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BIODIVERSITY OF INSECT FAUNA OF GOVERNMENT COLLEGE CAMPUS AND ANASAGAR LAKE OF AJMER

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ABSTRACT

Ajmer is situated in the middle of the Indian state of Rajasthan between the coordinates 25° 38' and 26° 58' north latitude and 73° 54' and 75° 22' east longitude. It has a total land area of about 8481 square kilometres and is surrounded on all sides by the Aravalli hills. Lord Brahma is credited with creating the Pushkar lake, which is located around 11 kilometres from the city. The holy site that is second only to Mecca in importance in the world is the Dargah of Khawaja Moinuddin Chisti. Summers in Ajmer are very hot and dry, while winters are brisk and invigorating. Summer lasts from March to June, followed by the rainy season, which lasts until around the middle of September. Winter begins in November and lasts until February. The temperature ranges from 0 degrees Celsius in the winter to 49 degrees Celsius in the summer. The average annual precipitation comes in about 527.3 millimetres. The adult insect fauna displayed a variety of more than 18 families. These families belonged to Dytiscidae, Helonidae, Hydraenidae, Hydrophilidae, Psephenidae, Corixidae, Gerriidae, Nepidae, Notonectidae, and Validae. Besides larval types and aquatic and terrestrial insect.

Keywords: *Aquatic insect faunal diversity, Anasagar lake.*

INTRODUCTION

Ajmer is situated in the middle of the Indian state of Rajasthan between the coordinates 25° 38' and 26° 58' north latitude and 73° 54' and 75° 22' east longitude. It has a total land area of about 8481 square kilometres and is surrounded on all sides by the Aravalli hills. The form of the district is similar to that of a triangle. It is regarded as the heart of Rajasthan due to its location in the geographic centre of Rajasthan. Lord Brahma is credited with creating the Pushkar lake, which is located around 11 kilometres from the city. The holy site that is second only to Mecca in importance in the world is the Dargah of Khawaja Moinuddin Chisti. Summers in Ajmer are very hot and dry, while winters are brisk and invigorating.

Summer lasts from March to June, followed by the rainy season, which lasts until around the middle of September. Winter begins in November and lasts until February. The temperature ranges from 0 degrees Celsius in the winter to 49 degrees Celsius in the summer. The average annual precipitation comes in about 527.3 millimetres. The municipality as a whole has a total population of 2180526, including its residents. A forest occupies around 5.56 percent of the total area that may be used for agricultural purposes. Ajmer is home to a number of plant and animal species that are unique to semi-arid environments and have developed unique adaptations that allow them to thrive in the arid and waterless portion of the state.

Diversity on a global scale: according to our best estimates, there might be anywhere from five million to thirty million different kinds of organisms on earth. These include 400,000 species of bug, 3,600,000 kinds of microorganisms, 400,000 species of green plants, 400,000 species of invertebrates, and 400,000 species of vertebrates. Many people feel that the number of insects alone is more likely to be somewhere around 5 million, despite the fact that some recent estimates put the number of insects at as high as 10 millions.

The processes of extinction and speciation have an impact on the world's total biodiversity. The background extinction rate varies from taxon to taxon, but it is believed that there is around one extinction for every million years of a species' existence (MSY). Species of mammals, for instance, have an average lifespan of one million years. Abiotic forces, such as extinction events brought on by geologically fast changes in temperature, are thought to be the driving force behind the fluctuating levels of biodiversity seen throughout Earth's history.

One such occurrence occurred 299 million years ago when there was a shift in the climate. A combination of cooling and drying caused the catastrophic collapse of the rainforest, which in turn led to a significant loss of biodiversity, particularly among amphibians. However, both the present rate of extinctions and their size are far greater than estimates of the background rate. The influence that humans have had on the environment has led to this phenomenon, which is thought by some to be the cause of the sixth mass extinction.

Changes in habitat are now the most significant factor having an effect on biodiversity. Approximately forty percent of ice-free habitats and forest habitats have been turned into farmland or pasture. Overexploitation, pollution, invasive species, and climate change are some of the other factors that contribute.

Because it can be applied in a variety of contexts toward the goal of fostering superior growth in the present-day world, biodiversity not only carries significant ecological and economic weight, but it also plays an important part in our day-to-day lives. This is due to the fact that the modern world presents a number of different contexts in which it’s the following is a list of some of the significant areas in which the concept of biodiversity may be applied:

Importance in Agriculture: In the field of agriculture, biodiversity plays an important role in the production of a new variety of plants or crops by causing a change in the genetic traits of existing plants or crops. It also helps in preventing diseases from developing in crops such as coffee plants, rice plants, and other plant species. Agricultural biodiversity is another name for this concept.

Importance in Human Life: Because they are highly important for the creation of many valuable items like food, water, and other types of medications, biodiversity plays a significant part in our everyday lives. This is one of the reasons why. In addition to that, it entails defending against a variety of calamities. It is responsible for the production of a wide range of pharmaceutical goods that are of assistance throughout the healing process.

Industrial Importance of Biodiversity: In the sphere of industry, it is also utilised to generate various types of materials, such as construction material, which are obtained from various kinds of biological resources and via biodiversity. One example of this is the utilisation of biodiversity. Many other types of commercial goods, such as textiles, dyes, oils, and rubbers, are produced as a direct consequence of biodiversity.

The Indian subcontinent is the seventh biggest nation in the world and is home to a significant number of endemic species of both flora and fauna. It is also one of the most biodiverse regions on the planet. The nation is home to about 75,000 different types of animals, the majority of which are insects. There are around 45,000 species of wild plants and 77,000 kinds of animals that have been reported in India. This accounts for approximately 6.5% of the world's known variety. India's biodiversities is one of the most important in the world.

Insects make up the biggest category of living things and are essential to the functioning of ecosystems due to their roles in pollination, decomposition, biological control, the food chain, and other important processes. India is one of the twelve nations in the world with the greatest biodiversity, and it is estimated that 80 percent of the country's insects are native to the country.

Insects are highly effective and rapidly adaptable creatures, and they have a high fertility rate while having a very short life cycle. The insect ecology is being disrupted as a result of human interference in agricultural ecosystems as well as differences in global climate. The severity of environmental fluctuations is being magnified by factors such as pollution, urbanisation, and the destruction of natural ecosystems. Insects make up a significant amount of the total number of terrestrial species as well as their biomass, and they have an important part to play in the overall operation of ecosystems. Insects are widely used as bioindicator species in order to monitor and identify changes in the surrounding environment. Instead of inspecting the whole biota, it is feasible to evaluate the effect that human activities have on the biota by making use of indicators. This saves time.

OBJECTIVES

1. To Study Biodiversity of Insect Fauna.

2. To study anasagar lake of ajmer.

MATERIALS AND METHODS

Ajmer is situated in the middle of the Indian state of Rajasthan between the coordinates of 25° 38' and 26° 58' north latitude and 73° 54' and 75° 22' east longitude, and it has a total land area of around 8481 square kilometres. Ajmer, which is the location of the study, has managed to preserve the ancient beauty of the Aravallis mountain range. It is home to an astonishing diversity of life and habitats, as well as a wide range of flora, and the current research was carried out between February 2014 and December 2014. It is necessary to have a notepad in order to record and draw the species that are seen. The Nagpahar Hills and the Taragarh Hills are included in the lake's catchment basin. The lake has a total capacity of 2052 million litres. Average depth is 5 metre (Ranga 1995). During the morning of the first week of each month, water samples were taken from several stations across the city. Analyses were performed on physiochemical parameters including temperature, transparency, pH, dissolved oxygen (DO), biological oxygen demand (BOD), alkalinity, chloride, turbidity, hardness, nitrate, and phosphate. Other parameters included alkalinity, chloride, turbidity, and hardness.

RESULT

Physiochemical characteristics were uncovered. Temperature between 16 and 32.3 degrees Celsius, evaporation rate between.34 and.65 millimetres per second, acidity between 6.8 and 10.1, dissolved oxygen between 6.6 and 10.6 milligrammes per litre, biological oxygen demand between 9.2 and 25 milligrammes per litre, alkalinity between 176 and 264 milligrammes per litre, and chloride concentration between 20 and 30 milligrammes per litre of phosphorus. 14-3.2 mg/l, Nitrate 14.1-26 mg/l, Total hardness 107-135 mg/l TDS 314-1105 mg/l.

Table 1 Physiochemical variables of Anasagar lake

Variable	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Avg
Temperature	26	27	31.5	32	32	25.5	24.4	23.2	20	16	20.2	22.6	23.08
Transpiracy(m)	.5	.5	.34	.34	.65	.5	.5	.5	.5	.5	.5	.5	.485
pH	6.8	7.8	8	10.6	9	7.8	7.8	7.8	7.9	7.8	6.9	7.8	7.35
DO m/l	9.6	10.6	10	10	10.6	10.6	6.6	10.6	10.6	8.6	10.6	10.6	9.1
BOD mg/l	25	24	23	22	20	15	12	9.2	9.9	9.9	20	22	17.6
Alkalinity mg/l	170	200	264	255	200	170	176	176	176	170	160	176	191.0
Chloride mg/l	25	30	20	20	20	20	25	20	20	20	20	20	21.6
Phosphate mg/l	2.9	3.2	3.1	3.0	.14	.15	.16	.17	.14	.15	.14	.15	1.116
Nitrate mg/l	25	26	20	18	14.1	15	15	14.1	14.2	14.1	14.3	14.2	17
Total Hardness mg/l	110	120	135	110	120	107	110	110	107	107	106	107	112.4

CONCLUSION

Based on the information presented above, we are able to draw the following conclusions about the lake: it is cloudy and alkaline; it is productive and eutrophicated; it is influenced by agricultural runoff, industrial effluents, sewage water, and other anthropogenic activities; and it is impacted by anthropogenic activities. The temperature ranges from 16 to 31 degrees Celsius depending on the time of year. pH 6.7-10, which indicates that the lake has an alkaline composition in its natural state. Throughout the whole year, the DO is between 6.7 and 10.7 mg/l, which is above 5 mg/L. BOD 9.2-25.2 mg/l . Alkalinity 176-264 mg/l. Chloride 20-30 mg/l . Phosphate .14-3.2 mg/l, Nitrate 14.1-26 mg/l. The water had a total hardness of 107-135 mg/L and a TDS of 314-1105 mg/L. During the Urs and Pushkar fairs, thousands of pilgrims bathe in the lake, which contributes to its pollution. The lake is coming under a lot of strain from the city's expansion and development efforts. Because to agricultural runoff, industrial effluents, and sewage water, the quality of the water is degrading and becoming more contaminated. During the Urs and Pushkar fairs, thousands of

pilgrims bathe in the lake, which contributes to its pollution. There were a total of 18 different bug species found, all of which belonged to the order Hemiptera or Coleoptera. The insects had a strong advantage. It is very necessary to have access to clean water throughout the whole year in order to preserve the variety of flora and wildlife that inhabits the lake. A cautious approach should be used while using water. The management of social rituals is required.

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