Research Article

Zooplankton diversity of Ambadi reservoir taluka Kinwat, Maharashtra

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Abstract

Plankton is most essential for many fishes as food. The growth of plankton feeding fishes mostly depends on plankton dynamics of the water body. In the complex chain of community metabolism, the different trophic strata, and a fraction of which ends up as fish flesh. Therefore, structure of different fish food biotic communities assumes greater significance to reservoir fish management. Ambadi reservoir in Kinwat Taluka of Nanded District of Maharashtra represents 17 species of zooplankton. These include 6 species of rotifera, 4 species of copepoda, 6 species of cladocera and 1 species of ostracoda.

Keywords: Zooplankton diversity, Fishes food, Ambadi reservoir

1. Introduction

The zooplankton forms an important group as it occupies an intermediate position in the food web, many of them feeding on algae and bacteria and in turn being fed up on by fishes. They also indicate the trophic status of the water body. Their abundance increases in eutrophic waters. They are also sensitive to pollution and many species are recognized as indicators of pollution. Fish production in a water body are directly or indirectly dependent on the abundance of plankton. The physico-chemical properties of water determine the quality and quantity of plankton. During the study of plankton, a link in the food chain is a prerequisite to understand the capacity of the water body to support the fisheries. Plankton is most essential for many fishes as food. Dhanpati (2000)² has extensively studied the systematic and ecology of freshwater rotifers of India. Unni et al., (1998), Kohli et al., (1998) Rao and Raju (2001) have done extensive work on plankton communities⁴,⁷,⁹.

2. Material and Methods

The zooplankton sampling on monthly basis was done at three sampling stations during the year 2009-2010. The reservoir is located at about 12 Km from Kinwat and 2 Km from Ambadi village latitude and longitude based on the toposheet No.56 L/I/2 are 78°13’ and 19°42’. Plankton net (mesh size 25) was swept through sub-surface (sachi disc transparency zone) and collected organisms was transferred to 100 ml capacity glass/plastic bottles. The samples were preserved in 4% formaldehdye solution and studied for diversity. Standard key and other literature was used for identification of different species for estimating seasonal population density studies, 10 buckets (100 L) of surface was poured through the plankton net (mesh size 25) and simultaneous samples by towing the plankton net through surface water were collected for diversity studies using Sedgwick Rafter Cell did the enumeration and lackeys drop method by taking 1 ml approximately diluted sample¹,²,³,⁶,⁸.
3. Results and Discussion

Zooplankton was represented by Rotifera, Cladocera, Copepoda and Ostracoda. Among zooplankton rotifera was dominated followed by Copepoda, Cladocera and Ostracoda.

In Rotifera six genera were found in the reservoir. *Keratella, Brachionus, Hexartha, Epiphanus, Rotaria, and Filina*. The maxima of Rotifera genera was observed in monsoon period (1573 organisms/litre) this indicated that the greater occurrence of loricate forms was related to the monsoon period with moderate temperature. The similar reports were given by Kumar et al., (1978)\(^5\). Copepoda was the second dominant group among the zooplankton in the reservoir. Four copepoda genera were represented by *Cyclops, Mesocyclops, Canthocamptus, Diaptomus*. Maximum copepods were found during monsoon period (414 organisms/litre).

Cladocera six genera were found *Daphnia, Moina, Daphnisoma, Cerodaphnia, Aloua, Loctona*. Maximum cladocerans were found during post monsoon period (158.0 organisms/litre) Highest diversity as well as maximum number of new records of Cladocerean species observed in Santragachi beel was presumably due to important bio-ecological relationship between macrophytes and zooplankton along with possible dispersal of zooplankton by avian agents\(^10\).

In Ostracoda only *Cypirus* was found in the reservoir. Monsoon was observed as the peak period for this genus (105.5) while lean period was the post monsoon. Sakhre and Joshi (2006)\(^11\) Reported 8 species of rotifers, 7 species each of cladocera and copepoda and 4 species of ostracoda in yeldari reservoir and also stated that copepoda was dominated among zooplankton, followed by cladocera, rotifer, and ostracoda. Shanbhag et al., (2008)\(^12\) Reported, the zooplankton community was represented by three main groups-

a) Rotifera: *Lacane luna L., Inopinata, Monostyla sp., Brachionus sp., Platias quadricornis and P. patulus*;

b) Cladocera: *Raphinids, Moinids, Leptodorials* and *Clydoris*

c) Copepoda: *Diaptomus judayi, Mesocyclops tenuis* and *Macrocylops varions*.

The density least in monsoon with 2,366 Ind/L raised sample in next season reaching peak with 13,747 Ind/L. The observations made on the density of plankton in the reservoir indicated that it can support Indian major carps and other fishes.

### Monthly Fluctuations of Zooplanktons in Ambadi Reservoir, During 2009-2010

| Months | Rotifera | Cladocera | Copepoda | Ostracoda |
|--------|----------|-----------|----------|-----------|
| May 2009 | 1108 | 82 | 402 | 92 |
| Jun 2009 | 1583 | 108 | 412 | 108 |
| Jul 2009 | 1597 | 112 | 418 | 103 |
| Aug 2009 | 1602 | 142 | 437 | 112 |
| Sept 2009 | 1510 | 120 | 389 | 99 |
| Oct 2009 | 388 | 148 | 210 | 96 |
| Nov 2009 | 378 | 150 | 212 | 78 |
| Dec 2009 | 310 | 162 | 218 | 88 |
| Jan 2010 | 301 | 173 | 209 | 50 |
| Feb 2010 | 1101 | 98 | 388 | 101 |
| Mar 2010 | 1100 | 93 | 399 | 107 |
| Apr 2010 | 1203 | 99 | 398 | 101 |
| Total | 12181 | 1487 | 4092 | 1135 |
| Minimum | 301 | 82 | 209 | 50 |
| Maximum | 1602 | 173 | 437 | 112 |
| Average | 1015.1 | 123.92 | 341.0 | 94.58 |
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