



Observation of diversity of some insects surrounding Jhumarghat near Indore and their role in environment

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Abstract

Biodiversity is very important on the earth. We know very well that different types of animals move on the earth which is very important for human life. The current study is on the insects seen in Jhumarghat during covid-19, 2020-21. Jhumarghat is the area adjacent to Indore. Insects seen during the study period are rarely seen. I saw the main insects like hooded grasshopper; leaf insects (Camouflage and Katydid), green praying mantis and carpenter bee at Jhumarghat. I have seen all these insects for the first time in living condition. Before that I only saw them as pictures. Most of these rare insects are considered.

Keywords: biodiversity, Jhumarghat, environment, insect, grasshopper

Introduction

We know that biodiversity is not distributed evenly on the earth. Biodiversity is the biological variety and variability of life on the earth. Biodiversity provides function ecosystems. The diversity of animals has its own importance in biodiversity. Insects are the most species rich group on the earth. Insects also play numerous crucial roles in ecosystem functioning and the global economy. "Insect diversity explores variety of insects at all levels starting from genetic variants that belong to a single species." Insects are important because of their diversity ecological role and influence on agriculture, human health and natural resources. They are very important as primary or secondary decomposer. They pollinate many flowers, vegetables and fruits. Insects serve beneficial ecological role in nature system. Insects play a vital role in balancing the equilibrium of the ecosystem. Insects cycle nutrients, disperse seeds, pollinate plants, maintain soil structure, soil fertility and provide a major food source for other animals. Butterflies, moths and bees are dependent on very specific native plant species. Crickets are also an important component of natural cave fauna (Rentz 2010) [4]. In the present study I observed at the insects mentioned above that play an important role in the ecosystem and environment.

Study area

Study area is Jhumarghat. It is located in south-west direction of Indore, Madhya Pradesh. It is a small hilly area. It is a resident place. Jhumarghat is covered with greenery. There is no pollution because there is very less vehicular movement. It has beautiful garden and big trees. The weather here is very pleasant. My house is also located in Jhumarghat.

Observation, Identification and Discussion

Insects observed during the study. Where identified as following:-

1. Hooded grasshopper
2. Leaf Insects-Camouflage
3. Leaf Insects-Katydid
4. Green mantis-Praying mantis
5. Carpenter bee

Hooded grasshopper

I show a green grasshopper near my house. After the study it was identified as hooded grasshopper. It is native to India and Shrilanka. Hooded grasshopper is worldwide. In science it is called teratodes. It is a genus of grasshopper group. Their class is insects and family teratodine. Their shape like a grasshopper but it has a large and sharp "hood". Hooded grasshopper has built up on amazing adaptation that helps them survive and merge seamlessly into their surroundings. The type species is teratodes monti collis which was described by the English zoologist George Robert Grey in 1832 as gryllus monti collis. When I looked closely at the grasshopper, it looked like the shape of the leaves of bauhinia recemasa tree on the side of the house. Their body has three sections (I) Head (II) Thorax (III) Abdomen. It has six legs and two pairs of wing. They feed on tree, plants, leaves and matter.



Fig 1: Hooded grasshopper

Leaf insects (Camouflage leaf insect)

I saw a insects which look like a green leaf shape. This leaf insect has been identified as camouflage leaf insects. It is known as a walking leaf. It's belonging to family-Phylliidae contains the extant true leaf insect. They occur from south Asia through Southeast Asia to Australia. It shows camouflage so also called camouflage leaf insect (leaf bug). It has greenish leaf like colour. They do this so accurately that predators often are not able to distinguish them from real leaf. Preliminary molecular data indicated that the leaf bug insect genera phyllium do not form monophyletic group (Robertson *et al* ; 2018) ^[5]. I saw it on terrace of my house. They bear enlargements of the legs and abdomen that make them resemble leaves. They feed on plants and vegetations. It was 3 inches in body length. Their leaf mimicry is thought to play an important role in defence against predators.



Fig 2: Leaf insect (Camouflage leaf insect or katydid)

Leaf insect or bush cricket

I saw another green leaf grasshopper. It's also called leaf Katydids. I have seen it on wall of my house. Katydid's also known as long horned grasshopper or bush crickets. It was leafy green coloured. It was large size and leaf shaped. It has long antennae katydids family telligoniidae and sub-family pseudophyllinae. Zabalius cf. Ophthalmicus species pseudophyllini genus (Burmeister, 1840). It is live in the tropical regions of the world. It has 2.5 inches length. It has straight wings. They eat smaller insects, grass, fruits, plant leaves and stems etc. The leaf katydids precisely mimic the form of leaves.



Fig 3: Leaf insect or Bush cricket or leaf Katydid

Green praying mantis

I saw a insect in my car. According to study I found out that it is a praying mantis. Actually my residential area is lush through greenery. I found it in January month and I saw it is match to grass of surrounding area, so it also mimics the form of grass. It was in light green and brown colour. It is on of the most fascinating insect it has turning head. I studied they have stereo type vision. This mantis is able to do acrobatic jumps. It has two antennae on the head. This mantis was wingless. It is a elongate and relatively slow moving. It is look like Arizona mantis. This mantis is not sting. They live in warm and temperate area where prey is abundant. Some praying mantids have sensitive ultrasonic hearing arising from a unique 'cyclopean' ear located in the ventral metathorax (yager and svenson ; 2008)^[6].



Fig 4: Green praying mantis

Carpenter bee

I found carpenter bee in front of my house at Jhumarghat. It was largest bee. Wings colour was metallic blue, green and purple. Zoological name is xylocopalatipes. Their family is apidae. Generally female bees can stinger but male do not have a stinger. Female carpenter bee is critical with a severe allergy to be venom. Carpenter bee can damage to wooden structure of our home. The common name for any all black spcies of xylocopa is 'Bhanvara'. It has two small antennae on head and legs were hairy. Their mouth parts are important pollinators. Carpenter bees feed on nectar and pollen of flowers. They seat on the flowers and feed on nectar, They pick up and transfer pollen on other place.



Fig 5: carpenter bee

Their role in environment

I have seen those insects as described above for the first time in my life. I have never seen them before. So it is not a common insects, rarely is it visible. On study, it has been found that all these insects have an important role in the environment. Insects found on earth are both beneficial and harmful to the environment. Hooded grasshoppers are beneficial and play a critical role in the environment. They facilitate a natural balance in the decomposing and regrowth process of plants. Their waste is a good source of fertilizer. They play a role in nutrient cycling and serving as a critical food supply for wild life. They are edible because they strongly recommended for their high vitamins (A, B, and C), also rich in fibers, zinc, magnecium and calcium. They cause direct crop and plants losses by feeding on ripening grains and plant leaves. Hooded grasshoppers are generally not good for the gardens. They are considered pests because they often feed on many of the growing plants in the garden. They cycle nutrients, disperse seed, pollinate plants. They create the biological foundation for all terrestrial ecosystem leaf insects use camoullage to take on the appearance of a leaf to protect from predators. Leaf or bush cricket katydids are not considered to be garden pests because that are destructive. Even

through katydids eat all parts of plants and flowers. But some katydids eat destructive insects. They are move from plant to plant at night to feed. The flowers pollen are sticks to the katydid's leg and antennae and transfer to other place to pollination. Praying mantis is highly predacious and feed on a variety of insects, flies, moths, grasshoppers and crickets tec. So praying mantis is good for our gardens and farms. Carpenter bees are important pollinators in native plant communities, gardens and in some crops. They contributing a food source for birds and other wild life. The number of these insects is decreasing day by day. We have to save them because these insects play a very important role for our environmental balance and ecosystem.

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