FAUNA OF MADHYA PRADESH (Including Chhattisgarh)

PART - 3

ZOOCLOGICAL SURVEY OF INDIA
FAUNA OF MADHYA PRADESH
(Including Chhattisgarh)
(PART-3)

Edited by
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INTRODUCTION

The phylum Mollusca among invertebrate is one of the important second largest group of animal kingdom on the basis of its species number. They found on land, freshwater and most of them are marine. Out of the seven classes of Mollusca so far only five classes found in India. We are dealing herewith only two classes i.e. Gastropoda and Bivalvia.

Mollusca are soft bodied animals and the body in many species is protected by calcareous shell. We are giving herewith only freshwater and land Mollusca. Terrestrial Mollusca are generally found near moist places, under leaf; bark of tree and under stones, whereas freshwater Mollusca are found in various places like lentic and lotic water or embankment or on weed grasses or among macrophytes. The estimated number of Mollusca today varies from 80,000 species Boss (1971) to 1,35,000 species Abbott (1989).


From the literature compilation and identified collections, the molluscan fauna of Madhya Pradesh is represented by 72 species belonging to 38 genera, under 24 families. This list of land and freshwater Mollusca of Madhya Pradesh State is given on the basis of past and present records and from the recent surveys made in this area. The key is given in the text is based on Ramakrishna and Dey (2007) and Mitra et al. (2004) for Freshwater and Land Mollusca respectively.

SYSTEMATIC LIST

(A) FRESHWATER MOLLUSCA

Phylum MOLLUSCA
Class GASTROPODA
Order MESOGASTROPODA
Superfamily VIVIPAROIDEA
Family VIVIPARIDAE (pond snails)
Subfamily BELLAMYINAE

Genus *Bellamya* Jousseaume, 1886
1. *Bellamya bengalensis* form *typica* (Lamarck)
2. *Bellamya bengalensis* form *doliaris* (Gould)
3. *Bellamya bengalensis* form *eburnea* (Annandale)
4. *Bellamya bengalensis* form *mandiensis* (Kobelt)
5. *Bellamya dissimilis* (Mueller)

Family AMPULLARIDAE

Genus *Pila* (Bolten) Roeding. 1798
6. *Pila globosa* (Swainson)
7. *Pila virens* (Lamarck)
Superfamily LITTORINOIDEA
Family BITHYNIIDAE
Genus *Bithynia* Leach, 1818
Subgenus *Digoniostoma* Annandale, 1920
8. *Bithynia (Digoniostoma) cerameopoma* (Benson)
9. *Bithynia (Digoniostoma) pulchella* (Benson)
Family THIARIDAE
Subfamily THIARIINAE
Genus *Thiara* Roding, 1786
Subgenus *Thiara* s. str.
10. *Thiara (Thiara) scabra* (Muller)
11. *Thiara (Thiara) rudis* (Lea)
Genus *Melanoides* Olivier, 1804
12. *Melanoides tuberculata* (Mueller)
Genus *Tarebia* H & A Adams, 1854
13. *Tarebia granifera* (Lamarck)
14. *Tarebia lineata* (Gray)
Subclass PULMONATA
Order BASOMMATOPHORA
Superfamily LYMNAEOIDEA
Family LYMNAEIDAE
Genus *Lymnaea* Lamarck, 1799
15. *Lymnaea (Pseudosuccinea) acuminata* form. typica Lamarck
16. *Lymnaea (Pseudosuccinea) acuminata* form brevissima (Annandale & Rao)
17. *Lymnaea (Pseudosuccinea) acuminata* form chlamys Benson
18. *Lymnaea (Pseudosuccinea) acuminata* form gracilior Martens
19. *Lymnaea (Pseudosuccinea) acuminata* form patula Troschel
20. *Lymnaea (Pseudosuccinea) acuminata* form rufescens Gray
21. *Lymnaea (Pseudosuccinea) luteola* form typica Lamarck
22. *Lymnaea (Pseudosuccinea) luteola* form australis Annandale & Rao
23. *Lymnaea (Pseudosuccinea) luteola* form impura Troschel
24. *Lymnaea (Pseudosuccinea) luteola* form ovalis Gray
25. *Lymnaea (Pseudosuccinea) luteola* form succinea Deshayes
Superfamily PLANORBOIDEA
Family PLANORBIDAE
Subfamily PLANORBINAE
Genus *Gyraulus* Charpentier, 1837
26. *Gyraulus convexiusculus* (Hutton)
27. *Gyraulus labiatus* (Benson)
Family BULLINIDAE
Subfamily BULININAE
Genus *Indoplanorbis* Annandale & Prashad, 1921
28. *Indoplanorbis exustus* (Deshayes)
Class BIVALVIA
Subclass PTERIOMORPHIA
Order ARCOIDEA
Superfamily ARCOIDEA
Family ARCIDAE
Subfamily ANADARINAE
Genus *Scaphula* Benson, 1834
30. *Scaphula celox* Benson, 1836
Subclass PALEOHETERODONTA
Order TRIGOINOIDA
Superfamily UNIONOIDEA
Family UNIONIDAE
Subfamily AMBLEMINAE
Tribe AMBLEMINI
Genus *Lamellidens* Simpson, 1900
31. *Lamellidens corrianus* (Lea)
32. *Lamellidens marginalis* (Lamarck)
Genus *Parreysia* Conrad, 1853
Subgenus *Parreysia* s. st.
33. *Parreysia (Parreysia) corrugata* Mueller
34. *Parreysia (Parreysia) corrugata* (Mueller)  
   subsp. *nagpoorensis* (Lea)
35. *Parreysia (Parreysia) favidens* (Benson)
36. *Parreysia (Parreysia) rajahensis* (Lea)  
   Subgenus *Radiatula* Simpson, 1900
37. *Parreysia (Radiatula) occata* (Lea)
38. *Parreysia (Radiatula) shurtleffiana* (Lea)  
   Subclass HETERODONTA  
   Order VENEROIDA  
   Superfamily CORBICULOIDEA  
   Family CORBICULIDAE  
   Genus *Corbicula* Mergerle von Muhlfeld
39. *Corbicula striatella* Deshayes
40. *Corbicula occidens* Deshayes
41. *Corbicula inflata* Clessin
42. *Corbicula pica* Clessin  
   Family PISIDIIDAE  
   Genus *Pisidium* Pfeiffer  
   Subgenus *Afropisidium* Kuiper, 1962
43. *Pisidium (Afropisidium) nevillianum* Theobald  
   Genus *Sphaerium* Scopoli, 1777
44. *Sphaerium indicum* Deshayes  
   Order SYSTELLOMMATOPHORA  
   Family VERONICELLIDAE  
   Genus *Laevicaulis* Simroth, 1913
45. *Laevicaulis alte* (Ferussac)  
   (B) LAND MOLLUSCA  
   Phylum MOLLUSCA  
   Class GASTROPODA  
   Subclass PROSOBRANCHIA  
   Order MESOGASTROPODA  
   Subclass PULMONATA  
   Order STYLOMMATOPHORA  
   Family PUPILLIDAE  
   Subfamily PUPILLINAE  
   Genus *Pupillo* Leach in Fleming, 1828
46. *Pupilla diopsis*, Benson  
   Genus *Pupoides* Pfeiffer, 1854
47. *Pupoides tutulus* (Reeve)  
   Family VERTIGINIDAE  
   Subfamily TRUNCATELLININAE  
   Genus *Boysia* Pfeiffer, 1849
48. *Boysia boysi* Pfeiffer  
   Subfamily GASTROCOPTINAE  
   Genus *Gastrocopta* Wollaston, 1878
49. *Gastrocopta bathyodon* Benson  
   Family CERASTUIDAE  
   Genus *Cerastua* Strand, 1928
50. *Cerastua abyssicus* Pfeiffer  
   Genus *Rachis* Albers, 1850
51. *Rachis punctatus* (Anton)  
52. *Rachis bengalensis* Lamarck  
53. *Rachis praetermissus* Blanford  
   Family FERUSSACIIDAE  
   Genus *Cecilioides* Ferussac, 1807  
   Subgenus *Geostilbia* Crosse, 1867
54. *Cecilioides (Geostilbia) balanus* (Reeve)  
55. *Cecilioides (Geostilbia) bensoni* Gude  
   Genus *Coilostele* Benson, 1864
56. *Coilostele scalaris* Benson  
   Family SUBULINIDAE  
   Subfamily SUBULININAE  
   Genus *Subulina* Beck, 1837
57. *Subulina octona* (Bruguiere)  
   Genus *Glessula* Von Martens, 1850
58. *Glessula paupercula* (Blanford)  
59. *Glessula mullorum* (Blanford)  
   Genus *Lamellaxis* Strebel and Pfeffer, 1882  
   Subgenus *Allopeas* H.B. Baker, 1935
60. *Lamellaxis (Allopeas) gracilis* (Hutton)  
   Subfamily RUMININAE  
   Genus *Zootecus* Westerlund, 1887
61. *Zootecus chion* (Pfeiffer)  
62. *Zootecus insularis* (Ehrenberg)  
   Family ACHATINIDAE  
   Genus *Achatina* Lamarck, 1799  
   Subgenus *Lissachatina* Bequaert, 1951
63. *Achatina (Lissachatina) fulica fulica* (Bowdich)
Family STREPTAXIDAE
Subfamily ENNEINAE
Genus *Sinoennea* Kobelt, 1904
64. *Sinoennea planguncula* (Benson)  
Family SUCCINEIDAE  
Subfamily CATINELLINAE  
Genus *Quickia* Odhner, 1950
65. *Quickia gravelyi* (Rao)
Family HELICARIONIDAE  
Subfamily SESARINAE  
Genus *Kaliella* Blanford 1863
66. *Kaliella barrackporensis* Pfeiffer  
Family ARIOPHANTIDAE  
Subfamily ARIOPHANTINAE  
Genus *Ariophanta* Desmoulins, 1829
67. *Ariophanta laevipes* (Muller)  
Genus *Cryptozona* Morch, 1872
68. *Cryptozona semirugata* (Beck)  
Subfamily MACROCHLAMYDINAE  
Genus *Macrochlamys* Benson, 1832
69. *Macrochlamys indica* (Godwin & Austen)  
Family CAMAENIDAE  
Subfamily CAMAENINAE  
Genus *Landouria* Godwin-Austen, 1918
70. *Landouria hengdanensis* Godwin-Austen  
Genus *Trachia* Albers, 1860
71. *Trachia asperella* (Pfeiffer)
72. *Trachia crassicostata* (Benson)

SYSTEMATIC ACCOUNT
A) FRESHWATER MOLLUSCA

Key to the families of the Order Mesogastropoda (Freshwater)

1. Shell limpet shaped, without spiral coil .......  
   .................................................. ANCYLIDAE
   – Shell spirally coiled .................................2
2. Shell without operculum .............................3  
   – Shell with operculum .................................6
3. Shell discoidal or when extended sinistrally  
   coiled .....................................................4
   – Shell dextrally coiled .................. LYMNAEIDAE
4. Shell sinistrally coiled; columnar axis twisted;  
   animals with triangular tentacles ......................  
   .................................................. PHYSIDAE
   – Shell discoidal or extended; columnellar axis  
   not twisted; animals with filiform tentacles5
5. Shell discoidal (disc shaped); large, aperture  
   ear shaped ............................................. BULLINIDAE
   – Shell discoidal or planispiral; small with small  
   aperture ............................................ PLANORBIDAE
6. Operculum with concentric lines ................. 7
   – Operculum with spiral lines .......................8
7. Shell pyramidal; whorls regularly increasing;  
   operculum horny; animals with gills only,  
   labial palps absent .............................. VIVIPARIDAE
   – Shell globose; bodywhorl inflated and larger  
   than spire; operculum calcareous animals with  
   gills and labial palps ........... AMPULARIDAE
8. Shell turreted or globose; mantle broader  
   fringed and with brood pouch ............... 9
   – Shell globose or conical, mantle broader not  
   fringed, without brood pouch .................. 10
9. Shell elongate, turreted; columnar callus  
   indistinct; operculum oblong with a terminal  
   nucleus ............................................ THIARIDAE
   – Shell either roundly ovate or elongate, turreted;  
   columnar callus distinct; operculum round  
   with usually central or subcentral nucleus  
   ........................................... PLEUROCERIDAE
10. Animal with gill, generally found in stagnant  
    freshwaters and often extending into brackish  
    waters ........................................ 11
    – Animal with both gill and branchial chamber,  
    found in hill streams .................. LITIORINIDAE
11. Operculum calcareous and concentric, as large  
    as aperture; verge bifurcate .......................  
    ........................................ BITHYNIIDAE
   – Operculum corneous, smaller than aperture;  
   verge not bifurcate ............ STENOTHYRIDAE
Phylum MOLLUSCA
Class GASTROPODA
Order MESOGASTROPODA
Superfamily VIVIPAROIDEA
Family VIVIPARIDAE (Pond snails)
Genus *Bellamya* Jousseaume, 1886

1. *Bellamya bengalensis* form *typica* (Lamarck)


*Diagnostic characters*: Shell thin, spire and body whorl of about equal height. Whorls gradually increasing, less rounded and with rather straight sides. Aperture subcircular with a narrow black margin. Dark bands variable and irregular, alternating broad and narrow bands.


*Distribution*: Common throughout India. Madhya Pradesh: Satna, Panna, Hoshangabad, Betul, Mandsaur, Khandwa, Balaghat, Chhindwara, Raigarh, Ujjain, Bhind, Morena.

*Elsewhere*: Myanmar.

2. *Bellamya bengalensis* form *doliaris* (Gould)


*Diagnostic characters*: Shell smaller and more conical, last whorl distinctly biangulate.

*Material examined/Source*: Ramakrishna and Dey (2007)

*Distribution*: India: Madhya Pradesh, Andhra Pradesh, Bihar, Jharkhand, Maharashtra, Orissa, West Bengal.

*Elsewhere*: Myanmar.

*Remarks*: Shell with two spiral ridges or thickened dark bands on the body whorl.
3. *Bellamya bengalensis* form *eburnea*  
(Annandale)  
1921. *Viviparus bengalensis* race *eburnean* Annandale,  
Rec. Indian Mus., 22 : 274, pl. 2. Fig. 1-2.  
1989. *Bellamya bengalensis* form *eburnea* : Subba Rao,  
Handbook : *Freshwater mollusks of India* : 47.  
2007. *Bellamya bengalensis* form *eburnea* : Ramakrishna  

**Diagnostic characters** : Shell narrow with smaller aperture, whorls much less inflated with distinct flattening below the sutures. Body whorl showing a tendency to become biangulate.  

**Material examined/Source** : Ramakrishna and Dey (2007).  

**Distribution** : India : Madhya Pradesh, Andhra Pradesh, Maharashtra, Orissa and West Bengal.  

Elsewhere : Bangladesh, Myanmar, Pakistan, Malaysia, Sri Lanka.  

4. *Bellamya bengalensis* form *mandiensis*  
(Kobelt)  
1908. *Viviparus bengalensis* var. *mandiensis* Kobelt, in  
Martini Chemnitz, *Conch. Cab.* 2 : 414, Pl. 77, figs,  
8-9.  
1989. *Bellamya bengalensis* form *mandiensis* : Subba Rao,  
2007. *Bellamya bengalensis* form *mandiensis* : Ramakrishna  

**Material examined/Source** : Ramakrishna and Dey (2007).  

**Distribution** : India : Madhya Pradesh, Maharashtra, Bihar, Gujarat, Punjab, Rajasthan, Uttar Pradesh and West Bengal.  

Elsewhere : Myanmar, Bangladesh, Sri Lanka.  

5. *Bellamya dissimilis* (Mueller)  
2007. *Bellamya dissimilis* : Ramakrishna and Dey,  

**Diagnostic characters** : Shell small, high and narrow, spire swollen, suture deeply impressed, without dark spiral bands. Body whorl subangulate at the periphery.  

**Material examined/Source** : Ramakrishna and Dey (2007).  

**Distribution** : India : Common throughout including Madhya Pradesh.  

Elsewhere : Bangladesh, Myanmar, Pakistan, Malaysia, Sri Lanka.  

Family AMPULLARIDAE  
Genus *Pila* (Bolten), Roeding, 1798  

6. *Pila globosa* (Swainson)  
1822. *Ampullaria globosa* Swainson, Zool. Illustrations,  
Vol. 2(1) : pl. cxix.  

**Diagnostic characters** : Shell globose with an inflated body whorl and depressed spire. Suture shallow, coloured bands present inside the aperture. The surface is very smooth and glossy. The colour of the shell is brownish olive with irregular red-brown conspicuous spiral bands. It shows remarkable variation in shape and elevation of the spire and body whorl.  


Remarks: Many larval trematodes were recorded from this species.

7. Pila virens (Lamarck)


Diagnostic characters: Shell oblong-ovate, whorls five, regularly and rather rapidly increasing, sculpture with very fine, weak spiral striae and weak growth lines. Sutures well impressed. Operculum calcarepus. Concave, nucleas sub central.

Material examined/Source: Ramakrishna and Dey (2007).

Distribution: India: Madhya Pradesh, Assam, Bihar, Maharashtra, Punjab, Rajasthan.

Elsewhere: Pakistan.

9. Bithynia (Digoniostoma) pulchella (Benson)


Diagnostic characters: Shell elongate, spire longer than the body whorl, sutures depressed, umbilicus almost closed, and aperture oval.


Distribution: Throughout India including Madhya Pradesh and Chhattisgarh.

Elsewhere: Myanmar, Malaya Peninsula.
Family THIARIDAE
Subfamily THIARIINAE
Genus Thiara Roding, 1786
Subgenus Thiara s. str.

10. Thiara (Thiara) scabra (Muller)


1973. Thiara (Thiara) scabra Pace, Malac Review Suppl., 1 : 52, pl. 12, fig. 1, 2 pl. 13 fig. 3.


**Diagnostic characters**: Whorls regularly increasing in size, sutures distinct, whorls often shouldered above and rounded below the row of spines. Shell sculptured with characteristic vertical ribs bearing prominent spines directed obliquely outward, surface with rough spiral striations.


**Distribution**: India : Madhya Pradesh (Hoshangabad, Khargone), Kerala, Maharashtra, Pondicherry, Tamil Nadu, West Bengal.

**Elsewhere**: Indonesia, Java, Mauritius, Scychelles, Timor.

11. Thiara (Thiara) rudis (Lea)


1956. Thiara rudis : Benthem Jutting, Treubia, 23(2) : 389, fig. 83.


**Distribution**: Throughout India including Madhya Pradesh.

**Elsewhere**: Indonesia, Mynmar, Philippines, Sri Lanka.

Genus Melanoides Olivier, 1804

12. Melanoides tuberculata (Mueller)


**Diagnostic characters**: Shell with high spire and moderately large body whorl. Spire five times the height of the aperture. Whorls 10-14, moderately convex, evenly rounded, dark red-brown dots and flames.


**Distribution**: India : Madhya Pradesh (Hoshangabad, Khargone), Kerala, Maharashtra, Pondicherry, Tamil Nadu, West Bengal.

**Elsewhere**: Indonesia, Java, Mauritius, Scychelles, Timor.


**Elsewhere**: Australia, North and South Africa, China, Pacific Islands.

**Remarks**: Widely distributed.

**Genus Tarebia** H & A Adams, 1854

13. **Tarebia granifera** (Lamarck)


**Material examined/Source**: Ramakrishna and Dey (2007).

**Distribution**: Madhya Pradesh, Andaman and Nicobar Islands, Andhra Pradesh, Bihar, Jharkhand, Maharashtra, Manipur, Meghalaya, Mizoram, Tripura, West Bengal.

**Elsewhere**: Formosa, Malagasy, Malaysia, Myanmar, Pacific Islands, Philippines, Taiwan.

14. **Tarebia lineata** (Gray)

1828. *Helix lineata* Gray. In woods's *Index Test supp.,* p. 24, fig. 68. Type locality: Ganges.


**Diagnostic characters**: Shell elongate, conical, rows of nodules less distinct, rather obsolete on the lower whorls, dark spiral lines distinct, apex acute.


**Distribution**: India: Madhya Pradesh (Mandla, Hoshangabad, Betul), Andhra Pradesh, Assam, Bihar, Maharashtra, Uttar Pradesh, West Bengal.

**Elsewhere**: Bhutan, Myanmar, Sri Lanka.
Subclass PULMONATA
Order BASOMMATOPHORA
Superfamily LYMNAEOIDEA
Family LYMNAEIDAE
Genus *Lymnaea* Lamarck, 1799

**15. Lymnaea (Pseudosuccinea) acuminata**
form *typica* Lamarck


**Diagnostic characters**: Shell thin, ovate, spire short, acuminate, body whorl much inflated, a little angular above, with a large aperture.


**Distribution**: Throughout India including Madya Pradesh (Ambikapur, Betul, Khargone, Panna, Raigarh, Mandla, Gwalior, Hoshangabad, Mandsaur, Balaghat, Jabalpur, Damoh, Morena, Ratlam); Chattisgarh (Bastar).

**Elsewhere**: Bangladesh, Myanmar, Pakistan.

**16. Lymnaea (Pseudosuccinea) acuminata**
form *brevissima*

(Annandale & Rao)


Distribution: Madhya Pradesh (Jabalpur); Maharashtra (Nagpur).

17. *Lymnaea (Pseudosuccinea) acuminata* form *chlamys* Benson


Distribution: Throughout India including Madhya Pradesh (Jabalpur) and Chhattisgarh (Subba Rao, 1989; Ramakrishna and Dey, 2007).

18. *Lymnaea (Pseudosuccinea) acuminata* form *gracilior* Martens


Distribution: Throughout India including Madhya Pradesh (Jabalpur) and Chhattisgarh (Subba Rao, 1989; Ramakrishna and Dey, 2007).

19. *Lymnaea (Pseudosuccinea) acuminata* form *patula* Troschel

Diagnostic characters: Shell narrower than in typical form, spire relatively large, anterior extremity of aperture tapering.


Distribution: Throughout India including Madhya Pradesh (Jabalpur, Shahdol) and Chhattisgarh (Ramakrishna and Dey, 2007).

Elsewhere: Myanmar, Nepal, Pakistan.

20. *Lymnaea (Pseudosuccinea) acuminata* form *rufescens* Gray

Diagnostic characters: Shell narrower than in typical form, spire longer, aperture uniformly less expanded. Shell reddish in colour.


**Distribution**: Throughout India including Madhya Pradesh (Jabalpur, Mandla) and Chhattisgarh (Ramakrishna and Dey, 2007).

**Elsewhere**: Bangladesh, Myanmar, Pakistan.

21. *Lymnaea (Pseudosuccinea) luteola* form *typica* Lamarck


**Diagnostic characters**: Shell less inflated, thin and glossy, relatively smaller and laterally compressed, spire gradually tapering and more produced, aperture narrow.


Distribution : Throughout India. Madhya Pradesh (Jabalpur).

Elsewhere : Bangladesh, Myanmar, Pakistan, Sri Lanka.

23. Lymnaea (Pseudosuccinea) luteola form impura Troschel


Diagnostic characters : Shell smaller than typica, spire comparatively longer, last whorl well rounded, suture shallow.


24. Lymnaea (Pseudosuccinea) luteola form ovalis Gray


Material examined/Source : Jabalpur Dist. : 24 exs., Nunsar Vill., 24.03.1964, Coll. H.P. Agrawal; 1 ex, Patan Village, 24.03.1964, Coll. H.P. Agrawal; 5exs., Madan Mahal, 11.09.1962,
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Distribution: Common throughout India including Madhya Pradesh (Jabalpur, Mandla), Andhra Pradesh, Jharkhand, Kashmir, Kerala, Maharashtra, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh.

Elsewhere: Java.

Superfamily PLANORBOIDEA
Family PLANORBIDAE
Subfamily PLANORBINAE
Genus Gyraulus Charpentier, 1837

26. Gyraulus convexiusculus (Hutton)


Diagnostic characters: Maximum diameter, rarely exceeds 5mm, whorls 4 or 5 rounded, suture well defined periphery subangulate, closely and obliquely striate, umbilicus wide all the whorl distinctly seen above, aperture ovate lunate.

Material examined/Source: Ramakrishna and Dey (2007).

Distribution: Common throughout in India including Madhya Pradesh.

Elsewhere: Iran to Philippines and Japan.

27. Gyraulus labiatus (Benson)


Material examined/Source: Ramakrishna and Dey (2007).

Distribution: India : Madhya Pradesh, Andhra...
Pradesh, Himachal Pradesh, Maharashtra, Mizoram, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal.

Elsewhere: Myanmar.

Family BULLINIDAE

Subfamily BULININAE

Genus *Indo planorbis* Annandale & Prashad, 1921

28. *Indo planorbis exustus* (Deshayes)


Material examined/Source: Ramakrishna and Dey (2007).

Distribution: India: Throughout India including Madhya Pradesh.

Elsewhere: Sri Lanka

Key to the families of class Bivalvia (Freshwater)

1. Shell internally non nacreous ...................... 2
   - Shell internally nacreous .......................... 4
2. Hinge with numerous lamelliform teeth and edentulous in the middle .......... ARCIDAE
   - Hinge with limited number of teeth but never edentulous .......................... 3
3. Shell thick and large; ligament very strong and external; hinge straight with three cardinal teeth and strong serrated anterior and posterior lateral teeth ........... CORBICULIDAE
   - Shell thin and small; ligament not very strong and internal; hinge curved with two small cardinal teeth and smooth lateral teeth .......... PISIDIIDAE
4. Shell irregular, inequivalve and attached to substratum with one valve .......... AETHIERIIDAE
   - Shell regular, equivale and valve not attached to substratum .......... UNIONIDAE

Class BIVALVIA
Subclass PTERIOMORPHIA
Order ARCOIDA
Superfamily ARCOIDEA
Family ARCIDAE
Subfamily ANADARINAE
Genus Scaphula Benson, 1834
30. Scaphula celox Benson, 1836

Material examined/Source: Ramakrishna and Dey (2007).

Distribution: India: Madhya Pradesh (River Cane, near Banda (Bundel Khand); Orissa, Uttar Pradesh, West Bengal.

Subclass PALEOHETERODONTA
Order TRIGOINOIDA
Superfamily UNIONOIDEA
Family UNIONIDAE
Subfamily AMBLEMINAE
Tribe Amblemini

Genus Lamellidens Simpson, 1900


Diagnostic characters: Shell elongate, elliptical; umbone slightly inflated; periostracum smooth and dark brown; dorsal margin almost straight and long; cardinals two in each valve.


Distribution: Common throughout India:

Elsewhere: Bangladesh, Myanmar.

32. Lamellidens marginalis (Lamarck)


Diagnostic characters: Shell oblong ovate, valves covered by blackish brown periostracum with light brown border along ventral margin., Umbo not elevated, posterior side broad, roundedly angular, margin produced, narrow wing, dorsal margin slightly curved, central margin slightly contracted in middle, hinge with two cardinals in right valve, interior nacreous.

Sharma; Khandwa Dist.: 1 ex., Narmada Sagar Dam Area, 17.03.1986, Coll. H.P. Agrawal.

**Distribution**: Widely distributed in India: Madhya Pradesh (Balaghat, Mandla, Betul, Chhindwara, Jabalpur, Panna, Khargone, Bhind).

**Elsewhere**: Bangladesh, Myanmar, Sri Lanka.

**Genus** *Parreysia* Conrad, 1853

**Subgenus** *Parreysia* s. st.

### 33. *Parreysia (Parreysia) corrugata* Mueller


**Diagnostic characters**: Shell elliptic to oval, smooth, scarcely inequilateral; umbones prominent; lunule well marked; sculptured with somewhat radiating, oblique, linear ridges, ventral margin convex, cardinal teeth strong, not lamellar; green in colour.


**Distribution**: Widely distributed throughout India: Madhya Pradesh (Panna, Betul, Morena, Chhindwara, Khandwa, Balaghat, Mandla).

**Elsewhere**: Bangladesh, Myanmar, Sri Lanka.

### 34. *Parreysia (Parreysia) corrugata* (Mueller) subsp. *nagpoorensis* (Lea)


**Diagnostic characters**: Shell oval, thick, greenish, sculptured with zigzag markings arranged in rows, concentrated at umbonal region; dorsal margin evenly sloping, anteriorly rounded, posterior end obtusely pointed.


**Distribution**: India: Madhya Pradesh (Jabalpur, Betul, Khargone, Hoshangabad), Maharashtra, Andhra Pradesh, Assam, Gujarat, Orissa, Tamil Nadu, West Bengal.

**Elsewhere**: Bangladesh.
35. *Parreysia (Parreysia) favidens* (Benson)


**Diagnostic characters** : Shell thicker, larger and more inequilateral, both anterior and posterior margins angulate, cardinal teeth strong and broad.


**Distribution** : India : Madhya Pradesh (Jabalpur, Damoh, Chhindwara), Maharashtra, Andhra Pradesh, Assam, Bihar, Jharkhand, Meghalay, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal.

**Elsewhere** : Bangladesh, Pakistan.

36. *Parreysia (Parreysia) rajaensis* (Lea)


**Material examined/Source** : Ramakrishna and Dey (2007).

**Distribution** : India : Madhya Pradesh, Maharashtra, Assam, Bihar, Orissa, Uttar Pradesh.

**Elsewhere** : Bangladesh, England.

37. *Parreysia (Radiatula) occata* (Lea)


**Material examined/Source** : Ramakrishna and Dey (2007).

**Distribution** : India : Madhya Pradesh, Maharashtra, Bihar, Orissa, Uttar Pradesh.

Subgenus *Radiatula* Simpson, 1900

38. *Parreysia (Radiatula) shurtleffiana* (Lea)


**Material examined/Source** : Ramakrishna and Dey (2007).

**Distribution** : India : Madhya Pradesh, Maharashtra, Assam, Bihar, Meghalaya, Rajasthan, Uttar Pradesh, West Bengal.

Subclass HETERODONTA

Order VENEROIDA

Superfamily CORBICULOIDEA

Family CORBICULIDAE

Genus *Corbicula* Mergerle von Muhlfeld

39. *Corbicula striatella* Deshayes


*Distribution*: Common throughout India: Madhya Pradesh (Balaghat, Jabalpur, Betul, Mandla).

*Elsewhere*: Afghanistan, Bangladesh, Myanmar, Pakistan, Sri Lanka.

40. *Corbicula occidentalis* Deshayes


*Distribution*: India: Madhya Pradesh (Balaghat, Jabalpur, Chhindwara); Sikkim; Bengal.

41. *Corbicula inflata* Clessin

1879. *Corbicula inflata* Clessin, in Martini & Chemnitz, p. 179, pl. 31, figs. 14, 15.


*Distribution*: India: Madhya Pradesh (Jabalpur).

42. *Corbicula picta* Clessin

1879. *Corbicula picta* Clessin, in Martini & Chemnitz, p. 179, pl. 31, figs. 12, 13.


*Distribution*: India: Madhya Pradesh (Jabalpur, Khargone).

43. *Pisidium (Afropisidium) nevillianum* Theobald


*Material examined/Source*: Ramakrishna and Dey (2007).

*Distribution*: India: Madhya Pradesh (Narmada River); Uttar Pradesh.

*Elsewhere*: Bangladesh.

44. *Sphaerium indicum* Deshayes


**Material examined/Source**: Ramakrishna and Dey (2007).

**Distribution**: Throughout Indian Plains (including Madhya Pradesh), Himalayas.

**Order SYSTELLOMMATOPHORA**

**Family VERONICELLIDAE**

**Genus Laevicaulis** Simroth, 1913


**Distribution**: India : Madhya Pradesh (Khargone, Sagar, Jabalpur); Maharashtra (Pune). Elsewhere : East Africa, Mauritius, Reunion, Madagascar, Sri Lanka, Hong Kong, China, Formosa, Indonesia, New Caledonia and Loyalty Islands.

**Remarks**: It is widely distributed tropical species.

B) **LAND MOLLUSCA**

**Phylum MOLLUSCA**

**Class GASTROPODA**

**Subclass PROSOBRANCHIA**

**Order MESOGASTROPODA**

**Key to the families of order Mesogastropoda**

1. Shell elongate-ovate or conoid, longer than broad...........................................3
   - Shell depressed, broader than long..........2
2. Shell with thickened and reflected peristome ............................................ CAMAENIDAE
   - Shell with simple peristome ......................
     .... ARIOPHANTIDAE/HELCARIONIDAE
3. Shell small, upto 5mm in length .............4
   - Shell larger, above 5mm in length ..........6
4. Columella concave and truncate at base ...... ........................................... FERUSSACIIDAE
   - Columella convex or straight, rounded at base ...........................................5
5. Last whorl scarcely broader than the penultimate whorl, not ascending in front ...
   .......... PUPILLIDAE
   - Last whorl broader than the penultimate whorl, ascending in front .......... VERTIGINIDAE
6. Shell with denticulate aperture .............. ........................................... STREPTAXIDAE
   - Shell with simple aperture ....................7
7. Shell very large and swollen, seldom below 50 mm in length ............ ACHATINIDAE
   - Shell small, and narrow, seldom exceeding 30 mm in length ...............8
8. Spire equal or shorter than the last whorl in length ................................9
   - Spire larger than the last whorl in length ...
     ............................................. SUBULINIDAE
9. Shell thin, imperforate, last whorl constituting 75% to 90% of the total length, columella not reflected .................................. SUCCEINEIDAE
   - Shell fairly thick, perforate, last whorl equal or slightly larger than spire, columella reflected ................................ CERASTUIDAE

**Subclass PULMONATA**

**Order STYLOMMATOPHORA**

**Family PUPILLIDAE**

**Subfamily PUPILLINAE**

**Genus Pupilla** Leach in Fleming, 1828

46. *Pupilla diopsis*, Benson


Material examined/Source: Gude (1914).

Distribution: India: Madhya Pradesh (Narmada valley).

Genus *Pupoides* Pfeiffer, 1854

47. *Pupoides tutulus* (Reeve)

Bulimus, pl. 84, fig. 625.


Material examined/Source: Mitra et al. (2004).

Distribution: India: Madhya Pradesh, Maharashtra, Bihar, Delhi, Gujrat, Rajasthan, Uttar Pradesh.

Family VERTIGINIDAE

Subfamily TRUNCATELLINAE

Genus *Boysia* Pfeiffer, 1849

48. *Boysia boysi* Pfeiffer


Material examined/Source: Mitra et al. (2004).

Distribution: India: Madhya Pradesh, Rajasthan (drier part of Central India).

Subfamily GASTROCOPTINAE

Genus *Gastrocopta* Wollaston, 1878

49. *Gastrocopta bathyodon* Benson


Material examined/Source: Gude (1914), Mitra et al. (2004).


Family CERASTUIDAE

Genus *Cerastua* Strand, 1928

50. *Cerastua abyssicus* Pfeiffer


Material examined/Source: Gude (1914).


Genus *Rachis* Albers, 1850

51. *Rachis punctatus* (Anton)


Diagnostic characters: Shell ovately conical, distinctly perforate, marked with transverse streaks throughout and a single narrow chocolate band below the periphery, pale white; whorls 7-8, fairly rounded, last whorl with a single band, rarely an indistinct second band exists, apex acute; aperture ovate, peristome slightly thickened; columella dilated and reflected.


**Distribution**: India: Madhya Pradesh (Ujjain, Khargone, Ratlam, Mandsaur, Jabalpur, Damoh, Chhindwara, Khandwa), Goa, Jharkhand, Maharashtra, Tamil Nadu, Uttar Pradesh, Orissa and West Bengal.

**Elsewhere**: Africa, Sri Lanka.

**Remarks**: Common.

52. **Rachis bengalensis** Lamarck


**Diagnostic characters**: Shell ovate, narrowly perforate, thin, nearly transparent, smooth, faintly spirally striate. Pale white or yellowish white, with 3-4 chocolate bands, the lower ones of which are more prominent; whorls 6, not much rounded, last whorl swollen; aperture oval, wide, peristome thin a little reflected; columellar margin dilated.


**Distribution**: India: Madhya Pradesh, Gujarat, Kashmir, Rajasthan, Uttar Pradesh and South India, drier parts of the country.

53. **Rachis praetermissus** Blanford


**Distribution**: India: Madhya Pradesh (Ujjain, Sarguja).

Family **FERUSSACIIDAE**

Genus **Cecilioides** Ferussac, 1807

Subgenus **Geostilbia** Crosse, 1867

54. **Cecilioides (Geostilbia) balanus** (Reeve)

1850. Achatina balanus (Benson) Reeve, Conch. Icon., 5, Achatina, pl. 20, fig. 109.

1914. Caecilioides (Geostilbia) balanus : Gude, Fauna of British India, Mollusca, 2 : 374.


**Material examined/Source**: Mitra et al. 2004.

**Distribution**: India: Madhya Pradesh, Gujarat, Rajasthan, Uttar Pradesh and South India, drier parts of the country.

55. **Cecilioides (Geostilbia) bensoni** Gude

1914. Caecilioides (Geostilbia) bensoni: Gude, Fauna of British India, Mollusca, 2 : 375.


**Material examined/Source**: Mitra et al. 2004.

**Distribution**: India: Madhya Pradesh, Gujarat, Rajasthan, On plains. Drier parts.

56. **Coilostele scalaris** Benson


**Material examined/Source**: Mitra et al. 2004.

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

**Elsewhere**: Sind.

**Family SUBULINIDAE**

**Subfamily SUBULININAE**

**Genus *Subulina* Beck, 1837**


**Distribution**: India : Madhya Pradesh (Khargone, Jabalpur, Mandsaur), Maharashtra, Kerala, Andaman and Nicobar Islands, Tamil Nadu.

**Elsewhere**: Widely distributed throughout America (North and South), Europe; Mauritius, Scyhelles, Sri Lanka, West Africa etc.

**Genus *Glessula* Von Martens, 1850**


**Distribution**: Throughout India : Madhya Pradesh (Ujjain, Jabalpur, Khargone, Mandsaur).

**Elsewhere**: Most common in south east Asia.

**Genus *Zootecus* Westerlund, 1887**


Distribution: India: Madhya Pradesh (Mandsaur, Hoshangabad), Maharashtra, Andhra Pradesh, Punjab.

Elsewhere: Afghanistan.

62. Zootecus insularis (Ehrenberg)


Distribution: India: Drier regions of the country. Madhya Pradesh (Jabalpur), Andhra Pradesh, Bihar, Delhi, Gujrat, Kashmir, Maharashtra, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh.


Family ACHATINIDAE
Genus Achatina Lamarck, 1799
Subgenus Lissachatina Bequaert, 1951

63. Achatina (Lissachatina) fulica fulica (Bowdich)

1822. Achatina fulica 'Lamarck' Bowdich, Elements of Conchology, 1, pl. 13, fig. 8.


Material examined/Source: Mitra et al. (2004).

Distribution: India: Throughout the country except north-west region.

Elsewhere: Malagasy, Mauritius, Scychelles, Singapore, Zanzibar.

Family STREPTAXIDAE
Subfamily ENNEINAE
Genus Sinoennea Kobelt, 1904

64. Sinoennea planguncula (Benson)


Material examined/Source: Mitra et al., 2004.

Distribution: India: Madhya Pradesh, Andhra Pradesh, Orissa.

Remarks: Not common (Mitra et al., 2004).

Family SUCCINEIDAE
Subfamily CATINELLINAE
Genus Quickia Odhner, 1950

65. Quickia gravelyi (Rao)


Distribution: India: Madhya Pradesh (Khargone, Jabalpur), Maharashtra, Andhra Pradesh, Tamil Nadu.

Family HELICARIONIDAE
Subfamily SESARINAE
Genus Kaliella Blanford 1863

66. Kaliella barrackporensis Pfeiffer


**Material examined/Source:** Mitra et al. (2004).

**Distribution:** India: Widely distributed from Kashmir to Kanya Kumari.

**Elsewhere:** Bangladesh, Myanmar, Pakistan, Sri Lanka.

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**Family ARIOPHANTIDAE**

**Subfamily ARIOPHANTINAE**

**Genus Ariophanta** Desmoulins, 1829


**Distribution:** Madhya Pradesh (Balaghat), Maharashtra, Andhra Pradesh, Gujrat.

**Remarks:** Common in gardens.

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**Genus Cryptozona** Morch, 1872


**Material examined/Source:** Mitra et al. (2004).

**Distribution:** India: Peninsular part of the country, from Gujarat southwards.

**Elsewhere:** Sri Lanka.

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**Family CAMAENIDAE**

**Subfamily CAMAENINAE**

**Genus Landouria** Godwin-Austen, 1918


**Material examined/Source:** Mitra et al (2004)

**Distribution:** India: Madhya Pradesh, Arunachal Pradesh, Maharashatra.

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**Genus Trachia** Albers, 1860


**Material examined/Source:** Mitra et al (2004).

**Distribution:** India: Madhya Pradesh, Andhra Pradesh, Maharashatra.


*Distribution*: Peninsular India.

**SUMMARY**

An attempt has been made here to give a consolidated list of land and freshwater mollusc species reported from Madhya Pradesh. The present paper depicts altogether 72 species belonging to 38 genera, under 24 families. This list of land and freshwater Mollusca of Madhya Pradesh State is given on the basis of past and present records and from the recent surveys made in this area. Of course this is not a final picture and it seems that many species still remain to be described for which more surveys are needed which will undoubtedly reveal the existence of much more species than what is known today.

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FRESHWATER OSTRACODS (ARTHROPODA : CRUSTACEA)

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INTRODUCTION

Freshwater Ostracods are common in India. Most of them are benthic, some occur among aquatic vegetation and algal mats, and a few are planktonic. Their role in an aquatic ecosystem is well established (Hoff, 1942). Ostracods form an important component in the food of aquatic macro organisms (Forbes, 1888, Kornicker and Sohn, 1971). They serve as ecological indicators (Puri, 1964), and acts as secondary hosts for a number of fish parasites (Hoff, 1942; Hoffmann, 1967). They are used as stratigraphic markers (Moore, 1961; Howe, 1969).

Taxonomy of Ostracods has mainly been studied in America, Europe and South Africa. Consolidated work on Indian Ostracods was published by Victor & Fernando (1979), which was mostly based from southern part of India. Besides, the Indian Ostracods have been reported by Klle (1927), Arora (1931), Hartmann (1964). Deb (1972, 1973 & 1978), Victor and Michael (1975) and Battish (1978, 1981) have reported several new records/species of Ostracods from other states of India but no work has been done on Ostracods of Madhya Pradesh and Chhattisgarh except the work done by the authors mentioned in the following paragraph.

The work on freshwater Ostracod fauna of Madhya Pradesh (at present Madhya Pradesh & Chhattisgarh) has been undertaken to record the occurrence of Ostracod species in this region and to review the taxonomic status of these species in relation to reported species of India. Hitherto, no comprehensive account on the Ostracoda fauna of Madhya Pradesh & Chhattisgarh is available, although some scattered papers published by Harshey and Victor (1983), Harshey & Srinivasan (1984), Harshey & Shrivastava (1983 &1987), Harshey & Patil (1988), Thilak et al., (1994).

MATERIALS AND METHODS

Originally the study area of this project was Madhya Pradesh which is recently divided into two states, Madhya Pradesh & Chhattisgarh. Madhya Pradesh is in the central part of the country, having an area of 308000 sq. km. It has a topography that is crossed from north to south by plains separated by upland areas. Madhya Pradesh receives an average annual rainfall of about 1200 mm (nearly 50 in), of which 90 percent falls during the monsoon season. It has total 45 districts of which 20 were surveyed for Ostracoda samples. Chhattisgarh has been carved out from the state of Madhya Pradesh on 1st November 2000 and is surrounded by Andhra Pradesh and Orissa. Area of the state is 135,100 Sq.km. It has total 18 districts of which 4 were surveyed for Ostracoda samples. Average rainfall more or less similar to Madhya Pradesh.

Taxonomic studies are based on the Ostracoda collection made from various districts of Madhya Pradesh & Chhattisgarh. About 350 samples from various freshwater bodies like lakes, ponds,
ditches, wells and rivers were collected for this project. Apart from these collections samples collected by other workers were also used. All the material collected and identified are deposited at Central Regional Station, Zoological Survey of India, Jabalpur, Madhya Pradesh.

Collections were made by using cone shaped plankton net No.10/25 made of the bolting silk of mesh size 154/67 μ. Several sweeps were made just above the substratum of the habitat and also among weeds. The bottom of the habitat was also disturbed to ensure the collection of Ostracods living in the upper most layer of the substratum. Samples were immediately fixed and preserved in 10% formalin. The Ostracods were later separated and transferred to vials containing 70% methanol. The soft parts were separated by removing the shell. The soft parts were transferred to a clean glass slide, and the appendages were teased out in a drop of polyvinyl lacto phenol / glycerin. The appendages were arranged in the desired positions and the preparation was allowed to dry for 10-12 hours. Then a cover slip was placed over the dissection using a fresh drop of mountant. Identification was carried under a stereomicroscope.

**SYSTEMATIC LIST**

Due to the difference of approaches amongst the workers, no stable classification of Ostracods has been achieved as yet. Many schemes of classification have been proposed so far (Moore, 1961; Van Morkhoven, 1962; Pokorny, 1965; Hartmann & Puri, 1974; Victor & Fernando, 1979 etc.). In this work the scheme of classification adopted by Victor & Fernando (1979) has been followed with some alterations in the light of current investigations. All the 42 species collected during this study belong to the super family Cypridacea Baird, 1845, which in turn divided into four families. The complete classified list is given below.

**Class CRUSTACEA**  
**Subclass OSTRACODA** Latrielle, 1806  
**Order PODOCOPIDA** Muller, 1894  
Suborder PODOCOPA Sars, 1866  
Superfamily CYPRIDACEA Baird, 1845  
Family CYPRIDIDAE Baird, 1845  
Subfamily CYPRIDINAE Baird, 1845  
Genus Cypris O.F. Muller, 1776
1. Cypris subglobosa Soweby, 1840  
Genus Pseudocypris Daday, 1908  
2. Pseudocypris dravidensis Victor & Michael, 1979  
Genus Strandesia Vavra, 1895  
4. Strandesia neelimae Harshey & Shrivastava, 1987  
5. Strandesia weberi (Moniez), 1892  
7. Strandesia purpurascens (Brady), 1886  
8. Strandesia odiosa (Moniez), 1892  
9. Strandesia victori Harshey & Srinivasan 1984  
10. Strandesia rotunda Hartmann, 1964  
11. Strandesia parva Hartmann, 1964  
12. Strandesia elongata Hartmann, 1964  
13. Strandesia indica Hartmann, 1964  
14. Strandesia meghnai Harshey & Shrivastava 1987  
Genus Cyprinotus Brady, 1866  
15. Cyprinotus nudus Victor & Michael, 1975  
Genus Hemicypris Sars, 1903  
16. Hemicypris pyxidata (Moniez) 1892  
17. Hemicypris anomala (Klie) 1938  
Genus Heterocypris Claus, 1892  
19. Heterocypris sp.  
Subfamily DOLEROCYPRIDINAE  
Genus Dolerocypris Kaufmann, 1900  
20. Dolerocypris sinensis Sars, 1903  
Genus Astenocypris Muller, 1912  
21. Astenocypris papyracea (Sars), 1981
22. Tanycypris pellucida (Klie), 1932  
   Subfamily HERPETOCYPRIDINAE  
   Kaufmann, 1900  
   Genus Stenocypris Sars, 1889  
23. Stenocypris derupta Vavra, 1906  
24. Stenocypris hislopis Ferguson, 1969  
25. Stenocypris major (Baird), 1859  
26. Stenocypris distincta Victor & Fernando, 1977  
27. Stenocypris orientalis Victor & Fernando, 1981  
   Genus Parastenocypris Hartmann, 1964  
29. Parastenocypris biswasi (Deb) 1982  
   Genus Chrissia Hartmann, 1957  
30. Chrissia humilis (Klie) 1932 spp. indica  
31. Chrissia formosa (Klie) 1939.  
   Subfamily CYPRIDOPSINAE Kaufmann, 1900  
   Genus Cypridopsis Brady, 1868  
32. Cypridopsis dispar Hartmann, 1964  
   Genus Oncocypris G.W. Muller, 1898  
33. Oncocypris pustulosa Gurney, 1916  
   Genus Pseudocypretta Klie, 1932  
34. Pseudocypretta maculata Klie, 1932  
   Subfamily CYPRETTINAE Hartmann, 1964  
   Genus Cypretta Vavra, 1895.37  
35. Cypretta globosa Brady, 1877  
36. Cypretta raciborskii (Grochmalicki), 1915  
37. Cypretta turgida (Sars), 1896  
38. Cypretta seurati Gauthier, 1929  
   Family CANDONIDAE Kaufmann, 1900  
   Subfamily CYCLOCYPRIDINAE Kaufmann, 1900  
   Genus Physocypria Vavra 1898  
39. Physocypria furfuracea (Brady), 1886  
40. Physocypria crenulata (Sars), 1961  
   Family NOTODROMADIDAE Kaufmann, 1900  
   Genus Centrocypris Vavra, 1897  
41. Centrocypris matthaii (Arora), 1931
2. **Pseudocypris dravidensis** (Victor & Michael)  


**Diagnostic characters**: Valves globular; right valve with a distinct flange. Valve surface punctate. Furcal rami symmetrical; dorsal setae more than \( \frac{1}{2} \) the length of the subterminal claw, both the terminal and subterminal claws pectinate; dorsal margin armed with short spines.

**Distribution**: India : Madhya Pradesh (Jabalpur), Maharashtra and Tamil Nadu.

**Remarks**: It is observed that the carapace and soft part morphology of the species *Cypris dravidensis* (Victor and Fernando) collected during the present study notably resembles to the genus *Pseudocypris* Daday, 1908 except the lateral alae. Therefore the species is described here as the genus *Pseudocypris*.

3. **Strandesia perakensis** Victor and Fernando  


**Diagnostic characters**: Valve surface with 10-12 posteriorly directed spines. Carapace moderately inflated, valves subovate.

**Distribution**: India : Madhya Pradesh (Jabalpur).

**Elsewhere**: Sri Lanka, Malaysia, Philippines and Indonesia.

**Remarks**: Harshey and Shrivastava (1982) reported this species for the first time from India. Indian species show longer posterior spine on the right valve than that of Philippines specimens and also differs from Malaysian specimens in which posterior spine of right valve is steeply pointed downwards.

4. **Strandesia neelimae** Harshey and Shrivastava  


**Diagnostic characters**: Carapace moderately inflated. Valves unequal. Right valve having 10 spines at the posterior end. Surface both the valves striated and with blue spots.

**Distribution**: India : Madhya Pradesh (Jabalpur).

5. **Strandesia weberi** (Moniez), 1892


**Diagnostic characters**: It is a distinct species with a long spine on the right valve and two short spines of unequal length on the anterior margin of the left valve.

**Distribution**: India : Madhya Pradesh (Chhindwara, Jabalpur), Chhattisgarh (Dantewada).

**Elsewhere**: Sri Lanka, Malaysia, Philippines and Indonesia.

**Remarks**: Harshey and Shrivastava (1982) reported this species for the first time from India. Indian species show longer posterior spine on the right valve than that of Philippines specimens and also differs from Malaysian specimens in which posterior spine of right valve is steeply pointed downwards.

6. **Strandesia madhuriae** Harshey and Shrivastava  

**Material examined**: Madhya Pradesh: 5 exs. 3.10.81, Panagar, Jabalpur distt. coll. D.K. Harshey.

**Diagnostic characters**: Carapace moderately inflated in lateral view, surface with striations. Anterior margin broadly rounded than the posterior margin. Posterior margin of each valve has a spine.

**Distribution**: India : Madhya Pradesh (Jabalpur).
7. **Strandesia purpurascens** (Brady)  


**Diagnostic characters**: Valves sub-elliptical, laterally elongated, both anterior and posterior margins rounded; hairy. Length of valves 0.80-0.85 mm, height 0.40-0.44 mm. Natatory setae of the second antenna smooth and reaching the tips of the toothed terminal claws; sensory club three segmented. Furcal rami symmetrical; terminal & subterminal claws slender with spines; terminal seta little longer than the terminal claw and smooth; dorsal seta setulate.

**Distribution**: India: Madhya Pradesh (Bhopal, Jabalpur), Tamil Nadu. Elsewhere: Indonesia, Malaysia, Thailand & Sri Lanka.

**Remarks**: Victor and Fernando reported this species from India (1979) and Malaysia (1981). In Malaysian specimens spines of furcal rami are in groups, but in present specimens spines are continuous, similar to their Indian specimens.

8. **Strandesia odiosa** (Moniez)  


**Diagnostic characters**: Each valve punctuate with reticulations and three prominent blue spots. Furca curved and short.

**Distribution**: India: Madhya Pradesh (Jabalpur). Elsewhere: Indonesia, Malaysia, Philippines.

**Remarks**: A similar species *Strandesia flavescens* Klie was also collected from this region, which is smaller in size and it is treated as a junior synonym of *Strandesia odiosa* (Victor & Fernando, 1979).

9. **Strandesia victori** Harshey and Srinivasan  


**Diagnostic characters**: Valves sub-elliptical, laterally elongated, both anterior and posterior margins broadly rounded. Length of valves 2.16-2.18 mm, height 1.9-2.1 mm. Furcal rami symmetrical; posterior margins with strong spines arranged in six linear groups.

**Distribution**: Madhya Pradesh (Jabalpur).

**Elsewhere**: Indonesia, Malaysia, Philippines.

**Remarks**: Victor and Fernando reported this species from India (1979) and Malaysia (1981). In Malaysian specimens spines of furcal rami are in groups, but in present specimens spines are continuous, similar to their Indian specimens.

10. **Strandesia rotunda** Hartmann  


**Diagnostic characters**: Valves ovate; valve surface hairy. Terminal seta of furca 3/4th the length of terminal claw, smooth. Length 0.83-0.86 mm and height 0.51-0.53.

**Distribution**: Gujarat, Maharashtra, Madhya Pradesh (Jabalpur), Kerala & Tamil Nadu.

11. **Strandesia parva** Hartmann  

Diagnostic characters: Left valve overlaps the right; surface punctuate. Length 1.17-1.28 mm, height 0.63-0.61 mm. Terminal seta of the furca approximately half the length of the terminal claw, smooth; both the claws smooth; dorsal margin armed with inconspicuous spines along the entire length.

Distribution: India: Kerala, Madhya Pradesh (Jabalpur), Maharashtra & Rajasthan.

12. Strandesia elongata Hartmann


Diagnostic characters: Valves sub-elliptical; elongate, entire margin of the valve lined with densely packed hairs except dorsally, valve surface hairy and punctuate. Length of valves 0.72-0.81 mm; height 0.30-0.38 mm. Natatory setae of second antenna smooth, barely reaching the tips of terminal claws. Furcal rami symmetrical; terminal and subterminal claws slender, dorsal margin of the entire ramus lined with delicate spines.

Distribution: India: Andhra Pradesh, Goa, Tamil Nadu, Kerala & Madhya Pradesh (Jabalpur).

13. Strandesia indica Hartmann


Diagnostic characters: Valves sub-elliptical, entire margin of the valve hairy except dorsally; valve surface sparsely hairy and punctate. Length 0.88-0.96 mm, height 0.45-0.48 mm. Natatory setae of second antenna smooth, slightly reaching beyond the tips of the terminal claws. Furcal rami symmetrical, long and slender; terminal & subterminal claws slender, lined with spines on the dorsal edge; terminal seta hairy, little shorter than terminal claw.

Distribution: India: Gujarat, Tamil Nadu, Kerala, West Bengal, Madhya Pradesh (Jabalpur, Morena).

14. Strandesia meghnae Harshey and Shrivastava


Distribution: India: Madhya Pradesh (Jabalpur).


Diagnostic characters: Valves subovate, unequal; left valve larger than the right, valve surface smooth. Length 1.2-1.3 mm, height 0.7-0.8 mm. Furcal rami symmetrical, nearly straight; dorsal seta nearly 1/2 the length of terminal claw; dorsal margin of ramus hairy.

Distribution: India: Tamil Nadu & Madhya Pradesh (Jabalpur).

16. Hemicypris pyxidata (Moniez)


**Diagnostic characters**: Valves subovate, unequal; right valve overlaps the left, left valve tuberculate, anterior and posterior margins rounded and hairy, valve surface dotted. Length of valves 0.93-0.98 mm, height 0.66-0.68 mm. Furcal rami symmetrical, slightly curved, sub terminal and terminal claws pectinate, dorsal seta longer than the subterminal claw, setulate, terminal seta short.

**Distribution**: India: Tamil Nadu & Madhya Pradesh (Bhopal, Chhindwara, Morena, Ratlam).

**Elsewhere**: Sri Lanka & Sumatra.


**Diagnostic characters**: Valves sub-triangular, unequal, left valve tuberculated; valve margins hairy; valve surface with short hairs. Length 0.70-0.75 mm, height 0.42-0.45 mm. Natatory setae of the second antenna reaching beyond the tips of the terminal claws; sensory club two segmented. Furca symmetrical, straight; dorsal seta more than \(\frac{3}{4}\) the length of subterminal claw; terminal seta less than \(\frac{1}{2}\) the length of terminal claw; dorsal margin of the ramus finely spinose.

**Distribution**: India: Tamil Nadu, Kerala, Maharashtra & Madhya Pradesh (Morena).

**Elsewhere**: Formosa


**Diagnostic characters**: Valves subovate; right valve larger overlapping the left; left valve tuberculated; anterior and posterior margins rounded and with long hairs; surface smooth. Length of valves 0.86-0.90 mm, height 0.5mm. Furca symmetrical, straight; dorsal seta setulate about \(\frac{3}{4}\) the length of sub terminal claw; terminal seta more than \(\frac{1}{2}\) the length of sub terminal claw.

**Distribution**: India: Madhya Pradesh (Jabalpur).

19. *Heterocypris* sp.


**Diagnostic characters**: Valves subovate; not tumid; unequal; left valve overlaps the right; left valve tuberculate.

This species could be identified up to generic level.

Subfamily DOLEROCYPRIDINAE


**Diagnostic characters**: Carapace compressed, valves elongate. Dorsum smoothly arched. Length 2.06-2.08 mm. Furcal rami symmetrical, slightly arched terminal seta smooth, posterior margin of the ramus smooth.

**Distribution**: India: Madhya Pradesh (Jabalpur).

**Elsewhere**: Afghanistan, Canada, France, Germany, Iran, Japan, Rumania, USSR and Yugoslavia.


Diagnostic characters: Valves elongate, unequal in lateral view. Valve surface striate. Furcal rami symmetrical, stout and strongly developed, both terminal and sub terminal claws heavily toothed. Posterior margin of ramus armed with prominent teeth.

Distribution: India: Madhya Pradesh (Jabalpur).

Elsewhere: Japan, Malaysia, Philippines, Russia and Sumatra.

22. Tanycypris pellucida Tribel
1932. Dolerocypris pellucida Kie, Arch. Hydrobiol. suppl., 11 : 482, Fig. 63-65.


Diagnostic characters: Valves compressed, unequal, right valve larger overlaps the left at anteriorly and posteriorly. Length 1.45-1.48 mm; Height: 0.55-0.58 mm. Furcal rami symmetrical, robust, both claws toothed. Furcal attachment has dorsal attachment and the ventral branch reduced to stump.

Distribution: India: Madhya Pradesh (Mandla, Morena).

Elsewhere: Malaysia, Philippines, Russia and Sumatra.

Subfamily STENOCYPRINAE

23. Stenocypris derupta Vavra


Diagnostic characters: Valves elongate, anterior margin rounded and posterior margin pointed. Prominent septa along the anterior margin. Length of valves 2.5 mm–2.6 mm. Furcal rami asymmetrical. Right ramus with heavy denticulation on dorsal margin, left ramus with faint spines.

Distribution: India: Andhra Pradesh, Chhattisgarh (Dantewada), Madhya Pradesh (Jabalpur), Maharashtra and Tamil Nadu.

Elsewhere: Java, Philippines, Sri Lanka and Sumatra.

24. Stenocypris hislopi Ferguson


Diagnostic characters: Valves elongate; anterior and posterior margins rounded; left valve overlaps the right; septa forming a prominent band along the margins except dorsally; surface with punctuation; anterior, posterior and ventral margins hairy. Length 1.38-1.63 mm, height 0.56-0.70 mm. Furcal rami asymmetrical; dorsal setae absent; terminal & subterminal claws toothed. Right ramus slightly curved, dorsal margin toothed. Left ramus straight, dorsal margin smooth.

Distribution: India: Andhra Pradesh, Chhattisgarh (Dantewada), Madhya Pradesh (Bhopal, Jabalpur), Maharashtra and Tamil Nadu.

25. Stenocypris major (Baird)

Diagnostic characters: Valve margins hairy, surface punctuated. Length 1.88-2.15 mm, height 0.73-0.88 mm. Radial band of septa prominent, of uniform width anteriorly and posteriorly. Furcal rami asymmetrical, right ramus curved, the dorsal margin heavily toothed. Left ramus relatively straight with few teeth on the distal end.

Distribution: India: Madhya Pradesh (Chhindwara).

Elsewhere: Europe, Indonesia, Japan, Malaysia, Philippines and Sumatra.

26. Stenocypris distincta Victor & Fernando


Diagnostic characters: Valves from above elliptical, elongate, radial band of septa present. Length : 1.75-1.80 mm. height : 0.70-0.72 mm. Furcal rami asymmetrical, dorsal seta absent.

Distribution: India: Madhya Pradesh (Jabalpur).

Elsewhere: Madhya Pradesh (Jabalpur) & Rajasthan.

27. Stenocypris orientalis Victor & Fernando


Diagnostic characters: Valves from above elliptical, elongate, radial band of septa present. Length : 1.75-1.80 mm. height : 0.70-0.72 mm. Furcal rami asymmetrical, dorsal seta absent.

Distribution: India: Madhya Pradesh (Chhindwara).

Elsewhere: Malaysia & Philippines

28. Stenocypris jabalpurensis Harshey & Patil


Diagnostic characters: Valves elongate, straight in the middle. Valve surface sparsely hairy and punctuate, radial band of septa broad anteriorly. Length 1.63-1.68 height : 0.64-0.66 mm. Natatory seta of second antenna reaching beyond the tips of terminal claws. Sensory club three segmented. Furcal rami asymmetrical.

Distribution: India: Madhya Pradesh (Jabalpur).

29. Parastenocypris biswasi (Deb)


Diagnostic characters: Valves very elongate laterally; anterior margin of valve rounded and posterior margin pointed, pore canals prominent, valve surface with minute hairs. Length 4.20-4.30 mm, height 1.30 mm. Furca asymmetrical, straight, right ramus armed with strong spines, left ramus with relatively weak spines.

Distribution: India: Chhattisgarh (Dantewada), Madhya Pradesh (Jabalpur) & Rajasthan.
Remarks: Deb (1972) described *Stenocypris biswasi* as a new species from Rajasthan, India. It was also collected during this study from Jabalpur, Madhya Pradesh, and redescribed as *Parastenocypris biswasi* by Harshey and Victor (1982) giving detailed account of the species.

30. *Chrissia humilis* (Klie) ssp. *Indica*


Diagnostic characters: Left valve slightly larger than the right; valve margin devoid of radial band of septa; surface hairy. Furcal ramus asymmetrical; dorsal margin of right ramus with spines for $\frac{1}{2}$ the length, dorsal margin of left ramus smooth.

Distribution: India: Maharashtra, Kerala, Chhattisgarh (Dantewada), Madhya Pradesh (Jabalpur), Tamil Nadu & West Bengal.

Elsewhere: Malaysia.

31. *Chrissia formosa* (Klie)


Diagnostic characters: Valves elongate in lateral view, greatest height in the middle, anterior and posterior margin rounded. Antenna with five smooth natatory setae, slightly reaching beyond the tips of terminal claws. Four claws toothed. Furcal rami asymmetrical. Right ramus broader, slightly curved; anterior margin with three inconspicuous depressions.

Distribution: India: Madhya Pradesh.

Elsewhere: Formosa and Philippines.

Subfamily CYPRIDOPSINAE Kaufmann, 1900

32. *Cypridopsis dispar* Hartmann


Diagnostic characters: Valve’s anterior and posterior margins rounded, hairy, right valve overlaps the left, valve surface covered with minute hairs. Length 0.56-0.60 mm, height 0.29-0.36 mm. Natatory setae of second antenna smooth, reaching the tips of terminal claws. Furcal ramus reduced to a flagellum.

Distribution: India: Andhra Pradesh, Karnataka, Madhya Pradesh (Morena), Maharashtra & Tamil Nadu.

33. *Oncocypris pustulosa* Gurney


Diagnostic characters: Valves tumid, ventral margin straight; marginal zone of valves tuberculate and hairy; surface with fine granulation and tuberculation super imposed with circular depressions. Length 0.60-0.62 mm; height 0.40-0.41 mm. Natatory setae of second antenna reaching beyond the tips of the terminal claws. Furca reduced to a flagellum.

Distribution: Kerala & Madhya Pradesh (Bhopal, Jabalpur).

34. *Pseudocypretta maculata* Klie

**Material examined**: Madhya Pradesh : 6 exs.

**Diagnostic characters**: Valves sub triangular; right valve overlaps the left; anterior and posterior margins rounded with pore canals; valve surface with minute puncta and few short hairs. Length 0.45-0.46 mm; height 0.30-0.32 mm. Natatory setae of second antenna well developed, reaching the tips of terminal claws. Furca reduced.

**Distribution**: Tamil Nadu, Kerala & Madhya Pradesh (Jabalpur).

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35. *Cypretta globosa* (Brady)


**Diagnostic characters**: Small, valve surface smooth, punctuate, anterior margin with well defined septa. Length 0.52-0.56 mm, Furcal rami well developed, symmetrical, slender and flexible.

**Distribution**: India : Madhya Pradesh (Jabalpur).

**Elsewhere**: Indonesia, Malaysia, Philippines, Sri Lanka.

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36. *Cypretta raciborskii* (Grochmalicki)


**Diagnostic characters**: Carapace tumid with broadly pointed anterior and angular posterior end. Valve surface punctate and sparsely hairy. Valves unequal, right valve overlapping left anterior and posteriorly. Furcal rami weakly developed.

**Distribution**: India weakly developed : Chhattisgarh (Bastar), Madhya Pradesh (Bhopal).

**Elsewhere**: New Zealand, Australia, South Africa, Sumatra, Indonesia, West Samoa.

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37. *Cypretta turgida* (Sars)


**Diagnostic characters**: Valve oval in shape dorsally. Anterior margin narrow, posterior margin broadly rounded. Prominent radial band of septa on the anterior margin. Furcal rami symmetrical, dorsal seta and terminal seta reduced.

**Distribution**: India : Madhya Pradesh (Jabalpur).

**Elsewhere**: New Zealand, North Western Australia, South Africa, Sumatra, West Indies, West Samoa.

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38. *Cypretta seurati* Gauthier


**Diagnostic characters**: Carapace tumid, subovate in lateral view, valves unequal, right valve overlaps the left anteriorly and posteriorly. Valve surface pitted and sparsely pilose. Both valves have septa. Wavy simulations in germ septa in the left valve. Furcal rami long, slender, symmetrical & weakly developed.

**Distribution**: India : Madhya Pradesh (Chhindwara, Mandla).

**Elsewhere**: East Malaysia, Japan, North Africa, Philippines.
Family CANDONIDAE
Subfamily CYCLOCYPRIDIINAE

39. **Physocypris furfuracea** Brady


*Diagnostic characters:* Valves subovate, anterior and posterior margins rounded; valve margins hairy; right valves with prominent tubercles on anterior and posterior margins; left valve smooth. Length 0.49-0.53 mm; height 0.29-0.31 mm. Furcal rami symmetrical, short and stout.

*Distribution:* India: Andhra Pradesh, Gujarat, Madhya Pradesh (Jabalpur), Maharashtra & Tamil Nadu.

*Elsewhere:* Sri Lanka.

40. **Physocypris crenulata** (Sars)


*Diagnostic characters:* Carapace compressed laterally. Valve unequal, right valve overlaps left valve. Anterior margin of valves narrowly rounded than the posterior margin; faint stimulations present in both anterior and posterior margins. A prominent flange present on, the left margin. Furcal rami slightly curved, stout stumpy, symmetrical. Terminal and subterminal claws equal. Posterior seta placed at the middle of the ramus, more than ½ the length of the ramus.

*Distribution:* India: Madhya Pradesh (Jabalpur, Morena).

*Elsewhere:* Brazil, Indonesia, Java, Malaysia, Philippines and Sumatra.

Family NOTODROMATIDAE

41. **Centrocypris matthaii** (Arora)


*Diagnostic characters:* Valves sub quadrate; anterior & posterior margins broadly rounded; valve margins spiny; surface heavily tuberculate with a sparse distribution of hairs. Length 0.97 mm; height 0.62 mm. Furcal rami symmetrical, straight; terminal and sub terminal claws slender and long; dorsal seta more than half the length of sub terminal claw, densely setulate, terminal seta short; dorsal margin with delicate hairs. Furcal rami slightly curved.

*Distribution:* Madhya Pradesh (Morena) & Tamil Nadu.

Family ILYOCYPRIDIDAE

42. **Ilyocypris** sp.

*Material examined:* Madhya Pradesh: 5 exs. 11.06.1982, Gwarighat, Jabalpur, coll. S.G. Patil

*Diagnostic characters:* Valves sub quadrate; laterally compressed; surface pitted, tuberculate. Natatory setae of second antenna well developed. Furca well developed, short and symmetrical.

*Distribution:* India: Madhya Pradesh (Jabalpur).

*Remarks:* This species could be identified up to generic level.

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REFERENCES


INTRODUCTION

The order Cladocera belongs to Subclass Branchiopoda of class Crustacea are commonly known as “Waterfleas”, a primitive group of microcrustaceans. This study was stimulated mainly by their importance in biological processes in water ecosystems as biological indicators, particularly in paleocological studies. Cladocera invariably constitute a dominant component of freshwater zooplankton, play an important role in aquatic food chain and also contribute significantly to zooplankton dynamics and secondary productivity in freshwater ecosystems. Among the zooplankton communities Cladocera is an interesting group not only for taxonomic and distributional studies but also in view of the ecological and reproductive strategies employed in their life cycles with alternating parthenogenetic and gamogenic phases, phenotypic changes associated with cyclomorphosis even within the populations of a single species and the rare occurrence of distinctly diamorphic males. Further, the Cladocera in general and members of family Chydoridae in particular are well known to be “Guide forms” in establishing the trophic and developmental history of lakes especially in the Quarternary epoch, since the disarticulated parts of the exoskeleton are deposited as well preserved remains in ancient lakes. These remains can give considerable insight into past condition of lakes and large and ancient water bodies. These Cladocera are important ecological markers and significant in paleoecological studies (Smirnov and Times, 1983). They are primary consumers directly utilizing primary producers and hence determine to a large extent the energy flow of the ecosystem. The systematic knowledge and mechanisms influencing their ecological efficiency are of great importance. They occupy a definite ecological niche in the freshwater ecosystem. They feed on green unicellular or filamentous algal matter and in turn a major food source for animals like Copepods and insect larvae. Some aquatic adult insects and almost all fishes feed heavily on Cladocera. Cladocera like Moina and Daphnia mainly feed on small microscopic bacteria which are one of the major components of polluted water bodies. Role in the reduction bacterial number in polluted oxidation ponds was studied and proved by Leodolff (1965). In measuring the effects of industrial effluents and metallic poisons was well studied on Daphnia and their cardiac mechanisms provide a very sensitive physiological index for noting the effects of toxic material. Cladocera usually inhabit every type of habitat in littoral, limnatic and benthic zones of freshwater lakes, muddy pools, ponds, marshes, streams, flowing riverwaters, and even brackish waters and about 8 species are truly marine.

HISTORICAL REVIEW

Very few information was available on Cladocera fauna of Madhya Pradesh and so far no attempt has been made to study the Madhya Pradesh freshwater Cladocera comprehensively. Hence this study was initiated. Several zooplankton samples were collected by various

MATERIAL AND METHODS

This study focuses on the taxonomy and distribution of Cladocera fauna in Madhya Pradesh state as a whole. In Madhya Pradesh state the order Cladocera is represented by six families namely : Sididae, Daphniidae, Moinidae, Bosminidae, Macrothricidae and Chydoridae.

During this study many limnetic and littoral and muddy bottoms of freshwater habitats such as lakes, ponds, marshes, reservoirs, dams, rivers, streams and miscellaneous water bodies were sampled throughout Madhya Pradesh state. Cladocera samples were collected by using plankton net of mesh size about 150 µm with circular mouth of 45 cms in diameter, made up of bolting silk. The fauna was collected in shallow water among the vegetations and in open water by taking both vertical and horizontal hauls. The nets also dragged close to the bottom to avoid excessive stirring of mud to collect Cladocera living on the substratum. In small shallow ponds buckets of water could be hauled and poured through a fine meshed net which will serve the purpose for limnetic species. For weed inhabiting or benthic forms a net with long handle and a wire meshed lid to sieve off the obstructing algae and weeds should prove efficient. All samples preserved in 10% formalin in the field itself. 5% concentration of formalin or 70% alcohol is ideal for the preservation of most Cladoceran species. However those with thin carapace could also be preserved in 80% ethanol. Subsequent to collection, sorting can be done under the stereo binocular microscope at low magnification. Temporary slides was made using glycerine and important diagnostic characters were studied by using Stereoscopic compound microscope with higher magnification. Drawings were made with use of camera lucida and measurements were taken by using a calibrated ocular micrometer. The measurements of the described taxa have been given in millimeters (mm).
MORPHOLOGY AND TERMINOLOGY

The vast majority of Cladocera range in size from about 0.2 to 3.00 mm. (except *Leptodora kindtii* Focke) whose female reaching a length of 18 mm. Most species are transparent, especially those which inhabit in open waters while other found among the weed beds of littoral and benthic zones are darkly pigmented with shades of yellow, brown or red. All have a distinct head and a body covered by a fold of cuticle, which extends backward and downward from the dorsal side of the head and constitutes a bivalve carapace. The junction of head and body is sometimes marked by a depression, the cervical sinus or notch. Cladocera have two light-sensitive organs in the head, large compound eye and the smaller ocellus. The eye has numerous or few lenses and is capable of being rotated by three muscles on each side. It is most conspicuous organ, by its size, dark pigment and its constant motion during life. The compound eye is usually present; the ocellus is more variable. The ocellus is sometimes absent; sometimes rudimentary; sometimes larger than eye; and may be the sole organ of sensitive to light. In the head are also brain, the optic ganglion with its numerous nerves to the eye, the antennal muscles and the anterior part of the digestive track. The head bears two pairs of sensory appendages. (1) First antennae or the antennules which carries sense-hairs, the olfactory setae (usually placed at the end), and also ordinarily have one or more lateral sense hairs. (2) Second antenna, usually called merely antennae, which are main organ of locomotion; they are large swimming appendages, with stout basal joint bearing two branches or rami which in turn carry long plumose setae. The number of the antennary setae can be expressed by a formula. The type of locomotion depends on the size of antennae, the length and number of the setae, and the size of the antennal muscles. The head also bears the mouth parts, the mandibles, maxillules, maxillae and the upper (labrum) and lower (paragnatha) lips. The part infront of the eye is known as the vertex. There is usually a beak in front of or between the antennules which is known as rostrum, whose size and shape has taxonomic value. The carapace called bivalve, is really a one piece. It has very different shapes, it may appear nearly square, oval or round. It may bears hairs, spines, along the ventral edge. It may be single spine at the superopostal angle or each valve may have one or more spines at inferopostal angle. The inner wall of carapace is far than the outer and through it some respiratory exchange occurs. The blood circulate freely in the space between the walls. The heart an oval or elongated sac lies just back of the head on the dorsal side. There are no blood vessels, but the circulation passes along definite courses through a complex series of passages all over the body. The blood corpuscles are present. The shell gland at the anterior part of valves serves the function of excretion and osmoregulation. The body lies freely within the valves and is divided into appendage bearing thorax and abdomen. Attached to the ventral side of body are the ordinarily five or sometimes six pairs of legs. They are mainly flattened structures bearing numerous hairs and long setae. This generally create current of water through valves, bring oxygen for respiration and particles of food. Cladocera are normally eating all the times. On the dorsal surface of the abdomen there are often one to several finger like projections, the abdominal processes. They often function to retain eggs in the brood chamber. The abreptor (often called postabdomen) is jointed to the rest of body and bent forward; dorsal side of it have two abdominal setae which often very long. At the end of the postabdomen are two terminal claws. Concave side of claw provided with spines and teeth of various size. These pattern are often taxonomically important. There are few large spines at the base of claw and are reffered to as basal spines. There may be anal spines, lateral spines on the postabdomen. First leg of males is modified into stout hook shaped structure which serves to clasp the females.

This study focuses on taxonomy & distribution of Cladocera in Madhya Pradesh state as a whole. In Madhya Pradesh, the order Cladocera is represented by six families namely: Sididae, Daphniidae, Moinidae, Macrothricidae, Bosminidae and Chydoridae.
SYSTEMATIC LIST
Phylum ARTHROPODA
Class CRUSTACEA
Subclass BRANCHIOPODA (Calman, 1909)
Superorder DIPLOSTRACA
Gernetaecker, 1866
Order CLADOCERA Calman, 1909
Superfamily SIDIDAE (Ctenopoda Sars, 1901)
Family I. SIDIDAE Baird, 1850
Genus 1. Diaphanosoma Fischer, 1850
  1. 1951. Diaphanosoma senegalensis Gauthier
  2. 1985. Diaphanosoma excisum Sars
  3. 1894. Diaphanosoma sarsi Richard
Genus 2. Pseudosida Herrick, 1884
  4. 1898. Pseudosida bidentata var. szalayi (Dayad)
Genus 3. Latonopsis Sars, 1888
  5. 1888. Latonopsis australis Sars
Genus 4. Latona Straus, 1820
Genus 5. Sarsilatona Korovchinsky, 1985
  7. 1888. Sarsilatona australis Sars
Family II. DAPHNIIDAE Straus, 1820
Genus 6. Ceriodaphnia Dana, 1853
  8. 1885. Ceriodaphnia cornuta Sars
10. 1785. Ceriodaphnia quadrangula (O.F. Muller).
Genus 7. Daphnia O.F. Muller, 1785
  11. 1885. Daphnia lumholtsi Sars
  12. 1986a. Daphnia sumanae (Rane)
  13. 1986b. Daphnia sarojae Rane
  14. 1990. Daphnia madhuriae Rane
  15. 1853. Daphnia carinata King
Genus 8. Simocephalus Schoedler, 1858
  16. 1776. Simocephalus vetulus (O.F. Muller)
  17. 1841. Simocephalus serrulatus Koch.
  18. 1985a. Simocephalus serrulatus surekhae (Rane)
  19. 1985 b. Simocephalus vamani Rane
  20. 1983. Simocephalus acutirostratus vidyae (Rane)
Subfamily SCAPHOLEBERINAE Dumont and Pensart, 1983
Genus 9. Scapholeberis Schoedler, 1858
  22. 1776. Scapholeberis macronata (O.F. Muller)
  23. 1888. Scapholeberis kingi Sars
Family III. MOINIDAE Goulden, 1968
Genus 10. Moinodaphnia Herrick, 1887
  24. 1853. Moinodaphnia macleayi (King)
Genus 11. Moina Baird, 1850
  25. 1874. Moina micrura Kurz
Family IV. MACROTHRIFICIDAE Norman and Brady, 1867
Genus 12. Macrothrix Baird, 1843
  27. 1853. Macrothrix spinosa King
Genus 13. Echinisca Lievin, 1848
  28. 1930. Echinisca capensis monodi (Gauthier)
  29. 1886. Echinisca triserialis (Brady)
Genus 14. Ilyocryptus Sars, 1862
  30. 1862. Ilyocryptus spinifer Herrick
Genus 15. Guernella Richard, 1892
  31. 1892. Guernella raphaelis Richard
Genus 16. Grimaldina Richard, 1892
  32. 1892. Grimaldina brazzai Richard
Family V. BOSMINIDAE Sars, 1865
Genus 17. Bosmina Baird, 1845
  33. 1785. Bosmina longirostris (O.F. Muller).
Genus 18. Bosminopsis Richard, 1895
  34. 1897. Bosminopsis dietersi Richard
Family VI. CHYDORIDAE Stebbing, 1902
Subfamily ALONINAE Frey, 1967
Genus 19. Pleuroxus Baird, 1853
  35. 1820. Pleuroxus aduncus Jurine
  36. 1900. Pleuroxus similes Vavra
Genus 20. **Alonella** Sars, 1862
37. 1854. *Alonella excisa* (Fischer)

Genus 21. **Chydorus** Leach, 1816
38. 1901. *Chydorus eurynotus* Sars
40. 1898. *Chydorus ventricosus* Daday
41. 1893. *Chydorus faviformis* Birge
42. 1894. *Chydorus barroisi* Richard

Genus 22. **Dunhevedia** King, 1853
43. 1853. *Dunhevedia crassa* King
44. 1891. *Dunhevedia crassa cilio-caudata* (Sovinsky)
45. 1898. *Dunhevedia serrata* Daday
46. 1901. *Dunhevedia odontoplax* Sars

Genus 23. **Pseudochydorus** Fryer, 1968
47. 1912. *Pseudochydorus globosus caelatus* Wereschagin

Genus 24. **Dadayia** Sars, 1901
48. 1898. *Dadayia macrops* (Daday)

Genus 25. **Leydigia** Kurz, 1875
49. 1884. *Leydigia acanthocercoides* (Fischer)
50. 1885. *Leydigia australis* Sars

Genus 26. **Kurzia** Dybowski and Grochowski, 1894
51. 1875. *Kurzia latissima* (Kurz)
52. 1898. *Kurzia longirostris* Daday

Genus 27. **Graptoleberis** Sars. 1862a
53. 1851. *Graptoleberis testudinaria* (Fischer)

Genus 28. **Camptocercus** Baird, 1843
54. 1885. *Camptocercus latikae* Rane

Genus 29. **Euryalona** Sars, 1901
55. 1898. *Euryalona orientalis* (Daday)

Genus 30. **Biapertura** Smirnov, 1974
56. 1860. *Biapertura affinis* (Leydig)
57. 1853. *Biapertura karua* (King)
58. 1901. *Biapertura verrucosa* (Sars)

Genus 31. **Oxyurella** Dybowski & Grochowski, 1894
59. 1984. *Oxyurella sangramsagari* Rane

Genus 32. **Indialona** Petkovski, 1966
60. 1966. *Indialona ganapati* Petkovski

Genus 33. **Notoalona** Rajpaksha & Fernando, 1987
61. 1898. *Notoalona globulosa* (Daday)

Genus 34. **Alona** Baird, 1843
62. 1862. *Alona rectangula* Sars
63. 1874. *Alona rectangular pulchra* Hellich
64. 1862. *Alona costata* Sars
65. 1862. *Alona guttata* (Sars)
66. 1853. *Alona pulchella* King
67. 1853. *Alona diaphana* King
68. 1898. *Alona macronyx* Daday
69. 1897. *Alona karelica* Stenroos

Genus 35. **Eurycercus** Baird, 1843
70. *Eurycercus* sp.

**Key to the families of Cladocera**

1a. Six pairs of legs of similar structure
..........................SIDIDAE Baird, 1850

b. Five pairs of legs of different structure
........................................................................................................2

2a. Dorsal ramus of antennae 4 segmented,
b. Ventral ramus 3 segmented
........................................................................................................5

3a. Antennules not mobile
..........................................................DAPHNIDAE Straus, 1820

b. Antennules mobile ......................................................................4

4a. Antennule situated on anterioventral end of head .......MACROTHRICIDAE Baird, 1843
b. Antennules situated on the ventral margin of the head but not at anterior end
........................................................................MOINIDAE Goulden, 1967

5a. Antennules fused with the rostrum, forming proboscis like structure
........................................................................BOSMINIDAE Sars, 1895
b. Antennules are at base, both rami of Antennae
3-segmented
....................................................................................CHYDORIDAE Stebbing, 1902
Family I SIDIDAE Baird, 1850

Key to the genera and species of Sididae

(Generic diagnosis of the genera with only one species are not given.)

1a. Postabdomen with anal spines .......................

.......................

Diaphanosoma Fischer, 1850

b. Postabdomen with anal spines ................... 2

2. Rostrum present ............................................

............................

Pseudosida Herrick, 1850

b. Rostrum absent, without tongue shaped process on the ventral side of the head, head and body not well demarked from each other, anal spines in groups and basal spines are three ............. Latonopsis Sars ... 3

3. Head and body separated from each other due to distinct impression in between. Two basal spines, and the anal spines are single in number at ventral side of postabdomen; small species ........................................................... Latona Straus, 1820 ... 4

4. Head and body not separated from each other, postabdomen with clusters of 4-5 anal spines inside the postabdomen and claw with large basal spines are three in numbers. Large species ...... Sarsilatona Korovchinsky, 1985

Genus Diaphanosoma Fischer, 1850

This genus is represented by three species in the examined material from Madhya Pradesh.

Key to the species of Diaphanosoma

1a. Large fleshy head, distal part of ventral shell margin with short row of gradually diminishing setae, followed by rows of denticles .................................................. D. senegalensis Gauthier, 1951

b. Distal part of ventral shell margin with large spines, head comparatively small ............ 2

2a. Shell duplicature rounded at distal end ........

.......................

D. sarsi Richard, 1894a ... b

b. Shell duplicature joining ventral shell margin at nearly right angle....D. excisum Sars, 1885

1. Diaphanosoma senegalensis Gauthier, 1951


Diagnostic characters: Female : Carapace oblong with posterodorsal corner with distinct angle and dorsal margin slightly arched. Ventral margin almost straight; distal part of ventral shell margin with short gradually decreasing setae, followed by row of denticles. Shell duplicature narrow. Head and eye markedly large, eye located near the anterior ventral margin of valves, claw short ; with three basal spines which increasing in length distally and setae on the concave margin.

Distribution: India : Madhya Pradesh, Maharashtra & South India.

Elsewhere : Africa.

2. Diaphanosoma excisum Sars, 1885


1933. Diaphanosoma paucispinosum Brehm, Arch. Hydrobiol Suppl., II : 656-659, fig. 3.

Material examined : 14 exs., 7-9-1984; Madan Mahal tank; 10 exs., 29-7-1984; Padwar tank, Jabalpur dist, all coll. P.D. Rane.

Diagnostic characters : Female : Body large, carapace almost oblong and rounded anteriorly. Eye small. Posteroventral corner broadly rounded with variable number of (mostly 6-7) marginal denticles followed by delicate cilia. Postabdomen narrow with fine setules. Claw with three basal spines, decreasing size proximally, claw serrated on the distal convex surface. Shell duplicature joining ventral shell margin at nearly right angle.

Distribution : India : Andaman and Nicobar Islands, Rajasthan, Tamilnadu, Tripura, Maharashtra, Kerala, Assam and West Bengal.

Elsewhere : Australia, common in tropical regions and subtropics.
3. *Diaphanosoma sarsi* Richard 1894a  

**Material examined:** 5 exs., 2-4-1981, Tewar tank; 6exs., 6-3-1982, Sukri tank, Jabalpur dist, all coll. P.D. Rane.  

**Diagnostic characters:** Carapace oblong in outline, transversely truncated behind. Posteroventral corner obliquely cut off and armed with a series of small denticles (12-20) followed by small setae. Head narrow, slightly tapering distally. Eyes large and antennae not reaching hind edge of carapace. Claw narrow with three basal spines rapidly decreasing in size proximally.  

**Distribution:** India: New Delhi, Tamil Nadu, West Bengal, Rajasthan, Bihar, Meghalaya.  

**Elsewhere:** Pantropical.  

**Genus Pseudosida** Herrick, 1884  
4. *Pseudosida bidentata* var. *szalayi* (Daday, 1898)  

**Material examined:** 2 exs., 2-2-91, Gorah tank on Nagpur Road, Jabalpur dist., coll. P.D. Rane.  

**Diagnostic characters:** Female: Body elongated, oval, short head; eye relatively small situated near to the anteroventral corner. Rostrum present, no fornix or cervical glands. Antennules unsegmented, long and attached to the posteroventral part of head, with long basal part, with olfactory setae, on each side and a long flexible flagellum. Antenna not extending beyond the posterior margin of valves. Ventral margin of valves with series of long setae followed by series of spinules on the posteroventral corner. Postabdomen with about 10 clusters of spinules. Claw large, with three basal spines and very small spine like process proximal to them.  

**Distribution:** India: Andaman and Nicobar Islands, Rajasthan, Tamil Nadu, Tripura and Maharashtra.  

**Elsewhere:** Many parts of tropics or near tropics. Sumatra, Sri Lanka, Malaysia, South Africa, South America and South-East Asia.  

**Genus Latonopsis** Sars, 1886  
5. *Latonopsis australis* Sars, 1886  

**Material examined:** 10 exs., 1-1-1979; Adhartal on Sihora road, 7 exs., 8-2-1982; Bohariband tank, Jabalpur dist, all coll P.D. Rane.  

**Diagnostic characters:** Female: Head large without distinct rostrum, with antennules on the ventral side. Antennules with sparsely spaced setae and situated on the the thick base. Body elongated; ventral margin of valve with numerous long setae, three setae at the posteroventral corner especially long. Eye located in the middle of head; ocellus minute, located immediately infront of the base of the labrum. Shell gland with two branches, posterior branch much longer than anterior. Postabdomen small, with 7 marginal spines; lateral setae irregularly located. Claw large, with two slightly curved basal spines and with a few denticles on concave margin.  

**Distribution:** India: Rajasthan, Tripura, Tamil Nadu, Maharashtra, West Bengal.  

**Elsewhere:** Australia, Sri Lanka.  

**Genus Latona** Straus, 1820  

**Material examined:** 6 exs., 25-3-1981; temporary water pool near Sahastradhara, Mandala distt, M.P, coll. Narendra Rane.  

**Diagnostic characters:** Female: Body flattened, nearly quadrangular, Infero-postal and supro-postal angles rounded. Long setae on posterior margin of valve; setae almost present along the entire ventral margin. Distinct dorsal impression between head and shell. Head very large with small tongue-shaped projection on ventral
side, rounded, sometimes more than half the total length of body. Eye placed centrally, with numerous lenses and large pigmented area. Rostrum absent. Hepatic caeca two branched. Shell gland with both branches equal in length. Ocellus present. Postabdomen conical, slightly lobular near the distal end; abdominal setae long two jointed, born on a pair of papillae. Terminal claw with two basal spines, distal one larger than proximal. Postabdomen with 7 marginal denticles. Antennules in female with basal part and one long slender flagellum. Olfactory setae 5-6 attached on one side of basal part. Colour greenish-white but not transparent.

**Distribution**: Endemic species only found from type locality.

Genus *Sarsilatona* Korovchinsky 1985

7. *Sarsilatona fernandoi* (Rane, 1983)


1993. *Sarsilatona fernandoi* (Rane, 1983), Biom. 6(1) : 41-44; figs. 1-10.

**Material examined**: 9 exs., 22-12-1978; Gorah tank & Balsagar tank infront of LIC building, Nagpur road, Jabalpur distt, M.P, coll. P.D. Rane.

**Diagnostic characters**: Female: Body massive, fleshy, head short, not separated from trunk by dorsal impression; no distinct fornicate plates laterally above the oral region. Eye relatively small situated closer to the dorsal side of head. Ocellus smaller than eye. Antennules relatively large with rather large cylindrical base. Swimming antenna massive with strong basipodite, biramous, rami flattened; dorsal ramus 2 and ventral ramus 3 segment; setae on them are unequal length. Setae on antenna : (9-10)-12 / 0-2-3. Ventro-anterior margin of the carapace with long feathered setae based on conical bases and row of dense clusters of minute spinules. Postabdomen with large pointed triangular prominences situated on dorsal postabdominal margins. Postabdomen with 14-16 clusters of 3-5 lancet shaped anal spines. Terminal claw with three thin basal spines. Semicircular part of claw with row of thin setules at outer margin and 8-10 large spines at inner margin. Length-2.1 to 2.34 mm.

**Distribution**: This species is endemic to Madhya Pradesh, India, only found at type locality.

**Remarks**: Rane, 1983 described this new species as *Latonopsis fernandoi* sp. nov, due to its peculiar postabdominal structure with row of lancet shaped lateral spines in group of 3 to 5. Later Korovchisky, (1985) erected new genus *Sarsilatona* and included 3 species *Pseudosida papuana* Dayad (1900), *Latonopsis serricauda* Sars and *Sarsilatona behningi* sp. nov. was described. Our species having many similar characters but with some distinct different characters. Therefore Rane (1993) relocated the original species *Latonopsis fernandoi* Rane to new genus erected by Korovchinsky – *Sarsilatona*.

**Family II. DAPHNIIDAE Straus, 1820**

**Key to the genera of Daphniidae**

1a. Rostrum present ........................................... 2

1b. Rostrum absent ... *Ceriodaphnia* Dana 1853

2a. Without any cervical sinus, valve with elongated spine posteriorly,................................. *Daphnia* O.F. Muller, 1785

2b. Cervical sinus present .................................. 3

3a. Postabdomen conically tapering, valve without spine posteriorly (Not recorded in collection of Madhya Pradesh) ......................................................... *Daphniopsis* Sars, 1903a

3b. Postabdomen not conically tapering ............ 4

4a. Valves obscurely reticulated and with some striae. Ventral body straight and with lateral spine.............. *Scapholebris* Schoedler, 1858

4b. Valves transversely striated ....................... *Simocephalus* Schoedler, 1858

**Genus *Ceriodaphnia* Dana, 1853**

**Key to the species of genus *Ceriodaphnia***

1. Head produced anteriorly into a short conical beak, claw without pectin, small species about 0.5 mm ... *Ceriodaphnia cornuta* Sars, 1885
2. Head not angulate and without spine. Claw with small group of teeth at proximal part, antennules with thick seta laterally near the tip, large species about 1 mm ...................... Ceriodaphnia affinis Lilljeborg, 1900

3. Head angulated, not inflated of antennule, claw finely denticulate, antennule with hair like lateral seta near the tip ................................ .. Ceriodaphnia quadrangula (O.F. Muller 1776).

8. Ceriodaphnia cornuta Sars, 1885


Diagnostic characters : Female : Head small, depressed and separated from the carapace by a dorsal impression and without rostrum. Head with an acute beak on the ventral side. Antennule short and broad with long seta laterally and group of sensory seta on the apex. Eye large, ocellus small. Valves reticulate with large polygonal meshes. Postabdomen moderately broad with 4 to 5 curved denticles. Claw stout, curved with a series of setules along the concave surface. Ephippial female (reproductive female) : Smaller than parthenogenetic female with rather blunt posterior spine. Dorsal margin of valve is highly arched anteriorly. Ephippium saddle shaped, yellow in colour with deep hexagonal cells at ventral side, central nucleus and star shaped markings of cells on dorsal side.

Remarks: This species was originally described from Australia by Sars (1894). There are two distinct forms of this species : hornless & horned forms. Horned forms are included in C. cornuta and hornless forms are in C. rigaudi. Fernando (1980) suggested that detailed studies on morphology, ecology & physiology are required to define the exact systematic status of these both species.

Distribution : India : West Bengal, Bihar, Andhra Pradesh, Karnataka, Madhya Pradesh, Rajasthan, Tamil Nadu, Meghalaya, Gujarat, Maharashtra, Andaman & Nicobar Islands, Tripura.

Elsewhere : Eastern Australia and S. Australia, Japan, China, South East Asia, South Africa, Egypt, South America, Sri Lanka, Palestine and other tropical regions.

9. Ceriodaphnia affinis Lilljeborg, 1900
1968. Ceriodaphnia affinis Rey and jean, Cah. O.R.S.T.O.M., Hydrobiol. 11 (3-4) : 89-90, pl. 7, figs. 4-c.


Diagnostic characters : Female : Head moderate in size, as high as two thirds that of valves. The antennules are short, not extending beyond the vertex of head ; lateral sense hair turn forward with thick base ie straight up right to the axis. The eye is large almost filling the head. The valves which are oval in shape are pointed at the posterior margin. The postabdomen is of medium width. Postabdominal claw with a dense group of teeth in the proximal part but not immediately near base. The rest of claw is covered by continuous dense denticulation.

Distribution : This is the first record of this species from India.

Elsewhere: Sudan, Algeria, Sahara, Lake Chad, Ontario.

10. Ceriodaphnia quadrangula (O.F. Muller, 1785)
1785. Daphnia quadrangula O.F. Muller. Lipsiae et Havniae P. 90, tab.xiii, figs. 3-4.


Diagnostic characters : Female : Carapace
rounded quadrangular in outline, posterior protuberance distinctly produced and far above the axis of the body. Valves reticulated but not often plainly marked. Head angulate but not inflated in front of antennules. Antennules small, sensory setae near the apex. Eye of moderate size. Postabdomen slightly narrowing towards the apex, sinuate above anal spines; with 7-9 anal spines. Claw large and finely setulate. Ocellus situated at the base of antennules. Distinct notch between head and carapace separates head from rest of the body.

Distribution: India: Kashmir, Ladakh, South India (Savantwadi & Nilgiri hills).

Elsewhere: Throughout Europe, Central Asia and Greenland.

Genus Daphnia O.F. Muller, 1785

Key to the species of the genus Daphnia

1. Anterior end of head produced into a spine of variable length, fornices extremely well developed forming lateral wing like spines on both side ........................................................

............... Daphnia lumholtzi Sars, 1885....2

2. Anterior end of head not produced in to helmet shape of spine fornix are not expanded. Anteriorly head ends into a knob like structure, sinuate ventral side of postabdomen. Dorsal side of head & body have deep notch, carapace is not reticulated and ventral margin of male with several plumose setae .................

............... Daphnia sumanea (Rane, 1986)....3

3. Head & body not demarked by a notch, carapace is reticulated with deep rectangular cells; dorsal edge of postabdomen straight but not sinuate ........................................................

............... Daphnia sarojae (Rane, 1986)....4

4. Head not produced into helmet shaped spine above and with rostrum not in contact with ventrolateral carapace margin, antennae densely ciliated, strong rows of dorsal spines about 77 and ventral spines about 115 to 121 at the dorsal and ventral side of valve, dorsal margin of postabdomen straight, 6 strong spines present all over the tail .................... Daphnia madhuriae Rane, 1990....5

5. Head without any crest (helmet). Rostrum recurved generally close to in contact with ventrolateral carapace margin. Antennular mounds set close to rostrum ................................................ Daphnia carinata King, 1853

11. Daphnia lumholtzi Sars, 1885


Diagnostic characters: Female: Length 1.1-1.4 mm (without tail spine). Carapace broadly oval with posterior long spine. Head produced anteriorly in the form of a helmet of variable length. Dorsal and ventral margin of valve with a series of small spines. Rostrum somewhat variable in shape. Antennular mounds very well developed, situated close to rostrum. Eye large ocellus small. Fornices extremely well developed, laterally expanded like wing like spine. Postabdomen tapering distally with 10-13 anal spines and group of lateral setae. Claw stout, curved with three groups of setae. Parthenogenetic female with 5 eggs in the brood pouch.

Male: Small, length about 1 mm. Head set off from the carapace by a distinct depression above the heart. Tail spine is about ½ the length of carapace. Anterior projecting crest on the head, like a small spine. Antennules nearly as long as head with strong flagellum. Antennule with 5 olfactory setae and spine like seta between the olfactory setae and base of flagellum. Eye large, ocellus conspicuous. Abdominal process reduced into small bulges. Postabdomen narrow near the claw. Dorsal margin of postabdomen strongly sinuate. 5-6 spines below the indentation, posterior most two are placed submarginally. Claw with 3 pecten with 8-14-44 teeth respectively. Middle pectin with large teeth than proximal and distal pectin. Ventral margin of carapace with long marginal setae.
Ephippial (reproductive) female: Length 1.6 mm, larger than parthenogenetic female. Body relatively broad. Two reproductive eggs present in the ephippium. Eggs well separated from each other by unmalanized dark ephippial matrix. Ephippium well developed hook shaped anterior prolongation. Dorsal margin dark brown with about 8 large but rather widely separated spine. Egg chambers are laterally protruded out.

Distribution: India: West Bengal, Orissa, Andhra Pradesh, Rajasthan, Tamil Nadu, Bihar, Tripura.

Elsewhere: Australia, Egypt and widely spread in Asia, Africa, Pakistan, Sri Lanka, Nepal.

12. Daphnia sumanae (Rane, 1983) comb. nov.


Diagnostic characters: Female: Head relatively large without helmet, Anterior lateral margin of the head above the eye almost straight which gives appearance like triangular head. Ocellus small, triangular. Rostrum small, obtuse at tips looks like knob. There is marked convexity at the base of small antennule. Fornix strongly prominent. There is slight bulging of shell at the ventral side near the joint of spine. Claw with three pecten, all unequal in size. Two ephippial eggs lying at right angles to the dorsal margin. Tips of eggs strongly pointed. Ephippium reticulated with dense circles and hairs. Length 2.4 mm.

Male: Similar to female in general shape. Body size 1.1 mm. Head almost as long as one third of valve. Fornix expanded. Eyes comparatively larger than females with many refractive bodies. Antennules with large flagellum narrowing evenly to the distal end. The inner ventral margin of valve with dense row of feathered setae. Postabdomen with small reduced abdominal processes. Dorsal side of the postabdomen sinuate with small 6-7 anal spines. Pectinate claw. Small specimens have small spine above the head.

Distribution: This is endemic species only found at type locality in Madhya Pradesh.

Remarks: This species originally placed in genus Daphniopsis Dana 1852, but prof. W.P. William (Per Comm. University of Adelaide, Australia) suggested that this species should put in genus Daphnia as it exhibit the main diagnostic character presence of posterior tail spine (absent in genus Daphniopsis). The original species is relocated herewith in genus Daphnia.

13. Daphnia sarojae Rane, 1986

Material examined: 96 exs (females), 5 exs (males), 26-6-1983, rain puddle near rice field on shahpura road about 6 kms from Jabalpur, Jabalpur distt, M.P, coll. P.D. Rane.

Diagnostic characters: Female: Carapace, seen laterally, rounded and oval in outline, with spine generally long more than one third of valve length and slightly turned obliquely upwards; denticles of dorsal edge extending beyond the cervical region and denticles of ventral edge starting almost from the join of head and carapace. Head of moderate size and defined from the carapace above by a slight concavity of dorsal margin. Helmet may present in early developing stages. Eyes and ocellus present. Rostrum small, pointed. Ventral margin of head concave and sinuate near the rostrum. Antennule small, knob like. Fornix well developed. Carapace distinctly reticulated all over by deep rectangular or squarish cells. Dorsal margin of postabdomen straight but not sinuate. There are 10-12 anal denticles. Claw straight, pectinate with proximal and distal pecten. Proximal pecten with 8-9 teeth arranged in half circles, distal pecten with 18-19 large equal teeth. There are five hairs extending from distal pecten to the end claw. Three hairy abdominal processes present. Length 2.2 mm.

Male: Similar to female in general shape of body. Antennule with long flagellum narrowing
evenly to the distal end. Large eye, no abdominal process and hook at first leg. Postabdomen much narrowed with small 4 anal spines. Claw with pecten. Rostrum obtuse.

**Distribution**: This is endemic species only found at type locality of Jabalpur distt. of Madhya Pradesh state.


**Material examined**: 40 exs (females), 20 exs. (males). 7-3-1983, Pariat tank 10 Kms east of Jabalpur, Amarkantak road Jabalpur distt and 10 exs. (females) and 10 exs. (males), 27-7-1985, Sri. Ganesh temple tank, Indore, Indore distt, all coll. P.O. Rane.

**Diagnostic characters**: Female : Length 1.84-2.30 mm. Head moderately large, semicircular seen from sides., anterior head with slight trace of frontal concavity. Compound eye moderately large situated near frontal edge of head with 10 lenses. Ocellus absent. Helmet on head unpronounced. Fonix laterally expanded. Rostrum pointed not in contact with ventrolateral carapace margin. Antennule mound strongly pronounced situated near the rostrum. Antennules small, embedded in pit, anterior part of antennules with 6 or 7 olfactory setae, projects beyond the ventral margin of head. Head reticulated with hexagonal cells. Antenna well developed, densely covered all over with thin spine like setae. These setae arranged in circles. Dorsal ramus 3 segmented, ventral with 4 segments. Antennal formula 1-1-3/0-0-1-3. Hepatic caeca large, almost circular. Shell spine large, slender, inserted just above the middle of the valve; encircled by 6 rows of strong spines. Carapace with about 77 strong dorsal spines and ventral spines 115-121. Postabdomen with 9-12 strong marginal anal spines. Abdominal setae long, two segmented with thin hairs all over. Pectenate claw with three pectens, first with 9-12, second with 18-21 and third with 50-55 teeth. Five abdominal process. Parthenogenetic female with 2 to 5 developing eggs, nearly up to 8.

**Ephippial female**: Length 2.15-2.44 (without tail spine). Body rather broad, densely reticulated, rostrum less pointed. 3rd, 4th, 5th abdominal processes larger and more hairy. Two ephippial eggs lies obliquely. Egg chamber dark brown black; separated by wide area of unmalanized light yellow matrix. Ephippium with 47 large equal spines on dorsal dark strip and anterior out shoot with 27 spines. Reproductive females are even larger than largest parthenogenetic females in the crowded population.

**Male**: Length 1.2 mm. Carapace oblong, shell spine well developed broader than female. Ocellus absent, head without crest dorsally. Rostrum undeveloped. Antennules large with well developed flagellum anteriorly. Antennule with 7 to 8 Olfactory setae. A large spine like seta present between the junction of flagellum and olfactory setae. Abdominal processes reduced. Dorsal margin of postabdomen with large indentation with 4 or 5 anal spines. Claw similar to female but more stout. First leg with a large slender hook and a long setae.

**Distribution**: It is endemic species only found at type localities of Jabalpur and Indore distts of M.P.

15. *Daphnia carinata* King, 1853

1853. *Daphnia carinata* King., *Pap and Proc. R. Soc. Vandieman land*, Hover town, 2(2) : 246, pl. 1 and VI A.


**Diagnostic characters**: Female : Length 2 to 2.3 mm (excluding tail spine). Tail spine half or slightly more than the length of body. Carapace broadly oval but slender in small and juvenile individuals. Head large with anterior margin roughly semicircular in shape. Helmet in adult female usually absent but may be present in juveniles. Antennular mound very small and set very close to the rostrum. Rostrum slightly recurved almost in contact with the antero-ventral corner of the valve. Ventral margin of head straight to slight concave. Eye moderately large, set nearer
RANE: Cladocera (Arthropoda: Crustacea)

...to anterior margin of head towards the rostrum. Intestinal cecae large 'S' shaped, thick with cellular lining inside. Antennae are moderately large. The distal segment of each ramus with three denticles. Three abdominal processes, second is almost straight. Third is one and a half times larger than second, sparsely covered with hairs. Dorsal margin of postabdomen almost straight with 10-11 anal teeth, 2-9 appear to be placed submarginally; followed by 10-13 small spines. Many rows of small spinules present on the poster-dorsal margin of postabdomen. Dorsal margin of carapace with 50-55 spines and ventral margin with 70-90 spines.

Male: Body oblong, 1.2 to 1.3 mm in length. Tail spine usually half the length of the body slightly placed dorsally to the central axis of body. Rostrum undeveloped. Eye is large almost filling anterior part of head. Ocellus conspicuous. Antennule small, flagellum well developed which is of same length as basal segment. Abdominal processes reduced to small bulges. Dorsal margin of postabdomen elongate, straight with small indentation distally. 9 anal spines present. Claw appears more stouter than claw of female, with usually 3 pectens of spines.

Ephippium: Length of ephippium about 1 mm. Colour dark yellow with eggs about 32 spines on the dorsal side of egg chamber and 19 on the anterior prolongation. Spines decrease in size towards each end. Only ephippium were found in the collection, no female specimen was found.

Distribution: India: Simla hills (H.P.); Mysore, Banaras, Meerut, Surat, Rajasthan, Tamil Nadu, Bihar, West Bengal, Goa, Orissa, Andhra Pradesh, Tripura, Manipur, Punjab, Haryana.

Elsewhere: Australia, Egypt and wide spread in Asia, Indonesia, Sri Lanka, Africa.

Genus Simocephalus Schoedler, 1858

Key to the species and subspecies of the genus Simocephalus

1a. Vertex rounded, without spines, without pectin. Ocellus elongated .......................... Simocephalus vetulus (O.F Muller, 1776).........2

2. Vertex angulate, spinous. Ocellus usually rhomboidal......................................................... Simocephalus serrulatus (Koch, 1841)

b. Vertex angulate, no spines on head, ocellus rhomboidal. Antennules with ventrally situated 4-5 pointed denticles, inner pectinate claw with small teeth of 28-30 Simocephalus serrulatus surekhae Rane, 1985a....3

3. Vertex rounded without spinules, head not produced into an acute projection, body reticulation in the form of bricklike pattern, large distal pectinate claw of 7-18 teeth ........ Simocephalus vamani Rane 1985b....4

4a. Head produced into an acute small projection, large pectinate claw of straight 15-16 teeth. Small species 2 to 2.1 mm in length ....... Simocephalus acutirostratusvidyae (Rane, 1983)

b. Head produced into an acute large projection, pectinate claw with slightly curved 15-21 teeth, large species with length 3.33 mm ........ Simocephalus acutirostratus gajareae (Rane, 1986)

16. Simocephalus vetulus (O.F. Muller, 1776)

1776. Daphne vetula, O.F. Muller, Zool. Danicu Prodromus Seu An;mat;um Norvegiae, etc. Havninae, p. 199, No. 2399.


1868. Simocephalus vetulus Muller, Naturhistorisk Tidsschrift, V, p-122, Tab. I, figs. 26-27.


Material examined: 5exs., 3-4-1985, Kundam tank; 10exs., 10-4-85, Padwar tank, Jabalpur distt, M.P., all coll. P.D. Rane.

Diagnostic characters: Female: Carapace broadly oval or rhomboid in shape. Dorsal margin moderately to strongly arched. No posterior spine present. Posterior corner with blunt angle, posterior part of dorsal margin with distinct denticles. Head small with large eye and elongated ocellus. Postabdomen very broad, deeply emarginated with about 10 anal spines and a long curved and denticulate claw.
Distribution: India: West Bengal, Tamil Nadu, Rajasthan, Punjab, Kashmir, Bihar, Uttar Pradesh, Andaman and Nicobar Island, Tripura, Maharashtra.

Elsewhere: Tibet, England, Australia, Switzerland, Turkey, Russia, Sri Lanka, North and South America.

Remarks: Some specimens in the same collections with a denticulate protuberance similar to sub species Simocephalus vetulus vetuloides (Sars, 1898) are not separately described as they are in the same samples.

17. Simocephalus serrulatus (Koch, 1841)


Diagnostic characters: Female: Carapace broadly oval or some what rhomboidal in outline; slightly widened behind. Dorsal margin evenly arched and ventral margin bulging in middle and posterior protuberance denticulated slightly above the median axis of body. Head comparatively small; with dorsal margin evenly curved and front forming below an acute angle armed with a number of minute denticles. Rostral projection small. Postabdomen broad, with 4 large and 4 small anal denticles. Large anal denticles with groups of hair near bases. Postabdominal claw nearly straight with spinulation at both outer and inner margin of dorsal side. Outer margin with 2 pectens of 35 small and 50 distal teeth which decreasing towards the tip of claw. Inner margin with continuous row of large teeth. Eye comparatively large, ocellus small rhomboidal in shape, carapace all over with hexagonal deep reticulation.

Distribution: India: Tamil Nadu, Meghalaya, Rajasthan, Tripura, Maharashtra.

Elsewhere: Australia, Sri Lanka, Africa, China, Europe, South East Asia, North and South America, Java, New Zealand.

18. Simocephalus serrulatus surekhae (Rane, 1985a) Comb. nov.

1985. Simocephalus serrulatus, Rane


Diagnostic characters: Female: Carapace seen laterally is broad, oval or somewhat rhomboidal in outline, with well marked protuberance posteriorly; dorsal margin evenly curved; posterior edge of valve nearly straight and rather oblique, joining the ventral edge at a well marked angle. Posterior half of the dorsal margin strongly denticulate; paired hook like, which continued to the terminal protuberance with small equal denticles attached submarginally. Head small angulate, with dorsal margin evenly curved. Rostrum absent. Antennules with 10 terminal aesthetasces and lateral sensory seta originate from knob like expansion. 3-4 large spines present laterally along the anterior edge of the antennules. Eye large, with refractive bodies conspicuous. Ocellus small, rhomboidal. Very large tongue like expansion present at the margin of head, clothed with several large hairs. Valves with distinct pattern of polygon cells at various places. Postabdomen broad posteriorly, with acute supra-anal angle; with anal denticles 11-12 on both side, with groups of hairs on inner margin. Postabdominal claw nearly straight, spinuated both on outer and inner margin. Length of female, 1.8 to 2.4.

Distribution: It is endemic sub-species only found at type locality and recorded from Jabalpur district only.

19. Simocephalus vamani Rane, 1985b


Diagostic characters: Female: Carapace, seen laterally, sub-rhomboid in outline; being only slightly expanded behind; very small protuberance behind in the middle; posterior dorsal margin evenly curved and situated just above the said protuberance. Posterior part of the carapace denticulate, the denticles continued on terminal protuberance but not the hind edge of valve. Anterior half of ventral margin with several feathered setae, 4 to 5 of them are thickened and become tuft. Valve strongly punctuate and reticulated with rectangular cells. Head small; fornix expanded; eye and ocellus present mostly squarish or sometimes rounded; vertex rounded over. Rostrum projection small pointed. Pair of antennules present below the rostrum with large sensory papilla arise on knob like expansion, 9-10 terminal sensory setae present. Postabdomen less broad, with supra-anal angle produced. Anal denticles 7 to 9. Claw pectinate with 17-18 large teeth. Inner margin of claw with one row of small teeth. Antenna with large basal segment with setae formula 0-0-1-3/1-1-3. Two abdominal process present and about 16 to 17 parthenogenetic eggs present in brood pouch. Length of female 2.17mm.

Distribution: This is endemic species only found from type locality of Jabalpur distt of M.P.

20. Simocephalus acutirostratus vidyae (Rane, 1983)


Diagnostic characters: Female: Carapace broadly oval or somewhat rhomboid in outline, with well marked protuberance in middle. Posterior part of dorsal margin of valve strongly denticulate, the denticles continued on terminal protuberance and hind edges of valve. Head prominent, fornix greatly expanded, front pointed, faintly reticulated. Vertex angulate, rostral projections very long. Eye comparatively large; ocellus small, rhomboid or rounded. Postabdomen broad, with supra-anal angle rather produced. Anal denticles 6-7 on each side. Apical claw slender nearly straight with pecten of large 15-16 teeth and row of fine teeth distally. Teeth on pecten increase in size from proximal to distal end. Antennules of female with very long sense hair. Colour reddish-brown. Length 2.16 to 2.59 mm. Male unknown.

Distribution: This sub-species has endemic distribution only found in type-locality of Jabalpur distt of Madhya Pradesh.

Remark: Present species have general characters similar to species Simocephalus acutirostratus (King, 1853) found at Kodaikanal, South India by Brehm, 1953. Present species transferred and relocated as the form of sub species of S. acutirostratus. The difference in size S. acutirostratus length is up to 2 mm, while S. vidya have size range from 2.16 to 2.59 mm and the claw pecten teeth in S. acutirostratus are 10-12 which are similar in size throughout and in S. vidya have pecten of 15-16 teeth and their size increases from proximal to distal end.

21. Simocephalus acutirostratus gajareae (Rane, 1986)

1986. Simocephalus vidyae gajareae (Rane)

Material examined: 9 exs., 18-7-1982, Balsagar tank behind medical college, 7 kms south west on Shahpura road, jabalpur distt., M.P., coll. P.D. Rane.

Diagnostic characters: Female: Carapace seen laterally, broadly rectangular with bilobed protuberance in the middle axis of body; dorsal margin almost straight and curved posterior part situated at some distance above the protuberance; hind edge of valve straight, oblique and joining the inferior edge at an obtuse angle. One-third posterior part of the dorsal margin strongly denticulate, the denticles being continued on terminal lobed protuberance and hind edges of valve. Head very prominent having fornix greatly expanded. Front of head pointed like a beak. Vertex angulate, rostral projection very large. Eye large without refractive bodies; ocellus small, rhomboidal, sometimes triangular. Postabdomen broad with supra-anal angle slightly produced. Anal
denticles 8 on each side. Apical claw with small proximal pecten with 6-7 teeth and distal pecten with large 15-21 teeth. The proximal pecten teeth straight while that of distal pecten slightly bend towards the tip of claw. Antennules slightly curved with large sensory hair at upper margin, arising from knob like expansion and 9 sensory setae present at tip. Colour blackish-green. Length of female is 3.3mm and 32 developing embryos inside brood pouch. Ephippial female smaller than parthenogenetic female. Length 2.2 mm. Colour of ephippium is yellow with slightly darker along circular border.

Male: Unknown.

Distribution: This species has endemic distribution as it has reported only from type locality of Jabalpur distt, M.P.

Remarks: This sub species has general characters similar to Simocephalus acutirostratus from South India, therefore the original sub species S. v. gajareae has been relocated and transferred to S acutirostratus. Both differs in many characters. i. Size – S. acutirostratus-2 mm while in S. a. gajareae-3.2 mm. ii. Protuberance–In S. acutirostratus : Protuberance rounded while S. a. gajareae it is bilobed. iii. The pectinate claw in S. acutirostratus pectin with 10-12 teeth all are of same size and straight while in S. a. gajareae the pecten with 15-21 teeth and they are bent slightly towards the tip of claw.

Subfamily SCAPHOLEBERINAE Dumont and Pensaert 1983

Genus Scapholeberis Schoedler, 1858

Key to the genus and species Scapholeberis

1a. Colour whitish green; head large with sclerotised crest above the head like thorn shape extention, postabdomen large, ventral side of the postabdomen almost half circular with 5-7 anal spines small. Species range from 0.4 to 0.7 mm .................................................. Scapholeberis mucronata (O.F. Muller, 1776).

22. Scapholeberis mucronata (O.F. Muller, 1776)

1903. Scapholeberis mucronata: Sars Archiv for math. og. naturv., xxv, 8, p 8, pl. l, figs. 2a-c.


Diagnostic characters: Female: Body and feet covered by bivalve shell, five pairs of feet, intestine with two hepatic caeca, valves arched dorsally; posterior and ventral margin straight; at their junction a spine. Antennule very small, sucker plate laminated, infolded and flat. Head has arched crest. Anal corner of postabdomen usually rounded, 3 pectinate claw weakly differentiated. Colour of the species white-greenish.

Distribution: India: As Saini & Singh it is recorded from Rewa distt. no other records of this species.

Elsewhere: Palaeartic and North Holartic forms, also recorded from Subarctic North America, Central Europe, Central France, North Italy, European, USSR, Western Siberia.


1853. Daphnia mucronata King, Pap. r. Soc. Candiemens land., 2, 255-256, pl. vi E.

1888. Scapholeberis kingi Sars, Forhandlinger i. Videnskabs selskabet i Christiania, P. 68.

1903. Scapholeberis kingi: Sars Archiv for math. og. naturv., xxv, 8, p 8, pl. l, figs. 2a-c.

Material examined: 3 exs., 10-9-1983, Panagar tank on Sihora road ; 2 exs., Kantangi tank on Damoh road, Jabalpur distt; 40 exs., 3-4-1983, at Holkar tank, Indore, Indore distt; all coll. P.D. Rane.

Diagnostic characters: Body oval, quadrangular and rounded dorsally. Head small, slightly depressed, rostrum rounded and projecting ventrally. Eye large, ocellus small situated closer to the rostrum than to the eye. Antennule short
located behind the rostrum. Posteroventral corner of each valve produced into short spine pointing backwards. Valves with lines and reticulation. Postabdomen short, broad – rectangular with 5-6 anal spines. Claw curved dorsally with spinules along the concave surface. Colour of the species yellowish- black. Length upto 0.4 mm to 1 mm.

**Distribution**: India: Andaman and Nicobar Islands, Assam, Kashmir, Meghalaya, Rajasthan, Tamil Nadu, Maharashtra, West Bengal, Tripura.

**Elsewhere**: Australia, South East Asia, Middle East, Africa, Sri Lanka, Phillipines, North and South America, Germany, China, Thailand, Indonesia.

Family **MOINIDAE** Goulden, 1968

**Key to the genera of family MOINIDAE**

1a. Ocellus present, body laterally compressed .................................................. *Moinodaphnia* Herrick, 1887

1b. Ocellus usually absent, body thick and heavy ................................................................. *Moina* Baird, 1850

**Key to the species of family MOINIDAE**

1a. Ocellus present, one large abdominal process, horse-shoe shaped, valves quadrate .................. *Moinodaphnia macleayi* (King, 1853)

1b. Ocellus absent, small species, less than 1mm. ventral margin of valves with 11-25 long setae, head with supraocular depression ................................................................. *Moina micrura* Kurz, 1874

1c. Large species more than 1.5mm, ventral margin of valve with 80-85 stout setae, head without supraocular depression ................................................................. *Moina dodhui* Rane, 1874

**Genus Moinodaphnia** Herrick, 1887

24. *Moinodaphnia macleayi* (King, 1853)


**Diagnoatic characters**: Female: Head small, rounded and trigonal in shape, with distinct cervical depression. Eye large, filling anterior part of head. Ocellus small, situated closer to antennules than to eye. Antennules slender with long lateral setae and group of sensory setae on the apex. Ventral margin of valve rounded with series of short marginal spines. Abdominal process large, horse-shoe shaped. Postabdomen with an elongated distal end, with 8-10 feathered teeth and a bident tooth, and with 7-11 feathered teeth. Labral keel with few setules on ventral margin. Valve tumid in posterior region crested and marked with oblique striae. Claw with fine setae on the concave margin. Length 0.6 mm.

**Distribution**: India: South India, West Bengal, Andaman & Nicobar Islands, Rajasthan, Tamil Nadu.

**Elsewhere**: Widely distributed in tropics and Australia.

**Genus Moina** Baird, 1850

25. *Moina micrura* Kurz, 1874


**Diagnostic characters**: Female: Head large with well developed supraocular depression. Eye large, no setule either on head or valve. Ventral margin of valve with 11-20 long setae followed by groups of short setae on posterior margin. Antennules are large, thin, with long basal seta. Postabdomen short, slender with distal conical part. Distal margin of postabdomen with bident tooth and 5-9 feathered lateral setae decreasing size
proximally. Claw large and curved, ventral base of claw with pectin of 3-7 teeth.

**Distribution**: India: Tamil Nadu, Maharashtra, Kerala, Rajasthan, West Bengal, Punjab, Haryana, Bihar, Karnataka, Tripura.

**Elsewhere**: Africa, Syria, USSR, France, Phillipines, N. America, South East Asia, Europe.


**Material examined**: 22 exs., 10-12-1980, Madan mahal ditch near premnagar, Nagpur road, Jabalpur distt; 50exs., 29-2-1984, a ditch near Shipra river near railway bridge about 8 kms from Ujjain, Ujjain Distt, all coll P.D. Rane.

**Diagnostic characters**: Female. Carapace oblong laterally and head flattened infront. The head distally separated from the shell, head is broadly rounded, no supraocular depression. Eye large occupying most of the central part. The antennules are long, robust and pointed at both ends. The sensory seta large originates from lateral margin. Antenna very stout covered with hairs all over the rami. The two sensory setae at base are almost as long as the basipod. There is no distinct reticulation but valve has somewhat granular appearance. The ventral shell rim carries row of 80-85 stout setae, followed by shorter teeth in groups of 6-9. Postabdomen broad and long; the distal conical part about one third of total length. 10-11 long feathered teeth and large bidentate tooth present on postabdomen. Claw with hairs on the concave surface. The first leg of male has large, recurved hooks. The postabdomen of male is broader than female; long hairs on the dorsal margin and 10-11 lateral feathered teeth. The claw armed with 12-14 teeth along the concave margin of claw, sometime has appearance of a pecten.

**Distribution**: This species is endemic to the type locality not found at other localities.

Family V. MACROTHRICIDAE Baird, 1843

**Key to the genera of Macrothricidae**

1. Postabdomen very large with long spines....
   ........................................*Ilyocryptus* Sars, 1862a
   - Postabdomen of medium size with small spines
     ........................................2

2a. Antennules widening distally, guts without loops, exopodite of leg iv with three bristles
   ........................................*Macrothrix* Baird, 1843

b. Antennules not widening distally, same length throughout, exopodite of leg iv with two bristles
   ........................................*Echinisca* Lievin 1848

**Genus Macrothrix** Baird, 1843

27. *Macrothrix spinosa* King


**Material examined**: 7 exs., 19-4-1983, Budhagar tank, Jabalpur distt. coll. P.D. Rane.

**Diagnostic characters**: Female: Length 0.4-0.42 mm. In lateral view body oval, head and carapace divided from each other by crumpled shaped structure. Dorsal margin finely serrated in places, edge of head and valves. Head rounded, ventral margin slightly concave with pointed prominence of anteroventral corner near rostral region. Antennules enlarged at apex; anterior margin with several fine incision and rows of setules. Dorsal surface of shell with squamous sculpturing. Eye large, ocellus small located near the tip of rostrum. Postabdomen short, bilobed with row of minute lateral spines. Claw short and serrated on the concave surface.
**RANE** : *Cladocera (Arthropoda : Crustacea)*

*Distribution* : India : Andaman and Nicobar Islands, Manipur, Tripura, Rajasthan, Tamil Nadu, Maharashtra.

*Elsewhere* : Cosmopolitan.

Genus *Echinisca* Lievin, 1848

**Key to the species of Echinisca**

1a. Posteroventral margin of valve fringed with long setae ................................. .............................. *Echinisca capensis monodi* Gauthier, 1930

b. Posteroventral margin with short setae .............. .............................. *Echinisca triserialis* (Brady, 1886)

28. *Echinisca capensis monodi* Gauthier, 1930


*Diagnostic characters* : Female : Length 1-1.1 mm. Body shape oval, dorsal margin broadly rounded, posterodorsal corner with or without projection. Antennules cylindrical typical of the genus, long, slightly bend, not dilated at their extremity; 4 sharp stout spines at their inner margin, sometimes they appears in pair, while at extremity there are half rings of spines. The postabdomen typical to this species, part anterior to the anus is densely seteferous; the anus guarded by a pair of typical flaps: posterior to the anus the ventral edge of the postabdomen with a row of minute teeth. Carapace convex dorsally, ventral margin evenly rounded with a series of long setae at the posteroventral corner. Postabdomen bilobed, dorsal distal margin rounded with 4-5 denticles on anal groove. Claw short, curved, strong, chitinous with a tough setae in the middle. Ventral distal margin is also with fine hairs. Natatorial setae with large anterior segment.

*Distribution* : India : Tripura, Goa.

*Elsewhere* : Sri Lanka, Malaysia and Africa.

29. *Echinisca triserialis* (Brady, 1886)


*Material examined* : 1 ex., 1-4-1984, Amkhas tank; 3 exs., Medical college tank; 5 exs., 29-7-1984, Gorah tank, Jabalpur distt, M.P, all coll P.D. Rane.

*Diagnostic characters* : Female : Length 0.4-0.6 mm. Body oval, dorsal margin of valve with slight cervical depression. Eye large, ocellus small and situated nearest to the apex of rostrum than to eye. Antennule long with long lateral setae, and notches on anterior margin and sensory seta situated near to base. Antennae short with a longest seta having two or three longer spines in the middle. Postabdomen bilobed with rows of spines increasing in size proximally. Claw short and serrated without basal spines.

*Distribution* : India : Andaman & Nicobar Islands, Madhya Pradesh, Rajasthan, Tamil Nadu, Kerala, West Bengal, Madhya Pradesh and Maharashtra.


Genus *Ilyocryptus* Sars, 1862

30. *Ilyocryptus spinifer* Herrick, 1882


*Diagnostic characters* : Female : Length 0.8 to 0.9 mm. Carapace triangular, dorsal outline slightly convex. Posterior and ventral margin of carapace forming large continuous curve. Carapace and head shield retained during the moult. Head small, eye large, ocellus small situated about halfway between eye and base of antennules. Antennules long with group of sensory setae on
distal end. Valves with a series of long feather like setae on ventral side. Postabdomen with slight depression in the middle. Preanal margin with 12 denticles upto anal groove and with five long and stout spines on the lateral surface.

Distribution: India: Andaman & Nicobar Islands, Meghalaya, Rajasthan, Tamil Nadu, Tripura and Madhya Pradesh.

Elsewhere: North America, China, Australia and Cuba.

Genus Guermella Richard, 1892
31. Guermella raphaelis Richard, 1892


Diagnostic characters: Length 0.4-0.5 mm. Body oval, carapace delicate, tumid with broad reticulate cells, mostly well marked at posterior dorsal region, head and shell region. Eye moderately large, situated anterior to the middle portion of head. Ocellus small, present at the tip of the rostrum near the bases of antennules. Rostrum with small triangular protuberance in between the bases of two antennules. Labral plate small, not so well marked. Two large thick and broad antennules. Apex of the antennules with 3-4 large triangular denticle like outgrowth, extending into 6-8 terminal olfactory setae. 4-6 lateral hairs present at lateral margin. One large bristle on the dorsal side near the base of antennules. Length of large antennule is about 1/4 of the length of body and width and length ratio is 1 : 4. Antenna large stout with thick basal segment. Basal segment with long thick seta at proximal side and one long thin seta at distal end near the joint of two rami of antenna. Dorsal side of basal segment with few serrations and covered with 3-4 rows of half circular cells. Outer ramus of antenna 4 segmented, inner is 3 segmented. Antennal formula 0-0-03 / 1-1-3. Ventral margin with minute denticles; sometimes they are converted into long spines near postero-lateral margin of valve. Postabdomen small with two small hook shaped claws, bases of which are club shaped. Dorsal margin of postabdomen evenly rounded without any anal teeth. Slight notch present at base of natatorial setae which are bend at their distal end. Small elongated oval head pore present at junction of head and carapace.

Distribution: India: Dharwad- Karnataka. This is the second report of this species from India.

Elsewhere: Srilanka, Chad-Africa.

Genus Grimaldina Richard, 1892
32. Grimaldina brazzai Richard, 1892


Material examined: 3 exs., 3-4-1980, Amakhas tank on Nagpur Road, Jabalpur distt. M.P, coll. P.D. Rane.

Diagnostic characters: Ephippial female: Length 0.8 to 0.9 mm. Length of ephippium 0.65mm and width 0.5 mm. Body broadly oval to quadrangular; compressed with all margin of valve slightly convex. Head with small rostrum and large triangular labrum with pointed tip. Head with large eye and small ocellus. Ocellus is nearer to bases of antennules than eye. Distinct crest above the eye arises from tip of the rostrum to bases of antenna. Antennules thin, long about 20% body length with fine serrations, about 10, both on dorsal and ventral margin. 6 denticles like projections at anterior end, from olfactory setae arise. Ventral margin of valve with several stout unequal setae; become long at posteroventral margin. Both dorsolateral and ventrolateral angle of carapace evenly rounded, slight hump at posterodorsal angle. Antenna well developed with serrated margin. Antennal formula 0-0-1-3/1-1-3. Two small setae present at the bases of basal segment. Ephippium rounded, quadrangular, with dark brown core area surrounded by light yellow ring. One circular egg which covered all over with rounded cells. Postabdomen enormous, much compressed, roughly semielliptical. The prenal part
Cladocera (Arthropoda: Crustacea) divided by a notch into two parts of which anterior is smaller. Dorsal margin of postabdomen has 3 lobes, junction of 1st and 2nd with one large stout spine. 1st lobe has large curved 10 spines, other lobes with fine marginal spinules. Claw recurved, small, denticulate with one small and one large basal spine.

**Distribution**: This is very rare species of this genus only collected in one sample. Recorded first time in India.

**Elsewhere**: Congo–Africa, South America.

Family BOSMINIDAE Sars, 1865

**Key to the genera and species of Bosminidae**

1a. Antennules of female not united at the base, almost parallel to each other ...................... ..

- *Bosmina longirostris* (O.F. Muller, 1776)

b. Antennule united at base and diverging at apex .............

- *Bosminopsis deitersi* Richard 1895

Genus *Bosmina* Baird, 1845

33. *Bosmina longirostris* O.F. Muller, 1776


**Diagnostic characters**: Female: Length : 0.35-0.39 mm. Body oval, with highest width in the middle and dorsal side evenly curved. Body transparent, colour whitish yellow. Ventro-posterior margin with two mucrons. Two antennules markedly bent at tips, with olfactory setuated one third portion away from base. Antenna very small with 3 and 4 segmented rami. Rostrum small with thin setae on the upper margin. Eye large, present near the base of rostrum with distinct eye lenses. Postabdomen quadrate, with two pectinate claw, claw with proximal 5-7 teeth and distal with 7-10 teeth. Lower part of postabdomen slightly protrudes out with 3-4 large curved spines.

**Distribution**: India : Kashmir, Meghalaya, West-Bengal, Maharashtra, Tripura.

**Elsewhere**: Cosmopolitan.

34. *Bosminopsis deitersi* Richard, 1895


**Material examined**: 100 exs., 12-4-1979, Pariat tank, Jabalpur; 26 exs., 23-3-1981 Narmada river at Bhedhaghat, 13 Kms N/W of Jabalpur, Jabalpur distt, M.P., all coll. P.D. Rane.

**Diagnostic characters**: Female: Body oval, posterodorsal corner of valves distinct, posteroventral corner with small micro-like processes and one or two spinules before it. Head large with a long rostrum with two lateral branches. Eye large, antennules long united with each other at basal part and with 5-6 sensory setae on the ventral side near apex. Valve with polygonal reticulation. Dorsal margin with cervical depression. Postabdomen broad and tapering distally with about 4-6 small spines on the post-anal edge followed by a row of setae proximally. Claw large, separated with large basal spine.

**Distribution**: India : Delhi, Rajasthan, Maharashtra, West-Bengal, Tripura, Kashmir, Kerala.

**Elsewhere**: South-East Asia, Africa, North & South America.

Family CHYDORIDAE Stebbing, 1902

**Key to the subfamilies of Chydoridae**

1a. Two separate main head pores and two pores situated between main pores .....................

- CHYDORINAE Stebbing, 1902

b. Two and three main pores and small two pores situated lateral to main pores at distance ......

- ALONINAE. Frey, 1967

**Key to genera of subfamily Chydorinae**

1. Valves with setae on entire posterior margin ........................................................... 2

- Valves with setae situated on the ventral margin at anterior half and the inner side of ventral margin of posterior half ............... 3
2. Rostrum long.......... *Pleuroxus* Baird, 1843

- Rostrum short and blunt.......................... *Alonella* Sars, 1862a

3. Labrum with plate shaped process ..........4

- Labrum without plate shaped process .......... *Pseudochydorus* Fryer, 1968

4. Body spherical, postabdomen long, anus situated on its functional ventral side.............. *Chydorus* Leach, 1816

- Body oval, postabdomen rounded, anus situated on its functional posterior side ...... *Dunhevedia* King, 1853

**Genus Pleuroxus** Baird

**Key to the species of genus Pleuroxus**

1. Postabdomen with rounded distal end........2

- Postabdomen with truncated distal end ......3

2. Anal denticles irregularly distributed on postabdomen. Preanal corner not projecting .................. *P. aduncus* (Jurine, 1820)

Anal denticles regularly distributed and the preanal corner slightly projecting .................. *P. similis* Vavra, 1900

35. *Pleuroxus aduncus* (Jurine, 1820)


**Material examined**: 4 exs., 7-7-1983, Gulava tank, Jabalpur distt, M.P, coll. P.D. Rane.

**Diagnostic characters**: Female : Posteroventral corner of valves with 1-3 posteriorly directed denticles. Height of posterior margin of valve about one third of maximum height. Dorsal margin strongly convex; ventral margin with feathered setae. Rostrum long, pointed and directed downwards. Antennules reaching about middle of rostrum, with sensory setae in the middle of anterior margin. Plate of labrum convex anteriorly and with slightly pointed apex. Ocellus smaller-than eye. Postabdomen short, tapering distally. Anal denticles small, irregularly distributed forming groups of 8-10. Lateral setae present. Claw with two basal spines. Length : 0.52 mm.

**Distribution**: India : Rajasthan, Maharashtra, Madhya Pradesh, Himachal Pradesh, Kashmir.

**Elsewhere**: W. Pakistan, Central Asia and N & S America.

36. *Pleuroxus similis* Vavra, 1900


**Diagnostic characters**: Female : Length 0.4 mm. Body with uniformly curved dorsal margin. Posteroventral corner of valves with 1-3 rather blunt denticles. Valve without reticulation, ventral margin with feathered setae. Rostrum long pointed downwards reaching level of ventral margin of valve. Antennules terminating far from apex of rostrum. Plate of labrum with convex anterior margin. Eye and ocellus present. Postabdomen elongated, tapering towards distal end; preanal corner moderately distinct. Anal spines 13-14 and increase in size gradually towards distally. Claw with two basal spines; first is half the length of second. Colour of specimens shows variations from yellow to dark brown. Intestine with loops and with caecum.

**Distribution**: India : Kashmir, West Bengal, Madhya Pradesh.

**Elsewhere**: Australia, Chile, Northern Caucasus, Taskent in USSR, Sri Lanka.

**Genus Alonella** Sars, 1862

37. *Alonella excisa* (Fischer, 1854)


Diagnostic characters: Female: Length 0.28-0.35 mm. Posterior margin of valve straight, slightly angular, about half the maximum height. Posterolateral corner of valve slightly protrudes out in the form of blunt denticle. Posterior half portion strongly reticulated with polygonal cells. Fine longitudinal striations and dots are present inside these polygons. Rostrum blunt. Antennules not reaching the apex of rostrum and with sensory seta distal to the middle. Plate of labrum with convex anterior margin and blunt apex. Postabdomen long with 7-8 anal denticles and 6-8 groups of lateral setules. Claw with two basal spines. Ocellus slightly smaller than eye, placed nearer to eye than to apex of rostrum.

Ephippial female: Length about 0.3 mm. Ephippium dark brown and oval. The postabdomen larger than parthenogenetic female with smaller anal denticles. Ephippium having dark reticulated hexagonal cell whose margin are slightly thickened.

Male: Length: 0.23-0.25 mm. Male smaller than female with distinct curved hook at the first leg. Posterodorsal angle is situated higher than the female. Reticulation same as female. Antennules with larger terminal esthetascs. Labrum with slight notch in the middle. Postabdomen narrowing, without anal denticles but several small setules all over the dorsal margin. Claw with two basal spines and vas deference opens at the base of claw.

Distribution: India: Kashmir, Madhya Pradesh and Tripura.

Elsewhere: Cosmopolitan.

Remark: Male and reproductive female has been described first time here which are not known before.

Genus Chydorus Leach, 1816

Key to the species of genus Chydorus
1a. Valves without deep polygons .......................... 2
b. Valves with deep polygons ............................

............... Chydorus faviformis Birge, 1893

2a. Plate of labrum with denticles ........................
............... Chydorus barroisi (Richard, 1894)
b. Plate of labrum with out denticles ................... 3

3a. Plate of labrum pointed ventrally, species more than 0.5 mm ...........................................
............... Chydorus ventricosus Daday, 1898
b. Plate of labrum rounded apex, less than 0.5 mm .... Chydorus eurynotus Sars, 1901 .... 4

4. Plate of labrum with button or nipple shaped apex ........................................................

Chydorus eurynotus brehmi Biswas (1966)

38. Chydorus eurynotus Sars, 1901


Material examined: 3 exs., 5-7-1985, Madan Mahal tank, Jabalpur distt, M.P, coll. P.O. Rane.


Distribution: India: Maharashtra, Rajasthan, Madhya Pradesh; third record of species from India.


Material examined: 3 exs., 4-7-1984, Deotal tank, Jabalpur distt, M.P, coll. P.D. Rane.

Diagnosis: Female: Length 0.45-0.5 mm. Carapace almost spherical in lateral view, dorsal margin articulate in middle, posterior part almost straight. Head slightly curved with acute rostrum. Labrum laterally convex, ending into button or nipple shaped protuberance. Valve without any sculpture. Antennules end far before apex of rostrum. Postabdomen with distinct preanal corner with about 12 anal spines and several groups of lateral setae, scattered irregularly, distributed on sides of postabdomen. Ocellus half as long as eye; situated nearer to eye than to apex of rostrum.

Distribution: India: Nilgiri hills, Jaipur-Rajasthan, Maharashtra. This is a new record of the this subspecies from Madhya Pradesh state.

Elsewhere: This is endemic subspecies only found in India only.

40. Chydorus ventricosus Daday, 1898

Material examined: 10 exs., 1-3-1983, Adhartal tank, on Sihora Road, Jabalpur distt, M.P, coll. P.D. Rane.

Diagnostic characters: Female: Length 0.74 mm. Body oval, posterodorsal and posteroventral corners of valves rounded with denticles. Ventral margin strongly bulged in the middle, with marginal setae anterior to the bulge and submarginal setae posterior to the bulge. Valve with faint polygons. Rostrum long, pointed. Antennules thick about half length of rostrum. Labral plate long, curved anteriorly and broadly pointed. Postabdomen long with distinct preanal corner with 8-10 anal spines. Claw with two basal spines.

Distribution: India: Kashmir, Tripura, Maharashtra.

Elsewhere: South East Asia, Australia, China & North America.

41. Chydorus faviformis Birge, 1893


Diagnostic characters: Female: 0.45 mm. Shape rounded and oval. Posteroventral and posterodorsal corner of valve not distinct. Valve and head shield with deep hexagonal cells. Ocellus smaller than eye situated much closer to the eye than apex of rostrum. Labral plate with convex anterior margin and blunt apex. Postabdomen with 7-9 unequal anal spines middle 3 are straight and large and others serrated.

Distribution: India: Andaman & Nicobar Islands, Tripura, Gujarat, Rajasthan, Tamil Nadu and Maharashtra.

Elsewhere: South-East Asia, Sri Lanka, China & Africa.

42. Chydorus (Ephemeroporus) barroisi (Richard, 1894a)

Material examined: 5 exs., 21-4-1984, Medical college tank; 2 exs., 3-4-1985, Sadar tank, Jabalpur distt, M.P, all coll P.D. Rane.

Diagnostic characters: Female: Length 0.24 to 0.26 mm. Body elliptical in shape with a spine in the posteroventral corner. Carapace ornamental with striations and hexagonal cells. Labrum with produced apex and with 3-5 serrated denticles on the anterior margin. Postabdomen with 7-9 unequal anal spines middle 3 are straight and large and others serrated.

Distribution: India: Nilgiri hills, Jaipur-Rajasthan, Maharashtra. This is a new record of the this subspecies from Madhya Pradesh state.

Elsewhere: This is endemic subspecies only found in India only.
long basal spines. Claw with two basal spines and setae on the concave margin.

**Distribution**: India: Andaman & Nicobar Islands, Gujarat, Rajasthan, Tamil Nadu, Tripura, Maharashtra, West Bengal & Kerala.

**Elsewhere**: Syria, South America, North America, Sahara, Lake Malwa (Nyassa), Sudan, Nigeria, China, Lake Chad, U.S.S.R, Sri Lanka, Philippines, Nepal, Australia.

**Remarks**: Frey, 1982 erected a new genus *Ephemeropterus* on the basis of the character that large median head pore only occur in the first instar and when revised this genus placed sp. *barroisi* and other five known species and two new species into this new genus.

**Genus Dunhevedia** King, 1853

**Key to the species of Dunhevedia**

1. Plate of labrum without denticles .......................... 2
   Plate of labrum with serrated margin with 10-15 denticles ................................................... .......................... *Dunhevedia serrata*, Daday, 1898

2. Anterior margin of labrum without tubercle shaped convexity. Posteroventral corner of valve with denticle and accessory denticle above it ................................................................. *Dunhevedia crassa ciliocaudata* Sovinski, 1891... 3

3. Labral tubercles are acute pointed with small accessory denticle present above the main denticle ................................................................. .......................... *Dunhevedia odontoplax* Sars, 1901

43. *Dunhevedia crassa* King, 1901


**Diagnostic characters**: Female: Length 0.38-0.5 mm. Body oval, posteroventral corner of valve with pointed denticle about 10 micron in length. Plate of labrum triangular, with blunt apex; anterior margin slightly concave without denticle. Ventral margin of valve with small feathered setae which are longest in the middle. Maximum height slightly before middle. Posterior margin almost straight. Valve with pattern of hexagons. Antennules thick, slightly tapering distally, ending slightly before apex of rostrum, lateral sensory setae situated on a tubercle. Postabdomen oval with 12-14 anal denticles, and number of groups of lateral setae. Claw with basal spine and with setae on the concave margin. Ocellus situated near the eye than apex of rostrum. Width of eye 30 micron and ocellus 10 micron.

**Distribution**: India: West Bengal, Rajasthan, Andaman & Nicobar Islands, Gujarat, Tamil Nadu, Maharashtra, Tripura, Madhya Pradesh.


44. *Dunhevedia crassa ciliocaudata* (Sovinsky, 1891)

1891. *Alona ciliocaudata* Sovinsky, Zapiski Kievskogo Obschestva Estestvoispytatelei 11(2) : 159-160, Pl. III, figs. 33-36.


**Material examined**: 1 ex., 27-7-1984, Gupeshawar tank, Jabalpur distt, M.P. coll. P.D. Rane.

**Diagnostic characters**: Female: Length 0.5mm. Posteroventral corner of valve with denticle. Sometimes with accessory denticle above it. Anterior margin of labral plate with strong convexity and blunt apex. Ocellus smaller than eye and situated halfway between eye and apex of rostrum. Postabdomen with 11-12 anal spines and transverse row of setae almost on whole surface. Middle setae of ventral margin of valve are rather long followed by about 30 feathered setae started submarginally.

**Distribution**: India: Maharashtra, North India, Kashmir.
Elsewhere: Poland, USSR.

Remark: This is first record of the species from Madhya Pradesh state.

45. Dunhevedia serrata Daday, 1898


Diagnostic characters: Female: Length 0.5 to 0.6 mm. length about 1.55 times the maximum height. Valve with distinct posterodorsal corner with 2 denticles, dorsal is smaller than ventral one. Valve with pattern of hexagons. Rostrum blunt. Plate of labrum triangular with serrated anterior margin, with 10-12 hook shaped denticles which are directed downwards. Plate of labrum with pointed ventral end. Ventral margin of valve with feathered setae which are longest in the middle. Maximum height of valve is in the middle. Antennules thick, slightly tapering distally, ending slightly before the apex of rostrum. Lateral sensory setae situated on tubercle distal to middle of anterior margin of antennules. Setae on antennae: 0-0-3/0-1-3. Postabdomen elongated, oval with distinct concavity at the dorsomiddle region and posterior region slightly protrude out. 15-25 sharp dorsal anal denticles, directed posteriorly and numerous lateral groups of setae. Ocellus situated half way between the eye and apex of rostrum. Claw with basal spine and with setae on the concave margin.

Distribution: India: Tamil Nadu, Maharashtra, Madhya Pradesh, Andaman & Nicobar Islands, Rajasthan & Tripura.


46. Dunhevedia odontoplax Sars, 1901

1901. Dunhevedia odontoplax Sars. Archiv. For. Mat. Og. Naturv., 23(3) : 76, pl. 11, Figs. 6, 6a, 6b.


Diagnostic characters: Female: Length 0.47-0.50 mm. Body oval, dorsal side evenly arched and ventral side almost straight. Postero-ventral corner of valve with a denticle and valve posterior to that is slightly undulating. Ventral margin of valve with long feathered setae. Last 1/3 part with longest setae. Valve without pattern of hexagonal reticulation. Antennules thick, slightly tapering distally, ending slightly before apex of rostrum. Lateral sensory seta situated on the tubercle. Plate of labrum triangular with pointed apex and a blunt denticle present at antero-middle region. Eye present, ocellus less than half length of eye. Postabdomen large usually oval, dorsal side with 25 moderately large anal denticles. Several groups of lateral setae present. Dorsal margin of claw evenly curved with one basal spine about half the length of claw.

Distribution: India: This is first record of this species from India.

Elsewhere: South America, Chad.

Remarks: Specimens of Jabalpur are similar to specimens described by Rey and Jean (1968) from lake Chad; with little developed small blunt tubercle at anteromiddle region of labrum. There are different types of tubercles/denticles on labral plate described by various authors. Sars (1901) acute pointed, Harding (1955) almost rounded blunt; Stingelin (1913) acute pointed with small accessory denticle present above the main denticle. According to Harding (1955), the posteroventral angle of valve bears large denticle and a accessory denticle present above the main denticle. Jabalpur specimens have comparatively large postabdomen with about 25 recurved anal spines and basal spine large about one third of claw. While typical forms described by Smirnov (1974) from lake Titicaca, have postabdomen rather small with 11 to 12 small straight anal spines and basal spine about one fifth the length of the claw.
Genus *Pseudochydorus* Fryer, 1968

47. *Pseudochydorus globosus caelatus*

Wereschagin, 1912


**Material examined**: Female: Length 0.55 mm.


**Distribution**: India: This subspecies records first time in India.

**Elsewhere**: Western Belorussia (U.S.S.R).

**Remarks**: This subspecies in general appears similar to typical *Pseudochydorus globosus* (Baird, 1893) but mainly differs in the presence of pits on the body. The claw of this subspecies appears more strongly developed and first leg with strong hook like seta which bordered with teeth is also unique character only to *Pseudochydorus globosus caelatus*.

48. *Daday macrops* (Daday, 1898)


1901. *Daday macrops* Sars, *Archiv for math. Og naturv.*, 23(3): 73-74, pl.11, figs. 5a, 5b.


**Material examined**: 1 ex., 3-3-1983, Ranital tank; 2 exs., 7-3-1983, Belbagh tank, Jabalpur distt, M.P, all coll P.D. Rane.

**Diagnostic characters**: Female: Length: 0.35-0.37 mm. Head small, much depressed. Dorsal and ventral margin of valve convex. Posteroventral corner of valve rounded, without a denticle. Valve with pattern hexagon. Antennules projecting markedly beyond apex of rostrum. Rostrum short and broad. Labrum with bead like process. Eye very large, with few lenses, ocellus nearly as large as eye-elongated. Postabdomen of moderate size, compressed, somewhat broadened behind anus and narrowing towards apex, about 10-12 marginal anal denticles, the preanal corner projecting. Claw small, with one small basal spine.

**Distribution**: India: Rajasthan, Tamil Nadu.

**Elsewhere**: Africa, Australia, Malaysia and Neotropical regions, Sri Lanka, Paraguay, Nugenia, Sahara, Tanganika, America, Australia, Phillipines, Africa, New-South whales, Australia.

Subfamily ALONINAE Frey, 1967

**Key to the genera of subfamily ALONINAE**

1. Three main head pores ................................ 2
   – One or two main head pores ........................ 6
   2. Lateral setae of postabdomen large and in groups ....... *Leydigia* Kurz, 1875
      – Lateral setae of postabdomen not large ..... 3
   3. Postabdomen of varying form but narrow or very long ................. 4
      – Postabdomen long and narrow ............... 5
   4. Head shield with broadly rounded anterior margin; projecting in anteriorly lateral view ................. *Graptoleberis* Sars, 1862b
      – Anterior margin of head shield not broadly rounded; not projecting in lateral view .........

................................. *Alona* Baird, 1843
5. Rostrum projecting ...........................................
   *Kunzia* Dybowski and Grochowski, 1894
   - Rostrum not projecting ................................
     *Camptocercus* Baird, 1843

6. Two main head pores ................................. 7
   - One main head pore .................................... 8

7. Main head pores narrowly connected ............ Biapertura Smirnov, 1971
   - Main head pores separate ...........................
     *Oxyurella* Dybowski & Grochowski, 1894

8. Body much longer than high, large anal teeth .......... *Euryalona* Sars, 1901
   - Body slightly longer than high, anal teeth
     absent, one head pore ............................... Indialona Petkovski, 1966

9. Two bean shaped thickening as head pores; Anal teeth small and many submerged setae like spines .......... *Notoalona* Rajapaksa & Fernando, 1987

Genus *Leydigia* Kurz, 1875

Key to the species of genus *Leydigia*

1. Postabdomen not narrowing distally, widest in distal part. Distal group of lateral setae, each with 2 setae .................................
   *Leydigia achantoceroides* (Fischer, 1854)

2. Postabdomen slightly narrowing distally, widest in the middle. Distal groups of lateral setae with three setae each ......................
   *Leydigia australis* Sars, 1885

49. *Leydigia achantoceroides* (Fischer, 1854)


   Diagnostic characters : Female : Body size 0.89 mm. Valve with longitudinal lines. Rostrum short, blunt, antennules not reaching apex of rostrum. Plate of labrum with setae on anterior margin. Ocellus triangular, larger than eye. Postabdomen broadly rounded and margin concave. Lateral part of anus with several rows of setae. Lateral groups consist of 2 setae each. Anal spine very small. Two small terminal groups of cilia near claws. Claws with out basal spine.

   *Distribution*: India : West Bengal, Rajasthan, Gujarat, Andaman & Nicobar Islands, Tamil Nadu.


50. *Leydigia australis* Sars, 1885

1885. *Leydigia australis* Sars, Forhandlinger i Videnskabs Selskabet i Christiania, pp. 35-43, pl. 7, 8.


   Diagnostic characters : Length 0.6 to 0.8 mm. Valve without sculpture, but very fine longitudinal lines all over. Postero-dorsal corner blunt. Postero-ventral corner rounded without denticle. Antennules almost reaching apex of the rostrum. Plate of labrum with hairs at anterior margin. Antennule with sensory seta on outer side near the distal end. Postabdomen slightly narrowed distally widest in the middle. Dorsal side of postabdomen with about 10-11 lateral large setae in the group of 2-3 each, distal setae longest in each group, proximal setae shortest. In addition 12-14 groups of spinules present. Claws without basal spine.

   *Distribution*: India : Firstly recorded from India.

   Elsewhere : Queensland, Australia, Africa.

Genus *Kunzia* Dybowski and Grochowski, 1894

Key to the species of the genus *Kunzia*

1. Antennules almost reaching apex of rostrum .................. *Kunzia latissima* (Kurz, 1875)...2

2. Antennules reaching to the middle of rostrum ............... *Kunzia longirostris* (Daday, 1898)

51. *Kunzia latissima* (Kurz, 1875)

RANE: Cladocera (Arthropoda: Crustacea)


**Diagnostic characters**: Female: Length 6.7 mm. Posterodorsal corner rounded, situated slightly below level of maximum height. Posteroverentral corner rounded, without denticles. Valve marked with longitudinal lines. Head and valves forming semicircular arch. Dorsal keel present, head keel present. 3 connected head pores. Rostrum long. Antennules almost reaching apex of rostrum. Postabdomen long, narrow, slightly tapering distally; with 12 marginal anal spines. Claw with basal spine, row of setae on concave margin.

**Distribution**: West Bengal. First record from Madhya Pradesh.

**Elsewhere**: Holarctic and Neotropical regions and European U.S.S.R.

52. Kurzia longirostris (Daday, 1898)


**Material examined**: 6 exs., 7-8-1981, A tank 4 kms east of Katangi on Damoh road, Jabalpur distt, M.P, coll. P.D. Rane.

**Diagnostic characters**: Female: Length 0.45-0.7 mm. Shape rectangular somewhat tapers towards the posterior margin, dorsal margin slightly curved, posterodorsal angle obtuse. Valves marked with longitudinal lines. Rostrum relatively long and slightly curved ventrally, apex or rostrum in line with median line of body. 3 Head pores in the head shield. Antennules reaching middle of rostrum. Antenna not reaching middle of rostrum. Plate of labrum with pointed apex. Ocellus smaller than eye. Postabdomen tapering distally. Preanal corner not projecting. Anal denticles 18-20. Claw with basal spine and row of setae on concave margin.

**Distribution**: India: Kashmir, Kumaon – W. Himalayas, Maharashtra, Madhya Pradesh.

**Elsewhere**: Cosmopolitan.

Genus Graptoleberis Sars, 1862

53. Graptoleberis testudinaria (Fischer, 1851)


**Diagnostic characters**: Female: Length 0.76 mm. Dorsal margin of body convex, ventral margin almost straight. Ventral margin of valves with setose setae decreasing in size towards posteroverentral corner but not reaching it. Posteroventral corner of valve with two denticles. Head body with polygonal cells. Three connected head pores and two lateral pores. Rostral margin very wide. Antennules with a sensory seta at distal end with esthetases of different length. Plate of labrum with rounded apex. Ocellus smaller than eye. Postabdomen tapering distally and with distinct preanal corner. Anal margin with row of anal spines. Eight groups of lateral setae. Claw with a small basal spine and fine setae along concave margin.

**Distribution**: India: Kashmir, Kumaon – W. Himalayas, Maharashtra, Madhya Pradesh.

**Elsewhere**: Sri Lanka, Asia, Africa, America, Australia.

Genus Camptocercus Baird, 1843

54. Camptocercus laitkæ Rane, 1985


**Diagnostic characters**: Female: Length of female 0.49-0.96 mm. Body oval, laterally compressed with narrow, long, denticulate postabdomen. Valve with 20-21 halfcircular longitudinal lines sometimes with cross connections, which appears like brick-pattern.
Posteroventral corner of valve with 3 small denticles directed posteriorly with fine spinules between them. Rostrum pointed, slightly directed anteriorly. Head keel present. Antennule large but not reaching apex of rostrum, with two spines on upper side and one sensory seta arising from bulb like process on lower side. Antenna three segmented, slightly larger than antennules. Setae on antenna 0-0-3/0-1-3. Plate of labrum with pointed apex and small spine on posterior side. A dark band present between ocellus and rostrum. Ventral margin of valve with unequally spaced setae. Postabdomen long, narrowing distally with small preanal and large postanal part. Postanal part with 18-19 anal denticles distal to anus. First 1-2 anal denticles comparatively large with pointed apex. Remaining denticles increase in size from proximal to distal, with 2-3 small denticles at lateral margin. Three small denticles present between base of claw and first large anal denticle of postabdomen. Claw with a basal spine and a row of about 14 spinules on concave margin, which become larger distally. Terminal two spinules larger than others, and followed by five hairs on the three quarter remaining part of the claw. Basal spine also with five hairs along its ventral margin. Ocellus smaller than eye, situated slightly nearer to eye than apex of rostrum. First leg with three setae on outer branch of endite. Basal setule on first and second setae is hook-shaped with flagellum, laterally. Second seta largest and third smallest, about one-third as long as second.

**Distribution**: This is an endemic species only found from type locality of Madhya Pradesh.

**Genus Euryalona** Sars, 1901

55. *Euryalona orientalis* (Daday, 1898)


**Material examined**: 2 exs., 3-4-1978, a ditch near Bada Mahadeo, Pachmadi; 30 exs., 21-8-1982, Tewar tank, on Shahpura road, Madhya Pradesh, all coll. P.D. Rane.

**Diagnostic characters**: Female: Length 1 mm. Posteroventral corner of valves rounded, without denticles. Ventral margin of valves with blunt process before middle and setae arising there from some distance of the margin. Anterior margin of valve with fine setae. Antennule reaching apex of rostrum. Plate of labrum with convex anterior margin and blunt apex. Ocellus smaller than eye and situated halfway between eye and apex of rostrum. Postabdomen narrow and slightly curved with about 20 anal denticles, decreasing in size proximally. Claw with basal spine and with setae on proximal half of concave margin.

**Distribution**: India: Tamil Nadu, West Bengal, Maharashtra.

**Elsewhere**: Shore of Gulf Mexico, North - East China, Indo-Malayan, Ethiopian and Neotropical regions.

**Genus Biapertura** Smirnov, 1971

**Key to the species of genus Biapertura**

1. Posteroventral corner of valve with denticles ...: *B. karua* (King, 1853)

Posteroventral corner of valves without denticles ........................................... 2

2. Plate of labrum with denticles, valves tuberculated ....... *B. verrucosa* (Sars, 1901)

Plate of labrum without denticles, valves not tuberculated ................................ 3

3. Postabdomen not widening distally. Anal spines large, lateral setae not projecting beyond margin of postabdomen .................................................................

........................................... *B. affinis* (Leydig, 1860)

56. *Biapertura affinis* (Leydig, 1860)


**Material examined**: 2 exs., 29-9-1982, Patan tank; 6 exs., 8-7-1985, Hanumantal tank, Jabalpur distt, all coll P.D. Rane; 3 exs., 11-5-1985, Chunabatti tank near BHEL, Bhopal distt, coll M.L. Kosta.
**Diagnostic characters:** Female: Length 0.8 mm. Body oblong in outline, maximum height in the middle region. Posteroventral corner of valve with rows of groups of setae continuing as a row of spinules on the posterior margin. Valves marked with longitudinal lines. Two main head pores on head shield, with narrow connection between them. Antennules not reaching apex of rostrum. Setae are present on segments of antennae. Plate of labrum with convex anterior margin. Ocellus is smaller than eye, situated near to eye than to apex of rostrum. Postabdomen uniformly wide, dorsal margin rounded with 12-16 anal denticles. Lateral groups of setae on concave margin. Setae on antennae: 0-0-3/1-1-3; with spines on proximal segment of exopodite and on both distal segments. A spinule present at joint of the segments of the distal setae.


**57. Biapertura karua** (King, 1853)


**Material examined:** 1 ex., 21-5-1979, Narmada river at Hoshangabad ghat, Hoshangabad distt; 3 exs., 1-2-1983, Gangasagar tank; 5 exs., 10-9-1984, Panager tank, Jabalpur distt, all coll. P.O. Rane.

**Diagnostic characters:** Female: Length 0.32 mm. Posteroventral corner of valve rounded. Valves with tubercles. Head shield with two main connected head pores and two small lateral head pores. Antennules almost reaching apex of rostrum. Plate of labrum with incision at lower portion of labral plate but no distinct denticle anteriorly. Ocellus smaller than eye and situated nearer to eye than to apex of rostrum. Postabdomen short with curved dorsal margin and rounded distal margin. Anal margin projecting and situated in the middle of dorsal margin of postabdomen. Postabdomen with 6-8 anal spines and lateral setae rather large and in groups. Claw with basal spine and setae on concave margin.

**Distribution:** India: Maharashtra & Gujarat. This is the first record of this species from Madhya Pradesh.
Elsewhere: Indo-Malayan, Ethiopian and Neotropical regions.

Genus *Oxyurella* Dybowski and Grochowski, 1894

59. *Oxyurella sangramsagari* Rane, 1984


**Material examined:** 1 ex, (male), 15 exs (females), 1-12-1978, Sangramsagar tank behind medical college, Jabalpur, Madhya Pradesh, coll. P.D. Rane.

**Diagnostic characters:**

**Male:** Length 0.45 mm. Body oval, posteroventral of valves rounded without denticles but row of spinules on the inner side. Rostrum blunt. Valve without lines. Antennules not reaching apex of rostrum. Esthetases of different length projecting beyond apex of rostrum. Antennules with a two segmented sensory papilla present on lateral side near apex. Plate of labrum rounded, with a slight concavity to the upper side. Post-abdomen narrowing distally with large curved hook shaped and one small anal denticle; 5-6 groups of lateral setae in the middle of post abdomen. There was distinct incision at the base of claw. Claw slightly bent at its distal end with two basal spines; distal larger about slightly less than half length of the claw and situated at about 1/4th of the total length of claw from base. Ventral side of valve with setae along its entire margin. Post-abdomen tapering towards base of claw without dorsal corner, with 4-5 groups of setae on lateral surface. Pre and postanal parts of postabdomen with anal denticles almost absent. Claw with one basal spine. Labral plate rounded with notch at apex. Ventral bulge of valve with few grouped setae and setae posterior to it arise from small protuberance.

**Female:** Length 0.6 mm. Female is larger than male with lines on the valves. Ventral margin of valve with setae along its entire margin. Antennules not reaching apex of rostrum. Plate of labrum rounded. Rostrum with blunt apex. Postabdomen slightly narrowing distally, with 13 anal denticles decreasing in size proximally; distal denticle longest and a small curved denticle before it. Claw with three basal spines. Proximal two smaller and distal one larger, about less than half length of the claw. Group of lateral setae present on the postabdomen.

**Distribution:** India: This species is endemic to the Jabalpur distt. Madhya Pradesh as this species only found at type locality.

Genus *Indialona* Petkovski, 1966

60. *Indialona ganapati* Petkovski, 1966


**Material examined:** 12 exs., 7.7.1982, Narmada river, Bhedaghat, about 7 Kms north of Jabalpur, Shahpura road, Jabalpur distt. M.P, coll. P.D. Rane.

**Diagnostic characters:**

**Female:** Length 0.27-0.29 mm. Body nearly circular. Valve without any pattern of polygons. Posterodorsal corner valves distinct and posteroventral corner rounded without spinule. Valve with sparse setae on ventral margin. Antennules almost reaching apex of the rostrum. Ocellus smaller than eye situated halfway between eye and apex of rostrum. Postabdomen, tapering towards base of claw without dorsal corner, with different sized groups of setae on lateral surface. Pre and postanal parts of postabdomen with anal denticles almost absent. Claw with one basal spine. Labral plate rounded with notch at apex. Ventral bulge of valve with few grouped setae and setae posterior to it arise from small protuberance.

**Ephippial female:** Length 0.29 mm. Body oval with anterior and posterior corners evenly rounded. Dorso-posterior half of ephippial female heavily chitinized. Height relatively larger than parthenogenetic female. Carapace around the resting eggs heavily pigmented. Ephippium with single egg.

**Male:** Length 0.25 mm. Height rather narrow than parthenogenetic female. Length – height ratio 10 : 6. Males are characterized by their large cigar shaped antennules which are equal in width throughout their length. First leg with a pair of strong copulatory hooks, with a knob like structure at their base. Postabdomen broad but rather smaller in size as compared to the female. Basal spine large, about more than half the length of terminal claw. Terminal claw similar to that of female except the length, is much short. Claw with one basal spine.
Distribution: India: Gujarat, (Ahmedabad); Madhya Pradesh, (Bhopal), Maharashtra (Ujani wetland).

Elsewhere: Endemic species only found in India.

Genus Notoalona Rajapaksha and Fernando, 1987
61. Notoalona globulosa (Daday, 1893)


Diagnostic characters: Female: Valve with striations. Rostrum short and blunt. Antennules not reaching apex of rostrum. Ocellus smaller than eye, situated closer to the eye than to the apex of rostrum. Labrum serrated on anteroventral margin. Postabdomen long with 12-13 anal denticles. Claw long with short basal spine. Typical bean shaped head pores, row of submarginal setae along posterior half of the ventral margin and typical branched setae on the first leg are diagnostic characters of this species.

Distribution: India: Andanian & Nicobar Islands, Madhya Pradesh, Maharashtra, Tamil Nadu.

Elsewhere: South-East Asia, Neotropical and Neoarctic region.

Genus Alona Baird, 1843

Key to the species of Alona

1a. Valve with longitudinal and transverse lines forming rectangular pattern, body smooth, posteroventral corner without denticle, basal spine small ... Alona rectangula Sars, 1862a
b. Valves with pits ................................. Alona rectangula pulchra Hellich, 1874...2.

2a. Postabdomen and groove not bordered by cluster of spinules, anal denticles more than 10; postabdomen with protruding end....
................. Alona costata Sars, 1862b.
b. Postabdominal anal groove deep and with cluster of spinules, anal denticles less than 10; postabdomen with pointed distal end........
................. Alona guttata Sars, 1862b...3.

3a. Basal spine large, about less than one third length of claw, anal denticles not in groups, postabdomen elongated..................
................. Alona pulchella, King 1854
b. Basal spine thin, about more than one third length of claw, anal denticles in group of 3, postabdomen large and broad ................
................. Alona diaphana King, 1853...4

4a. Basal spine at claw more than half length of claw, postabdomen long & narrowed, anal denticles isolated, labrum with deep notch on anteriorside ..........................................................
................. Alona macronyx Daday, 1898
b. Basal spine at claw less than half length of claw, postabdominal distal part slightly protruded out with group of large 4-5 large anal denticles decreasing in size proximally. Labrum with rounded apex ................
................. Alona karelica Strenroos, 1897

62. Alona rectangula Sars 1862


Material examined: 1 ex., 3-4-1978, Kundan tank; 1 ex., 23-3-1984, Padwar tank; 3 exs., 27-7-1984, Gupiteswar tank, Jabalpur distt, M.P., all coll P.D. Rane.

Diagnostic characters: Female: Length 0.4-0.5 mm. Valves with rounded posteroventral and posteroventral corner. Valves with longitudinal line or sometimes rows of tubercles. Head with three connected head pores. Head shield with rounded posterior margin. Setae on antenna 0-0-3/1-1-3. Lateral spines present on proximal segment of exopodite on second segment of endopodite and on both distal segments. Plate of labrum with
convex ventral margin. Postabdomen wide, with rounded dorsal distal margin. Anal margin slightly concave, with lateral rows of setae. Seven to nine anal spines, sometimes in groups. The distal spine of the group is largest. Claw with a row of setae in proximal three fourth of the concave margin. Ocellus as large as eye. Valves without pits. Posteroventral corner of valve without denticles. Anal margin with two groups of setae. The setae of second distal group projecting from beyond the margin of postabdomen. Claw with a basal spine.

Distribution: India: Ladakh, Gujarat, Rajasthan, Meghalaya, Kashmir, West Bengal, Maharashtra.


63. Alona rectangula pulchra Hellich, 1874


Diagnostic characters: Female: Length 0.43 mm. The general structure of body same as that of Alona rectangula except here the body is pitted all over. Claw with basal spine and plate of labrum with rounded anterior margin.

Distribution: India: This is the 1st record of this specimen from India

Elsewhere: Europe and Australia.

64. Alona costata Sars, 1862


Diagnostic characters: Female: Length 0.6 mm. Valve with rounded posterodorsal and posteroventral corner. Valve with longitudinal reticulation with interconnections. Posterior margin of valves with a row of spinules on its inner margin. Antennules not reaching apex of rostrum. Antennal setae: 0-0-3 / 1-1-3. Plate of labrum rounded. Ocellus much smaller than eye and situated half way between eye and apex of rostrum. Postabdomen short and tapering distally, dorsal margin almost straight and preanal corner only slightly projecting beyond the base of claws. Anal spines 11-12, decreasing in size proximally. Group of lateral setae present in a row, the distal setae being longest in each groups. Anal margin almost straight. Claw with basal spine.

Male: Length: 0.4 mm. Valve with rounded posterodorsal and posteroventral corner. Antennule reaching apex of rostrum. Postabdomen narrowing distally. Vas deferans opening ventrally at the base of claws. Anterior side of endite of first leg with group of thick setae and distinct curved claw. Postabdomen with small extension just above the claw and minute anal denticles dorsally up to the half the region.

Distribution: India: Himachal Pradesh, Uttar Pradesh, Manipur, Maharashtra. This is the first record of this species from Madhya Pradesh state.


65. Alona guttata (Sars, 1862)


Diagnostic characters: Female: Length 0.3-0.4 mm. Body oval in shape with rounded posterodorsal and posteroventral corners. Antennules not reaching the apex of rostrum. Plate of labrum rounded. Ocellus smaller than eye, situated halfway between eye and apex of rostrum. Postabdomen with 9 anal spines and indistinct lateral group of setae. Claw with basal spine. Anal margin slightly concave.

Distribution: Himachal Pradesh, Rajasthan, Tamil Nadu, Maharashtra. This is the first record of this species from Madhya Pradesh.
66. Alona pulchella (King, 1853)


Material examined: 3exs., 1-4-1978, Sukri tank; 1ex., 4-3-1980, Umaria tank; 3exs., 29-3-1981, Jalwara tank; 1ex., 2-4-1983, Padwar tank; 1ex., 22-7-1984, Hanuman tank, Jabalpur distt, M.P, all coll. P.D. Rane.

Diagnostic characters: Female: Length 0.5-0.57 mm. Posterodorsal and posteroventral corner of valve rounded. Valve without any reticulation. Antennules not reaching apex of rostrum. Plate of labrum convex at anterior margin and with pointed apex. Three head pores present, not connected to one another. Ocellus is smaller than eye situated between eye and rostrum. Postabdomen large with parallel dorsal and ventral margin. Preanal corner distinct but not projecting. About 10 anal denticles present. Group of lateral setae present, distal setae longest in each group. Claw with large basal spine.

Distribution: India: Gujarat, West Bengal, Tamil Nadu, Maharashtra. First record from Madhya Pradesh.


67. Alona diaphana King, 1853


Diagnostic characters: Female: Length 0.49-0.50 mm. Maximum height slightly before the middle of body. Dorsal margin of head forming a smooth curve with dorsal margin of valve. Posterodorsal margin slightly curved upward and posteroventral corner rounded. Ventral margin of valve with concavity at the anterior part with feathered setae, which passes on the posteroventral corner, into a row of short hairs which is continues on the posterior margin with slightly large, stout, equally spaced setae. Rostrum blunt. Antennules ending a short distance before apex of rostrum, with olfactory setae of different length. Plate of labrum rounded. Setae on antenna 0-0-3 / 0-0-3. The three distal setae are long, almost reaching the middle of valve. Postabdomen widest in the middle; tapering distally. Postanal part is large than the projecting preanal part. Postanal part with 12-14 groups of anal denticles; about 12 groups of lateral setae present. Claw with fine setules on the concave margin and one large basal spine. Ocellus smaller than eye. Valve without any type of reticulation and three head pores connected with each other on the head pores.

Distribution: This is first record of this species from India.

Elsewhere: Sudan, Egypt, Kenya, Sahara, Chad, Tanganyika, Nigeria.

68. Alona macronyx Dayad, 1898


Distribution: India: Maharashtra and first record of species from Madhya Pradesh.

69. Alona karalica Stenroos, 1897

Material examined: 1 ex., 21-7-1984, Bohriband reservoir; 2 exs., 1-8-1984, Umaria tank, Jabalpur distt, M.P, all coll P.D. Rane.

Diagnostic characters: Female: Length 0.38-0.4 mm. Posterodorsal and posteroventral corner of valve rounded. Ventral margin of valve straight, with setae. Faintly reticulation on the valve. Rostrum blunt. Antennules almost reaching apex of rostrum. Posterior margin of antennules with a sensory seta. Plate of labrum almost squarish. Postabdomen uniformly wide. Dorsal distal end projecting beyond the base of claw. Anal margin slightly concave. Anal denticles are in groups. Claw with small basal spine. Ocellus smaller than eye, situated halfway between eye and rostral apex.

Distribution: First record from India.


Subfamily EURYCERCINAE, Kurz, 1875
Genus Eurycercus Baird, 1843
70. Eurycercus sp.


Distribution: This genus is recorded from Kashmir and now recorded from Madhya Pradesh.

SUMMARY
Sixty one species, eight subspecies, one sp. total seventy type of Cladocera are recorded from Madhya Pradesh, belonging to 6 families (including 3 subfamilies) and 35 genera. Freshwater habitats in Madhya Pradesh mostly harbour Indo-Malayan, Palaearctic and tropical elements. Chydoridace is largest having 35 species, which is incidently one of the largest groups occurring anywhere in the world. Many endemic new subspecies occurs in this reported cladoceran fauna: Simocephalus serrulatus surekhae (Rane), Simocephalus acutirostratus vidyae (Rane), Simocephalus acutirostratus gajaree (Rane) and new species Latona narendrai Rane, Sarsilatona fernandoi (Rane), Daphnia sumanae (Rane) (relocated from genus Daphnopsis), Daphnia sarojae Rane, Daphnia madhuriae Rane, Moina dodhui Rane, all these sp / subsp are new to science and Madhya Pradesh and only reported / recorded from type locality only. Rare reporting Eurycercus sp only in the form of skeleton is an important finding from this region. Echinisca capensis mondoi earlier recorded from only Tripura is second time recorded from India. Moina oryzae Igor Hude. 1987 described new species from ricefields of Tamil Nadu.

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INSECTA : ISOPTERA

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INTRODUCTION

Termites have increased the curiosity of scientists for its vital role of both beneficial as decomposer, particularly in forest ecosystem and harmful as pest of crop plants, trees and any sort of non-living material of cellulosic origin. Moreover, their characteristic feature, such as, social system, architectural ability, symbiotic relationship with flagellates, fungus and bacteria, encouraging guests and inquilines in their nests, attracts the attention of scientists of varied discipline. However, they can act as climatic indicator since some genera restricts their distribution in particular climate zones (Maiti and Saha, 1998) and also as zoogeographical indicators due to their poor dispersal capability. Termites preliminary being a humid loving creature, creates some interest to study the present status and magnitude of termite fauna of Madhya Pradesh, a state which receives less rainfall and enjoys dry weather condition except in some limited areas in the south. All these keeping in mind, the termite fauna of Madhya Pradesh have drawn our attention to record the faunal status and distribution pattern in area under study. Although the fauna dealt here broadly refers to state of Madhya Pradesh, in its earlier geographical boundary, some species with their localities belongs to the state of Chhattisgarh as we conceive today.

Madhya Pradesh is situated in central part of India with extreme climatic condition prevailing in accordance with different season. But the termite fauna is not expected to be very rich due to its overall semiarid landscape except a few forest stretches in different localities.

Subsequent to the publication of Snyder's catalogue during 1949, Roonwal (1954) studied on ecological adjustment in nature between the species *Coptotermes heimi* (Wasmann) and *Odontotermes redemanni* (Wasmann) in Madhya Pradesh. Sen Sarma et al. (1975) while studying the wood destroying termites of India, reported 21 species under 10 genera. Chhotani (1977) collected and studied termite fauna of Kanha National Park in the district Mandla to a total of 16 species under 10 genera. These collections were further augmented by some collections made by Dr. M.L. Roonwal and Dr. K.K. Tiwari of Z.S.I. and G.B. Schaller, U.S.A. Further, Verma and Thakur (1982) studied termite collected by the staff-members of the Central Zone Regional Centre, Z.S.I., Jabalpur during the period of 1968-1975. They recorded 18 species under 6 genera of which 6 species were recorded for the first time. Further, many more species were either described as new species or new records from the state. The credit mostly goes to Chatterjee and Thapa (1964), Roonwal and Chhotani (1965), Thakur (1981), Roonwal and Chhotani (1989) and Chhotani (1997). Recently, Chandra in 2008, while coordinating the fauna of Jabalpur, enlisted seven species of Isoptera which were already known from the area.

Thus to sum up the number of species occurring in the state stands to a total of 35 species under 14 genera and 3 families.
SYSTEMATIC ACCOUNT

GENERAL MORPHOLOGY

Termites have three major castes namely imago, soldier and worker. The general morphology has been dealt recently by Roonwal and Chhotani (1989) in “Fauna of India” including the characters of taxonomic importance. Identification of termite species is mostly based on these characteristic features of soldier caste. In addition, the measurements of the characters of the soldiers used for the preparation of keys are as follows: Length and width of head, length of mandibles (except in nasute forms) and distance of tooth (if present) from the tip of the mandible, length and width of pronotum and postmentum, number of antennal segments, etc.

MATERIAL AND METHODS

The present study is based on some collections made by the staff members of Zoological Survey of India, Kolkata as well as of those from Central Zone Regional Centre, Z.S.I., Jabalpur. This collection was further augmented by authentically identified material, present in National Zoological Collections of Z.S.I., Kolkata in its Isoptera Section. Published informations have also been utilized in the paper.

Best method of collection of soil termites is done with the help of a shovel pushing it into the soil and putting the material on a tray and ultimately picking them up with the help of a forceps. Wood-eating forms are collected by the forceps after cutting the wood with the help of a hand axe. All the collections are preserved in 70% alcohol kept in small vials. Collection of queen from the soil nest needs caution to trace the royal chamber wherein the queen lives. All the measurements are expressed in millimeters.

Abbreviation used

Coll.—Collected by/Collector; det.—determined by; Dist.—District: E—East; ex.—extracted from; Fig.—Figure; Im—Imago; Km.—Kilometer; max. maximum; mm. millimeter; N—North; S.—Soldier; Sev.—Several; W.—workers; Z.S.I.—Zoological Survey of India.

PRESENT STATUS OF THE TERMITE FAUNA

Family KALOTERMITIDAE
Genus Cryptotermes Banks
1. C. bengalensis Snyder

Family RHINOTERMITIDAE
Subfamily COPTOTERMITINAE
Genus Coptotermes Wasmann
2. C. heimi (Wasmann)
3. C. kishori Roonwal and Chhotani

Family TERMITIDAE
Sub-family AMITERMITINAE
Genus Eurytermes Wasmann
4. E. boveni Roonwal and Chhotani
Genus Speculitermes Wasmann
5. S. chadaensis Chatterjee and Thapa
6. S. cyclops Wasmann
7. S. goesswaldi Roonwal and Chhotani
8. S. sinhalensis Roonwal and Sen-Sharma
Genus Euhamitermes Wasmann
9. E. kanhaensis Roonwal and Chhotani
10. E. karnatakensis Roonwal and Chhotani
Genus Synhamitermes Holmgren
11. Synhamitermes quadriceptes (Wasmann)
Genus Amitermes Silvestri
12. Amitermes belli (Desneux)
Genus Eremotermes Silvestri
13. E. paradoxalis Holmgren
Genus Microcerotermes Silvestri
14. M. beesoni Snyder
15. M. cameroni Snyder
16. M. sakesarensis Ahmad
Subfamily TERMITINAE Sjostedt
Genus Dicuspiditermes Krishna
17. D. obtusus (Silvestri)
Genus Pericapritermes Silvestri
18. P. tetraphilus (Silvestri)
Subfamily MACROTERMITINAE Kemner
Genus Odontotermes Holmgren
19. O. assmuthi Holmgren
20. *O. bhagwattii* Chatterjee and Thakur
21. *O. boveni* Thakur
22. *O. feae* (Wasmann)
23. *O. guptai* Roonwal and Bose
24. *O. gurdaspurensis* Holmgren and Holmgren
25. *O. horai* Roonwal and Chhotani
26. *O. horni* (Wasmann)
27. *O. microdentatus* Roonwal and Sen sarma
28. *O. obesus* (Ram bur)
29. *O. redemanni* (Wasmann)
30. *O. wallonensis* (Wasmann)

**Genus Microtermes** Wasmann
31. *M. incertoides* Holmgren
32. *M. obesi* Holmgren
33. *M. unicolor* Snyder

Subfamily NASUTITERMITINAE Hare

**Genus Trinervitermes** Holmgren
34. *Trinervitermes biformis* (Wasmann)
35. *Trinervitermes nigirostris* Mathur & Sen-sarma

**Key to families of Isoptera (Soldier)**

1. Fontenelle absent; antennae with 10-18 segments ................. KALOTERMITIDAE
   - Fontenelle present; antennae with 12-20 segments ...................................................... 2

2. Pronotum flat, devoid of any anterior lobe .................................. RHINOTERMITIDAE
   - Pronotum saddle-shaped with distinct anterior lobe .................................................. TERMITIDAE

**Family Kalotermitidae**

**Genus Cryptotermes** Banks
1. *Cryptotermes bengalensis* Snyder


**Distribution**: India, Madhya Pradesh, Assam, Andaman and Nicobar Islands, Gujarat, Karnataka, Tripura, West Bengal (Sundarbans), Orissa, Uttarakhand.

**Elsewhere**: Bangladesh, Sri Lanka, Africa, Madagascar, West Indies and South America (for further details vide., Chhotani, 1970).

**Remarks**: Although, the species has been reported by Roonwal and Chhotani (1989), but its exact locality is unknown in the state. The species being the only representative of the genus and can easily be identified with truncated head with very short mandibles of the soldier. This is a dry wood termite found both in the forest area as well as around human habitations in India. Swarming is reported during May to June in the Himalaya (Mukherjee *et al.*, 2008).

**Family Rhinotermitidae**

Subfamily Coptotermiteinae

**Genus Coptotermes** Banks

**Key to species of Coptotermes (Soldier)**

1. Waist of postmentum lying definitely below the middle of line connecting the level of anterior maximum width and the posterior maximum width; head-length 1.13-1.25, head-width 0.95-1.08 (1.01-1.03) ........................ .
   - Waist of postmentum lying in middle of line connecting the level of anterior maximum width and the posterior maximum width; head length 1.20-1.45 (1.27-1.30), head width 1.05-1.35 (1.01-1.03) ....... *C. heimi* (Wasmann)

2. *Coptotermes heimi* (Wasmann)

1902. *Arrhinotermes heimi* Wasmann, Zool. Jb. (Syst.), 17(1) : 104, pl. 4, Im. Type-locality: Wallon, Maharashtra, India.


**Material examined**: Identified: one vial with 2s. and 1 W., Kanha National Park, Coll. K.K. Tiwari, 10.i.1966.

**Measurements (soldiers)**: Head length to base of mandible: 1.27-1.30; Max. head width: 1.01-1.03; Left mandible length: 0.73-0.77; Max diameter of fontanelle: 0.13; Max. pronotum width: 0.67-0.70; Antennal segments: 14.

**Distribution**: India: Madhya Pradesh, Mandla Dist.: Kanha National Park. Widely distributed in India.

**Elsewhere**: Bangladesh, Bhutan, Indonesia, Nepal, Pakistan and Oman.

**Remarks**: *C. heimi* is a common Indian species found in diverse habitats either in wood or in soil and sometimes are associated with other species of termites. It is a very variable species in the Indian mainland and swarms from June to July in Dehra Dun.

3. *Coptotermes kishori* Roonwal and Chhotani


**Measurements (Soldiers)**: Head-length with mandible: 2.02 mm; Head-width: 1.03 mm; Postmentum length: 0.67; Pronotum length: 0.44; Pronotum width: 0.75.

**Distribution**: India: Madhya Pradesh: Jabalpur (Devtal on Nagpur road); Kerala, Rajasthan, Tripura and West Bengal.

**Remarks**: The species is hardly similar to any Indian species in its soldier characters, rather somewhat with some Indo-Malayan species *C. bornensis* Oshima and *C. minutissimus* Kemner (Maiti, 2006). It has been recorded from living *Mangifera indica* and *Ficus religious* from the place of its occurrence.

**Family TERMITIDAE**

**Key to subfamilies of TERMITIDAE (Soldiers)**

1. Head produced into a rostrum; mandibles generally degenerate with or without spine like apical processes, not functional

.................................NASUTITERMITINAE

— Head not produced into rostum, rather rectangular, squarish or oval; mandibles not degenerate, but well developed with or without teeth in the inner margins

.................................TERMITINAE

2. Mandibles rod-like or twisted, as long as or a little longer than head-length or shorter in some genera; fontanelle generally placed below frontal projection

.................................TERMITINAE

— Mandibles sabre-shaped or hooked, mostly shorter than head-length; fontanelle distinct or indistinct

.................................AMITERMITINAE

3. Mandible each with a prominent tooth or serration (*Microcerotermes*)

.................................AMITERMITINAE

— Mandible either with or without tooth, left mandible with a prominent and right mandible with a minute tooth (*Odontotermes*) or with crenulations (*Hypotermes*)

.................................MACROTERMITINAE

**Subfamily AMITERMITINAE**

**Key to Genera of Amitermitinae (Soldier)**

1. Mandibles sickle-shaped and serrated (finely or coarsely) throughout the inner margin...

.................................Microcerotermes

— Mandibles not serrated on inner margin, with a weak to prominent tooth on each mandible

.................................AMITERMITINAE

— Mandibles with a prominent tooth on each mandible

.................................MACROTERMITINAE

* Speculitermes represented by workers only, hence not included in generic key.
2. Head with frontal protuberance; mandibles long, thin, slender and slightly incurved at apices .................................. *Eremotermes*
   - Head without frontal protuberance; mandibles short, strong and distinctly incurved at apices ........................................... 3

3. Clypeus bilobed .................................. *Amitermes*
   - Clypeus not bilobed .................................. 4

4. Head subsquarish, small; mandibles weak, fairly strongly curved apically ............................ *Synhamitermes*
   - Head subrectangular; mandibles strongly built and very weakly to fairly curved apically 5

5. Mandibles exceptionally broad at base ........................................................................ *Euhamitermes*
   - Mandibles comparatively of normal shape, not very broad at base .................................. *Eurytermes*

4. *Eurytermes boveni* Roonwal & Chhotani

1. *Eurytermes boveni* Roonwal and Chhotani

   **Material examined**: Identified : 1 Im and 2 w, Kanha National Park, 1 Km N. of Forest Rest House, Coll. O.B. Chhotani, 15.vi.1964 (det. Roonwal and Chhotani)

   **Measurements** (soldiers) : from Chhotani 1997.

   - Head-length to base of mandibles: 2.00; Max head width: 1.20; Mandible length: 0.83-0.87; Pronotum length: 0.33; Pronotum width: 0.70; Antennal segments: 14.

   **Distribution**: India: Madhya Pradesh: Kanha National Park (Mandla Dist.).

   **Remarks**: The species is the only representative of the genus from Madhya Pradesh in having a small, obtused angled tooth at anterior one-fourth of left mandible and only known from its type-locality.

   In Kanha National Park, the species has been collected from soil, making long and narrow galleries, running horizontally about 2-5 cm below the ground level and the species *O. assimuthi* Holmg. was also collected close to the galleries of the species (Chhotani, 1977).

Genus *Speculitermes* Wasmann

**Key to species of Speculitermes** (Worker)

1. Mid-dorsal spot weakly swollen and raised from head surface (diameter 0.12-0.16) .... 2
   - Mid-dorsal spot flush with head-surface, not swollen (diameter 0.07-0.13) .................. 3

2. Paler species; head-capsule brown to dark brown; head-length 0.90-1.20, head width 1.20-1.40 .................. *S. cyclops* Wasmann
   - Darker species; head-capsule dark smoky brown; head-length 0.95-1.05 head width 1.20-1.28 ........................................................................ *S. chadaensis* Chatterjee and Thakur

3. Postclypeus-length nearly half its width (length 0.29-0.33, width 0.60-0.66) ............ *S. sinhalensis* Roonwal and Sen-Sanna
   - Postclypeus-length a little more than half its width (length 0.35-0.37, width 0.57-0.63) ....... *S. goesswaldi* Roonwal and Chhotani

5. *Speculitermes chadaensis*
   Chatterjee and Thapa

   1964. *Speculitermes chadaensis* Chatterjee and Thapa, Indian Forester, 90(8) : 514-516. W only. Type-locality: Karnajia forest Range, Madhya Pradesh.


   **Measurements** (workers): Total body length :
4.57-6.10; Head length to base of mandible : 0.95-1.05; Max. Head width : 1.20-1.28; Diameter of mid-dorsal spot: 0.13-0.17; Antennal segments : 14.

**Distribution:** India : Madhya Pradesh: Chada [Karanjia forest range], 8 km E. of SSS Club of Shivpuri (Shivpuri Dist.).

**Remarks:** The species is only known from its type-locality.

6. *Speculitermes cyclops* Wasmann


**Material examined:** (i) 2 vials with 10 w., Jabalpur on Nagpur Road near Bargi, N.K. Sinha coll. 3 and 11.v.73 (ii) 1 vial with 5 w., Budhaghat, Jabalpur, D.K. Ghosal coll., 20.vii.73.

**Measurements** (workers) : Total body length with mandibles : 6.12-6.31; Head length with mandibles: 1.75-1.83; Max. width of head: 1.36; Pronotum length : 0.42; Pronotum width : 0.86; Max. Diameter of mid-dorsal spot: 0.08; Antennal segments : 14.

**Distribution:** India : Madhya Pradesh : Jabalpur [Nagpur Road near Bargi, Budhaghat; Karnataka [Dharwar, type-locality].

**Remarks:** This was the first described species from India (Khandala, Maharashtra) based on worker only. However, no biological notes could be furnished except the record of dealate in the nest in November in Dharwar, Karnataka (Bose, 1984).

7. *Speculitermes sinhalensis* Roonwal and Sen-Sarma


**Material examined:** Two vials with w. only, Kanha National Park (i) coll. O.B. Chhotani, 15.vi.1964, under stone and in soil, making narrow galleries, and (ii) coll. K.K. Tiwari, 10.i.1966, 600 m alt. (iii) One vial with W. and Ny., coll. K.K. Tiwari, 13.i.1966.

**Measurements** (workers) : Head length to lateral base of mandibles : 1.03-1.10; Max. head with : 1.30-1.37; Pronotum width : 0.70-0.77; Diameter of mid-dorsal spot: 0.07-0.08; Antennal segments : 14.
**Distribution**: India: Madhya Pradesh: Kanha National Park (Mandla Dist.); Andhra Pradesh, Karnataka, Kerala, Maharashtra, Orissa, Tamil Nadu.

**Elsewhere**: Sri Lanka.

**Remarks**: This soil inhabiting termite is predominantly found in the Peninsular India, rather not so common in the northern India. However, in Kanha National Park, Chhotani (1977) collected the species under a stone making narrow galleries, running horizontally a little below the ground level for some distance.

**Genus Euhamitermes** Holmgren

**Key to species of Euhamitermes** (Soldier)

1. Mandibles thicker, index: width at base/length 0.67-0.71; tooth larger and lying somewhat posteriorly, index: tooth distance/mandible-length 0.39-0.40 ...........................................
   .... E. kamatakensis Roonwal and Chhotani

   - Mandibles thinner, index: width at base/length 0.64; tooth smaller and lying somewhat anteriorly, index: tooth distance/mandible length 0.32 .........................
     .... E. kanhaensis Roonwal and Chhotani

9. **Euhamitermes kanhaensis** Roonwal and Chhotani


**Measurements (soldiers)**: Chhotani, 1997.

   Head length to base of mandibles: 1.47-1.60; Max. head : width : 1.07-1.20; Length of left mandible: 0.67-0.70; Pronotum length: 0.33-0.36; Antennal segments: 14.

**Distribution**: India: Madhya Pradesh and Karnataka.

**Remarks**: The species had been observed nesting in the walls of a mound of Odontotermes redemanni (Wasmann) making extensive galleries (Bose, 1984) in its type locality.

**Genus Synhamitermes** Holmgren

11. **Synhamitermes quadriceps** (wasmann)


**Material examined**: Identified: Two vials, one (No. 010/16.6.64) with K., Q., and W and other (No. 029/15.6.64) with Im., S., and W., both coll.
O.B. Chhotani, June, 1964, nesting in type 'D' mounds of *Odontotermes obesus* (Rambur) [det. Ob. B. Chhotani].

**Measurements (soldiers)**:

Total body length : 3.10-4.30; Head length to lateral base of mandibles : 0.90-1.00; Max. width of head : 0.80-0.83; Length of left mandibles : 0.60; Length of right mandibles : 0.60-0.63; Width of pronotum : 0.50; Antennal segments : 13.

**Distribution**: India : Madhya Pradesh: Kanha National Park; Assam, Daman, Goa, Rajasthan, West Bengal, Tripura, Kerala.

Elsewhere : Bangladesh.

**Remarks**: The species differs from other species of the genus by its mandibles with outer margin incurved near middle and apical half of mandibles weakly incurved. In Kanha National Park, the species has been found in the outer wall of dome-shaped mounds of *Odontotermes obesus* forming some narrow galleries (Chhotani, 1977). It swarms in the months of mid-June to early November (Roonwal and Sen-Sarma, 1960).

Genus **Amitermes** Silvestri


**Material**: Not available for study.

**Measurements (soldier)**: Chhotani, 1997.

Head length to base of mandibles 1.07-1.44 : Max head width : 0.85-1.15; Length of left mandible : 0.58-0.80; Pronotum length : 0.28-0.40; Max. pronotum width : 0.56-0.78; Antennal segments : 14.

**Distribution**: India : Madhya Pradesh: Manpur; Delhi, Gujarat, Rajasthan; Elsewhere : Pakistan [Punjab, Baluchistan].

Remarks: The species is a minor wood destroying termite and reported feeding on several standing trees in Gujrat (Thakur, 1991).

Genus **Eremotermes** Silvestri


**Material examined**: Identified: 1S., Hoshangabad, 17.ix.1911, det. Holmgren.

**Measurements (Soldiers)**: Chhotani, 1997.

Head length to base of mandibles : 0.80-0.95; Max. Head width : 0.68-0.75; Length of left mandible : 0.70-0.85; Pronotum length : 0.23-0.25; Max pronotum width : 0.40-0.45; Antennal segments : 14.

**Distribution**: India : Madhya Pradesh, Hoshangabad Dist.: Hoshangabad; Bihar, Delhi, Karnataka, Tamil Nadu.

Elsewhere: Pakistan [Punjab, N.W.F.P. and Sind].

Genus **Microcerotermes** Silvestri

**Key to species of Microcerotermes (Soldier)**

1. Mandibles rounded curved at outer margin .......................................................... *M. cameroni* Snyder

   – Mandibles weakly curved and straight at outer margin ........................................ 2

2. Labrum pentagonal, anteriorly pointed at middle .................................. *M. sakesarensis* Ahmed

   – Labrum subsquarish or roundely pentagona I .......................................................... *M. beesoni* Snyder


**Measurements (soldiers)**:

Head length to base of mandibles : 1.40-1.67; Max. head width : 0.87-0.93; Length of left mandible 0.87-0.93; Width of pronotum : 0.57-0.63; No. of antennal segments : 13 (rarely 12).

**Distribution**: India: Madhya Pradesh; Assam, Delhi, Haryana, Orissa, Punjab, West Bengal. Elsewhere: Bhutan, Pakistan and Bangladesh.

**Remarks**: The species is found predominantly in the northern India. In Kanha National Park, the species had been observed nesting in dead stumps, under stones, in soil and also collected from a deserted mound of *Odontotermes obesus* (Ramb.), making extensive galleries throughout the nest (Chhotani, 1977). However, *M. beesoni* is a minor pest of sugarcane in Uttar Pradesh and reported from living trees, roots and dead stumps of a number of other plants in India (Sen-Sarma et al., 1975).

15. *Microcerotermes cameroni* Snyder


**Material examined**: Identified: 1 S., 12W., Pench river bank, west of Ranidoh rest house, N.K. Sinha and party coll., 16.i.73, det. G. Chhotani and S. Chakraborty.

**Measurements (soldiers)**: Chhotani, 1997.

Head length to base of mandible : 1.40-1.67; Max. head width : 0.90-1.00; Length of left mandible : 0.86-0.97; Pronotum length : 0.27-0.35; Max. pronotum width : 0.53-0.66; Antennal segments : 13.

**Distribution**: India : Madhya Pradesh, Andra Pradesh, Kerala, Tamil Nadu and West Bengal. Elsewhere: Pakistan.

**Subfamily TERMITINAE**

**Key to genus of Termitinae (Soldier)**

1. Antero-lateral corners of head produced into tuberculelike projections .... *Dicuspiditermes*

   - Antero-lateral corners of head rounded, not produced into tuberculelike projection ....

   ............................................ *Pericapritermes*

**Genus Dicuspiditermes** Krishna

17. *Dicuspiditermes obtusus* (Silvestri)


**Material examined**: Identified : (i) 4 vials with S. and W., O.B. Chhotani coll. as follows-1 vial (No. 01/9.6.64), 9.vi.64, nesting in *Odontotermes obesus* mound and 3 vials (Nos. 023 and 024/15.vi.64 and 04/16.vi.64), 15-16.vi. 1964, ex. under stones, det. O.B. Chhotani.
Measurements (soldiers):

Length of head to base mandibles: 2.00-2.33; Max. width of head: 1.25-1.40; Median length of labrum: 0.30-0.50; Width of labrum: 0.27-0.33; Length of left mandible: 1.80-2.10; Width of pronotum: 0.73-0.90; No. of antennal segments: 14.

Distribution: India: Madhya Pradesh and Chhattisgarh: Kanha National Park; 3 km from Manipur FRH (Sarguja Dist.); Orissa.

Remarks: D. Obtusus is so far known from its type locality in Orissa and Madhya Pradesh. In Kanha National Park, Chhotani (1977) observed that the species nest in the walls of O. obesus mound and also in the soil making narrow longitudinal galleries coated with blackish faecal matter.

18. Pericapritermes tetrphilus (Silvestri)


Material examined: Identified: One vial with several S. and W., O.B. Chhotani coll. (02/14.vi.64), 14.vi.64, ex. Odontotermes obesus mound, det. O.B. Chhotani.

Measurements (soldiers):

Length of head to base of mandible: 2.83-3.05; Max. head width: 1.60-1.70; Length of left mandible: 1.63-1.70; Max. width of labrum: 0.30-0.33; Max. length of labrum: 0.20-0.23; Width of pronotum: 1.03-1.13; No. of antennal segments: 14.

Distribution: India: Madhya Pradesh: Kanha National Park. Assam, Sikkim (Rangpo and Namchi), West Bengal (Darjeeling Dist.: Tashiding Forest).

Elsewhere: Bangladesh, Myanmar and South China.

Remarks: The blunt tip of the right mandible and four bristles on each tergite of soldier caste makes the species different from other Indian representatives. P. tetrphilus is only known from Kanha National park, Madhya Pradesh, where the species live in the large dome-shaped mound of Odontotermes obesus (Ramb.), making narrow galleries leading into chambers of different shapes and sizes (Chhotani, 1977). However, the species was also reported from stumps and logs in the Eastern Himalaya (Mukherjee, et al., 2008).

Subfamily MACROTERMITINAE

Key to genus of Macrotermiinae (Soldier)

1. Small and delicate species; mandibles sometimes with a minute tooth .......................................................... Microtermes

– Larger species; left mandible with a tooth placed at different positions on its inner margin ........................................... Odontotermes

Genus Odontotermes Holmgren

Key to species of Odontotermes (Soldier)

1. Larger species, head length to base of mandibles more than 2.00; head-mandibular index 0.1 .................................................. 2

– Smaller species, head length to base of mandibles less than or about 2.00 ............. 3

2. Left mandibular tooth placed near middle [mandible-tooth index: 0.50-0.56 (0.50-0.54)]; head capsule widest near posterior third, sides weakly but distinctly converging anteriorly; labrum triangular, with a sharp tip; head length 2.53-3.00, head width 2.12-2.45 .................................................. O. feae (Wasmann)

– Left mandibular tooth placed near proximal end of middle one-third [mandible-tooth index: 0.57-0.64; head capsule widest almost at middle, sides parallel, indistinctly converging anteriorly; head length 2.50-3.00, max. head width 1.85-2.20] ............................ O. horni (Wasmann)

3. Distal segments of antennae distinctly darker than proximal segments ................................. 4
Distal segments of antennae not darker than the proximal segments, rather uniformly coloured ................................................................. 9

4. Left mandibular tooth situated in front of distal third, mandible-tooth index: 0.26-0.33; head and body more hairy; antennae with 15-16 segments; labrum broadly rounded at anterior margin; postmentum not so wide; lateral sides convex ..................................................... 0. guptai Roonwal and Bose

5. Left mandibular tooth rudimentary; mandibles substraight, long and slender, and with weakly incurved apices; postmentum with sides weakly outcurved [head-length 1.37-1.43, max. head width 1.10-1.17] ........ O. microdentatus Roonwal and Sen-Sarma

6. Head-capsole subrectangular; mandibular tooth prominent, large and placed a little above middle point, mandible tooth index: 0.41-0.46 .......... O. wallonensis (Wasmann)

7. Head-capsole oval, distinctly narrowed anteriorly; mandibles of moderate length...8

8. Mandibles long, outer margin strongly incurved near the basal third, labrum longish; mandible-head index: 0.70-(0.69-0.79) ........ O. redemanni (Wasmann)

9. Tooth on left mandible placed near apical third or little below (tooth index: 0.32-0.40) ................................................................. 10

10. Postmentum swollen, extraordinarily wide, sides distinctly convex, inner margin of left mandible anterior to tooth not wavy; head length 1.92 ......................... O. bovini Thakur

11. Head smaller in size, head length to base of mandible 1.50-1.67, max. head width 1.13-1.23, mandibles shorter, length 0.83-0.97; tooth on left mandible very small and rudimentary; antennae longer ...................... O. bhagwatii Chatterjee and Thakur

19. Odontotermes assmuthi Holmgren


Measurements (soldiers):

Head length to lateral base of mandibles : 1.50-1.70; Max. head width : 1.07-1.20; Length of left mandible : 0.77-0.80; Width of pronotum : 0.75-0.86; No. of antennal segments : 16.
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Distribution: India: Madhya Pradesh (Jabalpur, Kanha National Park); Bihar, Himachal Pradesh, Jammu and Kashmir, Karnataka, Maharashtra, Punjab, Tamil Nadu, Uttar Pradesh, West Bengal.

Elsewhere: Bangladesh and Pakistan.

Remarks: O. assimuthi is the serious pest of sugarcane setts. However, Chhotani (1977) collected this subterranean termite under stone along with Eurytermes boveni in Kanha National Park, Madhya Pradesh. The species has also been collected from variety of habitat like wooden structure, poles, bamboo species, wood and bark of fallen logs including important timber species (Sen-Sarma et al., 1975).

20. Odontotermes bhagwati Chatterjee and Thakur


Measurements: Soldieres (Chhotani, 1977):

Head length to lateral base of mandibles: 1.50-1.67; Max. head width: 1.13-1.23; Length of left mandible: 0.83-0.97; Tooth distance of left mandible: 0.47-0.52; Max. width of pronotum: 0.80-0.87; No. of antennal segments: 15-16.

Distribution: India: Madhya Pradesh (Kanha National Park, Kisli); Punjab (Pathankot : type locality) Jammu and Kashmir, Karnataka and Uttarakhend.

Remarks: O. bhagawati, a minor wood destroying species, attacks number of important timber (Mukherjee et al., 2008). In Kanha National Park, Madhya Pradesh, the species was collected under bark of twigs and logs of unknown wood (Chhotani, 1977).

21. Odontotermes boveni Thakur


Measurements (soldiers):

Total body length with mandibles: 4.32; Head length with mandibles: 1.92; Max. head width: 1.16; Max. length of mandibles: 0.72; Tooth distance: 0.22; Pronotum length: 0.53; Pronotum width: 0.83; Posmentum length: 0.75; Posmentum width: 0.53; Antennal segments: 16.

Distribution: India: Chhattisgarh: 4 Km. W. from Konta motor Stand, Bastar (Bastar Dist.); Uttarakhend (Garhwal and Nainital Dist.) and West Bengal (Darjeeling Dist.).

Elsewhere: Nepal.

Remarks: O. bovini, a subterranean species, has been recorded for the first time from Bastar of Madhya Pradesh by Verma and dThakur (1982). However, the species is already known from Eastern, Central and Western Himalaya.

22. Odontotermes feae (Wasmann)


*Material examined*: Identified: (i) 1 vial with 3 S. and 5 W.; Sihora Rd., Garjtal (Jabalpur Dist.); H. Khajuria colI.; 4.v.73. (ii) 2 vials with 4 S. and Sev. W.; Barhai nullah (4 Km. S. from Manipat FRH) and Haratickeri village [8 km. from Ambikapur (Sarguja Dist.)]; H. Khajuria colI.; 3, 4.i.75.

*Distribution*: India : Madhya Pradesh and Chhattisgarh: Garjtal (Jabalpur Dist.), Mainpat and Ambikapur (Sarguja dist.); Arunachal Pradesh, Assam, Bihar, Gujarat, Karnataka, Manipur, Mizoram, Meghalaya, Nagaland, Orissa, Rajasthan, Takil Nadu, Tripura, Utrarhand, Uttar Pradesh and West Bengal.


*Remarks*: *O. feae* is one of the largest species in India and extends to the south eastern Asia. It rarely build very flat type mound (Bose, 1992 and Maiti et al. 2004) and can attack any sort of cellulosic material. Field biology of the species has been dealt by Mathur and Sen-Sarma (1962, Maiti 1983, Mukherjee, et al. 2008).

**23. Odontotermes guptai** Roonwal & Bose


*Material examined*: (i) 3 vials with 4 S. and W.; Jabalpur (King garden, Paritnala, Tilwaraghat); V.S. Durve and V.V. Rao colI.; 17.xii.68, 25.vii.69 and 6.viii.69. (ii) A vial with 10 S. and 5 W.; Khudera village (Bastar Dist.); R.K. Singh colI.; 20.i.74. (iii) 2 vials with 7 S. and 10 W.; Ambi Kapur and Bhanggacha village (Sarguja Dist.). H. Khajuria colI.; 6.vii.75.; det. Verma and Thakur.

*Measurements (soldiers)*: (Chhotani, 1977).

Head-length to lateral base of mandible : 1.07-1.20; Max. head-width : 1.00-1.07; Length of left mandible : 0.60-0.63; Tooth-distance of left mandible : 0.19-0.20; Max. pronotum width : 0.77-0.83; No. of antennal segments : 16.

*Distribution*: India : Madhya Pradesh and Chhattisgarh: Jabalpur [King Garden, Paritnala, Tilwaraghat] (Jabalpur Dist.); Khudera village (Bastar Dist.); Ambikapur and Banghagcha village (Sarguja Dist.); Assam, Bihar, Himachal Pradesh, Jammu, Kashmir and Uttarakhand.

*Elsewhere*: Pakistan and Bangladesh.

24. *Odontotermes gurdaspurensis* Holmgren and Holmgren


*Measurements (soldiers)*:

Head length to base of mandible : 1.42-1.63; Max. head-width : 1.20-1.40; Max. length of mandible : 0.95-1.08; Tooth distance : 0.33-0.45; Pronotum length : 0.50-0.70; Pronotum width : 0.85-1.00; Antennal segments : 16.

Punjab, Rajasthan, Uttar Pradesh, Uttarkhand and West Bengal.

Elsewhere : Pakistan [Punjab, N.W.F.P., Baluchistan, Lahore, Jehelum, Rawalpindi, Islamabad, Campbellpur, Peshwar, Kohat and Lovali].

Remarks : *O. gurdaspurensis* is very close to *O. obesus*, but much larger. Sometimes builds mound or soil dweller, but known as minor pest of wheat and maize crops in Rajasthan. It also attacks logs and twigs of different plants in Pakistan and in India.

25. **Odontotermes horai** Roonwal & Chhotani


Material studied : No material available for study.

Distribution : India : Madhya Pradesh; Meghalaya, Nagaland, Sikkim, West Bengal, Uttarakhand and Uttar Pradesh.

Elsewhere : Nepal and Pakistan.

Remarks : *O. horai*, a subterranean species, is very close to *O. parvidens* Holm. and Holm. due to presence of minute tooth at basal third of soldier's left mandible, it differs from other allied species.

26. **Odontotermes horni** (Wasmann)


Measurements (Soldiers) : Chhotani 1997.

Head-length to base of mandibles : 2.50-2.60; Max. head width : 1.97-2.05; Length of left mandible : 1.27-1.33; Tooth-distance of left mandible : 0.70-0.73; Max. pronotum width : 0.77-0.83; No. of antennal segments : 17.

Distribution : India: Madhya Pradesh: Kanha National Park (Kisli); Manipur, Meghalaya, Tripura, South India, Orissa, Uttaranchal (Dehra Dun) and West Bengal (Darjeeling and Jalpaiguri Dist.).


Remarks : *O. horni* is recognized as pest of tea and coconut in Sri Lanka and India, and also. attacks fallen logs of different trees (Sen-Sarma et al. 1975). The species has been collected from dead twigs lying on the ground and under stones in Kanha National Park (Chhotani, 1977).

27. **Odontotermes microdentatus** Roonwal and Sen-Sarma


Measurements (soldiers) :

Head length to base of mandibles : 1.37-1.43; Max. head width : 1.10-1.17; Length of left mandible : 0.87-0.90; Tooth distance from tip of
left mandible: 0.23-0.27; Max. pronotum width: 0.87-0.93; Antennal segments: 16-17.

**Distribution**: India: Chhattisgarh: Manipat (Sarguja Dist.), Himachal Pradesh, Jammu and Kashmir, Bihar, Uttar Pradesh, and Uttar Pradesh.

**Elsewhere**: Nepal.

**Remarks**: *O. microdentatus* is a mound building species in Kanha National Park and construct dome shaped mound with a few round swelling (Chhotani, 1977). He has also given details of fungus comb and royal chamber. Presence of a very minute tooth on the base of anterior third of left mandible and smaller head length (1.00-1.45 mm) keeps the species separate from all other Indian species.

28. **Odontotermes obesus** (Rambur)


**Material examined**: Identified: (i) 1 vial with 1 S. and 5 W., Jabalpur (Saopatal), L.P. Dubey coll., 9.x.73. (ii) 1 vial with 1 S. and 5 W., Jabalpur (Madan mahal), H. Khajuria coll., 18.xii.69 (det. Verma and Thakur).

**Distiribution**: India: Madhya Pradesh: Jabalpur (Saopatal, Madan Mahal); Andhra Pradesh, Bihar, Himachal Pradesh, Kerala, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

**Elsewhere**: Sri Lanka, Bangladesh and Nepal.

**Remarks**: *O. obesus* is a very common mound building species in India. It attacks living agricultural and forest plants including tea, rubber, seedlings of coconut plant. The species also reported from different logs, wood and wooden structure in houses.

30. **Odontotermes wallonensis** (Wasmann)


**Material examined**: Identified: A vial with 5
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Measurements (Imagoes):

Total body length without wings: 11.5-12.0; Head length to base of mandibles: 1.80-1.83.

Max. head width with eyes: 2.22-2.24; Labrum length: 0.53; Labrum width: 0.78; Max. diameter of eyes: 0.64; Min. diameter of eyes: 0.53; Max. diameter of ocellus: 0.28; Min. diameter of ocellus: 0.23; Min. eye-ocellus distance: 0.83; Antennal segments: 19.

Distribution: India: Madhya Pradesh: Jabalpur (Madan Mahal), Andhra Pradesh, Bihar, Delhi, Gujarat, Karnataka, Maharashtra, Orissa, Rajasthan, and Tamil Nadu.

Remarks: The species occurs predominantly in the peninsular India including other states of Western India. Generally reported as pest of sugarcane as well as found damaging maize, groundnut and soyabean crops.

Genus Microtermes Wasmann

Key to species of Microtermes (Soldier)

1. Labrum comparatively narrow at tip ............ M. incertoides Holmgren
   – Labrum broad at tip.......................... 2

2. Antennae with 2nd segment shorter than 3rd and 4th combined together; head and body comparatively densely hairy ............................................................... M. unicolor Snyder
   – Antennae with 2nd segment equal to 3rd and 4th combined together; head and body less so hairy ......................... M. obesi Holmgren

31. Microtermes incertoides Holmgren


Head length to base of mandibles: 0.80-0.88; Max. head width: 0.75-0.78; Left mandible length: 0.50-0.53; Pronotum length: 0.35; Pronotum width: 0.48-0.53; Antennal segments: 14.

Distribution: India: Madhya Pradesh, Andhra Pradesh, Daman & Diu, Gujarat, Karnataka, Maharashtra, Tamil Nadu and Uttar Pradesh.

Elsewhere: Pakistan.

Remarks: This subterranean species attacks different logs and decaying wood (Sen-Sarma et al., 1975, Thakur, 1991).

32. Microtermes obesi Holmgren


Measurements (Soldiers):

Head-length to base of mandibles: 0.83-0.87; Max. head-width: 0.73-0.80; Left mandible length: 0.47-0.50; Max. pronotum width: 0.47-0.53; Antennal segments: 14.

Distribution: India: Madhya Pradesh: Jabalpur, Bheraghat; Common in India.


Remarks: The species is one of the most common subterranean termites in India and south-east Asia. It causes extensive damage to agricultural plant, vegetables, fruit trees, garden flower, ornamental plants, twigs and logs of
several important plant species. Chhotani (1977) collected the species from the soil as well as from the walls of the mound of *Odontotermes* forming some inter communicating galleries and small chambers in Kanha National Park.

33. *Microtermes unicolor* Snyder


*Material examined*: Identified (Chhotani, 1977): (i) 3 vials with Im., S. and W., ex. Mound of *Odontotermes obesus* (Ramb.). (ii) 3 vials with S. and W., ex. twigs of woods lying on ground and under stone. (iii) 1 vial with two Im., "at light"

*Measurements (Soldiers)*: (Chhotani, 1977)

Head-length to base of mandible: 0.87-0.90; Max. head-width: 0.77-0.80; Length of left mandible: 0.43-0.47; Max. Pronotum width: 0.51-0.53; No. of antennal segments: 14.


*Elsewhere*: Bangladesh and Pakistan.

*Remarks*: In Kanha National Park, the species was collected from soil as well as in the walls of the mounds of *Odontotermes* spp. (Chhotani, 1977). The species attacks roots and stumps of sugarcane, chillies in Pakistan, and also twigs and logs of several timbers. In morphological character, the species is close to *M. obesi*.

Subfamily NASUTITERMITINAE

Genus *Trinervitermes*

**Key to species of Trinervitermes**

**Soldier major**

1. Rostrum reddish to dark brown with reddish brown apex and comparatively shorter; posterior bulge of head well marked. .................. .......................................................... *T. biformis* (Wasmann)

2. Rostrum darker, blackish brown with paler apex and comparatively longer; posterior bulge of head less marked .................. .......................................................... *T. nigrirostris* Mathur and Sen-Sarma

**Soldier minor**

1. Rostrum longer (length 0.70-0.76) in comparison to head without rostrum (index: rostrum-length/head length 0.82-0.086). .................. .......................................................... *T. nigrirostris* Mathur and Sen-Sarma

2. Rostrum shorter (length 0.55-0.60) in comparison to head without rostrum (index: rostrum-length/head length 0.62-0.76) .................. .......................................................... *T. biformis* (Wasmann)

34. *Trinervitermes biformis* (Wasmann)


*Material examined*: Identified: (i) 6 vials with sev. S. and W., Mainpat and vicinity (Sarguja Dist.) R.K. Singh colI., 13, 26-30.i.75. (ii) 2 vials with sev. S.W., Muraphad village (Sarguja Dist.). S.K. Mishra colI., 16-17.i.75. (iii) 1 vial with 10 S. and 15 S., Shivpuri, 8 Km. N. from S.S.S. Club (Shivpuri Dist.), R.K. Singh colI., 13.ix.75.

*Distribution*: India: Madhya Pradesh & Chhatisgarh: Mainpat, Murakhad (Sarguja Dist.), Shivpuri (Shivpuri Dist.); Andhra Pradesh, Gujrat, Karnataka, Kerala, Maharashtra, Orissa, Rajasthan, Tamil Nadu and West Bengal.

*Elsewhere*: Pakistan and Sri Lanka.

*Remarks*: The soldiers of the species are quite variable in forms since three species synonymised under it. This foraging species nests in rocky soil of plain land. They cause fairly damage to grasses including many fruit trees in India. Biological information provided by Bose (1984) and Mukherjee et al. (2008).
35. *Trinervitermes nigrirostris* Mathur and Sen-Sarma


**Material examined**: Identified: 1 vial with 2 S (minor) and 1 W.; Shivpuri, 8 Km. N. from S.S.S. Club (Shivpuri dist.); R.K. Singh coll., 13.ix.75, det. Verma and Thakur.

**Measurements (Soldier)**:

Total body length with rostrum: 3.27; Head length with rostrum: 1.39; Head length without rostrum: 0.84; Max. head width: 0.61; Length of nasute: 0.55; Pronotum length: 0.22; Pronotum width: 0.44; Antennal segments: 13.

**Distribution**: India: Madhya Pradesh: Shivpuri 8 Km. N. from S.S.S. Club (Shivpuri dist.); Tamil Nadu.

**Remarks**: This is a soil-dwelling species and has been collected from mound in Mandapam of Tamil Nadu. The species is close to *T. biformis*.

**FAUNAL ANALYSIS**

The termite fauna of Madhya Pradesh (including Chhattisgarh) comprises only 35 species under 14 genera and three families which is far less than the expected fauna in comparison to its vast geographical area. Hence more intensive surveys are needed in future to explore more areas to get a complete picture of fauna. Only two species, namely, *Eurytermes boveni* Roonwal and *Chhotani* and *Speculitermes chadaensis* Chatterjee and Thapa are restricted in distribution to state, but there is no endemic genus. The primitive or higher families are rather poorly represented. For instance, families Kalotermitidae and Rhinotermitidae are represented by a single species under genus *Cryptotermes* and only two species under genus *Coptotermes* respectively. The rest 32 species under 12 genera belong to lower termite family Termitidae. Among the families, Termitidae, especially the subfamily Macrotermiteinae is by far the largest and most common (15 species under genera *Odontotermes* and *Microtermes*), with decreasing sequence in the subfamily Amitermitinae (13 species under the genus *Eurytermes*, *Speculitermes*, *Euhamitermes*, *Synhamitermes*, *Amitermes*, *Eremotermes*, *Microcerotermes*), subfamily Termitinae (2 species under *Dicuspiditermes* and *Pericapritermes*), subfamily Nasutitermitinae (2 species under genus *Trinervitermes*).

It is no surprise that termite fauna of Madhya Pradesh is a varied assemblage of species from the adjoining areas of the country. Based on this most preliminary faunal report, it can be inferred that the majority species to a total of 20 share their distribution with the termites of the Himalaya, followed by the peninsular (17 species), arid and semi-arid areas including the north-western India (14 species) and lastly in decreasing faunal strength, north-eastern elements (12 species). This is purely a primary estimation for the fulfillment of the requirement of such analysis which needs further detailed survey and study.

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REFERENCES


INTRODUCTION

Madhya Pradesh state was created in 1956 by merging Mahakoshal and Chhatisgarh parts of the former Central Province (CP), Berar, Madhya Bharat, Bhopal, and Vindhya Pradesh, thereby forming geographically the largest state in India. Later on, in the year 2000, another state Chhattisgarh was carved out by the division of Madhya Pradesh. Today, Madhya Pradesh with its capital in Bhopal and Chhattisgarh with its capital in Raipur occupy the very heartland of India and together they from the unit of Central India. Five major rivers i.e. Narmada, Mahanadi, Tapti, Indravati, and Chambal flow from highlands of the Central India, which feeds the rivers of North, the East, the South, and the West. The total area of these two states is 4,43,446 sq.km. lies between 21 to 25 N and longitudes 74 to 84 E, covering about 13.5% of the total area of India. The two states are land-locked and surrounded by seven states, viz., Andhra Pradesh, Bihar, Gujarat, Maharashtra, Orissa, Rajasthan and Uttar Pradesh. The forest area of Madhya Pradesh is 30.9% of the total geographical area, while it is 43.9% in Chhattisgarh. As per the classification of Champion and Seth (1968), the forest types found in the area are classified as sub-tropical hill forests, moist deciduous forests, tropical dry deciduous forests and thorn forests.

The present work provides a comprehensive account of Orthopteran fauna from Madhya Pradesh and Chhattisgarh. The major work on Orthopteran fauna of India is published by Kirby (1914) and Chopard (1969), but so far no comprehensive account on Orthoptera of Madhya Pradesh and Chhattisgarh is available. Only the scattered information on faunal diversity of Orthoptera of these states has been published by the various workers. Uvarov (1925) has recorded nine species from Central Province. Chopard (1970) described one new species of cricket from Kutumswar cave, Bastar. Sinha and Agrawal (1973) also studied one species of cave gryllid from the same locality. Tandon et al. (1976) studied the collection of Orthoptera from Kanha National Park. Tandon et al. (1995) recorded 23 species belonging to 4 families of Orthoptera from Kanha Tiger Reserve. Dwivedi (1978) reported one species from Bilaspur district of Chhattisgarh. Dwivedi and Chattoraj (1985) studied on energy budget of grasshopper Acrida exalata (Walker) population from Bilaspur. Dwivedi (1990) worked on bio-energetics of the grasshopper Catantops pinguis innotabilis (Walker) at Bilaspur (Chhattisgarh). Gunther (1980) revised the Tridactyloidea of the world, where in species from India are also included. Roonwal (1981) studied 10 species of Orthoptera from Central India. Dixit and Sinha (1982) reported one species of Orthoptera from Ambikapur. Agrawal and Sinha (1987) described a new species Homoeogryllus indicus from Kachhuwa Pahar cave, Raigarh. Shishodia (1988) reported one species Capulica alata Uvarov from Amarkantak, Rewa. Shishodia (1991) recorded 8 species of grous locusts from Kanha National Park. Shishodia (1995) reported 15 species belonging to 6 families of Orthoptera from Indravati Tiger Reserve. Shishodia (1999) recorded 22 species of Orthopteran insects from


A number of workers including Hancock (1915), Mason (1973), Bhowmik (1985), Shishodia and Hazra (1986), Shishodia and Tandon (1987), Vasanth (1993), Ingrisch (1998), Dey and Hazra (2003), Shishodia and Barman (2004) have also worked on the fauna of other states and included the distribution of some species in Madhya Pradesh and Chhattisgarh.

A total of 154 species belonging 100 genera under 10 families of Orthopteran insects has been given below the table in which Acrididae 62 species, Pyrgomorphidae 6 species, Tettigidae 18 species, Tridactylidae 6 species, Gryllidae 37 species, Trigonidiidae 6 species, Gryllotalpidae 1 species, Schizodactylidae 1 species, Gryllacrididae 1 species and Tetrigoniidae 16 species are known from Madhya Pradesh and Chhattisgarh. This is the first comprehensive account on Orthoptera fauna of these two states, which is mainly based on identified specimens deposited in the National Zoological Collection, Kolkata & Central Regional Station, Zoological Survey of India and published information on the Orthoptera of Madhya Pradesh and Chhattisgarh.

**List of species of Orthoptera**

**Order ORTHOPTERA**

**Suborder CAELIFERA**

**Infraorder ACRIDIDEA**

**Superfamily ACRIDOIDEA**

**Family ACRIDIDAE**

**Subfamily ACRIDINAE**

**Genus Acrida** Linnaeus, 1758

1. *Acrida exaltata* (Walker, 1859)
2. *Acrida gigantea* (Herbst, 1794)
   - *Genus Ceracris* Walker, 1870
3. *Ceracris nigricornis* Walker, 1870
   - *Genus Orthochtha* Karsch, 1891
4. *Orthochtha indica* Uvarov, 1942
   - *Genus Phlaeoba* Stål, 1860
5. *Phlaeoba infumata* Brunner, 1893
6. *Phlaeoba panteli* Bolivar, 1902
   Genus *Truxalis* Fabricius, 1775
7. *Truxalis indica* (Bolivar, 1902)
   Subfamily CALLIPTAMINAE
   Genus *Acorypha* Krauss, 1877
8. *Acorypha glaucopsis* (Walker, 1870)
   Subfamily CATANTOPINAE
   Genus *Diaboloecatantops* Jago, 1954
9. *Diaboloecatantops innotabilis* (Walker, 1870)
   Genus *Oxyrrhepes* Stål, 1873
10. *Oxyrrhepes obtusa* (de Haan, 1842)
    Genus *Stenocatantops* Dirsh & Uvarov, 1953
11. *Stenocatantops splendens* (Thunberg, 1815)
    Genus *Xenocatantops* Dirsh & Uvarov, 1953
12. *Xenocatantops humilis humilis* (Serville, 1839)
13. *Xenocatantops karnyi* (Kirby, 1910)
    Subfamily COPTACRIDINAE
    Genus *Coptacra* Stål, 1873
14. *Coptacra punctoria* (Walker, 1870)
    Genus *Eucoptraca* Bolivar, 1902
15. *Eucoptraca praemorsa* (Walker, 1870)
    Subfamily CYRTACANTHACRIDINAE
    Genus *Chondracris* Uvarov, 1923
16. *Chondracris rosea* (De Geer, 1773)
    Genus *Cyrtacanthacris* Walker, 1870
17. *Cyrtacanthacris tatarica* (Linnaeus, 1758)
    Genus *Pachyacris* Uvarov, 1923
18. *Pachyacris vinosa* (Walker, 1870)
    Genus *Patanga* Uvarov, 1923
19. *Patanga succincta* (Johansson, 1763)
    Genus *Schistocerca*, Stål, 1873
20. *Schistocerca gregaria* (Forskål, 1775)
    Subfamily EYEPREPOCNEMIDINAE
    Genus *Cataloipus* Bolivar, 1890
21. *Cataloipus cognatus* (Walker, 1870)
    Genus *Choroedocus* Bolivar 1914
22. *Choroedocus illustris* (Walker, 1870)
23. *Choroedocus humilis* (Walkerv 1870)
24. *Eyprepocnemis Fieber, 1853*
25. *Eyprepocnemis alacris alacris* (Serville, 1839)
26. *Tylotropidius Stål, 1860*
27. *Aulacobothrus Bolivar, 1902 : 597*
28. *Aulacobothrus decisus* (Walker, 1871)
29. *Aulacobothrus luteipes* (Walker, 1871)
30. *Aulacobothrus strictus* (Bolivar, 1902)
    Genus *Capulica* Bolivar, 1918
31. *Capulica alata* Uvarov, 1929
    Genus *Gelastorhinus* Brunner, 1903
32. *Leva indica* (Bolivar, 1902)
    Genus *Mesopsis* Bolivar, 1906
33. *Mesopsis cylindricus* (Kirby, 1914)
    Subfamily HEMIACRIDINAE
    Genus *Clonacris* Uvarov, 1943
34. *Clonacris kirbyi* (Finot, 1903)
    Genus *Gesonula* Uvarov, 1940
35. *Gesonula punctifrons* (Stål, 1861)
    Genus *Hieroglyphus* Krauss, 1877
36. *Hieroglyphus annulicornis* (Shiraki, 1910)
37. *Hieroglyphus banian* (Fabricius, 1798)
38. *Hieroglyphus concolor* (Walker, 1870)
39. *Hieroglyphus nigrorepletus* Bolivar, 1912
40. *Hieroglyphus oryzivorus* Carl, 1916
    Genus *Parahieroglyphus* Carl, 1916
41. *Parahieroglyphus bilineatus* (Bolivar, 1912)
    Subfamily OEDIPODINAE
    Genus *Acrotylus* Fieber, 1853
42. *Acrotylus humbertianus* Saussure, 1884
    Genus *Aiolopus* Fieber, 1853
43. *Aiolopus thalassinus tamulus* (Fabricius, 1798)
Genus *Chondronotulus* Uvarov, 1956

44. *Chondronotulus bengalensis* (Saussure, 1888)

Genus *Chloebora* Saussure, 1884

45. *Chloebora crassa* (Walker, 1870)

Genus *Atractomorpha* Saussure, 1862

46. *Atractomorpha crenulata* (Fabricius, 1793)

Genus *Dittopternis* Saussure, 1884

47. *Dittopternis venusta* (Walker, 1870)

Genus *Gastrimargus* Saussure, 1884

48. *Gastrimargus marmoratus* (Thunberg, 1815)

Genus *Poekilocerus* Serville, 1831

49. *Poekilocerus pictus* (Fabricius, 1775)

Genus *Heteropternis* Stål, 1873

50. *Heteropternis respondens* (Walker, 1859)

Genus *Pyrgomorpha* Serville, 1831

51. *Pyrgomorpha bispinosa bispinosa* (Walker, 1871)

Genus *Zarytes* Bolivar, 1904

52. *Zarytes squalinus brachycerus* (Kirby, 1914)

Superfamily PYRGOMORPHEOIDEA

Family PYRGOMORPHIDAE

Genus *Atractomorpha* Saussure, 1862

63. *Atractomorpha crenulata* (Fabricius, 1793)

Genus *Chrotogonus* Serville, 1838

64. *Chrotogonus (Chrotogonus) oxypterus* (Blanchard, 1836)

65. *Chrotogonus (Chrotogonus) trachypterus trachypterus* (Blanchard, 1836)

Genus *Poekilocerus* Serville, 1831

66. *Poekilocerus pictus* (Fabricius, 1775)

Genus *Pyrgomorpha* Serville, 1831

67. *Pyrgomorpha bispinosa bispinosa* (Walker, 1870)

Genus *Zarytes* Bolivar, 1904

Subfamily SCELIMENINAE

Genus *Criotettix* Bolivar, 1887

70. *Criotettix bispinosus* (Dalman, 1818)

71. *Criotettix latifrons* Hebard, 1929

72. *Criotettix orientalis* Hancock, 1913

Genus *Euscelimena* Gunther, 1938

73. *Euscelimena harpago* (Serville, 1839)

Genus *Thoradonta* Hancock, 1909

74. *Thoradonta nodulosa* (Stål, 1860)

75. *Thoradonta spiculoba* Hancock, 1912 : 138

Subfamily TROPIDOPOLINAE

Genus *Coptotettix* Bolivar, 1887

76. *Coptotettix annandalei* Hancock, 1915

77. *Coptotettix conspersus* Hancock, 1915

Genus *Ergatettix* Kirby, 1914

78. *Ergatettix dorsiferus* (Walker, 1871)

79. *Ergatettix guentheri* Steinmann, 1970
Genus *Euparatettix* Hancock, 1904
80. *Euparatettix histricus* (Stål, 1861)
81. *Euparatettix variabilis* (Bolivar, 1887)
   Genus *Hedotettix* Bolivar, 1887
82. *Hedotettix attenuatus* Hancock, 1904
83. *Hedotettix cristitergus* Hancock, 1915
84. *Hedotettix gracilis* (de Haan, 1842)
85. *Hedotettix punctatus* Hancock, 1909
Genus *Paratettix* Bolivar, 1887
86. *Paratettix cingalensis* (Walker, 1871)
87. *Tridactylus fasciatus* Guerin, 1844
88. *Tridactylus thoracicus* Guerin, 1844
Genus *Xya* Latreille, 1809
89. *Xya frontomaculata* (Gunter, 1974)
90. *Xya japonica* Haan, 1842
91. *Xya opaca* (Walker, 1871)
92. *Xya variegata* Latreille, 1809
   Suborder ENSIFERA
   Infraorder OEDISCHIOIDEA
   Superfamily GRYLLOIDEA
   Family GRYLLIDAE Brunner, 1882
   Subfamily ENEOPTERINAE
   Genus *Xenogryllus* Bolivar, 1890
93. *Xenogryllus* sp.
   Subfamily GRYLLINAE
   Genus *Acheta* Fabricius, 1775
94. *Acheta domesticus* Linnaeus, 1758
   Genus *Gryllus* Linnaeus, 1758
95. *Gryllus bimaculatus* De Geer, 1773
   Genus *Gryllodes* Saussre, 1874
96. *Gryllodes sigillatus* (Walker, 1869)
97. *Gryllodes supplicans* (Walker, 1859)
   Genus *Gryllopsis* Chopard, 1928
98. *Gryllopsis falconetti* (Saussure, 1877)
99. *Gryllopsis furcata* (Saussure, 1877)
   Genus *Gymnogryllus* Saussure, 1877
100. *Gymnogryllus fascipes* Copard, 1969
101. *Gymnogryllus kashmirensis* Bhowmik, 1967
   Genus *Loxoblemmus* Saussure, 1877
102. *Loxoblemmus detectus* (Serville, 1838)
103. *Loxoblemmus equestris* Saussure, 1877
   Genus *Modicogryllus* Chopard, 1961
104. *Modicogryllus confirmatus* (Walker, 1859)
105. *Modicogryllus consobrinus* (Saussure, 1877)
   Genus *Phonarellus* (Gorochov, 1983)
106. *Phonarellus* (Phonarellus) minor Chopard, 1959
   Genus *Platygryllus* Chopard, 1961
107. *Platygryllus brunneri* (Saussure, 1877)
108. *Platygryllus melanocephalus* (Serville, 1839)
   Genus *Plebeiotrigrillus* Randell, 1964
109. *Plebeiotrigrillus guttiventris* (Walker, 1871)
   Genus *Tarbinskiellus* Gorochov, 1983 : 320
110. *Tarbinskiellus orientalis* (Burmeister, 1832)
111. *Tarbinskiellus portentosus* (Lichtenstein, 1796)
   Genus *Teleogryllus* Chopard, 1961
112. *Teleogryllus gracilipes* (Saussure, 1877)
113. *Teleogryllus mitratus* (Burmeister, 1838)
114. *Teleogryllus occipitalis* (Serville, 1838)
   Subfamily CACHOPLISTINAE
   Genus *Arachnomimus* Saussure, 1878
115. *Arachnomimus subalatus* Chopard, 1970
   Genus *Homoeogryllus* Guerin, 1847
   Genus *Kempiola* Uvarov, 1940
117. *Kempiola shankari* Sinha & Agarwal, 1973
   Genus *Meloimorpha* Walker, 1870
118. *Meloimorpha cincticornis* Walker, 1870
119. *Meloimorpha japonica* (Haan, 1842)
   Subfamily PODOSCIRTINAE Saussure, 1878
   Genus *Madasumma* Walker, 1869
120. *Madasumma* sp.
Subfamily NEMOBIINAE
Genus *Paranemobius* Saussure, 1877
121. *Paranemobius pictus* (Saussure, 1877)
Genus *Pteronemobius* Jacobson and Bianchi, 1905
122. *Pteronemobius bicolor* (Saussure, 1877)
123. *Pteronemobius concolor* (Walker, 1871)
124. *Pteronemobius novarae* (Saussure, 1877)
125. *Pteronemobius csikii* (Bolivar, 1901)
126. *Pteronemobius taprobanensis* (Walker, 1869)
127. *Pteronemobius fascipes* (Walker, 1869)
128. *Pteronemobius rufipes* Chopard, 1969

Subfamily OECANTHINAE
Genus *Oecanthus* Serville, 1831
129. *Oecanthus indicus* Saussure, 1878

Family TRIGONIDIIDAE
Genus *Anaxipha* Saussure, 1874
130. *Anaxipha* sp.
Genus *Amusurgus* Brunner, 1893
131. *Amusurgus* sp.
Genus *Homoeoxipha* Saussure, 1874
132. *Homoeoxipha lycoides* (Walker, 1869)
Genus *Metioche* Stål, 1877
133. *Metioche* sp.
Genus *Trigonidium* Rambur, 1839
134. *Trigonidium cincinneloides* Rambur, 1839
135. *Trigonidium humbertianum* (Saussure, 1878)

Family GRYLLTOTALPIDAE
Subfamily GRYLLTOTALPINAE
Genus *Gryllotalpa* Latreille, 1802
136. *Gryllotalpa africana* Beauvois, 1805
Superfamily SCHIZODACTYLOIDEA
Family SCHIZODACTYLIDAE
Subfamily SCHIZODACTYLINAE
Genus *Schizodactylus* Brulle, 1835
137. *Schizodactylus monstrosus* (Drury, 1773)

Superfamily STENOPELMATOIDEA
Family GRYLLACRIDIDAE
Subfamily GRYLLACRIDINAE
Genus *Gryllacris* Serville, 1831
138. *Gryllacris* sp.
Superfamily TETTIGONIOIDEA
Family TETTIGONIIDAE
Subfamily CONOCEPHALIDAE
Genus *Conocephalus* Thunberg, 1815
139. *Conocephalus maculatus* (Le Guillou, 1841)
Genus *Euconocephalus* Karsch, 1907
140. *Euconocephalus incertus* (Walker, 1869)
141. *Euconocephalus pallidus* (Redtenbacher, 1891)
Genus *Xiphidiopsis* Redtenbacher, 1891
142. *Xiphidiopsis citrina* Redtenbacher, 1891

Subfamily MECOPODINAE
Genus *Mecopoda* Serville, 1831
143. *Mecopoda elongata* (Linnaeus, 1758)
Subfamily PHANEROPTERINAE
Genus *Ducetia* Stål, 1874
144. *Ducetia japonica* (Thunberg, 1815)
Genus *Elimaea* Stål, 1874
Subgenus *Orthelimaea* Karsch, 1926
145. *Elimaea (Orthelimaea) securigera* Brunner, 1878
Genus *Himertula* Uvarov, 1940
146. *Himertula kinneari* (Uvarov, 1923)
Genus *Holochlora* Stål, 1873
147. *Holochlora albida* Brunner von Wattenwyl, 1878
Genus *Letana* Walker, 1869
149. *Letana infurcata* Ingrisch, 1990
151. *Letana pyrifera* Bey-Beinko, 1956
Genus *Phaneroptera* Serville, 1831
152. *Phaneroptera gracilis* Burmeister, 1838
Subfamily PSEUDOPHYLLINAE
Genus *Onomarchus* Stål, 1874
153. *Onomarchus* sp.
Genus *Sathrophyllia* Stål, 1874
154. *Sathrophyllia rugosa* (Linnaeus, 1758)
**Table**: Name of families, No. of genera and No. of species of Orthoptera from Madhya Pradesh and Chhattisgarh

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of families</th>
<th>No. of genera</th>
<th>No. of species</th>
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<tr>
<td>1.</td>
<td>Acrididae</td>
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<td>Pyrgomorphidae</td>
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<td>Terigidae</td>
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<td>6.</td>
<td>Trigonidiidae</td>
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<td>Schizodactylidae</td>
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<td>Gryllacridae</td>
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<td>Tettigoniidae</td>
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**Order ORTHOPTERA**

**Suborder CAELIFERA**

**Superfamily ACRIDOIDEA**

**Family ACRIDIDAE**

**Subfamily ACRIDINAE**

**Genus Acrida** Linnaeus, 1758

1. *Acrida exaltata* (Walker, 1859)


**Material examined**: Recorded from literature (Joshi et al., 2004, Shishodia, 2006, 2008).

**Distribution**: India : Himachal Pradesh, Madhya Pradesh (Jabalpur, Mandla and Rewa), Tamil Nadu and Uttarakhand.

**Elsewhere**: Africa and Nepal.

**Genus Ceracris** Walker, 1870

3. *Ceracris nigricornis* Walker, 1870


**Distribution**: India : Arunachal Pradesh, Chhattisgarh (Bilaspur), Himachal Pradesh, Madhya Pradesh (Bhopal, Chhindwara and Seoni), Sikkim and West Bengal.

**Elsewhere**: Taiwan; Tonkin and West & South China.

**Genus Orthochtha** Karsch, 1891

4. **Orthochtha indica** Uvarov, 1942


**Material examined**: Recorded from literature (Bhowmik, 1985).

**Distribution**: India : Delhi, Himachal Pradesh, Madhya Pradesh, Maharashtra and Meghalaya.

**Genus Phlaeoba** Stål, 1860

5. **Phlaeoba infumata** Brunner, 1893


**Material examined**: Recorded from literature (Dey & Hazra, 2003).

**Distribution**: India : Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar), Delhi, Goa, Haryana, Himachal Pradesh, Madhya Pradesh (Mandla), Manipur, Meghalaya, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

**Elsewhere**: Bangladesh; East Nepal; Hainan Islands; Kuangtung; Kwangs; Myanmar; South & North Malacca; South China; Tenasserim and Yunnan.

6. **Phlaeoba panteli** Bolivar, 1902


**Material examined**: Chhattisgarh, Bilaspur, AWLS : Kevachi, 22.vi.2004 (2♀,DC); Diyavan, 25.vi.2004 (1♀,DC), 09.v.2005 (2♀,DC); Atariya, 11.v.2005 (1♀,DC), 18.v.2005 (1♀,DC); Katami, 17.vii.2005 (2♀,DC); Achanakmar, 22.vii.2005 (1♀,DC); Bindaval, 24.vii.2005 (1♀,DC) coll. A. Singh & party.

**Distribution**: India : Andhra Pradesh, Arunachal Pradesh, Bihar, Chhattisgarh (Bilaspur), Himachal Pradesh, Madhya Pradesh (Hoshangabad and Shivpuri), Manipur, Meghalaya, Tripura, Tamil Nadu, Uttarakhand and West Bengal.

**Elsewhere**: Afghanistan.

**Genus Truxalis** Fabricius, 1775

7. **Truxalis indica** (Bolivar, 1902)


**Material examined**: Recorded from literature (Shishodia, 2000).

**Distribution**: India : Andhra Pradesh, Bihar, Chhattisgarh (Bastar and Bilaspur), Gujarat, Madhya Pradesh (Seoni), Maharashtra, Orissa, Karnataka and Tamil Nadu.
Elsewhere: Myanmar and Sri Lanka.

Subfamily CALLIPTAMINAE
Genus Acorypha Krauss, 1877
Calaptenopsis Bolivar, 1889

8. Acorypha glaucopsis (Walker, 1870)


Material examined: Recorded from literature (Shishodia, 2006, Gupta, 2008).

Distribution: India: Andhra Pradesh, Bihar, Delhi, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh (Hoshangabad, Shahdol and Shivpuri) Maharashtra, Rajasthan, Tamil Nadu and Uttarakhand.

Elsewhere: Iran and Saudi Arabia.

Subfamily CATANTOPINAE
Genus Diabolocatantops Jago, 1954

9. Diabolocatantops innotabilis (Walker, 1870)


Distribution: India: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar and Bilaspur), Delhi, Goa, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Lakshadweep Island, Madhya Pradesh (Bhopal, Chhindwara, Damoh, Hoshangabad, Seoni, Shivpuri, Sidhi and Umaria), Maharashtra, Meghalaya, Manipur, Nagaland, Orissa, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh, Uttarakhand, West Bengal.

Elsewhere: Afghanistan; Bangladesh; Borneo; Cambodia; China; Hong Kong; Indo-China; Japan; Java; Korea; Maldive Island; Malaysia; Myanmar; Nepal; New Guinea; Pakistan; Philippines; Sri Lanka; Sumatra; Tibet; Thailand and Yunnan.

10. Diabolocatantops pulchellus (Walker, 1870)


Material examined: Recorded from literature (Shishodia, 2000).

Distribution: India: Andaman & Nicobar Islands, Chhattisgarh (Bastar), Karnataka, Madhya Pradesh (Seoni), Manipur and Sikkim.

Elsewhere: Bangladesh and Pakistan.

Genus Oxyrrhepes Stål, 1873

11. Oxyrrhepes obtusa (de Haan, 1842)

Material examined: Recorded from literature (Tandon & Shishodia, 1989).

Distribution: India: Arunachal Pradesh, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Manipur, Meghalaya, Nagaland, Orissa, Rajasthan, Sikkim, Tamil Nadu, Uttarakhand and West Bengal.

Elsewhere: Celebes; China; Celebes; Hainan; Java; Korea; Malaysia; Moluccas Island, Myanmar; Nepal; New Guinea; Philippines; Sri Lanka; Sumatra; Taiwan; Thailand and Vietnam.

Genus Stenocatantops Dirsh & Uvarov, 1953
12. Stenocatantops splendens (Thunberg, 1815)

Genus Xenocatantops Dirsh & Uvarov, 1953
13. Xenocatantops humilis humilis (Serville, 1839)

Material examined: Chhattisgarh, Bilaspur, AWLS: Sambhar dhasan, 08.vi.2004 (1♂, 1♀, DC); Sattapani, 08.vi.2004 (1♀, NC), Diyavan, 11.vi.2004 (2♂, 1♀, DC), Katami, 11.vi.2004 (1♀, DC), Atariya, 17.vi.2004 (1♀, DC); Jhandi dongri, 19.vi.2004 (1♀, DC); Marvahi, 20.vi.2004 (1♂, 2♀, DC); Lamni, 21.vi.2004 (2♂, 1♀, DC); Mandri sarai, 23.vi.2004 (4♂, 2♀, DC); Gandelwapani, 27.vi.2004 (2♀, DC); Baharibhjar nala, 28.vi.2004 (1♀, NC); Chhirahata, 29.vi.2004 (1♀, DC); Rakhasak, 10.v.2005 (1♂, 4♀, DC); Bindival, 16.vii.2005 (1♀, DC), 24.vii.2005 (1♀, DC); Katami, 17.vii.2005 (1♀, DC); Sarasdal, 18.vii.2005 (1♀, DC); Maikumath road, 20.vii.2005 (1♀, DC) coll. A. Singh & party; Madhya Pradesh, Seoni, PTR: Karmajhiri, 10.vi.2001(1♀) coll. K. Chandra; Chandrapur, 07.xi.2001 (1♂) coll. M.L. Koshta & party.

Distribution: India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar and Bilaspur), Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh (Chhindwara, Damoh, Hoshangabad, Seoni and Umaria), Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal.

Elsewhere: Bangladesh; Borneo; Indo-China; Java; Lombok; Malaysia; Myanmar; Nepal; New Guinea; Philippines; Sumatra; Sri Lanka; Thailand; Tibet; Vietnam and Yunnan.
14. *Xenocatantops karnyi* (Kirby, 1910)


**Material examined**: Recorded from literature (Shishodia, 2000).

**Distribution**: India: Andhra Pradesh, Arunachal Pradesh, Assam, Chhattisgarh (Bastar), Delhi, Himachal Pradesh, Maharashtra, Orissa, Tamil Nadu, Tripura, Uttarakhand and Uttar Pradesh.

*Elsewhere*: Nepal.

**Subfamily COPTACRIDINAE**

**Genus Coptacra** Stål, 1873

15. *Coptacra punctoria* (Walker, 1870)


**Distribution**: India: Andhra Pradesh, Arunachal Pradesh, Assam, Chhattisgarh (Bastar, Bilaspur), Himachal Pradesh, Madhya Pradesh (Chhindwara, Damoh, Hoshangabad, Shivpuri and Umaria), Maharashtra, Manipur, Meghalaya, Orissa, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

*Elsewhere*: China; Myanmar and Taiwan.

**Subfamily CYRTACANTHACRIDINAE**

**Genus Chondracris** Uvarov, 1923

17. *Chondracris rosea* (De Geer, 1773)


**Material examined**: Recorded from literature (Shishodia & Hazra, 1986).

**Distribution**: India: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Goa, Himachal Pradesh, Kerala, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.
Elsewhere: Bangladesh; Bhutan; China; Hainan; Indonesia; Japan; Java; Korea; Manchuria; Myanmar; Philippines; Taiwan; Thailand and Vietnam.

Genus *Cyrtacanthacris* Walker, 1870

18. *Cyrtacanthacris tatarica* (Linnaeus, 1758)


**Distribution**: India: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar and Bilaspur), Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh (Chhindwara, Damoh and Seoni), Maharashtra, Manipur, Meghalaya, Orissa, Rajasthan, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Africa; Bangladesh; Central America; Hainan; Indonesia; Madagascar; Mediterranean Region; Myanmar; Nepal; Pakistan; Philippines; Red-Sea; Sahara; Saudi Arabia; Seychelles; Sri Lanka; South West Asia; Sumatra and Thailand.

Genus *Pachyacris* Uvarov, 1923

19. *Pachyacris vinosa* (Walker, 1870)


**Material examined**: Chhattisgarh, Bilaspur, AWLS : Katami, 17.vii.2005 (1♂, DC) coll. A. Singh & party.

**Distribution**: India: Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar and Bilaspur), Goa, Himachal Pradesh, Karnataka, Madhya Pradesh (Damoh, Hoshangabad and Panna), Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Tripura, Uttarakhand and West Bengal.

Elsewhere: China; Myanmar; Nepal; Thailand and Tongking.

Genus *Patanga* Uvarov, 1923

20. *Patanga succincta* (Johansson, 1763)


**Material examined**: Recorded from literature (Shishodia, 2000).

**Distribution**: India: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar), Delhi, Goa, Himachal Pradesh, Jammu & Kashmir, Kerala, Lakshadweep Island, Maharashtra, Manipur, Meghalaya, Orissa, Rajasthan, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Australia; Borneo; China; Hainan Island; Japan; Java; Malaysia; Myanmar; Pakistan; Philippines; South Arabia; Sri Lanka; South East Asia; Sumatra and Taiwan.

Genus *Schistocerca*, Stål, 1873

21. *Schistocerca gregaria* (Forskal, 1775)


**Material examined**: Recorded from literature (Joshi et al., 2004).

**Distribution**: India: Assam, Bihar, Delhi, Gujarat, Haryana, Jammu & Kashmir, Madhya Pradesh (Mandla), Maharashtra, Punjab, Rajasthan, Sikkim and Uttar Pradesh.
Elsewhere: Africa; Mediterranean Region; Nepal; Pakistan; Sri Lanka; South Europe; South & Central America and Western Asia.

Subfamily EYPREPONCENMIDINAE

Genus Cataloipus Bolivar, 1890

22. Cataloipus cognatus (Walker, 1870)


Distribution: India: Chhattisgarh (Bilaspur), Madhya Pradesh (Chhindwara and Seoni) and North India.

Genus Choroedocus Bolivar, 1914

23. Choroedocus illustris (Walker, 1870)


Material examined: Madhya Pradesh, Shahdol, AABR: Yamuna dadar, 07.xi.07(1♂, DC).

Distribution: India: Andhra Pradesh, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh (Chhindwara, Mandla and Seoni), Meghalaya, Uttarakhand and Uttar Pradesh. Elsewhere: Bangladesh; Myanmar; Pakistan and Thailand.

Genus Eyprepocnemis Fieber, 1853

24. Eyprepocnemis alacris alacris (Serville, 1839)


Material examined: Recorded from literature (Shishodia, 2000).

Distribution: India: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar), Delhi, Goa, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Manipur, Maharashtra, Meghalaya, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal. Elsewhere: Afghanistan; Bangladesh; Iran; Iraq; Pakistan and Sri Lanka.

25. Eyprepocnemis rosea Uvarov, 1942


Material examined: Chhattisgarh, Bilaspur, AWLS: Atariya, 17.vi.2004 (2♂,DC), 18.vi.2004 (1♂, DC); Marvahi forest, 20.vi.2004 (1♂,2♀, DC); Chhaparwa, 16.v.2005 (1♀,DC) coll. A. Singh & party.

Distribution: India: Andhra Pradesh, Chhattisgarh (Bilaspur), Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh (Chhindwara, Mandla and Seoni), Meghalaya, Uttarakhand and Uttar Pradesh. Elsewhere: Bangladesh; Myanmar; Pakistan and Thailand.

Genus Tylotropidius Stål, 1860

26. Tylotropidius varicornis (Walker, 1870)


Material examined: Chhattisgarh, Bilaspur, AWLS: Lamni, 07.v.2005 (1♂,1♀,DC) coll. A. Singh & party.

Distribution: India: Andhra Pradesh, Bihar, Chhattisgarh (Bastar and Bilaspur), Delhi, Goa, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh (Damoh, Hoshangabad, Panna, Rajpur and Shivpuri), Maharashtra, Meghalaya, Orissa, Rajasthan, Tamil Nadu, Tripura, Uttarakhand and West Bengal.

Elsewhere: Myanmar and Sri Lanka.

Subfamily GOMPHOCERINAE

Genus Aulacobothrus Bolivar, 1902: 597

27. Aulacobothrus decisus (Walker, 1871)


Distribution: India: Arunachal Pradesh, Madhya Pradesh (Hoshangabad), Maharashtra, Tamil Nadu and West Bengal.

28. Aulacobothrus luteipes (Walker, 1871)


Material examined: Recorded from literature (Shishodia, 1988).

Distribution: India: Karnataka and Madhya Pradesh (Amarkantak).

Genus Capulica Bolivar, 1918

30. Capulica alata Uvarov, 1929


Material examined: Recorded from literature (Shishodia, 1988).

Distribution: India: Karnataka and Madhya Pradesh (Amarkantak).

Genus Gelastorhinus Brunner, 1903

31. Gelastorhinus laticornis (Serville, 1839)


Material examined: Chhattisgarh, Bilaspur, AWLS: Jhandi dongri, 23.vii.2005 (1♂,DC) coll. A. Singh & party; Madhay Pradesh, Seoni, PTR: Khapa, 11.xi.2001 (1♂) coll. M.L. Koshta & party; Europe; Japan; Myanmar; North America; Pakistan; Sri Lanka; Taiwan and Thailand.

29. Aulacobothrus strictus (Bolivar, 1902)


Material examined: Recorded from literature (Tandon et al. 1976, 1995).

Distribution: India: Madhya Pradesh (Mandla, Pharissamer Hills) and Tamil Nadu.

Elsewhere: Nepal.
Distribution: India: Chhattisgarh (Bilaspur), Madhya Pradesh (Chhindwara, Hoshangabad, Seoni and Shivpuri), Maharashtra and West Bengal.

Subfamily HEMIACRIDINAE

Genus Clonacris Uvarov, 1943

Euthymia Stål, 1875

34. Clonacris kirbyi (Finot, 1903)

Material examined: Chhattisgarh, Bilaspur, AWLS: Chhaparwa, 04.vi.2004 (1♂,DC); 06.vi.2004 (1♂,DC); Matinala, 10.v.2005 (1♀,NC) coll. A. Singh & party; Madhya Pradesh, Chhindwara, PTR: Totladoh, 20.viii.2001 (4♂); 30.viii.2001 (1♂); Thota, 28.xi.2001 (1♂) coll. Y.N. Gupta & party.

Distribution: India: Chhattisgarh (Bilaspur), Karnataka, Madhya Pradesh (Seoni and Shivpuri), Tamil Nadu and Uttar Pradesh.

Genus Gesonula Uvarov, 1940

Gesonia Stål, 1878

35. Gesonula punctifrons (Stål, 1861)

Material examined: Recorded from literature (Shishodia, 2000).

Distribution: India: Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar), Delhi, Goa, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere: Bangladesh; Borneo; China; Hainan; Japan; Java; Kalimantan; Malacca; Malaysia; North Vietnam; Philippines; Sri Lanka; Taiwan; Thailand and Tongking.
Genus *Hieroglyphus* Krauss, 1877

36. *Hieroglyphus annulicornis* (Shiraki, 1910)


*Material examined:* Recorded from literature (Mason, 1973).

*Distribution:* India: Bihar, Chhattisgarh (Raipur).

*Elsewhere:* China; Hainan; Hong-Kong; Japan; Taiwan and Thailand.

37. *Hieroglyphus baniann* (Fabricius, 1798)


*Distribution:* India: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bilaspur), Himachal Pradesh, Karnataka, Madhya Pradesh (Chhindwara, Jabalpur and Seoni), Maharashtra, Manipur, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttarakhand, Uttar Pradesh and West Bengal.

*Elsewhere:* Afghanistan; Bangladesh; Bhutan; China; Myanmar; Nepal; Thailand and Vietnam.

38. *Hieroglyphus concolor* (Walker, 1870)


*Material examined:* Recorded from literature (Chandra et al., 2007, Shishodia, 2008).

*Distribution:* India: Assam, Delhi, Himachal Pradesh, Karnataka, Madhya Pradesh (Jabalpur), Maharashtra and Sikkim.

*Elsewhere:* Bangladesh and China.

39. *Hieroglyphus nigrorepletus* Bolivar, 1912


*Material examined:* Recorded from literature (Joshi et al., 2004).

*Distribution:* India: Andhra Pradesh, Assam, Bihar, Delhi, Jammu & Kashmir, Karnataka, Madhya Pradesh (Mandla), Maharashtra, Orissa, Punjab, Rajasthan, Uttarakhand, Uttar Pradesh and West Bengal.

*Elsewhere:* Bangladesh and Pakistan.

40. *Hieroglyphus oryzivorus* Carl, 1916


*Material examined:* Recorded from literature (Mason, 1973).

*Distribution:* India: Andhra Pradesh, Chhattisgarh (Bilaspur and Raipur), Gujarat, Himachal Pradesh, Maharashtra, Orissa, Rajasthan and West Bengal.

*Elsewhere:* Pakistan.

Genus *Parahieroglyphus* Carl, 1916

41. *Parahieroglyphus bilineatus* (Bolivar, 1912)


*Material examined:* Recorded from literature (Shishodia, 1999).

*Distribution:* India: Himachal Pradesh, Madhya Pradesh (Chhindwara), Maharashtra, Uttarakhand and West Bengal.

*Elsewhere:* Bangladesh.

Subfamily OEDIPODINAE

Genus *Acrotylus* Fieber, 1853

42. *Acrotylus humbertianus* Saussure, 1884


Distribution: India : Andhra Pradesh, Assam, Bihar, Chhattisgarh (Bastar), Delhi, Goa, Haryana, Himachal Pradesh, Lakshadweep Islands, Madhya Pradesh (Katni, Shahdol, Seoni and Umaria), Maharashtra, Punjab, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Elsewhere: Afghanistan; Bangladesh; Nepal; Pakistan and Sri Lanka.

Genus Aiolopus Fieber, 1853

43. Aiolopus thalassinus tamulus (Fabricius, 1798)


Material examined: Chhattisgarh, Bilaspur, AWLS: Chhaparwa, 04.vi.2004 (2 ♀,DC), 05.vi.2004 (1 ♂,1 ♀,NC), 10.vi.2004 (1 ♂,1 ♀,NC), 11.vi.2004 (1 ♀,DC); Atariya, 17.vi.2004 (1 ♀,DC), 18.v.2005 (1 ♂,1 ♀,DC); Lamni, 01.vii.2004 (1 ♀,DC), 09.v.2005 (1 ♂,NC), 13.v.2005 (1 ♀,DC); Jhandi dongri, 08.v.2005 (1 ♂,DC); Rakhasakh, 10.v.2005 (1 ♂,DC); Matinala, 10.v.2005 (2 ♂,1 ♀,NC); Jalda, 12.v.2005 (2 ♀,DC), 15.vii.2005 (1 ♀,DC); Titai dabra, 15.v.2005 (1 ♂,DC); Bindaval, 16.vii.2005 (1 ♀,DC); Katami, 17.vii.2005 (2 ♂,4 ♀,DC); Sarasdol, 18.vii.2005 (2 ♂,DC); Achanakmar, 22.vii.2005 (1 ♂,2 ♀,DC) coll. A. Singh & party; Madhya Pradesh, Seoni, PTR: Karmajhiri, 12.vi.2001 (1 ♂), 27.vi.2001 (1 ♀,NC), 04.vii.2001 (2 ♀) coll. K. Chandra; 09.vii.2001 (1 ♀) coll. R.K. Singh & party; Chandrapur road, 10.xi.2001 (2 ♂,4 ♀) coll. M. L. Koshta & party; Chhindimatta, 18.xii.2001 (1 ♂) coll. K. Chandra & party; Chhindwara: Totladoh, 28.viii.2001 (1 ♂), 07.ix.2001 (1 ♀); Gumtara, 27.viii.2001 (2 ♀) coll. Y.N. Gupta & party; Sitaghat, 25.xi.2001 (1 ♂,1 ♀); Chhindwani, 26.ii.2001 (1 ♂); Dongragaon, 27.xi.2001 (1 ♂,DC); Thota, 28.xi.2001 (1 ♂,1 ♀,DC); Banskheda, 28.xi.2001 (1 ♂,NC) coll. K. Chandra.

Distribution: India : Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Bihar, Chhattisgarh (Bastar and Bilaspur), Delhi, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh (Damoh, Hoshangabad, Mandla, Panna, Rewa, Seoni, Shivpuri and Umaria), Maharashtra, Manipur, Meghalaya, Orissa, Punjab, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Australia; Bangladesh; Borneo; Brunei; Celebes; China; Hainan; Hong Kong; Indonesia; Japan; Java; Lombok; Malaysia; Myanmar; New Guinea; Pakistan; Papua; Philippines; Singapore; Sri Lanka; Sumatra; Taiwan; Thailand and Timor.

Genus Chondronotulus Uvarov, 1956

44. Chondronotulus bengalensis (Saussure, 1888)


Material examined: Recorded from literature (Bhowmik,1985).

Distribution: India : Madhya Pradesh (Jabalpur), Maharashtra and West Bengal.
Genus *Chloeobora* Saussure, 1884

45. *Chloeobora crassa* (Walker, 1870)


*Material examined*: Chhattisgarh, Bilaspur, AWLS : Tilai dabra, 25.vii.04 (1 ♀,DC).

*Distribution*: India : Chhattisgarh (Bilaspur), Madhya Pradesh (Hoshangabad) Maharashtra and Tamil Nadu.

Genus *Dittopternis* Saussure, 1884

46. *Dittopternis venusta* (Walker, 1870)


*Distribution*: India : Andhra Pradesh, Chhattisgarh (Bastar and Bilaspur), Karnataka, Madhya Pradesh (Hoshangabad, Mandla, Rewa, Shahdol and Seoni), Manipur, Meghalaya, Orissa, Tamil Nadu, Tripura and West Bengal.

*Elsewhere*: Sri Lanka.

Genus *Gastrimargus* Saussure, 1884

47. *Gastrimargus africanus africanus* (Saussure, 1888)


*Distribution*: India : Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar and Bilaspur), Delhi, Goa, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh (Chhindwara, Damoh, Hoshangabad, Mandla, Panna, Shahdol, Seoni, Shivpuri, Sidhi and Umaria), Maharashtra, Meghalaya, Nagaland, Orissa, Rajasthan, Sikkim, Tamil Nadu, Uttarakhad, Uttar Pradesh and West Bengal.

*Elsewhere*: Africa; Myanmar; Nepal; Pakistan; Saudi Arabia; Sri Lanka; Thailand; Tibet and Yemen.

48. *Gastrimargus marmoratus* (Thunberg, 1815)


*Material examined*: Recorded from literature (Joshi et al., 2004, Shishodia, 2006).
**Distribution**: India: Andhra Pradesh, Assam, Bihar, Himachal Pradesh, Karnataka, Madhya Pradesh (Mandla, Shahdol and Sidhi), Maharashtra, Meghalaya, Nagaland, Sikkim, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal.

**Elsewhere**: Bangladesh; Borneo; Celebes; China; Hong Kong, Japan; Java; Korea; Lombok; Malaysia; Myanmar; Nepal; New Guinea; Philippines; Sulawesi; Sumatra; Taiwan; Thailand and Vietnam.

Genus *Heteropternis* Stål 1873

49. *Heteropternis respondens* (Walker, 1859)


**Material examined**: Chhattisgarh, Bilaspur.

**Distribution**: India: Arunachal Pradesh, Bihar, Chhattisgarh (Bastar and Bilaspur), Madhya Pradesh (Shahdol), Orissa, Tamil Nadu, Uttar Pradesh and West Bengal.

**Elsewhere**: Africa; Madagascar, South & West Asia and Sri Lanka.

Genus *Morphacris* Walker, 1870

50. *Morphacris fasciata sulcata* (Thunberg, 1815)


**Distribution**: India: Andhra Pradesh, Bihar, Chhattisgarh (Bastar and Bilaspur), Goa, Gujarat, Kerala, Lakshadweep Island, Madhya Pradesh (Hoshangabad, Jabalpur, Mandla and Seoni), Maharashtra, Orissa, Tamil Nadu and West Bengal.

**Elsewhere**: Afghanistan; Bangladesh; China; Indo-China; Myanmar; Nepal; Pakistan; Sri Lanka; Taiwan; Thailand and Vietnam.

Genus *Oedaleus* Fieber, 1853

51. *Oedaleus abruptus* (Thunberg, 1815)


**Distribution**: India: Andhra Pradesh, Arunachal Pradesh, Bihar, Chhattisgarh (Bastar), Delhi, Goa, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh (Chhindwara, Hoshangabad, Mandla, Shahdol, Seoni and Sidhi), Maharashtra, Manipur, Meghalaya, Orissa, Pondicherry, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

**Elsewhere**: Afghanistan; Bangladesh; China; Indo-China; Myanmar; Nepal; Pakistan; Sri Lanka; Taiwan; Thailand and Vietnam.

52. *Oedaleus senegalensis* (Krauss, 1877)


**Material examined**: Recorded from literature (Shishodia, 2006).

**Distribution**: India: Andhra Pradesh, Bihar, Delhi, Jammu & Kashmir, Madhya Pradesh (Sidhi), Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

**Elsewhere**: Afghanistan; North Africa; Pakistan and Western U.S.S.R.

Genus *Pternoscirta* Saussure, 1884

53. *Pternoscirta bimaculata* (Thunberg, 1815)


**Material examined**: Recorded from literature (Shishodia, 2006).

**Distribution**: India: Andhra Pradesh, Bihar, Madhya Pradesh (Shahdol), Nagaland and West Bengal.

**Elsewhere**: Sri Lanka.

54. *Pternoscirta cinctifemur* (Walker, 1859)


**Material examined**: Recorded from literature (Chandra et al., 2007).

**Distribution**: India: Arunachal Pradesh, Assam, Goa, Kerala, Madhya Pradesh (Hoshangabad and Seoni), Manipur, Meghalaya, Orissa, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, and West Bengal.

**Elsewhere**: Eastern Nepal and Sri Lanka.

Genus *Trilophidia* Stål, 1873

55. *Trilophidia annulata* (Thunberg, 1815)


**Distribution**: India: Arunachal Pradesh, Assam, Goa, Himachal Pradesh, Jammu & Kashmir, Kerala, Madhya Pradesh (Bhopal, Chhindwara, Mandla, Seoni, Shivpuri and Umaria), Madhya Pradesh (Bastar and Bilaspur), Manipur, Meghalaya, Orissa, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal.

**Elsewhere**: Afghanistan; Bangladesh; Borneo; China; Hong Kong; Japan; Java; Korea; Malaysia; Mongolia; Myanmar; Nepal; Pakistan; Philippines; Sarawak; Singapore; Sri Lanka; Sumatra; Taiwan; Thailand and Vietnam.

**Subfamily OXYINAE**

Genus *Oxya* Serville, 1831

56. *Oxya fuscovittata* (Marschall, 1836)


CHANDRA and GUPTA: Orthoptera


Material examined: Recorded from literature (Shishodia, 2000).

Distribution: India: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar), Delhi, Goa, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Rajasthan, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Afghanistan; Bangladesh; Nepal; Pakistan and USSR.

57. Oxya hyla hyla Serville, 1831


Distribution: India: Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar and Bilaspur), Goa, Delhi, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh (Chhindwara, Panna, Rewa, Seoni, Shivpuri and Umaria), Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Afghanistan; Africa; Angola; Bangladesh; Cameroun; Chad; Congo; Central African Republic; Dahomey; Iran; Fernando; Gabon; Gambia; Ghana; Giunea; Iran; Ivory Coast; Kenya; Liberia; Madagascar; Maldiv Island; Mali; Malawi; Nepal; Niger; Nigeria; Pakistan; Rhodesia; Sao Thome; Senegal; Sierra Leone; Sudan; Sri Lanka; Tanzania; Uganda and Zambia.

58. Oxya nitidula (Walker, 1870)

Material examined: Recorded from literature (Shishodia, 2000).

Distribution: India: Andhra Pradesh, Bihar, Chhattisgarh (Bastar), Goa, Karnataka, Kerala, Madhya Pradesh, Manipur, Orissa, Punjab, Rajasthan, Tamil Nadu, Tripura and West Bengal.

Elsewhere: Sri Lanka.

59. Oxya velox (Fabricius, 1787)
1787. Gryllus velox Fabricius, Mantissa Insectorum, 1 : 239.

Material examined: Recorded from literature (Shishodia, 2006).

Distribution: India: Andhra Pradesh, Arunachal Pradesh, Bihar, Assam, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh (Rewa), Manipur, Maharashtra, Meghalaya, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Balistan; Bangladesh; China; Myanmar; Pakistan; Singapore; Sri Lanka and Thailand.

Subfamily SPATHOSTERNINAE
Genus Spathosternum Krauss, 1877

60. Spathosternum prasiniferum prasiniferum (Walker, 1871)


**Distribution:** India: Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar and Bilaspur), Delhi, Goa, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh (Bhopal, Chhindwara, Damoh, Hoshangabad, Mandla, Panna, Shahdol, Seoni, Shivpuri, Sidhi and Umaria), Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

**Elsewhere:** Bangladesh; Hainan; Myanmar; Nepal; Pakistan; South & East China; Sri Lanka; Thailand; Vietnam and West Malaysia.

**Subfamily TERATODINAE**

Genus *Teratodes* Brulle' 1835

61. *Teratodes monticollis* (Gray, 1832)


**Material examined:** Madhya Pradesh, Chhindwara, PTR: Chhindwani, 26.xii.2001 (1♀) coll. K. Chandra.

**Distribution:** India: Andhra Pradesh, Bihar, Chhattisgarh (Bastar and Bilaspur), Madhya Pradesh (Chhindwara, Jabalpur, Seoni and Sidhi) and Maharashtra. **Elsewhere:** Sri Lanka.

**Subfamily TROPIDOPOLINAE**

Genus *Tristria* Stal 1873

62. *Tristria pulvinata* Uvarov, 1921


**Material examined:** Chhattisgarh, Bilaspur, AWLS: Rakshasakh, 30.vi.04 (1♀,DC); Jhandi dongri, 08.v.05 (1♀, DC); Diyavan, 09.v.05 (1♂,1♀,DC).

**Distribution:** India: Assam, Bihar, Chhattisgarh (Bilaspur), Karnataka, Maharashtra, Madhya Pradesh (Chhindwara), Meghalaya, Tamil Nadu, Uttar Pradesh and West Bengal. **Elsewhere:** Sri Lanka.

**Superfamily PYRGOMORPHOIDEA**

**Family PYRGOMORPHIDAE**

Genus *Atractomorpha* Saussure, 1862

63. *Atractomorpha crenulata* (Fabricius, 1793)


Distribution: India: Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar and Bilaspur), Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Lakshadweep Island, Madhya Pradesh (Bhopal, Chhindwara, Damoh, Hoshangabad, Jabalpur, Panna, Seoni, Shivpuri and Umaria), Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh, West Bengal.

Elsewhere: Bangladesh and Sri Lanka.


Distribution: India: Andhra Pradesh, Assam, Bihar, Chhattisgarh (Bastar and Bilaspur), Delhi, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh (Bhopal, Chhindwara, Hoshangabad, Jabalpur, Mandla, Panna, Seoni, Shivpuri and Umaria), Maharashtra, Meghalaya, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Afghanistan; Bangladesh; Iran; Nepal and Pakistan.

Genus Poekilocerus Serville, 1831

Fauna of Madhya Pradesh (including Chhattisgarh), State Fauna Series 15


*Material examined*: Recorded from literature (Shishodia, 2000).

*Distribution*: India: Andhra Pradesh, Assam, Bihar, Chhattisgarh (Bastar), Delhi, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal.

*Elsewhere*: Afghanistan; Bangladesh; Nepal and Pakistan.

Genus *Pyrgomorpha* Serville, 1831

67. *Pyrgomorpha bispinosa bispinosa* (Walker, 1870)


*Material examined*: Recorded from literature (Shishodia, 2000).

*Distribution*: India: Andhra Pradesh, Chhattisgarh (Bastar), Madhya Pradesh (Seoni), Orissa and Tamil Nadu.

Genus *Zarytes* Bolivar, 1904

68. *Zarytes squalinus brachycerus* (Kirby, 1914)


*Material examined*: Recorded from literature (Shishodia, 2000).

*Distribution*: India: Andhra Pradesh, Bihar, Madhya Pradesh (Mandla), Rewa estate-Amarkantak), Tamil Nadu and West Bengal.

Superfamily TETRIGOIDEA

Family TETRIGIDAE

Subfamily METRODORINAE

Genus *Hyboella* Hancock, 1915

69. *Hyboella* sp.


*Material examined*: Recorded from literature (Shishodia, 2000).

*Distribution*: India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Chhattisgarh (Bastar), Sikkim and West Bengal.

*Elsewhere*: Java; Key Islands, Malaya; Myanmar; Sumatra; Thailand and Tibet.

Subfamily SCELIMENINAE

Genus *Criotettix* Bolivar, 1887

70. *Criotettix bispinosus* (Dalman, 1818)


*Material examined*: Recorded from literature (Shishodia, 2000).

*Distribution*: India: Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar), Madhya Pradesh (Mandla), Manipur, Meghalaya, Tripura and West Bengal.

*Elsewhere*: Borneo; Celebes; China; Hainan; Hong kong; Java; Luzon; Malaysia; Myanmar; Sulawesi; Sumatra; Taiwan; Thailand and Vietnam.

71. *Criotettix latifrons* Hebard, 1929


*Material examined*: Recorded from literature (Shishodia, 2000).

*Distribution*: India: Andhra Pradesh, Chhattisgarh (Bastar), Maharashtra, Madhya Pradesh (Jabalpur) and Tamil Nadu.

72. *Criotettix orientalis* Hancock, 1913


**Distribution**: India: Andhra Pradesh, Assam, Chhattisgarh (Bastar), Maharashtra and Tamil Nadu.

Genus *Euscelimena* Gunther, 1938

73. *Euscelimena harpago* (Serville, 1839)


**Material examined**: Recorded from literature (Roonwal, 1981).

**Distribution**: India: Andhra Pradesh, Bihar, Karnataka, Gujarat, Madhya Pradesh (Hoshangabad and Shivpuri), Maharashtra, Orissa, Tamil Nadu and Uttar Pradesh.

**Elsewhere**: Sri Lanka.

Genus *Thoradonta* Hancock, 1909

74. *Thoradonta nodulosa* (Stål, 1860)


**Distribution**: India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Chhattisgarh (Bastar), Karnataka, Manipur, Meghalaya, Orissa, Sikkim, Tripura, Uttar Pradesh, West Bengal.

**Elsewhere**: Borneo; China; Hainan; Java; Malaysia; Myanmar; Perak; Pinang; Singapore; Sri Lanka; Sumba and Sumatra.

75. *Thoradonta spiculoba* Hancock, 1912 : 138


**Material examined**: Recorded from literature (Shishodia, 2000).

**Distribution**: India: Chhattisgarh (Bastar), Karnataka, Madhya Pradesh (Mandla), Maharashtra, Orissa and West Bengal.

Subfamily TETRIGINAE

Genus *Coptotettix* Bolivar, 1887

76. *Coptotettix annandalei* Hancock, 1915


**Material examined**: Recorded from literature (Shishodia, 2000).

**Distribution**: India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Chhattisgarh (Bastar), Karnataka, Manipur, Meghalaya, Orissa, Sikkim, Tripura, Uttar Pradesh, West Bengal.

**Elsewhere**: Myanmar; Nepal and Sri Lanka.

77. *Coptotettix conspersus* Hancock, 1915


**Material examined**: Recorded from literature (Shishodia, 1991, 2000).

**Distribution**: India: Arunachal Pradesh, Assam, Chhattisgarh (Bastar), Himachal Pradesh, Madhya Pradesh (Mandla), Maharashtra, Manipur, Meghalaya, Orissa, Tripura, Uttar Pradesh, West Bengal.

**Elsewhere**: Sri Lanka.

Genus *Ergatettix* Kirby, 1914

78. *Ergatettix dorsiferus* (Walker, 1871)


Distribution: India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar and Bilaspur), Delhi, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh (Bhopal, Chhindwara, Hoshangabad, Mandla, Seoni and Umaria), Maharashtra, Manipur, Meghalaya, Orissa, Rajasthan, Tamil Nadu, Tripura and West Bengal.

Elsewhere: Bangladesh; Nepal and Sri Lanka.

Genus Euparatettix Hancock, 1904

80. Euparatettix histricus (Stål, 1861)


Material examined: Recorded from literature (Shishodia, 1991, 2000).

Distribution: India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar), Delhi, Himachal Pradesh, Madhya Pradesh (Bastar), Delhi, Himachal Pradesh, Madhya Pradesh (Mandla), Maharashtra, Manipur, Meghalaya, Orissa, Rajasthan, Tamil Nadu, Tripura and West Bengal.

Elsewhere: Australia; Borneo; Caledonia; Celebes; East Africa; East Afghanistan; Holland; Indonesia; Iran; Java; Malaysia; Myanmar; Nepal; New Ireland; Pakistan; Philippines; Queensland; Saudi Arabia; Solomon Islands; South China; Sumatra; Sri Lanka and Taiwan.

81. Euparatettix variabilis (Bolivar, 1887)


Distribution: India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar), Delhi, Himachal Pradesh, Madhya Pradesh (Bastar), Delhi, Himachal Pradesh, Madhya Pradesh (Mandla), Maharashtra, Manipur, Meghalaya, Sikkim, Tripura, Tamil Nadu, Uttar Pradesh, West Bengal.

Elsewhere: Bangladesh; Britain; Borneo; Java; Myanmar; New Guinea; Pakistan; Papua; Philippines; Sri Lanka; Sumatra; Solomon Islands and Taiwan.
Genus *Hedotettix* Bolivar, 1887

82. *Hedotettix attenuatus* Hancock, 1904


**Material examined:** Recorded from literature (Shishodia, 2000).

**Distribution:** India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Chhattisgarh (Bastar), Himachal Pradesh, Manipur, Meghalaya, Orissa, Sikkim, Tripura and West Bengal.

**Elsewhere:** Sri Lanka.

83. *Hedotettix cristitergus* Hancock, 1915


**Material examined:** Recorded from literature (Hancock, 1915).

**Distribution:** India: Madhya Pradesh (Hoshangabad) and Maharashtra.

84. *Hedotettix gracilis* (de Haan, 1842)


**Distribution:** India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Chhattisgarh (Bastar and Bilaspur), Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh (Bhopal, Chhindwara, Hoshangabad, Mandla, Seoni and Umaria), Maharashtra, Manipur, Meghalaya, Orissa, Rajasthan, Sikkim, Tripura, Uttarakhand, Uttar Pradesh, West Bengal.

**Elsewhere:** Bangladesh; Celebes; China; Java; Myanmar; Pakistan; Sri Lanka; Sulawesi; Sumatra; Taiwan; Thailand and Vietnam.

85. *Hedotettix punctatus* Hancock, 1909


**Material examined:** Recorded from literature (Shishodia, 1991,1995,2000).

**Distribution:** India: Chhattisgarh (Bastar), Karnataka, Madhya Pradesh (Mandla), Maharashtra and Rajasthan.

**Elsewhere:** Borneo and Himalayan region.
Genus *Paratettix* Bolivar, 1887

86. *Paratettix cingalensis* (Walker, 1871)


**Material examined**: Recorded from literature (Shishodia, 2000).

**Distribution**: India: Arunachal Pradesh, Assam, Chhattisgarh (Bastar), Goa, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Manipur, Orissa, Sikkim, Tamil Nadu, Tripura, and West Bengal.

**Elsewhere**: Borneo; Hainan; Malaysia; Java; Mindanao; Sri Lanka; Sumatra; and Taiwan.

Infraorder TRIDACTYLIDEA

Superfamily TRIDACTYLOIDEA

Family TRIDACTYLIDAE Brunner, 1882

Subfamily TRIDACTYLINAE

Genus *Tridactylus* Olivier, 1789

87. *Tridactylus fasciatus* Guerin 1844


**Material examined**: Recorded from literature (Chandra et al., 2007).

**Distribution**: India: Bihar, Madhya Pradesh (Mandla), Orissa and West Bengal.

**Elsewhere**: Afghanistan; Iraq; Myanmar; North Central Africa to North Asian; South Soviet Union and Turkistan.

88. *Tridactylus thoracicus* Guerin, 1844


**Material examined**: Chhattisgarh, Bilaspur, AWLS: Jalda, 15.vii.2005 (2♀, DC); Achanakmar, 22.vii.2005 (1♀, DC) coll. A. Singh & party.

**Distribution**: India: Bihar, Chhattisgarh (Bilaspur), Goa, Himachal Pradesh, Madhya Pradesh (Damoh, Hoshangabad and Seoni), Orissa, Uttarakhand and West Bengal.

**Elsewhere**: Myanmar; Malaysia; Sumatra; and Sri Lanka and Thailand.

Genus *Xya* Latreille, 1809

89. *Xya frontomaculata* (Gunther, 1974)


**Distribution**: India: Madhya Pradesh (Nabarwa River, at Khar Ghat), Maharashtra, Rajasthan and West Bengal.

**Elsewhere**: Sri Lanka.

90. *Xya japonica* Haan, 1842


**Distribution**: India: Bihar, Madhya Pradesh (Pharismar Hills), Maharashtra, Orissa and West Bengal.

**Elsewhere**: Japan; East Siberia; Sri Lanka and Taiwan.

91. *Xya opaca* (Walker, 1871)


**Material examined**: Recorded from literature (Chandra et al., 2007).

**Distribution**: India: Assam, Madhya Pradesh (Rewa) and West Bengal.
Elsewhere: Sri Lanka; South & East Asia and Taiwan.

92. *Xya variegata* Latreille, 1809


Material examined: Recorded from literature (Shishodia, 2000).

Distribution: India: Bihar, Chhattisgarh (Bastar), Kerala, Madhya Pradesh (Mandla and Rewa), Maharashtra, West Bengal.

Elsewhere: China; Middle Europe to Middle Africa and South East Asia.

Suborder ENSIFERA
Infraorder OEDISCHIOIDEA
Superfamily GRYLLOIDEA
Family GRYLLIDAE
Subfamily ENEOPTERINAE
Genus *Xenogryllus* Bolivar, 1890

93. *Xenogryllus* sp.


Material examined: Recorded from literature (Shishodia, 2000).

Distribution: India: Chhattisgarh (Bastar), Himachal Pradesh, Jammu & Kashmir and Madhya Pradesh (Seoni).

Subfamily GRYLLINAE
Genus *Acheta* Fabricius, 1775

94. *Acheta domesticus* Linnaeus, 1758


Distribution: India: Chhattisgarh (Bilaspur), Chandigarh, Delhi, Himachal Pradesh, Jammu & Kashmir, Kerala, Maharashatra, Madhya Pradesh (Jabalpur, Mandla and Umaria), Punjab, Rajasthan, Uttar Pradesh, West Bengal.

Elsewhere: Pakistan.

Genus *Gryllus* Linnaeus, 1758

95. *Gryllus bimaculatus* De Geer, 1773


Distribution: India: Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar and Bilaspur), Chandigarh, Delhi, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh (Jabalpur, Hoshangabad, Mandla, Seoni and Umaria), Maharashatra, Manipur, Meghalaya, Orissa, Pondicherry, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh, Uttarakhand, Uttar Pradesh, West Bengal.
Elsewhere: Africa; Malaysia; Mediterranean Region; Myanmar; Nepal; Pakistan; Singapore and Sri Lanka.

Genus Gryllodes Saussure, 1874

96. *Gryllodes sigillatus* (Walker, 1869)


**Material examined:** Madhya Pradesh, Seoni, PTR: Karmajhiri, 02.vii.2001 (1♀) coll. K. Chandra.

**Distribution:** India: Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chandigarh, Chattisgarh (Bastar), Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh (Chhindwara, Mandla and Shiyugudi), Maharashtra, Manipur, Meghalaya, Orissa, Punjab, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal. Elsewhere: Malacca; Malaysia; Pakistan and Sri Lanka.

97. *Gryllodes supplcicans* (Walker, 1859)


**Material examined:** Recorded from literature (Chopard,1969, Chandra *et al.*, 2007, Shishodia, 2008).

**Distribution:** India: Karnataaka and Madhya Pradesh (Jabalpur, Mandla).

Elsewhere: Sri Lanka.

Genus *Gryllopsis* Chopard, 1928

98. *Gryllopsis falconneti* (Saussure, 1877)


**Material examined:** Recorded from literature (Chopard, 1969).

**Distribution:** India: Jammu & Kashmir, Madhya Pradesh, Maharashtra, Uttar Pradesh and West Bengal.

Elsewhere: Pakistan and Sri Lanka.

99. *Gryllopsis furcata* (Saussure, 1877)


**Material examined:** Recorded from literature (Shishodia & Tandon, 1987, Vasantr, 1993).

**Distribution:** India: Andhra Pradesh, Karnataka, Madhya Pradesh, Orissa, Tamil Nadu and Uttar Pradesh.

Elsewhere: Myanmar.

Genus *Gymnogryllus* Saussure, 1877

100. *Gymnogryllus fascipes* Copard, 1969

Material examined: Recorded from literature (Chopard, 1969, Shishodia & Tandon, 1987, Chandra et al., 2007).

Distribution: India: Madhya Pradesh (Chhindwara: Mohgaon) and Orissa.

101. Gymnogryllus kashmirensis Bhowmik, 1967

Material examined: Recorded from literature (Vasanth, 1993, Chandra et al., 2007).

Distribution: India: Assam, Bihar, Goa, Gujarat, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Meghalaya, Pondicherry, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere: Indonesia; Myanmar and South Vietnam.

Genus Loxoblemmus Saussure, 1877

102. Loxoblemmus detectus (Serville, 1838)
1838. Platylemmus detectus (Serville), Ins. Orth., 356.

Material examined: Chhattisgarh, Bilaspur, AWLS: Chhaparwa, 03.vi.2001(2♀, NC), 05.vi.04(3♀,NC), 06.vi.04(1♀,NC), 08.vi.04(4♀,NC), 10.vi.04(4♂,NC); Atariya, 07.v.05(1♀, NC).

Distribution: Andhra Pradesh, Andaman Islands, Arunachal Pradesh, Bihar, Chhattisgarh (Bilaspur), Himachal Pradesh, Mizoram, Orissa, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Elsewhere: China; Java, Johore, Malaysia, Pahang, Singapore, Sri Lanka, Sumatra and Taiwan.

103. Loxoblemmus eqestris Saussure, 1877


Material examined: Recorded from literature (Vasanth, 1993).

Distribution: India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Karnataka, Madhya Pradesh, Manipur, Meghalaya, Orissa, Punjab, Tamil Nadu, Tripura, Uttar Pradesh, Uttar Pradesh and West Bengal.

Elsewhere: China; Celebes; Indonesia; Japan; Malaysia; Myanmar and Sri Lanka.

Genus Modicogryllus Chopard, 1961

104. Modicogryllus confirma tus (Walker, 1859)


Distribution: India: Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chandigarh, Chhattisgarh (Bastar and Bilaspur), Delhi, Gujrat, Haryana, Himachal
Pradesh, Karnataka, Kerala, Madhya Pradesh (Bhopal, Hoshangabad, Mandla, Panna, Seoni, Shivpuri and Umaria), Maharashtra, Manipur, Meghalaya, Orissa, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Elsewhere: Bangladesh; China; Indo-China; Iran; Israel; Malaysia; Myanmar; Nepal; Pakistan; Philippines; Sri Lanka and Thailand.

105. *Modicogryllus consobrinus* (Saussure, 1877)


Material examined: Recorded from Literature (Chopard, 1969, Ingrisch 1998).

Distribution: India: Madhya Pradesh (Rewa), Maharashtra and Uttarakhand.

Genus *Phonarellus* (Gorochov, 1983)

106. *Phonarellus (Phonarellus) minor* Chopard, 1959


Distribution: India: Assam, Bihar, Chhattisgarh (Bilaspur), Goa, Delhi, Karnataka, Kerala, Madhya Pradesh (Bhopal, Mandla and Seoni), Maharashtra, Pondicherry, Tamil Nadu, Orissa, Uttarakhand, Uttar Pradesh and West Bengal.

Genus *Platygryllus* Chopard, 1961

107. *Platygryllus brunneri* (Saussure, 1877)


Distribution: India: Bihar, Chandigarh, Gujarat, Himachal Pradesh, Madhya Pradesh (Balaghat), Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere: Africa and Bangladesh.

108. *Platygryllus melanocephalus* (Serville, 1839)


Material examined: Recorded from literature (Bhowmik, 1985).

Distribution: India: Bihar, Chandigarh, Gujarat, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Madhya Pradesh, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh, Uttar Pradesh and West Bengal.

Elsewhere: Bangladesh; Myanmar and Nepal.

Genus *Plebeiogryllus* Randell, 1964

109. *Plebeiogryllus guttiventris* (Walker, 1871)


**Material examined**: Chhattisgarh, Bilaspur, AWLS: Atariya, 18.vi.2004 (1, d' NC) coll. A. Singh & party.

**Distribution**: India: Andhra Pradesh, Bihar, Chandigarh, Chhattisgarh (Bastar and Bilaspur), Delhi, Goa, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh (Chhindwara and Hoshangabad), Maharashtra, Manipur, Orissa, Pondicherry, Rajasthan, Tamil Nadu, Uttar Pradesh, Uttarakhand, Uttar Pradesh and West Bengal.

**Elsewhere**: Myanmar and Sri Lanka.


**Brachytrypes Serville, 1839**

110. *Tarbinskiellus orientalis* (Burmeister, 1832)

**Brachytrypes orientalis** (Burmeister, 1832)


**Material examined**: Recorded from literature (Joshi et al., 2004).

**Distribution**: India: Arunachal Pradesh, Assam, Bihar, Delhi, Himachal Pradesh, Karnataka, Madhya Pradesh (Mandla), Maharashtra, Meghalaya, Mizoram, Nagaland, Orissa, Punjab, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh, and West Bengal.

**Elsewhere**: Bangladesh; China; Indonesia; Java; Malaysia; Myanmar; Philippines; Singapore and Taiwan.

Genus *Teleogryllus* Chopard, 1961

112. *Teleogryllus gracilipes* (Saussure, 1877)


**Material examined**: Recorded from literature (Chopard, 1969).

**Distribution**: India: Assam, Madhya Pradesh and Orissa.

**Elsewhere**: East Africa.
113. *Teleogryllus mitratus* (Burmeister, 1838)


Material examined: Recorded from literature (Vasanth, 1993, Shishodia, 2000).

**Distribution**: India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar), Delhi, Gujarat, Himachal Pradesh, Karnataka, Kerala, Lakshadweep, Madhya Pradesh (Jabalpur), Maharashtra, Manipur, Meghalaya, Orissa, Sikkim, Tamil Nadu, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Annam; Bangkok; Bhutan; Borneo; Celebes; China; Indonesia; Indo-China; Japan; Java; Kuala Lumpur; Laos; Malaysia; Myanmar; Nepal; Philippines; Sarawak; Sri Lanka; Sumatra; Sulawasi; Taiwan; Thailand; Tibet and Vietnam.

Subfamily CACHOPLISTINAE

Genus *Arachnomimus* Saussure, 1878

115. *Arachnomimus subalatus* Chopard, 1970


Material examined: Recorded from literature (Shishodia 2000).

**Distribution**: India: Chhattisgarh (Bastar).

Genus *Homoeogryllus* Guerin, 1847


Material examined: Recorded from literature (Agarwal & Sinha, 1987).

**Distribution**: India: Chhattisgarh (Bastar).

Genus *Kempiola* Uvarov, 1940

117. *Kempiola shankari* Sinha & Agarwal, 1973

Material examined: Recorded from literature (Sinha & Agarwal, 1973).

Distribution: India: Chhattisgarh (Bastar).

Genus Meloimorpha Walker, 1870

118. Meloimorpha cincticornis Walker, 1870


Distribution: India: Chhattisgarh (Bilaspur), Chandigarh, Himachal Pradesh, Madhya Pradesh, Maharashtra, Meghalaya, Tamil Nadu and Uttarakhand.

Elsewhere: Pakistan.

119. Meloimorpha japonica (Haan, 1842)


Material examined: Recorded from literature (Dixit & Sinha, 1982).

Distribution: India: Chhattisgarh (Ambikapur) and Uttarakhand.

Elsewhere: Japan.

Subfamily PODOSCIRTINAE Saussure, 1878

Genus Madasumma Walker, 1869

120. Madasumma sp.


Material examined: Chhattisgarh, Bilaspur, AWLS : Gandelwa pani, 27.vi.2004 (1♂, DC); Atariya, 29.vi.2004 (1♀, DC); Sambhar dhasan, 26.vii.2004 (1♀, DC); Katami, 17.vii.2005 (1♂, DC); Bindaval, 24.vii.2005 (1♀, DC) coll. A. Singh & party; Madhya Pradesh, Chhindwara, PTR : Totladoh, 30.viii.2001 (1♂) coll. Y.N. Gupta & party; Seoni : Nayegaon, 05.xi.2001 (1♂) coll. M.L. Koshta & party.

Distribution: India: Andaman & Nicobar Islands, Assam, Chhattisgarh (Bilaspur), Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh (Chhindwara and Seoni), Maharashtra, Meghalaya, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere: Australia, Bhutan, Java, Madagaskar, Malaya, Myanmar, Philippines and Sri Lanka.

Subfamily NEMOBIINAE

Genus Paranemobius Saussure, 1877

121. Paranemobius pictus (Saussure, 1877)


Material examined: Madhya Pradesh, Seoni, PTR : Nayegaon, 05.xi.2001(1♂, 3♀); Bawanthadi river, 09.xi.2001 (1♀); Chhindwara : Jamtara, 21.xi.2001 (1♀) coll. M.L. Koshta & party; Thota, 28.xi.2001 (1♂) coll. K. Chandra.
**Distribution**: India: Andhra Pradesh, Bihar, Chhattisgarh (Bastar), Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh (Chhindwara, Hoshangabad and Seoni), Maharashtra, Orissa, Rajasthan, Tamil Nadu and West Bengal.

**Elsewhere**: Sri Lanka.

Genus *Pteronemobius* Jacobson and Bianchi, 1905

122. *Pteronemobius bicolor* (Saussure, 1877)


**Material examined**: Recorded from literature (Chopard, 1969).

**Distribution**: India: Bihar, Karnataka, Madhya Pradesh, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal.

**Elsewhere**: Myanmar; Sri Lanka and Thailand.

123. *Pteronemobius concolor* (Walker, 1871)


**Material examined**: Recorded from literature (Vasanth, 1993, Shishodia, 2000).

**Distribution**: India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar), Delhi, Goa, Karnataka, Kerala, Madhya Pradesh (Mandla), Maharashtra, Manipur, Meghalaya, Mizoram, Orissa, Rajasthan, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

**Elsewhere**: Afghanistan; Malaysia; Myanmar; Perak; Sri Lanka and Turkistan.

124. *Pteronemobius csikii* (Bolivar, 1901)


**Material examined**: Recorded from literature (Shishodia, 2000).

**Distribution**: India: Arunachal Pradesh, Assam, Bihar, Chandigarh, Chhattisgarh (Bastar), Haryana, Himachal Pradesh, Karnataka, Madhya Pradesh, Orissa, Rajasthan, Tamil Nadu and Uttar Pradesh.

**Elsewhere**: Bhutan; China; Myanmar; Siberia and Sri Lanka.

125. *Pteronemobius fascipes* (Walker, 1869)


**Material examined**: Madhya Pradesh, Chhindwara, PTR: Totladoh, 30.viii.2001 (1♀); coll. Y.N. Gupta & party; Thota, 28.xi.2001 (2♂); Seoni : Nayegaon, 05.xi.2001 (2♀); Rajola, 06.xi.2001 (1♀); Bawanthadi river, 09.xi.2001 (1♂) coll. M.L. Koshta & party.
**Distribution**: India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar), Delhi, Goa, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh (Bhopal, Chhindwara, Hoshangabad, Mandla, Seoni and Umaria), Maharashtra, Manipur, Meghalaya, Orissa, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

**Elsewhere**: China; Indonesia; Malaysia; Myanmar; Philippines; Singapore; Sri Lanka and Taiwan.

126. **Pteronemobius novarae** (Saussure, 1877)


**Material examined**: Recorded from literature (Chopard, 1969).

**Distribution**: India: Madhya Pradesh and Tripura.

**Elsewhere**: Java; Malaysia and Thailand.

127. **Pteronemobius rufipes** Chopard, 1969


**Material examined**: Recorded from literature (Shishodia, 2000).

**Distribution**: India: Assam, Chhattisgarh (Bastar) and West Bengal.

128. **Pteronemobius taprobanensis** (Walker, 1869)


**Material examined**: Recorded from literature (Shishodia, 1995, 2000).

**Distribution**: India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar), Delhi, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Orissa, Rajasthan, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

**Elsewhere**: Bangladesh; China; Indonesia; Malaysia; Malacca; Myanmar; Perak; Sri Lanka, Sumatra and Vietnam.

Subfamily OECANTHINAE

Genus **Oecanthus** Serville, 1831

129. **Oecanthus indicus** Saussure, 1878


**Material examined**: Chhattisgarh, Bilaspur, AWLS: Sarasdol, 23.vii.2004 (1σ, NC) coll. A. Singh & party; Madhya Pradesh, Seoni, PTR: Karmajhiri, 19.vii.2001 (1σ) coll. R. K. Singh & party; Rukhar, 06.xi.2001 (1♀); Rajola, 07.xi.2001 (1♂); Dudhiya, 08.xi.2001 (3♀) coll. M.L. Koshta & party, 14.xii.2001 (1♂, DC); Ghatkohka, 16.xii.2001 (3♀) coll. K. Chandra & party.

**Distribution**: India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar), Karnataka, Madhya Pradesh (Chhindwara, Hoshangabad, Mandla and Seoni), Maharashtra, Meghalaya, Orissa, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

**Elsewhere**: Amboine; China; Japan; Malaysia;
Malaya Archipelago; Nepal; Pakistan; Philippines; Pinang; Sri Lanka; Sumba and Vietnam.

Family TRIGONIDIIIDAE
Genus *Anaxipha* Saussure, 1874

130. *Anaxipha* sp.


**Material examined**: Madhya Pradesh, Seoni, PTR : Rukhar, 06.xi.2001 (1♂); Chandrapur, 10.xi.2001 (1♀) coll. M.L. Koshta & party; AABR; Shahdol; Kapila river, 06.xi.07 (1♂,NC); Yamuna dadar, 07.xi.07 (1♀,DC).

**Distribution**: India : Andaman & Nicobar Islands, Assam, Chandigarh, Himachal Pradesh, Karnataka, Madhya Pradesh (Shahdol and Seoni), Manipur, Meghalaya, Orissa, Punjab, Tamil Nadu and West Bengal.

**Elsewhere**: East Africa, Java, Myanmar, Malaysia, Maldives Islands, Myanmar, Nepal; Queensland; Perak; Singapore; Sri Lanka and Taiwan.

Genus *Amusurgus* Brunner, 1893

131. *Amusurgus* sp.


**Material examined**: Recorded from literature (Shishodia, 2000).

**Distribution**: This genus is distributed in India.

**Elsewhere**: North Australia, Malaya, Myanmar, New Guinea and Sri Lanka.

Genus *Homoeoxipha* Saussure, 1874

132. *Homoeoxipha lycoidea* (Walk, 1869)


**Material examined**: Recorded from literature (Shishodia, 2000).

**Distribution**: India : Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar), Jammu & Kashmir, Karnataka, Lakshadweep Islands, Meghalaya, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

**Elsewhere**: Australia; Bangladesh; China; Malaysia; Maldives Islands, Myanmar; Nepal; Queensland; Perak; Singapore; Sri Lanka and Taiwan.

Genus *Metioche* Stål, 1877

133. *Metioche* sp.


**Material examined**: Recorded from literature (Shishodia, 2000).

**Distribution**: This genus is distributed in Indo-Australian region and Philippines Islands.

Genus *Trigonidium* Rambur, 1839

134. *Trigonidium cicindeloides* Rambur, 1839


**Material examined**: Recorded from literature (Shishodia, 2000).

**Distribution**: India : Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar), Chandigarh, Delhi, Goa, Himachal Pradesh, Jammu & Kashmir, Karnataka, Lakshadweep Island, Madhya Pradesh (Chhindwara), Maharashtra, Manipur, Meghalaya, Mizoram, Orissa, Rajasthan, Tamil Nadu, Tripura, Uttarakhnad, Uttar Pradesh and West Bengal.
Elsewhere: Africa; Bhutan; China; Japan; Korea; Madagascar; Malaysia; Maldive Islands; Mauritius; Mediterranean Regions; Myanmar; Nepal; South Europe, Sri Lanka and Vietnam.

135. *Trigonidium humbertianum* (Saussure, 1878)


*Material examined:* Recorded from literature (Chopard, 1969, Shishodia, 2000).

*Distribution:* India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar), Delhi, Gujarat, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh (Amarkantak, Chhindwara), Maharashtra, Manipur, Meghalaya, Orissa, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal. Elsewhere: Iran; Malaysia and Sri Lanka.

Family GRYLLOTALPIDAE

Genus *Gryllotalpa* Latreille, 1802

136. *Gryllotalpa africana* Beauvois, 1805


*Distribution:* India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Chandigarh, Chhattisgarh (Bastar and Bilaspur), Delhi, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh (Seoni, Hoshangabad, Shivpuri and Umaria), Meghalaya, Orissa, Pondicherry, Rajasthan, Tamil Nadu, Tripura, Uttarakhund, Uttar Pradesh and West Bengal.

Elsewhere: Africa; Bhutan; Iran; Madagascar; Malaysia; Myanmar; Nepal; Pakistan; Singapore; Sri Lanka and South Spain.

Superfamily SCHIZODACTYLOIDEA

Family SCHIZODACTYLIDAE

Subfamily SCHIZODACTYLINAE

Genus *Schizodactylus* Brulle, 1835

137. *Schizodactylus monstruosus* (Drury, 1773)

1773. *Gryllus (Acheta) monstruosus* Drury, Illustrations of Natural History. Exotic Insects, according to their different genera, 2: 81.


*Material examined:* Recorded from literature (Chandra & Gupta, 2005, Chandra et al., 2007, Gupta et al., 2008).

*Distribution:* India: Assam, Bihar, Chhattisgarh (Bilaspur), Jammu & Kashmir, Rajasthan and West Bengal.

Superfamily STENOPELMATOIDEA

Family GRYLLACRIDIDAE

Subfamily GRYLLACRIDINAE

Genus *Gryllacris* Serville, 1831

138. *Gryllacris* sp.


**Material examined**: Chhattisgarh, Bilaspur, AWLS: Khudia dam, 04.vi.2004 (1♂, DC); Atariya, 17.vi.2004 (1♀, NC) coll. A. Singh & party.

**Distribution**: India: Andaman Islands, Chhattisgarh (Bilaspur), East India and North India.

Superfamily TETTIGONIOIDEA
Family TETTIGONIIDAE
Subfamily CONOCEPHALINAE
Genus *Conocephalus* Thunberg, 1815

139. *Conocephalus maculatus* (Le Guillou, 1841)


**Distribution**: India: Andaman & Nicobar Islands, Chhattisgarh (Bastar), Madhya Pradesh (Bhopal, Hoshangabad, Jabalpur, Panna and Umaria), Meghalaya, Nagaland, Orissa, Pondicherry, Rajasthan, Sikkim, West Bengal.

Elsewhere: Australia; Borneo; China; Java; Myanmar; Pinang; Sri Lanka and Sumatra.

141. *Euconocephalus pallidus* (Redtenbacher, 1891)


**Material examined**: Recorded from literature (Dwivedi 1978).

**Distribution**: India: Andaman & Nicobar Islands, Assam, Chhattisgarh (Bilaspur), Himachal Pradesh, Gujarat, Kerala, Meghalaya, Mizoram, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere: Bangladesh; Borneo; East Indies; Java; Myanmar; Philippines; Pinang; Singapore; Sri Lanka and Tonkin.
Genus *Xiphidiopsis* Redtenbacher, 1891

142. *Xiphidiopsis citrina* Redtenbacher, 1891


*Material examined:* Recorded from literature (Chandra et al., 2007).

*Distribution:* India: Madhya Pradesh (Jabalpur) and Tripura. Elsewhere: Sri Lanka.

Subfamily MECOPODINAE

Genus *Mecopoda* Serville, 1831

143. *Mecopoda elongata* (Linnaeus, 1758)


*Distribution:* India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Sikkim, Tamil Nadu and West Bengal.

Elsewhere: Australia; Bangladesh; Borneo; China; Formosa; Hainan; Indo-China; Japan; Java; Kuala Lumpur; Myanmar; Nepal; New Guinea; Pakistan; Philippines; Selangor; Singapore; Solomon Island; Sri Lanka; South & East Asia; Thailand; Tibet and Tonkin.

Subfamily PHANEROPTERINAE

Genus *Ducetia* Stål, 1874

144. *Ducetia japonica* (Thunberg, 1815)


*Distribution:* India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Sikkim, Tamil Nadu and West Bengal.

Elsewhere: Australia; Bangladesh; Borneo; China; Formosa; Hainan; Indo-China; Japan; Java; Kuala Lumpur; Myanmar; Nepal; New Guinea; Pakistan; Philippines; Selangor; Singapore; Solomon Island; Sri Lanka, South & East Asia; Thailand; Tibet and Tonkin.

Genus *Elimaea* Stål, 1874

Subgenus *Orthelimaea* Karny, 1926

145. *Elimaea (Orthelimaea) securigera* Brunner, 1878


Distribution: India: Andaman & Nicobar Islands, Andhra Pradesh, Assam, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh (Chhindwara), Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Rajasthan, Sikkim, Tripura and West Bengal.

Elsewhere: Australia; Indonesia; Java; Nepal; Philippines and Sri Lanka.

Genus Himertula Uvarov, 1940

146. Himertula kinneari (Uvarov, 1923)


Material examined: Recorded from literature (Shishodia 2000).

Distribution: India: Bihar, Chhattisgarh (Bastar), Gujarat, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Madhya Pradesh, Rajasthan, Uttar Pradesh and West Bengal.

Elsewhere: Bhutan and Nepal.

Genus Holochlora Stål, 1873

147. Holochlora albida Brunner von Wattenwyl, 1878


Material examined: Recorded from literature (Joshi et al., 2004).

Distribution: widely distributed species India; Madhya Pradesh (Mandla). Elsewhere: Malaysia and Singapore

Genus Letana Walker, 1869

148. Letana intermedia Ingrisch, 1990


Material examined: Chhattisgarh, Bilaspur, AWLS: Chhaparwa, 06.vi.04 (1 ♀ ,NC), 11.vi.04 (3 ♀,NC), 18.vi.04 (2 ♀,NC); Bindaval, 13.vi.04 (1♂,DC); Atariya, 18.vi.04 (1♂,DC), 11.v.05 (2♂,1 ♀,NC), 17.v.05 (1♀,NC); Achanakmar, 19.vii.04 (2♂,NC); Lamni, 09.v.05 (1♂,3 ♀,NC); Matinala, 14.v.05 (1♀,NC).

Distribution: India: Chhattisgarh (Bilaspur), Delhi, Madhya Pradesh (Damoh) and Maharashtra.

149. Letana infurcata Ingrisch, 1990


Material examined: Recorded from literature (Shishodia, 1999, Chandra et al., 2007)

Diagnostic characters: Tegmina surpassing hind knees, radial sector unforked.

Distribution: India: Madhya Pradesh (Chhindwara), Pondicherry and Tamil Nadu.

150. Letana megastridula Ingrisch, 1990


Material examined: Recorded from literature (Shishodia, 2000, Chandra et al., 2007).
Distribution: India: Bihar, Chhattisgarh (Bastar), Himachal Pradesh, Maharashtra and Tamil Nadu.

151. Letana pyrifera Bey-Beinko, 1956

Material examined: Recorded from literature (Shishodia, 1999, Chandra et al., 2007).

Distribution: India: Madhya Pradesh (Chhindwara), North West to South West India and Rajasthan.

Genus Phaneroptera Serville, 1831
152. Phaneroptera gracilis Burmeister, 1838

Material examined: Recorded from literature (Shishodia, 1999, Chandra et al., 2007).

Distribution: India: Madhya Pradesh (Chhindwara), Assam, Bihar, Himachal Pradesh, Karnataka, Madhya Pradesh (Chhindwara and Hoshangabad), Manipur, Orissa, Sikkim, Tamil Nadu and Uttarakhand.

Elsewhere: Africa; Annam; Australia; Celebes; China; Indo-China; Java; Malaysia; Maldivie Islands, Myanmar; Solomon; Sri Lanka; Sumatra and Sumba.

Subfamily PSEUDOPHYLLINAE
Genus Onomarchus Stål, 1874
153. Onomarchus sp.


Material examined: Recorded from literature (Shishodia, 2000).

Distribution: Tropical east Asia.

Genus Sathrophyllia Stål, 1874
154. Sathrophyllia rugosa (Linnaeus, 1758)

Material examined: Recorded from literature (Joshi et al., 2004).

Distribution: India: Karnataka, Madhya Pradesh (Mandla), Manipur, Meghalaya, Sikkim, Tamil Nadu and West Bengal.

Elsewhere: Java; Sri Lanka and Sumatra.


SUMMARY

A comprehensive account of Orthoptera of Madhya Pradesh and Chhattisgarh has been provided. Presently 154 species of Orthoptera belonging to 100 genera under 10 families are reported from these two states. Of these, 131 species are reported from Madhya Pradesh and 101 species are from Chhattisgarh.

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REFERENCES


SHISHODIA, M.S. 2006. On a collection of grasshoppers by Dr. M. L. Roonwal from the erstwhile Rewa estate, Madhya Pradesh. Bionotes, 8(1) : 11-12.


INTRODUCTION

Neuroptera are soft-bodied insects and include a variety of small to large insects. They are commonly known as dobson-flies, alder-flies, fish-flies, snake-flies, lace-wings, ant-lions and owl-flies. They are recognized by the fine network of veins of generally transparent wings and well developed antennae. The wings are held roof-wise over the back at rest and are generally similar in size, shape and venation. The mouth parts are adapted for chewing. Abdomen is ten segmented with eight abdominal spiracles. The larvae are predacious, aquatic, semi-aquatic, arboreal or terrestrial.

The order Neuroptera created by Linnaeus (1758) are valuable allies of man. A large number of species belonging to families of Hemerobiidae, Chrysopidae and Coniopterygidae are known to be predacious on the Agri-horticultural pests like aphids, coccids, thrips, mites, and small moths etc. Therefore, these insects take active part in biological control measures. They are generally found in herbages, bushes, trees, different types of vegetations including crops in the Himalayan, Desert, terrestrial and insular ecosystems of India (Ghosh, 1990).

Numerically, about 5000 species are known throughout the world (Tjeder, 1966). Of which, about 335 species under 125 genera under 13 families are known from India (Ghosh, 1998). The present paper deals with 33 species of Neuroptera belonging to 23 genera and 6 families from Madhya Pradesh and Chhattisgarh. Of these, 23 and 13 species are recorded from Madhya Pradesh and Chhattisgarh respectively and only three species are reported from both the states and 22 species are new record to the fauna of these states.

SYSTEMATIC LIST

Suborder PLANIPENNIA
Infraorder HEMEROBIIFORMIA
Superfamily MANTISPOIDEA
Family MANTISPIDAE
Subfamily MANTISPINAE
Genus Climaciella Enderlein
1. Climaciella quadriruberculata (Westwood)
   Genus Mantispa Illiger
2. Mantispa femoralis Banks
3. Mantispa nodosa Westwood
4. Mantispa sp
   Superfamily OSMYLOIDEA
   Family OSMYLIDAE
   Subfamily SPILOSMYLINAE
   Genus Spilosmylus Kolbe
5. Spilosmylus tuberculatus (Walker)
   Superfamily HEMEROBIODEA
   Family CHRYSPIDAE
   Subfamily CHRYSPINAE

* Southern Regional Centre, Zoological Survey of India, Chennai
** High Altitude Zoology Regional Centre, By-pass road, opp. Gurudwara, Saproon, Solan, 173211, Himachal Pradesh.
6. *Chrysopa orestes* Banks
7. *Chrysopa septempunctata* Wesmael
8. *Chrysopa (Chrysoperla) sanandensis* Ghosh
9. *Chrysopidia nigrata* Navas
10. *Italochrysa flavobrunnea* Ghosh
11. *Croce filipennis* Westwood
12. *Palpares pardus* Rambur
13. *Palpares contrarius* (Walker)
14. *Tomatares pardalis* Fabricius
15. *Indoclystus singularis* (Westwood)
16. *Acanthaclisis edax* (Walker)
17. *Stiphroneura inclusa* (Walker)
18. *Myrmeleon angusticollis* Rambur
19. *Myrmeleon tenuipennis* Rambur
20. *Myrmeleon assamensis* Ghosh
21. *Hagenomyia sagax* (Walker)
22. *Hagenomyia marginicollis* (Gerstaecker)
23. *Nesoleon perpunctatus* Banks
24. *Distoleon verendus* (Walker)
25. *Distoleon sp.*

Genus *Chrysopidia* Navas
Genus *Neuroleon* Navas
Genus *Ogcogaster* Westwood
Genus *Pseudoptynx* Weele
Genus *Glyptobasis* MacLachlan
Genus *Indoclystus* Banks
Genus *Stiphroneura* Gerstacker
Genus *Distoleon* Banks
Genus *Indoclystus* Banks
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Genus *Myrmeleon* Linnaeus
Genus *Myrmeleon* Linnaeus
Genus *Hagenomyia* saga (Walker)
Genus *Hagenomyia* marginicollis (Gerstaecker)
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Genus *Distoleon* Banks
Genus *Creoleon* Tillyard
Genus *Creoleon griseus* (Klug)
Genus *Neuroleon* Navas
Genus *Indophanes* Banks
Genus *Indophanes barbarus* (Walker)
Family Ascalaphidae
Subfamily Ascalaphinae
Genus *Ogcogaster* Westwood
Genus *Ascalaphus* Fabricius
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Genus *Indoclystus* Banks
Genus *Stiphroneura* Gerstacker
Pronotum is yellow anteriorly with black margin and a brown transverse fascia posteriorly. Meso and metanotum are yellow. Legs are reddish brown; femur of foreleg with a large black spot at inner side. Wings: suffused with pale brownish on costal, subcostal and radial areas of both wings and at the base of forewing. A conspicuous fulvous band on apical areas of both wings. Abdomen with yellow tergites, but hind borders of both third and fourth tergites black.

Distribution: India : Assam, Chhattisgarh (Bilaspur), Himachal Pradesh and W. Bengal.

Elsewhere: Japan, Taiwan, Philippines, Vietnam and Java.

2. Mantispa femoralis Banks
1933. Mantispa femoralis Banks, Indian Forest Re., 18(6) : 2.


Diagnostic characters: Antenna is very short. Prothorax is slender. Radial cells of both wings wide and somewhat angulated; prothorax short and nodose. Wings are subhyaline, costal half of forewing yellow and its base brown with an oblique brown band before middle. Legs are brown. Abdomen is dorso-medially yellowish.

Distribution: India : Assam, Madhya Pradesh (Seoni) and Meghalaya.

4. Mantispa sp. Illiger

Material examined: Chhattisgarh ; 1 ex ., 1.7.04; Lamni forest, ABR, Bilaspur, coll. A. Singh.

Diagnostic characters: Radial cells of both wings wide and somewhat angulated; prothorax slender; cubitus in hind wing bending down towards first anal, touching first anal or connected with it by a short cross vein. Fore legs are raptorial. Coxae long, femur much enlarged with long spines on ventrolateral margin. Tibia and tarsus thin.

Distribution: India: Chhattisgarh (Bilaspur).

Elsewhere: Africa, America, Australiia, China, Indonesia, New Guinea, Philippines, Russia, Sri Lanka and Taiwan.
Family OSMYLIDAE

5. *Spilosmylus tuberculatus* (Walker)


**Material examined**: Recorded from literature (Ghosh, 1983).

**Diagnostic characters**: Antenna is yellow. Wings are hyaline. Forewing with whitish veins, interrupted by brown bands. Pterostigma yellowish; a small dot present in the crossvein between first branch of radial sector and media and one on the cells between second and third branches of radial sector; three crossveins in outer gradate series and two in inner gradates distinctly clouded with brown; a brown tubercle with yellow stripes on hind border at one third of length from base. Hindwings are without tubercle and dots.

**Distribution**: India: Assam, Andaman Islands, Maharashtra and Madhya Pradesh (Balaghat).

Family CHRYSOPIDAE

6. *Chrysopa orestes* Banks


**Material examined**: Chhattisgarh: 1 ex., 11.6.04; AMS, Diyavan forest, Bilaspur, coll. A. Singh.

**Diagnostic characters**: Antenna: yellow to fuscos; with black on outer side of basal joints. Pronotum: broad but narrowed infront; with transverse groove and ridge; meso and metanotum: greenish yellow. Forewing: short and broad with tip subacute; venation pale; gradate veinlets, the ends of costal veinlets and few other crossveins brown; divisory veinlet ending beyond first radio-medial cross vein; gradate veinlets 3/6; inner gradates plainly nearer to outer than to radial sector; pterostigma yellowish; hindwing: slender, gradate veinlets 3/2; legs: pale yellow; tarsi brown; abdomen: brownish.

**Distribution**: India: Karnataka, Bihar and Madhya Pradesh.

7. *Chrysopa septempunctata* Wesmael


**Material examined**: Recorded from literature (Anon., 1992).

**Diagnostic characters**: Antenna: yellow to fuscos; with black on outer side of basal joints. Pronotum: broad but narrowed infront; with transverse groove and ridge; meso and metanotum: greenish yellow. Forewing: short and broad with tip subacute; venation pale; gradate veinlets, the ends of costal veinlets and few other crossveins brown; divisory veinlet ending beyond first radio-medial cross vein; gradate veinlets 3/6; inner gradates plainly nearer to outer than to radial sector; pterostigma yellowish; hindwing: slender, gradate veinlets 3/2; legs: pale yellow; tarsi brown; abdomen: brownish.

**Distribution**: India: Karnata, Bihar and Madhya Pradesh.
**Diagnostic characters**: Head with a black spot between antennae. Vertex slightly raised. Face normally with seven black spots. Forewing oval, elongate, apex subacute, pterostigma long and narrow intramedian cell ovate and ending after first crossvein between radius and anterior & posterior media. Several costal veinlets, centre of gradate crossveins, apical portion of cubitus posterior and anal veins black. Costal veinlets, crossvein between radius and radial sector and centre of gradates of hind wings black.

**Distribution**: Earlier record from India and presently collected from Chhattisgarh (Bilaspur).

**Elsewhere**: Europe, Iran, Mauritius and Turkestan.


**Material examined**: Chhattisgarh; 2 exs., 4-1-1979; Kanker Rest House, Bastar; 1 ex, 13-12-78; Bodhghat, Bastar, all coll. M.S. Shishodia; 3 exs., 12-12-1978; Dongaghat, Bastar, coll. M.S Shishodia & I.J. Gupta. (Recorded from literature. Material available at Z.S.I, HQS, Kolkata)

**Diagnostic characters**: Forewing with costal area of moderate width. Wing margin with small hairy thickening; crossvein between radius and media in hind wing short and placed obliquely and transversely.

**Distribution**: India: Chhattisgarh (Bastar) and Gujarat.

9. *Chrysopidia nigrata* Navas


**Material examined**: Madhya Pradesh: 1 ex., 16-6-01; PTR, Karmalhiri, Seoni; 1 ex., 18-6-01; PTR, Karmalhiri, Seoni; 1 ex., 19-6-01; PTR, Karmalhiri, Seoni, all coll. K.Chandra.

**Diagnostic characters**: Mandible asymmetrical; forewing without jugal lobe; coastal field broad; only a single basal crossvein between subcosta and radius; apex of intra median cell ending beyond the 1st radio medial crossvein; three rows of gradate crossveins. Hindwing: with feebly developed frenulum; anterior media and radius occasionally fused; three rows of gradates.

**Distribution**: India: Manipur, Madhya Pradesh (Seoni), Sikkim and West Bengal.


**Material examined**: Chhattisgarh: 1ex., 4-1-1979; Kanker Rest House, Bastar, coll. M.S. Shishodia & party. (Recorded from literature. Material available at Z.S.I, HQS, Kolkata)

**Diagnostic characters**: Scape and pedal of antenna yellow but flagellum black. Pro- meso and metanotum yellow. Mesonotum with blackish markings on anterior part of prescutum. Wings elongate with subacute apex. Longitudinal veins of forewings pale, yellowish white but portion of radial sector beyond middle black. Pterostigma elongate and brownish. Hind wing with pale venation. Legs: femur yellow with a blackish spot just before apex, tibia yellow but foreleg with a longitudinal brown line on the inner side. Abdomen: black but apex of each segment yellow.

**Distribution**: India: Chhattisgarh (Bastar), Madhya Pradesh, Meghalaya and Tamilnadu.

Family NEMOPTERIDAE


1842. *Nemoptera filipennis* Westwood, Cabinet Oriental Ent., pl. 34.


**Diagnostic characters**: Hind wings very narrow, thread-like and longer than body. The head is prolonged into a rostrum. Antennae are moderately long, not clubbed or thickened at the end.

**Distribution**: India: Uttar Pradesh, Gujarat, Maharashtra, Madhya Pradesh (Jabalpur). Bihar, Orissa and West Bengal.

**Family MYRMELEONTIDAE**

12. *Palpares pardus* Rambur


**Material examined**: Madhya Pradesh: 1 ex., 6-9-00; P.W.D Rest House, Hoshangabad coll. Y.N. Gupta; 1 ex., 14-1-01; Totladoh Rest House, P.T.R, Chhindwara, coll. S.K. Mishra; 1 ex., 19-1-01; Lohanala, P.T.R, Chhindwara, coll. Y.N. Gupta; 1 ex., 30-7-01; Darsaela, P.T.R, Chhindwara, coll. M.L. Koshta; 1 ex., 18-8-01; Totladoh, P.T.R, Chhindwara; 1 ex., 22-8-01; Dammot, P.T.R, Chhindwara; 1 ex., 5-9-01; Kumbhpani, Totladoh, P.T.R, Chhindwara all coll. Y.N. Gupta; 3 ex., 21-9-01; P.T.R, Chhindwara; 1 ex., 21-9-01; P.T.R, Totaladoh Rest House, Chhindwara; 1 ex., 22-9-01; Totladoh, P.T.R, Chhindwara; 1 ex., 22-9-01; Totladoh, P.T.R, Chhindwara; 1 ex., 24-9-01; Shircloani, P.T.R, Chhindwara all coll. S.K. Mishra; 1 ex., 18-10-02; Delkhani, Pachmari, Chhindwara; 1 ex., 19-10-02; Delkhani, Pachmari, Chhindwara; 2 exs., 19-10-02; Bamahni, Delkhani, Pachmari, Chhindwara; 2 exs., 19-10-02; Delkhani, Pachmari, Chhindwara; 4 exs., 22-10-02; Tamia Patalkot, Pachmari, Chhindwara; 1 ex., 23-10-02; Patalkot, Pachmarhi, Chhindwara; 1 ex., 23-10-02; Patalkot, Pachmarhi, Chhindwara; 6 exs., 25-10-02; Parasia, Pachmarhi, Chhindwara all coll. Y.N. Gupta; 1 ex., 14-10-03; V.V.N.P, Gate 2&1, Bhopal, Coll. D.N & S.A; 1 ex., 14-8-05; Tala, B.N.P, Umariya, coll. K.Chandra; 1 ex., 29-9-07; Rest House Narmada Nagar, Khandawa; 2 exs., 3-10-07; Narmada Nagar, Indore road, Khargon; 1 ex., 7-10-07; F.R.H Badwah, Khargon; 1 ex., 9-10-07; P.W.D Rest House, Satwas, district Dewas, all coll. D. K. Harshey; 1 ex., 25-10-07; Bamera Dam, Umariya, coll. R.M. Sharma.

**Diagnostic characters**: Antenna is black. Pronotum with a median stripe and also a stripe on either side. Meso and metanotum with three interrupted black stripes. Forewing with several quadrate brown spots from base of costa towards apex; brown dots at base and along hind margin besides a few large brown spots on disc and small dots on hind margin; single pterostigmal band either extending outward or curved inward or broken into a series of spots; a large spot on cubitus.

**Distribution**: India: Bihar, Maharashtra, Madhya Pradesh (Bhopal, Chhindwara, Hoshangabad, Khandawa, Khargon, Umariya), Orissa, Sikkim, West Bengal & South India.

13. *Palpares contrarius* (Walker)


**Material examined**: Madhya Pradesh: 1 ex., 12.4.01; Bori Rest House, Pachmarhi, Hoshangabad, coll. Y.N. Gupta.

**Diagnostic characters**: Antenna is black, vertex with two black bands and a black spot behind hind band. Thorax with three black stripes. Pterostigma indistinct. Forewing is dotted with brown; tinged with pale brown specially at tip, 4 oblique dark brown bands on disc. Hind wing
with three dark brown bands—median band reaching fore and hind border, stigmal band extending to hind border with a projection towards tip of median band, apical band broader at hind border. Abdomen darker towards apex.

Distribution: India: Karnataka, Maharashtra, Madhya Pradesh (Hoshangabad), Orissa and Uttar Pradesh.

Elsewhere: Sri Lanka

14. Tomatares pardalis Fabricius

Material examined: Madhya Pradesh: 1 ex., 24-11-01; MNP (D.C), Tiger Safari, Shivpuri, coll. D. Nema; 1 ex., 18-10-02; Sitadongni, Chhindwara; 4 exs., 18-10-02; Delkhan, Pachmarhi, Chhindwara; 4 exs., 19-10-02; Delkhan, Pachmarhi, Chhindwara; 5 exs., 19-10-02; Bamakni, Delkhan, Pachmarhi, Chhindwara; 1 ex., 21-10-02; PWD Rest House, Tamia, Pachmarhi, Chhindwara; 7 exs., 22-10-02; Tamia, Patalkot, Pachmarhi, Chhindwara; 4exs., 23-10-02; Patalkot, Pachmarhi, Chhindwara; 3 exs., 28-10-02; P.W.D Rest. House, Singnana Pachmarhi, Hoshangabad; 2exs., 29-10-02; Singnana P.W.D Rest House, Pachmarhi, Hoshangabad; 1 ex., 31-10-02; Pitoamia, Pachmarhi, Hoshangabad; 1 ex., 1-11-02; Tekapan, Pachmarhi, Hoshangabad, all coll. Y.N. Gupta; 1 ex., 29-9-07; Narmada Nagar, Shuttle Dam, Khandawa; 1 ex., 3-10-07; Narmada nagar, Indore road, Khargon; 1 ex., 3-10-07; NHDC Rest House, Khandawa; 1 ex., 7-10-07; Siddwab koot, Badwah, Khargon; 1 ex., 7-10-07; F.R.H Badwah, Khargon, all coll. D.K. Harshey; 1 ex., 25-10-07, Bamera Dam, Umaria, coll. R.M. Sharma.

Diagnostic characters: Head small with prominent lateral eyes but without ocelli. Antenna multi segmented, weakly clubbed. Distance between bases of antennae more than their basal diameter. Wings usually subequal; cross veins numerous; with pterostigma; hypostigmatic cell long and subapical; costa with simple or forked veinlets.

Distribution: India: Madhya Pradesh (Chhindwara, Hoshangabad, Khandawa, Khargon, Shivpuri, Umaria), N. India, W. India and W. Bengal.

15. Indoclystus singularis (Westwood)

Material examined: Madhya Pradesh: 1 ex., 7-4-01; Brijala River, Pachmarhi, Hoshangabad, coll. Y.N. Gupta.

Diagnostic characters: Head yellow with black markings. Frons: black, Clypeus: brownish with a dark brown spot on either side. Scape and pedicel of antenna blackish brown Pronotum yellow with a narrow black stripe at middle; black hairs well-marked at lateral margins. Meso and metanotum are yellow with dark brown bands. Legs are yellow, femora and tibiae dark brown at middle and tips black. Spurs of hind tibiae red; claws red; hairs black. Abdomen yellow with some brown patches either at apex or base of each segment.

Distribution: India: North India and Madhya Pradesh (Hoshangabad).

16. Acanthaclisis edax (Walker)


**Diagnostic characters**: Antenna, head and thorax are black. Wings are broader. Pterostigma is brown. A few cross veins between radius & radial sector. Some brown shade near tip of wings. Hind wings are shorter and narrower, than forewing. 1st anal is fused with the lower branch of cubitus. Spur of hindtibia bent at right angle and never shorter than 3 tarsal segments taken together. Body is stout and hairy. Abdomen is black.

**Distribution**: India : Madhya Pradesh (Chhindwara), Orissa and Tamilnadu.

17. *Stiphronoeura inclusa* (Walker)


**Material examined**: (Recorded from literature-Ghosh, 1983)

**Diagnostic characters**: Body is stout & dark. Antenna is black. Head is pitchy. Pronotum with grayish marks. Legs are black and stout; spurs curved. Wings are grayish, pterostigma whitish. Forewing with numerous limpid spots along borders and also at apex; alternately arranged with some pale brown spots; a few dark brown spots at base, at apex, one between the apical portion of first sector of radius and cubitus. Hindwing with some alternate pale brown and limpid spots along borders towards tip; two large brown rounded spots one near fore border and other near hind border. Abdomen is less than half the length of wings : slightly paler than thorax.

**Distribution**: India : Himachal Pradesh, Madhya Pradesh (Balaghat), Meghalaya, Orissa and Sikkim.

**Elsewhere**: East Indies.

18. *Myrmeleon angusticollis* Rambur


**Material examined**: Madhya Pradesh: 1 ex., 28-3-01; Ghatpindra, P.T.R, Chhindwara, coll. Y.N. Gupta; 1 ex., 5-6-01; Karmalhiri, P.T.R., Seoni, coll. K. Chandra.

**Diagnostic characters**: Antenna short, weakly clubbed or flattened towards apex; hypostigmatic cell of wings elongated, pterostigma not very distinct. First anal in hindwing running directly to hind margin. Three or more cross veins before radial sector in hindwing.

**Distribution**: India : Maharashtra and Madhya Pradesh (Chhindwara, Seoni).

19. *Myrmeleon tenuipennis* Rambur


**Diagnostic characters**: Antenna is short, clubbed, widely separated from its counterpart at base and generally shorter than the head and thorax taken together. Wings with a single series of costal cells, costal veins simple; radial sector originating beyond cubital fork. Forewing with basal fork of cubitus running parallel to 1st anal for a short distance and connected with cubitus by a cross vein; 2nd anal running close to 1st anal. Legs are short, spur of hind tibia nearly equal to first tarsal joint.

**Distribution**: India: North India, Chhattisgarh (Bastar), Madhya Pradesh (Seoni) and Maharashtra.

20. *Myrmeleon assamensis* Ghosh


**Material examined**: Madhya Pradesh : 1 ex., 31-10-02; Piparria, Pachmarihi, Hoshangabad, coll. Y.N. Gupta.

**Diagnostic characters**: Frons: yellow. Vertex with two yellow spots. Pronotum: with three yellow stripes. Meso and metanotum with yellow borders. Wings are long and narrow. Subacute at apex; pterostigma is white; veins black. Subcosta and radius yellow. Costa of forewing with forked veins which are divided by transverse veinlets for some distance from pterostigma towards base. Hindwing narrower than forewing and pterostigma smaller than forewing. Legs testaceous. Abdomen ventrally yellow.

**Distribution**: India: Assam, Chhattisgarh (Bisalpur), Sikkim, West Bengal and Western Himalayas.

Elsewhere: Taiwan and Bangladesh.

22. *Hagenomyia marginicollis* (Gerstaecker)


**Material examined**: Chhattisgarh : 1 ex., 30-6-04; Rakshasaika, ABR, Bilaspur, coll. A. Singh.

**Diagnostic characters**: Vertex with two rows of black spots. Space between antennae black which is continued laterally below antennae upto inner edges of eyes. Frons yellow but dark brown on either side and at apex. Clypeus and labrum brownish yellow. Pronotum is yellow with three black stripes. Forewing: costals crossed before yellow pterostigma; radial sector arising at the level of cubital fork; 9-10 crossveins before radial sector; venation brownish. Hindwing narrower than forewing and apex more acute. Legs are brown. Abdomen dark brown.

**Distribution**: India: Assam, Chhattisgarh.
23. **Nesoleon perpunctatus** Banks


**Material examined**: Madhya Pradesh: 2 ex., 18-10-02; Sinadogni, Chhindwara; 1 ex., 18-10-02; Delkhani, Pachmarhi, Chhindwara; 1 ex., 19-10-02; Bamahni, Delkhani, Chhindwara; 1 ex., 19-10-02; Delkhani, Pachmarhi, Chhindwara; 1 ex., 18-10-02; Delkhani, Chhindwara; 1 ex., 20-10-02; Lalgoan, Delkhani, Chhindwara; 1 ex., 21-10-02; Delkhani, Chhindwara; 1 ex., 21-10-02; Tamia, P.W.D Rest House, Chhindwara; 1 ex., 22-10-02; P.T.R., Karmalhiri, Seoni; 1 ex., 23-10-02; P.T.R., Karmalhiri, Seoni; 1 ex., 1-11-02; Tekapan, Pachmarhi, Hoshangabad, all coll. Y.N. Gupta.

**Diagnostic characters**: Antenna short, weakly clubbed or flattened toward apex; hypostigmatic cell of wings elongated. Wings are short and broad; forewing rounded at apex; wing membrane heavily marked and banded with dark brown colour.

**Distribution**: India: Andhra Pradesh, Bihar, Maharashtra, Madhya Pradesh (Chhindwara, Hoshangabad), Orissa and West Bengal.

24. **Distoleon verendus** (Walker)


**Diagnostic characters**: Head is blackish. vertex with several blackish spots. Antenna with a band on fore border of each segment. Pro-meso and metanotum with four irregular black stripes. Wings : costals mostly simple. Pterostigma is rosy and indistinct in hind wing; forks of marginal veinlets clouded with pale brown at base along hind border to apex. Forewings with a dark brown dot in male at tip of cubitus. Legs are with brown dots. Abdomen is shorter than wings.

**Distribution**: India: Arunachal Pradesh, Himachal Pradesh, Madhya Pradesh (Chhindwara, Khandawa, Khargon, Seoni.), North India and Orissa.

25. **Distoleon sp** Banks.


Diagnostic characters: Antenna is shorter than head and thorax taken together. Wings are generally densely spotted. Forewing with radial sector arising beyond the level of fork of cubitus, basal portion of which is bent at right angle so as to meet radius; cubitus posterior not parallel, neither to cubitus nor to hind margin. Legs are densely hairy; hind tibia and femur generally with long and dark hairs; tarsus much shorter than tibia; tibial spur longer than basal tarsal segment; spur of hind tibia as long as 4 tarsal segments taken together.

Distribution: Widely distributed genus; India: Madhya Pradesh (Chhindwara).

26. Creoleon griseus (Klug)


Diagnostic characters: Antenna is shorter than head and thorax taken together. Wings are generally densely spotted. Forewing with radial sector arising beyond the level of fork of cubitus, basal portion of which is bent at right angle so as to meet radius; cubitus posterior not parallel, neither to cubitus nor to hind margin. Legs are densely hairy; hind tibia and femur generally with long and dark hairs; tarsus much shorter than tibia; tibial spur longer than basal tarsal segment; spur of hind tibia as long as 4 tarsal segments taken together.

Distribution: Widely distributed genus; India: Madhya Pradesh (Chhindwara).

27. Neuroleon apicalis Navas

Material examined: Chhattishgarh: 1 ex., 20-12-78; East Garden, Bastar; ex., 21-12-78; P.W.D Rest House, Gidam, Bastar; 1 ex., 2-1-79; Kanker Rest House, Bastar; all coll. M.S. Shishodia. (Recorded from literature. Material available at Z.S.I, HQS, Kolkata).

Diagnostic characters: Body is small, with less spotted wing. Forewing: with costal field having one row of cells; Pterostigma without any mark at base and also cubital field without brown streak. Hindwings with inner radial field having only one crossvein. Legs are short & stout. Spurs in hind tibia hardly longer than two basal tarsal joints taken together.

Distribution: India: Madhya Pradesh (Jabalpur) and Tamil Nadu.

28. Indophanes barbarus (Walker)

Material examined: Madhya Pradesh: 1 ex., 23-10-02; Chota Mahadev, Chhindwara, coll. Y N. Gupta.

Diagnostic characters: Body long and slender. Antenna short, weakly clubbed or flattened towards apex. Wings usually subequal; cross veins numerous; hypostigmatic cells of wings elongate. Meso and metanotum without any prominent black stripes. Legs are slender and tibiae with spurs.

Distribution: India: Maharashtra and Madhya Pradesh (Chhindwara).
Family ASCALAPHIDAE

29. *Ogcogaster tessellata* (Westwood)

1848. *Ascalaphus (Ogcogaster)tesselatus* Westwood, Cabinet Orient., ent., P. 69.


**Diagnostic characters**: Antenna long and slender, strongly clavate apically; hypostigmatic cell not elongated and differentiated. Pterostigma black, small and 2-4 rows of apical cells beyond it; cubitus posterior strong and free but running parallel and very close to 1st anal. Abdomen laterally compressed.

**Distribution**: India : Bihar, Chattisgarh (Bilaspur), Gujarat, Madhya Pradesh (Chhindwara, Khandawa, Khargon, Seoni, Umaria), North-East; Western Himalayas including Himachal Pradesh. Elsewhere : Pakistan.

30. *Ascalaphus sinister* Walker


**Material examined**: Chhattisgarh ; 1 ex., 18-12-1978; Kaler, Bastar. (Recorded from literature. Material available at Z.S.I, HQS, Kolkata).

**Diagnostic characters**: Antenna long, neither ciliate, nor serrate. Posterior margin of pronotum simple. Supraepisternum with a dense tuft of brown setae along its upper edge. Wings not appendiculate, angles of anal lobe less obtuse. Pterostigma of forewing brown with 6 crossveins and two rows of apical cells beyond it. Hindwing : pterostigma with 5 crossveins. Abdomen is brown; 4th tergite slightly swollen; 4-5 tergites with long, scattered black setae.

**Distribution**: India : Arunachal Pradesh, Chattisgarh (Bastar), Orissa, West Bengal, Maharashtra, and other areas of North India. Elsewhere : Sri Lanka.

31. *Pseudoptynx furcifer* Weele


**Material examined**: Madhya Pradesh : 1 ex., 7-6-99; Mahadev Forest Rest House, Pachmarhi, Hoshangabad, coll. K. Chandra.

**Diagnostic characters**: Antenna long and slender, strongly clavate apically; hypostigmatic cell not elongated and differentiated. Pterostigma black, small and 2-4 rows of apical cells beyond it; cubitus posterior strong and free but running parallel and very close to 1st anal. Abdomen laterally compressed.
**Distribution**: India: Maharashtra and Madhya Pradesh (Hoshangabad).

32. *Glyptobasis dentifera* (Westwood)


**Distribution**: India: Goa, Maharashtra, Madhya Pradesh (Balaghat, Chhindwara, Dewas, Khargon, Umaria), Orissa, Punjab, Utter Pradesh, West Bengal and S. India.

33. *Glyptobasis comuta* Kimmins


**Material examined**: Chhattisgarh: 1 ex., 18-8-04; Chaparwa forest, ABR, Bilaspur, coll. A. Singh.

**Diagnostic characters**: Wings appendiculate. Spur of hind tibia is as long as first two tarsal segments taken together. Antenna shorter than wings, angled near base; 10th sternite with a pair of curved horns, each with a small and strong branch at the inner margin towards the base. Abdomen rather shorter than wings.

**Distribution**: India: Chhattisgarh (Bilaspur) and Orissa.

**SUMMARY**

The paper includes the information on 33 species of Neuroptera belonging to 23 genera under six families from Madhya Pradesh and Chhattisgarh. Of these, 22 species are added to the fauna of these states.

**ACKNOWLEDGEMENT**

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INSECTA : DIPTERA

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INTRODUCTION

The Diptera are commonly known as (true) flies and include many familiar insects such as mosquitoes, black flies, midges, fruit flies, blow flies and house flies. Flies are found throughout the world and exist in areas from the arctic to the rain forests on the equator. The earliest fossil flies are known from the Upper Triassic of the Mesozoic geological period, some 225 million years ago and since that time they have diversified to become one of the largest groups of insects.

The flies are small to moderate-sized insects and the major morphological feature which distinguishes flies from other insects is their reduced hind wings, termed halteres or balancing organs. A few species are completely wingless, usually in association with parasitic habits. Eyes are usually large, occupying much of the head. Antennae variable, sometimes long and thread-like or plumose, but more often fairly short and bulbous, with the terminal segments more or less fused to form a spur or bristle. The mouthparts of flies are also characteristically suctorial and many have large fleshy pads with drainage canals termed pseudotracheae for efficient liquid uptake. Some predatory flies have mouthparts modified for stabbing and piercing other insects (Family Asilidae and Empididae). Blood-sucking flies are found in many families (Cecidomyiidae, Tephritidae, and Agromyzidae) and they carry several dangerous diseases, including malaria, sleeping sickness, yellow fever and elephantiasis.

Veterinary pests include a number of species whose maggots eat away or burrow into the flesh of domestic sheep and cattle, causing the condition known as myiasis. Many flies cause economic damage to plants (Cecidomyiidae, Tephritidae, and Agromyzidae) or animals (Calliphoridae, Oestridae) through direct feeding by their larvae. However, the most unappreciated role of flies may be as pollinators of flowering plants (Syrphidae, Bombyliidae, Nemestrinidae, Acroceridae, Conopidae, and Stratiomyidae). The active immature stages of flies are called maggots. They are typically small, pale and soft-bodied. Dipteran pupae have non-functional mandibles (adecticous), and may have the appendages free from the body (exarate), or glued to the body (obtect), if exarate, the pupa is concealed inside the hardened skin (puparium) of the last larval instar.

The present account of 257 species belonging to 124 genera spread over 29 families of Diptera so far known from Madhya Pradesh and Chhattisgarh states is provided based on the past published records and actual material examined housed at Zoological Survey of India, Kolkata and Central Zone Regional Centre, Zoological Survey of India, Jabalpur.

Suborder NEMATOCERA
Infraorder TIPULOMORPHA
Family TIPULIDAE
Genus Holorusia Loew, 1863
1. Holorusia ornithorax (Brunetti)

* Zoological Survey of India, Western Regional Centre, Pune-411044
1911. *Tipula ornatithorax* Brunetti, *Rec. Indian Mus.*, 6: 258. Type-locality: Darjeeling (West Bengal), India

*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh, Uttar Pradesh and West Bengal.

*Elsewhere*: None

Genus *Nephrotoma* Meigen, 1803

2. *Nephrotoma delta* (Walker)


*Distribution*: Madhya Pradesh (Hoshangabad & Chhindwara), Assam, Bihar, Kerala and Uttarakhand.

*Elsewhere*: Indio-China, Taiwan.

Family LIMONIIDAE

Genus *Trentepohlia* Bigot, 1854

3. *Trentepohlia (Trentepohlia) trentepohlii* (Wiedemann)


*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh (Seoni), Assam, Bihar, Kerala, Orissa and West Bengal.

*Elsewhere*: Bangladesh, Borneo, Java, Malaya, Myanmar, Philipines, Sri Lanka, Sumatra, Taiwan and Thailand.

Infraorder PSYCHOMORPHA

Family PSYCHODIDAE

Genus *Sergentomyia* Frana & Parrot, 1920

4. *Sergentomyia (Sintonius) eadithae* (Sinton)


*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh (Saugor).

*Elsewhere*: None.

Family CULICIDAE

Genus *Anopheles* Meigen, 1818

5. *Anopheles (Anopheles) nigerrimus* Giles

1900. *Anopheles nigerrimus* Giles, *Handbook*: 162. Type-locality: Calcutta (West Bengal), India

*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh (Jabalpur, Mandla) Assam, Andaman Islands and West Bengal.

*Elsewhere*: China, Java, Malaya, Myanmar, Pakistan and Thailand.

6. *Anopheles (Cellia) aconitus* Donitz

1902. *Anopheles aconitus* Donitz, *Z. Hyg. Infektkrankh.*, 41: 70. Type-locality: Kajoe Tanem, Sumatra; Willem Island and Sockaboemi, Java

*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh, Assam, Andamans, Andhra Pradesh, Assam, Bihar, Karnataka, Orissa, Tamil Nadu and West Bengal.

*Elsewhere*: Widely distributed in Oriental region including Celebes, Lesser Sunda Islands.

7. *Anopheles (Cellia) annularis* van der Wulp

1884. *Anopheles annularis* van der wulp, *Notes Leyden Mus.*, 6: 249. Type-locality: Mount Arjoeeno, Java

*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh, Assam, Kashmir, Maharashtra, Punjab and West Bengal.

*Elsewhere*: Widely distribution in the Oriental region including Lesser Sunda Islands.

8. *Anopheles (Cellia) culicifacies* Giles


*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh (Hoshangabad), Andamans, Assam, Delhi, Maharashtra, Punjab.

*Elsewhere*: Nepal, Pakistan, Thailand; Afghanistan, Bahrein, Indochina, Iran, Trucial Oman.
9. Anopheles (Cellia) fluviatilis James

1902. Anopheles fluviatilis James, Scient. Mem. Offrs med
saint. Dps India, n.s., 2 : 31. Type-locality : West
Bengal, Maharashtra and Jeypore Hills Tracts
(Rajasthan), India

Material examined : Reported from Literature.

Distribution : India : Madhya Pradesh &
Chhatisgarh, New Delhi, Jammu & Kashmir,
Punjab.

Elsewhere : Bangladesh, Formosa, Myanmar,
Nepal, Pakistan, Sri Lanka, Thailand; Afghanistan,
Bahrain, Indo-China, Iran, Iraq, Kazakhstan,
USSR, Oman, Trucial, Oman.

10. Anopheles (Cellia) jamesii Theobald

Type-locality : Quilon, Travancore (Kerala), India

Material examined : Reported from Literature.

Distribution : India : Madhya Pradesh &
Chhatisgarh (Mandla), Assam, Bihar, Kerala,
Orissa.

Elsewhere : China, Indonesia, Malaya,
Maylayasia, Myanmar, Sri Lanka.

11. Anopheles (Cellia) jeyporiensis James

1902. Anopheles jeyporiensis James, Scient. Mem. Offrs
Med. Sanit. Dps India, 2 : 32. Type-locality :
Nagpur, Maharashtra, Jeypore State, India

Material examined : Reported from Literature.

Distribution : India : Madhya Pradesh (Jabalpur, Mandla),
Chhatisgarh Karnata, Maharashtra, Orissa, Rajasthan and Tamil Nadu.

Elsewhere : Indonesia, Myanmar.

12. Anopheles (Cellia) karwari James

1903. Anopheles Karwari James, in Theobald, Monogr. Cul.
3 : 102. Type-locality : Karwar, Bombay, (Mysore),
India

Material examined : Reported from Literature.

Distribution : India : Madhya Pradesh &
Chhatisgarh, Karnataka, Kerala and Uttar Pradesh.

Elsewhere : Wide spread in the Oriental region;
New Guinea.

13. Anopheles (Cellia) maculatus Theobald

1901. Anopheles maculatus Theobald, Monogr. Cul., 1 :
171. Type-locality : Hong kong (Kwantung), China

Material examined : Reported from Literature.

Distribution : India : Madhya Pradesh (Mandala), Chhatisgarh Assam, Kerala, Tamil
Nadu and West Bengal.

Elsewhere : Wide spread in Oriental Region
including Lesser Sunda Islands.

14. Anopheles (Cellia) pallidus Theobald

Type-locality : Madras and Bihar, India

Material examined : Reported from Literature.

Distribution : India : Madhya Pradesh (Jabalpur, Mandla),
Chhatisgarh (Bastar), Andamans, New Delhi, Lakshadweep and Rajasthan.

Elsewhere : Bangladesh, Indonesia, Malaysia,
Myanmar, Nepal, Pakistan, Sri Lanka, Thailand.

15. Anopheles (Cellia) philippinensis Ludlow

39 : 426. Type-locality : San Jose, Abra, Philippines

Material examined : Reported from Literature.

Distribution : India : Madhya Pradesh (Mandla),
Andamans, Assam, Bihar, Kerala and
Karnataka.

Elsewhere : China, Jawa, Malay, Philippines,
Sumatra, Thailand.

16. Anopheles (Cellia) splendidus Koidzumi

1920. Anopheles splendidus Koidzumi, Daiwan Kenkyuyo
Hokoku, 8 : 23. Type-locality : Formosa

Material examined : Reported from Literature.

Distribution : India : Madhya Pradesh (Mandla &
Jabalpur), Chhatisgarh Assam, Andhra Pradesh,
Goa, Gujarat, Himachal Pradesh, Karnataka,
Kerala, Maharashtra, Rajasthan, Punjab, Sikkim,
Tamil-Nadu and West Bengal.

Elsewhere : Afghanistan, Bangladesh, China,
Indo-China, Myanmar, Nepal, Pakistan, Thailand.
17. **Anopheles (Cellia) stephensi** Liston

Type-locality: Ellichpur, Maharashtra, India

**Material examined**: Reported from Literature.

**Distribution**: India: Madhya Pradesh & Chhattisgarh, Widely distributed in India.

**Elsewhere**: China, Myanmar, Pakistan, Thailand, Afghanistan, Baharin, Iran, Iraq, Oman, Saudi Arabia, Trucial Oman

18. **Anopheles (Cellia) subpictus** Grassi


**Material examined**: Reported from Literature.

**Distribution**: India: Madhya Pradesh (Jabalpur, Mandla), Andaman Islands, Bihar, Delhi, Gujarat, Maharashtra, Orissa, Tamil Nadu and West Bengal.

**Elsewhere**: Indonesia, Malay, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand; Afghanistan, China, Bismarok Islands, Iran, New Guinea.

19. **Anopheles (Cellia) tessellatus** Theobald

Type-locality: Taipang, Perak, Malaya.

**Material examined**: Reported from Literature.

**Distribution**: India: Madhya Pradesh (Indore), Delhi, Gujarat and Uttar Pradesh.

**Elsewhere**: wide spread in the Oriental Region including Ryukyu Islands, Lesser Sunda; Moluccus, New Guinea.

20. **Anopheles (Cellia) theobaldi** Giles


**Material examined**: Reported from Literature.

**Distribution**: India: Madhya Pradesh (Jabalpur), Chhattisgarh (Bastar), Maharashtra.

**Elsewhere**: Myanmar, Pakistan, Philippines.

21. **Anopheles (Cellia) turkhudi** Liston


22. **Anopheles (Cellia) vagus** Donitz

1902. *Anopheles vagus* Donitz, *Z. Hyg. Infekt Krankh*, 41 : 80. Type-locality: Fort de Kock, Sumatra; Java and numerous other Indonesian localities

**Material examined**: Reported from Literature.

**Distribution**: India: Madhya Pradesh (Jabalpur, Mandla), Andamans, Assam, Goa and Maharashtra.

**Elsewhere**: Bangladesh and widely distributed in other Oriental Region; New Guinea.

23. **Anopheles (Cellia) varuna** Iyenger


**Material examined**: Reported from Literature.

**Distribution**: India: Madhya Pradesh (Mandla), Chhattisgarh (Bastar), Bihar, Gujarat, Karnataka, Maharashtra, Meghalaya, Orissa, Uttar Pradesh, Tamil Nadu and West Bengal.


24. **Anopheles (Cellia) moghulensis** Christopher


**Material examined**: Reported from Literature.

**Distribution**: India: Madhya Pradesh (Satpura), Andhra Pradesh, Karnataka, Maharashtra, Punjab and Tamil Nadu.

**Elsewhere**: Pakistan.

Genus **Aedeomyia** Theobald, 1901

25. **Aedeomyia (Aedeomyia) catasticta** Knab

Material examined: Reported from Literature.

Distribution: India: Chhatisgarh (Bastar), West Bengal.

Elsewhere: Wide spread in Oriental region; throughout Australia, Caroline Islands, Fiji Islands, Mariana Islands.

Genus Aedes Meigen, 1818

26. Aedes (Aedimorphus) alboscutellatus (Theobald)


Material examined: Reported from Literature.

Distribution: India: Chhatisgarh (Bastar)

Elsewhere: Oriental region; Australia; Japan.

27. Aedes (Aedimorphus) caecus (Theobald)

1901. Culex caecus Theobald, Monogr. Cul., 1 : 413, Type-locality: Klang Mangrove swamps, Selanagar, Malaya.

Material examined: Reported from Literature.

Distribution: India: Chhatisgarh (Bastar), Orissa, West Bengal.

Elsewhere: Oriental region; Mariana Islands, New Guinea.

28. Aedes (Aedimorphus) jamesi (Edwards)


Material examined: Reported from Literature.

Distribution: India: Chhatisgarh (Bastar).

Elsewhere: Sri Lanka

29. Aedes (Aedimorphus) pallidostriatus (Theobald)


Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhatisgarh, Tamil Nadu.

Elsewhere: Sri Lanka, Thailand.

30. Aedes (Aedimorphus) pipersalatus (Giles)

1902. Stegomyia pipersalatus Giles, Handbook. ed : 2; 372. Type-locality: Jhansi, Gonda, (U.P), India

Material examined: Reported from Literature.

Distribution: India: Chhatisgarh (Bastar), Uttar Pradesh.

Elsewhere: Sri Lanka.

31. Aedes (Aedimorphus) taeniorhynchoides (Christopher)

1911. Leslieomyia taeniorhynchoides Christopher, Paludism 2: 68. 130. Type-locality: Amritsar (Punjab), India.

Material examined: Reported from Literature.

Distribution: India: Chhatisgarh (Bastar), Punjab.

Elsewhere: Sri Lanka, Hainan Islands, Thailand.

32. Aedes (Aedimorphus) trimaculatus (Theobald)

1905. Culex trimaculatus Theobald, Annls hist.-nat. Mus. natn. hung. 3 :86, Type-locality: Bombay, Maharashtra

Material examined: Reported from Literature.

Distribution: India: Chhatisgarh (Bastar), Maharashtra.

Elsewhere: None.

33. Aedes (Aedimorphus) vexans (Meigen)


Material examined: Reported from Literature.

Distribution: India: Chhatisgarh (Bastar).

Elsewhere: Throughout Oriental region; Holarctic region; Pacific Islands.

34. Aedes (Christophersiomyia) thomsoni (Theobald)

1905. Stegomyia thomsoni Theobald, Genera Insecta, 26 : 19, Type-locality: NW Provinces, India

Material examined: Reported from Literature.

Distribution: India: Chhatisgarh (Bastar)

Elsewhere: Sri Lanka.
35. **Aedes (Diceromyia) micropterus** (Giles)


*Material examined*: Reported from Literature.

*Distribution*: India: Chhatisgarh (Bastar), Uttar Pradesh.

*Elsewhere*: None.

36. **Aedes (Finlaya) albolateralis** (Theobald)


*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh (Bastar), Assam, Meghalaya, Mizoram.

*Elsewhere*: Sri Lanka, China, Bangladesh, Formosa, Malaya, Nepal, Sumatra; Japan, Korea.

37. **Aedes (Finlaya) assamensis** (Theobald)


*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh (Bastar), Assam.

*Elsewhere*: Bangladesh, China, Indo china, Java, Thailand.

38. **Aedes (Finlaya) gubernatoris** (Giles)


*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh (Bastar), Maharashtra and Uttar Pradesh.

*Elsewhere*: None.

39. **Aedes (Finlaya) pseudotaeniatus** (Giles)


*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh, Punjab, Uttrakhand.


40. **Aedes (Neomelaniconion) lineatipennis** (Ludlow)


*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh (Bastar).

*Elsewhere*: Throughout Oriental region; Africa; Australia.

41. **Aedes (Stegomyia) aegypti** (Linnaeus)


*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh (Bastar), West Bengal.

*Elsewhere*: Pan tropical.

42. **Aedes (Stegomyia) albopictus** (Skuse)


*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh (Bastar), West Bengal.

*Elsewhere*: Widespread Oriental region through Australia, Japan.

43. **Aedes (Stegomyia) novaalbopictus** Barraud


*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh (Bastar), Bihar.

*Elsewhere*: None.

44. **Aedes (Stegomyia) pseudoalbopictus** Borel

1938. Stegomyia pseudoalbopictus Borel, *Archs, Insts Pasteur Indocheine.*, 7 : 85. Type-locality: Cochin China, Indo China

*Material examined*: Reported from Literature.
Distribution: India: Madhya Pradesh & Chhattisgarh (Bastar).

Elsewhere: South Viet Nam

45. Aedes (Stegomyia) subalbopictus Barraud

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhattisgarh (Bastar).

Elsewhere: South Viet Nam

46. Aedes (Stegomyia) vittatus (Bigot)
1861. Culex vittatus Bigot, Annls Soc. ent. Fr. (4)1 : 227, Type-locality: Corsica

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhattisgarh (Bastar).

Elsewhere: Hainan Islands

47. Aedes (Stegomyia) w-albus (Theobald)
1905. Stegomyia w-albus Theobald, Annls hist.-nat.Mus.natn.hung.3 :74, Type-locality: "India Orientalis"

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhattisgarh (Bastar), Andaman & Nicobar Islands and West Bengal.

Elsewhere: Sri Lanka, China, Malaya, Nepal, Sumatra, Thailand.

Genus Armigeres Theobald, 1901

48. Armigeres (Armigeres) kuchingensis Edwards

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh (Mandla), Andhra Pradesh, Assam, Meghalaya, Maharashtra and West Bengal.

Elsewhere: Indonesia, Malaya, Sumatra, Taiwan, Thailand.

49. Armigeres (Armigeres) theobaldi Barraud

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhattisgarh (Bastar), Orissa.

Elsewhere: Myanmar, Thailand.

50. Armigeres (Armigeres) subalbatus (Coquillett)

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhattisgarh (Bastar), Assam and Orissa.

Elsewhere: Throughout Orienta region; Japan, Korea.

Genus Coquillettidia Dyar, 1905

51. Coquillettidia (Coquillettidia) crassipes (van der Wulp)
1881. Culex crassipes Vander Wulp, Midden-Sumatra, Dipt., 4 : 9, Type-locality: Soeroelangoen, Sumatra

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhattisgarh (Bastar), Assam and Orissa.

Elsewhere: Throughout Orienta region; Australia; Mariana Islands, New Caledonia.

Genus Culex Linnaens, 1758

52. Culex (Culex) barraudi Edwards

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhattisgarh (Bastar), Meghalaya and Punjab.


53. Culex (Culex) bitaenirohynchus Giles
Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh (Jabalpur), Chhattisgarh (Bastar), Kerala, Orissa, Tamil Nadu.

Elsewhere: Malaya, Sarawak and Sri Lanka and many other parts of Oriental region; Africa; Japan; Australia.

54. Culex (Culex) epidesmus (Theobald)

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhattisgarh (Bastar) and Bihar.

Elsewhere: Sri Lanka.

55. Culex (Culex) fuscocephalus Theobald
1906. Culex fuscocephalus Theobald, Monogr. Cule., 4 : 420. Type-locality: Pedradeniya, Ceylon

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhattisgarh (Bastar), Andaman Islands and Orissa.

Elsewhere: Throughout Oriental region.

56. Culex (Culex) gelidus Theobald

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhattisgarh (Bastar) and Orissa.

Elsewhere: Throughout Oriental region; Japan; New Guinea.

57. Culex (Culex) mimulus Edwards

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh (Jabalpur), Chhattisgarh (Bastar), Assam and Uttar Pradesh.

Elsewhere: China, Myanmar, Nepal, Philippines, Taiwan, Thailand, Sri Lanka; Australia; New Guinea.

58. Culex (Culex) perplexus quinquefasciatus Say

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh (Bhopal, Mandla), Chhattisgarh (Bastar) Assam, Delhi, Orissa, Uttar Pradesh and West Bengal.

Elsewhere: Cosmopolitan.

59. Culex (Culex) pseudovishnui Colless

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhattisgarh (Bastar), Orissa and West Bengal.

Elsewhere: Throughout Oriental region.

60. Culex (Culex) sinensis Theobald
1903. Culex gelidus var. sinensis Theobald, Monogr. Cule., 3 : 80. Type-locality: China

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhattisgarh (Bastar).

Elsewhere: Throughout Oriental region; Japan; Korea; USSR.

61. Culex (Culex) tritaeniorhynchus Giles

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh (Jabalpur), Chhattisgarh (Bastar), Kerala, Orissa, West Bengal.

Elsewhere: Throughout Oriental region; Ethiopian region; Japan; Korea.

62. Culex (Culex) vishnui Theobald

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh
MITRA et al.: Insecta: Diptera

(Jabalpur), Chhatisgarh (Bastar), Assam, Orissa, Tamil Nadu and West Bengal.

Elsewhere: Throughout Oriental Region and Japan; New Guinea.

63. Culex (Culex) whitmorei (Giles)
Material examined: Reported from Literature.
Distribution: India: Madhya Pradesh & Chhatisgarh (Bastar).

Elsewhere: Throughout Oriental region; Japan; New Guinea; USSR.

64. Culex (Culiciomyia) nigropunctatus Edwards
Material examined: Reported from Literature.
Distribution: India: Madhya Pradesh & Chhatisgarh (Bastar).

Elsewhere: Throughout Oriental region; Carolin Islands; Palau Islands.

65. Culex (Culiciomyia) pallidithorax Theobald
Material examined: Reported from Literature.
Distribution: India: Madhya Pradesh & Chhatisgarh (Bastar).

Elsewhere: Throughout Oriental region; Japan, Moluccas, New Guinea.

66. Culex (Eumelanomyia) brevipalpis (Giles)
1901. Culex longipes Theobald, Monogr. Cul., 2: 68, Type-locality: Singapore
Material examined: Reported from Literature.
Distribution: India: Madhya Pradesh & Chhatisgarh (Bastar), Orissa and Tamil Nadu.

Elsewhere: Throughout Oriental region; Bismark Islands, New Guinea.

67. Culex (Eumelanomyia) malayi (Leicester)
1908. Aedes malayi Leicester, Cul. Malaya: 184, Type-locality: Kuala Lumpur, Malaya
Material examined: Reported from Literature.
Distribution: India: Madhya Pradesh & Chhatisgarh (Bastar) and West Bengal.

Elsewhere:

68. Culex (Lophoceromyia) minor (Leicester)
1908. Lophoceromyia minor Leicester, Cul. Malaya: 126, Type-locality: Klong jungle, Malaya
Material examined: Reported from Literature.
Distribution: India: Madhya Pradesh & Chhatisgarh (Bastar).

Elsewhere: Myanmar, Sri Lanka, Indochina, Malaya, Philippines, Ryukyu Islands, Thailand.

Genus Lutzia Theobald, 1903

69. Lutzia (Metalutzia) fusca (Wiedemann)
Material examined: Reported from Literature.
Distribution: India: Madhya Pradesh & Chhatisgarh (Bastar).

Elsewhere: Throughout Oriental region; Australia; Japan; Korea; USSR

70. Lutzia halifaxi Theobald
1903. Culex (Lutzia) halifaxi Theobald, Monogr. Cul., 3: 231, Type-locality: Malaya
Material examined: Reported from Literature
Distribution: India: Madhya Pradesh & Chhatisgarh (Bastar) and Punjab.

Elsewhere: Throughout Oriental region; Australia; Japan; Korea; USSR

Genus Heizmannia Ludlow, 1905

71. Heizmannia complex (Theobald)
Material examined: Reported from Literature.
Distribution: India: Madhya Pradesh & Chhatisgarh (Bastar).

Elsewhere: Myanmar, Cambodia, Indochina, Thailand, Viet'Nam
Genus *Mansonia* Blanchard, 1900

72. *Mansonia (Mansonoides) annulifera* Theobald

1901. Panoplites annulifera Theobald, *Monogr. Cul.*, 2 : 183. Type-locality: Madras, Quilon, Travancore, Kerala, India

*MATERIAL EXAMINED*: Reported from Literature.

*Distribution*: India: Madhya Pradesh (Mandla), Chhattisgarh (Bastar), Assam, Bihar, Kerala, Maharashtra, Orissa, Uttar Pradesh and Tamil Nadu.


73. *Mansonia (Mansonoides) dives* (Schiner)

1868. Culex dives schiner (n. name for annulipes walker) in *Raiser der oesterreichischen Fregalte Novara, Dipt.*, 2 : 31. Type-locality: Singapore

*MATERIAL EXAMINED*: Reported from Literature.

*Distribution*: India: Madhya Pradesh (Mandla), Chhattisgarh, Assam and Meghalaya.

*Elsewhere*: Bangladesh, Hainan Island, Indonesia, Malaya, Philippines, Singapore, Sumatra, Thailand; Australia.

74. *Mansonia (Mansonoides) indiana* Edwards


*MATERIAL EXAMINED*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh (Bastar), West Bengal.

*Elsewhere*: Sri Lanka, Indochina, java, Malaya, Sumatra, Thailand; New Guinea

75. *Mansonia (Mansonoides) uniformis* (Theobald)


*MATERIAL EXAMINED*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh (Bastar), Kerala.

*Elsewhere*: Throughout Oriental region; Australia to Solomon Islands; Ethiopian region; Japan.

Genus *Ficalbia* Theobald, 1903

76. *Ficalbia (Mimomyia) chamberlaini* (Ludlow)


*MATERIAL EXAMINED*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh (Bastar).

*Elsewhere*: Myanamar, Celebes, Hainan Islands, Java, Philippines, Malaya, Thailand

77. *Ficalbia (Etorleptiomyia) luzonensis* (Ludlow)


*MATERIAL EXAMINED*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh (Bastar).

*Elsewhere*: Borneo, Celebes, Sri Lanka, China, Indochina, Java, Malaya, Philippines, Thailand.

Family CHIRONOMIDAE

Genus *Chironomus* Meigen, 1803

78. *Chironomus circumdatus* (Kieffer)


*MATERIAL EXAMINED*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh and West Bengal.

*Elsewhere*: Korea, Taiwan, Thailand, Japan.

79. *Chironomus javanus* Kieffer


*MATERIAL EXAMINED*: Reported from Literature.

*Distribution*: India: Madhya Pradesh, Chhattisgarh and West Bengal.

*Elsewhere*: Java, Sumatra, Caroline Islands, Marshal Iscandy.
Genus *Polypedilum* Kieffer, 1912
Subgenus *Pentapedilum* Kieffer, 1913
80. *Polypedilum (Pentapedilum) robusticeps* Guha and Chaudhuri


**Material examined:** Reported from Literature.

**Distribution:** India: Madhya Pradesh & Chhatisgarh and West Bengal.

**Elsewhere:** None.

Infraorder BIBINOMORPHA
Family BIBIONIDAE
Genus *Plecia* Wiedemann, 1828
81. *Plecia dispersa* Hardy

1958. *Plecia dispersa* Hardy, Pacif Ins., 12: 196 (n. name for *Confusca Malloch*) Type-locality: Coromandal, Andhra Pradesh

**Material examined:** Reported from Literature.

**Distribution:** India: Madhya Pradesh & Chhatisgarh, Andhra Pradesh, Chandigarh, Tamil Nadu and Nicobar Islands.

**Elsewhere:** Nepal, Pakistan and Sri Lanka.

Family SCIARIDAE
Genus *Trichosia* Winnertz, 1867
82. *Trichosia rufithorax* (van der Wulp)


**Material examined:** Reported from Literature.

**Distribution:** India: Madhya Pradesh & Chhatisgarh, Assam, Arunachal Pradesh, South India and West Bengal.

**Elsewhere:** China, Java, Malaysia, Mentawai Island, Myanmar, Sri Lanka, Sumatra, Thailand.

Family CECIDOMYIIDAE
Subfamily LESTREMIINAE
Genus *Conarete* Pritchard, 1951
83. *Conarete indorensis* Grover


**Material examined:** Reported from Literature.

Genus *Peromyia* Kieffer, 1894
84. *Peromyia indica* Grover


**Material examined:** Reported from Literature.

**Distribution:** India: Madhya Pradesh (Indore).

**Elsewhere:** None.
Material examined: Collected galls in Madhya Pradesh.

Distribution: Madhya Pradesh (Jabalpur, Shahdol), wide spread in India.

Elsewhere: None

Genus Contarinia Rondani, 1860

89. Contarinia sesami Grover and Bakshi


Material examined: Reported from Literature.

Distribution: Madhya Pradesh & Chhattisgarh (Raipur), Maharashtra.

Elsewhere: None.

Genus Dasineura Rondani, 1840

90. Dasineura lini Barnes


Material examined: Reported from Literature.

Distribution: Madhya Pradesh & Chhattisgarh, Bihar and Maharashtra.

Elsewhere: None.

Genus Lasioptera Meign, 1818

91. Lasioptera achyranthesae Sharma


Material examined: Collected galls in Madhya Pradesh.

Distribution: Madhya Pradesh & Chhattisgarh (Jabalpur, Shahdol), Maharashtra, Karnataka, Punjab.

Elsewhere: None.

92. Lasioptera bryoniae Schiner

1868. Lasioptera bryoniae Schiner, Diptera. In Reise der oesterreichischen Fregate Novara, 5 : 5. Type-locality: Madras, India

Material examined: Collected galls in Madhya Pradesh.

Distribution: Madhya Pradesh (Jabalpur, Shahdol), Maharashtra, Himachal Pradesh and Tamil Nadu.

Elsewhere: None

Genus Clinodiplosis Kieffer, 1894

93. Clinodiplosis indorensis Grover

1979. Clinodiplosis indorensis Grover, Cecidologia indica, 14 : 32. Type-locality: Indore, Madhya Pradesh

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh (Indore).

Elsewhere: None

Genus Coquillettomyia Felt, 1908

94. Coquillettomyia quadrispina Grover


Elsewhere: None.

Genus Feltiella Rubsamen, 1910

95. Feltiella minuta Grover

1979. Feltiella minuta Grover, Cecidologia indica, 14 : 46. Type-locality: Madhya Pradesh

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh (Indore).

Elsewhere: None.

Genus Horidiplosis Felt, 1920

96. Horidiplosis mathuri Mani


Material examined: Reported from Literature.

Distribution: Madhya Pradesh (Shahdol), Maharashtra, Andaman Islands and Uttarakhand.

Elsewhere: None.

Genus Odinadiplosis Mani, 1935

97. Odinadiplosis odinae Mani

Material examined: Collected galls in Madhya Pradesh.

Distribution: Madhya Pradesh (Jabalpur, Shahdol), Maharashtra, Tamil Nadu and West Bengal.

Elsewhere: None.

Genus **Orseolia** Kieffer & Massalongo, 1902

98. **Orseolia monticola** (Felt)


Material examined: Reported from Literature.

Distribution: Madhya Pradesh & Chhattisgarh (Jabalpur), Karnataka.

Elsewhere: None.

99. **Orseolia oryzae** (Wood-Mason)

1889. Cecidomyia oryzae Wood-Mason, Entomology Notes, Indian Mus., Notes, 1: 103. Type-locality: Kurruckpore, India

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhattisgarh (Indore).

Elsewhere: Myanmar, Sri Lanka, China, Indonesia, Thailand, Viet Nam

100. **Orseolia paspali** (Felt)


Material examined: Reported from Literature.

Distribution: Madhya Pradesh (Jabalpur), Chhattisgarh (Raipur), Kerala, Orissa and Uttar Pradesh.

Elsewhere: Indonesia, Java

Genus **Procontarinia** Kieffer & Ceconni, 1906


Material examined: Collected galls from both states.

Distribution: India: Madhya Pradesh (Jabalpur, Shadol), Chhattisgarh (Jagdalpur), widely distributed in India.

Elsewhere: Italy, Kenya, Java, Mauritius

Genus **Trisopsis** Kieffer, 1912

103. **Trisopsis narendrii** Grover

1979. Trisopsis narendrii Grover, Cecidologia indica, 14: 41. Type-locality: Indore, Madhya Pradesh

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh (Indore).

Elsewhere: None

Suborder BRACHYCERA

Infraorder STRATIOMYOMORPHA

Family STRATIOMYIDAE

Genus **Ptecticus** Loew, 1855

104. **Ptecticus australis** Schiner

1868. Ptecticus australis Schiner, Reise der osterreichischen Fregatte Novara, Dipt., 2: 65. Type-locality: Nicobar Islands

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhattisgarh, Assam, Karnataka, Meghalaya, Nicobar, Punjab, Sikhim, Tamil Nadu and West Bengal.

Elsewhere: Sri Lanka, Taiwan, Thailand.

Genus **Microchrysa** Loew, 1855

105. **Microchrysa flaviventris** (Wiedemann)

1824. Sargus affinis Wiedemann, Analecta Ent: 31. Type-locality: "Ind. Orient"


Distribution: India: Chhattisgarh (Bilaspur), Arunachal Pradesh, Uttar Pradesh and West Bengal.
Elsewhere: Borneo, Hainan Islands, Jawa, Pakistan, Philippines, Sarawak, Sri Lanka, Sumatra, Thailand; Papua.

Infraorder TABANOMORPHA
Family TABANIDAE
Genus Philoliche Wiedemann, 1828

106. Philoliche taprobanes (Walker)


Distribution: India: Madhya Pradesh, Chhatisgarh, Karnataka.

Elsewhere: Sri Lanka.

Genus Chrysops Meigen, 1803

107. Chrysops dispar (Fabricius)


Distribution: India: Madhya Pradesh, Chhatisgarh, Assam, Himachal Pradesh, Arunachal Pradesh, Manipur, Meghalaya, Nagaland, Sikkim, Tripura and West Bengal.


Genus Tabanus Linnaeus, 1758.

108. Tabanus abscondens Walker


Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur).

Elsewhere: Myanmar.

109. Tabanus (Tabanus) orientis Walker


Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur), Assam, Himachal Pradesh, Manipur, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere: Bhutan, Nepal and Pakistan.

110. Tabanus (Tabanus) rubicundus Macquart


Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur), Assam, Meghalaya and West Bengal.

Elsewhere: Bangladesh, Laos, Myanmar.

111. Tabanus (Tabanus) striatus Fabricius

1787. Tabanus striatus Fabricius, Montissa Insect., 2 : 356. Type-locality: China


Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur).


112. Tabanus (Tabanus) indianus Ricardo

1911. Tabanus indianus Ricardo, Rec. Indian Mus., 4 : 175. Type-locality: SW India and Formosa

Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur), Assam and Karnataka.

Elsewhere: Celebes, China, Formosa, Viet Nam.


Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur) and Assam.

Elsewhere: China, Nepal, Myanmar.


Material examined: Reported from literature.


Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur), Arunachal Pradesh, Maharshtar, and Uttar Pradesh.

Elsewhere: Bangladesh.


Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur), Arunachal Pradesh, Meghalaya and West Bengal.


117. Haematopota javana Wiedemann 1821. Haematopota javana Wiedemann. Dipt. Exot., I : 100. Type locality: Java


Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur), Bihar, Kerala, Meghalaya, Mizoram, Tamil Nadu and West Bengal.

Elsewhere: Bangladesh, China (W. Yunan), Java, Laos, Malaysia, Myanmar, Pakistan, Thailand.


Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur), Assam, Bihar, Meghalaya and West Bengal.

Elsewhere: Bangladesh.


Distribution: India: Madhya Pradesh (Seoni), Chhatisgarh and Tamil Nadu.

Elsewhere: Sri Lanka.
Superfamily ASILOIDEA
Family BOMBYLIIDAE
Genus Bombomyia Greathead, 1995
120. Bombomyia maculata Fabricius

1775. Bombyllius maculatus Fabricius, Syst. ent. insectorum class. : 803. Type-locality : Kamataka.


Distribution: India : Madhya Pradesh & Chhatisgarh (Bilaspur), Andhra Pradesh, Gujarat, Karnataka, Orissa, Tamil Nadu and Uttarakhand.

Elsewhere: None.

Genus Heteralonia Rondani, 1863
121. Heteralonia (Homolonia) lateralis (Brunetti)


Material examined : Reported from literature.

Distribution: India : Madhya Pradesh & Chhatisgarh Andhra Pradesh, Karnataka, Orissa, West Bengal.

Elsewhere: None.

122. Heteralonia (Isotamia) insulata (Walker)

1852. Anthrax insulata Walker, Insecta Saundersiana, Diptera (Part 3) : 172. Type-locality :


Distribution: India : Madhya Pradesh & Chhatisgarh Andhra Pradesh, Assam, Bihar, Chandigarh, Gujarat, Himachal Pradesh, Karnataka, Maharashtra, Meghalaya, Tamil Nadu, Tripura, Uttaranchal and West Bengal.


Genus Ligyra Newman, 1841
123. Ligyra aurantiaca Guerin–Meneville

1835. Anthrax aurantiaca Guérin-Méneville, Icon, du regne anim. Dipt., 3 : 539. Type-locality : Not given (“Bengale” = India (Bihar or West Bengal)


Distribution: India : Madhya Pradesh (Chhindwara), Chhatisgarh (Bilaspur), Andhra Pradesh, Arunachal Pradesh, Bihar, Gujarat, Tamil Nadu and West Bengal.

Elsewhere : None

124. Ligyra semifuscata (Brunetti)


Material examined : 3♀♀ Rakhashak, 10.v.05, Bilaspur dist, A.K.Singh & Party.

Distribution: India : Madhya Pradesh & Chhatisgarh Andaman & Nicobar islands, Karnataka and Maharashtra.

Elsewhere : None

Family ASILIDAE
Genus Nusa Walker, 1851
125. Nusa bengalensis Joseph & Parui

1877. Nusa bengalensis Joseph & Parui, Oriental Ins., 21 : 136. Type-locality : Chapmari forest, Darjeeling, West Bengal


Distribution: India : Madhya Pradesh (Hoshangabad, Chhindwara), Chhatisgarh (Bilaspur) and West Bengal.

Elsewhere : None

Genus Microstylum Macquart, 1938
126. Microstylum bhattacharyai Joseph & Parui


**Distribution:** India : Madhya Pradesh (Hoshangabad), Chhatisgarh (Bilaspur), Kerala, Pondicherry and Tamil Nadu.

**Elsewhere:** Sri Lanka.

127. *Microstylum varshneyi* Joseph & Parui


**Distribution:** India : Madhya Pradesh (Hoshangabad), Chhattisgarh (Bilaspur), Bihar, Karnataka, Kerala and Tamil Nadu.

**Elsewhere:** None

128. *Clephydroneura pulla* Oldroyd


**Distribution:** India : Madhya Pradesh & Chhatisgarh (Bilaspur), Andhra Pradesh, Karnataka and Tamil Nadu.

**Elsewhere:** None

129. *Leptogaster cheriani* Bromley


**Material examined:** 1♂, Parasia, Chhindwara, 25. x. 2002, coll. Y.N. Gupta.

**Distribution:** India : Madhya Pradesh (Chhindwara), Tamil Nadu and Rajasthan.

**Elsewhere:** None.

130. *Neolophonotus indicus* Bromley


**Material examined:** Reported from literature.

**Distribution:** India : Madhya Pradesh & Chhatisgarh, Uttar Pradesh.

**Elsewhere:** None

131. *Michotamia aurata* (Fabricius)

1794. *Asilus aurata* Fabricius, *Ent. Syst*; 4 : 387. Type-locality : East India

**Material examined:** Reported from literature.

**Distribution:** India : Madhya Pradesh & Chhatisgarh, Andhra Pradesh, Arunachal Pradesh, Bihar, Karnataka, Kerala, Madhya Pradesh, Orissa, Pondicherry, Tamil Nadu, Uttar Pradesh and West Bengal.
Genus **Laxenecera** Macquart, 1838
132. **Laxenecera albibarbis** Macquart


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh, Bihar, Gujarat, Himachal Pradesh, Maharashtra, Rajasthan, Uttar Pradesh and West Bengal.

*Elsewhere*: Celebes, Myanmar, Pakistan, Taiwan.

Genus **Philodicus** Loew, 1848
133. **Philodicus femoralis** Ricardo


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh Arunachal Pradesh (East Siang, Papumpare, Changlang), Assam, Bihar, Himachal Pradesh, Karnataka, Meghalaya, Orissa, Rajasthan, Uttar Pradesh and West Bengal.

*Elsewhere*: None

134. **Philodicus pruthii** Bromley


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh, Chhatisgarh and Tamil Nadu.

*Elsewhere*: None.

Genus **Ommatius** Wiedemann, 1821
135. **Ommatius minor** Doleschall


*Material examined*: Reported from literature.


*Elsewhere*: Borneo; Moluccas; New Guinea.

Genus **Promachus** Loew, 1848
136. **Promachus duvauceli** (Macquart)


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh Delhi, Gujarat, Madhya Pradesh, Punjab, Uttar Pradesh and West Bengal.

*Elsewhere*: None

Genus **Stenopogon** Loew, 1847
137. **Stenopogon raven** (Bromley)


*Distribution*: India: Madhya Pradesh (Hoshangabad, Seoni), Chhatisgarh (Bilaspur) and Tamil Nadu.

*Elsewhere*: None.

Superfamily **EMPIDOIDEA**

Family **DOLICHOPODIDAE**

Genus **Chrysosoma** Guerin-Meneville, 1831
138. **Chrysosoma punctiforme** Becker


*Material examined*: Reported from literature

*Distribution*: India: Madhya Pradesh & Chhatisgarh, West Bengal.

*Elsewhere*: None
Division ASCHIZA
Family SYRPHIDAE
Subfamily SYRPHINAE
Genus *Asarkina* Macquart, 1892

139. *Asarkina (Asarkina) ericetorum* (Fabricius)

Type-locality: "Africa aequinoctial"


Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur), Assam, Jammu & Kashmir, Manipur, Meghalaya, Sikkim, Tamil Nadu, Tripura and West Bengal.

Elsewhere: Nepal; Holartic.

Genus *Paragus* Latreille, 1804

140. *Paragus (Paragus) serratus* (Fabricius)

1805. *Mulio serratus* Fabricius, Syst. Antliat., : 186. Type-locality: (Tranquebar) Tamilnadu, India

Material examined: Reported from literature.

Distribution: India: Madhya Pradesh & Chhatisgarh, Assam, Bihar, Goa, J&K, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Punjab, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Elsewhere: Jakarta, Java, East Malaysia, Nepal, Pakistan SriLanka; Africa, Papuan sub regions.

141. *Paragus (Paragus) yerburiensis* Stuckenberg


Material examined: Reported from literature.


Elsewhere: Sri Lanka, Nepal

Genus *Syritta* Lepeletier and Serville, 1828

142. *Syritta pipiens* (Linnaeus)

Type-locality: Europe

Material examined: Reported from literature.

Distribution: India: Madhya Pradesh & Chhatisgarh, Uttarakhand, Himachal Pradesh, Punjab, Uttar Pradesh and West Bengal.

Elsewhere: Nepal; Holartic.

Genus *Dideopsis* Matsumura, 1917

143. *Dideopsis aegrotus* Fabricius

Type-locality: China.


Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur) Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Sikkim, Tripura and West Bengal.

Elsewhere: Nepal, throughout SE Asia; Australia, Moluccas; New Guinea

Genus *Episyrphus* Matsumura & Adachi, 1917

144. *Episyrphus balteatus* (De Geer)


Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur), Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Manipur, Meghalaya, Orissa, Sikkim, Tamil Nadu, Tripura, Uttarankhand and West Bengal.

Elsewhere: China, Malay and other parts of the Oriental region; Australia, Bonin Islands and Palaearctic Region.

Genus *Ischiodon* Sack, 1913

145. *Ischiodon scutellaris* (Fabricius)

Type-locality: Tranquebar (Tamil Nadu), India.


Distribution: India: Madhya Pradesh (Chhindwara) & Chhatisgarh, Uttarakchal, Andhra
Pradesh, Assam, Chandigarh, Delhi, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Manipur, Meghalaya, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura and West Bengal.

Elsewhere: Java, Philippines, Taiwan and other parts of the S.E. Asia; Australia, Hawaii, Japan and Micronesia.

Genus **Baccha** Fabricius, 1805

146. Baccha (Allobaccha) sapphirina Wiedemann

1830. Baccha sapphirina Wiedemann, Aussereurop. zweifl. Insek. 2 :96, Type-locality : East Indies

Material examined: Reported from literature.

Distribution: India: Madhya Pradesh & Chhatisgarh, Maharashtra, Rajasthan and Tamil Nadu.

Elsewhere: Sri Lanka, Formosa, New Guinea; Aden; Africa.

Genus **Eristalinus** Rondani, 1845

147. Eristalinus (Eristalinus) arvorum (Fabricius)

1787. Syrphus arvorum Fabricius, Mantissa Insect, 2 : 335. Type-locality : China.

Material examined: Reported from literature.

Distribution: India: Madhya Pradesh & Chhatisgarh Arunachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Orissa, Sikkim, Tripura, Uttrakhand and West Bengal.

Elsewhere: China and other parts of the S.E. Asia; Australia, Hawaii, Japan and Micronesia.

148. Eristalinus (Eristalinus) quinquestriatus (Fabricius)

1794. Syrphus quinquestriatus Fabricius, Ent. Syst., 4 : 289. Type-locality: "Indian Orientalis".

Material examined: Reported from literature.

Distribution: India: Madhya Pradesh & Chhatisgarh, Uttarakhand, Assam, Bihar, Karnakata, Kerala, Nagaland, Orissa and West Bengal.

Elsewhere: China and other parts of the Oriental Region; Japan.

149. Eristalus (Merodonoides) multifarius (Walker)

1852. Eristalus multifarius Walker, Insecta saundersiana, 1 : 248, Type-locality : East Indies

Material examined: Reported from literature.

Distribution: India: Madhya Pradesh & Chhatisgarh, Assam and Tamil Nadu.

Elsewhere: Sri Lanka, Java, Malaya, Nepal, Viet Nam.

Genus **Eristalis** Latreille, 1804

150. Eristalis aeneus Scopoli

1763. Conops aeneus Scopoli, Ent. Carniolica : 356, Type-locality : Europe

Material examined: Reported from literature.


Elsewhere: Northern Oriental region; Australia, Bermuda, Hawaii, North America; Palearctic.

Genus **Phytomia** Guerin-Meneville, 1834

151. Phytomia (Phytomia) argyrocephala (Macquart)

1842. Eristalis argyrocephala Macquart, Dipt.exot. 2(2) : 45(105), Type-locality: "Indes orientalis"

Material examined: Reported from literature.

Distribution: India: Madhya Pradesh & Chhatisgarh, Karnataka, Tamil Nadu and West Bengal.

Elsewhere: Myanmar, Java, Laos, Sumatra, Sumbawa.

Genus **Mesembrius** Rondani, 1857

152. Mesembrius quadrivittatus (Wiedemann)

1819. Eristalis quadrivittatus Wiedemann, Zool. Mag., 1 : 17 Type-locality: Tranquebar, India.

Material examined: Reported from literature.

Distribution: India: Madhya Pradesh & Chhatisgarh, Assam, Bihar, Gujarat, Karnataka, Madhya Pradesh, Orissa, Punjab, Tamil Nadu, Tripura and West Bengal.

153. *Xanthandrus indicus* Curran

1933. *Xanthandrus indicus* Curran, Stylops, 2 : 46. Type-locality: Hoshangabad, M.P., India

*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh (Hoshangabad).

*Elsewhere*: None.

154. *Microdon (Microdon) auricinctus* Brunetti


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh, West Bengal.

*Elsewhere*: Sri Lanka.

155. *Sphyracephala hearseiana* Westwood


*Distribution*: India: Madhya Pradesh (Jabalpur) & Chhattisgarh, Chandigarh and Gujarat.

*Elsewhere*: Bangladesh and Pakistan.

156. *Anatrichus pygmaeus* Lamb


*Material examined*: 1♀ 1♂, 2 km from Motorstand, Konta, Bastar district, dt. Nil, coll. Nil.; 1♀, 2 km away east of forest rest house, Sarguja district, dt. Nil, coll. Nil.

*Distribution*: India: Madhya Pradesh & Chhattisgarh (Bastar, Sarguja)

*Elsewhere*: Throughout Oriental region; Japan.

157. *Pachylophus Loew, 1858*


*Distribution*: India: Madhya Pradesh (Hoshangabad, Jabalpur), Chhattisgarh (Bastar), Assam, Bihar, Himachal Pradesh, Maharashtra, Gujarat, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal.

*Elsewhere*: Java, Nepal, Philippines, Sumatra, Thailand, Viet Nam; Australia.

158. *Oscinella pura* (Becker)

1912. *Oscinella pura* Becker, Annls hist. nat. Mus. natn. hung. 9 : 151. Type-locality: Bombay, India

*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh, Maharashta.

*Elsewhere*: None

159. *Typopsis Cresson, 1916*


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh, Assam and West Bengal.

*Elsewhere*: China, Nepal, Philippines, Ryukyu Islands, Thailand; Australia, Caroline Islands.
Genus *Paralimna* Loew, 1862


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh, Tamil Nadu.

*Elsewhere*: Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Taiwan; New Guinea, West Irian.

Subfamily PARYDRINAE

Genus *Ochthera* Latreille, 1802


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh, Assam, Tamil Nadu.

*Elsewhere*: Java, Philippines, Sumatra

Family DROSOPHILIDAE


*Material examined*: Reported from literature.


*Elsewhere*: Borneo, Celebes, Java, Malaya, Philippines, Singapore, Sri Lanka, Sumatra, Thailand.


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh Chhattisgarh Uttarakhand (Kumaon), Bihar, Kashmir, Maharashtra, Manipur, Orissa, Punjab, Tamil Nadu, Uttar Pradesh & West Bengal.

*Elsewhere*: None.


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh Chhattisgarh Uttarakhand (Kumaon), Andaman & Nicobar Island, Assam, Bihar, Karnataka, Maharashtra, Manipur, Orissa, Punjab, Uttar Pradesh and West Bengal.

*Elsewhere*: Borneo, Celebes, Java, Malaya, Philippines, Singapore, Sri Lanka, Sumatra, Thailand.


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh Uttarakhand, Karnataka, Maharashtra, Manipur, Punjab, Uttar Pradesh and West Bengal.

*Elsewhere*: Borneo, China, Formosa, Java, Malaya, Nepal, Philippines, Ryukyu Island, Thailand; Japan, Korea, Manchuria, Micronesia.


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh Uttarakhand, Karnataka and Uttar Pradesh.

*Elsewhere*: None.
167. *Drosophila* (*Scaptodrosophila*) *paratriangulata* Gupta & Ray chaudhury


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh, Uttar Pradesh.

*Elsewhere*: None.

168. *Drosophila* (*Scaptodrosophila*) *latifshahi* Gupta & Ray chaudhury


*Material examined*: Reported from literature.


*Elsewhere*: None.

Superfamily TEPHRITOIDEA

Family PYRGOTIDAE

Genus *Taeniomastix* Enderlein, 1942

169. *Taeniomastix pictiventris* (Hendel)


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh, Bihar, Sikkim.

*Elsewhere*: Sri Lanka.

Family ULIDIDAE (=OTITIDAE)

Genus *Physiphora* Fallen, 1810

170. *Physiphora aenea* (Fabricius)


*Distribution*: India: Madhya Pradesh (Hoshangabad), Chhatisgarh (Bilaspur), Chandigarh, Assam, Orissa and West Bengal.

*Elsewhere*: Widespread from Seychelles to Samoa; Hawaii to Australia; North and South Americas.

Family TEPHRITIDAE

Genus *Sphenella* Robineau Desvoidy, 1830

171. *Sphenella sinensis* Schiner

1868. *Sphenella sinensis* Schiner, Reise der österreichischen Fregatte novara, *Dipt.* 2 : 267. Type locality: China

*Material examined*: 1♀, Pench Tiger reserve, Madhya Pradesh.

*Distribution*: India: Madhya Pradesh (Seoni), Tamil Nadu.

*Elsewhere*: China, Philippines and Viet Nam.

Genus *Dacus* Fabricius, 1805

172. *Dacus* (*Zeugodacus*) *caudatus* Fabricius


*Distribution*: India: Madhya Pradesh & Chhatisgarh, Tamil Nadu, West Bengal.

*Elsewhere*: Java, Malaysia, Myanmar, Formosa, Thailand, Viet Nam.

173. *Dacus* (*Zeugodacus*) *duplicatus* (Bezzi)


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh (Panchmari).

*Elsewhere*: None.

174. *Dacus* (*Zeugodacus*) *tau* (Walker)


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh, Arunachal Pradesh, Bihar, Karnataka, Maharashtra, Meghalaya, Punjab, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal.

*Elsewhere*: Oriental (Widespread).
175. **Dacus (Zeugodacus) cucurbitae** Coquillett

   Type-locality: Honolulu, Hawaii


   **Distribution**: India: Madhya Pradesh (Jabalpur), Chhatisgarh, Arunachal Pradesh (East & West Kameng, Papumpare).

   **Elsewhere**: Widespread Oriental, including China, Ryukyu Islands; Japan, Pacific, New Guinea, Solomon Islands, Bismark Archipelago, Darwin; Australia, Mauritius; Africa.

Genus **Platensina** Enderlein, 1911

176. **Platensina acrostacta** (Wiedemann)

   Type-locality: India

   **Material examined**: Reported from literature.

   **Distribution**: India: Madhya Pradesh & Chhatisgarh, Arunachal Pradesh, Bihar, Tamil Nadu and West Bengal.

   **Elsewhere**: Cambodia, Pakistan, Sri Lanka, Thailand.

Superfamily **LAUXANIODEA**

Family **CELYPHIDAE**

Genus **Spaniocelyphus** Hendel, 1914

177. **Spaniocelyphus scutatus** (Wiedemann)

   Type-locality: East Indies

   **Material examined**: Reported from literature.

   **Distribution**: India: Madhya Pradesh & Chhatisgarh, Karnataka.

   **Elsewhere**: None.

Superfamily **SCIOMYZOIDEA**

Family **SEPSIDAE**

Genus **Sepsis** Fallen, 1810

178. **Sepsis nitens** Wiedemann

   Type-locality: India

   **Material examined**: Reported from literature.

   **Distribution**: India: Madhya Pradesh, Chhatisgarh, Andhra Pradesh, Assam, Bihar, Orissa, Punjab, Sikkim and Uttar Pradesh.

   **Elsewhere**: Java, Lesser Sunda Islands, Pakistan, Philippines, Sri Lanka, Taiwan; Australasian Region; Japan.

179. **Sepsis rufa** Macquart


   **Material examined**: Reported from literature.

   **Distribution**: India: Madhya Pradesh & Chhatisgarh, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Meghalaya, Orissa, Punjab, Sikkim, Uttar Pradesh and West Bengal.

   **Elsewhere**: Myanmar, Nepal.

Superfamily **OPOMYZOIDEA**

Family **AGROMYZIDAE**

Genus **Melanagromyza** Hendel, 1920

180. **Melanagromyza cuscutae** Hering

   Type-locality: Germany

   **Material examined**: Reported from literature.

   **Distribution**: India: Madhya Pradesh & Chhatisgarh, Bihar, Rajasthan, Uttar Pradesh.

   **Elsewhere**: Myanmar, Pakistan, Germany.

181. **Melanagromyza obtusa** (Malloch)

   Type-localities: Sokotsu, Takao, Yentempo, Tainan, Formosa.

   **Material examined**: Reported from literature.

   **Distribution**: India: Madhya Pradesh & Chhatisgarh, Assam, Bihar, Delhi, Maharashtra and Uttar Pradesh.

   **Elsewhere**: Myanmar, Formosa.

182. **Melanagromyza sojae** (Zehnter)

   Type-locality: Java

   **Material examined**: Reported from literature.
MITRA et al.: Insecta: Diptera

**Distribution**: India: Madhya Pradesh & Chhatisgarh Bihar, Uttar Pradesh.

**Elsewhere**: Flores Island, Formosa, Jawa, Malaya, Sumbawa, Taiwan; Australia, Egypt, Fiji, Japan, Melanesia, Micronesia, USSR.

Genus *Ophiomyia* Braschnikov, 1897

183. *Ophiomyia phaseoli* (Tryon)


**Material examined**: Reported from literature.

**Distribution**: India: Madhya Pradesh & Chhatisgarh Delhi, Kerala, Uttar Pradesh.

**Elsewhere**: Flores Island, Formosa, Java, Malaya, Nepal, Philippines, Ryukyu Island, Sri Lanka, Viet Nam; Africa, Australia, Hawaii, Melanesia, Micronesia.

**Subfamily PHYTOMYZINAE**

Genus *Pseudonapomyza* Hendel, 1920

184. *Pseudonapomyza malheri* Singh & Ipe


**Material examined**: Reported from literature.

**Distribution**: India: Madhya Pradesh & Chhatisgarh (Malhera).

**Elsewhere**: None

185. *Pseudonapomyza spicata* (Malloch)


**Material examined**: Reported from literature.

**Distribution**: India: Madhya Pradesh & Chhatisgarh, Punjab.

**Elsewhere**: Formosa, Philippines, Thailand; Australia; Hawaii; Micronesia; Polynesia.

**Calypttrate**

**Family HIPPOBOSCIDAE**

Genus *Lipoptena* Nitzsch, 1818

186. *Lipoptena axis* Maa


**Distribution**: India: Madhya Pradesh & Chhatisgarh Rajasthan.

**Elsewhere**: Nepal, Sri Lanka.

Genus *Basilia* Miranda Ribeiro, 1905

187. *Basilia (Paracryptocladia) chlamyophora* (Speiser)


**Material examined**: Reported from literature.

**Distribution**: India: Madhya Pradesh & Chhatisgarh, Assam, Arunachal Pradesh (Lower Subnsiri), Meghalaya, Karnataka, Tamil Nadu.

**Elsewhere**: China, Borneo, Java, Malaya, Myanmar, Sri Lanka, Sumatra, Thailand, Viet Nam.

**Family MUSCIDAE**

Genus *Morellia* Robineau-Desvoidy, 1830

188. *Morellia hortensia* (Wiedemann)

1824. *Musca hortensia* wiedemann, Analecta Ent. : 49. Type-locality: Java

**Material examined**: Reported from literature.

**Distribution**: India: Madhya Pradesh & Chhatisgarh, Tamil nadu, Punjab, Uttar Pradesh and West Bengal.

**Elsewhere**: Java, Malaya, Nepal, Philippines, Ryukyu Islands, Sumatra, Sumbawa, Sri Lanka, Papuan Subregion.

Genus *Musca* Linnaeus, 1758

189. *Musca (Byomya) conducens* Walker


**Distribution**: India: Madhya Pradesh & Chhatisgarh (Bilaspur), Assam, Andaman, Orissa, Punjab, Tamil Nadu, Uttar Pradesh and West Bengal.

**Elsewhere**: China, Flores Island, Formosa,

190. **Musca (Byomya) confiscata** Speiser


**Material examined:** Seychelles

**Distribution:** India: Madhya Pradesh & Chhatisgarh (Jabalpur), Andhra Pradesh, Delhi, Tamil Nadu, Uttar Pradesh and West Bengal.

**Elsewhere:** China, Malaya, Philippines, Ryukyu Islands, Sri Lanka.

191. **Musca (Byomya) pattoni** Austen


**Material examined:** 1♀7♂♂, AtARIYA, Bilaspur district, 18.v.05, coll. A.K. Singh & Pty.

**Distribution:** India: Madhya Pradesh (Rewa), Chhatisgarh (Bilaspur), Andhra Pradesh, Assam, Bihar, Tamil Nadu, Uttar Pradesh and West Bengal.

**Elsewhere:** China, Myanmar, Nepal, Sri Lanka.

192. **Musca (Byomya) planiceps** (Wiedemann)

1824. *Musca (Byomyia) planiceps* Wiedemann, *Analecta Ent.* : 48. Type-locality: Java

**Material examined:** 1♀2♂♂, AtARIYA, Bilaspur district, 18.v.05, coll. A.K. Singh & Pty.

**Distribution:** India: Madhya Pradesh (Indore, Jabalpur), Chhatisgarh Andaman Islands, Assam, Delhi, Kerala, Karnataka, Punjab and Uttar Pradesh.

**Elsewhere:** Bali, China, Java, Nepal, Philippines, Sri Lanka, Sumbawa.

193. **Musca (Byomya) sorbens** Wiedemann


**Type-locality:** Sierracone

**Material examined:** 4♂♂, AtARIYA, Bilaspur district, 18.v.05, coll. A.K. Singh & Pty.

**Distribution:** India: Madhya Pradesh (Rewa), Chhatisgarh (Bilaspur), Andhra Pradesh, Assam, Bihar, Tamil Nadu, Goa, Uttar Pradesh and West Bengal.

**Elsewhere:** China, Christmas Islands, Cocos Island, Formosa, Java, Lombok, Malay, Maldives Islands, Myanmar, Nepal, Pakistan, Philippines, Ryukyu Islands, Sumatra, Sumbawa, Talaur Islands, Sri Lanka, Thailand, Ethiopian, Hawaii, Micronesia, S Palaearctic.

194. **Musca (Eumusca) lusoria** Wiedemann

1824. *Musca (Eumusca) lusoria* Wiedemann, *Analecta Ent.,*

**Material examined:** South Africa

**Distribution:** India: Madhya Pradesh & Chhatisgarh (Jabalpur), Andhra Pradesh, Assam, Bihar, Tamil Nadu, Uttar Pradesh and W. Bengal.

**Elsewhere:** Myanmar, Nepal, Sri Lanka, Ethiopia.

195. **Musca (Musca) domestica** Linnaeus


**Material examined:** 10♂♂, AtARIYA, Bilaspur district, 18.v.2005, coll. A.K. Singh & Pty.

**Distribution:** India: Madhya Pradesh (Seoni, Rewa), Chhatisgarh Bilaspur) and in many other states of India.

**Elsewhere:** Borneo, Burma, Celebes, China, Christmas Island, Cocos Islands, Flores Island, Formosa, Java, Krakatu, Malaya, Maldives Islands, Nepal, Pakistan, Philippines, Ryukyu Islands, Sumatra, Sumbawa, Talaur Islands, Sri Lanka, Thailand.

196. **Musca (Philaematomyia) crassirostris** Stein


**Material examined:** 1♂, Diyivan, Bilaspur dist, 09. v.2005, coll. A.K. Singh & Pty,

**Distribution:** India: Madhya Pradesh & Chhatisgarh (Bilaspur), Andhra Pradesh, Assam, Bihar, Kerala, Tamil Nadu, Maharashtra, Punjab, Uttar Pradesh and W. Bengal.
Elsewhere: China, Java, Kalimantan, Lombok, Malaya, Myanmar, Nepal, Philippines, Sumatra, Sri Lanka, Taiwan, Thailand, Ethiopia, S. Palaearctic.

Genus *Orthellia* Robineau-Desvoidy, 1863

197. *Orthellia diffidens* (Walker)


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh, Assam, Tamil Nadu, Uttar Pradesh and W. Bengal.

Elsewhere: Celebes, China, Java, Malaya, Myanmar, Philippines, Sumatra, Sumbawa, Sri Lanka, Taiwan, Thailand, Vietnam.

198. *Orthellia indica* (Robineau-Desvoidy)


*Distribution*: India: Madhya Pradesh & Chhattisgarh (Chhindwara), Andhra Pradesh, Assam, Bihar, Tamil Nadu, Maharastra, Uttar Pradesh and West Bengal.

Elsewhere: China, Flores Island, Formosa, Java, Laos, Lombok, Malaya, Myanmar, Philippines, Ryukyu Islands, Sumatra, Sumbawa, Sri Lanka, Taiwan, Thailand.

199. *Orthellia lauta* (Wiedemann)


*Distribution*: India: Madhya Pradesh & Chhattisgarh (Bilaspur), Andhra Pradesh, Assam, Bihar, Tamil Nadu, Uttar Pradesh and W. Bengal.

Elsewhere: China, Flores Island, Formosa, Java, Laos, Lombok, Malaya, Myanmar, Philippines, Ryukyu Islands, Sumatra, Sri Lanka, Taiwan, Thailand, Australia, Iran.

200. *Orthellia timorensis* (Robineau-Desvoidy)


*Distribution*: India: Madhya Pradesh (Chhindwara, Hoshangabad), Chhattisgarh (Bilaspur), Andhra Pradesh, Assam.

Elsewhere: Java

Genus *Pyrellia* Robineau-Desvoidy, 1830

201. *Pyrellia scintillans* Bigot


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh, Bihar, Punjab, Uttar Pradesh, West Bengal.

Elsewhere: Malaya, Nepal, Egypt, Ethiopian.

Genus *Helina* Robineau-Desvoidy, 1830

202. *Helina punctata* (Robineau-Desvoidy)


*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh, Himachal Pradesh, Assam, Madhya Pradesh, Tamil Nadu, Uttaranchal (Kumaon), Uttar Pradesh, West Bengal.

Elsewhere: Nepal, Holarctic.

Genus *Phaonia* Robineau-Desvoidy, 1830

203. *Phaonia longipalpis* Emden

Material examined: 1♂ Atariya, Bilaspur district, 11.v.05, coll. A.K. Singh & Pty.

Distribution: India: Madhya Pradesh & Chhattisgarh (Bilaspur).

Elsewhere: Myanmar.

Genus Dichaetomyia Malloch, 1921

204. Dichaetomyia luteiventris (Rondani)

1893. Anthomyia luteiventris Rondani, Aurali Mus. civ. stor. nat. Giacomo Doria. 4 : 288. Type-locality: Ethiopia

Material examined: 3♂ 6, Tilaiyadora, Bilaspur district, 15.v.05, coll. Singh & Pty.

Distribution: India: Madhya Pradesh & Chhattisgarh, Andhra Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh.

Elsewhere: Myanmar, Sri Lanka, Formosa, Java, Malaya, Nepal, Sumatra; Ethiopia.

205. Dichatomyia quadrata (Wiedemann)

1824. Anthomyia quadrata Wiedemann, Analecta ent. : 52. Type-locality: Java

Material examined: 1♀ 1♂, Diyavan, Bilaspur dist, dt. 09.v.05, coll. A.K. Singh & Pty., 1♂ Atariya, Bilaspur district, 18.v.05, coll. A.K. Singh & Pty.

Distribution: India: Madhya Pradesh & Chhattisgarh (Bilaspur), Assam, Sikkim and Tamil Nadu.

Elsewhere: Throughout Oriental region; Melanesia.

Genus Gymnodia Robineau-Desvoidy, 1863

206. Gymnodia tonitrui (Wiedemann)

1824. Anthomyia tonitrui, Wiedemann Analecta Ent., : 52. Type-locality: E.Indies

Material examined: 1♀, Jaldapara forest, Bilaspur district, 12.v.05, coll. A.K. Singh & Pty.

Distribution: India: Madhya Pradesh & Chhattisgarh (Bilaspur), Andhra Pradesh, Assam, Himachal Pradesh, Maharasrtha, Uttar Pradesh and West Bengal.

Elsewhere: China, Malaya, Nepal, Pakisatan, Taiwan, Ethiopian, S. Palaeartic, Sri Lanka.

Genus Myospila Rondani, 1856.

207. Myospila bina brueneifemorata Emden


Material examined: 2♀ 9, Diyavan, Bilaspur dist, dt. 09.v.05, coll. A.K. Singh & Pty.

Distribution: India: Madhya Pradesh (Jabalpur), Chhattisgarh (Bilaspur), Uttarakhand (Mussorie).

Elsewhere: None.

Genus Atherigona Rondani, 1865

208. Atherigona (Atherigona) falcata (Thomson)


Material examined: Reported from literature.

Distribution: India: Madhya Pradesh & Chhattisgarh, Andhra Pradesh, Maharashtra, Rajasthan, Tamil Nadu and Uttar Pradesh.

Elsewhere: Myanmar, Sri Lanka, China, Formosa; Australia.

209. Atherigona (Atherigona) oryzae (Malloch)

1925. Atherigona oryzae Malloch, Mem. Dep. Agric. India (ent. ser.) 8(11) : 117. Type-locality: Tamil Nadu

Material examined: Reported from literature.

Distribution: India: Madhya Pradesh & Chhattisgarh, Bihar, Kerala, Tamil Nadu, Maharasrtha, Karnataka, Rajasthan, Uttar Pradesh, West Bengal.

Elsewhere: Throughout Oriental; Australasian; Japan.

210. Atherigona (Atherigona) pulla (Wiedemann)


Material examined: Reported from literature.

Distribution: India: Madhya Pradesh & Chhattisgarh, Andhra Pradesh, Bihar, Tamil Nadu, maharashtra, Karnataka, Punjab, Rajasthan, Uttar Pradesh.
Elsewhere: Myanmar, Pakistan, Thailand; Ethiopian; South Palaearctic.

211. *Atherigona (Atherigona) soccata*

1871. *Atherigona soccata*, Bull. Soc. Ent. Ital. 2: 332, Type-locality: Italy

*Material examined*: Reported from literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh, Andhra Pradesh, Bihar, Tamil Nadu, maharashtra, Karnataka, Punjab, Rajasthan, Uttar Pradesh.

Elsewhere: Myanmar, Pakistan, Thailand; Ethiopian; South Palaearctic.

Genus *Lispe* Latreille, 1796

212. *Lispe assimilis* (Wiedemann)

1824. *Lispe assimilis* Wiedemann, Analecta Ent. : 51, Type-locality: E. India

*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh, Andhra Pradesh, Orissa, Tamil Nadu, West Bengal.

Elsewhere: Throughout Oriental; Japan

213. *Lispe geniseta* Stein

1909. *Lispe geniseta* Stein, Tijdschr. Ent. 52. 256, Type-locality: Batavia, Java

*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh.

Elsewhere: Java

214. *Lispe leucospila* (Wiedemann)

1830. *Coenosia leucospila* Wiedemann, Aussereurop. zweifl. Insekt., 2 : 441. Type-locality: E. India

*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh, Andhra Pradesh, Assam, Bihar, Tamil Nadu, Karnataka, Punjab, Uttar Pradesh, and West Bengal.

Elsewhere: Throughout Oriental, New Guinea.

215. *Lispe mirabilis* Stein


*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh (Bhopal, Jabalpur).

Elsewhere: Sri Lanka, Thailand

216. *Lispe orientalis* Wiedemann

1824. *Lispe orientalis* Wiedemann, Analecta Ent. : 51, Type-locality: E. India

*Material examined*: Reported from Literature

*Distribution*: India: Madhya Pradesh & Chhattisgarh, Assam, Bihar, Himachal Pradesh, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere: Myanmar, Sri Lanka, China, Flores Island, Formosa, Malaya, Pakistan, Sumatra; Japan

Genus *Coenosia* Meigen, 1826

217. *Coenosia exigua* Stein


*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh, Assam, Himachal Pradesh, Tamil Nadu and West Bengal.

Elsewhere: Throughout Oriental region.

Genus *Haematobia* Le Peletier & Servelle, 1828

218. *Haematobia irritans* ssp. *exigua* de Meijere

1903. *Haematobia exigua* de Meijere, Meded. Proefstn oost- Java (3)44 : 17 Type-locality: Java

*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh, Andamans, Assam, Kerala, Tamil Nadu, Maharashtra, Karnataka, Uttar Pradesh, West Bengal.

Elsewhere: Throughout Oriental region.

219. *Haematobia minuta* (Bezzi)


*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhattisgarh, Andhra Pradesh, Bihar, Tamil Nadu, Karnataka, Punjab, Uttar Pradesh, and West Bengal.

Elsewhere: Throughout Oriental region.
Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhatisgarh, Bihar, Goa, West Bengal.

Elsewhere: Sri Lanka, Thailand; Iran; Ethiopia.

Genus Stomoxys Geoffroy, 1762


Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur), Manipur, Nagaland, Sikkim.

Elsewhere: Cosmopolitan.

Family CALLIPHORIDAE

Genus Bengalia Robineau-Desvoidy, 1830

221. Bengalia jejuna (Fabricius) 1787. Musca jejuna Fabricius, Mani. Ins., 2 : 342. Type-locality: Tranquebar, India


Distribution: India: Madhya Pradesh (Chhindwara, Hoshangabad, Seoni,), Chhatisgarh (Bilaspur) and Uttar Pradesh.

Elsewhere: Celebes, Malaya, Philippines, Sri Lanka.


Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhatisgarh Chandigarh, Tamil Nadu, West Bengal.

Elsewhere: Sri Lanka; Java; Philippines; Pakistan; Taiwan; Thailand.


Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur).

Elsewhere: Sri Lanka, Java, Malaya

Genus Hemipyrellia Townsend, 1918

224. Hemipyrellia liguirrens (Wiedemann) 1830. Musca liguirrens Wiedemann, Aussereurop. zweiffl. Insekten., 2 : 655, Type-locality: Java


Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur), Bihar and Tamil Nadu.

Elsewhere: Throughout Oriental region

Genus Lucilia Robineau-Desvoidy, 1830


Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur).

Elsewhere: Entire Oriental region; Micronesia

Genus Chrysomya Robineau-Desvoidy, 1830

226. Chrysomya megacephala (Fabricius) 1794. Musca megacephala Fabricius, Syst. Ent., 4 : 317. Type-locality: Guam

Material examined: 3♂♂, Chisna FRH, Hoshangabad, 18.04.01, Y.N. Gupta, 1♀, Panch River, Parasia, Chhindwara district, 27.x.02, coll. Y.N. Gupta, 4♂♂, Mendi Sarai, Bilaspur dist, 14.v.05, coll. A.K. Singh & Pty.

Distribution: India: Madhya Pradesh
MITRA et al. : Insecta : Diptera

(Hoshangabad, Chhindwara), Chhatisgarh (Bilaspur), Arunachal Pradesh and also in other states in India.

Elsewhere : Oriental region, North China and Japan of the Palaearctic region; Australasian region; Malagasy sub-region of the Ethiopian region.

227. Chrysomya rufifacies (Macquart)
1843. Lucilia rufifacies Macquart, Mem. Soc. Sci. Agric. Lille. 1842 : 303 (1843 : 146). Type-locality :


Distribution : India : Madhya Pradesh (Chhindwara, Hoshangabad), Chhatisgarh (Bilaspur).

Elsewhere : Entire Oriental region; Australia.

Genus Cosmina Robineau-Desvoidy, 1830
228. Cosmina hieolor (Walker)
1856. !dia hicolor Walker. J. Proc. Linn. Soc., I : 23. 77. Type-locality :

Material examined : Reported from Literature.

Distribution : India : Madhya Pradesh & Chhatisgarh, Assam, Arunachal Pradesh, Meghalaya, Karnataka and Tamil Nadu.

Elsewhere : China, Borneo, Java, Malaya, Myanmar, Sri Lanka, Thailand.

Genus Rhinia Robineau-Desvoidy, 1830
229. Rhinia melanostoma (Wiedemann)

Material examined : Reported from Literature.

Distribution : India : Madhya Pradesh (Seoni), Chhatisgarh, Himachal Pradesh, Tamil Nadu and West Bengal.

Elsewhere : China, Java, Sri Lanka.

Genus Rhyncomya Robineau-Desvoidy, 1830
230. Rhyncomya divisa (Walker)
1856. Musca divisa walker, Insecta saundersiana, I : 333. Type-locality : "East Indies."

Material examined : Reported from Literature.

Distribution : India : Madhya Pradesh & Chhatisgarh

Elsewhere : Sri Lanka, Java.

231. Rhyncomya pollinosa (Townsend)


Distribution : India : Madhya Pradesh (Chhindwara, Hoshangabad), Chhatisgarh, Maharasstra, Punjab, Uttar Pradesh and Tamil Nadu.

Elsewhere : Bangladesh, China, Indonesia, Malaysia, Myanmar, Sri Lanka, Taiwan and Thailand.

Genus Idiella Braeuer and Berensteaamn, 1889
232. Idiella mandarina (Wiedemann)

Material examined : Reported from Literature.

Distribution : India : Madhya Pradesh & Chhatisgarh, Assam, Bihar, Gujarat, Haryana, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Punjab, Uttar Pradesh and West Bengal.

Elsewhere : Bangladesh, China, Indonesia, Malaysia, Myanmar, Sri Lanka, Taiwan and Thailand.

Genus Idiellopsis Townsend, 1917
233. Idiellopsis xanthogaster (Wiedemann)
Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhatisgarh, Assam, Bihar, Uttar Pradesh.

Elsewhere: Formosa, Java, Malay, Sri Lanka, Taiwan; Australia, Moluccas.

Genus Isomyia Walker, 1860


Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur).

Elsewhere: Philippines

Family SARCOPHAGIDAE

Genus Sarcorohdendrofia Baranov, 1938


Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur).

Elsewhere: Taiwan, Thailand, Nepal, Indonesia, Japan, Kriilslands (???) Papua New Guinea, South Korea, Australia.

Genus Iranihindia Rohdendorf, 1961


Material examined: Reported from Literature.


Elsewhere: None


Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh & Chhatisgarh Uttaranchal, Andhra Pradesh, Assam, Bihar, Chhatisgarh, Gujarat, Karnataka, Kerala, Maharashtra, Madhya Pradesh, Nagaland, Mizoram, Orissa, Tamil Nadu, Tripura, West Bengal.

Elsewhere: Nepal and Sri Lanka.

238. Iranihindia martellatoides (Baranov) 1931. *Sarcocephaga martellatoides* Baranov, Konowia, (2)10 : 14. Type-locality: Sri Lanka

Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh (Bhopal, Jabalpur), Chhatisgarh. (Bilaspur), Bihar, Karnataka, Maharashtra, Orissa, Tripura, Uttar Pradesh and West Bengal.

Elsewhere: Sri Lanka.

Genus Parasarcophaga Johnston & Teigs, 1921


Material examined: Reported from Literature.

Distribution: India: Madhya Pradesh (Indore, Bhopal, Panchmari, Jabalpur), Chhatisgarh (Bilaspur), Andaman and Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chandigarh, Delhi, Goa, Gujrat, Haryana, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Meghalaya, Mizoram, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere: China, Kalimantant, Malaysia, Nepal, Philippines, Ryukyu Islands, Taiwan, and Thailand, Bismarck Archipelago, Europe, Hawaii, Israel, Japan, Korea, New Britain; New Guinea Solomon Island and Turkey.
240. **Parasarcophaga (Parasarcophaga) misera** (Walker)


*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh (Indore, Bhopal, Panchmari, Jabalpur), Chhatisgarh (Bilaspur), A & N Islands, Andhra Pradesh, Arunachal Pradesh Assam, Bihar, Chandigarh, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Pondicherry, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal.

*Elsewhere*: Bangladesh; Bhutan; Nepal; Pakistan; Sri Lanka; Afganistan, Borneo, Caroline Islands, China, East Indies; Micronesia; Palaearctic; Australia.

241. **Parasarcophaga (Parasarcophaga) sericea** (Walker)


*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh (Indore, Bhopal, Panchmari, Jabalpur), Chhatisgarh (Bilaspur), Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chandigarh, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Pondicherry, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh, West Bengal.

*Elsewhere*: Bangladesh; Bhutan; Nepal; Pakistan; Sri Lanka; Afganistan, Borneo, Caroline Islands, China, East Indies; Micronesia; Palaearctic; Australia.

242. **Parasarcophaga (s. str.) hirtipes** (Wiedemann)


*Material examined*: 2♂♂♂, Atariya, Bilaspur district, 18.v.05, coll. A.K. Singh & Pty.

*Distribution*: India: Madhya Pradesh & Chhatisgarh (Bilaspur), Andaman & Nicobar Islands; Andhra Pradesh, Bihar, Delhi, Gujarat, Karnataka, Kerala, Punjab, Maharashtra, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal.

*Elsewhere*: Bangladesh; Pakistan; Afganistan; Algeria; Angola; Arabia; Azerbaijan; Botswana; Bulgaria; China; Egypt; Gambia; Guinea; Iran; Iraq; Israel; Jordan; Kazakhstan; Kenya; Kyrgyzstan; Lebanon; Liberia; Morocco; Namibia; Russia; Saudi Arabia; Senegal; South Africa; Sudan; Syria; Tajikistan; Tanzania; Turkey; Turkmenistan; Uganda; Uzbekistan; Zaire; Zambia and Zimbabwe.

243. **Parasarcophaga (Liopygia) ruficornis** (Fabricius)


*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh (Jabalpur, Indore), Chhatisgarh, Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Pondicherry, Punjab, Rajasthan, Tamil Nadu, Uttaranchal, West Bengal, Dadra and Nagar Haveli, Pondicherry and Lakshadweep.

*Elsewhere*: Bangladesh; Bhutan; Nepal; Pakistan; Sri Lanka; Borneo, Brazil, Canada; Guam; Hainan Island; Hawaiian Islands; Japan (including Ryukyu Islands); Korea; Madagascar; Malaysia; Mariana Islands; Moluccas Islands; Myanmar, Nigeria; Panama; Papua New Guinea; Philippines; Saudi Arabia; Singapore; Socotra Island; South Africa; Taiwan; Thailand; Uganda; USA; Western Samoa and Zaire.

244. **Parasarcophaga (Baranovisca) cantrelli** Verves


*Material examined*: 2♂♂, Atariya, Bilaspur district, 18.v.05, coll. A.K. Singh & Pty.
Distribution: India: Madhya Pradesh & Chhatisgarh (Bilaspur), Tamil Nadu.

Elsewhere: None

245. *Parasarcophaga* (Liosarcophaga) *amplicerus* Shinonaga and Tumrasvin


Distribution: India: Madhya Pradesh (Bilaspur, Jabalpur), Tamil Nadu and Karnataka.

Elsewhere: Thailand

246. *Parasarcophaga* (Liosarcophaga) *dux* (Thomson)


*Material examined:* Reported from Literature.

Distribution: India: Madhya Pradesh (Jabalpur), Chhatisgarh (Bilaspur), Andamans, Arunachal Pradesh, Andhra Pradesh, Bihar, Goa, Gujarat, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Rajasthan, Tamil Nadu, West Bengal.

Elsewhere: Nepal, Pakistan, Sri Lanka; Hainan islands, Indonesia; Japan, Malaysia, Philippines, Russia, Singapore, Taiwan, Thailand.

Genus *Sarcosolomonia* Baranov, 1934

248. *Sarcosolomonia (Parkerimyia) nathani* Lopes and Kano


*Material examined:* Reported from Literature.

Distribution: India: Madhya Pradesh (Indore), Chhatisgarh, Orissa, Tamil Nadu, Uttarakhand and West Bengal.

Elsewhere: None.

Genus *Seniorwhitea* Rohdendorf, 1937

249. *Seniorwhitea reciproca* (Walker)


*Material examined:* Reported from Literature.

Distribution: India: Madhya Pradesh (Bhopal, Panchmari, Jabalpur), Chhatisgarh, Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Sikkim, Tamil Nadu, Tripura, Uttarakhund, Uttar Pradesh, West Bengal.

Elsewhere: Bhutan, Indonesia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Singapore, Sri Lanka, Taiwan; Tajikistan; Thailand; Ukraine.; Uzbekistan; Wake Islands and Western Samoa.
Taiwan, Thailand; China, France, Hainan Island, Hawaiian Islands.

Family TACHINIDAE
Subfamily GONIINAE
Genus *Palexorista* Townsend, 1921
250. *Palexorista solennis* (Walker)

*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh, Karnataka, Maharashtra, Manipur, Tamil Nadu, Uttar Pradesh.

*Elsewhere*: Aru Island, Borneo, China, Formosa, Indonesia, Java, Malaysia, Melanesia, Myanmar, Sri Lanka, Thailand, Australia, Taiwan, Tonga.

251. *Palexorista parachrysops* (Bezzi)

*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh, Andhra Pradesh, Tamil Nadu.


252. *Palexorista laxa* (Curran)

*Material examined*: Reported from Literature.


*Elsewhere*: Widespread Ethiopian Region.

Genus *Peribaea* Robineau-Desvoidy, 1863
253. *Peribaea orbata* (Wiedemann)

*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh, Andhra Pradesh, Assam, Gujarat, Kerala, Tamil Nadu, Rajasthan, West Bengal.

*Elsewhere*: Formosa, Malaysia, Philippines, Sumatra, Sri Lanka, Thailand; Melanesia and Micronesia, Australia, Africa, Middle East.

Genus *Carcelia* Robineau-Desvoidy, 1830
254. *Carcelia* (*Senometopia*) *illota* (Curran)

*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh, Gujarat, Karnataka, Maharashtra, Orissa, West Bengal.

*Elsewhere*: Tanzania.

Genus *Hapalioloemus* Baranov, 1934
255. *Hapalioloemus machaeralis* Baranov

*Material examined*: Reported from Literature.


*Elsewhere*: None

Genus *Prosopodopsis* Townsend, 1926
256. *Prosopodopsis orbitalis* (Baranov)

*Material examined*: Reported from Literature.

*Distribution*: India: Madhya Pradesh & Chhatisgarh, Kerala.

*Elsewhere*: None

Genus *Suensonomyia* Mesnil, 1953
257. *Suensonomyia setinerva* Mesnil

*Material examined*: Reported from Literature.


*Elsewhere*: China.
SUMMARY

An enumeration of 257 species belonging to 124 genera spread over 29 families of Diptera so far known from Madhya Pradesh and Chhattisgarh states based on the past published records and actual. *Material examined* housed at Zoological Survey of India, Kolkata and Central Zone Regional Centre, Zoological Survey of India, Jabalpur is provided.

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