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EDITORS

Dr. Nitin Padwal

Mr. Gopal Khandare

Ms. Dipti Giri

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INNOVATIVE & APPLIED RESEARCH IN ANIMAL SCIENCES

VOLUME - II

Dr. Nitin Padwal

Mr. Gopal Khandare

Ms. Dipti Giri

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ZOOPLANKTONIC DIVERSITY AND ITS IMPORTANCE FOR FISH PRODUCTION ON MAJALGAON DAM RESERVOIR IN BEED DISTRICT, MAHARASHTRA STATE, INDIA.

Sitaram B. Ingole, Vinod B. Kakade*, Prashant K. Sanghal**

Shri Siddheshwar Mahavidyalaya Majalgaon, Dist Beed, M.S. India

Eknath Divakar Mahavidyalaya, Varavadi, Dist Pune, M.S. *

Shivaji Mahavidyalaya, Kannad, C. Sambhajinagar, M.S. **

E-mail: sbingole@yahoo.com

Abstract

Majalgaon Dam was constructed on the River Sindphana which is a tributary of River Godavari in Beed District (Maharashtra, India) in 1987. The River Sindphana has been under constant threat of pollution by sewage and industrial wastes, disposal of dead bodies, deforestation, excessive use of fertilizers and pesticides, bathing and water development programmes. The dam has a catchment area of 5540 sq. Km. It is of great importance for the region because its water is used for human and cattle consumption, power generation, fish production and irrigation. A total of 33 species of phytoplankton, 29 species of zooplankton and 11 species of fishes were identified.

The importance of plankton in fisheries is well established. It has been clearly demonstrated that the zooplankton constitute the only food for the fish fry and the adult fish not only eat them, but also select them as a delectable item. Thus zooplankton have a direct bearing in the fish industry. In India, several studies were conducted in reservoirs elucidating the characteristics of zooplankton. The zooplankton peak was found during summer followed by winter and rainy season. Microfauna (zooplankton) was observed about four groups as Rotifera observed about eleven species, Copepoda observed about nine species, Cladocera observed seven species and Ostracoda observed about two species.

The macro fauna or fish fauna were observed at the Majalgaon Dam reservoir. There are culture of fish with quick growing varieties of fishes including Indian Major Carps, exotic species have been popular in recent time. There is abundance of the species such as *Labeo rohita*, *Cirrhina mrigala*, *Catla catla*, *Cyprinus carpio*, Silver carp, *Wallago attu*, *Mystacembelus armatus*, *Notoptemus chital*, *Puntius ticto*, *Channa striatus*, *Mystus seenghala*, *Mystus cavasius*, *Eutroplus suratensis*, *Belon conchila*, *Chela*, *Tilapia Mossambica*, *Rohtee alfrediana*, *Gobius giuris*, etc. Fish is economically a very important group of animals beside being used as food. Fish liver is an important source of oil containing Vitamins A and D, several minerals and protein.

Key word: Reservoir, Zooplankton, Pollution, Fish production.

Introduction:

India has a large network of river, canals, lakes and ponds, which contribute more than 30% of the total fish production. Fish form one of the most important group of animals for man and have received his attention from ancient time. Majority of our people suffer from hunger and malnutrition. Fish is an excellent food for man and provides protein, fat and vitamin A and D, which are essential for the health of man. Fish is also provide source of vitamin B, it food rich in protein is specially preferred for containing essentially amino acid such as Lysine and methionine abundantly required for formation of phospholécithine in gray matter of the brain unsaturated fat in fish also reduce the risk of formation of high blood cholesterol. Phosphorus and several minerals are also present in it. They have good test and easily digestible. Besides being a rich source of food, fishery provides job opportunities also. By product of fishes i.e. fish manure, isinglass and several other production of commerce.

Considerable studies on fish diversity from different fresh water bodies of India have been carried out during the last few decades Hamilton Buchanan (1822), Day(1878), Mishra (1962), Jayram (1981) Thonus et.al. (1989), Talwar & Jhingrah (1991), Menon (1992), Rao et.al (1999), Sarkar and Banergee (2000), Mishra et.al.(2003). There are over 19000 reservoirs in India. Covering 3, 15,366 ha. And many more are under construction. (Suguman 2000) Reservoir Fishery in India is also important from social economic point of view as it has the potential of providing employment to about 2 million people (Khan Et.al.1999). According to sreenivasan (1993) the Maharashtra is endowed with an area of 1,79,430 ha. Under reservoir and the state produces 516 tones of fish of these area the state fisheries corporation was operating in 6,272 ha. Of reservoir and marketing the catches.

The present investigation was under taken to study the aquatic vertebrate animals with reference to fishes from Majalgaon dam reservoir water. It is a second stage of Jayakwadi Project of Nath Sagar. It is irrigation project of Maharashtra state. It is situated in the latitude $16^{\circ}16'$, and longitude $73^{\circ}26'E$. It is multipurpose type like irrigation and power production and also fishing purposes (Table No. 1).

Material and Method:

Sample collected and preserved in 4 % solution of formalin. The quantitative and qualitative analysis was carried out by taking 20 ml of concentrate obtained by siphoning the supernatant liquid. The genera of Zooplankton were identified and quantitative determination was carried out referring Needhan and work of Edmondson. Zooplankton were counted by drop count method and the results were converted to organisms per ml of water. The counting was done following the work of Edmondson (1965), APHA, AWWA and WPCF (1985), Trivedy and Goel (1984), Tonapi (1980). Standard key & other literature were used for identification of different species and the identified species were expressed in no. per liter.

The fishes were collected from the Majalgaon dam reservoir with the help of fisherman during the year June 2015 – May 2016. The specimen were preserved in 10% formalin and subsequently identified following work of Lagler (1956) Menon and Talwar (1972), Day (1878), Datta Munshi & Srivastav (1968), Jayram (1981) and Talwar & Jhingran (1991)

Result and Discussion:

The importance of plankton in fisheries is well established. It has been clearly demonstrated that the zooplankton constitute the only food for the fish fry and the adult fish not only eat them, but also select them as a delectable item. Thus zooplankton have a direct bearing in the fish industry. In India, several studies were conducted in reservoirs elucidating the characteristics of zooplankton. The zooplankton peak was found during summer followed by winter and rainy season. Microfauna (zooplankton) was observed about four groups as Rotifera observed about eleven species, Copepoda observed about nine species, Cladocera observed seven species and Ostracoda observed about two species.

Fish as constitute economically a very important group of animals. A large number of dams and reservoir has been constructing during the recent year to provide water for irrigation and power production. These bodies of water offer immense scope for fish culture for successful fish farming in dam and reservoir.

Majalgaon dam reservoir is very productive more work has been carried out of fish fauna. The distribution of fish species is quite variable because of geographical and geological condition.

The Eleven species of the fish fauna in this study belonging to four order and six families are given in the table No. 2 among them order Cypriniformes was dominant with eight species to be followed by the Mastalimbeliformes, Osteoglossiformes, and Ophiocephaliformes each with one species. Valsangkar (1993) recorded 17 indigenous and 5 introduced fish species from Shivaji Sagar reservoir. Sakhare (2001) recorded 23 fish species belonging to 7 orders in Jawalgaon reservoir in Solapur district. Pawar and Madlapure (2002) recorded 11 fish species belonging to 5 order in sivur dam. Ingole (2005) recorded 11 fish species occurrence in the during research work at Majalgaon dam reservoir.

Table No. 1: Highlight of Majalgaon dam reservoir.

Name	Majalgaon dam Jaikwadi project Stage – II
Type	Multipurpose (Irrigation and Power production)
River	Sindphana
Basin	Godavari
Location	2 Km. u/s of Majalgaon Dist-Beed (M.S.)
Year of start of Construction	1977
Year of completion	1987

Catchment area	3840 Sq Km
A.V. Rainfall in C.A.	800 mm
Submerged area	7813 Ha

Table No. 2: Fish diversity from Majalgaon Dam reservoir

Class - Pisces	Family -3 Siluridae
Sub-class - Teleostomi	Species - 8 - Wallago attu
Order 1 - Cypriniformes	Order - 2 - Mastacembeliformes
Family 1 - Cyprinidae	Family 4 - Mastamecembelidae
Species - 1 - Catla Catla	Species 9 - M. armatus
Species 2 - Labeo rohita	Order 3 - Osteoglossiformes
Species 3 - Cirrhina mrigal	Family 5 - Notopteridae
Species 4 - Cyprinus carpio	Species - 10 - N. chital
Species 5 - Silver carp	Order 4 - Ophiocephaliformes
Species 6 - Barbus ticto	Family 6 - Channidae
Family 2 - Bagridae	Species - 11 - Channa Staitus
Species 7 - Mystus seenghala	

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