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Variability of Nocturnal Insects In Sant Gadge Baba Amravati University Campus, Amravati

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ABSTRACT

The insects are known to be the most successful and diverse animals on earth. Variability of nocturnal insects in Sant Gadge Baba Amravati University campus was recorded by using the light trap method for collection of insect. This trap consists of the light source and a big white sheet. The sheet was hung on the pillars. Insects were attracted to the light source settled on the sheet. The second sheet was also spread on the ground to catch the insect that fall. Collected insect in the killing bottle by beating tray aspirator, and forceps. Lightning hours were set for seven hours. During this study, total 6 orders of species of insects are found are Coleoptera, Lepidoptera, Orthoptera, Hemiptera, Diptera, and Hymenoptera, insects belonging to different families was collected in university campus by using light trapping methods respectively and moderate species diversity were observed. The abundance of species of most night insect in the study area maybe due to the loss of their natural habitat. This may be the virtue of anthropogenic activity such as fragmentation of habitat, replacement of the habitat for humane purpose or may be other due reasons that eventually lead to the decline of species diversity.

Keywords : Variability, Nocturnal insects, Sant Gadge Baba Amravati University.

I. INTRODUCTION

Insects have been around for more than 400 million years and it could be argued that they are the most successful and enduring life form that has ever arisen on this planet. Insects are abundant and ubiquitous. From the poles to the equator, from the surface of the sea to the highest peaks and from deserts to rain forests. Diverse as well as abundant, insects comprise roughly half of the Earth's one and a half million known species. There are many more species than those to which we have given names and past estimates have been as high as 100 million. The majority view nowadays is that we share the planet with somewhere between 5-15 million species, of which insects will be a sizeable proportion. Insects

are the dominant component of biodiversity in terrestrial ecosystems and play important roles in ecosystem processes (Weisser and Siemann, 2004). Insects exhibit considerable variations in their season availability, size, trophic level, life history, mobility, strategy and habitats. Insect communities constitute an integral part of terrestrial ecosystems by the diversity of both the species and life forms (Adjaloo et al., 2012). Insects dominate in many food webs and food chain lengths (Sugihara et al., 1997) and have great importance because of their diversity, ecological roles and influence on the agriculture, natural resources and human health (Foottit and Adler, 2009). About one million species are extant and certainly, many more await discovery and description, especially in the tropics. The class includes 30 orders with the variable number of species: the less diverse include the Mantophasmatodea (gladiators, 24 spp.) (Zompro et al, 2002:Damgaard et al. 2008), Grylloblattodea (ice crawlers, 32 spp.) (Wipfler et al. 2014), and Zoraptera (angel insects, 30 spp.) (Mashimo et al. 2014); whereas the more diverse comprise the Dipteran (flies, 100,000 spp.). Hemiptera (bugs, 100,000 spp.), Hymenoptera (wasps, bees, ants, and sawflies; 120,000 spp.) Lepidoptera (butterflies and moths, 150,000 spp.) and of course, the Coleopteran (beetles, 370,000 spp.) (Capinera 2008). The Orthoptera senses trictois somewhat in the middle regarding the number of species 25,000 although this may be doubled with new species from poorly surveyed or unexplored regions. The order includes well-known insects such as grasshoppers, locusts, katydids and crickets but also, bush-crickets, wetas, mole-crickets, ant-inquiline crickets

Keeping in mind the above literature the present study aimed to know the different variety of insects from different order at selected places of Amravati university campus.

II. MATERIAL AND METHODS

In the present study, we have been used the light trap method for collection of insect. This trap consists of the light source and a big white sheet. The sheet was hung on the pillars. Insects were attracted to the light source settled on the sheet. The second sheet was also spread on the ground to catch the insect that fall. Collected insect in the killing bottle by beating tray aspirator, and forceps. Lightning hours were set for seven hours.

A cotton swab dipped in benzene was put in killing bottle which used to anesthetize the insects. The insect was cached up in the following month (January, February, and March) at different interval of time.

The collected insects was put in the killing bottle to anesthetize and then removed to dry preservation for overnight by using of 160w mercury bright light. The average temperature ranged from 30–40 °C maximum and 15–25 °C minimum during the collection. The collected insects were then allowed for labelling, and sorting order wise.

Site of collection :

Insects are a remarkable group of animals. They occur virtually everywhere and make up more than half of all living things on earth. In the present study, we have selected the study area "Sant Gadge Baba Amravati University campus" for insect collection. The area was mostly vegetation and moderately temperate during the collection month. Most insects were noticed near the swampy area as well as the gardening site.

Preservation of collected insects :

The collected insects were transferred from killing bottle to preservation box. Smaller insects were preserved in 70% alcohols and large insects were preserved by pinning. Insects were pinned through properly thorax region about halfway between the two ends of the body.

Labelling and storage :

In order to have scientific values the collected specimens were labelled, in one side of the label, we noted locality, data, and last name of the collector in

an international convention writing procedure by a permanent marker pen.

Now, the labelled dried specimens were kept in a storage box with a small amount of flake naphthalene so that it may be protected from other museum insects.

III. OSERVATIONS AND RESULT

During this study, total 6 orders of species of insects are found are Coleoptera, Lepidoptera, Orthoptera, Hemiptera, Diptera, and Hymenoptera, insects belonging to different families were collected in university campus by using light trapping methods respectively and moderate species diversity was observed. Temperature variations during the study period of different months. The highest number of Lepidoptera was collected during February and March 2016. Some habitats factors that influence the patterns of Lepidoptera and other orders diversity are vegetation including host plants, food availability, temperature and wind exposure. So the temperature plays a major role in distributions of night insects. Mostly the nocturnal insects identified and classified at genus level and the rest of few are pause at the family level below under classified are.

Classification	Figure 1	Figure 2	Figure 3	Figure 4	Figure 5	Figure 6	Figure 7	|Figure 8	Figure 9	Figure 10
Order	*Lepidoptera*	*Lepidoptera*	*Lepidoptera*	*Lepidoptera*	*Lepidoptera*	*Lepidoptera*	*Lepidoptera*	*Lepidoptera*	*Lepidoptera*	*Lepidoptera*
Family	*Noctuidae*	*Noctuidae*	*Noctuidae*	*Aretidae*	*Arctidae*	*Natodontidae*	*Crambidae*	*Geometridae*	*Erebidae*	*Timeoidae*
Genus	*Luypurina*	*Sesamia*	*Orthosia*	*Apaidia*		*pheosia*	*Agriphilla*			*Tineola*
Species	*Testacea*	*nonagriodes*	*hebisci*	*mesogona*						*bisselliella*

Classification	Figure 11	Figure 12	Figure 13	Figure 14	Figure 15	Figure 16	Figure 17
Order	*Hemiptera*	*Hemiptera*	*Hemiptera*	*Hemiptera*	*Hemiptera*	*Hemiptera*	*Hemiptera*
Family	*Alydidae*	*Rhopalidae*	*Coreidae*	*Coreidae*	*Rhopalidae*	*Coreidae*	*Reduvidae*
Genus	*Alydis*	*Biosea*	*Leptoglossus*	*Leptoglossus*	*Halymortha*		
Species			*occidentalis*				

Figure No- 1

Figure No- 2

Figure No- 3

Figure No- 4

Figure No- 5

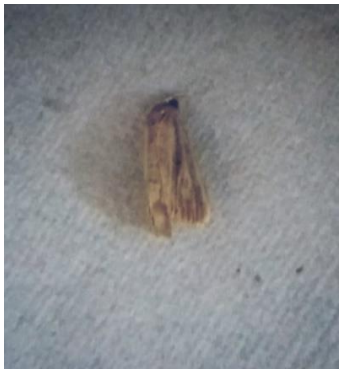

Figure No- 6

Figure No- 7

Figure No- 8

Figure No- 9

Figure No- 10

Figure No- 11

Figure No- 12

Figure No- 13

Figure No- 14

Figure No- 15

Figure No- 16

Figure No- 17

Figure No- 18

Figure No- 19

Figure No- 20

Figure No- 21

Figure No- 22

Figure No- 23

Figure No- 24

IV. DISCUSSION

Based on the survey which was carried out in the present study a total of 41 species belonging to 12 families were found. This study was mainly carried out to elucidate the biodiversity of moth fauna that has not been studied previously. It was observed that the number of moth species belonging to family Erebidae, was found more than other families viz., Noctuidiae, Crambidae, Arctiidae, Geometridae,

Sphingidae, Lymantriidae, Saturniidae, and Lasiocampidae. The collection was more mainly in August. Similar studies were carried out at 16 sites in southern Korea to determine the patterns of diversity for moths in this area. A total of 975 moth species were recognized in the 6 month collection periods (May to Oct) between 2001 and 2007. Species diversity and seasonal abundance of fruit piercing moth were carried out from different localities in Tamil Nadu. They observed five species of fruit piercing moth belonging to two genera (Ramkumar 2010) Comprehensible surveys of moth diversity have been done in Hawaii (Zimmerman 1948) and on larger continental islands New Zealand (Hudson 1928), and (Holloway 1976).

Orthoptera and coleopteran showed fewer species in the study area. The presence of less food and shelter on the restored site could be the reason for the less diversity of these insect species on that site. Most species of belongs to these three order just visit the ecosystem for sake of food and shelter as “Visitors” and come from the nearby agricultural fields on which they act as pests (Ahmed et al., 2004; Sultana and Wagan, 2010). Dipteran communities were more clearly differentiated by habitat as defined by dominant vegetation rather than geographic proximity between sites. This result does not mean that spatially autocorrelated factor does not influence these communities, however. In regions such as our study area that incorporate many habitat type distance may not be as important as habitat type (Harrison et al. 1992). Lepidopterans were probably one of the common and abundant among other insect species in the study site. This could be many reasons elaborated by Holloway (1980, 1984 and 1985), especially their abundance, species richness, response to vegetation and climate.

In tropical zones, the most significant temperature is not seasonal, but rather diurnal and nocturnal. The differences in temperature between day and night could also explain the diversity and species richness between diurnal and nocturnal insects, as the insects must explaine more energy to adapt to the lower nocturnal temperature. Indeed, at the individual level the available heat, as indicated by body temperature, is the most significant variable that determines growth and activity (Huffaker and Gutierrez 1999). Metabolic activities essential for development, feeding, dispersal, reproduction, and survival may all are impeded by the decrease in nocturnal temperature, which likely results in great diversity, species richness, and abundance. The abundance of species of most night insect in the study area may be due to the loss of their natural habitat. This may be the virtue of anthropogenic activity such as fragmentation of habitat, replacement of the habitat for humane purpose or maybe other due reasons that eventually lead to the decline of species diversity.

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