



"STUDIES ON ZOOPLANKTON OF SON RIVER OF SIDHI DISTRICT (M.P.)"

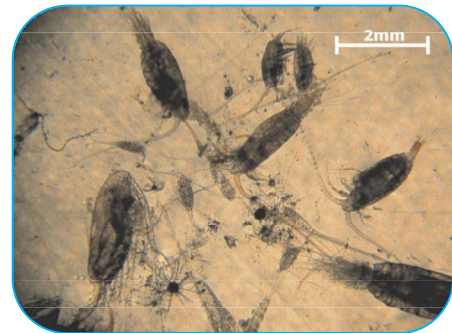
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ABSTRACT :

Zooplankton play a crucial role in freshwater ecosystems, contributing to nutrient cycling and serving as vital components in aquatic food webs. This study investigates the zooplankton communities in the Son River of the Sidhi District, aiming to enhance our understanding of their biodiversity, environmental health indicators and implications for conservation. The research employed comprehensive sampling methodologies, including plankton tows and water quality assessments, conducted at various sites along the river. Zooplankton population is very useful indicators of food web stability. Zooplanktons are affected by many environmental factors such as pH, temperature, salinity; oxygen etc. zooplanktons are play important role on food chain, energy transfer between primary and tertiary trophic levels. Due to their large densities they are being used as the indicator organisms of physical, chemical and biological process of aquatic system.



KEYWORDS : Zooplankton, aquatic food, energy transfer and Son River.

INTRODUCTION :

Zooplankton, a diverse community of microscopic organisms drifting in aquatic ecosystems, form a crucial link in the intricate web of freshwater habitats. The Son River, coursing through the Sidhi District, emerges as a vital yet vulnerable ecosystem where zooplankton play pivotal roles in nutrient cycling, energy transfer, and overall ecological balance. This introduction outlines the rationale and objectives of studies conducted on zooplankton in the Son River, shedding light on the significance of these investigations.

Fresh water ecosystem, the study of which is known as limnology is divided into two groups - lentic (standing or still water habitats) and lotic (running water habitats). Lentic and lotic types are inland fresh water bodies, are spatiotemporally dynamic ecosystems and support rich biodiversity. These inland freshwater bodies play vital role in food web and nutrient recycling and act as perfect home for different biological activities for various microorganisms and macroorganisms. Wetlands i.e., lakes, Jheels and beels etc. have variety of linkages for energy and nutrient exchange with surrounding watersheds and air sheds (Patra et al., 2010). Rivers, lakes, streams are most highly deep fertile, diverse aquatic ecosystems, home for both benthic and interstitial micro and macro flora and fauna, while ponds and reservoirs are shallow and small fresh water ecosystems. Sunlight mostly reaches in the

bottom of these small ecosystems and most of them are temporary and ephemeral (following precipitation). These temporary freshwater ecosystems support only those small numbers of species of micro and macro invertebrates which can withstand dry periods by adopting survival strategies. Both lentic and lotic ecosystems are major part of global hydro biological regime and their existence depends upon geographical, physiographical and climatic conditions. On other hand salt water ecosystem include inland brackish water as well as marine and estuarine habitats. Estuarine represents a transitional zone between a river and the sea it contains dissolved solid contents intermediate between those of fresh and marine water.

MATERIALS AND METHODS :

Study site:

The Son River is one of the major tributaries of the Ganges River in northern India. The Son River originates near Amarkantak in the state of Madhya Pradesh, at an elevation of about 780 meters (2,560 feet) above sea level. Amarkantak is a prominent pilgrimage site and a highland plateau known for its natural beauty. The Son River, with its cultural, ecological, and economic significance, remains an essential part of the landscape in central and eastern India. Efforts to manage and preserve its resources are crucial for sustainable development in the region.

Collection and preservation of Zooplankton was done at the study sites while method of identification of zooplankton was applied in the laboratory. Samples were collected seasonally from three sampling stations during the study period. For qualitative and quantitative studies of zooplankton, 10 lits. of surface water were passed through a No. 25 bolting silk cloth net of mesh size 63 m and concentrated to 100ml and were preserved by adding 2ml of 4% formalin simultaneously. The samples were observed and identified under microscope using keys and monographs of Edmondson (1959), Pennak, (1978), Battish, (1992), Dhanapathi, (2000) and Adoni, (1985). Zooplanktons were counted with the help of Sedgwick Rafter cell method. 10ml of concentrated sample was used for the identification of different groups of zooplankton like Rotifera, Copepoda, Cladocera, Protozoa and Ostracoda. For their numerical estimation, the organisms were observed under light microscope using "Sedgwick Rafter Cell" as per procedure given in standard methods APHA, (1991). Average 5 to 10 counts for each sample were taken and results were expressed in number of organisms/litre. The results have been expressed as ind./l (Wanganeo and Wanganeo, 2006).

RESULTS AND DISCUSSION :

The findings reveal a diverse array of zooplankton species inhabiting the Son River, with particular emphasis on [mention any specific species if relevant]. The study establishes zooplankton as sensitive indicators of water quality, with variations in their abundance and composition correlating with environmental parameters. Anthropogenic impacts, such as [mention specific human activities], were found to significantly influence zooplankton communities, highlighting the need for sustainable river management practices.

During the entire study of Son river, a total of 24 species of zooplankton, belonging to groups Rotifera (10 species), Cladocera (6 species), Copepoda (4 species), Protozoa (2 species) and Ostracoda (2 species) was registered from all the study sites (Table 1):

Table 1: Diversity of different groups of zooplankton.

S.No.	Groups	Son river
1.	Rotifera	10
2.	Cladocera	06
3.	Copepoda	04
4.	Protozoa	02
5.	Ostracoda	02
	Total	24

Research on zooplankton in rivers typically includes:

Biodiversity and Species Composition: Scientists may study the diversity of zooplankton species present in the Son River. This involves identifying and cataloging the various species to understand the ecosystem's richness.

Abundance and Distribution: Researchers may assess the abundance and spatial distribution of zooplankton in different parts of the river. This information helps in understanding the ecological health of the river and identifying areas of high or low productivity.

Environmental Indicators: Zooplankton are sensitive to changes in water quality and environmental conditions. Studying them can provide insights into the overall health of the river ecosystem and serve as indicators of environmental changes.

Impact of Human Activities: Scientists might investigate the impact of human activities such as agriculture, industry, and urbanization on zooplankton communities. Pollution and habitat alterations can significantly affect the composition and abundance of zooplankton.

Food Web Dynamics: Zooplankton form a crucial link in aquatic food webs. Research may focus on understanding the interactions between zooplankton and other organisms, including phytoplankton, fish, and higher trophic levels.

Conservation and Management: Knowledge gained from zooplankton studies can contribute to the development of effective conservation and management strategies for the Son River. This includes measures to protect and restore the habitats essential for zooplankton survival.

CONCLUSION:

In conclusion, this study contributes valuable insights into the zooplankton ecology of the Son River, providing a foundation for future research and informing conservation strategies in this ecologically significant region. The research underscores the importance of zooplankton in maintaining ecosystem balance, particularly in relation to phytoplankton dynamics and trophic interactions. Conservation implications drawn from the study emphasize the necessity of preserving habitats and mitigating anthropogenic stressors to ensure the continued health of the Son River ecosystem.

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