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Studies On Diversity Of Zooplanktons From Lower stream Sampling Spots Of Hanuman Sagar Dam Of Wari In Akola District, Maharashtra

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ABSTRACT:

Among the largest bodies of water in Akola district is a hanuman sagar dam at Wari. The principal means of energy transmission between phytoplankton and fish is through zooplanktons, which are also bio-indicators of pollution and a direct link between primary producers and high trophic levels. As an animal food source that provides amino acids, fatty acids, and vitamins, zooplankton is essential to the food chain of fish. Water samples were gathered from four sampling locations for the current study area. For additional water analysis, the water was taken from a lower streamde signated dam sampling site and analyses in a lab. In the course of the study, the monthly periodic observations, which took place between March 2023 to February 2024, study revealed that the highest yearly percentage of zooplankton at sampling sites was 43.54% (Rotifer), 22.20% (Cladocera), 11.04% (Ostracoda)and 24.03% (Copepoda). 16 species from 4 distinct classes of the variety of zooplankton are recorded in the current study.

INTRODUCTION:

The zooplankton population is made up of a remarkably diversified group of invertebrate taxa. Zooplanktons are a measure of the diversity of living things; each species has a specific role in the ecosystem. These are important indicators of the presence or absence of fish species and are sensitive to climate variables. High trophic level zooplanktons are the main means of energy

transmission between phytoplankton and fish, and they also serve as bio-indicators of pollution and a direct link between primary producers. As fish food, zooplankton is essential because it provides amino acids, fatty acids, and vitamins. (Akin-Oriola FA, 2003)

Zooplankton is a significant aquatic creature that is widely distributed in all kinds of aquatic habitats and is essential to the exchange of energy within aquatic ecosystems. It has an intermediary role in the food chain, with many of them feeding on algae and bacteria, which are then eaten by a variety of fish, birds, and invertebrates. (Basu BK & Pick FR, 1996)

The existence and dominance of zooplankton species are crucial to the health of the freshwater environment. Understanding the fundamental characteristics and overall economy of aquatic environments is considerably aided by the variety and ecology of zooplankton. The population of zooplankton in a body of water is also controlled by physical and chemical variables. Many fish species and commercially significant groups of crustaceans are among the secondary feeders of zooplankton species. Fish are an important and delectable food for humans and a rich source of nourishment. Fish oil is one of the byproducts that fish create that has a good therapeutic food value. For the development of fisheries, the amount of zooplanktons in the water offers important information about the sources of life that are accessible.

Nowadays, pollution and human activity are putting biodiversity under risk. As a result, it is imperative to maintain current knowledge on the variety of all aquatic organisms. Because planktons are the primary source of food for fish that are significant to the fishing industry, the density of planktons in a body of water affects the rate of growth of fish.

MATERIALS AND METHODS-

Water samples from the four sampling sites of the Hanuman Sagar Dam near Wari, in the Akola district of Maharashtra, India, were obtained for the current study. Direct water collection was done at each dam sample point that was chosen. Nothing unusual transpired during the transfer of the samples to the bottle and their delivery to the lab. Throughout the course of a year, water samples were taken from the sampling stations once a month. The samples were gathered in the early morning. Water samples were taken from the lower stream Hanuman Sagar Dam near temple at month-to-month intervals over the current research period, from March 2023 to February 2024, at specific locations within the dam. Regarding the gathering of planktons 200 liters of water samples were filtered using 25 bolting silk plankton nets. (Rana and Pundhir, 2002)

For future research, the gathered planktonic sample was kept in 4% formalin solution after being concentrated to a 50 ml volume. Every planktonic growth was recognized under a microscope using conventional identification techniques, monographs, and keys that were recommended by the

APHA (1985), Tonapi (1980),

OBSERVATIONS AND RESULTS :

During the year of investigation, the monthly period observation was March 2023 to February 2024. The findings are reported into the following observation table.

Table 01 :Monthly variation in Zooplankton of Lower stream Hanuman Sagar Dam from March 2023 to February 2024

Class		Genera	Jun	Jul	Aug	Sep	Oct.	Nov.	Dec.	Jan.	Feb.	Mar	Apr.	May	Total
Rotifer	1)	*Brachionusangularis* sp.	26	28	29	14	11	12	8	5	12	13	17	7	182
	2)	*Brachionuscaudatus* sp.	14	13	20	10	12	16	11	19	9	10	11	7	152
	3)	*Brachionuscalyciflorus* sp.	19	11	14	14	17	6	9	6	13	16	11	8	144
	4)	*Filiniapolihensis*	18	14	22	17	19	21	20	10	18	12	18	6	195
	5)	*Keatellaprocurca* sp.	15	16	16	26	19	15	17	23	16	18	9	7	197
	6)	*Keatellacochlearis* sp.	20	22	14	11	15	11	17	16	18	10	7	7	168
	7)	*Lecane bulla*	20	14	16	18	11	6	36	11	16	13	9	5	175
Cladocera	8)	*Daphnia carinata*	11	14	15	17	29	26	21	21	11	13	12	14	204
	9)	*Chydorus ciliates*	7	17	25	15	19	20	22	17	17	18	11	7	195
	10	*Moniabrachiata*	11	15	11	12	21	19	21	27	19	13	11	7	187
Ostracoda	11	*Condonaohioensis*	5	7	6	6	8	2	8	3	9	8	16	11	89
	12	*Cyclocypris* sp.	6	9	14	17	9	0	10	12	4	2	3	5	91
	13	*Cyprinotusglaucus*	5	9	5	6	4	8	10	9	11	12	13	8	100
Copepod	1	*Mesocyclopsleucarati*	18	14	28	21	19	20	13	16	15	15	10	9	198
	15	*Mesocyclopshyalinus*	17	22	19	24	8	15	16	19	20	16	11	7	194
	16	*Nauplius larvae*	19	11	25	15	20	27	36	23	15	19	20	13	243
													Grand Total		2538

Table 2: Annual percentage of Zooplankton of Lower stream hanuman Sagar Dam from March 2023 to February 2024

Sr. No.	Classes	Annual percentage of Zooplankton
01	Rotifer	47.79%
02	Cladocera	23.09%
03	Ostracoda	11.04%
04	Copepod	18.08%

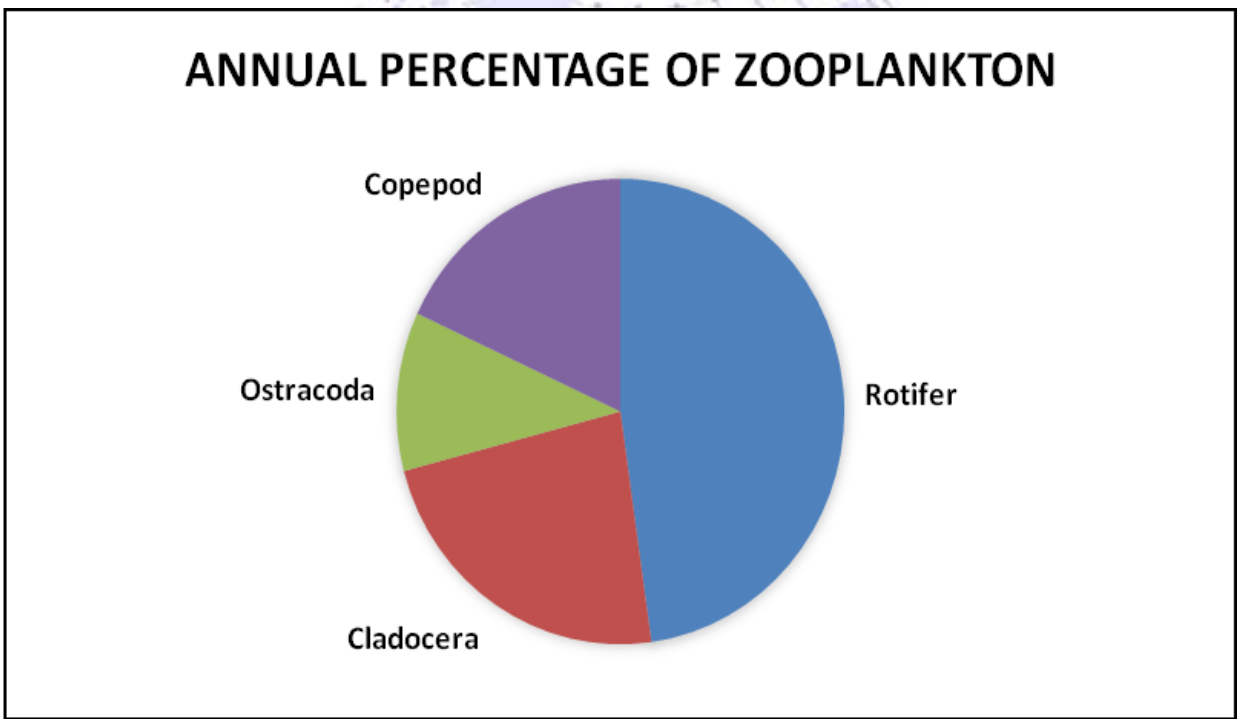

Fig. 01 - Annual percentage of Zooplankton of Lower stream Hanuman Sagar Dam from March 2023 to February 2024

DISCUSSION-

The small, free-swimming living organisms found in the water body are called zooplanktons. They are also known as main consumers because they eat the phytoplankton found in bodies of water. The lower stream Hanuman Sagar Dam zoo planktonic research was based on four groups: rotifers, cladocera, ostracoda, and copepods. Different species' distributions were influenced by physicochemical parameters, including water's temperature, conductivity, pH, chloride

concentration, and free CO2 content. Among all the zooplankton groups in the current study, Rotifers was found to be dominating in all groups because of its distribution and results that were comparable to those previously noted by several studies.

Seven species were seen from Rotifer group throughout the course of the study, includes *Lecanebulla sp., Keatellaprocurca sp., Keatellacochlearis sp., Filiniaopoliensis sp., Brachionusangularis sp., and Brachionuscaudatus sp. Keatellaprocurca* was the most prevalent species among these seven species. Three species were seen in the Cladocera group throughout the research period: *Daphnia carinata, Chydorus ciliates*, and *Moniabrachiata. Daphnia carinata* was the most dominant species among these three species.

Three species, including *Condonaohioensis, Cyclocypris* sp., and Cyprinotusglaucus were noted in the Ostracoda group studies. Among these three species, *Cyprinotusglaucus* dominated.the other three species, including *Mesocyclopsleucarati sp., Mesocyclopshyalinus sp*., and *Nauplius* larvae sp., were noted in thr Copepoda group observation and study. The *Nauplius* larvae outcompeted the other two species out of these three.

CONCLUSIONS-

The abundance and dominance of zooplankton species contribute significantly to the functioning of the freshwater environment, owing to their great variety. There were sixteen species from four distinct types of zooplankton diversity in the current study. For the development of fisheries, the amount of zooplanktons in the water offers important information about the sources of life that are accessible. The biodiversity observed was under threat because of pollution and human activity near the periphery of temple. Maintaining current knowledge of the variety of all aquatic organisms is vital for the conservation of biodiversity. Since planktons were the main source of food for fish that were significant to the economy, their density in a body of water influenced the pace at which fish were stocked. This was also the case for the growth of the inland fisheries industry. The existence and dominance of zooplankton species were crucial to the freshwater ecosystem's ability to operate. In the future, we can conduct research on the protection of zooplankton diversity and the growth of fish production at the near Hanuman Sagar Dam in Wari, Maharashtra's Akola District. The current situation of Dam makes this study useful for future fishing growth.

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