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Insect Biodiversity of Tibbi Region in Hanumangarh District (Rajasthan)

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ABSTRACT: This paper presents the Insect Biodiversity in the Tibbi area of Hanumangarh district. This study provides general information about insect species belonging to this area. The study is conducted in Tibbi and surrounding areas. 12 orders of insects are reported by the author in this study, out of which mainly orders are Lepidoptera, Coleoptera, Isoptera, Orthoptera, Diptera, Hymenoptera, Hemiptera etc. In this study area, mostly butterflies, flies, crickets, beetles, ants, termites, wasps, bees etc. have been observed.

KEYWORDS: Biodiversity, Tibbi, insects, butterflies, termites, bees.

INTRODUCTION: Biodiversity refers to the variety of life and the total sum of all living organisms that exist on our earth. Biodiversity provides a functioning ecosystem that supplies oxygen, clean air and water, pollination of plants, pest control, water waste treatment and many ecosystem services. In agro-ecosystem insect pollinators, natural enemies, earthworms and soil micro-organisms are key biodiversity components.

Insects are special creatures of nature and are included in the Arthropoda phylum of the animal kingdom. They are found everywhere in the environment, so we can say that insects are universal, found in almost all types of habitats like aquatic, desert, aerial, terrestrial etc. They have three body segments such as head, thorax and abdomen. Generally, insects have two pairs of wings and three pairs of legs, so they are known as hexapods. They have some special anatomical and morphological features like; a chitinous cuticle, ocelli, compound eyes, mouth parts, antennae, ovipositor and tracheal respiratory system.

These insects are very beneficial to our ecosystem. The presence of a diversity of insects in a place is a sign of a balanced ecosystem. These insects act as decomposers in the environment. These insects also perform a very important mechanism like pollination, so these insects contribute a lot to crop production in horticulture and farming activities. Some insects produce beneficial products, such as honey, bee-wax, propolis by honey bee and silk by silkworm.

So we can say that insect biodiversity is very beneficial for the ecosystem, so these insects should also be protected.

OBJECTIVES:

1. To study the role of insect species in the environment.
2. To identify the current status of insect biodiversity in the Tibbi area.
3. To recognize different orders of Insecta class.
4. To study different types of behavior of insects.
5. To gather information about scientific knowledge, important insect species, public awareness about insects etc.
6. To study the amazing life cycle of insects and their different stages.

STUDY AREA: Rajasthan state is the largest state in India by area. Tibbi block has been selected for this research work. This region is located in the almost northern part of Rajasthan. The study area Tibbi is a tehsil in the Hanumangarh district of Rajasthan. District Hanumangarh comes under agro-climatic Zone Ib (Irrigated North-Western plains) of Rajasthan. It lies between 290 5' N to 300 6' N latitude and 740 3' to 750 3' longitudes. It is bounded on the North by Punjab, on the South by Bikaner and Churu, on the East by Haryana, and on the West by Sri Ganganagar.

The study area is located 23 KM towards the East of district headquarter Hanumangarh. This area is mainly agro-based and most of the farming is dependent on the irrigation system. In Hanumangarh District, we find hot summer, cool winter, unreliable rainfall, and many variations in the temperature. This area is very hot in summer and very cold in the winter season. The rainfall is mostly restricted to the rainy season.

The monsoon normally comes in the first week of July and returns in the last week of September. There is very low rainfall during the monsoon season, but this area receives water from the IGNP canal for agricultural purposes. The Ghaggar River also passes through this area, whose downstream area is also known as Nali. This area is suffering from water lodging conditions in the canal command area due to high irrigation water supply and hardy layer in the subsoil.

This region is also known as the Rice Belt. There are two main crops Rabbi and Kharip. The crop production in this area is very good due to the proper irrigation system.

MATERIAL & METHODS: The study was carried out in the Tibbi block of the Hanumangarh district in Rajasthan. The data for this research paper is collected by direct observation, collection method, photography and many other procedures. Most of the insects in this study were collected with insect nets and by hand picking method. The captured insects were preserved in insect boxes by dry preservation method and these insects were identified by identification key. In this study, the researcher collected most of the insects from

gardens, grassy areas, small plants, above ground, flowers, and trees. Some insects were also found indoors and on roofs.

RESULT AND DISCUSSION- In this study, the researcher has concluded that most of the insects of the orders are found here. In this research work 12 types of orders of Insecta class have been reported in this study area. In this research, different orders of insect species such as Lepidoptera, Coleoptera, Diptera, Orthoptera, Hymenoptera, Isoptera, Hemiptera, etc. were observed in the study area. Coleoptera and Lepidoptera are major orders of insects that are found in this study area. Many types of beetle are observed during this study like; ground beetles, ladybugs, dung beetles etc. Many types of moths, butterflies and their larval stage (caterpillars) have also been reported in this research work. Various types of flies, termites, wasps and bugs are also reported here. The insects reported in this research work are listed in the following table (Table-01)-:

Table - 01

S. N.	**COMMON NAME**	**SCIENTIFIC NAME**	**ORDER**
1	House fly	*Musca domestica*	Diptera
2	Locust	*Schistocerca gregaria*	Orthoptera
3	House cricket	*Gryllodes sigillatus*	Orhtoptera
4	Field cricket	*Gryllus*	Orthoptera
5	Red cotton bug	*Dysdercus cingulatus*	Hemiptera
6	Mosquito	*Anopheles stephensi*	Diptera
7	Red fire ant	*Solenopsis invicta*	Hymenoptera
8	Paper wasp	*Ropalidia marginata*	Hymenoptera
9	Potter wasp	*Eumenes*	Hymenoptera
10	Honey bee	*Apis florea*	Hymenoptera
11	Carpenter bee	*Xylocopa*	Hymenoptera
12	Grass hopper	*Truxalis eximia*	Orthoptera
13	Leaf insect	unidentified	Orthoptera
14	Stick insect	*Phasmids*	Phasmida
15	Gram pod borer	*Helicoverpa sps.*	Lepidoptera
16	Termite	*Macrotermes serrulatus*	Isoptera
17	Silver fish	*lepisma*	Thysanura
18	Cockroach	*Periplaneta americana*	Dictyoptera
19	Mantis	*Mantis religiosa*	Mantodea
20	Plain tiger butterfly	*Danaus chrysippus*	Lepidoptera

21	Lemon emigrant	*Catopsila pomana*	Lepidoptera
22	Cotton leaf worm	*Spodoptera litura*	Lepidoptera
23	White moth	*Leucoma salicis*	Lepidoptera
24	Click beetle	*Ampedus sanguineus*	Coleoptera
25	Ladybug	*Coccinella septempunctata*	Coleoptera
26	Ground beetle	*Amara aulica*	Coleoptera
27	Dung beetle	*Scarabaeus satyrus*	Coleoptera
28	Common green bottle fly	*Lucilia sericata*	Diptera
29	Red hairy caterpillar	*Amsacta moorei*	Lepidoptera
30	Flesh fly	*Sarcophag bercaea*	Diptera
31	Mealy bug	*Phenacoccus solenopsis*	Hemiptera
32	Moth	*Uthetheisa pulchella*	Lepidoptera
33	Head louse	*Pediculus humanus*	Siphunculata
34	Flour beetle	*Tribolium castaneum*	Coleoptera
35	Rice weevil	*Sitophilus oryzae*	Coleoptera
36	Moth	*Plusia*	Lepidoptera
37	Moth	*Uthetheisa pulchella*	Lepidoptera
38	Dragon fly	*Pantala flavescens*	Odonata
39	Damsel fly	unidentified	Odonata
40	Bed bug	*Cimex sps.*	Hemiptera
41	Carpenter ant	*Camponotus*	Hymenoptera
42	House ant	*Tapinoma*	Hymenoptera
43	Stink bug	*Halyomorpha halys*	Hemiptera
44	White fly	*Trialeurodes sps.*	Hemiptera
45	Hover fly	*Syrphus species*	Diptera
46	Dune cricket	*Schizodactylus monstrosus.*	Orthoptera
47	Blister beetle	*Lytta*	Coleoptera
48	Painted grasshopper	*Poekilocerus pictus.*	Orthoptera
49	Beetle	*Scarites*	Coleoptera
50	House Moth	unidentified	Lepidoptera

CONCLUSION: The author has found in this research work that insect biodiversity is very rich here. Several types of insects have been reported here. Insects play a very important role in our ecosystem maintenance. This study provides basic information about insect biodiversity of different orders found in the study area. This study provides an overview of insect status in Tibbi tehsil of the Hanumangarh district.

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