



Inventorizations of Fauna of District Faridkot, Punjab, India with particular references to Class Insecta (Phylum Arthropoda)

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Abstract

A total of 44 insect species belonging to 13 orders, 29 families and 43 genera were documented from different localities of district Faridkot, Punjab, India during the year 2023. Insects were recorded from houses, agricultural fields, gardens *etc.* Majority of insects were documented from agricultural fields and garden because insects act as pollinators for many crops. Social insects such as termite was documented from old woody materials whereas honey bees were recorded from many apiculture farms. Present study will be useful for researchers, scientists, entomologists, zoologists for additional information about the faunal diversity of the region.

Keywords: Insect, pest, pollination, bee, Faridkot, Fauna, biodiversity, arthropoda

Introduction

Insects represent the two third flora of India with 59353 species under 619 orders (Alfred *et al.*, 1998^[2]; Joshi *et al.*, 2016)^[4]. According to Prakhar *et al.* (2021)^[11] insects are the largest, most dominant and diverse group of animals found on earth.

Pollination is an important process for development of fruits. It is a type of cross pollination which is helpful for transformation of pollen grains in unisexual flowers. According to Moreno and Blasquez (2021) insects play vital role in pollination as well as in biological control.

In many countries insects are used as a food. They act as active ingredients in different dishes. Insects are rich in proteins, amino acids and minerals such as calcium, iron, zinc, vitamin A, C, and D (Pino Moreno and Ganguli, 2016^[10]; Ramos-Elorduy and Pino Moreno, 1989^[15]; Ramos-Elorduy and Pino Moreno, 1990^[12]; Ramos-Elorduy and Pino Moreno, 2001^[13]; Ramos-Elorduy *et al.*, 1997^[14]).

According to Karthika *et al.* (2016)^[5] taxonomic study and accurate identification of the organisms are important for biological research. Keeping this in view present study was conducted for documentation of fauna of district Faridkot especially for diversity of insects.

Material and Methods

Study area

Punjab state is agricultural state and present in northern part of India. Geographically, it is divided into three regions (Majha, Doaba and Malwa). Present study was conducted in selected sites such as village sangatpura, Mrar, Pipli, Arian wala, Machaki Mal Singh, Faridkot city, Sangat Sahib Bhai Pheru Khalsa Senior Secondary School campus of district Faridkot (Malwa) during the year 2023.

Documentation

Regular field visits were conducted in different crops, gardens and buildings for documentation of insects. Photographs were clicked using mobile camera.

Taxonomic identification

Documented insects were identified on the basis of available literature (Pathak and Khan, 1994^[9]; Musgrave, 2013^[7]; Van Driesche *et al.*, 2013^[19]; Siregar *et al.*, 2017^[18]; Bhat and Ahangar, 2018^[3]; Ahmed *et al.*, 2020^[11]; Oo *et al.*, 2020^[8]; Prakhar *et al.*, 2021^[11]; Yadav *et al.*, 2022^[20] and Sharma *et al.*, 2023)^[17].

Results and Discussion

During present study 44 species of insects belonging to 13 orders, 29 families and 43 genera were recorded from the study area. Out of 13 orders, Coleoptera was dominant with 5 families and 7 species followed by Hymenoptera with 4 families and 7 species, Lepidoptera (6 families and 6 species), Diptera (3 families and 4 species), Araneae (4 families and 4 species) and Odonata (2 families and 2 species) (Table.1.) (Fig.1.). Orders Blattodea, Isoptera, Ixodida, Mantodea and Psocodea represented with one species each.

Shakeel *et al.* (2019)^[16] studied the insect pollinator diversity in the crop fields of *Eruca sativa* Mill. (Arugular) and *Brassica rapa* L. They recorded, total 20 insects which were visited on the flower for pollination in which order Hymenoptera was dominant than Diptera, Lepidoptera and Coleoptera. They suggested *Apis mellifera* was most prominent than *A. cerana*, *A. florea* and *A. dorsata*. They also suggested, pollinators were more in afternoon than morning.

Ahmed *et al.* (2020)^[11] recorded 219 species of insects belonging to 103 genera and 20 families (6 superfamilies) from Haryana. They suggested this study will be useful for conservation of insects in the Haryana region. After that, Moreno and Blasquez (2021)^[6] documented 69 species of edible insects from the state of Michoacan, Mexico. They suggested documented insect are used by people in various dishes. This study provides information about nutritional values of the insects.

Table 1: List of documented insect species with taxonomic position.

S. No.	Phylum	Class	Order	Family	Zoological Name	Common Name
1.	Arthropoda	Insecta	Araneae	Araneidae	<i>Argiope aurantia</i> Lucas, 1833	Yellow garden spider
2.				Oxyopidae	<i>Peucezia viridans</i> Hentz, 1832	Green lynx spider
3.				Salticidae	<i>Hyllus semicupreus</i> Simon 1885	Hyllus spider
4.					<i>Plexippus paykulli</i> Audouin, 1826	Wall spider
5.			Blattodea	Blattidae	<i>Periplaneta americana</i> Linnaeus, 1758	Cockroach
6.			Coleoptera	Chrysomelidae	<i>Aulacophora foveicellis</i> Lucus 1849	Pumpkin beetle
7.					<i>Coccinella septempunctata</i> Linnaeus, 1758	Lady bird beetle
8.				Coccinellidae	<i>Coleomegilla maculate</i> De Geer 1775	Spotted Lady Bird Beetle
9.					<i>Henosepilachna vigintioctopunctata</i> Fabricius 1775	Hadda Beetle
10.				Lampyridae	<i>Lampyrus noctiluca</i> Linnaeus, 1758	Fire fly
11.				Scarabaeidae	<i>Heteronychus arator</i> Fabricius, 1775	Dung beetle
12.				Tenebrionidae	<i>Tribolium castaneum</i> Herbst, 1797	Red flour beetle
13.				Diptera	Culicidae	<i>Aedes aegypti</i> Linnaeus in Hasselquist, 1762
14.			<i>Anopheles sp</i>			Malarial mosquito
15.			Drosophilidae		<i>Drosophila melanogaster</i> Meigen, 1830	Fruit Fly
16.			Muscidae		<i>Musca domestica</i> Linnaeus, 1758	House fly
17.			Hemiptera	Cimicidae	<i>Cimex lectularius</i> Linnaeus, 1758	Bed bug
18.				Pentatomidae	<i>Oebalus pugnax</i> Fabricius, 1775	Rice stinck bug
19.				Pseudococcidae	<i>Phenacoccus solenopsis</i> Tinsley 1898	Mealy Bug
20.				Pyrrhocoridae	<i>Dysdercus cingulatus</i> Fabricius 1775	Cotton Bug
21.			Hymenoptera	Apidae	<i>Heterotrigo itama</i> Cockerell 1918	Stingless bee
22.					<i>Bombus occidentalis</i> Greene 1858	Bumble Bee
23.					<i>Apis cerana</i> Fabricius 1793	Red dwarf Honey bee
24.				Crabronidae	<i>Larra bicolor</i> Fabricius, 1775	Mole Cricket hunter
25.				Formicidae	<i>Formica rufa</i> Linnaeus, 1716	Common Ant
26.					<i>Formica fusca</i> Linnaeus, 1758	Common black Ant
27.			Vespidae	<i>Polistes versicolor</i> Olivier 1791	Common yellow wasp	
28.			Isoptera	Mastotermitidae	<i>Mastotermes darwiniensis</i> Froggatt, 1897	Termite
29.			Ixodida	Ixodidae	<i>Rhipicephalus microplus</i> Canestrini, 1888	Cattle Tick
30.			Lepidoptera	Hesperiidae	<i>Pelopidas mathias</i> Fabricius 1798	Small branded Swift
31.				Papilionidae	<i>Papilio demoleus</i> Linnaeus, 1758	Lime butterfly
32.				Noctuidae	<i>Maliattha lacteata</i> Warren 1913	Moth
33.				Erebidae	<i>Orvasca subnotata</i> Walker, 1865	
34.				Nymphalidae	<i>Danaus genutia</i> Cramer, 1779	Common tiger
35.				Pieridae	<i>Eurema hecabe</i> Linnaeus, 1758	Common grass yellow
36.			Mantodea	Mantidae	<i>Mantis religiosa</i> Linnaeus, 1758	Praying mantis
37.			Odonata	Aeshnidae	<i>Anax indicus</i> Lieftinck 1942	Dragon fly
38.				Coenagrionidae	<i>Ischnura heterostica</i> Burmeister 1842	Damsle Fly
39.			Orthoptera	Acrididae	<i>Omocestus viridulus</i> Linnaeus, 1758	Grasshopper
40.					<i>Schistocerca gregaria</i> Forsskal, 1775	Locust
41.					<i>Oxya sp</i>	Rice grasshopper
42.				Gryllidae	<i>Acheta domesticus</i> Linnaeus, 1758	House cricket
43.				Gryllotalpidae	<i>Gryllotalpa gryllotalpa</i> Linnaeus, 1758	Mole Cricket
44.			Psocodea	Pediculidae	<i>Pediculus humanus</i> Linnaeus, 1758	Louse

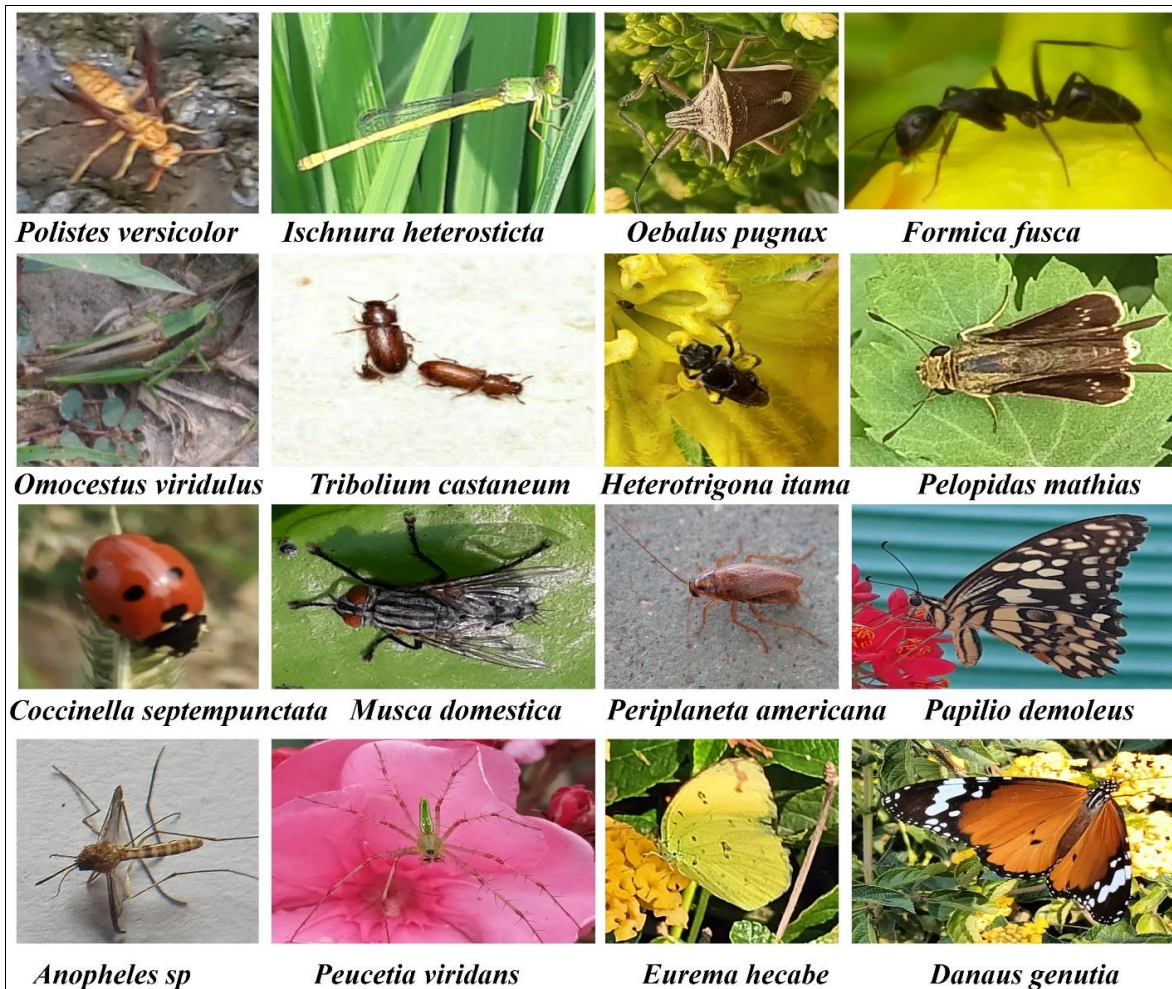


Fig 1: Morphology of documented insects (photography by AS, JS, RSD and VM).

Conclusion

Documentation of faunal diversity provides information about the occurrence of different types of species of any area. This information will be useful for development of conservation strategies for rare species.

Author detail

AS and JS are senior secondary medical student and RSD working as Biology Lecturer in Sangat Sahib Bhai Pheru Khalsa Senior Secondary School Faridkot, Punjab. VM is working as Assistant Professor in the department of Zoology, Govt. Brijindra College Faridkot, Punjab, India.

Authors contribution

AS, JS and RSD collected information and prepared manuscript. VM and RSD identified the insects and suggested some corrections. Present manuscript is finalized by all authors.

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