsocentral bristles distinct; much longer and stronger than mesonotal hairs; arista often long plumose COENOSIINAE
- Hind tibia with a single posterodorsal at about $2/3$ rd tibial length, lower stigmatic bristle not directed downward; at most last 2 postsutural dorsocentral distinct, other scarcely separable from rather setulose mesonotal hairs; arista bare or nearly so PHAONIINAE (*Atherigona*, *Gymnodia*)

Subfamily MUSCINAE

Key to the genera

1. Suprasquamal ridge with black setulose hairs on posterior part; bend of vein M_{1+2} angular or in a gentle curve *Orthellia* Robineau-Desvoidy
- Suprasquamal ridge bare, bend of vein M_{1+2} subangular 2

2. Mid tibia with pv seta; vein M_{1+2} sharply bending anteriorly *Musca* Linnaeus
 – Mid tibia without pv seta; hypopleuron setulose just above coxa and vein M_{1+2} broadly rounded *Muscina* Robineau-Desvoidy

Genus *Musca* Linnaeus

1758. *Musca* Linnaeus, *Syst. Nat. Ed.* 10 : 589.

Type-species : *domestica* Linnaeus

Key to the subgenera

1. Propleural depression hairy *Musca* Linnaeus
 – Propleural depression bare 2
 2. Suprasquamal ridge bare *Byomya* Robineau-Desvoidy
 – Suprasquamal ridge setulose
 3. Suprasquamal ridge setulose only anteriorly *Eumusca* Townsend
 – Suprasquamal ridge setulose only posteriorly *Viviparomusca* Townsend

Subgenus *Byomya* Robineau-Desvoidy

1830. *Byomya* Robineau-Desvoidy, *Mém. prés. div. Sav. Acad. Sci. Inst. Fr.* 2: 392.

Type-species : *violacea* Robineau-Desvoidy

1. *Musca (Byomya) sorbens* Wiedemann

1830. *Musca sorbens* Wiedemann, *Aussereurop. zweifl. Insekt.* 2 : 418.

Material examined : 1♂ Khatang, North Sikkim, 12.x. 1992, Coll. A.R. Lahiri; 1♂ 1♀, Khatang, North Sikkim, 12.x. 1992, Coll. S.K. Saha; 2♂♂, Rabong, Jorhang, South Sikkim, 16. x. 1995, Coll. S.C. Mitra.

Diagnosis : Thorax shining black, with a broad glossy black vitta on either side. more or less bifurcated anteriorly, especially in females; 1 acr, 2+4–6 dc, anterior post dc often small in males, if more than 4.

Distribution : Sikkim (North, South) Arunachal Pradesh, Andhra Pradesh, Assam, Bihar, Goa, Tamil Nadu, Uttar Pradesh, West Bengal; China, Christmas Island, Cocos Island, Flores Island, Jawa, Lombok, Malaya, Maldive Islands, Myanmar, Nepal, Pakistan, Peloe Endeh, Philippines, Ryukyu Islands, Simeulue Island, Sumatera, Sumbawa, Sri Lanka, Taiwan, Talaud Islands, Thailand; Ethiopian; Hawaii, Micronesia, South Palaeartic

Remarks : This is the first report from this state.

Subgenus *Eumusca* Townsend

1911. *Eumusca* Townsend, *Proc. ent. Soc. Wash.*, 13 : 170.

Type-species : *corvina* Fabricius

2. *Musca (Eumusca) hervei* Villeneuve

1912. *Musca hervei* Villeneuve, *Annls. Sci. nat. (Zool.)*, (10) 5 : 335.

Diagnosis : Fuscous-black; thorax with four conspicuous rather broad vittae, 1 acr. 2 + 4 strong dc, pleural setae normal; anterior end of suprasquamal ridge with some erect black setulae.

Distribution : Sikkim, Assam, Himachal Pradesh, Punjab, West Bengal; China, Myanmar, Nepal, Sri Lanka, Vietnam; Japan, Ogasawara Gunto (Bonin Islands), Caroline Islands.

Subgenus *Musca* Linnaeus

1915. *Promusca* Townsend, *J. Wash. Acad. Sci.*, 5 : 434.

Type-species : *Musca domestica* Linnaeus

3. *Musca (Musca) domestica* Linnaeus

1758. *Musca domestica* Linnaeus, *Syst. Nat. Ed.* 10 : 589

Material examined : 1♂ 6♀♀, Jorhang, South Sikkim; 5. vi. 1994. Coll. B.C. Das; 2♂♂, Gangtok fish market, East Sikkim, 11. x. 1995, Coll. S.C. Mitra; 3♂♂, 3♀♀, Melli Bazar, South Sikkim, 14.x. 1995, Coll. S.C. Mitra; 1♂ 9♀♀, Pelling, West Sikkim, 21.x. 1995, Coll. S.C. Mitra; 1♂ 2♀♀, Rabong, Jorhang, South Sikkim, 16.x. 1995, Coll. S.C. Mitra; 1♂ 4♀♀, Gezing, Sikkim, 17.x.1995,

Coll. S.C. Mitra; 2 ♀ ♀, Roadside forest near Tikjuk, Gezing, West Sikkim, 10.v. 1998, Coll. B. Mitra, 2 ♂ ♂ 2 ♀ ♀, Tinjir, Namchi, South Sikkim, 30. iv. 1998, Coll. B. Mitra.

Diagnosis : Four black vittae on thorax, inner pair terminating towards posterior end, propleural depression with fine setulose hair; suprasquamal ridge without black setulae, all post dc strong; mid tibia without av and ad setae.

Distribution : Sikkim (South, West and East), Andaman Islands, Andhra Pradesh, Assam, Bihar, Goa, Himachal Pradesh, Karnataka, Kashmir, Maharashtra, Punjab, Tripura; Cosmopolitan.

Subgenus *Viviparomusca* Townsend

Viviparomusca Townsend, 1915, *J. Wash Acad. Sci.*, 5: 435.

Type-species : *bezzi* Patton and Cragg.

Key to the species

1. Eyes distinctly hairy *convexifrons* Thomson
- Eyes with sparse minute hairs *bezzi* Patton & Cragg

4. *Musca (Viviparomusca) bezzi* Patton and Cragg

1913. *Musca bezzi* Patton and Cragg, *Indian J. med. Res.*, 1 : 19.

Material examined : 2 ♀ ♀, Tinjir, Namchi, South Sikkim, 30. iv. 1998, Coll. B. Mitra.

Distribution : Sikkim (South), Assam, Himachal Pradesh Kshmir, Punjab, Tamil Nadu, Uttar Pradesh, Meghalaya, Nepal; East Palaearctic.

5. *Musca (Viviparomusca) convexifrons* Thomson

1869. *Musca convexifrons* Thomson, *K. sevenska Fregatten Eugenies Resa. Zool. Dipt.* : 547

Material examined : 2 ♀ ♀, Roadside forest near Tikjuk, Gezing, West Sikkim, 10.v.1998, Coll. B. Mitra.

Distribution : Sikkim (West), Arunachal Pradesh, Assam, Tamil Nadu, Uttar Pradesh,

West Bengal, China, East Malaysia (Borneo), Jawa, Malaya, Myanmar, Nepal, Philippines, Ryu Kyu-retto (Ryu Kyu Islands), Sri Lanka, Sumatera, Taiwan (Formosa).

Genus *Orthellia* Robineau-Desvoidy

1863. *Orthellia* Robineau-Desvoidy, *Hist. nat. Dipt. env. Paris*. 12 : 837.

Type-species : *rectinervis* Robineau-Desvoidy.

Key to the species

1. Thorax without post dc. anterior mesopleural absent, parafrontalia polished, interfrontalia narrower than parafrontalia in females 2
- Thorax with post dc; anterior mesopleural present and distinct; interfrontalia wider than parafrontalia in female 3
2. Prsc acr absent or indistinct, post ia almost always absent; body less robust; wing hairs spread over a large part, especially more or less whole anterior length *claripennis* (Malloch)
- Prsc acr distinct, post ia almost always present; body stout; on the wing hairs restricted to a smaller part of apex of discal cell *gavisa* (Walker)
3. Thorax with a pair of strong prst acr and 3 pairs of post dc; M_{1+2} with deep behind bend. wing entirely hairs; antennae black to fuscus, parafrontalia shining blue green, interfrontalia narrower than parafrontalia *viridis* (Wiedemann)
4. Discal cell wholly hairy, M_{1+2} usually without a deep behind bend; mesonotum either conspicuously dusted in front or with only 3 post dc, anterior two subequal; mid tibia without an ad seta *timorensis* (Robineau-Desvoidy)
- Discal cell with a bare strip, M_{1+2} with a distinct deep behind bend; mesonotum not markedly dusted in front and with more than 3 post dc,

anterior 2-4 inconspicuous
 *indica* (Robineau-Desvoidy)

6. *Orthellia claripennis* Malloch

1923. *Orthellia claripennis* Malloch, *Ann. Mag. nat. Hist.*,
 (9) 12 : 515.

Material examined : 1♀, Deorali, Gangtok,
 East Sikkim, 25. iv. 1998, Coll. B. Mitra.

Distribution : Sikkim (East), Arunachal Pradesh, Assam, Bihar, Karnataka, Kerala, Tamil Nadu, West Bengal, Jawa, Lombok, Malaya, Nepal, Philippines, Sumatera, Sumbawa.

7. *Orthellia gavis* (Walker)

1859. *Musca (Neomyia) gavis* Walker, *J. Proc. Linn. Soc. Lond., Zool.* 4 : 138.

Material examined : 1♀, Upper hill slope on Rangeet river, Legship, South Sikkim, 9.v. 1998, Coll. B. Mitra.

Distribution : Sikkim (South), Assam, Himachal Pradesh, Kashmir, Punjab, Uttar Pradesh, West Bengal; Jawa, Nepal, Pakistan, Simeule Island, Sumatera, Tamaon Island.

8. *Orthellia indica* (Robineau Desvoidy)

1830. *Lucilia indica* Robineau-Desvoidy, *Mém. Prés. div. Sav. Acad. Sci. Inst. Fr.*, 2 : 453.

Material examined : 2♂♂ 2♀♀, Dambing 12 kms from Lachung, North Sikkim, 20. iv. 1992, Coll. R.S. Mridha; 3♂♂, 11♀♀, Lanchung T.S.P. farm, North Sikkim, 21. iv. 1992, Coll. A.R. Lahiri, 2♀♀, Melli Bazar, South Sikkim 14.x. 1995, Coll. S.C. Mitra.

Distribution : Sikkim (North and South), Andaman Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Madhya Pradesh, Maharashtra, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal; Jawa, Laos, Malay, Myanmar, Philippines, Ryukyu Islands, Sumatera, Sumbawa and Thailand.

Remarks : This is the first report from the state of Sikkim.

9. *Orthellia timorensis* (Robineau-Devvoidy)

1830. *Lucilia timorensis* Robineau-Desvoidy, *Mém. Prés. Div. Sav. Acad. Sci. Inst. Fr.*, 2: 460.

Material examined : 2♀♀, Singhik, North Sikkim, 3.ix. 1992, Coll. A.K. Hazra, 1♀, Manjhit, South Sikkim, 22. ix. 1993, Coll. S.K. Saha; 2♀♀, Jorthang, South Sikkim, 4. vi. 1994, Coll. B.C. Das; 1♂, Melli Bazar, South Sikkim, 14.x. 1995, Coll. S.C. Mitra; 1♂ 4♀♀, Pelling, West Sikkim, 21.x. 1995, Coll. S.C. Mitra.

Distribution : Sikkim (North, South, West), Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Kerala, Tamil Nadu, Orissa, Uttar Pradesh, West Bengal; Bangladesh, China, Dammar Islands, Flores Island, Jawa, Malaya, Myanmar, Nepal, Philippines, Ryukyu Islands, Simeulae Island, Sulawesi, Sumatera, Taiwan, Thailand, Vietnam, Japan, Papuan Subregion.

10. *Orthellia viridis* (Wiedemann)

1824. *Idia viridis* Wiedemann, *Analecta Ent.*, : 50.

Material examined : 1♂ 1♀, Tung, 10 kms South of Chungthang, North Sikkim, 14. iv. 1992, Coll. S.R. Banerjee; 1♂ 5♀♀, 2kms South of State, P.W.D. Guest House, Chungthang, North Sikkim, 14. iv. 1992, Coll. R.S. Mridha; 1♀, Tadong, Gourigaon, East Sikkim, 7.x. 1995, Coll. S.C. Mitra.

Distribution : Sikkim (North and East), Himachal Pradesh, Kashmir, Punjab, Uttar Pradesh, West Bengal; China, Nepal, Pakistan, Tibet, Hawaii, Holarctic.

11. *Muscina pascuorum* (Meigen)

1826. *Musca pascuorum* Meigen, *Syst. Besch. europ. zweifl. Insekt.*, 5 : 74.

Material examined : 1♀, Gezing, 17.x. 1995, West Sikkim, Coll. S.C. Mitra; 1♀, road side forest near Tikjuk, Gezing, 10.v. 1998, Coll. B. Mitra.

Diagnosis : Fuscous-black with apical part of scutellum and in males lateral parts of abdomen dull rufous translucent, thorax with 3 + 2 acr, 2-3 + 4 dc, 2 ia, 3 humerals.

Distribution : Sikkim (West), Assam, West Bengal; Pakistan, Holarctic.

Subfamily PHAONIINAE

Key to the genera

1. Metathoracic spiracles with strong bristles on anterior margin *Dichaetomyia* Malloch
- Metathoracic spiracles without strong bristles 2
2. Hind tibia with a single postero-dorsal bristle at about 2/3 tibial length, at most last 2 post sutural dorsocentral distinct. *Atherigona* Rondani
- Hind tibia without postero dorsal bristle, 2 post dc *Gymnodia* Robineau-Desvoidy

Genus *Atherigona* Rondani

1865. *Atherigona* Rondani, *Dipterol. ital. Prodr.*, 1 : 97.

Type-species : *Anthomyia varia* Meigen.

Subgenus *Atherigona* Rondani

1. Fore tibia yellow only on basal quarter to fifth; fore femur darkened on apical half; tergite 5 always unmarked; hypopygial prominence with two lateral arms situated on a small knob arising from tergite, and not so broadly separated; trifoliate process with stalk of uniform width; shoulders well-developed; median piece rather sinuous or angled at apical quarter in lateral view *Reversura* Villeneuve
- Fore femur entirely yellow; fore tibia mostly yellow, darkened only at tip; tergite 5 without dark spots; hypopygial prominence with two simple diverging arms; rounded or truncate at tips; trifoliate process entirely sclerotized and dark brown with sloping shoulders; median piece elbowed at middle in lateral view *Alpha* Pont

12. *Atherigona* (*Atherigona*) *alpha* Pont

1981 *Atherigona* (*Atherigona*) *alpha* Pont, *Bull. ent. Res.*, 71 : 371-393.

Distribution : Sikkim, Myanmar, Australia.

13. *Atherigona* (*Atherigona*) *reversura*
Villeneuve

1936. *Atherigona reversura* Villeneuve, *Ark. Zool.*, 27A (36) : 11.

Distribution : Sikkim, Andhra Pradesh, Assam, Maharashtra, Uttar Pradesh, West Bengal; Kalimantan, China, Jawa, Lombok, Myanmar, Malaya, Philippines, Sri Lanka, Sumbawa, Hawaii, Japan.

Genus 5 *Dichaetomyia* Malloch

Dichaetomyia Malloch, 1921, *Ann. Mag. nat. Hist.*, (9) 7 : 163.

Type-species : *polita* Malloch.

Key to the species

1. Ventral surface of scutellum without fine pale golden hairs (sometimes lower part of lateral surface with a few black hairs); 4 post *quadrata* (Wiedemann)
- Ventral surface of scutellum with fine golden hairs, scutellum setulose laterally; 3 post *bibax* (Wiedemann)

14. *Dichaetomyia bibax* (Wiedemann)

1830. *Anthomyia bibax* Wiedemann, *Aussereurop. zweifl. Insekt.*, 2 : 431.

Material examined : 4 ♀♀, Yumthang, North Sikkim, 17. iv. 1992, Coll. R.S. Mridha.

Distribution : Sikkim (North), Assam, Himachal Pradesh, Uttar Pradesh, West Bengal; China, Jawa, Malaya, Myanmar, Philippines, Ryukyu Island, Sabah, Sumatera, Taiwan, Japan.

15. *Dichaetomyia quadrata* (Wiedemann)

1824. *Anthomyia quadrata* Wiedemann, *Analecta Ent.*, : 52.

Material examined : 1 ♀, Yumthang, North Sikkim, 17. iv. 1992, Coll. R.S. Mridha.

Distribution : Sikkim (North), Assam, Tamil Nadu; China, Flores Island, Jawa, Lombok,

Malaya, Myanmar, Philippines, Ryukyu Islands, Sarawak, Simeulue Island, Sri Lanka, Sumatera, Taiwan, Melanesia.

Genus *Gymnodia* Rohineau-Desvoidy

1863. *Gymnodia* Robineu-Desvoidy, *Hist. nat. Dipt. env. Paris*, 2 : 635.

Type-species: *partensis* Robineau-Desvoidy.

16. *Gymnodia lasiopa* Emden

1965. *Gymnodia lasiopa* Emden, *Fauna India*, Muscidae, 1 : 636.

Diagnosis : Fuscous black with brown dust; in males long and erect prst acr, prsc indistinct or small, 2 + 4 strong dc.

Distribution : Sikkim, Himachal Pradesh, Punjab, Myanmar.

C. Subfamily MYDAEINAE

Genus *Myospila* Rondani

1856. *Myospila* Rondani, *Dipterol. ital Prodr.*, 1 : 91.

Type-species : *Musca mediatubunda* Fabricius.

17. *Myospila bina* (Wiedemann)

1830. *Anthomyia bina* Wiedemann, *Aussereurop. zweifl. Insekt.*, 2 : 426.

Material examined : 10+, Rabong, Jorhang, South Sikkim, 16.x. 1995, Coll. S.C. Mitra.

Diagnosis : Black with rather dense grey, in places somewhat greenish or bluish-grey dust and pale testaceous antennae; thorax with the four vittae slightly more distinct; wings with apical part at more strongly upcurved.

Distribution : Sikkim (South), Bihar, Himachal Pradesh, Tamil Nadu, West Bengal; Bangladesh, China, Jawa, Malay, Myanmar, Philippines, Sri Lanka, Sumatera, Taiwan, Timor.

D. Subfamily LIMNOPHORINAE

Genus *Lispe* Latreille

1796. *Lispe* Latreille, *Précis caract. gen. Ins.*, 169.

Type-species : *Musca tentaculata* (De Geer)

Key to the species

1. Body non-metallic, greyish brown to grey pollinose, third antennal segment black or dark brown, ventral surface of fore femur without strong bristles; medium-sized species
..... *sericipalpis* Stein
- Body non-metallic, greyish brown to grey pollinose, third antennal segment black; palpi yellow or orange at least apices, hind metatarsus normal; body yellowish grey or ashy grey, cell R_5 not narrow apically
..... *orientalis* Wiedemann

18. *Lispe orientalis* Wiedemann

1824. *Lispe orientalis* Wiedemann, *Analecta Ent.*, : 51.

Material examined : 6 ♀ ♀, Khatang, North Sikkim, 12. iv. 1992, Coll. J.R. Pradhan, 5 ♂ ♂, 7 ♀ ♀, Mangan, North Sikkim, 13. iv. 1992, Coll. A.R. Lahir, 2 ♂ ♂, 3 ♀ ♀, Ranipool, East Sikkim, 30. iv. 1992, Coll. R.S. Mridha; 3 ♀ ♀, Gangtok fish market, East Sikkim, 11.x. 1992, Coll. S.C. Mitra, 2 ♂ ♂, 4 ♀ ♀, Khatang, North Sikkim, 12. x. 1992, Coll. R.S. Mridha, 3 ♂ ♂, 6 ♀ ♀, Mangan near Bus Stand, North Sikkim, 13.x. 1992, Coll. A.R. Lahiri, 1 ♂, Jorhang, South Sikkim, 2.vi. 1994, Coll. B.C. Das, 4 ♂ ♂, 6 ♀ ♀, Tadong, Gaurigaon, East Sikkim, 7.x. 1995, Coll. S.C. Mitra; 6 ♂ ♂, 3 ♀ ♀, Tinjir, Namchi, South Sikkim, 30. iv. 1998, Coll. B. Mitra; 2 ♂ ♂, 2 ♀ ♀, Dambulana, Namchi, South Sikkim, 30. iv. 1998, Coll. B. Mitra.

Distribution : Sikkim (North, South & East), Assam, Bihar, Himachal Pradesh, Madhya Pradesh, Uttar Pradesh, West Bengal; China, Flores Island, Malaya, Myanmar, Pakistan, Sri Lanka, Sumatera, Taiwan, Japan.

19. *Lispe sericipalpis* Stein

1904. *Lispe sericipalpis* Stein, *Tijdschr. Ent.*, 47 : 110.

Distribution : Sikkim, Himachal Pradesh, Uttar Pradesh, West Bengal; Bali, Taiwan, Jawa, Lombok, Myanmar, Nepal, Sri Lanka, Sumatera.

E. Subfamily COENOSIINAE

Key to the genera

1. Head with 1 pair of reclinate frontal bristles (ori); hind tibia usually with 1 ad (sometimes absent) *Coenosia* Meigen
- Head with 2 pairs of reclinate frontal bristles; hind tibia with 2 ad seta *Orchisia* Rondani

Genus *Coenosia* Meigen

1826. *Coenosia* Meigen, *Syst. Besch. europ. zweifl. Insekt.* 5 : 210.

Type-species : *Musca tigrina* Fabricious

20. *Coenosia humilis* Meigen

1826. *Coenosia humilis* Meigen, *Syst. Besch. europ. zweifl. Insekt.* 5 : 220.

Distribution : Sikkim, Tamil Nadu, Himachal Pradesh, Uttar Pradesh, West Bengal; Flores Island, Jawa, Lombok, Nepal, Sri Lanka, Sumbawa; Ethiopian; Palaearctic.

Genus *Orchisia* Rondani

1877. *Orchisia* Rondani, *Dipterol. ital. Prodr.*, 6 : 16.

Type-species: *Sapromyza costata* Meigen

21. *Orchisia costata* (Meigen)

1826. *Sapromyza costata* Meigen, *Syst. Besch. europ. zweifl. Insekt* 5 : 266.

Distribution : Sikkim, Assam; China, Flores Island, Nepal, Pakistan, Philippines, Sri Lanka, Taiwan; Australasian; Ethiopian; Palaearctic.

Subfamily STOMOXYINAE

Genus *Stomoxys* Geoffroy

Stomoxys Geoffroy, 1762, *Hist. abreg. Ins. Paris.*, 2 : 449.

Type-species : *calcitrans* (Linnaeus)

22. *Stomoxys calcitrans* (Linnaeus)

1758. *Conops calcitrans* Linnaeus, *Syst. Nat. Ed. 10*, 1 : 604.

Material examined : 1 ♀, Tadong, Gourigaon, East Sikkim, 7.x. 1995, Coll. S.C. Mitra; 1 ♀ Rabong, Jorthang, South Sikkim, 16.x. 1995, Coll. S.C. Mitra; 2 ♂♂, 1 ♀ Upper Pakhrin, Namchi, South Sikkim, 29. iv. 1998, Coll. B. Mitra; 1 ♂ 1 ♀ Upper Pakhrin, Namchi, South Sikkim, 29. iv. 1998, Coll. B. Mitra; 1 ♂ 1 ♀ Tinjir, Namchi, South Sikkim, 30. iv. 1998, Coll. B. Mitra; 4 ♂♂, 3 ♀♀ Upper hill slope on Rangeet river near Legship, South Sikkim, 4.v. 1998, Coll. B. Mitra; 2 ♂♂, 4 ♀♀ Rangeet river side hill slope, Legship, South Sikkim, 9.v. 1998, Coll. B. Mitra; 2 ♂♂, road side forest near Tikjuk, Gey zing, West Sikkim, 10.v. 1998, Coll. B. Mitra; 4 ♂♂, 4 ♀♀ near Bull shed, Karfectar, Jorthang, South Sikkim, 13.v. 1998, Coll. B. Mitra.

Diagnosis : Propleural depression and hypopleuron embossed with erect setulose hairs, apex of proboscis slender; stpl 0 + 1; arista pectinate dorsally.

Distribution : Sikkim (East, West and South), Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Goa, Kerala, Maharashtra, Orissa, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal; Bali, Bangladesh, China, Jawa, Malaya, Myanmar, Nepal, Pakistan, Philippines, Simeulue Island, Sri Lanka, Sulawesi, Sumatera, Sumbawa, Taiwan, Thailand, Vietnam; Cosmopolitan.

DISCUSSION

The distribution pattern of 22 species of the Muscidae so far known in the state of Sikkim shows that all the species are predominantly Oriental in distribution. Of them, 6 species (27%) are restricted to the Oriental region, whereas the remaining 16 species (73%) extend beyond the limit of this region.

The Sikkimese Muscidae are known to have 11 genera. Of these genera *Orthellia* (5 species) and *Musca* (5 species) have shared the major bulk of the fauna, whereas *Atherigona* (2 species), *Dichaetomyia* (2 species), *Lispe* (2 species), *Coenosia* (1 species), *Gymnodia* (1 species), *Orchisia* (1 species), *Muscina* (1 species),

Stomoxys (1 species) and *Myospila* (1 species) have registered below one half only.

However, the species restricted only to the Oriental region are *Orthellia claripennis* Malloch, *O. indica* (Robineau-Desvoidy), *Dichaetomyia quadrata* (Wiedemann), *Myospila bina* (Wiedemann), *Lispe sericipalpis* Stein and *Gymnodia lasiopa* Emden. Of the two species of *Orthellia*, *claripennis* is distributed throughout Malay, Sumatera, Jawa as far as Philippines. And *indica* extends towards Myanmar, Laos, Thailand and Sumatera in the south, and Philippines in the east. Among the other 4 species of this region, *Dichaetomyia quadrata* and *Myospila bina* are distributed in all three subregions : Indian subregions, Indo-Chinese and Indo-Malayan whereas *Lispe sericipalpis* is distributed in Sri Lanka and Myanmar in the Indian subregion in addition to the Indo-Malayan subregion. *Gymnodia lasiopa* extends its range outside India upto Myanmar.

The other 3 species of the genus *Orthellia*, *gavisa* (Walker) and *timorensis* (Robineau-Desvoidy) have advanced towards the Palaearctic region, and *viridis* (Wiedemann) furthermore to the Holarctic region.

The only other five membered group of the genus *Musca*, found in Sikkim is certainly distributed throughout the Oriental and the Palaearctic regions except *Musca (Byomya) sorbens* that extends its range towards the Ethiopian region and Micronesia as well as Hawaii and *Musca (Musca) domestica* is distributed throughout the globe, like *Stomoxys calcitrans*, the lone species of the Stomoxyinae.

However, *Lispe orientalis*, *Dichaetomyia bibax* and *Atherigona (Atherigona) reversura* are restricted to their distribution within the Oriental and the Palaearctic regions. To be precise, *Atherigona (Atherigona) reversura* shows its distribution only in the Indian and Indo-Malayan subregions, whereas the other two species do it in all three subregions.

The other species of the genus *Atherigona*, *Atherigona (Atherigona) alpha* extends its range only up to Myanmar of the Oriental region with a long bound over the rest of the region to the Australian region.

Both the species of the subfamily Coenosiinae, *Orchisia costata* and *Coenosia humilis* are distributed also in the Oriental, the Palaearctic and the Ethiopian regions on either side, but the former extends its range furthermore the Australian region, whereas *Orchisia costata* is distributed only in the Indian and Indo-Malayan subregions. *Coenosia humilis* Meigen distributed only in the Indian and Indo-Chinese subregions of the Oriental region. Finally, *Muscina pascuorum* seems to be originated in the Holarctic regions, extending its range southward in the Himalayan belt.

From the above analysis of the numerical strength of species in the Sikkim, it appears majority of the species have their strong affinities to that of Indo-Malayan subregion (17 spp.) rather than Indo-Chinese subregion (14 spp) within the Oriental region and outside the Oriental region, the Palaearctic region (14 spp) claims much more than the Australian (4 spp) and the Ethiopian (5 spp) regions.

But this zoogeographical analysis, however remains tentative due to poor collection of Muscid fauna from the state. So, it may need still a thorough and intensive exploration for a fuller knowledge on the species diversity of the family Muscidae.

ACKNOWLEDGEMENT

The author is grateful to Dr. J.R.B. Alfred, Director, Zoological Survey of India, Calcutta for the facilities provided. Thanks are also due to Dr. S.K. Mitra, Scientist 'SF' (Retd.) for various helps. The author is also grateful to Dr. M. Datta, Scientist 'E' (Retd.) for critically going through the manuscript of the paper.

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