



# An Ecological Survey Of Fish Communities At Kolhi Station In The Freshwater Reservoir: Bembala Yavatmal, Maharashtra

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## Abstract

Bembala is a large irrigation project and freshwater reservoir (dam) built in the Godavari basin across the Bembala River in the Babhulgaon Taluka in the Yavatmal District of Maharashtra state. It is located near Khadak-Sawanga. It is located in latitude 20°59' and longitude 78°13', 29 kilometers from Yavatmal. The diversity of Ichthyofauna has been investigated from June 2022 to February 2023 at Kolhi station near Falegaon, which is 8 km from the main gate in the backwaters. According to primary inquiry reports, the ichthyofauna are classified into 10 families and the 09 order. 3 species each from the orders Siluriformes, 4-Cypriniformes, 2-Anabantiformes, 1-Anguliniformes, and 1-Osteoglossiformes, 1-Channiformes, 1-Mugiliformes, 2-Perciformes, and 1-Cichliformes were among the sixteen total species that were observed. Cypriniformes order is the most prominent among them. study was conducted for a brief time, however the search is continuing and hope in future the diversity number will goes on increasing. In the coming days we are mainly focus on other seasonal variations relating to diversity, pathogenicity and most importantly their some of the nutritious values.

**Keywords:** Fish Diversity, Kolhi Station, Bembala, Yavatmal, Maharashtra.

## Introduction:

The fresh water resources are very precious for the life on our planet. The number of dams, reservoirs, tanks, etc. has significantly increased in last few years. The aquatic ecosystem is important and it has large number of economically important animals especially fish which is an important source of food. The development of fisheries in these fresh water resources needs to be increased through the scientific development. The reservoirs form one of the most important sources of large number of living aquatic animals, which are economically important for nature as well as for human beings as food.

The nutritive and medicinal value of fish has been recognized from ancient time to recent era. Maharashtra is rich in freshwater (rivers, irrigation canals, dams, and lakes) reservoirs and its fish diversity. Therefore, Maharashtra is one of the important states for fish production and natural water resources and there is great scope for developing fisheries in this state. Fish diversity is declining rapidly each day due to unending anthropogenic stress. This diversity is not only the wealth of our world but it also has some serious implications on fishery. Thus there is an urgent need for proper investigation and documentation of this fish diversity in order to develop a fresh water fish diversity information system having both bioinformatics and georeferenced databases of fish and fish habitat.

In Yavatmal district Bembala reservoir, still there is no study found on fish diversity. Therefore, the present investigation was undertaken to study fish diversity in the freshwaters of Bembala reservoir at Kolhi station in the months of June 2022 to February 2023. The objective of the study was to assess the fish diversity during this period along with which fish species majorly found and economically important, consumed as well. From this we can study which fish species play an important role in economies of pisciculture in Yavatmal district and nearby areas.

## Materials and Methods:

The present study is carried out in the month of June 2022 to February 2023 in the year. Kolhi sampling spot (collecting centre) was selected mainly. Thrice in a week Kolhi station was visited to study fish diversity during morning hours from 8 am to 11am generally.

Fishes were collected personally and with the help of local fishermen from the Kolhi station of Bembala Reservoir. To take photographs, Nikon Cooplix P520 Point and Shoot Camera was used. Then the fishes were transferred to an ice box for further identification in the laboratory at the research centre. The fishes were identified and scientifically classified at five levels i.e. Phylum, Class, Order, Family, to Species level by referring to standard literature of Talwar and Jhingran (1991), fish base database and Google like identification keys etc.

## Result and Discussion:

The Bembala reservoir is 29 km away from Yavatmal district and spread widely, 7650 metres long and 29.15 metres high with a capacity of 322,068,000 cubic metres, over Bembala river at Khadak-sawanga. Primary investigation reports reveal that the ichthyofauna belong to 09 order and 10 families. Total 16 species were observed from which 3 species belong to order Siluriformes, 4-Cypriniformes, 2-Anabantiformes, 1-Anguliniformes, and 1- Osteoglossiformes, 1-Channiformes, 1-Mugiliformes, 2-Perciformes, 1-Cichliformes. Among these, Cypriniformes order is found to be dominant.

At Kolhi station of Bembala reservoir during multiple visits found that major carps *Cirrhinus mrigala*, *Labeo rohita*, and other fish like *Tilapia*, *S. seenghala* were found dominant. Generally, 10 to 12 quintals of fishes are captured and collected by local fishermen everyday as the reservoir is given on lease for fishing purpose. Then the fishes are segregated species wise to know the number and amount of particular fish by the fishermen. When percentage count of every observed fish during every catch from collected fishes was roughly calculated, then it is observed that 48% to 50% were *Tilapia*, 18% to 20% were *Labeo rohita*, 9% to 12% were *Cirrhinus mrigala*, 10% to 14% were *S. seenghala*, and 7% to 10% were other fishes like *Catala catala*, *Channa striata*, *A. bengalensis*, *N. notopterus*, *P. sarana*, *W. attu*,

Major carps were dominating due to regular seed stocking and the similar results were also obtained by Kamble and Mudkhede in Loni reservoir of Maharashtra. The other fish groups which increase the species diversity of the reservoir are Potis, Bhadar, Tilapi, Singat, Murrel, Silver carp, Eel (Vam), Padin, navara, Bora, Dokala, Bhushi, Gurda, Pabada, Shingani, etc. The major carps *Lebeo rohita*, *Catala catala*, *Cirrhinus mrigala* etc. have great food value and their demand is also more as food resource among people therefore are commercially very important species. With economic perspective Common sneakhead, *A. bengalensis*, *Ompok bimaculatus* are having more importance as they gives more cost benefit ratio. Out of 16, 8 to 9 species are commercially important including major carps and according to reservoir lease about 95% of its catches are directly marketed to distant markets in Yavatmal district and outskirt areas.

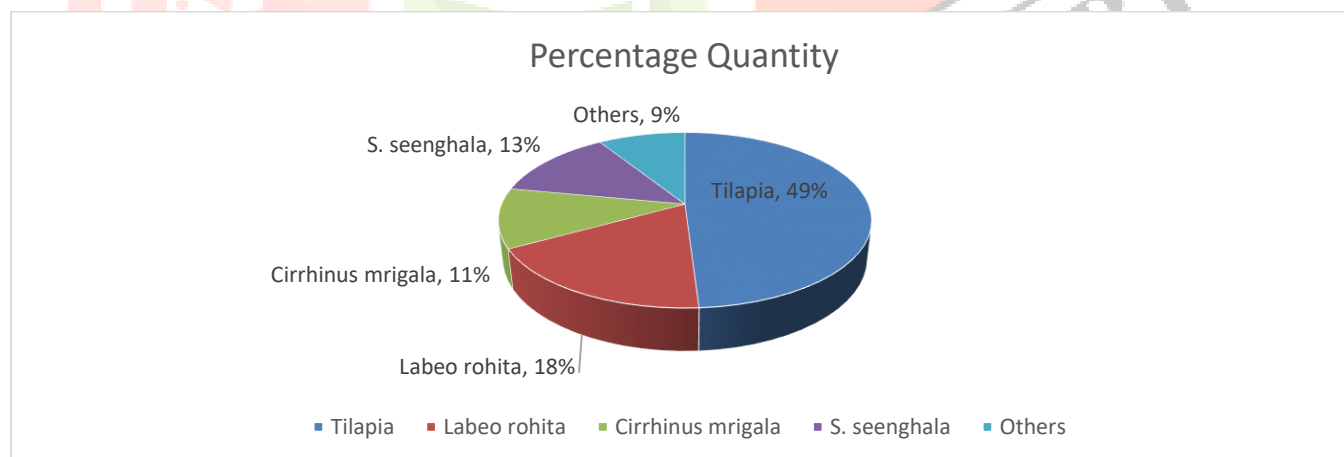


Figure 1. Percentage Count of Fish Species at Kolhi station of Bembala Reservoir.

Table1. Species composition at Bembala Reservoir Yavatmal with their scientific classification

S.N.	Scientific Name	Class	Order	Family	Local Name
1	Ompok bimaculatus	Actinopterygii	Siluriformes	Siluridae	Pabada
2	Ambasis ranga	Actinopterygii	Perciformes	Ambassidae	Chandani
3	Glossogobius giuris	Actinopterygii	Perciformes	Gobiidae	Dhanagarya
4	Ambasis nama	Teleostei	Perciformes	Channidae	gurda/ bhushi
5	Channa punctata	Actinopterygii	Anabantiformes	Channidae	Dokala/ Dhok
6	Mugil cephalus	Actinopterygii	Mugiliformes	Mugilidae	Bora
7	Catla catla	Actinopterygii	Cypriniformes	Cyprinidae	Catla
8	Labeo rohita	Actinopterygii	Cypriniformes	Cyprinidae	Rohu
9	Cirrhinus mrigala	Actinopterygii	Cypriniformes	Cyprinidae	Mrigal
10	Channa striata.	Actinopterygii	Anabantiformes	Channidae	Murrel
11	A.bengalensis	Actinopterygii	Angulliformes	Angullidae	Eel (Vam)
12	Tilapia	Actinopterygii	Cichliformes	Cichlidae	Tilapi
13	N.notopterus	Osteichthyes	Osteoglossiformes	Notopteridae	Bhadar
14	S.seenghala	Actinopterygii	Siluriformes	Bagridae	Singat
15	P. sarana	Actinopterygii	Cypriniformes	Cyprinidae	Potis
16	W.attu	Actinopterygii	Siluriformes	Siluridae	Padin

Bembala reservoir comes under large reservoir category and is major irrigation project and the species diversity in reservoir is good like other reservoirs, Nath Sagar Dam, Maharashtra. 43 fish species reported by Hiware and Pawar, Govindsagar reservoir, Himachal Pradesh 51 fish species reported by Kumar<sup>13</sup>, Rawanwadi Lake, Maharashtra 29 fish species reported by Kalbandeet *al.*<sup>15</sup>, Rana Pratap Sagar Lake, Rajasthan 39 fish species reported by Verma *et al.*<sup>16</sup>, Gandhi Sagar Reservoir, Madhya Pradesh 72 species of fishes belonging to 9 orders, 20 families and 43 genera reported by Ridhi<sup>17</sup> etc.

Total 16 species were observed from which 3 species belong to order Siluriformes, 4-Cypriniformes, 2-Anabantiformes, 1-Anguliniformes, and 1- Osteoglossiformes, 1-Channiformes, 1-Mugiliformes, 2-Perciformes, 1-Cichliformes. Among these Cypriniformes and Perciformes orders are found to be dominant.

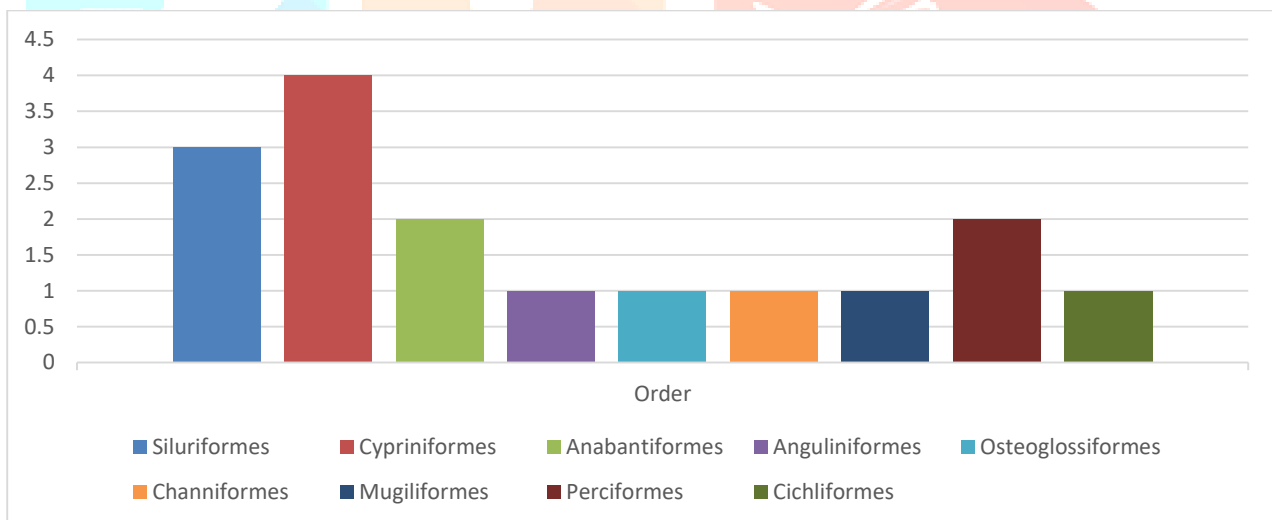


Figure 2. Order wise freshwater Fish Species at Kolhi station of Bembala Reservoir.



Figure 3. Ompok bimaculatus





Figure 4. *Ambassis ranga*



Figure 9. *Channa punctata*



Figure 5. *Glossogobius guiris*



Figure 6. *Mugil cephalus*



Figure 7. *Ambassis nama*



Figure 8. *Catla catla*



Figure 10. Labeo rohita



Figure 15. A bengalensis



Figure 11. Cirrhinus mrigala



Figure 12. Tilapia



Figure 13. Channa striata



Figure 14. N. notopterus



Figure 16. *S. seenghala*Figure 18. *W attu*Figure 17. *P. sarana*

### Conclusion:

There is a rich diversity of fish in Maharashtra which suggests that a major part of this is threatened by human activities. Fish fauna and distribution is useful for designing and implementing conservation strategies, to make fishermen aware of fishing, to give scientific training, to provide facilities to the fish farmers and to avoid immature fishing.

The Kolhi station of Bembala reservoir exhibits a good fish diversity represented by 16 species of fishes belonging to 9 orders and 10 families. The diversity and abundance of fishes in Bembala reservoir represents the suitability of water of Bembala reservoir for aquaculture practices. To maintain the richness of aquatic ecosystems continuous monitoring of reservoirs is needed.

The present study states that the Bembala reservoir hosts a number of freshwater fish species. But the fish fauna of this lake is being threatened due to several anthropogenic activities including introduction of exotic fish species, habitat degradation, pollution, irrational fishing, as there is extraction of fishes occurring from different collecting centres like Kolhi and other. Mainly the fishes are captured and collected from collecting centres like Kolhi, Pahur etc. The fishes are extracted in huge amounts in quintals from these stations by fishermen. The reservoir has great fish diversity but it is important conserve the local fishes due to introduction of exotic fishes like Tilapia, Grass carp etc. These exotic fishes may affect the number and abundance of local fishes of reservoir.

To conserve this inherent treasure of Bembala reservoir strict management measures with large public awareness would be essential to save the fish diversity and it is time to make proper policies and take necessary actions to improve conservation measures so that the future generations get the fish live on the earth rather than the photographs in the literature. This study would serve as a frame of reference for future initiatives in studying fish biodiversity and conservation management.

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