

## Research Article

### MOTH (LEPIDOPTERA: HETEROCERA) FAUNA OF EASTERN JABALPUR: A PRELIMINARY CHECKLIST

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#### ARTICLE INFO

##### Article History:

Received 17<sup>th</sup> December, 2016  
Received in revised form  
26<sup>th</sup> January, 2017  
Accepted 11<sup>th</sup> February, 2017  
Published online 30<sup>th</sup> March, 2017

##### Keywords:

Heterocera, Bargi reservoir,  
Light Trap, Diversity,  
Indicator.

#### ABSTRACT

Moths (Heterocera) belong to the order Lepidoptera. A preliminary study of Moth fauna in catchment of Bargi reservoir was carried out during 2015-2016. that a total 22 moth species All possible efforts were carried out to record and enlist the hidden fauna of Narmada basin and some surrounding areas for environmental health conservation. Collection of moths was carried out in all seasons to determine their diversity and occurrence. In present findings total 22 moth specimens were collected by using simple light traps operated from dusk to dawn, which belongs to 7 families under 5 super families from the reservoir. Families *Noctuidae*, *Arctiidae*, *Pyralidae*, *Geometridae*, *Sphingidae*, *Saturniidae* and *Eupterotidae* were presented in collection samples. The study has also indicated that there are possibilities of new records of moth family, genus and species of in Madhya Pradesh.

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## INTRODUCTION

Narmada is one of the most important aquatic resources in Madhya Pradesh as well as an important ecological hub of central India hence known as epicentre for diversities study. Insect is most diverse class among which both moth and butterflies belong to same order Lepidoptera, meaning "Scaled wings" in Greek. Moths (Heterocera) represent one of the most heterogeneous groups among insects. There are about 1, 27,000 species of moths from all over the world and of these, over 5000 species are reported from India (Paul *et al.*, 2016). ZSI (2007) reveals the new record of 48 species of moths pertaining to genera and families and reported total 313 species/subspecies of moths belonging to 221 genera and 25 families from central, India. However, the moth fauna of Jabalpur is represented by 42 species belonging to 38 genera under 6 families. Moths play a very important role in urban vegetative area as agricultural pests (Sharma and Bisen, 2013; Sharma, 2011), night pollinators (Devoto *et al.*, 2011; Le Croy *et al.*, 2013) and ecological health marker (Holloway, 1985). But studies on moths are highly neglected in central India. This study was mainly carried out to elucidate the biodiversity of moth fauna that has not been studied previously.

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## MATERIALS AND METHODS

The findings presented here are based on random surveys carried out January 2015 to December 2016 in catchment of Bargi reservoir, (35 km from Jabalpur bus stand) in Jabalpur region of river Narmada. Jabalpur is located between 23°10'N latitude and 79°56'E longitude. Moths are nocturnal so Light trap was use for the collection of them. Light traps were in the evening onwards till morning on next day using a 160W mercury vapour bulb over a three by three white cloth sheet which was hung between two vertical poles. The moths sitting on the white cloth were picked into the killing bottles containing chloroform (CHCl<sub>3</sub>). Later they were pinned on insect stretching board using entomological pins and have been kept in the insect box for later identification. All specimens were well labeled and preserved in airtight insect box, having naphthalene balls as fumigant for later identification. The identification of moths was carried out in laboratory at Zoological Survey of India, Jabalpur with help of identified specimens and available literature Hampson (1892; 1894; 1895 and 1896) and Bell and Scott (1937).

## RESULTS AND DISCUSSION

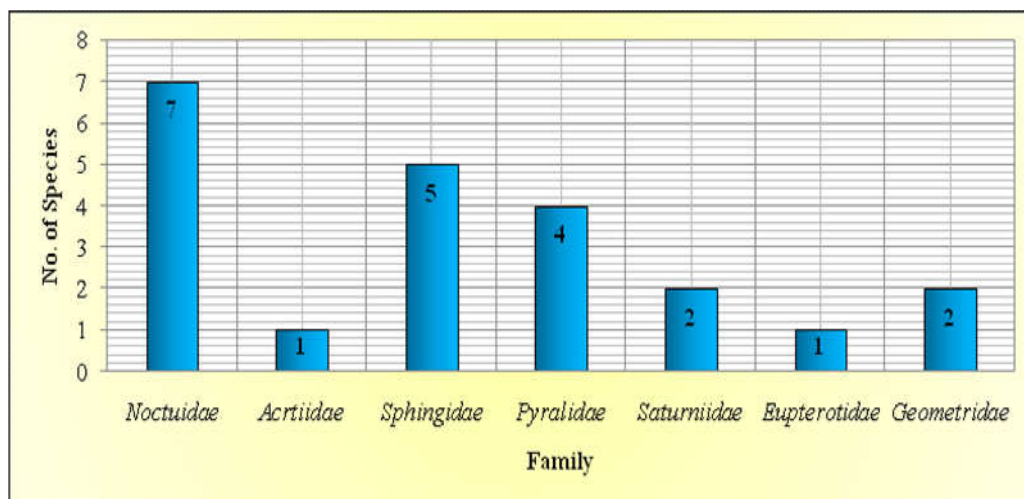
During the present study, total of 22 species of moths (Heterocera), belonging to 5 super-families and 7 families, were collected from catchment of Bargi reservoir, Jabalpur, by using light traps.

**Table 1. List of Moth (Heterocera) and their occurrence in Bargi Reservoir, Jabalpur**

S.No.	Super-Family	Family	Name of Species	Occurrence	
1.	NOCTUOIDEA	<i>Noctuidae</i>	<i>Achaea janata</i> (Linnaeus)	Very Common	
2.			<i>Chrysodeixis eriosoma</i> (Doubleday)	Common	
3.			<i>Cosmophila erosa</i> (Hubner)	Rare	
4.			<i>Hyblaea puera</i> (Cramer)	Common	
5.			<i>Pseudaletia separata</i> (Walker)	Very Common	
6.			<i>Thermesia rubicans</i> (Boisduval)	Very Common	
7.			<i>Trigonodes hyppasia</i> (Cramer)	Rare	
8.	SPHINGOIDEA	<i>Acrtiidae</i>	<i>Amsacta lineola</i> (Fabricus)	Common	
9.			<i>Sphingidae</i>	<i>Acherontia styx</i> (Westwood)	Common
10.				<i>Acherontia lachesis</i> (Fabricius)	Not Rare
11.	<i>Deilephila nerii</i> (Linnaeus)	Rare			
12.	PYRALIDOIDEA	<i>Pyalidae</i>	<i>Herse convolvuli</i> (Linnaeus)	Not Rare	
13.			<i>Theretra alecto</i> (Linnaeus)	Common	
14.			<i>Cirrhochrista brizoalis</i> (Walker)	Not Rare	
15.			<i>Nephoteryx rhodobasalis</i> (Hampson)	Common	
16.			<i>Diaphania indica</i> (Saunders)	Common	
17.			<i>Microthrix omichleua</i> (Mey)	Very Common	
18.			BOMBYCOIDEA	<i>Saturniidae</i>	<i>Actias selene</i> (Hubner)
19.	<i>Antheraea paphia</i> (Linnaeus)	Common			
20.	GEOMETROIDEA	<i>Eupterotidae</i>	<i>Eupterote undara</i> (Blanch)	Very Common	
21.			<i>Geometridae</i>	<i>Euchloris uvidula</i> (Swinhoe)	Very Common
22.				<i>Hyperythra swinhoei</i> (Butler)	Rare

**Table 2. Summarization of collected data of Heterocera in Bargi reservoir**

Super-family	Family	Genus	Species	Very Common	Common	Not Rare	Rare
5	7	21	22	6	9	3	4

**Figure 1. Familywise distribution of Heterocera in Bargi Reservoir Catchment**

The maximum number of moth species belonged to family *Sphingidae* while families *Geometridae*, *Saturniidae* and *Noctuidae* with 2 species of moth each represented the minimum number. ZSI, recorded 40 species from Jabalpur but majority of moth species previously reported from Jabalpur remained unnoticed and the reason may be the limited area was covered during the study. Among this record, species richness was found to be highest for family *Noctuidae* with 7 species followed by *Sphingidae* with 5 species, *Pyalidae* with 4 species, *Geometridae* and *Saturniidae* with 2 species each and *Eupterotidae* and *Acrtiidae* with 1 species each (Figure 1). *Noctuidae* members may account for their higher species richness. The occurrence of moth in study area was shown that, among 22 recorded species of moths, 6 species were found to be very common (27%), 9 species were common (41%), 4 species were rare (18%) and 3 species were not rare (14%)

were found to the study areas shown in table 2 and Figure 2. It thus implies that further work undertaken in greater depth and covering large areas may reveal a rich biodiversity of moth fauna. Rare species were those which were encounter only 1 to 5 in numbers though out the study period. Comprehensive surveys of moth diversity have been done in Madhya Pradesh and Chhattisgarh, which included the annotated list of all 313 species/subspecies of moths belonging to 221 genera and 25 families and incorporates the information on district-wise localities (Chandra and Nema, 2007). During the present study 7 species were recorded from Bargi reservoir which previously recorded by ZSI from Madhya Pradesh namely *Achaea janata*, *Thermesia rubicans* and *Trigonodes hyppasia* belongs to family *Noctuidae*; *Herse convolvuli* belongs to family *Sphingidae*; *Cirrhochrista brizoalis* belongs to family *Pyalidae*; *Antheraea paphia* and *Actias selene* belongs to family *Saturniidae* as new record.

In the same order ZSI (2008) reported the moth fauna of Jabalpur which was represented by 42 species belonging to 38 genera under 6 families. Throughout India, 15 species were previously reported by many authors such as *Chrysodeixis eriosoma* in Jabalpur by Singh and Rawat (1980), *Hyblaea puera* on Soybean in M. P by Verma *et al.*, (1980) and in teak forest of M. P. by Khan *et al.*, (1988), *Pseudaletia separate* in Tripura by Mandal and Ghosh (1991), *Cosmophila erosa* in Orissa by Mandal and Maulik (1991) of family *Noctuidae*; *Amsacta lineola* in West Bangal by Ghosh and Chaudhary (1997) of family *Arctiidae*; *Acherontia styx*, *Acherontia lachesis*, *Deilephila nerii* and *Theretra alecto* by Bell and Scott (1937) of family *Sphingidae*; *Diaphania indica* in West Bangal by Bhattacharya (1997), *Nephopteryx rhodobasali* and *Microthrix omichleula* by Kulkarni and Joshi (1998) of family *Pyralidae*; *Eupterote undata* by Cotes and Swinhoe (1887) of family *Eupterotidae*; *Euchloris uvidula* and *Hyperythra swinhoei* by Hampson (1895) of family *Geometridae*. Likewise many more species may be recorded in all seasons from this study area in future through systematic surveys covering.

### Conclusion

The biodiversity and occurrence of widespread moth fauna in Bargi reservoir catchment is mainly due to the rich vegetation in this area as vegetation plays an important role for the existence of insect fauna in a community as it provides the main source of food etc. Further future study will help to understand overall species diversity as well as seasonal variations in moth abundance in Jabalpur region and underlying biotic interactions.

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