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## New records of aquatic bugs (Insecta: Hemiptera) from Sunderban biosphere reserve, West Bengal, India

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### Abstract

The present study reports six species of aquatic Hemiptera belonging to the families Belostomatidae, Nepidae and Hydrometridae as the new record from Sunderban Biosphere Reserve namely, *Lethocerus indicus* (Lepeletier & Serville, 1825), *Diplonychus annulatus* (Fabricius, 1781), *Diplonychus rusticus* (Fabricius, 1781), *Laccotrephes griseus* (Guerin-Meneville, 1835), *Ranatra digitata* Hafiz & Pradhan, 1947 and *Hydrometra butleri* Hungerford & Evans, 1934. The communication also provides a list of aquatic bugs so far reported from this biosphere reserve.

**Keywords:** Aquatic insects, Hemiptera, New record, Indian Sunderbans

### Introduction

Sunderban mangrove forests (contiguous landmass of both India and Bangladesh) have been considered as one of the seven most important wetlands globally, based on biological diversity [1]. The Indian part of Sunderbans is bounded by the Ichamati - Raimangal River in the east, Hugli River in the west, Bay of Bengal in the south, and the Dampier-I Hodges line drawn in 1829-1830 in the north [2] and lies between the coordinates 21°30' to 22°15' N and 88°10' to 89°10' E [3]. The human-inhabited islands of Sunderbans delta have lots of fresh water bodies in the form of ponds, pools, marshy land etc., which are the breeding ground of the freshwater-inhabiting insect fauna.

There is very poor information on the aquatic bugs from Sunderbans except the work of Bal and Basu [4, 5]. This present communication provides a list of 18 species of aquatic Hemiptera from Sunderban Biosphere Reserve including six new records from this area.

### Methodology

The aquatic bugs were collected from the freshwater bodies of the Sagar Island, Bali Island and Gosaba Island of Sunderban Biosphere Reserve during the period of 2014-2015 and preserved in 70% ethanol. Identification of the materials were done by using different literatures like Bal (2007), Chandra and Jehamalar (2012) and Jehamalar and Chandra (2013). [6-8] Identified insects were photographed by Nikon DSLR D7000 with 105mm macro lens (Fig. 1 - 5) and Leica stereo zoom microscope (M205A) with the help of Leica DFC 500 camera (Fig. 6).

### Results and Discussion

Bal and Basu (1994 a & b) reported 12 species of aquatic bugs belong to six families, namely, Mesoveliidae, Veliidae, Gerridae, Belostomatidae, Nepidae and Notonectidae from the Sunderban Biosphere Reserve in the West Bengal State Fauna Series [4, 5]. The present work reports six more species under three families, namely, Belostomatidae, Nepidae and Hydrometridae, which are newly added to the aquatic bug fauna of Sunderban Biosphere Reserve. The family Hydrometridae is reported for the first time from this Biosphere Reserve. Altogether, 18 species under 11 genera of aquatic bugs belong to seven families of order Hemiptera are reported from the Sunderban Biosphere Reserve (table. 1). Of them, the family Gerridae represents the maximum diversity with 07 species followed by family Belostomatidae (04 species), Nepidae (03 species), Mesoveliidae (01 species), Veliidae (01 species), Notonectidae (01 species) and Hydrometridae (01 species).

The following six species of aquatic Hemiptera under five genera and three subfamilies were collected and identified during the present survey from the Sunderban Biosphere Reserve, West Bengal, India. All these six species are reported for the first time from this area.

**Table 1:** List of Aquatic bugs (Insecta: Hemiptera) from Sunderban Biosphere Reserve (\*marked are new records from Sunderban Biosphere Reserve)

Sl. No.	Name of the species	Family
1.	<i>Mesovelia vittigera</i> Horvath, 1895	Mesoveliidae
2.	<i>Microvelia (Microvelia) annandalei</i> Distant, 1909	Veliidae
3.	<i>Halobates flaviventris</i> Eschscholtz, 1822	Gerridae
4.	<i>Asclepios annandalei</i> Distant, 1915	Gerridae
5.	<i>Limlometra anadyomene</i> (Kirkaldy, 1901)	Gerridae
6.	<i>Limnogonus (Limnogonus) nitidus</i> (Mayr, 1865)	Gerridae
7.	<i>Limnogonus (Limnogonus) fossarum fossarum</i> (Fabricius, 1775)	Gerridae
8.	<i>Neogerris parvula</i> (Stal, 1859)	Gerridae
9.	<i>Aquarius adelaidis</i> (Dohrn, 1860) #	Gerridae
10.	<i>Diplonychus molestum</i> (Dufour, 1863)	Belostomatidae
11.	<i>Diplonychus annulatus</i> (Fabricius, 1781)*	Belostomatidae
12.	<i>Diplonychus rusticus</i> (Fabricius, 1781)*	Belostomatidae
13.	<i>Lethocerus indicus</i> (Lepeletier & Serville, 1825)*	Belostomatidae
14.	<i>Laccotrephes griseus</i> (Guerin-Meneville, 1835)*	Nepidae
15.	<i>Ranatra digitata</i> Hafiz & Pradhan, 1947*	Nepidae
16.	<i>Ranatra varipes</i> Stal, 1861	Nepidae
17.	<i>Anisops sardea</i> Herrich-Shaffer, 1850	Notonectidae
18.	<i>Hydrometra butleri</i> Hungerford & Evans, 1934*	Hydrometridae



**Fig 1:** *Lethocerus indicus* (Lepeletier & Serville, 1825)



**Fig 2:** *Diplonychus annulatus* (Fabricius, 1781)



**Fig 3:** *Diplonychus rusticus* (Fabricius, 1781)



**Fig 4:** *Laccotrephes griseus* (Guerin-Meneville, 1835)



**Fig 5:** *Ranatra digitata* Hafiz & Pradhan, 1947



**Fig 6:** *Hydrometra butleri* Hungerford & Evans, 1934

**Order Hemiptera**  
**Family Belostomatidae**

**1. *Lethocerus indicus* (Lepeletier & Serville, 1825)**  
1825. *Belostoma indica* Lepeletier & Serville, *Encycl. Meth.*, 10:272

1924. *Lethocerus indicum* (Lepeletier & Serville): Hale, *Rec. South Aust. Mus.*, 2 (4):521

1994. *Lethocerus indicus*: Bal & Basu, *Fauna of West Bengal, State Fauna Series*, 3(5):539

**Material Examined:** 1 ex., Sagar Island: Notun Gheri, Sunderbans, West Bengal, India, 17.vii.2014; coll. B. Mitra & Party.

**Distribution:** India: Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chandigarh, Chhattisgarh, Delhi, Goa, Gujarat, Himachal Pradesh, Kerala, Maharashtra, Mizoram, Orissa, Uttar Pradesh, West Bengal

**Elsewhere:** China, Korea, Hong Kong, Ryukyu Islands, Myanmar, Thailand, Vietnam, Philippines, Indonesia, Borneo, Sulawesi, Singapore, Peninsular Malaysia<sup>[9-11]</sup>.

## 2. *Diplonychus annulatus* (Fabricius, 1781)

1781. *Nepa annulata* Fabricius, *Carol. Ernest. Bokhni. Hamburgi et Kiloni*, 333.

1961. *Diplonychus annulatus* (Fabricius): Lauck & Menke, *Ann. Ent. Soc. America*, 54:649

2002. *Diplonychus annulatus* (Fabricius): Thirumalai, Metha & Sharma, *Res. Bull. Pan jab Univ.*, 52:157.

**Material Examined:** 1 ex., Gosaba Island: Pakhirala, Sunderbans, West Bengal, India, 11.xii.2014; 1 ex., Bakkhali: Laxmipur, Sunderbans, West Bengal, India, 21.vii.2015; coll. B. Mitra & Party.

**Distribution:** Andhra Pradesh, Assam, Bihar, Chandigarh, Chhattisgarh, Delhi, Gujarat, Himachal Pradesh, Jammu & Kashmir, Kerala, Madhya Pradesh, Maharashtra, Manipur, Orissa, Punjab, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

**Elsewhere:** Bangladesh, Pakistan.

## 3. *Diplonychus rusticus* (Fabricius, 1781)

1781. *Nepa rustica* Fabricius, *Species insectorum*, 2:333.

1833. *Diplonychus rusticus* (Fabricius): Laporte, *Magasin de Zool.*, Paris 2 (suppl.):18.

2005. *Diplonychus rusticus* (Fabricius): Thirumalai & Sureshkumar, *Rec. zool. Surv. India*, 105:13.

**Material Examined:** 1 ex., Bali Island: Vidya forest, Sunderbans, West Bengal, India, 12.xii.2014; coll. B. Mitra & Party.

**Distribution:** Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chandigarh, Chhattisgarh, Delhi, Goa, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Odisha, Puducherry, Punjab, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

**Elsewhere :** China, Indonesia, Japan, Malay Peninsula, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam, Taiwan, Singapore<sup>[11]</sup>.

## Family Nepidae

### 4. *Laccotrephes griseus* (Guerin-Meneville, 1835)

1829. *Nepa griseus* Guerin-Meneville, *Iconogr Regne Anim. Ins.*: 352

1947. *Laccotrephes griseus*: Hafiz & Pradhan, *Rec. Indian*

*Mus.* 45:364

2005. *Laccotrephes griseus* (Guerin- Meneville): Thirumalai & Suresh Kumar, *Rec. zool. Surv. India*. 105:11.

**Material Examined:** 2 ex., Gosaba Island: Pakhirala, Sunderbans, West Bengal, India, 11.xii.2014; coll. B. Mitra & Party.

**Distribution:** Throughout India.

**Elsewhere:** Malaysia, Myanmar, Seychelles, Sri Lanka, Thailand.

### 5. *Ranatra digitata* Hafiz & Pradhan, 1947

1947. *Ranatra digitata* Hafiz & Pradhan, *Rec. Indian Mus.*, 45: 361.

2007. *Ranatra digitata* Hafiz & Pradhan: Thirumalai, *Rec. zool. Surv. India, Occ. Paper*, 273:9.

**Material Examined:** 1 ex., Gosaba Island: Pakhirala, Sunderbans, West Bengal, India, 11.xii.2014; coll. B. Mitra & Party.

**Distribution:** Bihar; Haryana; Himachal Pradesh; Madhya Pradesh; West Bengal

## Family Hydrometridae

### 6. *Hydrometra butleri* Hungerford & Evans, 1934

1934. *Hydrometra butleri* Hungerford and Evans, *Ann. Mag. nat. Hist.*, 28:71.

2004. *Hydrometra butleri* Hungerford and Evans: Thirumalai, *Rec. zool. Surv. India*, 102 (Part 1-2); 165:29.

**Material Examined:** 1 ex., Gosaba Island: Pakhirala, Sunderbans, West Bengal, India, 11.xii.2014; coll. B. Mitra & Party.

**Distribution:** Assam, Himachal Pradesh, Madhya Pradesh, Orissa, Karnataka, Kerala, Tamil Nadu, West Bengal.

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