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A Study On Biodiversity Of Insects Collected From Pilibanga Block Of Hanumangarh District, Rajasthan

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Abstract: Biodiversity is the contraction of ‘biological diversity’ which refers to variability among living organisms. It is the measure of variation on the ecosystem level. The present study was undertaken in the Pilibanga tehsil of the Hanumangarh district. Pilibanga is a block situated in the Hanumangarh district, in the Indian state of Rajasthan. There is long summer and short winter. Summer is humid and winter is very cool and dry. The main objective of the study is to identify the insect biodiversity of the study area. Insects are belonging to the phylum Arthropoda which is the largest phylum of the animal kingdom. Insects are worldwide distributed so they form an important component of terrestrial, aquatic and areal ecosystems. The insect faunal composition is rich in Pilibanga tehsil and their surrounding villages. The present study provides general information about the orders and families of the insect present in the study area. The adult insects were represented by 75 species of 53 families belonging to 15 orders namely Diptera, Hymenoptera, Lepidoptera, Orthoptera, Odonata, Dictyoptera, Mantodea, Isoptera, Thysanura, Siphunculata, Hemiptera, Neuroptera, Phasmida, Ephemeroptera and Coleoptera. Larval forms are also observed.

Keywords: Biodiversity, Insects, Pilibanga, Hanumangarh, Arthropoda, faunal, species.

Introduction: Biodiversity is one of the most fascinating aspects of biology. Biodiversity is the contraction of “biological diversity” which refers to variability among living organisms from all sources including polar regions, areal, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part including diversity within species, between species and of ecosystems. India is one of the world’s twelve megadiversity countries. Arthropoda is the largest phylum of the Animal kingdom. Insects are belonging to the class Insecta of this phylum. In the intrinsic part of the earth’s ecosystem, great insect biodiversity is present. Members of Insects are cosmopolitan as they live in highly diverse habitats such as aquatic, terrestrial, areal, etc. So insect’s biodiversity accounts for a large ratio of our planet. About 75% of all described forms of life, insects are the most diverse group. Insect contributes over half of all the recorded species. Approx. 1.5

million species of organisms are classified as insects. Potentially they are highly indicative of the environmental changes. They likely have the largest biomass of terrestrial animals. Most of the insects are collected from plants, flowers, grasses, weeds, shrubs, trees, etc. Insects play an important role as pollinators, bio-control agents of pest insects, predators, Decomposers of agro-wastes in the agro-ecosystem, herbivores and parasites. Globally, an estimated 70% of crop plants are pollinated by insects. If this pollination service is lost then there would be an adverse effect on food production and also on the maintenance of Biodiversity. Soil insect fauna is involved in biogeochemical processes and promotes nutrient availability so soil insects are essential for ecosystem dynamics. In this research paper researchers are trying to collect, identify and observe the current status of insect biodiversity in the Pilibanga tehsil of Hanumangarh.

Aims of the study:

1. To identify the current status of insect diversity in the Pilibanga block of Hanumangarh district.
2. To study different orders of insects and their families.
3. To study the habitat, behaviour and life cycle of insects.
4. To enhance public awareness and knowledge about insects.
5. To study the ecology of such insect fauna which expose the environmental conditions of the study area.

Study Area:India- 'A Land of Heritage' is one of the mega-diversity countries. Rajasthan -'A Land of kings' is the largest state in India. The study site, Pilibanga is a municipality situated in Hanumangarh district in the Indian state of Rajasthan. It is about 30 km. away from Hanumangarh. Pilibanga is located at 29°45' N 74°08'E. There are long summers and short winters. In summer there is humid and sweltering while in winter weather is very cool and dry. The temperature is varies from 46°F -108°F. Very rarely is goes below 41°F and above 114°F.The rainiest month in Pilibanga is July with an average rainfall of 2.4 inches. For this research paper, some villages of Pilibanga tehsil such as Kalibanga, Panditanwali, Lakhuwali, Dabli Rathan, Dulmana, Hansliya and Likhmisarwere selected for the study of Insect biodiversity.

Method & Material:The study was carried out in Pilibanga tehsil of Hanumangarh district, Rajasthan monthly from April 2021 to December 2021.

The insect fauna from the study area was collected by visiting the above -said villages. An Insect net was used to capture insects. Aquatic insect fauna was collected with Plankton net covering both macroscopic and microscopic forms. Fieldwork, survey method, direct observation and Photography were also used for identifying insects. Mobile was also used for insect photography.

Result and Discussions:This research paper identifies that insects of almost all major order are found in the study area and all these insects show different types of adaptations. Insects are unique creatures and they are adapted to all environments. Researchers have found about a hundred types of insects in this area. The adult insects were represented by 100 species of insects belonging to 15 orders namely Diptera, Hymenoptera, Lepidoptera, Orthoptera, Odonata, Dictyoptera, Mantodea, Isoptera, Thysanura, Siphunculata, Hemiptera, Neuroptera, Phasmida, Ephemeroptera, and Coleoptera. Besides it, the larval form of insects is also found.

List of insects observed in the study area:-

Table- 1

S.N.	Scientific Name	Order	Family	Common Name
1.	<i>Danaus chrysippus</i>	Lepidoptera	Nymphalidae	Plain tiger butterfly
2.	<i>Paranthrene</i> sp.	Lepidoptera	Sesiidae	Moth
3.	<i>Antigastra catalaunalis</i>	Lepidoptera	Crambidae	Moth
4.	<i>Acherontia styx</i>	Lepidoptera	Sphingidae	Bee robber
5.	<i>Plusia</i> sp.	Lepidoptera	Noctuidae	Moth
6.	<i>Agrotis ypsilon</i>	Lepidoptera	Noctuidae	Gram cut worm
7.	<i>Achoea janata</i>	Lepidoptera	Noctuidae	Castor semilooper
8.	<i>Mythimna separate</i>	Lepidoptera	Noctuidae	Army worm
9.	<i>Helicoverpa armigera</i>	Lepidoptera	Noctuidae	Gram caterpillar
10.	<i>Eldana saccharina</i>	Lepidoptera	Pyralididae	Moth
11.	<i>Chilo infuscatellus</i>	Lepidoptera	Pyralididae	Sugarcane shoot borer
12.	<i>Chilo partellus</i>	Lepidoptera	Pyralididae	Jowae stem borer
13.	<i>Catopsilia pamon</i>	Lepidoptera	Pieridae	Common emigrant butterfly
14.	<i>Pieris brassicae</i>	Lepidoptera	Pieridae	Cabbage butterfly
15.	<i>Cretonotos trasiens</i>	Lepidoptera	Erebidae	Moth
16.	<i>Uthethesia pulchella</i>	Lepidoptera	Erebidae	Moth
17.	<i>Papilio demoleus</i>	Lepidoptera	Papilionidae	Swallowtail butterfly
18.	<i>Spilosoma oblique</i>	Lepidoptera	Arctiidae	Hairy caterpillar
19.	<i>Amsacta moorei</i>	Lepidoptera	Arctiidae	Red hairy caterpillar
20.	<i>Earias vitella</i>	Lepidoptera	Cymbidae	Spotted bollworm
21.	<i>Sitotroga cerealella</i>	Lepidoptera	Gelechiidae	Grain moth
22.	<i>Virachola Isocrates</i>	Lepidoptera	Lycaenidae	Anar butterfly
23.	<i>Holotrichia consanguinea</i>	Coleoptera	Melolonthidae	Safed gidar
24.	<i>Raphidopalpa foveicollis</i>	Coleoptera	Chrysomelidae	Red pumpkin beetle
25.	<i>Epilachna vigintioctopunctata</i>	Coleoptera	Coccinellidae	Epilachna beetle
26.	<i>Coccinella septempunctata</i>	Coleoptera	Coccinellidae	Lady bird beetle
27.	<i>Sitophilus oryzae</i>	Coleoptera	Curculionidae	Rice weevil
28.	<i>Trogoderma granarium</i>	Coleoptera	Dermestidae	Khapra beetle
29.	<i>Rhizopertha dominica</i>	Coleoptera	Bostrychidae	Lal surhi
30.	<i>Tribolium castaneum</i>	Coleoptera	Tenebrionidae	Red rust flour beetle
31.	<i>Pimeliinae</i> sp.	Coleoptera	Tenebrionidae	Beetle
32.	<i>Alphitobius</i> species	Coleoptera	Tenebrionidae	Darkling beetle
33.	<i>Derobrachus hovorei</i>	Coleoptera	Cerambycidae	Palo verde beetle
34.	<i>Carabus coriaceus</i>	Coleoptera	Carabidae	Beetle
35.	<i>Scarites</i>	Coleoptera	Carabidae	Ground beetle

36.	<i>Anthia sexmaculata</i>	Coleoptera	Carabidae	Beetle
37.	<i>Melolontha</i>	Coleoptera	Scarabaeidae	European cockchafers beetle
38.	<i>Onitis</i>	Coleoptera	Scarabaeidae	Scarab beetle
39.	<i>Protaetia</i>	Coleoptera	Scarabaeidae	Beetle
40.	<i>Lytta</i>	Coleoptera	Meloidae	Blister beetle
41.	<i>Melanotus</i>	Coleoptera	Elateridae	Click beetle
42.	<i>Callosobruschus chinensis</i>	Coleoptera	Bruchidae	Pluse beetle
43.	<i>Scarabaeus viettei</i>	Coleoptera	Scarabaeidae	Rolling dung beetle
44.	<i>Catharsius pithecus</i>	Coleoptera	Scarabaeidae	Dung beetle
45.	<i>Lampyris noctiluca</i>	Coleoptera	Lampyridae	Fire fly
46.	<i>Athalia proxima</i>	Hymenoptera	Tenthredinidae	Sarson ki illi
47.	<i>Apis indica</i>	Hymenoptera	Apidae	Honey bee
48.	<i>Amegilla</i>	Hymenoptera	Apidae	Bee
49.	<i>Exaerete</i>	Hymenoptera	Apidae	Euglossine bee
50.	<i>Xylocopa latipes</i>	Hymenoptera	Apidae	Tropical carpenter bee
51.	<i>Melophorus</i>	Hymenoptera	Formicidae	Ants
52.	<i>Campomotus</i>	Hymenoptera	Formicidae	Carpenter ant
53.	<i>Ammophila</i>	Hymenoptera	Sphecidae	Hunting wasp
54.	<i>Bracon</i>	Hymenoptera	Braconidae	Wasp
55.	<i>Chelonus</i>	Hymenoptera	Braconidae	Wasp
56.	<i>Eumenes</i>	Hymenoptera	Vespidae	Potter Wasp
57.	<i>Ropalidia marginata</i>	Hymenoptera	Vespidae	Paper Wasp
58.	Caddishflies	Trichoptera	Phryganeidae	Rail- flies
59.	<i>Locusta migratoria</i>	Orthoptera	Acrididae	Locust
60.	<i>Hieroglyphus banian</i>	Orthoptera	Acrididae	Tidda
61.	<i>Acrida</i>	Orthoptera	Acrididae	Silent slant faced grasshopper
62.	<i>Schistocerca gregaria</i>	Orthoptera	Acrididae	Locust
63.	<i>Truxalis eximia</i>	Orthoptera	Acrididae	Grasshopper
64.	<i>Crotogonus sp.</i>	Orthoptera	Acrididae	Surface grasshopper
65.	<i>Tettigonia viridissima</i>	Orthoptera	Locustidae	Long horned grasshopper
66.	<i>Libanastus vittatus</i>	Orthoptera	Anostomatidae	Tusked cricket king
67.	<i>Grylloides sigillatus</i>	Orthoptera	Gryllidae	House cricket
68.	<i>Gryllus bimaculatus</i>	Orthoptera	Gryllidae	Cricket
69.	<i>Schizodactylus monstrosus</i>	Orthoptera	Schizodactylidae	Dune cricket
70.	<i>Periplaneta americana</i>	Dictyoptera	Blattidae	Cockroach
71.	<i>Gonatista</i>	Mantodea	Listurgusidae	Mantis
72.	<i>Mantis religiosa</i>	Mantodea	Mantidae	Praying mantis
73.	<i>Tenodera sinensis</i>	Mantodea	Mantidae	Chinese mantis
73.	<i>Leptocoris varicornis</i>	Hemiptera	Coreidae	Gundhi bug
74.	<i>Lipaphis erysimi</i>	Hemiptera	Aphididae	Tela, Lahi
75.	<i>Hylomorpha halys</i>	Hemiptera	Pantatomidae	Bug
76.	<i>Bagrada cruciferarum</i>	Hemiptera	Pantatomidae	Painted bug, Dagila keet

77.	Dysdercus cingulatus	Hemiptera	Pyrrhocoridae	Red cotton bug
78.	Cimex lectularius	Hemiptera	Cimicidae	Bed bug
79.	Rhabdomiris striatellus	Hemiptera	Miridae	True bug
80.	Macrotermes serrulatus	Isoptera	Termitidae	Termite
81.	Odontotermes obesus	Isoptera	Termitidae	Fungus growing termite
82.	Coptotermes ceylonicus	Isoptera	Rhinotermitidae	Wood destroying termite
83.	Bradinopyga	Odonata	Libellulidae	Dragonfly
84.	Pantala flavescens	Odonata	Libellulidae	Dragonfly
85.	Dacus cucurbitae	Diptera	Trypetidae	Son makhi
86.	Carpomyia visuviana	Diptera	Trypetidae	Ber fruit fly
87.	Musca domestica	Diptera	Muscidae	House fly
88.	Bactrocera	Diptera	Tephritidae	Fruit fly
89.	Syrphus species	Diptera	Syrphidae	Hover fly
90.	Anopheles species	Diptera	Culicidae	Mosquito
91.	Culex pipiens	Diptera	Culicidae	Mosquito
92.	Aedes aegypti	Diptera	Culicidae	Yellow fever mosquito, dengue mosquito
93.	Pediculus humanus	Siphunculata	Pediculidae	Human lice
94.	Bovicola bovis	Anoplura	Trichodectidae	Cattle lice
95.	Thrips	Thysanoptera	Thripidae	Slender insect with fringed wings
96.	Lepisma	Thysanura	Lepismatidae	Silverfish
97.	Myrmeleon	Neuroptera	Myrmeleontidae	Antlion
98.	Phasmids	Phasmida	Phyllidae	Stick insect
99.	unidentified	Coleoptera		
100.	unidentified	Coleoptera		

Conclusion: A survey was conducted to investigate the faunal diversity of insects from the Pilibanga block of Hanumangarh district, Rajasthan. In this study, the basic distribution of insects in such areas is preliminary clarified. Conclusively the present research provides the basic information about different orders and families of insects found in this area. It also provides a picture of the environmental status of insect diversity. I think for future research what we have learned can be used.

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