EFFECTIVENESS OF LIGHT TRAP FOR INSECT DIVERSITY AND DISTRIBUTION IN TEHSIL BAFFA PAKHAL, DISTRICT MANSEHRA PAKISTAN

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Abstract-Insects are come under Phylum Arthropoda and class Insecta. There are three body parts of insect, the head thorax and abdomen. The present research work was conducted to investigate the effectiveness of Light trapping system for insect diversity and distribution in Tehsil Baffa Pakhal, District Mansehra K P. The surveys for insect trapping was carried out from June 2022 to September 2022. A light trap were used for four months (from June 2022 to September 2022) for insect diversity and distribution in Tehsil Baffa Pakhal District Mansehra Khyber Pakhtunkhwa Pakistan. A total of 161 specimens were trapped. Which were identified into three orders (Order Blattodea, Order Coleoptera and Order Diptera), four families, seven Genera and seven species. Out of these three orders the order Coleoptera were recorded with the highest number of specimens and order Diptera were recorded with the lowest number of specimens. Light trap were found effective for nocturnal insects.

Index Terms-Coleoptera, Diversity, Insect, Light trap.

INTRODUCTION

Insects are come under Phylum Arthropoda and class Insecta. There are three body parts of insect, the head thorax and abdomen. Mouth parts, antennae and eyes are located on the head. The thorax is the section of the body that connects the legs and wings to the rest of the body. Internally, abdomen houses the digestive and reproductive organs, as well as outwardly, reproductive structures. Insects are very important for the ecosystem and play an important role in environmental services including pollination through visiting the flowers and as a predatory or parasitoid insects potential for biological control of pest insects [1]. While some insects are agricultural pests and harm the crops. So the crop production will enhance or destroy insect diversity depending on selected agricultural practices [2]. Monitoring the local insect fauna in crops fields is a serious step for effective agriculture yield [3].

About 75 percent of insect species among all recorded animal species. [4]. A total of 1, 00,000 species of arthropods are found in one hectare of Amazonian rain forests, among them 85% are insect [5]. Order Coleoptera, is most successful taxa accounts for 38% (3, 87,100 species) of all insect species on the planet [6]. Insects are divided into two main groups on the basis of wings which are Apterygota and Pterygota. Aperygota are those insects which have no wings and Pterygota are those insects which have wings [7].

Insect trapping systems the techniques used for the capturing of insect for pests control and as well as for research studies. There are many types of traps used for capturing of insects, for example light trap, sticky trap, adhesive trap, flying insect trap, pan trap, bottle trap, moth trap, bucket trap etc. All the traps are used for arresting and to reduce insect population. Different traps are used for the capturing of different insect. The method for fitting of traps are different. Sometimes we use chemical like pheromones to attract the insect. The use of trapping devices is the best common observing techniques for insect's fauna. Those traps using colours, smell , shape etc. are called attractant traps , In contrast to traps that catch insects by intercepting their flight (such as the flight intercept, malaise, and pitfall traps), which capture insects by trapping them [8]. For example pan trap are commonly used for sampling or capturing agrarian pests and bud visitor for example winged Hymenoptera, Coleoptera , Diptera and Hemiptera [9]. Sticky trap is installed in farming lands and households to capture the large quantity of pests insect such as Hemiptera, Diptera and Thysanoptera, this trap is less used than pan trap [10].

Light trapping system is used for the capturing of nocturnal insects. Light trap is placed on ground or suspended with a tree branch in the selected area. An artificial light is used as a light source. Nocturnal insects are attracted to light source that produce ultraviolet radiations. Moths and beetles are usually attracted to light trap. Light trap control the population of cotton insects. This method is also effected for the capturing of insects under the orders Coleoptera and Lepidoptera [11].

MATERIALS AND METHODS

Light trap design and setup

Light trap was used to collect nocturnal insect which contain a light bulb (to which nocturnal insect attracted), an electric wire which power the bulb and a small round box located bellow the light in which insect were collected. The insect that hit with light bulb and fall to round box. Light trap was placed on ground or hang with a tree where need. Most of insect were attracted to

light trap from 12 am to 3 am. Then the insect were trap collected from the box through forceps and preserved carefully.

Light trap

Study site and Sampling

Tehsil Baffa Pakhal District Mansehra were selected for the installation of Light trap. District Mansehra is located in the North of Pakistan. Light trap were set up in the four localities of Tehsil Baffa Pakhal and each locality were further divided into four small sample sites. The study were carried out for four month June, July, August and September of 2022. The minimum temperature were recorded 31 C and the maximum temperature were recorded 39 C during this research. The field work was started from June 2022 to September 2022. The insect samples were collected from light trap on daily basis.

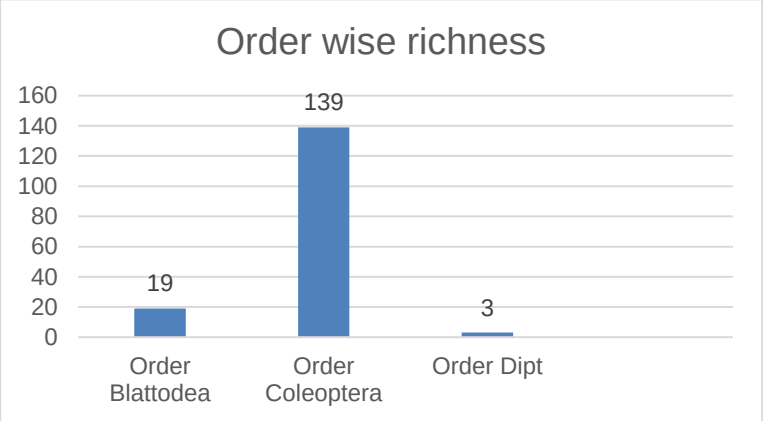
Results

A total of 161 specimens were trapped in four months, which were identified in National Insects Museum, National Agricultural Research Center Islamabad, Pakistan into three orders (Order Blattodea, Order Coleoptera and Order Diptera), four families, seven Genera and seven species. Out of three orders, order Coleoptera were found in highest number of specimens and five species were recorded. The order Diptera were recorded with the lowest number of specimens and only one specie was recorded.

No	Order	Family	Species	No of specimens (n)
1	Blattodea	Ectobiidae	*P. americana*	19
2	Coleoptera	Hybosoridae	*H. orientalis*	15
		Scarabaeidae	*A.ictericus*	22
			A.bengalensis	30
			C. repertus	27
			H. artor	45
3	Diptera	Muscidae	*M. domestica*	3

Order wise richness

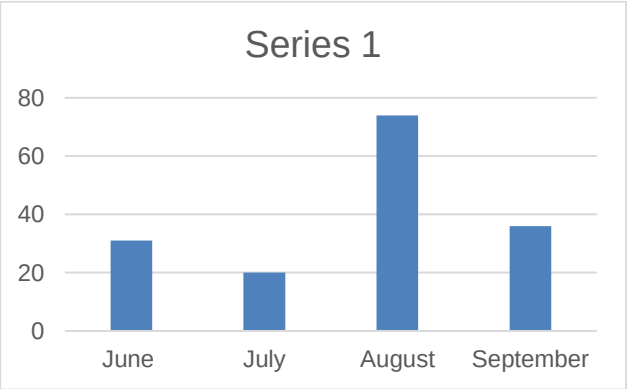
A total of 163 specimens were trapped which were identified into three orders i.e Order Diptera, order Coleoptera and Order Blattodea. Order Coleoptera contain mostly on beetles.



Monthly wise richness

A total of 161 specimens were trapped in four months (June, July, August and September) in four localities of Tehsil Baffa Pakhal District Mansehra. In the month of August, more insects were trapped.

No	Name Of Month	Number of trapped specimens
1	June	31
2	July	20
3	August	74
4	September	36



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