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Role Of Insects In Different Habitat Of Hanumangarh District In Rajasthan

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ABSTRACT:- Insect play crucial role in maintaining the ecosystem services. Insects affect ecosystem services in different way such as positive and negative. In positive way they do pollination, aeration, seed dispersal and decomposition of dead organic matter and in negative manner they do voracious feeding on crops & plants and affect their annual production. In this study researcher observed all the functions which are performed by a variety of insect. Researcher observed corpse decomposition by a variety of insect like flesh fly larvae, blow fly larvae, rove beetle, ants etc. These arrived at decomposition site in different time interval to decompose the corpse. Different flies, ants and beetles performed the pollination process. In which honey bee has special type of structures in their hind legs known as pollen basket to collect the pollen of the flowers. In this row ants indirectly enhance the fertility of soil by forming a tunnel. Fresh water indicators also recorded by researcher. Above all the phenomenon observed by the researcher during visit to agriculture field, stagnant water body, lotic water body, nursery, forest area, terrestrial & desert habitat. The purpose of this study to examine the role of insect plays in ecosystem and the services that insect provide to us.

KEYWORDS:- Ecosystem, pollination, decomposition, crops, desert, terrestrial, agriculture.

INTRODUCTION:- Insects are the largest group of the animal kingdom and they are also diverse creature so they play greater role in maintenance of different habitat such as aquatic, terrestrial, desert, forest and agriculture field. The insects are the unique arthropods their body divided into head, thorax and abdomen region, a single pair of antennae, three pair of legs (Hexapoda) , one or two pairs of wings (pterygota) bearing on thorax region and a long abdomen bearing distally the genital appendages.

The insects are the tracheate arthropods and the Integument is composed of chitinous cuticle by virtue of which, it molts repeatedly during the post embryonic development by the help of various molting hormone like juvenile, ecdyson etc.

The body of insect typically composed of 6 segmented head, three segmented Thorax and 11 segmented abdomens but the entire body organization is evolved so widely, that the living insects are grouped into 29 distinct orders and each order consists of a large number of families and sub-families embodying a number of genera and species.

They form the largest fauna of all the living animals inhabiting the earth and have occupied almost all the ecological niches, from the frozen Antarctica to the dry deserts, springs, high mountains and of course they have equally dominated in the water, land and air.

A large number of insects are well adapted to stay on or inside the animal as well as the plant body. Insects makeup the most numerous group of organism on earth, around 65% of all animals species, and being good dispersers and exploiters of Virtually all type of organic matter, can be found almost everywhere, forming an important part of every ecosystem and are vital within our Food Supply chains performing valuable ecosystem services. While everyone is talking about sustainability in agriculture, but the role of insects has largely been ignored.

STUDY AREA:- This study was carried out in rawatsar, tibbi, talwara jheel of hanumangarh district in rajasthan. This region are rich in biodiversity of different vegetation and insect fauna. These all study area located 20 to 40 km far from district head quarter hanumangarh. In this area kharif and rabi crops mainly cotton, mustard, basmati rice, wheat, gram are cultivated. In this area agricultural activities are totally based on proper irrigation system.

MATERIAL & METHODS:- In this study researcher observed different function of insect in ecosystem such as pollination, decomposition, biological control of pest, herbivorous nature. Fast flier insect collected with the help of sweep net for their further examination. Different type of larvae collected from the corpse decomposition site by forceps, killing bottle etc. These all functions observed during the field visit by the direct observation. For these observations entomological tools such as binoculars, camera, handy cam and mobile phone are used.

RESULT AND DISCUSSION:-

As Pollinators :- The transfer of pollen from the male parts of a flower to the female part of a flower of the same species, which results in fertilization this process performed by a mediator known as pollinators and phenomenon known as pollination. A majority of insects play vital role in pollination as pollinator. It has often been said that bees are responsible for one out of every three bites for food we eat, most crops grown

for their fruits (including vegetables such as squash, cucumber, tomato and egg plant), nuts, seeds, fiber require pollination by insects.

Pollinating insects also play a critical role in maintaining natural plant communities and ensuring production of seeds in most flowering plants. The most important pollinators are bees, beetles, butterflies and flies.

Honey bees, play important role in pollination of forest species affecting cross pollination and maintenance of variability within species. Bees make excellent pollinators because most of their life is spent collecting pollen, a source of protein that they feed to their developing offspring and they collect the pollen in a special structure that is pollen basket.

Butterflies are also important pollinators. In which there is a lime butterfly is mostly depends on citrus plant species and other nectar plants throughout its life cycle and is a good indicator of environmental health. Species diversity and density of butterfly indicate a good diversity of plant in an area. Climate change, forest degradation, habitat loss, unavailability of host and nectar plant species are among major reason for a decline in butterfly population. This leads to the loss of plant species that depends on the butterflies for population. Background gardening and growing host plants in public spaces are important strategies to conserve butterfly species.

Beetles, beetles were among the first insects to visit flowers and they remain essential pollinators today. Beetles will eat their way through petals and other floral parts. They even defecate within flowers, earning them the nickname “mess and soil” pollinators.

Flies, The two-winged insects (flies, gnats, and mosquitos) are a very large group. Many of them specifically visit flowers, such as the Syrphid flies or flower flies. They are not as hairy as bees and as efficient in carrying pollen, but some are good pollinators.

As a Indicator Of Aquatic Ecosystem:- Dragonflies, one of the most widely recognized insects, need clean aquatic system and are hence a good indicator of health of local aquatic system.

These along with damsel flies, are well known biological predators with both larval and adults acting as natural bio control agent.

They are highly sensitive to changes in their habitats and are declining due to increasing habitat loss, anthropogenic activities, pollutants, climate change and rapid urbanization.

As Food:- For birds, birds around the world eat 200 to 400 million metric tons of beetles, flies, ants, moths, aphids, grasshoppers, crickets and other arthropods per year. It means birds play important role in keeping plant-eating insect populations under control. There are some examples of birds which eat insects for their nutritional value.

As Decomposers: - Ants, act as scavengers by feeding on organic waste and other dead animals and also aerate soil and increase soil fertility. Heavy use of chemicals in agriculture causes harm to ants.

Dung beetles, there are document 4000 dung beetles species which play any important role in the decomposition of manure .They removing surface waste and recycling nutrients that can be used by plants .Dung beetles contribute to soil health by increasing nitrogen, Phosphorus, potassium ,calcium and magnesium etc. Dung beetles also contribute to the carbon cycle reduction greenhouse gases emission by between 6% to 11% .As well as beetles larvae, flies, ants and termites clean up dead plant matter and break it down for further decomposition by microbes.

Termites are also known as nutrients recycler. Termites are Eusocial insect that are classified at the taxonomic rank of infra order Isoptera. They form an important link in the cycling of nutrients in the forest by breaking down wood and organic residues on the ground. It has a major contribution in recycling of the nutrients in ecosystem.

As Predators: - Herbivorous insects damage 18% of world agricultural production, so herbivorous insect with the potential of becoming pest under natural control by insect predators and parasitoids. In the insect order Odonata (Dragon flies) and Neuroptera (less wings and ant lions) all the insect species are predators, while a large percentage of species in the order Hemiptera (bugs) ,Coleoptera (beetles) and Diptera (flies) and Hymenoptera (wasp, bees) are predators either as larvae or in both larval and adults stages.

Dragon flies, dragonflies are known for their long, slender bodies, their double set of transparent wings and their large, multifaceted eyes. Together, these traits make dragonflies one of the most effective predators on earth. In one study, dragonflies were observed to have up to a 94% success rate in capturing prey.

Wasps, braconids are small predatory wasps that measure less than one-quarter inch (0.5 cm.) in length. Adults like small flowers with open centers that contain nectar. They sting their prey and lay eggs inside the prey's body. Braconids are very important predatory wasps for the control of caterpillars.

Beetles, entomophagous lady beetles often prey on a variety of insects in addition to the Hemiptera (Sternorrhyncha) for which they are well-known natural enemies. Many species (particularly those well-adapted for consuming aphids) appear opportunistic in their use of non-hemipteran prey. Others may have evolved especially from aphidophagous habits to use non-hemipteran prey (particularly eggs and larvae of Coleoptera) as primary prey.

CONCLUSION:- The author has found in this research work Hanumangarh region is rich in insect fauna . This study provides a spacious overview of different insect and their crucial role in different habitat of hanumangarh district. This study also gives knowledge about special phenomenon like pollination, decomposition, predation etc.

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