



A Study On Importance Of Beetles In Taranagar Region Of Churu District Of Rajasthan (India)

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Abstract: This research work was done in Taranagar area of Churu district of Rajasthan (India). This informative study based on the importance of beetles has been completed in Taranagar area from January 2023 to December 2023. This dedicated study provides various facts about the importance and ecological contribution of various Beetles found in Taranagar region. The author has observed several positive findings about the importance of Beetles during this study. These Beetles are playing a major role in the food chain, plant pollination, pest control, and decomposition functions. They also act as primary consumers, decomposers, indicators of the ecosystem. Their use is also very important in forensic science and various research works. This study provides various aspects of the importance of beetles in the study area.

Keywords: Beetles, Coleoptera, Pollination, Indicators, Decomposers, Taranagar, Churu.

Introduction: Insects species are important biological wealth of this universe. These insects are placed in class Insecta of the Arthropoda phylum. Insects have three body parts such as head, thorax and abdomen. They have six jointed legs and due to this features they are named hexapods. Beetles are also special insects and very unique creatures that are belonging from Coleoptera order of class Insecta. The Coleoptera order that included beetles and known as coleopterans. Coleoptera is the largest order of class Insecta that representing about 35-40 % of the known insects species. Beetles characterized by leathery and harden forewings (known as elytra) and a pair of membranous hind-wings. Many beetles are found in form of pests and some beetles are beneficial for our ecosystem. Beetles are found in almost all habitats, they are found in desert areas, on the ground, on plants, under the rocks, under the stones, in agricultural fields, in water bodies, and many other places.

Some beetles are solitary and others are found in aggregations. These beetles communicate with each other through chemical known as pheromones. They feed on various plants, crops and also on various organisms.

They undergo complete metamorphosis and there stages of life cycle are as follows-

1. Egg
2. Larva
3. Pupa and
4. Adult

After the mating process, their females lay eggs on various parts of plants. Their life cycle begins with these eggs and larvae emerge from these eggs. The emerged larvae continuously feed on their host plants. After some time, these larvae turn into pupa, which finally transform into adult beetles.

These beetles are very beneficial insects for our ecosystem the author has worked on the importance of these beetles and observed some beneficial aspects with respect to Taranagar study area.

Aims of the Study:

1. To investigate the importance of various Beetles.
2. To know about importance of beetles in food chain, pollination, pest control, decomposition.
3. To enhance the knowledge and public awareness about various Beetles.
4. To promote conservation of beetles.
5. To find out the biodiversity status of beetles.

Study area: Rajasthan is the largest state of Indian country. The state covers 10.4% landmass of India. Study area Taranagar region of Rajasthan is located in Churu district between 28.660 N to 28.680 N Latitude and 75.020 E to 75.050 E Longitudes. There are very variable and adverse climatic conditions in Taranagar area.

Low rainfalls, lack of water, lack of food, sand dunes, dry winds, lack of vegetation are some salient features of this area. There are very extreme climatic conditions. In this region, the temperature is recorded below 0⁰C or in minus during the winter season, on the other hand, in summer the temperature goes above 50⁰C and strong hot winds also blow. The climatic conditions here are less favorable for the biodiversity. Due to adverse climatic conditions the biodiversity of this area has to struggle a lot for survival. Despite the adverse conditions, beetles are found in abundance in this area. Various beetles are found in this area such as ground beetles, dung beetles, red flour beetles, ladybird beetles etc.

Methodology: The study was conducted over the period from January 2023 to December 2024. The following materials and methods were used for this study.

Materials: Hand lens, binocular, etc. things are used for observing beetles in study area. Camera, Mobile phone etc. were used for photography and boxes were used for collection purposes.

Methods: Observation method, Survey method, photography method and various suitable methods were used for this study by the authors. Interaction and Talk methods were also applied for this study. The authors interact with various experts such as researchers, farmers, entomologists, and foresters.

Result and Discussion:

Following are the findings of this study -

1. **Ecosystem Indicators-** Beetles are very important for the environment. They are known as indicators of environmental change, because these beetles are highly sensitive to environmental changes. The diversity of beetles at a particular place gives indications about the health and stability of the ecosystem.
2. **Food Chain** – Beetles play an important role in various food chains in the ecosystem, beetles play the role both consumers and decomposers. Some beetles are primary consumers, while others are decomposers that decompose dead plants and animals. Many animals, including birds, reptiles and mammals eat various beetles as source of food. Hence they are an important part of the food chain.
3. **Biodiversity-** Beetles play a major role in the biodiversity of the ecosystem. They are present in abundance in this area and enrich the local biodiversity. Along with this, the number of consumers dependent on coleopterans for food increases, as a result of which biodiversity increases.
4. **Decomposers-** Beetles play important role as decomposers in various ecosystem, especially in forests and agricultural fields, by breaking down dead plant and organism matter and other substances. The most popular name among them is dung beetles, these beetles are specialized decomposers that eat and burry animals dung. These beetles decompose organic matter and recycle nutrients back into the soil. Beetles also improve soil quality by acting as decomposers, which increase crop production. In this way beetles play a role in keeping the ecosystem healthy.
5. **Pollinators-** Some beetles are also pollinators and they are the oldest known pollinators of flowering plants. The researchers have observed some beetles pollinating such as ladybird beetles.
6. **Pest control Agents-** Beetles are natural pest control agents, with many species feeding on other insects. Beetles control pests by eating eggs, larvae and adult's insects or pests. Ladybird beetles are known to eat garden pests such as aphids. Likewise, ground beetles play a role in controlling pests by eating caterpillars and insect's eggs. Tiger beetles also prey on other insects and act as controllers in pest control.
7. **Research-** Beetles are also important for various research purposes. These coleopterans are valuable research subjects in various scientific fields such as environmental indicator studies, ecosystem studies, pest control studies, food chain studies, biomedical studies etc.

8. **Forensic Entomology**-Beetles also play a very important role in forensic entomology in present time. Beetles are very important and valuable decomposers for the ecosystem. In forensic entomology, beetles are used for estimate the time of death. Beetles are also used in crime scene investigations.
9. **Predators**- Many beetles' species are predatory. They kill and eat many organisms and other insects, so these beetles control the growing population of insects as well as other small organisms. For example ladybugs beetles are predators.
10. **Cleaners**- Various beetles clean up nature by eating various parts of dead plants, organisms and other organic materials. In this way, these insects clean up the environments.

Conclusion: Insects are a special group of organisms spread all over the world and beetles are insects found in almost all habitats which belong to the Order Coleoptera and are known as coleopterans. They increase the biodiversity of this desert region.

This research provides specific information about the importance of Beetles found in Taranagar area of Churu district. The authors have concluded that these beetles act as indicator of a healthy ecosystem and environment. Beetles are playing a major role in the food chain, pollination, pest control, and decomposition in our ecosystem. This research work has found that these beetles act as primary consumers and decomposers in our ecosystem. Their use in forensic science and various research works is also very important. This study provides various aspects of the importance of beetles in study area.

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