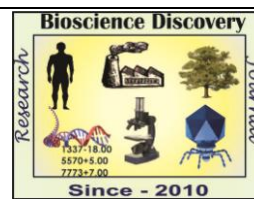


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**Research Article**



## Diversity of Ground beetles (Insecta: Coleoptera: Carabidae) from Indian Sundarban with seven new records

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### Abstract

The present communication deals with 15 species of ground beetles (Insecta: Coleoptera: Carabidae) from Sundarban Biosphere Reserve, of which, *Cicindela (Spilodia) multiguttata* Dejean, *Cicindela (Myriochile) atelesta* Chaudoir, *Clivina lobata* Bonelli, *Ophionea (Ophionea) indica* (Thunberg), *Eucolliuris fuscipennis* (Chaudoir), *Bembidion sobrinum* Boheman, *Bembidion niloticum* Dejean are being reported for the first time from this unique deltaic mangrove zone. One species, *Chlaenius* sp has been identified upto generic level. A list of 15 species so far reported from Sundarban Biosphere Reserve is also provided along with their valid scientific names, systematic position and distribution within and outside India.

### INTRODUCTION

The family Carabidae (ground-beetles and tiger beetles) is composed of over 40,000 species distributed in almost every part of the world except Antarctica, Tasmania and smaller oceanic islands and atolls (Slipinski *et al.*, 2011). These beetles are a group of mostly predatory insects, abundant in the field and attract attention with their peculiar shape and coloration. They are mostly active at night and prey on a wide range of small animals such as other insects and spiders; some species are active during the day and feed on plant tissue. Each species rarely occurs in more than one or a very few habitat types and habitat associations tend to be highly specific (Morgan *et al.*, 2000; Rafi *et al.*, 2010). One of the most common habitat types of tiger beetles are coastal areas with ocean beaches, sand dunes, sand bars, salt flats, estuaries, rocky shores, tidal flats with reeds and lagoons (Wiesner, 1975; Satoh *et al.*, 2003; Knisley and Fenster, 2005; Knisley, 2011).

The pioneer contributors on ground beetle fauna of SBR are Andrews (1929), Saha *et al.*

(1995), Saha (1995) and Mandal and Nandi (1989). A total of 15 species of 07 Genera under 06 tribe belonging to 05 Subfamilies are reported from Sundarban Biosphere Reserve, of which 07 species under 05 Genera are recorded for the first time from this region during the present survey.

### MATERIALS AND METHODS

Sundarban Biosphere Reserve, a World Heritage site is situated in the southern part of West Bengal, India have the third largest mangrove ecosystem of the World. It lies between 21°40'04" N and 22°09'21" N latitude, and 88°01'56" E and 89°06'01" E longitude.

The surveys were undertaken in different islands *viz.* Bali, Gosaba, Satjelia, Bakkhali, Jharkhali, Sagar Island of SBR under the project entitled 'Role of Insect Pollinators on the Conservation of Major Mangrove Species in Sundarban Islands, West Bengal' funded by Ministry of Environment, Forest and Climate Change, Government of India from 2014 to 2016.

The specimens were collected either by hand or by sweeping net in daytime. In the night time, the collection was made using light of 160 watts mercury vapour lamp in front of a white cloth. The examples were studied with the help of Stereo Zoom Binocular Microscopes, model Leica EZ4 HD. Identified specimens are deposited in the "National Zoological Collections of Zoological Survey of India, Kolkata. All collections were made by B. Mitra and party.

## RESULTS AND DISCUSSION

Present communication deals with 15 species under five subfamilies of ground beetles (Coleoptera: Carabidae). Among these, subfamily Cicindelinae shares maximum species (09), Trechinae and Lebiinae each share 02 species, and subfamilies Brachininae and Licininae with single species each. Seven species are reported for the first time from this deltaic Islands. Altogether, 15 species were listed below with their distribution from India and abroad.

### Systematic position

#### Order Coleoptera

#### Family Carabidae

Subfamily Cicindelinae Latreille, 1802

Tribe Cicindelini Latreille, 1802

#### 1. *Cicindela (Callytron) limosa* Saunders

1834. *Cicindela limosa* Saunders, *Trans. ent. Soc. London*: 64, Pl. 7, Fig.6.

**Materials examined:** West Bengal, Sundarban, 4 exs., Gosaba: Pakhir chor, 19.v.2015; 4 exs., Gosaba: Bagbagan, 31.v.2015; 2 exs., Gosaba: Pakhirala, 19.v.2015; 4 exs., Sagar island: Gangasagar Panmazani, 09.vi.2015; 12 exs., Sagar island: Gangasagar, 19.v.2015; 3 exs., Sagar island: Gangasagar colony, 20.v.2015; 4 exs., Bakkhali: Debnibas, 17.vi.2015; 3 exs., Bakkhali: Henry's island, 16.vi.2015; 6 exs., Bakkhali: Henry's island, 22.v.2015; 1 ex., Bakkhali: Henry's island, 17.vi.2015; 1 ex. Bakkhali: Henry's island, 18.vi.2015; 1 ex., Jharkhali, 28.v.2015; 1 ex., Satjelia island: 4 no. satjelia, 28.v.2015; 2 exs. Bali island: 9 no. gheri, 11.iii.2015; 1 ex., Bali island: 9 no. gheri, 14.iii.2015.

**Distribution:** India: Andaman Island, Andhra Pradesh, Odisha, Sikkim, West Bengal.

Elsewhere: China, Myanmar, Sri Lanka, Chusan Island, Thailand.

**Remarks:** This species was reported from Sundarban by Saha *et al.*, (1995). A good number

of examples have also been collected during this survey.

#### 2. *Cicindela (Hypaetha) quadrilineata* Fabricius

1781. *Cicindela quadrilineata* Fabricius, *Sp. Ins.* i, : 285.

**Materials examined:** 3 exs., West Bengal, Sundarban, Gosaba: Pakhir chor, 19.v.2015; 1ex., West Bengal, Sundarban, Gosaba: Pakhirala, 18.vi.2015.

**Distribution:** India: Andhra Pradesh, Kerala, Puducherry, Tamil Nadu, West Bengal.

Elsewhere: Iran, Myanmar, Malaysia, Pakistan, Sri Lanka, Thailand.

**Remarks:** This species was reported from Sundarban by Saha *et al.*, (1995) and Mandal and Nandi (1989). This species have also been collected during this survey.

#### 3. *Cicindela (Hypaetha) biramosa* Fabricius

1781. *Cicindela biramosa* Fabricius, *Spec. Ins.*, i : 286.

**Distribution:** India: Andaman and Nicobar islands, Andhra Pradesh, Karnataka, Kerala, Puducherry, Tamil Nadu, West Bengal.

Elsewhere: Bangladesh, Myanmar, Sri Lanka, Malacca, China.

**Remark:** This species was reported from Sundarban by Saha *et al.*, (1995) and Mandal and Nandi (1989).

#### 4. *Cicindela (Spilodia) multiguttata* Dejean

1825. *Cicindela (Spilodia) multiguttata* Dejean, *Spec. Gen. Col.*, 1: 109.

**Materials examined:** 1 ex., West Bengal, Bali island: Peyaratoli, 12.xii.2014; 2exs., West Bengal, Bakkhali: Henry's island, 16.vi.2015.

**Distribution:** India: Arunachal Pradesh, Assam, Haryana, Punjab, Uttar Pradesh and West Bengal.

Elsewhere: Bangladesh, Bhutan and Nepal.

**Remark:** This species is reported for the first time from Sundarban Biosphere Reserve.

#### 5. *Cicindela (Myriochile) atelesta* Chaudoir

1854. *Cicindela atelesta* Chaudoir, *Bull. Soc. Imp. Nat. Mosc.*, (1) 27: 115. 2015. *Cicindela (Hypaetha) quadrilineata*: Kushwaha & Hegde, *State fauna series, zool. Surv. India, Fauna of Uttar Pradesh*, 22 (2): 417

**Materials examined:** 1 ex., West Bengal, Bali island: Peyaratoli, 22.v.2015; 1 ex., West Bengal, Bakkhali: Debnibas, 16.vi.2015.

**Distribution:** India: Bihar, Gujarat, Karnataka, Maharashtra, Sikkim, Uttar Pradesh and West Bengal.

Elsewhere: Bangladesh, China, Nepal.

**Remark:** This species is reported for the first time from Sundarban Biosphere Reserve.

**6. *Cicindela (Eugrapha) erudita* Wiedemann**

1823. *Cicindela erudita* Wiedemann, *Zool Mag.* (1) 2: 68.

**Distribution:** India: Assam, Bihar, Chandigarh, Haryana, Himachal Pradesh, Jammu-Kashmir, Jharkhand, Madhya Pradesh, New Delhi, Punjab, Sikkim, Uttar Pradesh, Uttarakhand and West Bengal.

Elsewhere: Nepal.

**Remark:** This species was reported from Sundarban by Saha *et al.*, (1995) and Mandal and Nandi (1989).

**7. *Cicindela (Calochroa) sexpunctata* Fabricius**

1775. *Cicindela sexpunctata* Fabricius, *Syst. Ent.* : 226.

**Distribution:** India: Andaman and Nicobar Islands, Andhra Pradesh, Bihar, Odisha, Maharashtra, Tamil Nadu, West Bengal.

Elsewhere: Bangladesh, China, Myanmar, Vietnam, Formosa, Annam, Philippine, Senegal.

**Remark:** This species was reported from Sundarban by Saha *et al.*, (1995).  
Tribe Clivinini Rafinasque, 1815

**8. *Clivina lobata* Bonelli**

1813. *Clivina lobata* Bonelli, *Mem. Acad. Sci. Turin.*, 20: 481.

**Materials examined:** 1 ex., West Bengal, Sundarban, Gosaba: Pakhirala, 16.xii.2014.

**Distribution:** India: Chandigarh, Gujarat, Uttar Pradesh, West Bengal.

Elsewhere: Myanmar, and Thailand.

**Remark:** This species is reported for the first time from Sundarban Biosphere Reserve.

**9. *Clivina helferi* Putzeys**

1863. *Clivina heifer* Putzeys, Posteer, ad Cliv, *Mon. Mem. liege.* : 41.

**Materials examined:** 2 exs., West Bengal, Sundarban, Gosaba: Pakhirala, 16.xii.2014.

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

**Remark:** This species was reported from Sundarban by Andrews (1929). This species have also been collected during this survey.

Subfamily Lebiinae Bonelli, 1810

Tribe Odacanthini Laporte, 1834

**10. *Ophionea (Ophionea) indica* (Thunberg, 1784)**

1784. *Attelabus indicus* Thunberg: 68.

*Ophionea (Ophionea) indica*: 2014. Terada, K and Wu, Wen-Jer. *Coll. and Res.* 27: 15-41

**Materials examined:** 1 ex., West Bengal, Sundarban, Gosaba: Pakhirala, 14.xii.2014; 4 exs., West Bengal, Sundarban, Gosaba: Pakhirala, 10.xii.2014; 3 exs., West Bengal, Sundarban, Gosaba: Pakhirala, 11.xii.2014; 3 exs., West Bengal, Sundarban, Gosaba: Pakhirala, 16.xii.2014; 1ex., West Bengal, Sundarban, Bali island, 14.xii.2014.

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

Elsewhere: Australia, China, Indonesia, Japan, Nepal, Thailand, Taiwan.

**Remark:** This species is reported for the first time from Sundarban Biosphere Reserve.

**11. *Eucolliuris fuscipennis* (Chaudoir)**

1850a. *Casnonia fuscipennis* Chaudoir: 26  
2014. *Eucolliuris fuscipennis* : Terada, K and Wu, Wen-Jer. *Coll. and Res.* 27: 15-41

**Materials examined:** 6 exs., West Bengal, Sundarban, Gosaba: Pakhirala, 16.xii.2014; 2 exs., West Bengal, Sundarban, Gosaba: Pakhirala, 10.xii.2014; 1 ex., West Bengal, Sundarban, Gosaba: Pakhirala, 14.xii.2014; 2 exs., West Bengal, Sundarban, Gosaba: Jotirampur, 16.xii.2014.

**Distribution:** India: Widespread

Elsewhere: China, Japan, Taiwan, Malaysia, Vietnam, Thailand, Indonesia.

**Remark:** This species is reported for the first time from Sundarban Biosphere Reserve.

Subfamily Trechinae Bonelli, 1810

Tribe Bembidiini Stephens, 1827

**12. *Bembidion sobrinum* Boheman**

1848. *Bembidium sobrinum* Boheman, *Ins. Caffr.*, 1: 232.

**Materials examined:** 1ex. West Bengal, Sundarban, Gosaba: Pakhirala, 16.xii.2014.

**Distribution:** India: Plains of India including Uttar Pradesh

Elsewhere: Cambodia, East African Countries, Indonesia, Sri Lanka, Myanmar, South Africa and Thailand.

**Remark:** This species is reported for the first time from Sundarban Biosphere Reserve.

**13. *Bembidion niloticum* Dejean**

1831. *Bembidium niloticum* Dejean, *Spec. Gen. Col.*, 5: 73.

**Materials examined:** 1ex. West Bengal, Sundarban, Gosaba: Pakhirala, 16.xii.2014.

**Distribution:** India: Haryana, Nagaland, Uttarakhand, Uttar Pradesh and West Bengal; Elsewhere: Cambodia, China, Egypt, Iraq, Iran, Japan, Laos, Pakistan, Saudi Arabia, Turkey and Vietnam.

**Remark:** This species is reported for the first time from Sundarban Biosphere Reserve.

Subfamily Brachininae Bonelli, 1810

Tribe Brachiniini Bonelli, 1810

**14. *Pheropsophus catoirei* (Dejean, 1825)**

1825. *Brachinus catoirei* Dejean, *Spec. Gen. Col.*, 1: 301.

1924. *Pheropsophus catoirei*, Andrewes, *Mission Prov. Centr. l'Inde Reg. Occi. L Himalaya 1914, par Guy Babault*: 55.

**Distribution:** India: Arunachal Pradesh, Himachal Pradesh, Jammu and Kashmir, Sikkim, Uttar Pradesh, Uttarakhand, West Bengal.

Elsewhere: Afghanistan, Bhutan, Myanmar, Nepal, Pakistan and Sri Lanka.

**Remark:** This species was reported from Sundarban by Mandal and Nandi (1989).

Subfamily Licininae Bonelli, 1810

Tribe Chlaeniini Brulle, 1834

**15. *Chlaenius* sp.**

**Materials examined:** 1ex. West Bengal, Sundarban, Bali island, 04.vii.2014.

**Remark:** This specimen have been identified up to generic level.

**DISCUSSION**

Probably, Andrews (1929) was the pioneer worker on the carabid fauna of Sundarban and describes several species in his Fauna of British India series. During the post-independence, some contributors like Saha (1986), Zamotajlov and Sciaky (1998), Vennila and Rajagopal (1999), Abhitha *et al.* (2009), Thakare and Zade (2012 a & b), Kushwaha and Hegde (2015) and many others were enriched the carabid fauna of India. Saha *et al.* (1995), Saha (1995), Mandal and Nandi (1989) were enriched the carabid fauna of Indian Sundarban. This present communication reports seven species for the first time from Sundarban Biosphere Reserve. Though the present work have been undertaken in the human inhabited areas and buffer zones of this

biosphere reserve, more surveys and exploration of core area of this biosphere reserve will definitely enrich the faunal diversity of Carabidae fauna of this deltaic mangrove ecosystem.

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