The Bioscan
AN INTERNATIONAL QUARTERLY JOURNAL OF LIFE SCIENCES
20(2): S.I (2): 182-188, 2025 www.thebioscan.com

DIVERSITY, THREATS AND CONSERVATION OF CATFISH (ORDER – SILURIFORMES) FROM SUB-BASIN OF WAINGANGA RIVER NEAR ARMORI, DISTRICT GADCHIROLI, MAHARASHTRA, INDIA

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DOI: 10.63001/tbs.2025.v20.i02.S.I(2).pp182-188

KEYWORDS
Armori, Wainganga, Catfish, Siluriformes, Conservation

Receivedon:

22-03-2025

Acceptedon:

25-04-2025

Published on

30-05-2025

ABSTRACT

The present study of catfish was carried out from the Wainganga River sub-basin of Armoritaluka, District Gadchiroli, Maharashtra, India. It has been carried out to explore the diversity, threats and conservation status of catfish. The study was conducted from November 6, 2023, to October 5, 2024. The documented paper deals with the variety, Abundance, threats, and conservation status (IUCN) of Catfish. The study was conducted between the range of 15 km. In present study, 13 species belonging to the Order Siluriformes with 7 families and 9 genera are reported. The dominant family among the catfish family was Bagridae (46.15 %) with 6 species, Siluridae (15.38%) with 2 species, Clariidae (7.69%), Pangasiidae (7.69%), Schilbeidae (7.69%), Sisoridae (7.69%), and Heteropneustidae (7.69%) with each 1 species recorded. (Graph No.1) In the variety of catfish found, 8 species were common, 1 species was uncommon, 2 species were occasional, and 2 species were rare. According to IUCN status, 10 species were in the least concern category, while 3 species were in the Near Threatened (NT) category. The distribution of catfish along the Wainganga River system may be due to slow and stable state of water movement and its width ensures the continuous availability of nutrition. It is suggested that the Wainganga River would be a suitable habitat for the conservation of freshwater catfish if the threats are diminished.

Introduction

Wainganga River emerges from Mahadeo hills of Gondwana region near Gopalganj in seoni, Madhya Pradesh. It flows 580 km of distance out of which 295 km of distance covered in the Gadchiroli district, Maharashtra, India. It enters in Gadchiroli district at place Sawangi in Desaiganjtaluka. Wainganga River is a main tributary of Godavari. Wainganga and Wardha confluence form Pranhita which empties in Godawari at KaleshwarTelangana. Wainganga River (21^0 57’ 0” N) (79^0 34’0” E) emerges at an elevation of 1048 m (3,438 ft.) above mean sea level.Wainganga River is a boon for the people of Madhya Pradesh and Maharashtra. It helps to irrigate large agricultural areas as well as ensure the availability of sufficient potable water. It also protects various native flora & fauna. Tributaries of Wainganga areGadhavi, Khobragadi, Kathani, Potfodiand Pohar.The area under investigation for documentation was the ArmoriTaluka region, which is a fully nature-covered area having very little pollution. Armori (20.460 N, 79.980 E) is 36 km North of the district headquarters, Gadchiroli.It is located at an elevation of 199m (676 ft.) above mean sea level. Weather conditions in this area vary in different seasons.In summer, temperature rises to 44^{0}C,whereas in winter, it falls to 15^{0}C on an average. Vertebrates have huge variations,and pisces (fishes) are one of them. Variation in shape, size, biology&habitat (Bobdey, 2014)order Siluriformes represents the strongest &bottom-dwelling group of fishes. Catfish hasa cylindrical body with a flattened ventral & prominent barbell. They are nocturnal in search of their food. Catfish are teleost fish that have significantly fewer scales. The global number of catfish reported in the year 2005 was 3093, and in 2011 the number reached to 3407. When the global research works steadily in right direction,definitely catfish numbers may reach 5000 by2030(Armbruster, 2011).

The KaralaRiver in West Bengal was reported to have 7 Species of catfish fauna belonging to the order Siluriformes (Patra,

2011). Catfish diversity of Krishna River Maharashtra reported 13 species of order Siluriformes(Kumar and Lad, 2014). In the investigation of the Ichthyofaunal diversity of Wan River (Tributary of Tapi), 4 species of order Siluriformes were recorded (Khade*et al.*, 2014). The study of rivers of Barak drainage of Mizoram recorded 37 species of catfishes(Lalronunga*et al.*, 2014). TheIchthyofaunal diversity of the Wainganga River, Bhandara,comprises 51 species, of which 10 belongs to the order Siluriformes(Gadekar, 2015). The diversity of Ichthyofauna of WardhaRiver and NirgundaRiver reported 37 species out of which 08 species belong to the order Siluriformes (Khamankar*et al.*, 2012). The study of fish biodiversity near Bramhapuri recorded 51 species, out of which 13 species belong to the order Siluriformes (Dhamani*et al.*, 2013).

In the Indian freshwater ecosystem, 197 catfish species were reported (Jayaram, 2009). Investigation of Ichthyofaunal diversity of Pranhita River Sironcha recorded 37 Species out of which 8 species belong to the order Siluriformes(Sheikh, 2014). In the analysis of catfish fauna (order-Siluriformes) diversity of the Pranhita River recorded 15 species of order Siluriformes with 5 families & 9 Genera (Sayyad N.and Dhamani, 2018). The examination of diversity &distribution of fish fauna in the Ib River recorded 12 species of the order Siluriformes out of 55 species (Rejani*et. al.*, 2019).In the study of Ichthyofaunaldiversity of Wainganga River near AA energy plant Desaiganj (Wadsa) recorded 16 species out of which 6 species belong to the order Siluriformes(Kamble, S.M. *et al.*, 2020). Studies on the fish diversity of the Wainganga River around the Desaiganj region reported 28 species from which 8 species belongs to the order Siluriformes(Dorlikar, A.V., 2022).

However, upon reviewing the literature, it is found that researchers have explored very little work on catfish diversity, threats, and conservation status of the Wainganga River. So, the research has been carried out to create awareness regarding the importance & their conservation.

Materials and Methods

A study was carried out at the five different sites of the Wainganga River sub-basin of Armoritaluka, Gadchiroli district, Maharashtra, India.(fig.1) In the present study, samples were collected with the help of local fishermen twice a week from each sampling site. Immediate photographs of fish were takenfrom different angles with a Canon 3000D DSLR camera. The samples were identified based on different standard taxonomic keys given by (Day F. 1988, 1978),(Jayaram K.C. 2002,1999,1991),(TalwarP.K.&Jhingran1991), (Beaven C.R. 1877) & research articles used for the Identification process.The identified fish species are tabulated in the standard format.

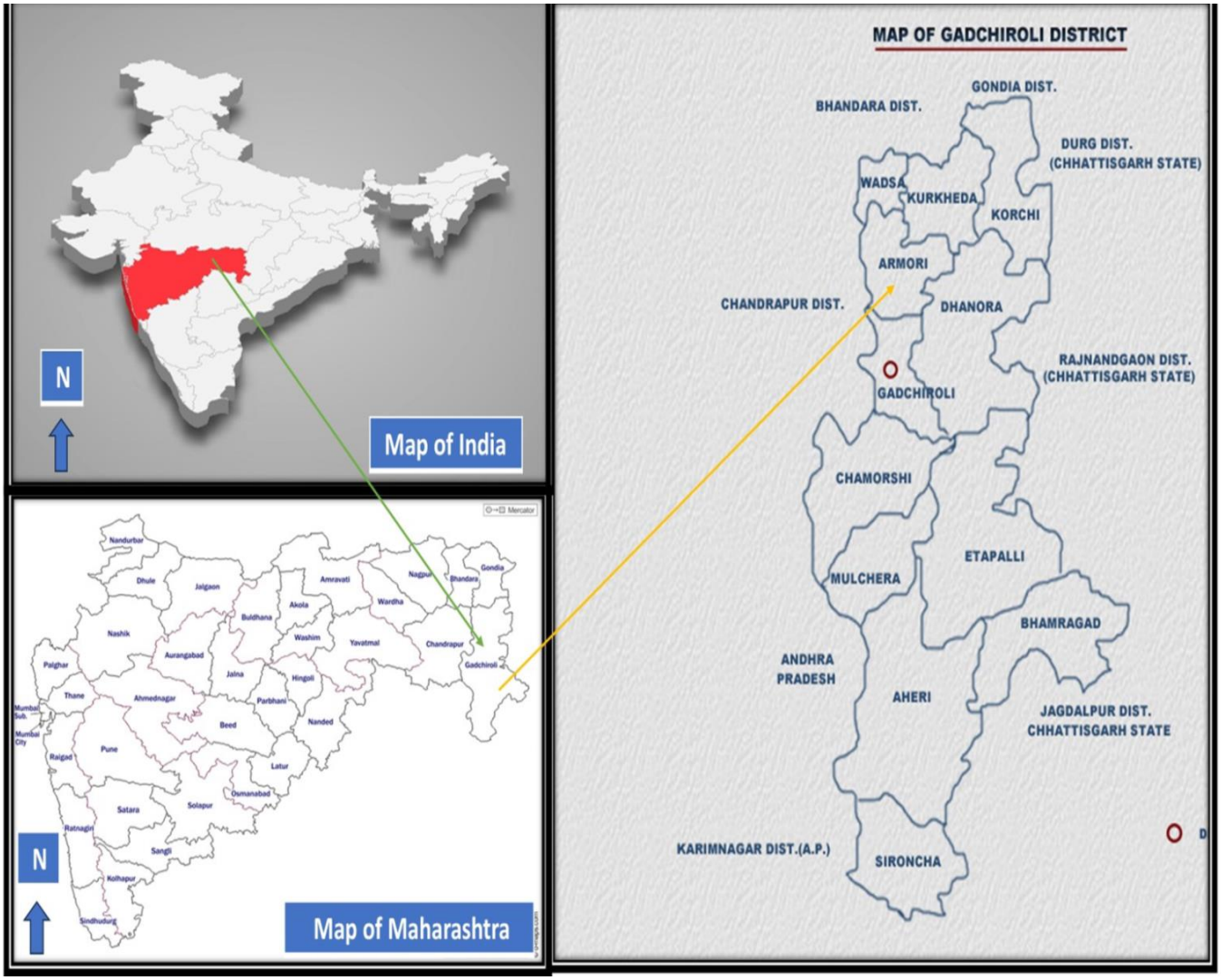


Fig.1: Showing map of India, Maharashtra and Gadchiroli district

Fig.2: Showing Sampling sites

Result and Discussion

About 13 catfish species belonging to the order Siluriformes from 7 families and 9 generawere recorded in present study. The most dominant family contributing to the study was Bagridae,reported 6 species, belonging to the genusare *Mystusvittatus, Mystuscanvass, Mystustengara,Ritagogra, Rita kuturnee andSperataseenghala*.

Thefamily Siluridaereported 2 species,belonging to thegenus *Ompakbimaculatus* and *Wallagoattu*.The Families Clariidae, Pangasiidae, Schilbeidae, Sisoridae and Heteropneustidae were reported with one species each belonging to the genus*Clariusbatrachus, Pangasiuspangasius, Clupisomagarua, Bagariusbagarius, and Heteropneustesfossilis, respectively.*The *Ritagogra*&*Clariasbatrachus* were occasionally captured. During the investigation period, *Bagariusbagarius*&*Pangasiuspangasius*was rarely captured. The most abundant fish caught in every season by fishermen *Wallgoattu.Rita and Bagarius* species have a great demand in the local fish market of Armori and Deulgaon village.

Wainganga River is a perennial, but water quantity and flow reduces in summer. Although it conserves catfish very well,but local fishermen in this area carriedout illegal practices of fish capturing, such as liming, electric shock, etc. In the present scenario, there is a need forattentiveness among the local people and fishermen to avoid over-exploitation for theconservation ofIchthyofaunal diversity. Due to over-exploitation, some species may become extinct in this area. In the variety of catfish, 8 species were common, 2 species were rare, 2 species were occasional, and 1 species wasuncommonly found in the investigation. According to IUCN status, 10 species were under the Least Concern (LC) category, whereas 3 species were under the Near Threatened (NT) category (Table No.1). Based on frequency-based abundance Majority of catfish were common (61.53 %) such as *Mystusvittatus, Mystuscavassius, Mystustengara, Rita kuternee, Sperataseenghala, Ompakbimaculatus, wallagoattu, and Clupisomagarua*,uncommon species was *hetropneustesfossilis (7.69%)*, rare species were *Pangasiuspangasius,Bagariusbagarius (15.38%)*& occasionally found species were *Clariasbatrachus* and *Rita gogra*(15.38%).

DISCUSSION

Most researchers have a keen interest in the study of catfish diversity. They have explored catfish diversity in various lotic and lentic ecosystems. Shaw, G.E. and Shebbeare, E.O. (1937) reported 34 Species of catfish from the river and Streams in the hills & Plains of the Darjeeling district and the adjoining Dooars. (Patra2011) reported 7 species of catfish fauna from the Kerala River of West Bengal. (Kumbhar S.M. and Lad S.B. 2014) reported 13 species of catfish fauna from the Krishna River, Maharashtra. (Gadekar2015) reported 10 species of catfish fauna out of 51 species reported from the Wainganga River of Bhandara. Although very little work has been carried out on the study of catfish diversity inthe Wainganga River.

The present study reported 13 species of catfish, among them,*Clariasbatrachus and Heteropneustesfossilis* were reported from the Wainganga River. These species might have entered the mainstream of the Wainganga River through different flows of water meeting the river and entering their water into the tributary of the Wainganga. Local fishermen in this area carried out illegal practices of fish capturing, such as liming, electric shock, etc. Such bad practices may reduce the diversity and further lead to the extinction of species. In the present scenario, there is a need for awareness among the local people and fishermen to avoid over-exploitation with illegal practices (Patra,2011).

Due to the construction of the Gosikhurd dam on the Wainganga Riverand overexploitation of catfish results in reduction in the diversity. If it continues further, species may be threatened and become extinct in future. It was reported that some species, whose abundance was there in the past few years, (*Bagariasbagarias*,*Ompakpabda*&*Mystusaor*),such species now becomes very rare in recent years.Anthropogenic activities are responsible for the destruction of habitat, which is one of the major threats to species extinction. (Abraham2011; Ng2010; Ng *et al.*,2010), Agricultural & Industrial pollutionalso increases the pollution of the river, which may affect the ichthyofaunaldiversity.In the present investigation, no exotic species were reported.

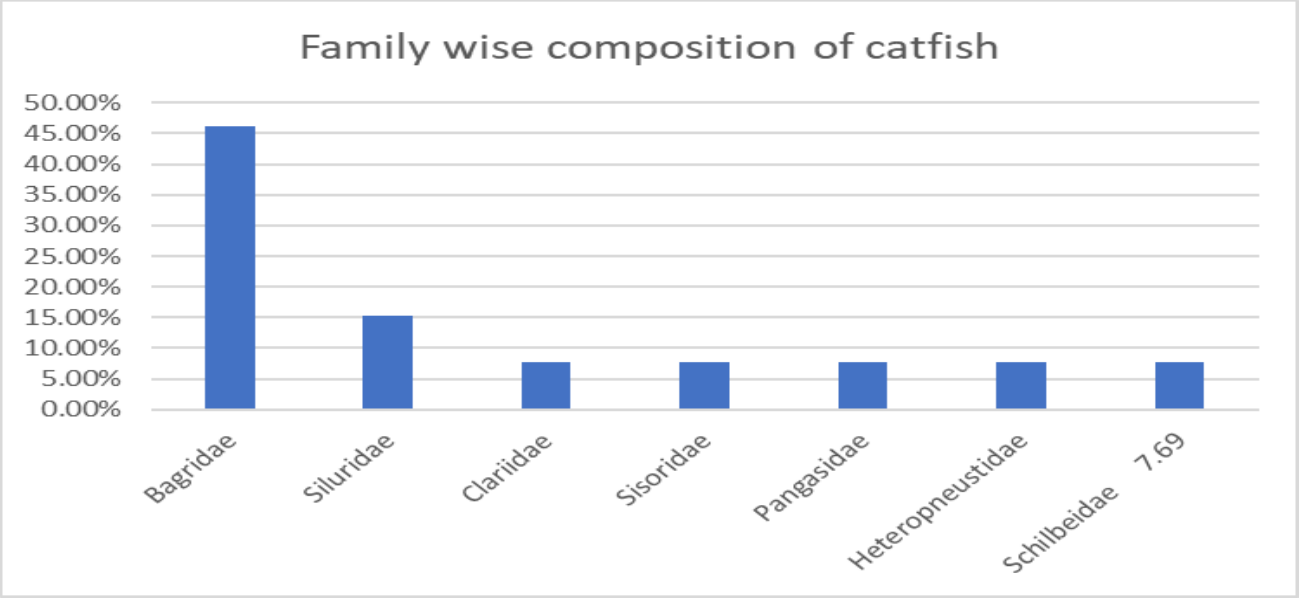
While studying the correlation among the Aquatic freshwater ecosystem about catfish diversity, threats, and conservation status, some similar findings were observed. In correlation with Pranhita and Wainganga, it is observed that 50% findings are similar, as Pranhita reported 15 species of catfish fauna, whereas Wainganga reported 13 species. In both cases, family Bagridaeshow dominance. In the case of the Krishna River, both reported 13 species. On both river systems, dams and barriers were constructed, leading to habitat loss and restricting the movement of ichthyofaunaresulting in a drastic decline of ichthyofauna. The Krishna River also reported the dominance of Bagridae. Catfish diversity in the Krishna River shows about 45% similar findings to the present investigation.

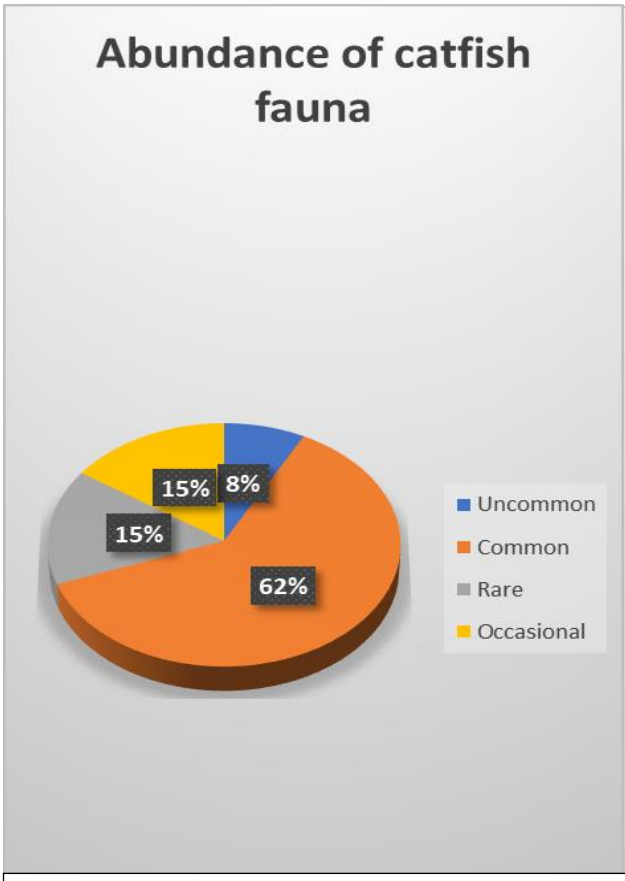
The Barak drainage river system reported the dominance of the Sisoridae family, showing similar findings with the present investigation. In the present investigation, 7 species and 6 families were common. In the Teesta River, 37 species belonging to 8 families were reported, out of which 10 Species and 6 Families were common with the present investigation. The Sisoridaefamily shows dominance here also.Over the past few decades there is requirement and dependency of human beings on River water and biodiversity have been increasing continuously,which wasone of the threats to the biodiversity of ichthyofauna (Dudgaon,2006).

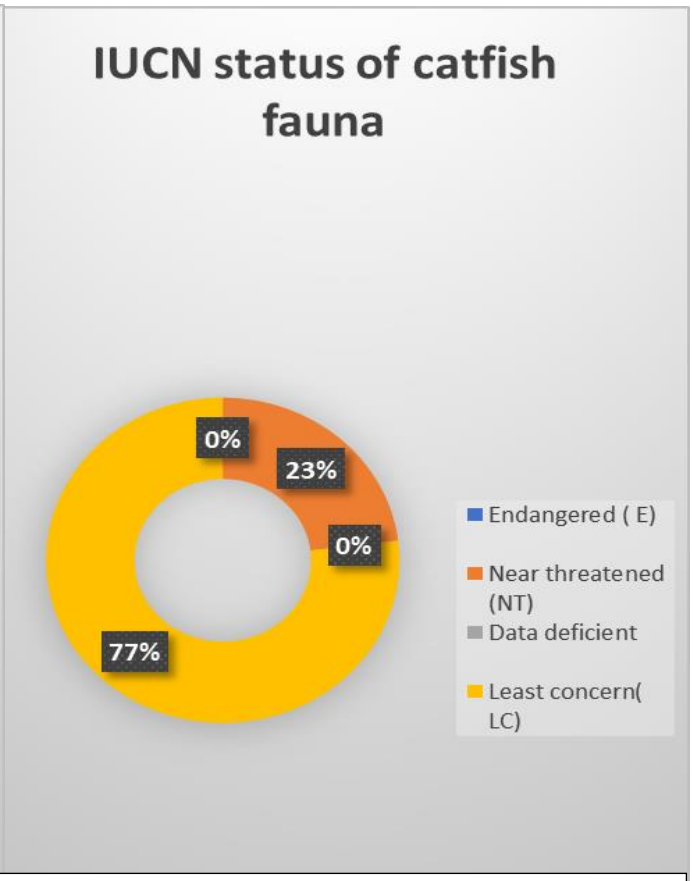
According to the IUCN status, the species *Ompakbimaculatus, Wallagoattu,* and *Bagariasbagarias were* under the Near Threatened category. They were in the near-threatened category because of the over-exploitation of Species for food. The species are threatened by habitat modification caused by the construction of dams and rapid urban development (Dahanukar, 2011)and (Sarkar,2023).

Sr. No.	Name of Family	Scientific Name	Common Name	Vernacular Name	Abundance	IUCN status
1.	Bagridae	*Mystus Vittatus*	Stripe dwarf catfish	katwa	C	LC
		Mystus cavasius	Gangetic mystus	Jalakatwa	C	LC
		Mystus tengara	Tengara catfish	Ringnyakatwa	C	LC
		Rita gogra	Ghogar	Ghogar	O	LC
		Rita kuturnee	Deccan rita	Kuddo/ Kurudkatwa	C	LC
		Speratase enghala	Seenghala	Singta/ Koir	C	LC
2.	Siluridae	*Ompakbim aculatus*	Butter catfish	Waranja	C	NT
		Wallago attu	Helicopter catfish	Sawada/ Shiwada	C	NT
3.	Clariidae	*Clariasb atrachus*	Walking catfish	Gavathiwagur	O	LC
4.	Sisoridae	*Bagarias bagarias*	Goonch	Bodh	R	NT
5.	Pangasidae	*Pangasiusp ungasius*	Pangas	Jarang	R	LC
6.	Heteropneustidae	*Heteropneustes fossilis*	Asian stinging catfish	Singur/ Ingur	U	LC
7.	Schilbeidae	*Clupiso magarua*		Wayadi	C	LC

Table No. 1 Showing IUCN status of catfish fauna







Graph 1, 2 &3 Show composition of catfish family, abundance, & IUCN status of catfish fauna respectively.

a

b

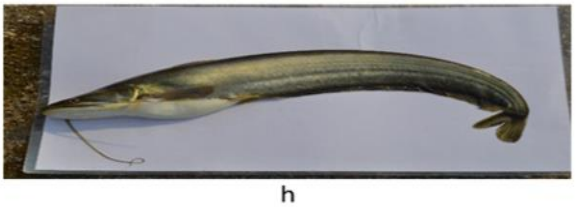
c

d

e

f

g



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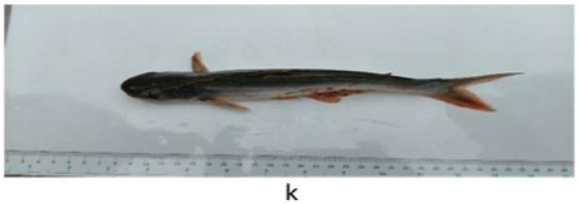

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a. *Mystus vittatus, b.Mystus cavasius, c. Mystus tengara, d. Rita gogra, e. Rita kuturnee, f. Mystus seenghala, g. Ompak bimaculatus, h. Wallago attu, i. Clarias batrachus, j. Bagarius bagarius, k. Pangasius pangasius, l. Heteropneustes fossilis, m. Clupisoma garua*

CONCLUSION

In the present investigation, 13 species of catfish fauna were captured, which belong to 7 families and 9 genera. Some species showed abundance in the past few years before this study, even though it is not reported in my study. It is observed that after the construction of the GoseKhurd dam on the Wainganga River ichthyofaunal diversity of the Wainganga River decreased.

The illegal fishing practices,anthropogenic activities and river pollution in this areahave been studied, which confirms the reduction in the ichthyofaunal diversity. Over-exploitation is one of the strongest reasons behind the loss of ichthyofauna. Fish is an indicator of good health and maintains the socio-economic status of human beings.So,to keep all this in maintained condition, there is a need to increase awareness among the fishermen and the common man about conservation and the exploitation of ichthyofauna.

Acknowledgment

The author is thankful to the Government of Maharashtra (OBC Ministry) financial assistance through the (MAHAJYOTI) scheme to carry out research. Authorsare also thankful to IHLR&SS, Department of Zoology, AnandNiketan College,AnandwanWarora, and Dr. R. G. Munghate, Principal, Shri Govindrao Munghate Arts and Science College, Kurkheda Dist.-Gadchiroli, for their support and encouragement.

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