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Contents

Diversity of Rotifera in Kapileshwar lake, Ashti, Di-Wardha (M.S.)

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Abstract:
The present paper deals with the investigation of the diversity of Rotifera in Kapileshwar lake,Ashti. The qualitative and quantitative analysis of zooplankton community was undertaken on monthly basis from February 2019- January 2020.During the present investigation total 11 species of Rotifera were recorded, viz. *Brachionus fulcatus, B.rubens, B.calciflorus, B.diversicornis, B.plicatus, Filinia longiseta, Keratella tropica, Asplanchna priodonta, Tricocerca longiseta, Monostylla bulla and Lecane spp* among which *Branchionus fulcatus* was dominant during the year 2019-2020. The total number of Rotifers was 471.0 ind/lit at Site 1, 436.0 ind/lit at Site 2 and 530.0 ind/lit at Site 3.Maximum density of Rotifers was recorded in winter and minimum in monsoon season.

Keywords:
Rotifera, Kapileshwar lake, Ashti

Introduction:

As producers and consumers, plankton plays an important role in the transformation of energy from the tropic level to the next higher tropic level ultimately leading to fish production which is the final product of aquatic

environment . Planktonic animals in fresh water are dominated by Rotifers, Cladocerans, Copepods and Ostrocodes. The occurrence and abundance of zooplankton in freshwater ecosystem depends on its productivity, which in turn is influenced by physic-chemical parameters and level of nutrients. The species composition and distribution of fresh water zooplankton is very poorly studied in tropical inland water.

Rotifers are amongst some of the most abundant and important members of the freshwater zoofauna, along with the protozoa and crustacean. They are found in many diverse and temporary habitat, including gutters and the water trapped within mosses. Globally around 2000 species of Rotifers are known (Shiel,1995).

Materials and methods :

Kapileshwar lake is located 1 km. away from Ashti town. It is a Tahasil place in Wardha district in the state of Maharashtra, India. Kapileshwar lake named as Kapileshwar Talav and is famous due to Kapileshwar Mandir built at the base of talav, so named as Kapileshwar Talav, now local name is Ashti lake. It was constructed in 1960 as an irrigation project by the Government of Maharashtra. It was constructed on and impounds a local Nallah. It is a good picnic spot and a popular tourist attraction for its scenic beauty.

Water samples were collected monthly from the Kapileshwar lake at fixed time to avoid the influence of fluctuation. Three different sampling sides were selected for the study of Rotifera from February 2019 to January 2020. The plankton samples were collected by filtering 40 liters of water through plankton net silk bolting cloth no. 25 (Mesh size 56). The concentration of plankton samples were mixed and collected after adding 45 formalin and brought to the laboratory for analysis. After centrifugation take 1 ml. sample in a sedwick rafter counting cell. Rotifers ware identified with the help of keys provided by APHA (1985), Tonapi (1980), Sehgal (1993).The quantitative analysis of Rotifers was carried out with the help of S.R. Cell as per the methodology of Kodarkar (1992)and calculated by using formula

$$n = \frac{(a \times 1000) \times C}{I}$$

Where,

n = Number of plankton/litre of water.

a = Average of plankton in one small chamber.

C = ml. of plankton concentration.

I = Volume of original water filtered in litre.

Results and Discussion:

During the present investigation total 11 species of Rotifera were recorded, viz. *Brachionus fulcatus, B.rubens, B.calciflorus, B.diversicornis, B.plicatus, Filinia longiseta, Keratella tropica, Asplanchna priodonta, Tricocerca longiseta, Monostylla bulla and Lecane spp among which Branchionus fulcatus* was dominant during the year 2019-2020. The total number of Rotifers was 471.0 ind/lit at Site 1(Table 1), 436.0 ind/lit at Site 2(Table 2) and 530.0 ind/lit at Site 3(Table 3).Their maximum appearance 97.00 ind/lit was recorded in the month of November while minimum 3.00 ind/lit in the month of May at Site 1(Table 1),maximum 80.00 ind/lit in the month of November while minimum 2.00ind/lit in the month of June at Site 2(Table 2) and maximum 93 ind/lit while minimum 5.00 ind/lit at Site 3(Table 3).In yearly mean average *Brachionus fulcatus* showed dominance 5.4± 2.9 ind/lit while *Monostyla bulla* showed least appearance 1.8± 1.2 ind/lit at Site 1(Table 4).*B.fulcatus* was dominant 5.4± 2.2 ind/lit and *Asplachna spp.* was least in appearance 1.9± 0.9 ind/lit at Site 2(Table 5) and *B. fulcatus* also showed dominance 6.0± 2.7 ind/lit while *Monostyla spp.* was least in appearance 2.1± 1.0 ind/lit at Site 3(Table 6).

During present investigation, the highest population of Rotifera was recorded during winter season. Edmondson (1965) and Baker (1979) observed that the high Rotifer population in winter could be attributed with favorable temperature and availability of abundant food in the form of bacteria, nanoplankkton and suspended detritus. Sawane et.al.(2006) reported maximum number of Rotifers in winter from river Irai, Chandrapur. Dahageonkar (2008) recorded maximum density of Rotifers in winter season in Wardha river near Ballarshah (M.S.). Among the observed Rotifers, *Brachionus fulcatus and Keratella spp.* were pollution indicator species and were abundantly found at sampling station. Tijare and Shastrakar (2016) also found highest Rotifer population in winter and minimum in summer in Asolamendha lake, Di-Chandrapur.

Table : 1 Monthly Diversity of Rotifera in Kapileshwar Lake at site S1 during year 2019-2020

S.No.	Name of species	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
1	*Brachionus fulcatus*	12	11	02	01	03	00	00	03	09	10	10	05

2	*B. rubens*	00	00	00	00	00	01	02	04	03	07	08	13
3	*B. calciflorus*	04	02	02	00	00	00	02	03	03	08	02	02
4	*B. diversicornis*	01	01	02	00	00	00	00	02	04	11	09	06
5	*B.plicatus*	02	02	02	00	00	00	03	08	09	03	08	12
6	*Filinia longiseta*	02	02	00	00	00	06	06	13	10	14	04	03
7	*Keratella tropica*	02	03	05	01	00	00	04	06	11	13	07	08
8	*Asplanchna priodonta*	02	02	00	00	00	00	02	04	06	06	02	02
9	*Tricocerca longiseta*	03	01	01	00	00	02	07	07	04	08	09	02
10	*Monostyla bulla*	00	00	00	00	00	00	06	04	04	04	02	02
11	*Lecane spp.*	02	04	04	01	01	00	00	01	03	04	05	08

Table : 2 Monthly Diversity of Rotifera in Kapileshwar Lake at site S2 during year 2019-2020

S.No.	Name of species	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
1	*Brachionus fulcatus*	13	12	06	03	00	01	00	00	10	09	06	05
2	*B. rubens*	00	00	00	00	00	02	04	06	07	09	12	07
3	*B. calciflorus*	03	01	02	02	00	00	01	04	04	06	03	02
4	*B. diversicornis*	02	03	01	01	00	00	00	02	06	11	08	04
5	*B.plicatus*	03	02	01	00	00	03	06	06	02	08	11	10
6	*Filinia longiseta*	01	00	00	00	00	00	03	06	07	07	02	02
7	*Keratella tropica*	06	03	05	00	00	00	00	00	09	07	11	06
8	*Asplanchna priodonta*	03	01	02	00	00	00	02	00	05	03	04	03
9	*Tricocerca longiseta*	02	01	00	00	00	03	04	06	06	10	04	03
10	*Monostyla bulla*	00	01	00	00	00	02	07	06	05	05	03	01
11	*Lecane spp.*	02	05	03	04	02	00	01	00	06	05	08	03

Table : 3 Monthly Diversity of Rotifera in Kapileshwar Lake at site S3 during year 2019-2020

S.No.	Name of species	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
1	*Brachionus fulcatus*	11	12	03	03	02	01	00	03	08	12	11	05
2	*B. rubens*	00	00	00	00	01	02	05	05	08	09	10	11
3	*B. calciflorus*	05	03	02	01	00	01	02	03	04	07	03	04
4	*B. diversicornis*	02	01	02	01	00	00	01	02	05	11	12	06
5	*B.plicatus*	04	03	02	01	00	00	04	09	10	04	09	13
6	*Filinia longiseta*	03	02	01	00	00	06	07	12	13	13	05	03
7	*Keratella tropica*	03	04	06	02	00	00	04	07	12	13	07	08
8	*Asplanchna priodonta*	02	03	01	00	00	00	02	05	06	07	02	03
9	*Tricocerca longiseta*	03	02	01	00	00	02	07	08	05	07	11	03
10	*Monostyla bulla*	00	00	00	00	00	03	05	03	04	05	02	03
11	*Lecane spp.*	04	04	03	02	02	01	00	02	01	05	04	07

Table: 4 Seasonal Diversity of Rotifera in Kapileshwar lake at Site S1 during year 2019-2020

Sr. no.	Parameters	Summer	Mansoon	Winter	Mean
1	*Brachionus fulcatus*	6.5 ± 4.5	1.3 ± 1.3	8.5 ± 3.0	5.4 ± 2.9
2	*B. rubens*	0.0 ± 0.0	1.8 ± 1.5	7.8 ± 2.6	3.2 ± 1.4
3	*B. calciflorus*	2.0 ± 1.4	1.3 ± 1.3	3.8 ± 2.5	2.3 ± 1.7
4	*B. diversicornis*	1.0 ± 0.7	0.5 ± 0.9	7.5 ± 2.6	3.0 ± 1.4
5	*B.plicatus*	1.8 ± 1.1	3.0 ± 3.7	8.0 ± 3.2	4.3 ± 2.7
6	*Filinia longiseta*	1.0 ± 1.0	6.3 ± 4.6	7.8 ± 4.3	5.0 ± 3.3
7	*Keratella tropica*	3.3 ± 1.9	2.5 ± 2.6	10.0 ± 2.0	5.3 ± 2.2
8	*Asplanchna priodonta*	1.0 ± 1.0	1.5 ± 1.7	4.0 ± 2.0	2.2 ± 1.6
9	*Tricocerca longiseta*	1.3 ± 1.1	4.0 ± 3.1	6.0 ± 3.2	3.8 ± 2.4

10	*Monostyla bulla*	0.0 ± 0.0	2.5 ± 2.6	3.0 ±1.0	1.8 ± 1.2
11	*Lecane spp.*	3.0 ± 0.7	1.0 ± 1.0	4.3 ± 1.8	2.8 ± 1.2

Table: 5 Seasonal Diversity of Rotifera in Kapileshwar lake at Site S2 during year 2019-2020

Sr. no.	Parameters	Summer	Mansoon	Winter	Mean
1	*Brachionus fulcatus*	8.5 ± 4.2	0.3 ± 0.4	7.5 ± 2.1	5.4 ± 2.2
2	*B. rubens*	0.0 ±0.0	3.0 ±2.2	8.8 ± 2.0	3.9 ± 1.4
3	*B. calciflorus*	2.0 ± 0.7	1.3 ± 1.6	3.8 ± 1.5	2.3 ± 1.3
4	*B. diversicornis*	1.8 ± 0.8	0.5 ± 0.9	7.8 ± 2.9	3.3 ± 1.5
5	*B.plicatus*	1.5 ± 1.1	4.0 ± 2.7	8.0 ± 3.5	4.5 ± 2.5
6	*Filinia longiseta*	0.3 ± 0.4	2.3 ± 2.5	4.8 ± 2.8	2.4 ± 1.9
7	*Keratella tropica*	3.5 ± 2.3	0.0 ± 0.0	8.8 ± 2.4	4.1 ± 1.6
8	*Asplanchna priodonta*	1.5 ± 1.1	0.5 ± 0.9	3.8 ± 8.8	1.9 ± 0.9
9	*Tricocerca longiseta*	0.8 ± 0.8	3.5 ± 2.3	5.8 ± 2.7	3.3 ± 1.9
10	*Monostyla bulla*	0.3 ± 0.4	04.0 ± 3.2	3.5 ± 1.7	2.6 ± 1.8
11	*Lecane spp.*	3.8 ± 1.5	0.8 ± 0.8	5.5 ± 1.8	3.3 ± 1.4

Table: 6 Seasonal Diversity of Rotifera in Kapileshwar lake at Site S3 during year 2019-2020

Sr. no.	Parameters	Summer	Mansoon	Winter	Mean
1	*Brachionus fulcatus*	7.3 ± 4.3	1.5 ± 1.1	9.3 ± 2.7	6.0 ± 2.7
2	*B. rubens*	0.0 ±0.0	3.3 ±1.8	9.5 ±1.1	4.3 ±1.0
3	*B. calciflorus*	2.8 ± 1.5	1.5 ± 1.1	4.5 ± 1.5	2.9 ± 1.4
4	*B. diversicornis*	1.5 ± 0.5	0.8 ± 0.8	8.5 ± 3.0	3.6 ± 1.5
5	*B.plicatus*	2.5 ± 1.1	3.3 ± 3.7	9.0 ± 3.2	4.9 ± 2.7
6	*Filinia longiseta*	1.5 ± 1.1	6.3 ± 4.3	8.8 ± 4.8	5.5 ± 3.4
7	*Keratella tropica*	3.8 ± 1.5	2.8 ± 2.9	10.0 ± 2.5	5.5 ± 2.3
8	*Asplanchna priodonta*	1.5 ± 1.1	1.8 ± 2.0	4.5 ± 2.1	2.6 ± 1.7
9	*Tricocerca longiseta*	1.5 ± 1.1	4.3 ± 3.3	6.5 ± 3.0	4.1 ± 2.5
10	*Monostyla bulla*	0.0 ± 0.0	2.8 ± 1.8	3.5 ± 1.1	2.1 ± 1.0
11	*Lecane spp.*	3.3 ± 0.8	1.3 ± 0.8	4.3 ± 2.2	2.9 ± 1.3

Conclusion:

In the present investigation , maximum density of Rotifers was recorded during winter season at Site 3. The higher density of Rotifer was recorded at Site 3, attributed to the organic pollution mostly contributed by the sewage.

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