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RESEARCH ARTICLE

DIVERSITY OF ACRIDIDS IN MUTHUPET MANGROVE FOREST OF TAMIL NADU, INDIA

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ABSTRACT

Diversity of acridids in Muthupet mangrove forest in Thiruvarur District of Tamil Nadu was assessed for a period of one year from April 2013 to March 2014. 1310 grasshoppers belonging to 8 family and 8 species were recorded. The sub family Atractomorphinae (*Atractomorpha crenulata*) recorded a maximum density of (376) grasshoppers with a population density of 28.7 % followed by the sub family, *Orthacris robusta* (27.2 %), Oxyinae (*Oxya hyla hyla*) (13.59 %), Acridinae (*Acrida exaltata*), (12.4 %), Catantopinae (*Diabolocatantops pinguips*), (9.16%), Eyprepocnemidinae (*Eyprepocnemis alacris alacris*) (4.43%), Cyrtacanthacridinae (*Cyrtacanthacris tatarica tartarica*) (3.05%) and Locustinae (*Lucusta migratoria migratoria*) (1.91%). Grasshopper population density exhibited temporal variations with the maximum during summer months and a minimum in monsoon months.

INTRODUCTION

Acridoidea is the largest group of herbivorous insects, contributing 30-60% of the total biomass of all insect species put together (**Mulkern, 1970**) and forms the first link in the food chain of terrestrial ecosystem. It includes the non-migratory grasshoppers and the gregarious locusts, both are causing considerable damage to agricultural and forest ecosystem. Mangroves are unique plants which can tolerate a wide range of salinity, mostly found in the tropical and subtropical coastlines. In India, the mangroves are highly depleted (**Government of India, 1987**) and about 40% of its mangrove area was lost in the last century. This degradation is due to natural hazards, destructive human activities and insect herbivores (**Remadevi and Raji, 2005 and Veenakumari *et al*., 1997). Senthil and Varadharajan (1995)** studied insect diversity in Pichavaram mangrove and they reported 28 species belongs to order coleopteran and 25 species of the order lepidoptera. **Kathiresan (1992)** reported that predominant insect species of Avecenniaceae in Pichavaram are leaf mining moth; *Phylloenistis sp* (Lepidoptera), leaf galls of *Stephaniella falcaria* (Dipteral) and *Monolepta sp* (Coleopteran) and caterpillars of *Dasychira sp* (Lepidoptera). Thangam and **Kathiresan (1993)** carried out a study on mosquitoes species in Pichavaram mangroves and they had identified 18 species. Nelson (1997) recorded 4 species of ants in the Pichavaram mangroves. Veenakumari *et al*. (1997) reported the occurrence of 276 species of insects in the mangals of Andaman and Nicobar Islands of India.

Herbivorous insects can cause considerable damage to the mangrove vegetations. Lepidoptera and coleopteran are the most important phytophagous insects occurring in the mangrove forests (**Kathiresan and Bingham, 2001**). However, there is no detailed work on the diversity of orthopteran insects (grasshoppers) in the mangroves of India has been done till date. Keeping in view this fact an attempt has been made to investigate the diversity and distribution of grasshoppers in the Muthupet mangroves.

MATERIALS AND METHODS

Study Area: Muthupet mangroves (Lat. 10° 46' N; Long. 79° 51' E) is located at the southern end of the Cauvery river delta on the Bay of Bengal, covering an area of approximately 6,803.01 ha. The study area is fully covered with dense mangroves vegetations like *Avicennia officinalis, Avicennia marina, Acanthus illicifolius, Sueda martima, Fimbristylis polytrichoidea* and *Rhizophora mucronata*.

Sampling Method: Sweep-net technique was followed in the sampling with a 30 cm (dia) hand net. In each plot, 10 sweeps were made at a time. The diameter of the net, the number of sweeps and the collection area were kept constant throughout study period. Grasshoppers were also collected by hand picking and counts were made. Collection and estimation of population density was done once a week and the data was compiled on a monthly basis.

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Identification: The collected specimens have been identified with the help of binocular stereoscopic microscope up to the species level (**Alexander, 1941**).

RESULTS AND DISCUSSION

In Muthupet mangroves, the grasshoppers representing 2 families, 8 genera and 8 species were recorded from Muthupet mangroves during the study (Table 1).

The Acrididae was the dominant family constituting 6 species followed by pyrgomorphidae (2 species). Maximum number of species represented by the subfamily Atractomorphinae (*Atractomorpha crenulata*) followed by *Orthacris robusta*, Oxyinae (*Oxya hyla hyla*),Catantopinae (*Diabolocatantops pinguips*), Acridinae (*Acrida exaltata*), Eyprepocnemidinae (*Eyprepocnemis alacria alacris*), Cyrtacanthacridinae (*Cyrtacanthacris tatarica tartarica*) and Locustinae (*Lucusta migratoria migratoria*) (Fig.1).

Table 1. The numerically dominant grasshopper species in Muthupet mangroves

Family	Sub family	Species	Species %	Species Rank
Acrididae	Acridinae	*Acrida exaltata*	12.14	IV
	Catantopinae	*Diabolocatantops pinguips*	9.16	V
	Cyrtacanthacridinae	*Cyrtacanthacris tartarica tartarica*	3.05	VII
	Eyprepocnemidinae	*Eyprepocnemis alacris alacris*	4.43	VI
	Locustinae	*Lucusta migratoria migratoria*	1.91	VIII
	Oxyinae	*Oxya hyla hyla*	13.59	III
Pyrgomorphidae	Atractomorphinae	*Atractomopha crenulata*	28.70	I
	Pyrgomorphinae	*Orthacris robusta*	27.02	II

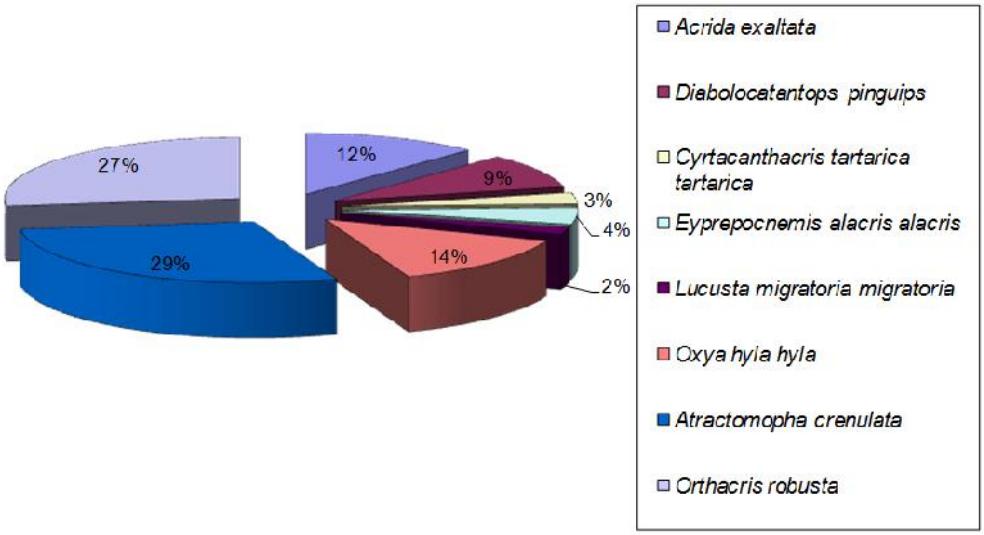

Fig. 1. Distribution of grasshopper species in Muthupet mangroves

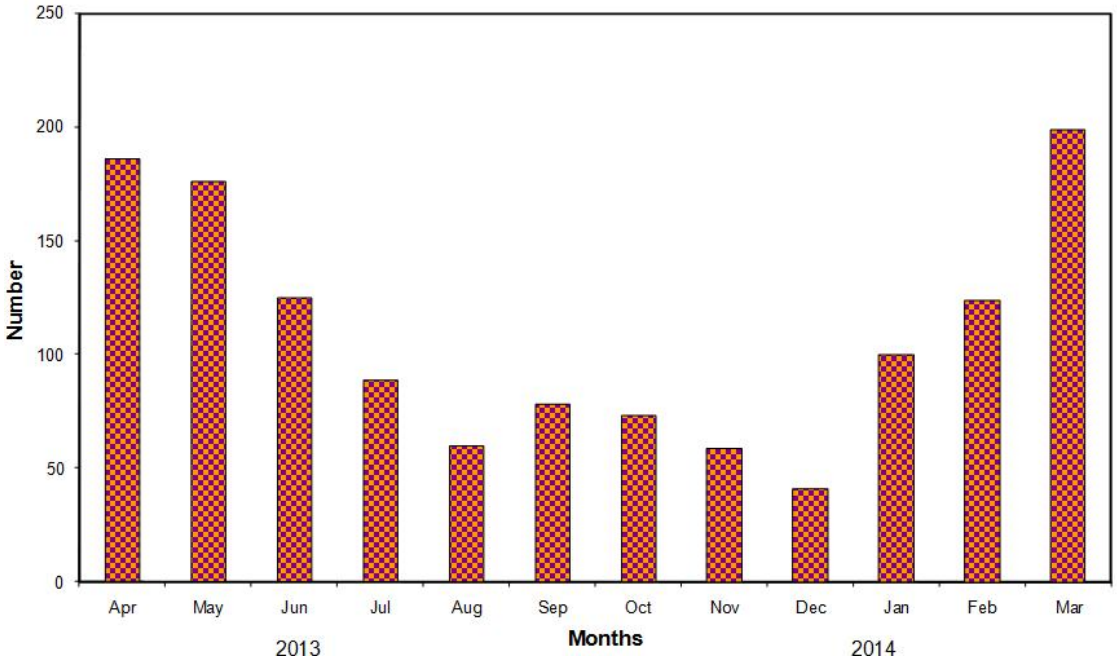

Fig. 2. Monthly collected grasshoppers from Muthupet mangroves

The population density was slash down during the months of October which incidentally coincides with the onset of rainy season. From then on, the population density increased slowly. The population was more or less exploded, during the month of March, which fortuitously marks the beginning of summer (Fig.2).

Parkers (1930) extensive experiments with several American grasshoppers have clearly indicated a shortening of the hopper period and an accelerated rates of development with rising temperatures. A detailed and comprehensive experimental studies on locusts by **Hamilton (1950)** have revealed that the length of hopper period was found to be decreased with rising temperature. The population study of *Oxya fuscovittata* has indicated an increase in population density during summer months followed by a gradual decline in the rest of the months, with an annual low density during November and December months (**Partho Partim Dhang, 1994**).

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