

# PRELIMINARY SURVEY OF ZOOPLANKTON DIVERSITY OF KAMALAVATI RIVER, SEDAM TALUKA, KALABURAGI DISTRICT, KARNATAKA

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**Abstract:** The present preliminary study is undertaken to focus on the zooplankton diversity in Kamalavati River, Sedam taluka, Kalaburagi district Karnataka. During the month January 2016 to December 2016. In present investigation total 27 different groups of zooplankton species were identified, among them rotifers are 18 species, cladocera are 06 species and copepods are 03 species.

**Keywords:** Zooplanktons, diversity, sedam, species.

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## 1. INTRODUCTION

The name “zooplankton” is originated from two Greek words “zoon” which means “animal” and “planktos” which means “wanderer or drifter” [Thurman, H.V 1997; [www.doc.govt.nz](http://www.doc.govt.nz); [www.softschools.com](http://www.softschools.com)]. Zooplanktons are small, microscopic, aquatic microfauna they lead dwelling life in water, drifting with water currents and freely floating in surface water due to availability of food and limited locomotion [APHA, 1985; Ovie, 2011; [aquafind.com](http://aquafind.com)]. Zooplanktons are cosmopolitan in distribution [Mukharjee, 1997].

Zooplanktons are considered as excellent bio-indicators, because zooplankton diversity indicates the quality of water [Khan, 2003; Hassan, 2008; Dadhick Nand, 1999]. If there is any fluctuation in the aquatic environment it directly or indirectly effects the zooplankton diversity, because these are very sensitive and respond immediately according to the adverse effect of environment.

Zooplanktons plays a very important key role in aquatic food webs, because these are important food for fish and invertebrate predators and they heavily consumes phytoplanktons or algae, bacteria, protozoa and other invertebrates, it helps to maintain the natural balance of algae, bacteria etc., in aquatic ecosystem [[aquafind.com](http://aquafind.com); [www.doc.govt.nz](http://www.doc.govt.nz)].

The major groups of freshwater zooplanktons are rotifers, cladocera and copepod. Zooplanktons plays a vital key role in energy transfer of an aquatic ecosystem [Murugan, 1998]. Therefore these are considered as link between the primary producers and consumers of aquatic ecosystem [Boyd, 1982; Guy D., 1992;].

Rotifers are most dominant zooplankton group in freshwater ecosystems. Hence, rotifer species composition is considered as biological indicators and water quality assessment. These species are quickly respond to environmental changes [Sladeczek, 1983].

## 2. MATERIALS AND METHODS

### STUDY AREA:

The Kamalavati River is a perennial fresh water body of Kalaburagi district and located at Sedum taluka, which is 49 km away from the Gulbarga University Campus. It lies between Latitude of 17° 10' 42.92" N and Longitude of 77° 17' 23.93" E. This water is mainly used for agriculture. In addition to this, its water is also used for bathing animals, washing clothes and other domestic activities.

**SAMPLE COLLECTION:**

Samples were collected from five different selected stations from the study area. For the qualitative analysis of zooplankton, samples were collected from sub-surface water using nylon bolt zooplankton net (No. 25)[APHA, 1998] and samples were fixed and preserved in 4% formalin in a wide mouthed propylene labeled vial bottles (125ml) immediately after collection[Sharma and Sharma, 2008].

These samples were taken to the laboratory and qualitative analysis of zooplankton identification was done according to the methods given by [Edmondson, 1966; Needham and Needham, 1962; Michel, 1973; Pennak, 1978; Tonopi, 1980; Battish, 1992; Altaff, 2004;]. The same species were confirmed by ZSI, Hyderabad.

**3. RESULTS AND DISCUSSION**

During the present study period the results reveals that there are 27 species of major zooplankton groups are recorded in the Kamalavati River. Among 27 species, Rotifera comprises 18 species, Cladocera with 6 species and Copepoda with 3 species. The results are shown in table 1.

**Table 1: Checklist of freshwater zooplankton species recorded in Kamalavati River at different stations.**

Groups	Family	Species	Name of the sample				
			S1	S2	S3	S4	S5
Rotifera	Brachionidae	<i>Brachionus angularis</i> Gosse, 1851	-	+	+	-	+
		<i>Brachionus calyciflorus</i> Pallas, 1776	+	+	+	-	+
		<i>Brachionus caudatus</i> Barrios & Daday, 1894	-	+	-	-	+
		<i>Brachionus diversicornis</i> Daday, 1883	+	-	-	-	-
		<i>Brachionus falcatus</i> Zacharias, 1898	+	+	-	-	+
		<i>Brachionus quadridentatus quadridentatus</i> Hermann, 1783	+	-	+	-	-
		<i>Brachionus rubens</i> Ehrenberg, 1838	-	-	+	-	-
		<i>Keratella tropica</i> Apstein, 1907	+	+	-	+	+
		<i>Platios patulus</i> Muller, 1786	-	-	+	-	-
	Euchlanidae	<i>Dipleuchlanis propatula</i> Gosse, 1886	+	-	-	-	-
	Mytilinidae	<i>Mytilina acanthophora</i> Hauer, 1938	-	-	-	-	+
	Lecanidae	<i>Lecane bulla</i> Gosse, 1851	-	+	-	+	-
		<i>Lecane papuana</i> Murray, 1913	-	-	+	-	-
		<i>Lecane quadridentata</i> Ehrenberg, 1832	+	-	-	-	-
	Asplanchnidae	<i>Asplanchna brightwellii</i> Gosse, 1850	-	-	-	-	+
	Synchaetidae	<i>Polyarthra</i> species	-	-	-	-	+
	Filiniidae	<i>Filinia longiseta</i> Ehrenberg, 1832	-	-	-	+	-
	Testudinellidae	<i>Testudinella patina</i> Hermann, 1783	-	-	+	-	-
Cladocera	Sididae	<i>Diaphanosoma sarsi</i> Richard, 1895	-	+	+	+	+
	Daphniidae	<i>Ceriodaphnia cornuta</i> Sars, 1885	-	-	-	-	+
		<i>Scapholeberis kingi</i> Sars, 1903b	-	-	+	-	-
	Moinidae	<i>Moina micrura</i> Kurz, 1874	-	+	+	-	-
		<i>Coronatella rectangular</i> Sars, 1862a	+	-	-	-	-
<i>Pleuroxus aduncus</i> Jurine, 1820		-	-	-	-	+	
Copepoda	Cyclopoidae	<i>Mesocyclops hyalinus</i> Rehberg, 1880	+	-	-	+	+
		<i>Mesocyclops leuckarti</i> Claus, 1857	+	-	+	-	-
		<i>Thermocyclops hyalinus</i> Rehberg, 1880	-	+	+	+	-

**Rotifera:**

The name “rotifers” is derived from two Latin words “rota” which means “wheel” and “ferre” which means “to bear”. Hence the name “wheel-bearer or wheel animals” [www.ucmp.berkeley.edu; www.sciencedaily.com]. Rotifers are small, microscopic animalcules, with two distinctive features namely presence of ciliated region at the head or apical end called corona. Its function is gathering food particles from the water and locomotion and the other one is the presence of muscular pharynx made of two hard jaws called trophi. [www.sfrc.ufl.edu]. Rotifers are usually located in freshwater. The presence of some species such as, Asplanchna and Brachionus species in river that indicates the river water is eutrophicated [Attayde and Bozelli, 1998].

**Cladocera:**

Cladocerans are commonly referred to as “water fleas”. These species were live in freshwater stationary regions. They have strong sense of smell via their special long antennae. Water fleas are mostly eaten by many animals, such as fish and aquatic insects, so cladocerans composition is less compared to rotifers [eol.org/data\_objects/22758773].

**Copepoda:**

The name “copepoda” is originated from two Greek words “cope” which means “oar or paddle” and “pod” which means “foot” [www.montereybayaquarium.org]. Copepods use antennae and appendages as like paddles for movement. Copepods are mainly key link in aquatic food webs.

During the present study period the rotifers are dominant zooplankton group, compared to cladocerans and copepods [J. Green, 1993]. Similar results were recorded by several workers. Singh *et al* [1990] recorded 15 rotifers, 3 cladocerans and 2 copepods in Nanaksagar, a reservoir located in Tarai area. Rawat [1991] 9 rotifer species, 8 cladocerans species and 4 copepods species.

**4. CONCLUSION**

The present preliminary results reveals, the composition of zooplankton comprised of 27 species belonging to three major zooplankton groups viz., Rotifera, Cladocera and Copepoda. The present investigation shows that the Rotifers were the most dominant of all groups contributing 18 species, followed by Cladocera 6 species and Copepoda 3 species. The presence of number of eurytopic species like, Brachionus angularis, B. diversicornis, B. calyciflorus, B. patulus, B. caudatus, Asplanchna brightwellii indicated organic enrichment of the river. The presence of maximum Rotifer species is due to their small size, low transparency of river water so; these species are not really visible to predatory fishes. This indicates the river water is eutrophicated such trophic state is favourable for rotifers [Cajander, 1983]. The other groups of zooplanktons are Cladocerans and Copepods are recorded as less dominant species because of their larger size compared to Rotifers, due to their large size this decreases their composition because these species can easily visible to predatory fishes [Karus, 2014].

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