



ICHTHYOFAUNAL DIVERSITY IN KARMAVEER KANNAMWAR RESERVOIR (DEENA PROJECT); REGADI, TAH. CHAMORSHI, GADCHIROLI (M.S.), INDIA

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Abstract:

The present study has been conducted for 24 months during July 2014 to June 2015 and July 2015 to June 2016 in Karmaveer Kannamwar Reservoir (Deena project); Regadi, Tah. Chamorshi, Gadchiroli (M.S.), India. Karmaveer Kannamwar Reservoir (Deena project) is earthen filled reservoir built on the river Deena in the district Gadchiroli. It is covered by hilly areas and dense forest from all the sides. During the present investigation Ichthyofaunal diversity were explored and reported 29 species of fishes which belongs to 9 orders and 13 families. Order Cypriniformes and Order Siluriformes found to be the most abundant among other. Order Cypriniformes represent 9 species from family Cyprinidae. 8 species reported from order Siluriformes which belongs to family Bagridae (3 species), family Siluridae (3 species), family Clariidae (1 species) and family Heteropneustidae (1 species). Next to these, Order Perciformes stands at third position and represents 3 species from 2 families (Ambassidae and Nandidae). Order Osteoglossiformes represents 2 species from family Notopteridae. Order Ophiocephaliformes and Order Synbranchiformes represents two species each respectively. Order Anguiliformes, Order Cichlidiformes and Order Beloniformes are least abundant and represents only one species each.

Keywords: Karmaveer Kannamwar Reservoir, Ichthyofauna

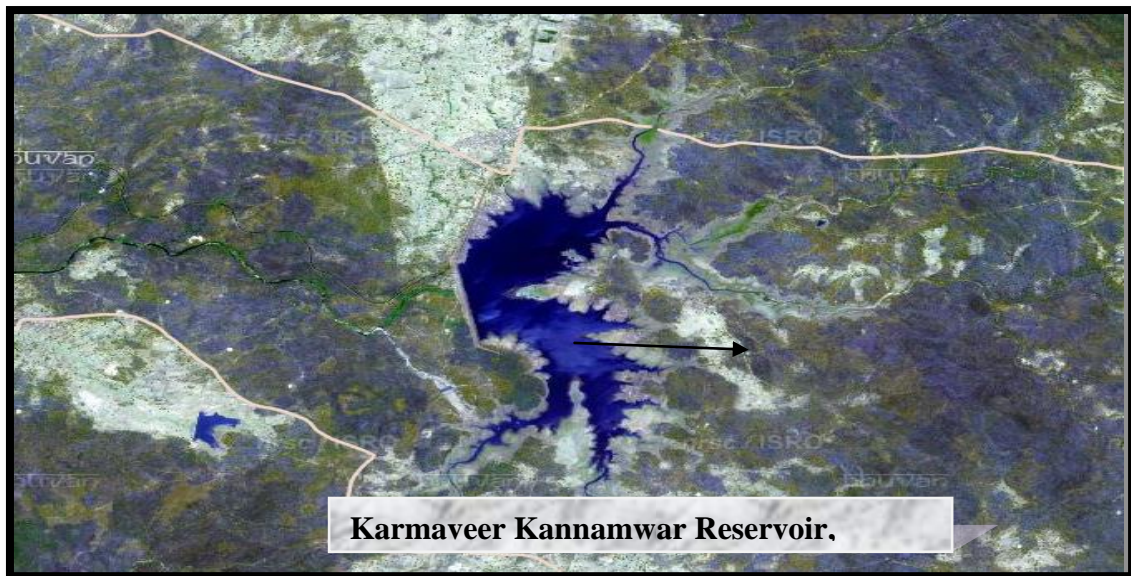
Introduction:

Fish is one of the basic biotic components of aquatic ecosystem. The diversity of fish fauna has its own importance like other aquatic and terrestrial animals. They constitute very important trophic link in water bodies. Some of them are commercially important species with good economic value. Reservoirs provide significant contributions to the global fisheries. In many parts of the world, a reservoir fishery is essential and often represents an irreplaceable resource of low cost animal protein providing balanced human diet.

Study Area:

Gadchiroli is one of the tribal and naxal affected district of Maharashtra. Gadchiroli district is situated on the north-eastern side of Maharashtra state. Gadchiroli district geographically lies between 19°31' & 19°45' N latitude and

80°15' & 80°45' E longitude. The Karmaveer Kannamwar reservoir is the only complete irrigation project being the Major Dam Project of the district. It is situated at Regadi village. It is an earthen fill Dam. Geographically the reservoir lies between 19°47'0" altitude and 80°7'0" longitude. The Length of dam is 3137 m (10291.99ft), while the height of the dam above lowest foundation is 21.49 m (70.5052 feet). Project has a spillway of Ogee type. Length of the spillway is 122 m (400.262 feet). The Dam has unigated Spillway. Dam has a catchment area of 1376.52 Hectors. Maximum / Gross storage capacity is 61.15cubic cm. Live storage capacity is 55.94cubic cm. whereas the dead water storage is 5.21 cubic cm. Main water canal has length of 51.20 km. Total area under irrigation of the district is 647 hectares (Source: Irrigation Division, Gadchiroli).



Material Methods:

The fishes were collected with the help of fisherman from study area, the Karmaveer Kannamwar reservoir, Regadi during the year July 2014 to June 2015 and July 2015 to June 2016. After the collection of fishes, fishes were immediately preserved in 10% formaldehyde solution or 70% ethanol for taxonomic analysis. Identification and economic importance of fishes was carried out with the help of standard literature (Day, 1958; Jayaram, 1991; Datta Munshi and Shrivastava, 1988; Talwar and Jhingran, 1991).

Fish diversity was subjected to diversity analysis using the index like Shannon-Weiner (Weaver) index (1949). $H' = -\sum (p_i) \log_2 p_i$ Where H' = Shannon-Weaver index, sum represents a capital epsilon S =number of species, p_i =proportion of individuals of the total sample belonging to the i th species calculated as n_i/N for each i th species with n_i being the number in species I and N , the number of individuals in the sample.

Observation:

In the present study total 29 species of fishes were recorded which belongs to 9 orders and 13 families. Order Cypriniformes and Order Siluriformes found to be the most abundant among other and represents 9 species from family Cyprinidae i.e. *Catla catla*, *Cirrhinus mrigala*, *Labeo rohita*, *L. calbasu*, *Puntius*

sarana, *P. saphore*, *Cyprinus carpio*, *Ctenopharyngdon idella*, *Osteobrama cotio* and 9 species i.e. *Mystus cavasius*, *M. vittatus*, *M. seenghala*, *Wallago attu*, *Ompok bimaculatus*, *O. pabda*, *Clarias batrachus*, *Heteropneustes fossilis* from 4 families (Bagridae, Siluridae, Clariidae and Heteropneustidae) respectively. Next to these, Order Perciformes stands at third position and represents 3 species from 2 families (Ambassidae and Nandidae)

i.e. *Ambassis nama*, *A. ranga*, and *Nandus nandus*. Order Osteoglossiformes represents two species from family Notopteridae, i.e. *Notopterus notopterus*, *N. chitala*. Order Ophiocephaliformes and Order Synbranchiformes represents two species each *Ophiocephalus striatus* and *O. punctatus* and *Mastacembelus armatus*, *Macroglyphus aculeatus* respectively. Order Anguiliformes, Order Cichliformes and Order Belontiiformes are least abundant and represents only one species each i.e. *Anguilla bengalensis*, *Oreochromis mossambicus* and *Xenentodon cancilla* respectively.

Result and discussion: Several workers also studied the Ichthyofaunal diversity in different water bodies from different regions of India. Raveendar (2018) was reported 30 species with Cyprinidae family most abundant during their investigation in Nanaksagar reservoir of

Uttarakhand. Mishra *et. al.*, (2017) were recorded 44 species belonging to 14 families and observed Catla, Rohu, Mrigal, Grass carp, Silver carp, Common Carp, Olive barb, Pangasius and Mystus species mostly in their study in Kodar reservoir of Chhattisgarh.

61 species of fishes belonging to 38 different genera, 19 different families and 9 different orders was explored by Seema Jain (2017) in different water bodies, Uttar Pradesh. The order Cypriniformes was dominant with 23 species followed by Siluriformes with 15 species, Perciformes (8 species), Clupeiformes (1 species), Ophiocephaliformes (4 species), Beloniformes (2 species), Mastacembaliformes (2 species), Tetrodontiformes (2 species) and Mugiliformes (1 species).

Owais and Gupta (2015) reported 21 species of freshwater fishes belonging to 6 orders, 11 families, Family Cyprinidae found to be the most abundant family of the fishes in Sagar Lake, Madhya Pradesh. Mishra *et. al.*, (2014) reported 33 fish species comprising 8 species of carps, 14 species of cat fishes/other carnivorous fishes and 11 species of weed fishes in Dhaura and Bailgul reservoirs, Uttarakhand. 39 species of fishes recorded by Ananya *et. al.*, (2014) which includes *Catla catla*, *Labeo rohita*, *Cirrhinus mrigala*, *Labeo calbasu*, *Ctenopharyngodon idella*, *Cyprinus carpio*, *Labeo gonius*, *Notopterus notopterus*, *Mystus sp*, *Channa sp*, *Wallago attu* etc. from Sarni reservoir, Madhya Pradesh. Similarly, Tijare and Shastrakar observed and reported 32 fish species from Asolamendha reservoir of Chandrapur district. Bhalerao (2012) reported 15 species which includes

Puntius sp., *Catla sp.*, *Labeosp.*, *Tilapia sp.*, *Mastacembelus sp.*, *Goby sp.*, *Mystus sp.*, *Cirrhinus sp.*, *Cyprinus sp.* from Kasar Sai Dam, Hinjewadi Pune (M.S.). Paliwal *et. al.*, (2013) reported 35 species which belonging to 6 Orders and 16 Families with order Cypriniformes were dominant from Itiadh Dam, Gondia (M.S.). Gedekar and Tijare (2012) reported ichthyofauna from Wainganga river of Gadchiroli district of Maharashtra.

Ubharhande and Sonawane (2012) recorded total 21 species with Cyprinidae family most dominant with 10 (47.61%) species followed by Channidae and Mastacembelidae with 02 (9.52%) species, Balitoridae, Bagridae, Clariidae, Belonidae, Notopteridae, Cichlidae, and Poecilidae contribute 01(4.76%) species each from Paintakli dam, Buldhana (M.S.). Thirumala *et. al.*, (2011) were reported 33 fish species which belongs to Cyprinidae 18 species, Channidae 2 species, Bagridae and Siluridae with 3 species and 01 species each of Mastacembelidae, Ambassidae, Cichlidae, Claridae, Notopteridae, Cobitidae and Heteropneustidae from Bhadra reservoir, Karnataka. Hiware and Pawar (2007) reported 36 species under 19 genera under the family Cyprinidae from Nathsagar reservoir, Paithan (M.S.).

Conclusion:

During the present study period it was observed that the water quality of Karmaveer Kannamwar reservoir was within the permissible limit for fish and fisheries practices. Cyprinidae family is found dominant group among the other. The occurrence of total 24 fish species indicated good fish diversity.

Ichthyfaunal Species Diversity In Karmaveer Kannamwar Reservoir During the year 2014-2016

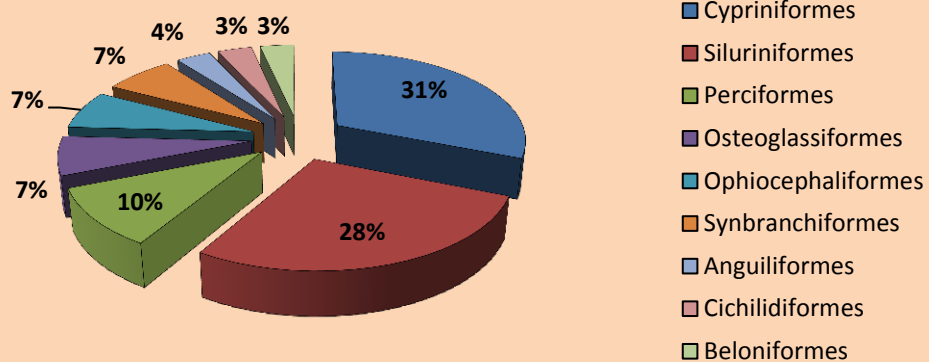
Sr. No	Order	Family	Name Of Species	Common Name
1	Cypriniformes	Cyprinidae	Catla catla (Hamilton)	Catla
2			Cirrhinus mrigala (Hamilton)	Mrigal
3			Labeo rohita (Hamilton)	Rohu
4			Labeo calbasu (Hamilton)	Kanas
5			Puntius sarana (Hamilton)	Olive barb

6			Puntius sophore (Hamilton)	Khavali
7			Cyprinus carpio (Linnaus)	Common carp
8			Ctenopharynodon idella (Valenciennes)	Grass carp
9			Osteobrama cotio (Hamilton)	Cotio
10	Siluriformes	Bagridae	Mystus cavasius (Sykes)	Gangetic mystus
11			Mystus vittatus (Bloch)	Shingur
12			Mystus seenghala (Sykes)	Shingta
13		Siluridae	Wallago attu (Schneidei)	Boal
14			Ompok bimaculatus (Bloch)	Butter catfish
15			Ompok pabda (Hamilton)	Pabdah catfish
16		Clariidae	Clarias batrachus (Linnaeus)	Magur
17	Heteropneustidae	Heteropneustes fossilis (Bloch)	Stinging cat fish	
18	Perciformes	Ambassidae	Ambasis nama (Hamilton)	Scalloped Perchlet
19			Ambasis ranga (Hamilton)	Indian glass fish
20		Nandidae	Nandus nandus	Mottled Nandus
21	Osteoglassiformes	Notopteridae	Notopterus notopterus (Pallas)	Featherback
22			Notopterus chitala (Hamilton)	Chital
23	Ophioceliformes	Ophiocephalidae	Ophiocephalus striata (Bloch)	Striped snake head
24			Ophiocephalus punctatus (Hamilton)	Spotted snake head
25	Synbranchiformes	Mastacembelidae	Mastcembelus armatus (Lacepede)	Spiny Eel
26			Macragnathus aculeatus (Bloch)	Lesser spiny Eel
27	Anguiliformes	Anguillidae	Anguilla bengalensis (Gray)	Fresh water Eel
28	Cichlidiformes	Cichlidae	Oreochromis mossambicus (Peters)	Tilapia
29	Beloniformes	Belonidae	Xenentodon cancilla (Hamilton)	Gar fish

Shannon-Weiner diversity Index (H')

Order	Family	No. of species	Pi	lnPi	Pi*lnPi	H'
Cypriniformes	Cyprinidae	9	0.310	-1.170	-0.363	2.267
Siluriformes	Bagridae	3	0.103	-2.269	-0.235	
	Siluridae	3	0.103	-2.269	-0.235	
	Clariidae	1	0.034	-3.367	-0.116	
	Heteropneustidae	1	0.034	-3.367	-0.116	
Perciformes	Ambassidae	2	0.069	-2.674	-0.184	
	Nandidae	1	0.034	-3.367	-0.116	
Osteoglassiformes	Notopteridae	2	0.069	-2.674	-0.184	
Ophiocelesiformes	Ophiocephalidae	2	0.069	-2.674	-0.184	
Synbranchiformes	Mastacembelidae	2	0.069	-2.674	-0.184	
Anguiliformes	Anguillidae	1	0.034	-3.367	-0.116	
Cichlidiformes	Cichlidae	1	0.034	-3.367	-0.116	
Beloniformes	Belonidae	1	0.034	-3.367	-0.116	
TOTAL		29	1		-2.267	

Ichthyofaunal Diversity In Karmaveer Kannamwar Reservoir, Regadi



Ichthyofaunal Diversity



Osteobrama cotio



Puntius sophore



Notopterus notopterus



Ophiocephalus striatus



Tilapia mossambicus



Mystus vittatus

Ichthyofaunal Diversity



Cyprinus carpio



Mastcembelus armatus



Clarias batracus



Xenentodon cancilla



Labeo rohita



Puntius sarana

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