

Ichthyofaunal Bioersivity of Girna Dam (Girna River) Dist. Nasik, Maharashtra, India

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Abstract: Girna Dam was built on the Girna River in 1969 which is located near the Nandgaon in the Nasik District of Maharashtra state of India. The main purpose of construction of this dam was to provide water for irrigation in surrounding agricultural fields and drinking water supply to the North Maharashtra area. However, as it has good water storage capacity, the reservoir is good source of fish fauna. The present study on ichthyofaunal biodiversity of Girna Dam was carried out from January 2015 to July 2015. During the present investigation, fishes were collected and identified. The aim of this study was to reveal the diversity of fish species in this Dam. There were many fish species collected, here are mentioned only those species which identification work have been completed. In the present study, it was observed that the ichthyofauna belong to 05 order 11 families, 18 genus and 24 species, were Cyprinidae 13 (54.16%) family was dominant followed by Channidae 02 (8.33%), Anabantidae, Nandidae, Ambassidae, Claridae, Bagridae, Schilbeidae, Notopteridae, Parapsilorhynchidae and Platycephalidae, contribute 01 (4.16%) species each.

Key words: Freshwater Fish Biodiversity • Girna River • Girna Dam • North Maharashtra Region • India

INTRODUCTION

The fresh water reservoirs made with this purpose are under utilized and except water utility management no further use of such water sheets is done. Reservoirs and lakes could be the main resources exploited for inland fisheries. The understanding of fish faunal diversity is a major aspect for the exploitation of fresh water reservoirs and the sustainable as well as economical management [1].

The environmentally sustainable use of fish resources is central to fisheries management, given the long-term importance of this sector in terms of nutrition and employment. But today's major concern relates to the unsustainable levels of exploiting fishes with such practices that lead to the depletion of fish stocks, disruption of ecological equilibrium and reduction in diversity [2].

Fishes are the only major group of vertebrate which very much effect on human civilization from ancient time to date. It is one of the good and cheapest sources of proteins food for economic as well as high class people so

it is essential to study the distribution and the availability of fish from freshwater reservoirs and tanks [3].

Fishes constitutes half of the total number of vertebrates in the world with over 22,000 species, of these about 58 % are marine, 41 % are fresh water species and 1 % move back and forth between salt and fresh water. As expected marine fishes are the most diverse because salt water covers 70 % of the earth. In India there are 2,500 species of fishes of which 930 live in fresh water [4] and 1,570 are marine [5].

In India, various workers have studied diversity and distribution of freshwater fishes from different parts of country viz., Singh and Kamble [6] recorded 32 genera of fishes from Jalgaon district (M.S.), [7] recorded 26 species from Dhulia district (M.S.), Kharat *et al.* [8] reported 51 species of Krishna river at Wai, Western Ghats. Nagma and Khan [9] reported 36 freshwater fish fauna of district Bijnor in western Uttar Pradesh and Kal bande *et al.* [10] represent 60 fish faunal diversity from Rawanwadi lake of Bhandara district (M.S.) Very recently. Sheikh [11] reported 37 species of ichthyofaunal diversity of Pranhita River, Sironcha district- Gadchiroli (M.S.).

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However, no attempt has been made so far to explore the freshwater fish fauna of the Girna dam, district Nasik. Nobody reported the fish diversity of Girna dam till today. Hence in view of lack of information on fish diversity, attempt has been made here to report the freshwater fish fauna of Girna dam. District Nasik.

MATERIALS AND METHODS

Study Area and Sampling Sites: The Girna is a River in Maharashtra state of southern India. It originates at Kem Peak in the Western Ghats range of Nashik district, and flows east across Nashik district where Mausam River joins Girna River and then east into Jalgaon district where it then swings north to join the Tapti River. The biggest dams on the Girna are Chankapur Dam built by British near Abhona in Kalwan tehsil, where sarganga River joins to Girna River. Girna Dam was built in 1969. Total length of dam is 963.17 meter, maximum height of dam is 54.56 meter and surface area is 60,040 KM². The name Girna derives from the name of the goddess Giraja (Parvati). The basin of the Girna lies on the Deccan Plateau and its valley has fertile soils which are intensively farmed.

The Gazetteer of the Bombay presidency describes the river as "Rising in the western hills of the Kalvan subdivision of Nasik, and fed by streams from the northern slopes of the Chandor or Saptashring range, after a course of about 150 miles, falls into the Tapti near Savda-Nanded. Its course lies in nearly equal parts in Nasik and

Khandesh. Passing through Nasik almost in a straight line eastwards, in Khandesh its course changes to north-east, till, near Jalgaon, it bends north and then north-west flowing for several miles with many windings almost parallel to the Tapti. In Khandesh, except in one or two places where it is hemmed in by rocky hills, the Girna, over a broad sandy bed, flows through a well tilled valley gradually spreading into the great central plain. Its waters, both in Nasik and Khandesh, are much used for irrigation. In Nasik lately repaired dams and channels water many of its upland valleys, and in Khandesh, from Eahal about ten miles north of Chalisgaon, the Jamda canals stretch east for about twenty-seven miles on the left and twelve miles on the right bank.

Objectives:

- ▶ To report the freshwater fish diversity from Girna dam, District Nasik, Maharashtra.
- ▶ To analysis the present status, categories of freshwater fish from Girna dam, District Nasik, Maharashtra.
- ▶ To generate gainful rural employment with special reference to fishing communities.
- ▶ To make data available for future fishery policies.

Collection of Fish Species: Fishes were collected from Girna dam, District Nasik, Maharashtra, India with the help of local fishermen using different type of nets namely gill nets, cast nets, dragnets and Bharjal. Immediately photographs were taken with help of digital camera.



Fig. 1: Location of Girna dam on Girna River near nandgaon, District Nasik, Maharashtra.

Preservation of Fish Species: Fish were brought to the laboratory were fixed in 10% formalin solution in separate jars according to the size of species. Smaller fishes were directly placed in the formalin solution, while larger fishes were given an incision on the abdomen before they were fixed.

Labeling of Fish Species: The fish collected and fixed were labeled giving serial numbers and date of the collection. The common local name of fish used in this region was labeled in each jar containing the fish.

Laboratory Work: Various morphometric measurements of fish were made by ruler and Vernier caliper. Different instruments used in laboratory work are light microscope, dissecting microscope, magnifying glass, counting needle, forceps.

Identification of Fish Species: The identification of the species was done mainly on the basis of the colour pattern, specific spots or marks on the surface of the body, shape of the body, structure of various fins etc. The identification of fishes was based on fresh specimens. Fishes were identified by using standard taxonomic keys viz. Fishes of India, FAO identification sheets, ITIS (Integrated Taxonomic Information System) standard report (<http://www.itis.gov>), Fish Base (<http://fishbase.org>) and other reference books [12-17]. The collected fish were identified up to species level.

RESULT AND DISCUSSION

The present study on ichthyofaunal biodiversity of Grna Dam was carried out from January 2015 to July 2015. During the study period, it was observed that the ichthyofauna belong to 05 order 11 families, 18 genus and 24 species, The members of order Cypriniformes were dominated by 13 species followed by Perciformes with 05 species, Siluriformes with 03 species, Osteoglossiformes, Parapsilorhynchidae and Scorpaeniformes with 01 species each. 24 fish species representing by 3 orders, Cypriniformes was dominant with 13 (54.16%) species in which *Lebeo rohita*, *Cirrhinus mrigala*, *Catla-caltla*, *Labeo fimbriatus*, *Labeo bata*, *Puntius cinchonas*, *Puntius stigmata* were found Common and *Cirrhinus reba*, *Labeo boggut*, *Amblypharyngodon mola*,

Crossocheilus latius latius, *Hypophthalmichthys nobilis* were found uncommon and *cyprinus carpio* was found exotic species followed by perciformes in which *Anabas testudineus*, *Nandus nandus* *Channa punctata*, *Channa striata* were found common and *Chanda nama* was found uncommon. Siluriformes in which *Clarias batrachus* was found uncommon and *Macrones seenghala*, *Eutropiichthys vacha* were found common. Parapsilorhynchidae in which *Parapsilorhynchus discophorus* was found least concern. In the osteoglossiformes in which *Notopterus notopterus* was found vulnerable and in the Scorpaeniformes *Platycephalus indicus* was found uncommon, shown in the Table no 1. and Phptoplate- I, II, III, IV.

Sakhare [18] investigated the occurrence of 23 fish species belonging to 7 orders in Jawalgaon reservoir in Solapur district of Maharashtra. The fishes belonging to order Cypriniformes were dominant with 11 species followed by order Siluriformes with 4 species, while orders like Osteoglossiformes, Perciformes and Channiformes were represented by 2 species and the rest of the orders by single species. Yazdani and Singh [19] have given an account of fish resources of Bhima River at Indapur and found 54 species belonging to 15 families. Wagh and Ghate [20] noticed 62 species from Mula and Mutha River in Pune.

Khedkar [21] observed 67 fish species belonging to 7 orders and 19 families from Nathasagar reservoir from Paithan, Dist. Aurangabad. Of the total 58 species, 8 were abundant, 21 common, 19 moderate and 10 rare in the study area [22] recorded 56 species of fish representing 39 genera and 15 families from Bhadra river of Western Ghats. Supugade *et al.* [23] recorded 20 species from 13 genera and 7 families included in 4 orders from Ghogaon reservoir of Satara district. Joshi *et al.* [24] recorded 20 species belonging to 7 families from Purna River at Buldhana District. Pawara and Patel [25] have recorded 25 fish species belonging to 03 orders, 05 families and 13 genera. Among the collected species, family Cyprinidae was the most dominant constituting 68% followed by Channidae constituting 12%, Balitoridae constituting 08%, Bagridae constituting 08% and Cobitidae constituting 04% of the total fish species from the Karvand dam (Shirpur) during July, 2011 to February, 2012. Pawar [26] has reported 42 fish species belonging to 29 genera, 15 families and 9 orders from Majalgaon reservoir from Beed district.

PHOTOPLATE-I



1. *Labeo rohita*.



2. *Cirrhinus mrigala*.



3. *Catla catla*.



4. *Labeo fimbriatus*.



5. *Cirrhinus reba*.



6. *Cyprinus carpio*.

PHOTOPLATE-II



7. *Labeo boggut*.



8. *Labeo bata*.



9. *Amblypharyngodon mola*.



10. *Crossocheilus latius latius*.



11. *Puntius conchoniensis*.



12. *Puntius stigmata*.

PHOTOPLATE-III



13. *Hypophthalmichthys nobilis.*



14. *Anabas testudineus.*



15. *Nandus nandus.*



16. *Chanda nama.*



17. *Channa punctata.*



18. *Channa striata.*

PHOTOPLATE-IV



19. *Clarius batrachus.*



20. *Macrones seenghala.*



21. *Eutropiichthys vacha.*



22. *Notopterus notopterus.*



23. *Parapsilorhynchus discophorus.*



24. *Platycephalus indicus.*

Table 1: IchthyofaunalBiodiversity of Girna Dam (Girna River) near Nandgaon, Dist.-Nasik, Maharashtra, India.

Se. no.	Order	Family	Scientific name	Common name	Status	Remark
1.	Cypriniformes (Bleeker, 1859)	Cyprinidae	<i>Labeo rohita</i> (Ham., 1822)	Rohu	C	Food Fish.
2.			<i>Cirrhinus mrigala</i> (Ham.,1822)	Mrigal	C	Excellent Fish for stocking the ponds.
3.			<i>Catla Catla</i> (Ham., 1822)	Catla	C	Food Fish.
4.			<i>Labeo fimbriatus</i> (Bloch., 1795)	Fringed lipped carp	C	Food Fish.
5.			<i>Cirrhinus reba</i> (Ham., 1822)	Rewah	UNC	Food Fish.
6.			<i>Cyprinus carpio</i> (Linn., 1758)	Common carp	Exo	Introduced in India from Bangkok in 1957
7.			<i>Labeo boggut</i> (Skyes, 1839)	Ger	UNC	Food Fish.
8.			<i>Labeo bata</i> (Ham., 1822)	Bata	C	Food Fish.
9.			<i>Amblypharyngodon mola</i> (Ham., 1822)	Dhawai	UNC	Food Fish.
10.			<i>Crossocheilus latius latius</i> (Ham., 1822)	Regadi	UNC	Food Fish.
11.			<i>Puntius conchoni</i> (Hamilton 1822)	Gulabi Khavali	C	Food Fish.
12.			<i>Puntius stigmata</i>	Pothi	C	Food Fish.
13.			<i>Hypophthalmichthys nobilis</i> (Richardson 1845).	Bighead carp	UNC	Food Fish.
14.		Parapsilorhynchidae	<i>Parapsilorhynchus discophorus</i> (Hora, 1921)	Ratnagiri minnow	LC	Food Fish.
15.	Perciformes	Anabantidae	<i>Anabas testudineus</i> (Bloch 1792)	Climbing perch	C	Hardy fish due to presence of accessory respiratory organ.
16.		Nandidae	<i>Nandus nandus</i> (Hamilton 1822)	Mottled Nandus	C	Good food value.
17.		Ambassidae	<i>Chanda nama</i> (Ham., 1822)	Glass perch	LC	Useful for malaria & guinea wormcontrol (Talwar&Jhingran 1991).
18.		Channidae	<i>Channa punctata</i> (Bloch,1793)	Spotted Snake head	C	Prolific breeder.
19.		Channidae	<i>Channa striata</i> (Bloch, 1793)	Striped Snake head	C	Carnivorous, prefers muddy waters.
20.	Siluriformes	Claridae	<i>Clarias batrachus</i> (Linnaeus 1758)	Magur	UNC	Allen, 2011.
21.		Bagridae	<i>Macrones seenghala</i>	Shingta	C	Predatory Fish.
22.		Schilbeidae	<i>Eutropiichthys vacha</i> (Ham-Buch)	Vacha	C	Food Fish.
23.	Osteoglossiformes	Notopteridae	<i>Notopterus notopterus</i> (Pallas 1769)	Feather back	VL	Food Fish.
24.	Scorpaeniformes	Platycephalidae	<i>Platycephalus indicus</i>	Belle	UNC	Food Fish.

C = Common, UNC = Uncommon, Exo= Exotic, LC = Least Concern, VL=Vulnerable.

CONCLUSION

My conclusion is the capture of fishes in the rivers, lakes, Dams, channels, tanks and ponds were always the rural livelihoods and it is important food security base. Considering the extent to which small indigenous species of freshwater fish play a vital role in providing nutrition to the rural poor. So to maintain the indigenous species of freshwater fish biodiversity is a need of today's era.

To maintain healthy fish biodiversity and abundance of fish, I have to suggest some recommendations or conservation approaches in every freshwater reservoirs were fishing activities taking place i) To educate fisherman's and local about the life cycle of freshwater fish. ii) Do not harvest fish during spawning periods. iii) Do not harvest juveniles. iv)Do not allow the introduction of invasive species. (v) To give scientific training to fisherman's and local on industrial fish and fisheries and its management and negative impact of pollution with sewage, fertilizers, pesticides and other chemicals on the life of fishes.

Hence purpose is that we can achieve Mainstreaming Biodiversity; sustainable people and their livelihood.

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