

First report on insect faunal diversity from the mangrove ecosystem of Diu, Union Territories of India

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Abstract

Present communication is the first faunistic study in the mangroves of Diu Island, India. Altogether, 29 species of the orders, Hemiptera (12 species), Orthoptera (10 species) and Lepidoptera (7 species) are reported for the first time from the mangroves of Diu Island. Eighteen insect species are also reported here for the first time from the Indian mangroves.

Keywords: Diu, mangrove, insect biodiversity

1. Introduction

Mangrove entomology have remained a neglected field of study in different parts of the world including India. But, currently increased focus on mangrove herbivory or pest attack has shown that the situation in mangroves are in no way different from other terrestrial ecosystems. Mangrove forests in India are found along the coastline of 9 States and 4 Union territories (Fig. 1). Their overall cover is estimated to be 4740 km², of which about 58% is along the east coast (Bay of Bengal); 29% along the west coast (Arabian Sea) and the remaining 13% in the Andaman and Nicobar Islands (Bhatt & Kathiresan, 2011) ^[1]. Among the 13 mangrove States and Union territories of India, nothing has been known on insect diversity from the mangrove ecosystem of Diu. Recently, Zoological Survey of India has taken initiative to explore the fauna of Diu and the first team visited this Union territory under the leadership of the first author in the month of September, 2016. This communication is the outcome of that survey and reports 29 species under 3 orders for the first time from the mangroves of Diu.

2. Study Site

Diu district is an island on southern portion of Gujarat Peninsula and situated between the latitude 20°44'34" N to 20°42'00" N and between the longitude 71°00'24" E to 70°52'26" E. Its length from the extremes north and south, measures 4.6 kms and width from east to west measures 13.8 kms. The altitude is 6 metres above the sea level. The topography is generally plain. The hillocks attain maximum height of 30 metres. Collection was mostly made near to Fudam Bird sanctuary, bank of the river and harbour areas of Diu. It is the only bird sanctuary in Diu, situated in the brackish water swampy area vegetated with mangrove plants.

3. Vegetation

In general, Diu Island is lacking of natural forest. Muddy flats towards northern end of Diu, at the bank of Chasi River harbour mangrove species *Avicennia marina var acutissima*.

Other species found in association are *Acanthus ilicifolius*, *Aegiceras corniculatum*, *Sonneratia apetala*, *Salicornia* sp., and a few members of Cypraceae and Poaceae like *Apluda mutica*, *Arthraxon lancifolius*, *Digitaria ciliaris*, *Eragrostis ciliaris* and *Fimbristylis polytrichoides*, etc. (Sharma and Sikarwar, 2004) ^[2].

3. Materials & Methods

The specimens have been collected either by hand or by sweeping net in daytime. In the night time, the collection has been made using light of 27 watt CFL bulb hung in front of a white cloth. The examples have been studied under the Stereo Zoom Binocular Microscopes, model Leica EZ4 HD. Specimens examined are deposited in the "National Zoological Collections of Zoological Survey of India, Kolkata.



Fig 1: Mangrove states & Union territories in India.

4. Results

Altogether, 29 species under 15 families of three orders have been reported from the mangrove areas of Diu Island. Of them, Hemiptera shares highest number of species (12), followed by Orthoptera (10) and Lepidoptera (7) (Table-1).

Present communication also documents 18 insect species for the first time from the Indian mangroves. Of which, Hemiptera (8 species), followed by Orthoptera (6 species) and Lepidoptera (4 species) (Table-1)

Table 1: List of species reported from mangroves of Diu

	Order	Family	Species	Remarks
1	LEPIDOPTERA	Crambidae	<i>Botyodes asialis</i> Guenee, 1854	Reported from West Bengal (Mitra, 2017) ^[3]
2			<i>Diaphania indica</i> (Saunders, 1851)	First report from Indian mangroves
3			<i>Maruca vitrata</i> (Fabricius, 1787)	First report from Indian mangroves
4			<i>Parotis marginata</i> Hampson, 1893	First report from Indian mangroves
5			<i>Spoladea recurvalis</i> (Fabricius, 1775)	Reported from West Bengal (Mitra, 2017) ^[3]
6		Noctuidae	<i>Spodoptera litura</i> (Fabricius, 1775)	Reported from West Bengal & Gujarat (Mitra, 2017 & Remadevi <i>et al.</i> , 2008) ^[3,4]
7		Pyralidae	<i>Hypsopygia olinalis</i> (Guenee, 1854)	First report from Indian mangroves
1	HEMIPTERA	Cercopidae	<i>Callitettix versicolor</i> (Fabricius, 1794)	First report from Indian mangroves
2		Coreidae	<i>Cletus rubidiventris</i> (Westwood, 1842)	First report from Indian mangroves
3		Lygaeidae	<i>Rhyparothesus bengalensis</i> (Distant, 1909)	First report from Indian mangroves
4		Membracidae	<i>Otinotus oneratus</i> (Walker, 1858)	Reported from West Bengal (Mitra, 2017) ^[3]
5		Pentatomidae	<i>Acrosternum gramineum</i> (Fabricius, 1787)	Reported from West Bengal (Mitra, 2017) ^[3]
6			<i>Antestiopsis cruciata</i> (Fabricius, 1775)	Reported from A & N (Veenakumari <i>et al.</i> , 1997) ^[5]
7			<i>Carbula biguttata</i> (Fabricius, 1794)	First report from Indian mangroves
8			<i>Eysarcoris ventralis</i> (Westwood, 1837)	Reported from West Bengal, Andhra Pradesh & Tamil Nadu (Mitra, 2017, Remadevi <i>et al.</i> , 2008) ^[3,4] & Rahaman, 2002) ^[6]
9		Phyrrhocoridae	<i>Antilochus coqueberti</i> (Fabricius, 1803)	First report from Indian mangroves
10		Reduviidae	<i>Ectrychotes dispar</i> Reuter, 1881	First report from Indian mangroves
11			<i>Lisarda annulosa</i> Stal, 1874	First report from Indian mangroves
12		Ricaniidae	<i>Ricanoides pipera</i> (Distant, 1914)	First report from Indian mangroves
1	ORTHOPTERA	Acrididae	<i>Choroedocus illustris</i> (Walker, 1870)	First report from Indian mangroves
2			<i>Xenocatantops humilis humilis</i> (Serville, 1839)	First report from Indian mangroves
3			<i>Eyprepocnemis alacris alacris</i> (Serville, 1838)	Reported from West Bengal (Mitra, 2017) ^[3]
4			<i>Spathosternum prasiniferum prasiniferum</i> (Walker, 1871)	Reported from West Bengal (Mitra, 2017) ^[3]
5		Pyrgomorphidae	<i>Atractomorpha crenulata</i> (Fabricius, 1793)	Reported from West Bengal (Mitra, 2017) ^[3]
6			<i>Chrotogonus trachypterus trachypterus</i> (Blanchard, 1836)	Reported from West Bengal (Mitra, 2017) ^[3]
7		Tetrigidae	<i>Ergatettix dorsifera</i> (Walker, 1871)	First report from Indian mangroves
8			<i>Paratettix histricus</i> (Stål, 1861)	First report from Indian mangroves
9		Tettigoniidae	<i>Conocephalus (Anisoptera) maculatus</i> (Le Guillou, 1841)	First report from Indian mangroves
10			<i>Letana pyrifer</i> Bey-Bienko, 1956	First report from Indian mangroves

5. Discussion

Mangroves are the most productive ecosystems, which can fertilize the marine ecosystem, protect the coastal zone and serve as the breeding, feeding and nesting ground for many birds and animals. The Indian mangroves support rich faunal resources. But unfortunately, mangrove faunal diversity of India is well known for the larger animals and poorly known for tiny insects. Study of insect biodiversity can help in assess its potential productivity and in better conservation of mangroves. Present communication reports for the first time 29 species of insects from the mangroves of Diu and 18 species for the first time from the mangroves of India. Therefore, this communication may serve as a baseline data of insect diversity of mangrove of Diu as well as India.

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