

**OCCASIONAL PAPER NO. 332**

**Records of the  
Zoological Survey of India**

**Studies on Aquatic and Semi-aquatic  
Hemiptera (Insecta) of Jaiñtia Hills and  
East Khasi Hills Districts of Meghalya,  
North Eastern India**

**JENNIFER LYGDOH**

**Zoological Survey of India**

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Districts of Meghalya, North Eastern India**

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सत्यमेव जयते

**Zoological Survey of India  
Kolkata**

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## INTRODUCTION

Meghalaya is a picturesque landscape of plateaus, ravines, brooks, rivulets, lakes and waterfalls. The rivers originating from Meghalaya plateau are all rain-fed and most of the rivers either flow towards the North or South of the State. Rivers that flow towards the South drain into Surma valley in Bangladesh and those that flow towards the North ultimately join the Brahmaputra in Assam.

Aquatic Hemiptera or Water bugs play an important role in the fresh water ecosystems and because of their predatory nature, certain families of bugs may be utilised in the biological control of mosquitoes. Jansson (1977) demonstrated that members of the family corixidae are used as indicators of water quality. Because of their diverse habitats and poor dispersal capabilities, these water bugs serve as zoogeographical indicators (Jordon, 1951).

The water-bugs from the State of Meghalaya (the then Assam) was first studied by Distant (1902, 1906, 1910) who reported only three species. Then, Paiva (1919b) recorded 11 species belonging to two families from Garo Hills. In 1940, Hutchinson recorded two new species of Corixids from Khasi Hills and after a span of five decades; a comprehensive systematic work was done by Bal & Basu (1998) who reported 35 species under 25 genera and 9 families. However, the work of Bal & Basu (loc. cit.), though comprehensive included only the species mostly from Khasi Hills and Garo Hills. Therefore, this study is an attempt to consolidate the information on the group by throwing more light on the present taxonomic status of the species occurring in this part of the country especially those of Jaiñtia Hills districts where information on the group is limited to only one species i.e., *Laccotrephes robustus* Stal (Bal & Basu loc.cit).

The present study, herein, provides informations on the water bugs of East Khasi Hills and Jaiñtia hills districts of Meghalaya. The materials under study contained 16 species, belonging to 16 genera under 7 families and were collected from diverse habitats such as slow and fast flowing streams, rivers, ponds, lakes and paddy fields.

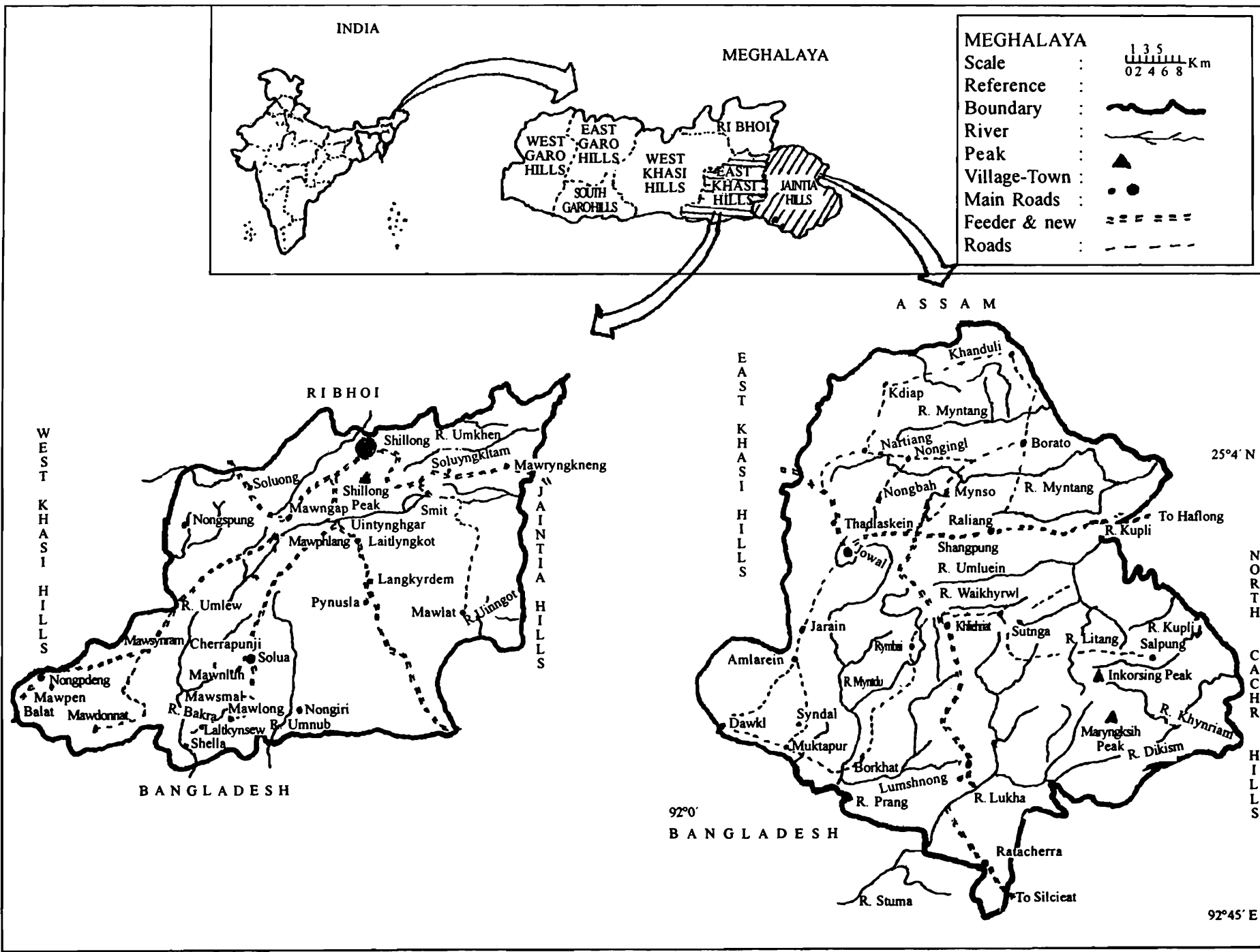
The taxonomic account of all the species studied, descriptive account of each species including synonyms, diagnostic characters and distribution is dealt with in this report. The entire material under report is deposited in North Eastern Regional Centre.

## ABBREVIATIONS

JHD - Jaiñtia Hills District.

EKH - East Khasi Hills District.

Map of Jantia and East Khasi Hills Districts of Meghalaya



**SYSTEMATIC ACCOUNT**

Following is the systematic list of all the species dealt with :

Infraorder NEPOMORPHA

Family I CORIXIDAE

Subfamily CYMATINAE

Genus 1. *Corixa* Geoffroy 1762

1. *Cymatia apparens* (Distant)

Family II NEPIDAE

Subfamily NEPINAE

Genus 2. *Laccotrephes* Stål 1865

2. *Laccotrephes ruber* (Linnaeus)

Subfamily RANATRINAE

Genus 3. *Ranatra* Fabricius 1790

3. *Ranatra varipes varipes* Stål

Genus 4. *Cercotmetus* Amyot & Serville 1843

4. *Cercotmetus pilipes* (Dallas)

Family III NOTONECTIDAE

Genus 5. *Anisops* Spinola 1837

5. *Anisops sardeus sardeus* Herrich-Shaffer

Family IV BELOSTOMATIDAE

Genus 6. *Lethocerus* Mayr 1853

6. *Lethocerus indicus* (Lapeletier & Serville)

Genus 7. *Diplonichus* Laporte, 1833

7. *Diplonichus rusticus* (Fabricius)

Family V NAUCORIDAE

Subfamily CHEIROCHELINAE

Genus 8. *Gestroiella* Montandon 1897a

8. *Gestroiella insignis* Distant

Subfamily LACCOCORINAE

Genus 9. *Heleocoris* Stal 1876

9. *Heleocoris breviceps* Montandon

10. *Heleocoris obliquatus* (Spinola)

Infraorder GERROMORPHA

Family VI HYDROMERIDAE

Subfamily HYDROMETRINAE

Genus 10. *Hydrometra* Latreille 1796

11. *Hydrometra greeni* Kirkaldy

Family VII GERRIDAE

Subfamily PTILOMERINAE

Genus 11. *Ptilomera* Amyot & Serville 1843

12. *Ptilomera (Ptilomera) laticaudata* (Hardwicke)

Subfamily HALOBATINAE

Genus 12. *Metrocoris* Mayr 1865

13. *Metrocoris nigrofasciatus* Distant

Subfamily GERRINAE

Genus 13. *Neogerris* Matsumura

14. *Neogerris parvula* (Stål)

Genus 14. *Limnogonus* Stal 1868

15. *Limnogonus (Limnogonus) nitidus* (Mayr)

Genus 15. *Aquarius* Schellenberg 1800

16. *Aquarius paludum* Fabricius

Genus 16. *Rhycobates* Esaki 1923\*\*

### Identification Key to the Infraorder and Families

(Adopted from Pareira D.L.V *et al.*, 2007)

1. Short antennae smaller than head, usually hidden beneath the compound eyes (except Ochteridae & Saldidae.....Infraorder–**Nepomorpha** ..... 2
- Long antennae larger than the head, usually free. ....Infraorder–**Gerromorpha** ..... 9
2. Ocelli present; species semi-aquatic, living near the water's edge ..... 3
- Ocelli absent; aquatic species, ..... 4
3. Antennae hidden, visible ventrally near the eyes; raptorial forelegs .....  
..... GELASTOCORIDAE
- Antennae exposed, visible dorsally; unmodified forelegs ..... OCHTERIDAE
4. Front tarsi clamshell and unisegment; head wider than pronotum, rostrum short, not segmented ..... CORIXIDAE

- Front tarsi differently; head less wide than pronotum, rostrum with three or more segment ..... 5
- 5. Raptorial front legs with femora robust or not, flattened body ..... 6
- Front legs differently, with femora not robust, dorsally convex ..... 8
- 6. Membrane hemelytra ribbed; species can reach 20 mm or more in length ..... 7
- Hemelytra membrane devoid of ribs, length always less than 20 mm ..... NAUCORIDAE
- 7. Narrow body; appendages at the apex of the abdomen forming a long breathing tube, not retractile, cylindrical hind legs with tibia without fringe of setae or with few setae ..... NEPIDAE
- Body broad, the apex of abdominal appendages short, flat and retractable; flattened hind legs, tibia with fringe of setae well developed ..... BELOSTOMATIDAE
- 8. Posterior tibia and tarsus with distinct fringe of setae, claws of hind tarsus apparently absent; head detached from the pronotum; species usually over 5 mm long, wing membrane present ..... NOTONECTIDAE
- Posterior tibia and tarsus with a little fringe of setae, normal claws of hind tarsus; head fused to the pronotum; species small, smaller than 5 mm long, wing membrane absent ..... PLEIDAE
- 9. Long and slender body, head wider than  $\frac{1}{4}$  of the total body length, legs markedly thinner ..... HYDROMETRIDAE
- Body in various ways, but not long and slender, head less than  $\frac{1}{4}$  of the total body length, different legs ..... 10
- 10. Claws inserted before the apex of tarsus (Claws pre-apical); distance between the anterior and middle legs distinctly longer than the distance between the median and posterior thigh ..... GERRIDAE
- Claws inserted at the apex of tarsus (Claws apical) legs inserted ventrally near the midline ..... MESOVELIIDAE

Infraorder NEPOMORPHA

Family I CORIXIDAE

Subfamily CYMATINAE

Genus 1. *Cymatia* Flor 1860

1. *Cymatia apparens* (Distant)

(Plate V-A)

1902. *Corixa hieroglyphica* : Distant, *Fauna Brit. India, Rhynchota*, 2 : 13.

1910. *Corixa apparens* Distant, *Fauna Brit. India, Rhynchota*, **5** : 343.  
 1919a. *Corixa hieroglyphica* : Paiva, *Rec. Indian Mus.*, **16** : 156.  
 1928. *Cymatia apparens* : Jaczewsky, *Ann. Mus. Zool. polon.*, **7** : 107.  
 1940. *Cymatia apparens* : Hutchinson, *Trans. Connecticut Acad. Arts Sci.*, **33** : 405.  
 2000. *Corixa hieroglyphica* : Ramakrishna, *Rec. zool. Surv India*, **98** : 183.  
 2004. *Corixa apparens* : Thirumalai, *Rec. zool. Surv India*, **102(1-2)** : 68.  
 2004. *Corixa apparens* : Bal & Basu, *State fauna Series* : **10** : *Fauna of Manipur (2)*, : 297.

*Materials examined* : 1 ex., Waikhyrwi, Sutnga vill., JHD, 21.vi.06, coll : J. Lyngdoh & Party.

*Diagnosis* : Adult insects with body length from 4.7-5.8 mm; pronotum with seven to eight transverse black lines, which are finely rastrate; clavus rastrate, thickly mottled with short irregular black lines, the base pale; corium not rastrate, punctured, with short transverse fragmentary dark markings arranged in three or four series; a well defined longitudinal carina on the pronotum.

*Distribution* : India : Meghalaya (Districts-Khasi hills, Jaiñtia Hills); Jammu and Kashmir; Maharashtra; Manipur; Tamil Nadu; West Bengal.

*Elsewhere* : China.

*Remarks* : First record from Jaiñtia Hills district, Meghalaya.

## Family II NEPIDAE

### Subfamily NEPINAЕ

#### Genus 2. *Laccotrephes* Stål 1865

#### 2. *Laccotrephes ruber* (Linnaeus)

(Plate V-B)

1764. *Nepa ruber* Linnaeus, *Mus. Lud. Ulr.*, : 165.  
 1868. *Laccotrephes ruber* : Stål, *Hem. Fabr.*, **7** : 135.  
 1906. *Laccotrephes ruber* : Distant, *Fauna Brit. India, Rhynchota*, **3** : 18.  
 1947. *Laccotrephes ruber* : Hafiz & Pradhan, *Rec. Indian Mus.*, **45(4)** : 347-376.  
 1988. *Laccotrephes ruber* : Ravishanker & Venkatesan, *Entomon.*, **13** : 231.  
 1989. *Laccotrephes ruber* : Thirumalai, *Rec. zool. Surv. India. Occ. Pap.*, **118** : 30.

*Materials examined* : 1 ex., Umkaikada I, Mupliang vill., JHD, 15.x.06, Coll : J. Lyngdoh & Party & Party; 4 exs., Wah Borsara, Borsara vill., JHD, 5.ii.07, Coll : J. Lyngdoh & Party; 4 exs., Lamsaki vill., (Stream-I), JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 1 ex., Umsngurkur, Sung vill., JHD, 14.x.06; 1 ex., Wah Leteifñ, Sutnga vill., JHD, 14.x.06, Coll : D. Khyriam; 3 exs., Wah Dona, Dona vill., JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 1 ex., Lamsaki vill., (Stream-II), JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 4 exs., Lamsaki vill., (Stream-III), JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 2 exs., Wah Tishang, Nongjri vill., EKH Dist., 19.i.06, Coll : J. Lyngdoh & Party; 6 exs., Mupyut (Paddy fields), Pdengshakap vill; JHD,

18.vi.05, Coll : J. Lyngdoh & Party; 1 ex., Amjalong, Umjalong-Kyrwen vill., JHD, 18.x.06, Coll : J. Lyngdoh & Party; 1 ex., Myntdu (Paddy fields), Jowai, JHD, 14.vi.05, Coll : J. Lyngdoh & Party.

**Diagnosis** : Adults attain a length of about 30-35 mm excluding abdominal appendages; breadth between pronotal angles 7-9 mm; abdomen reddish brown above; prosternum convex in the middle provided with a small indistinct tubercle; abdominal appendages a little longer than the body.

**Distribution** : India : Meghalaya (Districts-East Khasi Hills, West Khasi Hills, East Garo Hills, West Garo Hills); Bihar; Delhi; Gujarat; Jammu & Kashmir; Kerala; Manipur; Maharashtra; Mizoram; Nagaland; Orissa; Sikkim; Tamil Nadu; Tripura; Uttar Pradesh; West Bengal.

**Elsewhere** : China, Japan, Nepal, Pakistan, Sri Lanka.

**Remarks** : New record from Jaiñtia Hills district.

### 3. *Ranatra varipes varipes* Stål

(Plate V-C)

1861. *Ranatra varipes* Stål, *Ofvers. K. Vet.-Akad. Forh.*, 18 : 203.

1910. *Ranatra varipes* : Distant, *Fauna of Brit. India, Rhynchota*, 5 : 316.

1947. *Ranatra varipes* : Hafiz and Pradhan, *Rec. Indian Mus.*, 45 : 366.

1974. *Ranatra varipes* : Fernando & Cheng, *Fdn. Mus. J.*, 19 : 32.

**Material examined** : 3 exs., Wailangwiang, Muthlong vill., JHD, 15.x.06, Coll : J. Lyngdoh & Party; 1 ex., Umbluh, Muthlong vill., JHD, 15.x.06, Coll : J. Lyngdoh & Party; 5 exs., Wah Borsara, Borsara vill., JHD, 5.ii.07, Coll : J. Lyngdoh & Party; 2 exs., Umpung, Lyniong vill., EKH Dist., 5.ii.07, Coll : J. Lyngdoh & Party; 1 ex., Ambuka, Umjalong-Kyrwen vill., JHD, 18.x.06, Coll : J. Lyngdoh & Party; 4 exs., Lamsaki vill., (Stream-I), JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 8 exs., Umpaji, Sahnsiang vill., JHD, 24.vi.06, Coll : J. Lyngdoh & Party; 1 ex., Wah Umkiang (Downstream), Umkiang vill., JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 2 exs., Thlu-Ummulong, Ummulong vill., JHD, 4.x.06, Coll : J. Lyngdoh & Party; 2 exs., Umtyngar, Myllem Block, EKH Dist., 18.i.06, Coll : J. Lyngdoh & Party; 6 exs., Wah Dona, Dona vill., JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 1 ex., Lamsaki vill., (Stream-III), JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 5 exs., Iongnoh, Kyrwen vill., JHD, 24.vi.06, Coll : J. Lyngdoh & Party; 5 exs., Wah Mynktah, Rwan vill., JHD, 24.vi.06, Coll : J. Lyngdoh & Party; 1 ex., Wah Kongong, Kongong vill.; JHD, 24. i.06, Coll : J. Lyngdoh & Party; 15 exs., Umkaikada-I, Mupliang vill., JHD, 15.x.06, Coll : J. Lyngdoh & Party; 11 exs., Lamsaki vill., (Stream-II), JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 1 ex., Umtyngar, Myllem Block, EKH Dist, 18.i.06, Coll : J. Lyngdoh & Party; 3 exs., Wah Khasaw, Sohra sub-div., EKH Dist., 23.vi.06, Coll : J. Lyngdoh & Party; 1 ex., Umblock-I, B.D.O. campus, Mawsynram div., EKH Dist., 21.vi.05, Coll : J. Lyngdoh & Party.

*Diagnosis* : Adult insects may attain a length of about 19-20 mm; abdominal appendages reach upto 12 mm in length i.e., 7-8 mm shorter than the body; pronotum provided with a distinct ridge at the posterior angle on each side ; metasternal process posteriorly blunt and slightly rounded with no lateral concavity, mid-longitudinal carination less distinct; fore femora broad with irregular markings and anterior tibia longer and clearly touching the inner tooth on the anterior femur.

*Distribution* : India : Meghalaya (Districts-East Khasi Hills); Manipur; Orissa; Tamil Nadu; Tripura; Uttar Pradesh; West Bengal.

*Elsewhere* : Australia, Indonesia, Malaysia, Myanmar, Taiwan, Sri Lanka.

*Remarks* : New record from Jaiñtia Hills district.

#### Genus 4. *Cercotmetus* Amyot & Serville 1843

##### 2. *Cercotmetus pilipes* (Dallas)

(Plate V-D)

1850. *Ranatra* (*Cercotmetus*) *pilipes* Dallas, *Trans. R. ent. Soc. London* : 1 : 9.

1906. *Cercotmetus pilipes* : Distant, *Fauna Brit. India, Rhynchota*, 3 : 23.

1918. *Cercotmetus pilipes* : Paiva, *Rec. Indian Mus.*, 14 : 26.

1997. *Cercotmetus pilipes* : Bal and Basu, *Fauna of Delhi, State Fauna Series*, 6 : 267.

*Material examined* : 1 ex., Wah Kwai, Moomalaing vill., JHD, 22.i.06, Coll : J. Lyngdoh & Party; 1 ex., Wah Umkiang (upstream), Umkiang vill., JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 2 exs., Umsngurkur, Sung vill., JHD, 14.x.06, Coll : J. Lyngdoh & Party; 1 ex., Umtyrchi, Khliehtyrchi vill., JHD, 25.vi.06, Coll : J. Lyngdoh & Party; 2 exs., Iongnoh, Kyrwen vill., JHD, 24.vi.06, Coll : J. Lyngdoh & Party; 2 exs., Wah Thaleiñ, Mawmluh, Sohra, EKH Dist., 19.vi.05, Coll : J. Lyngdoh & Party; 5 exs., Wah Myrkeiñ, Myrkeiñ vill., JHD, 16.x.06, Coll : J. Lyngdoh & Party; 1 ex., Salaroh, Jowai, JHD, 26.vi.06, Coll : J. Lyngdoh & Party; 30 exs (immature), Wah Sahpseiñ, Nongbah vill., JHD, 25.vi.06, Coll : J. Lyngdoh & Party; 1 ex., Umpung, Lyniong vill., EKH Dist., 20.vi.05, Coll : J. Lyngdoh & Party; 2 exs (immature), Wah Saitaphlang, Khliehtyrchi vill., JHD, 25.vi.06, Coll : J. Lyngdoh & Party; 4 exs (immature), Wah Khasaw, Sohra sub-div., EKH Dist., 23.vi.06, Coll : J. Lyngdoh & Party; 7 exs, Wah Mynktah, Rwan vill., JHD, 24.vi.06, Coll : J. Lyngdoh & Party 8; 1 ex., Umtyngkrong, Eco-Park, Sohra sub-div., EKH Dist., 23.vi.06, Coll : J. Lyngdoh & Party; 1 ex., Wah Dieñthlen, Sohra sub-div., EKH Dist., 20.vi.06, Coll : J. Lyngdoh & Party; 9 exs., Moosyat, Jowai, JHD, 24.vi.06, Coll : J. Lyngdoh & Party; 1 ex., Wah Mynkre, Mynkre vill., JHD, 23.i.06, Coll : J. Lyngdoh & Party; 4 exs., Umtyngar, Myllem Block, EKH Dist., 18.i.06, Coll : J. Lyngdoh & Party; 14 exs., Wah Langstieh, Laittyra vill., EKH Dist., 22.vi.06, Coll : J. Lyngdoh & Party; 1 ex., Umlidoh, Mihmyntdu vill., JHD, 26.vi.06, Coll : J. Lyngdoh & Party.

**Diagnosis** : Body elongate, cylindrical about 44 mm in length; abdominal appendages of only 9 mm in length; vertex with indistinct tubercle; prosternum with two deep long longitudinal furrows extending its whole length; front coxae inserted at the front margin of the prosternum; legs banded with pale brown markings; forelegs strongly prehensile, without claws; femur of fore leg considerable shorter than pronotum; middle and hind tibia besets with a double row of spines laterally and fringed with long yellow hairs on the inner sides; posterior end of abdomen bears a pair of short, broad, compressed and strongly pilose caudal filaments.

**Distribution** : India : Mizoram; Delhi.

**Elsewhere** : Bhutan.

**Remarks** : New record from Meghalaya.

### Family III NOTONECTIDAE

#### Genus 5. *Antsops* Spinola 1837

#### 5. *Antsops sardeus sardeus* Herrich-Shaffer (Plate VI-A, VI-B)

1850. *Antsops sardeus* Herrich-Shaffer, *Die Wanz. Ins.*, 9 : 41.

1904. *Antsops sardea* : Kirkaldy, *Wien ent. Ztg.*, 23 : 114.

1951. *Antsops sardeus sardeus* Herrich-Shaffer : Polhemus, *Cat. Het. Palaerctic region.*, 1 : 66.

1989. *Antsops sardea* : Thirumalai, *Rec. zool. Surv. India. Occ. Pap.*, 118 : 26.

**Materials examined** : 12 exs., Umbluh, Muthlong vill., JHD, 15.x.06, Coll : J. Lyngdoh & Party; 1 ex., Waikhyrwi, Sutnga vill., JHD, 21.i.06, Coll : J. Lyngdoh & Party.

**Diagnosis** : Adult males 7.5-8.4 mm and female 7.2-7.5 mm in length; greatest body width about mid way the length of the body; general body colour pale yellow or brownish yellow; synthlipes narrow, less than one-third the anterior width of vertex; male provided with much prominent cephalic horn with frons excavate its entire length and bordered laterally by two carinae; anterior tibia of male provided with stridulatory comb which gradually narrow towards the apex, composed of about 18 teeth.

**Distribution** : India : Meghalaya : India : Meghalaya (Districts-East Khasi Hills); Manipur; West Bengal; Orissa; Punjab; U.P.; South India.

**Elsewhere** : Africa, Albania, Canary Islands, Corfu, Myanmar, Pakistan, Syria, Turkey.

**Remarks** : New records from Jaiñtia Hills district.

### Family IV BELOSTOMATIDAE

#### Genus 6. *Lethocerus* Mayr 1853

#### 6. *Lethocerus indicus* (Lapeletier & Serville) (Plate VI-C)

1825. *Belostoma indica* Lapeletier & Serville, *Encycl. Meth.*, : 272.

1909. *Lethocerus indicus* : Montandon, *Bull. Soc. Sci. Buc.*, **17** : 138.  
 1956. *Lethocerus indicus* : Usinger, *Aquatic Insects of California*, 204.  
 1969. *Belostoma indicum* Varshney & Biswas, *J. Bombay nat. hist. Soc.*, **66(2)** : 272.  
 1974. *Lethocerus indicus* : Fernando & Cheng *Fdn. Mus. J.*, **19** : 41.  
 1997. *Lethocerus indicus* : Bal and Basu, *State fauna Series* : **6** : *Fauna of Delhi*, : 269.

*Materials examined* : 1 ex., Wah Dona (upstream), Marbaksa vill., JHD, 3.ii.07, Coll : J. Lyngdoh & Party; 1 ex., Waikhyrwi, Sutnga vill., JHD, 21.i.06, Coll : J. Lyngdoh & Party.

*Diagnosis* : Body large in size and the length may vary between 62-85 mm; head between eyes with parallel sides; pronotum with a transverse fasciae at the basal end and a fine mid-longitudinal carination; hemelytra with distinct membrane provided with longitudinal veins; posterior tibiae and tarsi ampliatly compressed; intermediate and posterior legs provided with thick sets of swimming hairs on the ventral side.

*Distribution* : India : Meghalaya (Districts-West Garo Hills); Assam; Bihar; Kerala; Maharashtra; Mizoram; Manipur; Orissa; Tripura; Uttar Pradesh; West Bengal.

*Elsewhere* : China, Java, Malay Peninsula, Myanmar, Pakistan, Philippines, Sri Lanka, Sumatra.

*Remarks* : New records from Jaiñtia Hills district.

#### Genus 7. *Diplonychus* Laporte, 1833

##### 7. *Diplonychus rusticus* (Fabricius)

(Plate VI-D)

1794. *Nepa rustica* Fabricius *Ent. Syst.*, **4** : 62.  
 1906. *Sphaerodema rusticum* : Distant, *Fauna Brit., India, Rhynchota*, **3** : 36.  
 1934. *Sphaerodema rusticum* : Lundblad, *Arch. Hydrobiol. Suppl.*, **12** : 55.  
 1961. *Diplonychus rusticus* : Lauck & Menke, *Ann. Entomol. Soc. Amer.*, **54** : 649.  
 1980. *Diplonychus rusticus* : Venkatesan & Rao, *J. Bombay nat. Hist. Soc.*, **77** : 299.  
 1989. *Diplonychus rusticus* : Thirumalai, *Rec. zool. Surv. India, Occ. Pap.*, **118** : 32.

*Material examined* : 16 exs., Ambuka, Umjalong-Kyrweng vill., JHD, 18.x.06, Coll : J. Lyngdoh & Party; 1 ex., Umpaji, Sahnsniang vill., JHD, 24.vi.06, Coll : J. Lyngdoh & Party; 1 ex., Wah Mynktah, Rwan vill., JHD, 24.vi.06, Coll : J. Lyngdoh & Party.

*Disgnosis* : Body length of a adult varies from 15-17 mm; head shorter than breadth between eyes, which are obliquely converging; pronotum, scutellum and corium very thickly and finely punctuate; anterior tarsal claws very small; ventro-lateral stripe of fine hairs on the abdomen narrow.

*Distribution* : India : Delhi; Jammu and Kashmir; Kerala, Manipur; Maharashtra, Tripura; West Bengal. *Elsewhere* : Austria, China, Japan, Java, Malay Peninsula, Myanmar, Philippines, Sri Lanka, Sumatra, Thailand, New Guinea.

*Remarks* : New record from Meghalaya.

## Family V NAUCORIDAE

Genus 8. *Gestroiella* Montandon, 18978. *Gestroiella insignis* Distant

1910. *Gestroiella insignis* Distant, *Fauna Brit. India. Rhynchota*, 5 : 318.

2004. *Gestroiella insignis* : Bal & Basu, *State fauna Series* : 10 : *Fauna of Manipur* (2), : 303.

*Material examined* : 2 exs., Wah Apha, Pyrtakuna vill., JHD, 5.ii.07, Coll : J. Lyngdoh & Party.

*Diagnosis* : Body length may be 17.5 mm; head slightly longer than breadth between eyes; pronotum centrally depressed at the anterior margin; lateral margins of pronotum oblique slightly rounded and posterior angles broadly acute and directed backward over the base of the hemelytra; male anterior femur strongly dilated with a concavity at the distal end.

*Distribution* : India : Assam; Manipur.

*Remarks* : New record from Meghalaya.

Genus 9. *Heliocoris* Stal 18769. *Heleocoris breviceps* Montandon

1897c. *Heleocoris breviceps* Montandon, *Ann. Soc. Belgique*, 41 : 55.

1906. *Heleocoris breviceps* : Distant, *Fauna Brit. India, Rhynchota*, 3 : 29.

1989. *Heleocoris breviceps* : Thirumalai, *Rec. zool. Surv. India. Occ. Pap.*, 118 : 33.

2007. *Heleocoris breviceps* : Bal and Basu, *State fauna Series* : 14 : *Fauna of Mizoram*, : 254.

*Material examined* : 1 ex., Um-Mungriah, Umwai vill., EKH Dist., 22.vi.06, Coll : J. Lyngdoh & Party.

*Diagnosis* : Adult insects may reach upto 9.5 mm in length. Body oval in shape with yellow impression of spots on the head and pronotum; abdomen dark brown or brownish black, with its apex lighter in colour on the ventral side.

*Distribution* : India : Mizoram; Maharashtra; Tamil Nadu, Uttar Pradesh; West Bengal.

*Elsewhere* : Japan, Malaya, Myanmar, Philippines, Sri Lanka.

*Remarks* : Record for the first time from Meghalaya.

10. *Heleocoris obliquatus* (Spinola)

1837. *Heleocoris obliquatus* Spinola, *Ess. Ins. Hemipt.*, : 55.

1906. *Heleocoris obliquatus* : Distant, *Fauna Brit. India, Rhynchota*, 3 : 31.

1919b. *Heleocoris obliquatus* : Paiva, *Rec. Indian Mus.*, 16 : 155.

1998. *Heleocoris obliquatus* : Bal & Basu, *Fauna of Meghalaya, State Fauna Series*, 4(Part-4) : 446.

*Material examined* : 1 ex., Wah Mynsar, Umsalait vill., JHD, 24.vi.06, J. Lyngdoh & Party.

*Diagnosis* : Adult insects attain a length of about 10.5 mm; head and pronotum spotted with grey and black markings ; scutellum black, apex pale; pronotum not distinctly bordered with marginal furrow; posterior angles of pronotum terminating obliquely.

*Distribution* : India : Meghalaya (Districts-South Garo Hills Dist.); Bihar; Mizoram; Maharashtra.

*Remarks* : New record from Jaiñtia Hills district.

Infraorder **GERROMORPHA**

Family VII **HYDROMETRIDAE**

Subfamily **HYDROMETRINAE**

Genus 10. *Hydrometra* Latreille 1796

11. *Hydrometra greeni* Kirkaldy

(Plate VII-A)

1898. *Hydrometra greeni* Kirkaldy, *Entomologist*, **31** : 2.

1902. *Hydrometra vittata* : Distant, *Fauna Brit.India. Rhynchota*, **2** : 170.

1919a. *Hydrometra vittata* : Paiva, *Rec. Indian Mus.*, **16** : 153.

1928. *Hydrometra greeni* : Dover, *J. Bombay nat. Hist. Soc.*, **32** : 614.

1934. *Hydrometra greeni* : Hungerford and Evans, *Ann. Mus. Nat. Hung.*, **38** : 79.

1994. *Hydrometra greeni* : Thirumalai, *Rec. zool. Surv. India. Occ. Paper*, **165** : 29.

*Material examined* : 13 exs., Umsngurkur, Sung vill., JHD, 14.x.06, Coll : J. Lyngdoh & Party; 6 exs., Wah Kuliang, Kuliang vill., JHD, 5.ii.07, Coll : J. Lyngdoh & Party; 4 exs., Wah Dona, Dona vill., JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 3 exs., Wah Umkiang (upstream), Umkiang vill., JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 1 ex., Soil Conservation Compd., (Pond), Lumshnong vill., JHD, 2.ii.07, Coll : J. Lyngdoh & Party; 1 ex., Wah Tishang, Nongjri vill., EKH Dist., 19.i.06, Coll : J. Lyngdoh & Party; 1 ex., Thlu Ummulong, Ummulong vill., JHD, 14.x.06, Coll : J. Lyngdoh & Party; 1 ex., Wah Umkiang (downstream), Umkiang vill., JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 1 ex., Wah Sohpai, Nongjri vill., EKH Dist., 19.i.06, Coll : J. Lyngdoh & Party.

*Diagnosis* : Adult insects may attain upto 11.0-12.0 mm in length; head very long, much longer than pronotum and dilated distally; eyes placed considerably far from both the ends on the much elongated head; 1<sup>st</sup> antennal segment shortest, 2<sup>nd</sup> and 4<sup>th</sup> subequal, 3<sup>rd</sup> segment longest; hemelytra extends upto 5<sup>th</sup> abdominal segments in both the sexes; in males a transverse depression on the 6<sup>th</sup> ventral abdominal segment which is also fringed with short erect hairs on the dorsal margin.

*Distribution* : India : Meghalaya (Districts-East Khasi Hills, Jaiñtia Hills); Manipur; Mizoram; Orissa; Maharashtra; Tamil Nadu; U.P.; West Bengal.

*Elsewhere* : Japan, Malasia, Myanmar, Philippines, Sri Lanka.

*Remarks* : New record from Meghalaya.

## Subfamily PTILOMERINAE

Genus 11. *Ptilomera* Amyot & Serville 184312. *Ptilomera (Ptilomera) laticaudata* (Hardwicke)

1825. *Gerris laticaudata* Hardwicke, *Trans. Linn. Soc.*, 14 : 134.  
 1902. *Ptilomera laticaudata* : Distant, *Fauna of Brit. India, Rhynchota*, 2 : 414.  
 1926. *Ptilomera agroides* : Schmidt, *Ent. Mitt.*, 15 : 63.  
 1960. *Ptilomera lachne* : Matsuda, *Kans. Univ. Sci. Bull.*, 41(2) : 267.  
 1965. *Ptilomera laticaudata* : Hungerford and Matsuda, *Kans. Univ. Sci. Bull.*, 45(5) : 416.

*Materials examined* : 23 exs., Wah Apha, Pyrtakuna vill., JHD, 5.ii.07, Coll : J. Lyngdoh & Party & Party; 1 ex., Umthneng, Umwai vill., Sohra sub-div., EKH Dist., 22.vi.06, Coll : J. Lyngdoh & Party & Party; 8 exs., Umdap, Amlampiang vill., JHD, 17.x.06, : Coll : J. Lyngdoh & Party & Party; 3 exs., Phudum-langmar, Shillong-Mawsynram Road, EKH Dist., 20.vi.05, Coll : J. Lyngdoh & Party & Party; 1 ex., Wah Kuliang, Kuliang vill., JHD, 5.ii.07, J Coll : J. Lyngdoh & Party & Party; 18 exs., Umsohlun, Tamabil vill., JHD, 19.x.06, Coll : J. Lyngdoh & Party & Party; 10 exs., Umlarung, Lumshnong vill., JHD, 16.vi.05, Coll : J. Lyngdoh & Party & Party; 17 exs., Umsku, Rhongkum vill., JHD, 18.x.06, Coll : J. Lyngdoh & Party & Party; 4 exs., Umsahi, Lumshnong vill., JHD, 16.vi.05, J Coll : J. Lyngdoh & Party & Party; 1 ex., CMCL Stream, Lumshnong vill., JHD, 16.vi.05, Coll : J. Lyngdoh & Party & Party; 4 exs., Wah Lynkeiñ, Lynkeiñ vill., EKH Dist., 20.vi.05, Coll : J. Lyngdoh & Party & Party; 10 exs., Wah Saitbot, Umwai vill., EKH Dist., 22.vi.06, Coll : J. Lyngdoh & Party & Party; 4 exs., Um-Mungriah, Umwai vill., EKH Dist., 22.vi.06, Coll : J. Lyngdoh & Party & Party; 30 exs., Umladoh, Lumshnong vill., JHD, 16.vi.05, Coll : J. Lyngdoh & Party & Party; 13 exs., Wah Myntang, JHD, 16.vi.05, Coll : J. Lyngdoh & Party & Party; 3 exs., Umpung, Lyniong vill., EKH Dist., 20.vi.05, Coll : J. Lyngdoh & Party & Party; 18 exs., Stream : Riajalong basti, JHD, 19.x.06, Coll : J. Lyngdoh & Party & Party; 1 ex., Nonglwai vill., (Paddy field), EKH Dist., 20.vi.05, Coll : J. Lyngdoh & Party & Party; 2 exs., Wah Dienglieng, Wahlong vill., EKH Dist., 22.vi.06, Coll : J. Lyngdoh & Party & Party; 3 exs., Wah Shella, Shella, EKH Dist., 20.vi.06, Coll : J. Lyngdoh & Party & Party; 4 exs., Wah Makjai, Jowai-Amlarem road, JHD, 17.vi.05, Coll : J. Lyngdoh & Party & Party; 2 exs., Umblai, Pysadwar vill., JHD, 17.x.06, Coll : J. Lyngdoh & Party & Party; 7 exs., Wah Malidar, Malidar vill., JHD, 3.ii.07, Coll : J. Lyngdoh & Party & Party; 5 exs., Wah Sohmad, Tyra vill., EKH Dist., 21.vi.06, Coll : J. Lyngdoh & Party & Party; 1 ex., Umthangskai, Thangskai vill., JHD, 1.ii.07, Coll : J. Lyngdoh & Party & Party; 1 ex., Umheñ, Lait-tyra vill., EKH Dist., 23.vi.06, Coll : J. Lyngdoh & Party & Party; 6 exs., Wah-Jaklong, Nongjriong vill., EKH Dist., 13.x.06, Coll : J. Lyngdoh & Party & Party 0; 15 exs., Umbah, Nartiang vill., JHD, 15.x.06, Coll : J. Lyngdoh & Party & Party; 1 ex., Wah Mawpunkrem, Mawsmi vill., EKH Dist., 22.vi.06, Coll : J. Lyngdoh & Party & Party; 7 exs., Wah saitsaphlang,

Khliehtyrchi vill., JHD, 25.vi.06, Coll : J. Lyngdoh & Party & Party; 8 exs., Wah Dona (upstream), Marbaksa vill., JHD, 9.ii.07, Coll : J. Lyngdoh & Party & Party; 1 ex., Tre-rangriang, Jowai, JHD, 17.vi.05, Coll : J. Lyngdoh & Party & Party; 6 exs., Wah Synleng, Nongjri vill., EKH Dist., 19.i.06, Coll : J. Lyngdoh & Party & Party; 1 ex., Amlampiang, JHD, 17.x.06, Coll : J. Lyngdoh & Party & Party; 8 exs., Umtyngar, Myllem Block, EKH Dist., 18.i.06, Coll : J. Lyngdoh & Party & Party; 1 ex., Wah Sohpaï, Nongjri vill., EKH Dist., 19.i.06, Coll : J. Lyngdoh & Party & Party.

*Diagnosis* : Both apterous and macropterous adults may attain a length between 13.0-15.0 mm; antennae as long as the body, first antennal segment almost as long as the other three segments together; rear margin of metacoxa provided with thorn like projection in both the sexes; almost all over the middle femur with fringed like dark hairs in male, parameres very prominent, direct and laterally directed; female with 7<sup>th</sup> abdominal segment modified and provided with long prominent connexival spines.

*Distribution* : India : Meghalaya (Districts-West Garo Hills, South Garo Hills, East Khasi Hills); West Bengal; Sikkim.

*Elsewhere* : Myanmar, Malay Peninsula, Sri Lanka, Thailand.

*Remarks* : Recorded for the first time from Jaiñtia Hills district.

#### Subfamily HALOBATINAE

#### Genus 12. *Metrocoris* Mayr 1865

#### 13. *Metrocoris nigrofasciatus* Distant

(Plate VII-B, VII-C)

1910. *Metrocoris nigrofasciatus* : Distant, *Fauna of Brit. India, Rhynchota*, 5 : 159.

1918. *Metrocoris nigrofasciatus* : Paiva, *Rec. Indian Mus.*, 14 : 25.

1934. *Metrocoris nigrofasciatus* : Lundblad, *Arch. Hydrobiol.*, Supple., 12 : 371.

1969. *Metrocoris nigrofasciatus* : Cheng and Fernando, *Oriental Ins.*, 3 : 125.

1998. *Metrocoris nigrofasciatus* : Bal & Basu, *Fauna of Meghalaya, State Fauna Series*, 4(Part-4) : 449.

*Materials examined* : 11 exs., Laitsaum, Mawsynram sub-div., EKH Dist., 22.vi.05, Coll : J. Lyngdoh & Party & Party; 2 exs., Wah Myntang, JHD, 13.vi.05, Coll : J. Lyngdoh & Party & Party; 5 exs., Nonglwai vill., (Paddy field), EKH Dist., 20.vi.05, Coll : J. Lyngdoh & Party & Party; 1 ex., Umpung, Lyniong vill, EKH Dist., 20.vi.05, Coll : J. Lyngdoh & Party & Party; 3 exs., Wah Saitsaphlang, Khliehtyrchi vill., JHD, 25.vi.06, Coll : J. Lyngdoh & Party & Party; 5 exs., Um-Mungriah, Umwai vill., EKH Dist., 22.vi.06, Coll : J. Lyngdoh & Party & Party; 1 ex., Umsohlun, Tamabil vill., JHD, 19.x.06, Coll : J. Lyngdoh & Party & Party; 10 exs., Umnailang, Mawsynram div., EKH Dist., 22.vi.05, Coll : J. Lyngdoh & Party & Party; 8 exs., Wah Synleng, Nongjri vill., EKH Dist., 18.i.06, Coll : J. Lyngdoh & Party & Party; 1 ex., Umdap, Amlampiang vill., JHD, 17.x.06, Coll : J. Lyngdoh & Party

**& Party**; 4 exs., Phudumlangmar, Shillong-Mawsynram Road, EKH Dist., 20.vi.05, Coll : J. Lyngdoh & Party & Party; 13 exs., Umphodbah, Mawsynram, EKH Dist., 21.vi.05, Coll : J. Lyngdoh & Party & Party; 2 exs., Wah Umkiang, Umkiang vill., JHD, 4.ii.07, Coll : J. Lyngdoh & Party & Party; 8 exs., Umblai, Pysadwar vill., JHD, 17.x.06, Coll : J. Lyngdoh & Party & Party; 2 exs., Syntuksiar, Jowai, JHD, 14.vi.05, Coll : J. Lyngdoh & Party & Party; 5 exs., Pyrtakuna vill., JHD, 14.vi.05, Coll : J. Lyngdoh & Party & Party; 3 exs., Tre-rangriang, Jowai, JHD, 17.vi.05, Coll : J. Lyngdoh & Party & Party; 4 exs., Amlampiang vill., JHD, 17.x.06, Coll : J. Lyngdoh & Party & Party; 11 exs., Stream : Riajalong basti, JHD, 19.x.06, Coll : J. Lyngdoh & Party & Party; 2 exs., Ialong vill., (Paddy fields), JHD, 16.vi.05, Coll : J. Lyngdoh & Party & Party; 4 exs., Wah Lynkeiñ, Lynkeiñ vill., EKH Dist., 20.vi.05, Coll : J. Lyngdoh & Party & Party; 16 exs., Wah Mynsar, Umsalait vill., JHD, 24.vi.06, Coll : J. Lyngdoh & Party & Party; 1 ex., Umladoh, Lumshnong vill., JHD, 16.vi.05, Coll : J. Lyngdoh & Party & Party; 2 exs., Wah Myrkeiñ, Myrkeiñ vill., JHD, 16.x.06, Coll : J. Lyngdoh & Party & Party; 2exs., Umtyrchi, Khliehtyrchi vill., JHD, 25.vi.06, Coll : J. Lyngdoh & Party & Party; 1 ex., Wah Sahpseiñ, Nongbah vill., JHD, 25.vi.06, Coll : J. Lyngdoh & Party & Party; 8 exs., Umblock-I, B.D.O. campus, Mawsynram div., EKH Dist., 21.vi.05, Coll : J. Lyngdoh & Party & Party; 2 exs., Umblock-II, B.D.O. campus, Mawsynram div., EKH Dist., 21.vi.05, Coll : J. Lyngdoh & Party & Party; 2 exs., Wah Dieñthlen, Sohra sub-div., EKH Dist., 20.vi.06, Coll : J. Lyngdoh & Party & Party; 1 ex., Wah Tishang, Nongjiri vil., EKH Dist., 20.vi.06, Coll : J. Lyngdoh & Party & Party; 5 exs., Wah Umkhat, Pynursla vill., EKH Dist, 20.i.06, Coll : J. Lyngdoh & Party & Party; 3 exs., Umlidoh, Mihmyntdu vill., JHD, 26.vi.06, Coll : J. Lyngdoh & Party & Party; 1 ex., Moosyat stream, Jowai, JHD, 26.vi.06, Coll : J. Lyngdoh & Party & Party.

*Diagnosis* : Apterous and macropterous forms may be 5.5-6.0 mm in length. Yellow in ground colour with brown to black markings. Head protruding well beyond the eyes; pronotum as long as head. Rostrum short, slightly surpassing posterior margin of prosternum. 2<sup>nd</sup> and 3<sup>rd</sup> segments of antennae subequal in length; male front femur much broader than that of female and provided with prominent teeth at the distal end. In winged forms, head with central brown speck as in apterous forms but pronotom with central T-shaped brown markings and 2 brown longitudinal strips ane on each side of the 'T' Wings dark brown, extending well beyond the abdomen.

*Distribution* : India : Meghalaya (Districts-South Garo Hills, East Khasi Hills); Paranas.

*Elsewhere* : Java, Malaya, Myanmar, Thailand.

*Remarks* : New record from Jaiñtia Hills district.

## Subfamily GERRINAE

Genus 13. *Neogerris* Matsumara 191314. *Neogerris parvula* (Stål)

(Plate VII-D)

1859. *Gerris parvula* Stål, *K. svenska Eug. zool.*, 4 : 265.  
 1868. *Limnogonus parvulus* : Stål, *K. svenska Vet.-Akad. Handl.*, 7 : 133.  
 1902. *Gerris tristan* : Distant, *Fauna Brit. India, Rhynchota.*, 2 : 179.  
 1934. *Limnogonus parvulus* : Lundblad, *Arch. Hydrobiol. Suppl.*, 12 : 384.  
 1969. *Limnogonus parvulus* : Cheng & Fernando, *Oriental Ins.*, 3(2) : 102.  
 1989. *Neogerris parvula* : Thirumalai, *Rec. zool. Surv. India, Occ. Pap.*, 118 : 42.

*Material examined* : 10 exs., Lamsaki vill., JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 5 exs., Wah Kuliang, Kuliang vill., JHD, 5.ii.07, Coll : J. Lyngdoh & Party; 6 exs., Wah Umkiang (upstream), Umkiang vill., JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 6 exs., Wah Lukha, Kuliang vill., JHD, 5.ii.07, Coll : J. Lyngdoh & Party; 2 exs., Wah Dona, Dona vill., JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 1 ex., Wah Diengkyrtung, Wahlong vill., EKH Dist., 22.vi.06, Coll : J. Lyngdoh & Party; 5 exs., Wah Borsara, Borsara vill., JHD, 5.ii.07, Coll : J. Lyngdoh & Party; 2 exs., Wah Umkiang (downstream), Umkiang vill., JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 9 exs., Umkaikada II, Mupliang vill., JHD, 15.x.06, Coll : J. Lyngdoh & Party; 1 ex., Lamsaki vill., (Stream-II ), JHD, 4.ii.07, Coll : J. Lyngdoh & Party.

*Diagnosis* : Adults may attain a length of 6.0-6.5 mm in body length; 1<sup>st</sup> antennal segment longest and as long as or a little longer than the 2<sup>nd</sup> and 3<sup>rd</sup> segments together; mid longitudinal carination on pronotum indistinct. A large round or quadrangular yellow spot on the pronotum separates this from all other known species of this genus.

*Distribution* : India : Meghalaya (East Khasi Hills); Assam; Bihar; Kerala; Manipur; Mizoram; Orrisa; Sikkim; Tripura; Uttar Pradesh; West Bengal.

*Elsewhere* : Bangladesh, China, Java, Malay Peninsula, Myanmar, Pakistan, Singapore, Sri Lanka.

*Remarks* : New record from Jaiñtia Hills district.

Genus 14. *Limnogonus* Stal 186815. *Limnogonus (Limnogonus) nitidus* (Mayr)

(Plate VIII-A)

1865. *Hydrometra nitida* Mayr, *Verh.zool.-bot. Ges. Wien*, 15 : 443.  
 1910. *Gerris nitida* : Distant, *Fauna of Brit. India, Rhynchota*, 5 : 142.  
 1934. *Limnogonus nitidus* : Lundblad, *Arch. Hydrobiol. Suppl.*, 12 : 387.  
 1969. *Limnogonus nitidus* : Cheng and Fernando, *Oriental Ins.*, 3(2) : 101.  
 1979. *Limnogonus nitidus* : Polhemus, *Bull. Fish Res. Stn., Sri lanka.*, 29 : 90.  
 1989. *Limnogonus (Limnogonus) nitidus* : Thirumalai, *Rec. zool. Surv. India, Occ. Pap.*, 118 : 41.

**Material examined** : 3 exs., Umsohlun, Tamabil vill., JHD, 19.x.06, Coll : J. Lyngdoh & Party; 16 exs., Amjalong, Umjalong-Kyrweng vill., JHD, 18.x.06, Coll : J. Lyngdoh & Party; 1 ex., Umpung, Lyniong vill, EKH Dist., 20.vi.05, Coll : J. Lyngdoh & Party; 5 exs., Lamsaki vill., JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 2 exs., Amjalong, Umjalong-Kyrweng vill., JHD, 18.x.06, Coll : J. Lyngdoh & Party; 4 exs., Thlumuwi, Jowai-Amlarem Road, JHD, 17.vi.05, Coll : J. Lyngdoh & Party; 1 ex., Wah Umkiang (upstream), Umkiang vill., JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 3 exs., Umblai, Pyrsadwar vill., JHD, 17.x.06, Coll : J. Lyngdoh & Party; 9 exs., Wah Kuliang, Kuliang vill., JHD, 4.ii.07, Coll : J. Lyngdoh & Party; 2 exs., Umblock-I, B.D.O. campus, Mawsynram div., EKH Dist., 21.vi.05, Coll : J. Lyngdoh & Party; 1 ex., Wah Thaleiñ, Mawmluh, Sohra, EKH Dist., 19.vi.05, Coll : J. Lyngdoh & Party; 1 ex., Wah Borsara Borsara vill., JHD, 5.ii.07, Coll : J. Lyngdoh & Party; 1 ex., Nonglwai vill., EKH Dist., 20.vi.05, Coll : J. Lyngdoh & Party; 9 exs., Soil Conservation Compd., (Pond), Lumshnong vill., JHD, 2.ii.07, Coll : J. Lyngdoh & Party; 1 ex., Thlu Ummulong, Ummulong vill, JHD, 14.x.06, Coll : J. Lyngdoh & Party; 1 ex., Umbah, Nartiang vill., JHD, 15.x.06, Coll : J. Lyngdoh & Party; 1 ex., Umkaikada I, Mupliang vill., JHD, 15.x.06, Coll : J. Lyngdoh & Party; 1 ex., Lamsaki vill., (Stream-II), JHD, 4.ii.07, Coll : J. Lyngdoh & Party.

**Diagnosis** : Body length may be 6.0-8.0 mm. 1<sup>st</sup> antennal segment slightly longer than the 4<sup>th</sup> segment or they are subequal in length while the 2<sup>nd</sup> and 3<sup>rd</sup> segments shortest and subequal in length; anterior part of pronotum with a pair of linear, small yellowish patches; posterior margin of dorsal vesicle plate is remarkable angular; 7<sup>th</sup> abdominal segment provided with a prominent connexival spines in both the sexes.

**Distribution** : India : Meghalaya (Districts - East Khasi Hills); Assam; Bihar; Kerala; Manipur; Mizoram; Orrisa; Sikkim; Tripura; Uttar Pradesh; West Bengal.

**Elsewhere** : Bangladesh, China, Java, Malaya, Myanmar, Sri Lanka, Sumatra.

**Remarks** : New record from Jaiñtia Hills district.

#### Genus 15. *Aquarius* Schellenberg, 1800

#### 16. *Aquarius paludum* (Fabricius)

(Plate VIII-B)

1794. *Aquarius paludum* Fabricius, *Ent. Syst.*, 4 : 188.

1902. *Gerris paludum* : Distant, *Fauna Brit. India, Rhynchota.*, 2 : 180.

**Material examined** : 11 exs., Wah Umiew-Umphrup, Smit, EKH Dist., 26.vi.06, Coll : J. Lyngdoh & Party; 10 exs., Umkaikada I, Mupliang vill, JHD, 15.x.06, Coll : J. Lyngdoh & Party; 1 ex., Wailangwiang, Muthlong vill., JHD, 5.x.06, Coll : J. Lyngdoh & Party; 4 exs., Syntu ksiar, Jowai, JHD, 14.vi.05, Coll : J. Lyngdoh & Party; 23 exs., Umblock-I, B.D.O. campus, Mawsynram, EKH Dist., 21.vi.05, Coll : J. Lyngdoh & Party; 5 exs., Wah Lynkeiñ,

Lynkeiñ vill., EKH Dist., 20.vi.05, Coll : J. Lyngdoh & Party; 3 exs., Nan Kachari, Jowai, JHD, 14.vi.05, Coll : J. Lyngdoh & Party; 4 exs., Wah Umjlieng, Myllichem block., EKH Dist., 18.i.06, Coll : J. Lyngdoh & Party; 2 exs., Thlu Ummulong, Ummulong vill., JHD, 14.x.06, Coll : J. Lyngdoh & Party; 2 exs., Umtyrchi, Khliehtyrchi vill., JHD, 25.vi.06, Coll : J. Lyngdoh & Party; 3 exs., Umpung, Lyniong vill., EKH Dist., 20.vi.05, Coll : J. Lyngdoh & Party; 1 ex., Wah Mynsar, Umsalait vill., JHD, 24.vi.06, Coll : J. Lyngdoh & Party.

*Diagnosis* : Adult male may attain a length between 11-14 mm whereas adult female between 13-16 mm; Black, opaque, body beneath silvery-grey pubescent; base of rostrum, coxae, trochanter and extreme bases of femora very pale; pronotum with a strong central longitudinal carinate line; hemelytra with the veins very strong and prominent; antennae with the basal joint very long, about as long as the other three joints taken together.

*Distribution* : India : Meghalaya (Districts- East Khasi Hills).

*Elsewhere* : Myanmar.

*Remarks* : New records from Jaiñtia Hills district.

#### Genus 16. *Rhyacobates* Esaki 1923\*\*

(Plate VIII C, D & E)

1923. *Rhyacobates* Esaki, *Phillipine J. Sci.*, 22, 387.

2006. *Rhyacobates* Tran A.D. and Yang C.M., *Raffles Bull., Zool.*, 54(1) : 16.

*Materials examined* : 1 ex., Wah Lynkeiñ, Lynkeiñ vill., JHD., 26.vi.05, Coll : J. Lyngdoh & Party, 2 exs., Wah Shella, Shella, EKH Dist., 21.vi.06, Coll : J. Lyngdoh & Party.

*Diagnosis of Genus* : Mesonotum black with pale median stripe; first antennal segment longer than the other three segment together, last segment with whitish area in distal two fifths; middle and hind tarsus without claws; middle femur without distinct row of black spines; eight abdominal segment of male reduced ventrally, shorter than the seventh segment; posterior segments of female abdomen usually curved dorsad (apterous form).

*Distribution* : China, Vietnam.

*Remarks* : This Genus is recorded for the first time from India or could turnout new to science. Species is yet to be confirmed by Dr. G. Thirumalai.

Besides the above species recorded during the present study, a list of species reported by Bal and Basu, 1998, from the State of Meghalaya (East Khasi Hills, West & South Garo Hills Districts) are given below :

Series NEPOMORPHA

Family I OCHTERIDAE

Genus 1. *Ochterus* Latreille 1807

1. *Ochterus marginatus marginatus* (Latreille, 1804)

## Family II GELASTOCORIDAE

Genus 2. *Nerthra* Say 1932

2. *Nerthra indica* (Atkinson, 1888)

3. *Nerthra spissa* (Distant, 1910)

## Family III CORIXIDAE

## Subfamily CYMATINAE

Genus 3. *Micronecta* Kirkaldy 1897Subgenus *Pardanecta* Wroblewski, 1962

4. *Micronecta punctata* Horvath, 1904

Subgenus *Unguincta*, Nieser, Chen, and Yang, 2005

5. *Micronecta waltoniana* Hutchinson, 1940

6. *Micronecta khasiensis* Hutchinson, 1940

## Subfamily CYMATINAE

Genus 4. *Cymatia* Flor 1860

7. *Cymatia apparens* (Distant, 1910)

Genus 5. *Corixa* Geoffroy 1762

8. *Corixa (Vermicorixa) kempfi* Hutchinson

## Family IV NEPIDAE

Genus 6. *Ranatra* Fabricius 1790

9. *Ranatra gracilis* Dallas, 1850

10. *Ranatra filiformis* Fabricius, 1790

11. *Ranatra varipes varipes* Stål, 1861

Genus 7. *Laccotrephes* Stal

12. *Laccotrephes pfeiferiaes* (Ferrari, 1888)

13. *Laccotrephes ruber* (Linnaeus, 1764)

14. *Laccotrephes griseus* (Güerin-Méneville, 1844)

Genus 8. *Montonepa* Lansbury 1973

15. *Montonepa erutus* (Montandon)

## Family V NOTONECTIDAE

Genus 9. *Anisops* Spinola 1837

16. *Anisops sardeus sardeus* Herrich-Shaffer, 1850

Genus 10. *Enithares* Spinola 183717. *Enithares fusca* Brooks, 1948

## Family VI BELOSTOMATIDAE

Genus 11. *Sphaerodema* Laporte 183218. *Diplonychus annulatus* (Fabricius, 1781)Genus 12. *Lethocerus* Mayr 185319. *Lethocerus indicus* (Lapeletier & Serville, 1825)

## Family VII NAUCORIDAE

## Subfamily CHEIROCHELINAE

Genus 13. *Cheirochela* Hope 184020. *Cheirochela assamensis* Hope, 1841

## Subfamily LACCOCORINAE

Genus 14. *Heleocoris* Stål 187621. *Heleocoris obliquatus* (Spinola, 1837)

## Series GERROMORPHA

## Family VIII GERRIDAE

## Subfamily PTILOMERINAE

Genus 15. *Ptilomera* Amyot & Serville 184322. *Ptilomera (Ptilomera) laticaudata* (Hardwicke, 1823)

## Subfamily HALOBATINAE

Genus 16. *Metrocoris* Mayr 186523. *Metrocoris tenuicornis* Esaki, 192624. *Metrocoris femoratus* (Paiva, 1919)25. *Metrocoris nigrofasciatus* Distant, 1903

## Subfamily GERRINAE

Genus 17. *Eotrechus* Kirkaldy 190226. *Eotrechus kalidasa* Kirkaldy, 1902Genus 18. *Onychotrechus* Kirkaldy 190327. *Onychotrechus* sp. (Kirkaldy)Genus 19. *Chimarrhometra* Bianchi 186928. *Chimarrhotra orientalis* (Distant, 1879)

Genus 20. *Aquarius* Schellenberg, 1800

29. *Aquarius adelaidis* (Dohrn, 1860)

Genus 21. *Limnogonus* Stal 1868

30. *Limnogonus (Limnogonus) nitidus* (Mayr)

Genus 22. *Neogerris* Matsumura, 1913

31. *Neogerris parvula* (Stal, 1859)

Family IX VELIIDAE

Genus 23. *Rhagovelia* Mayr 1865

32. *Rhagovelia (Rhagovelia) ceylanica* Lundblad, 1936

Genus 24. *Microvelia* Westwood 1834

33. *Microvelia (Microvelia) lineatipes* Paiva, 1919

34. *Microvelia (Microvelia) atromaculata* Paiva, 1919

Genus 25. *Perittopus* Fieber 1861

35. *Perittopus maculatus* Paiva, 1919

## DISCUSSION

Globally, the infraorder Nepomorpha is represented by 11 families and 2404 species and infraorder Gerromorpha by 7 families and 2021 species (Polhemus & Polhemus, 2008). In the Indian sub-continent, the infraorder Nepomorpha constitute about 7.6% of the global species and is represented by 153 species under 34 genera and 10 families (Thirumalai, 2007) whereas under the infraorder Gerromorpha, 131 species, 46 genera and 5 families was documented (Thirumalai, 2002). Out of the 304 species of aquatic and semi-aquatic species known from India, 34 species were reported from Meghalaya in general by Bal and Basu (loc.cit). However, the present study which was localised only in two districts i.e., Jaiñtia Hills and East Khasi Hills Districts of Meghalaya only 16 species belonging to 16 genera and 7 families was recorded out of which including 6 species were recorded for the first time from the State and 1 Genus recorded new from India. The species richness reported herein is less as compared to those recorded by Bal and Basu (loc.cit), who reported 34 species from Meghalaya out of which 26 species are from these two Districts. The decrease in the number of species and the absent of the above mentioned species may probably be attributed to changes in the ecology of the habitats. Dumping of domestic sewage directly into water bodies has deteriorated the water quality of most rivers, streams and rivulet around human habitation areas which in turn may affect the species composition of these biota. Moreover, it was observed that during the recent past the ecology of the state has been seriously threatened by large scale environmental degradation caused by extensive deforestation,

overexploitation of natural resources and other anthropogenic activities coupled with unprecedented rise in human populations. Moreover, unscientific coal and limestone mining in most part of Jaiñtia Hills and East Khasi Hills Districts has greatly affected the water quality of those water bodies lying in and around mining areas as most of the mining wastes enters directly into the water bodies thereby to a great extent affecting the aquatic fauna.

During this study it was noted that in one of the river–Waikhyrwi of Sutnga village, located in the midst of coal mining areas of Jaiñtia Hills District, the biota is almost devoid of life and as reported by Swer and Singh, 2004 only a few tolerant species namely Chironomus larvae, dragonfly larvae, water bugs, worms etc., are present in low abundance. From this particular habitat only 3 species of aquatic forms belonging to 3 families (Corixidae, Notonectidae and Belostomatidae) were recorded, whereas, semi-aquatic species are not encountered in the present study.

However, taking the topographical feature of the state into account, there is a possibility that water bodies located in remote, uninhabited and unexplored areas of the Districts in particular and Meghalaya in general could harbour a rich and diversified aquatic and semi-aquatic insect fauna. In fact, in the present study 1 genus, *Rhyacobates* Esaki : Gerridae is recorded new from India and 6 species were recorded new from Meghalaya - 4 species viz., *Cercotmetus pilipes* (Dallas) : Nepidae, *Diplonychus rusticus* (Fabricius) : Belostomatidae, *Hydrometra greeni* Kirkaldy : Hydrometridae, *Aquarius paludum* (Fabricius) : Gerridae Jaiñtia Hills, 1 species viz., *Heleocoris breviceps* Montandon : Naucoridae from East Khasi Hills and 1 species i.e., *Gestroiella insignis* Distant : Naucoridae from Jaiñtia Hills. It is therefore, expected that extensive and intensive study may reveal a greater number of aquatic and semi-aquatic Hemiptera, some of which could be new records to the State or even new species.

### SUMMARY

The aquatic and semi-aquatic Hemiptera of Jaiñtia Hills and East Khasi Hills Districts of Meghalaya collected by the author are reported. The present work incorporates the account of 16 species belonging to 16 genera under 7 families including 6 new records from the state viz., *Cercotmetus pilipes* Dallas (Family : Nepidae); *Diplonychus rusticus* (Fabricius) (Family : Belostomatidae); *Gestroiella insignis* Distant, *Heleocoris breviceps* Montandon (Family: Naucoridae); *Hydrometra greeni* Kirkaldy (Family : Hydrometridae); *Aquarius paludum* Fabricius (Family : Gerridae) and 1 genus - *Rhyacobates* Esaki of the family Gerridae is recorded new from India.

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**PLATE-I**



A. Wah Lukha



B. Thlu Muwi

**PLATE-II**



A. Wah Mynsar

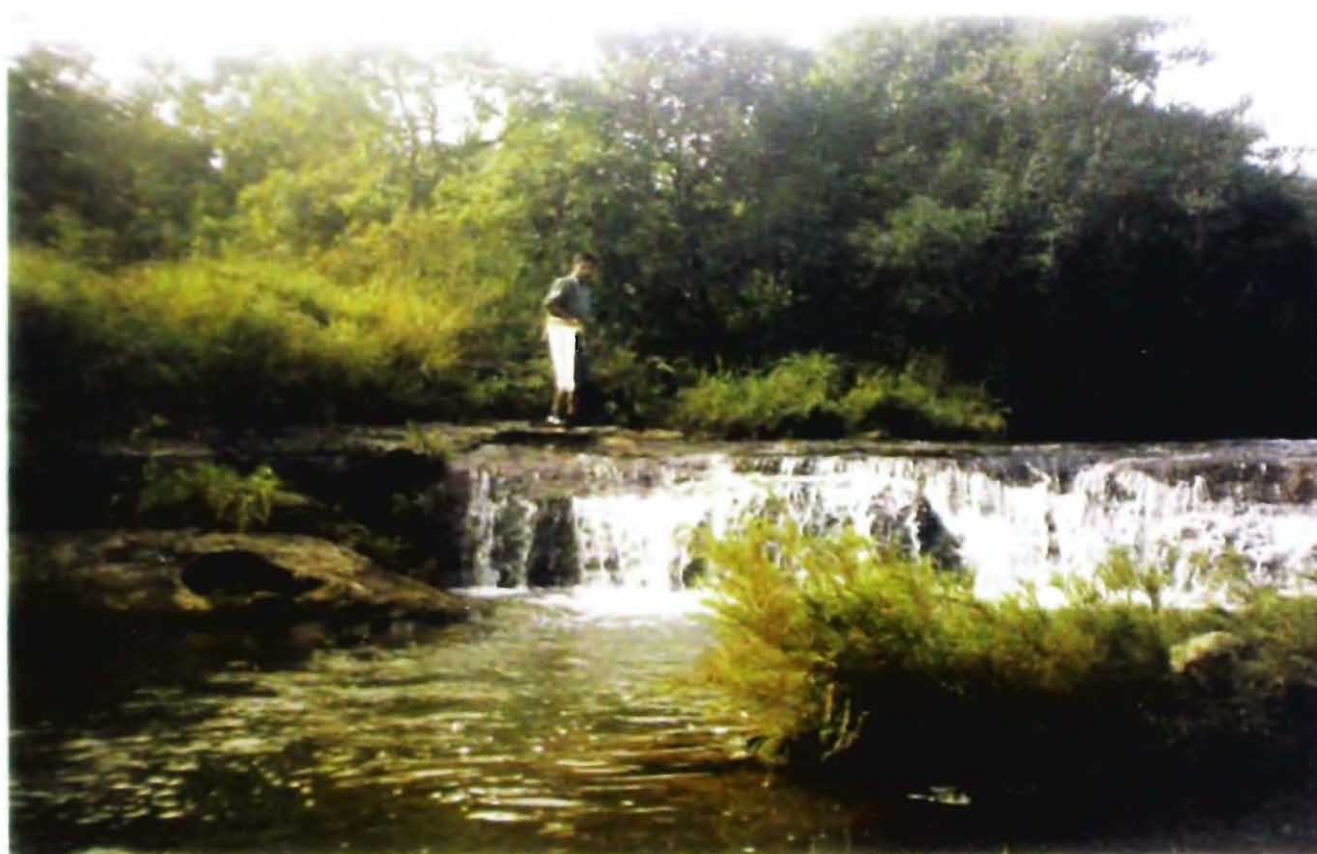


B. Wah Arphyllaw

**PLATE-III**



A. Wah Shella



B. Wah Langstich

**PLATE-IV**



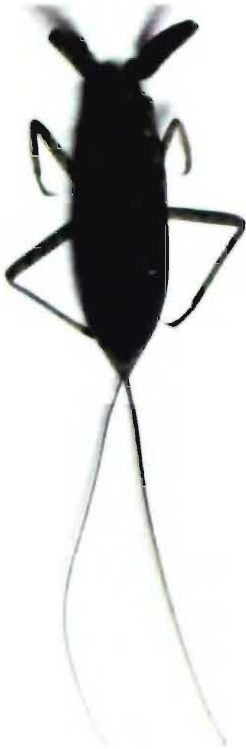
A. Um Iyngkrong



B. Mawsmal Ponds



A. *Cymatia apparens* (Distant)



B. *Laccotrephes ruber* (Linneaus)



C. *Ranatra varipes varipes* Stål



D. *Cercotmetus pilipes* (Dallas)

## PLATE-VII &amp; VIII



A. *Anisops sardeus sardeus* Herrich-Shaffer (Male)    B. *Anisops sardeus sardeus* Herrich-Shaffer (Female)



C. *Lethocerus indicus* (Lepeletier & Serville)



D. *Diplonychus rusticus* (Fabricius)

**PLATE-IX & X**



A. *Hydrometra greeni* Kirkaldy



B. *Metrocoris nigrofasciatus* Distant (Apterous form)



D. *Neogerris parvula* (Stål)



C. *Metrocoris nigrofasciatus* Distant (Winged form)

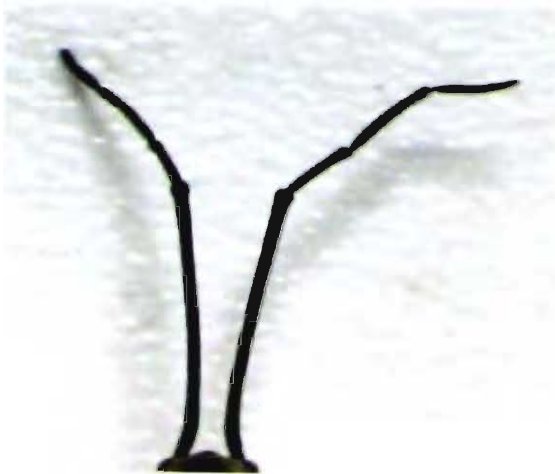


E. *Limnogonus (Limnogonus) nitidus* (Mayr)

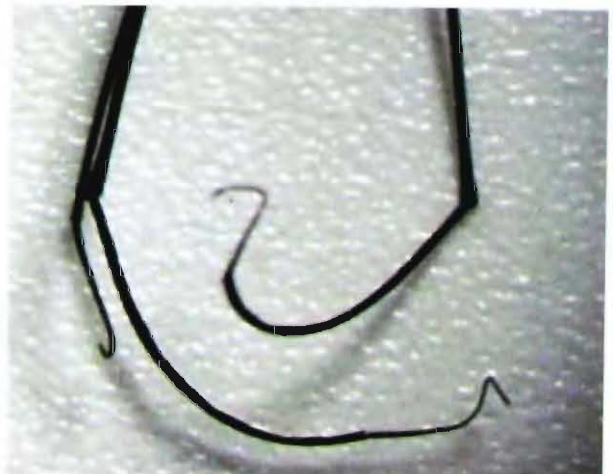
**PLATE-VIII**



*A. Rhycobates sp. Esaki*



*B. Rhycobates sp. Esaki (Antennae)*



*C. Rhycobates sp. Esaki (Part of Mid & Hind leg)*