

Conservation Status of Fishes Reported from Tapi District of Gujarat, India

ABSTRACT

This study aimed to assess the conservation status and diversity of fishes in Tapi District, Gujarat, India. The study was conducted from Jan. to Dec. 2023. During exploration, a total of 25 species of fishes belonging to different 13 families and 11 orders were identified and specimens were preserved in the laboratory. The details being Siluriformes 5 species (Pangasiidae - *Pangasius bocourti*, Siluridae- *Wallago attu*, Bagridae - *Sperataseenghala*, *Mystusnigriceps*, *Mystuscavasius*), Beloniformes 1 (Belonidae - *Strongylura strongylura*), Cichliformes1 (Cichlidae- *Oreochromis niloticus*), Cypriniformes10 (Cyprinidae- *Cirrhinus mrigala*, *Cyprinus bata*, *Ctenopharyngodonidella*, *Amblypharyngodonmola*, *Systomussarana*, *Puntius sophore*, *Pethiaticto*, *Labeorohita*, *Labeobata*, *Catlacatla*), Osteoglossiformes1 (Notopteridae- *Chitalachitala*), Gobiiformes 1 (Gobiidae- *Glossogobiusgiuris*), Perciformes2 (Ambassidae- *Chanda nama*, *Parambassisranga*) Anabantiformes 1 (Channidae- *Channapunctata*) Synbranchiformes1 (Mastacembelidae- *Mastacembelusarmatus*) Atheriniformes1 (Atherinopsidae- *Poblanaferdebueni*) and Clupeiformes1 (Alosidae- *Aloosaalosa*). As per species wise fish diversity of Tapi District of Gujarat, India is concerned, Cypriniformes dominated with 10 species, followed by Siluriformes 5, Beloniformes 1, Cichliformes 1, Osteoglossiformes 1, Gobiiformes 1, Perciformes2, Anabantiformes 1, Synbranchiformes 1, Atheriniformes1 and Clupeiformes1. Present conservation status of these fishes being out of 25 species of fishes identified, 1 species Critically Endangered (CR), 1 species come under Not evaluated (NE), 2 species come under Lower risk-near threatened (LR-NT), and 21 under least concern (LC) so far.

keywords: Conservation, Fish diversity, Tapi District

INTRODUCTION

Fishes are cold blooded animal, aquatic vertebrates having cartilaginous or bony vertebral column, ventral muscular 2- chambered heart, tubular nerve chord, fins as paired appendages and gills for breathing. They constitute about half of the total number of vertebrate in the world Verma A.K. *et al.* (2016).

The aquatic biodiversity of the world is getting depleted faster every day due to habit loss, pollution, introduction of exotic species, over exploitation, agricultural runoff and other anthropogenic activities Moyle, P.B. *et al.* (1995). The fish are one of the most important organisms in aquatic ecosystems as those occupy primary and secondary consumer level. Though the freshwater bodies contribute only 0.1% of the total water of the planet, it harbours 40% of fish species Nelson, J.S (1994). Fishes have high nutritive value, especially omega 3 fatty acids, because of which they are heart-friendly and improve reproductive and nervous system development Kalyankar, V.B. *et al.* (2012). India is one of the mega biodiversity centers for the genetic resources in the world and the same is true also in case of fishes. Nearly 2,868 species of fishes belonging to 42 orders, 426 families and 1,019 genera are found in different ecosystems of this country. The approximate ecosystem-wise distribution of fish germplasm resources of India are- freshwater (877; 30.6%), brackish water (113; 3.9%) and marine (1368; 65.5%). Out of these, about 258 species are commercially important which include cultured, cultivable and wild taxa, 199 endemic and 275 game fishes. Further, more than 447 exotic species have been introduced in Indian waters, mostly for ornamental purpose Lakra, W.S *et al.* (2009) and Anon (2015). Around the world, there is a growing concern over the loss of aquatic ecosystems and the biodiversity that goes along with them Singh, A.P. *et al.* (2024). The Convention on Biological Diversity (CBD) reaffirms the sovereign rights of the member nations over their entire genetic resources and envisages conservation, sustainable use and equitable sharing of the benefits arising from the biological resources. More than 28,400 finfish species have been reported throughout the world which represents about half of the entire vertebrate diversity Nelson J S (1994), Nelson J S (2006), Hilton-Taylor C (2000), Vie' J - C, (2008). Water is most productive resource for pisciculture. Fishes are the group of subphylum- Vertebrata, superclass- pisces in the world and are very useful in biological researches Tripathi, R. B. *et al.* (2023).

District Tapi consist of seven Taluka namely Kukarmunda, Vyara, Valod, Uchhal, Dolvan, Nizar and Songadh. Covering an area above 3139 km. Having 523 total numbers of villages. Total population of Tapi district is about 8,07,022 out of which 90% of population belongs to tribal community. Tapi district consist of huge network (Tapi and its tributaries) along with huge Ukai and Dosvada riverine dam. It has been observed that approximately 30-40% of tribal population engaged in fisheries related activities.

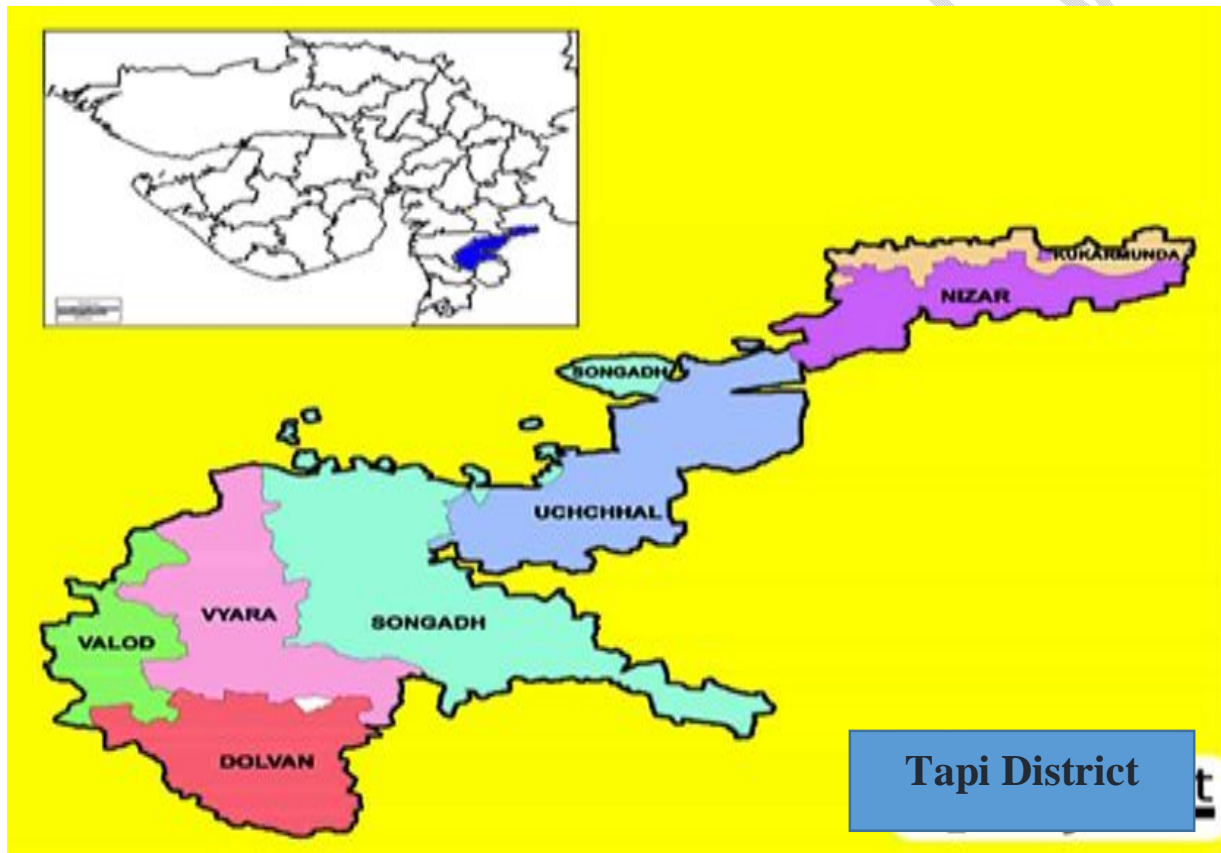
The present investigation was undertaken to Conservation status of fishes reported from Tapi District of Gujarat, India.

STUDY AREA: Conservation status of fishes reported from Tapi District of Gujarat, India (Image 1).

MATERIALS AND METHODS

Fish were caught and collected for the study from the river, dam by using hand nets, cast nets, hooks, pulling nets with the help of local people and fishermen while fishing. Studying fish recovery and collection were done twice in a month from January 2023 to December 2023. Fish were later identified using Mishra's standard keys, Mishra KS, Day, Day F, Jhingran VG, Jayaram Jayaram KC, Srivastava Gopalji, and L. Flora.

Image No. 1 Tapi district of some Taluka given below.



RESULTS

The present study during exploration, a total of 25 species of fishes belonging to different 13 families and 11 orders were identified and specimens were preserved in the laboratory. Present conservation status of these fishes being out of 25 species of fishes identified 1 species Critically Endangered (CR), 1 species come under Not evaluated (NE), 2 species come under Lower risk-near threatened (LR-NT), and 21 under least concern (LC) so far. Zoological names of these 25 different species of fishes recorded, with family, order and conservation status are shown in the Table No. 1. And Figure No. 1 to 25 of some collected fishes given below.

Table No. 1: Different fish species with conservation status recorded during 2023 Data deficient (DD), Endangered (EN), and Critically Endangered (CR) Least concerned (LC), Lower risk-near threatened (LR-NT), Not evaluated (NE), Vulnerable (VU)

S.N	Scientific Name	Order	Family	Common Name	Conservation Status
1	<i>Pangasius bocourti</i>	Siluriformes	Pangasiidae	Basa Fish	LC
2	<i>Wallago attu</i>	Siluriformes	Siluridae	Freshwater Catfish	LR- NT
3	<i>Strongylura strongylura</i>	Beloniformes	Belonidae	Spottail Needlefish	NE
4	<i>Oreochromis niloticus</i>	Cichliformes	Cichlidae	Nile Tilapia	LC
5	<i>Sperataseenghala</i>	Siluriformes	Bagridae	Giant River-Catfish	LC
6	<i>Cirrhinus mrigala</i>	Cypriniformes	Cyprinidae	Mrigal Fish	LC
7	<i>Chitalachitala</i>	Osteoglossiformes	Notopteridae	Knifefish	LR- NT
8	<i>Ctenopharyngodonidella</i>	Cypriniformes	Cyprinidae	Grass Carp	LC
9	<i>Mystusnigriceps</i>	Siluriformes	Bagridae	Two-Spot Catfish	LC
10	<i>Amblypharyngodonmola</i>	Cypriniformes	Cyprinidae	MolaCarp let	LC
11	<i>Systomus sarana</i>	Cypriniformes	Cyprinidae	Olive Barb	LC
12	<i>Puntius sophore</i>	Cypriniformes	Cyprinidae	Spotfin Swamp Barb	LC
13	<i>Pethia ticto</i>	Cypriniformes	Cyprinidae	Ticto Barb	LC
14	<i>Cirrhinusreba</i>	Cypriniformes	Cyprinidae	Reba Carp	LC
15	<i>Labeorohita</i>	Cypriniformes	Cyprinidae	Rohu	LC
16	<i>Labeobata</i>	Cypriniformes	Cyprinidae	Bata Fish	LC
17	<i>Aloaalosa</i>	Clupeiformes	Alosidae	Allis Shad	LC
18	<i>Mystuscavasius</i>	Siluriformes	Bagridae	Gangetic Mystus	LC
19	<i>Glossogobiusgiuris</i>	Gobiiformes	Gobiidae	Tank Goby	LC
20	<i>Chanda nama</i>	Perciformes	Ambassidae	Glassfish	LC
21	<i>Parambassisranga</i>	Perciformes	Ambassidae	Indian Glassy Fish	LC
22	<i>Channapunctata</i>	Anabantiformes	Channidae	Spotted	LC

				Snakehead	
23	<i>Mastacembelusarmatus</i>	Synbranchiformes	Mastacembelidae	Zig-Zag Eel	LC
24	<i>Poblanaferdebueni</i>	Atheriniformes	Atherinopsidae	Rice Fish	CR
25	<i>Catlacatla</i>	Cypriniformes	Cyprinidae	Catla Fish	LC

Figure No. 1 to 25 of some collected fishes given below

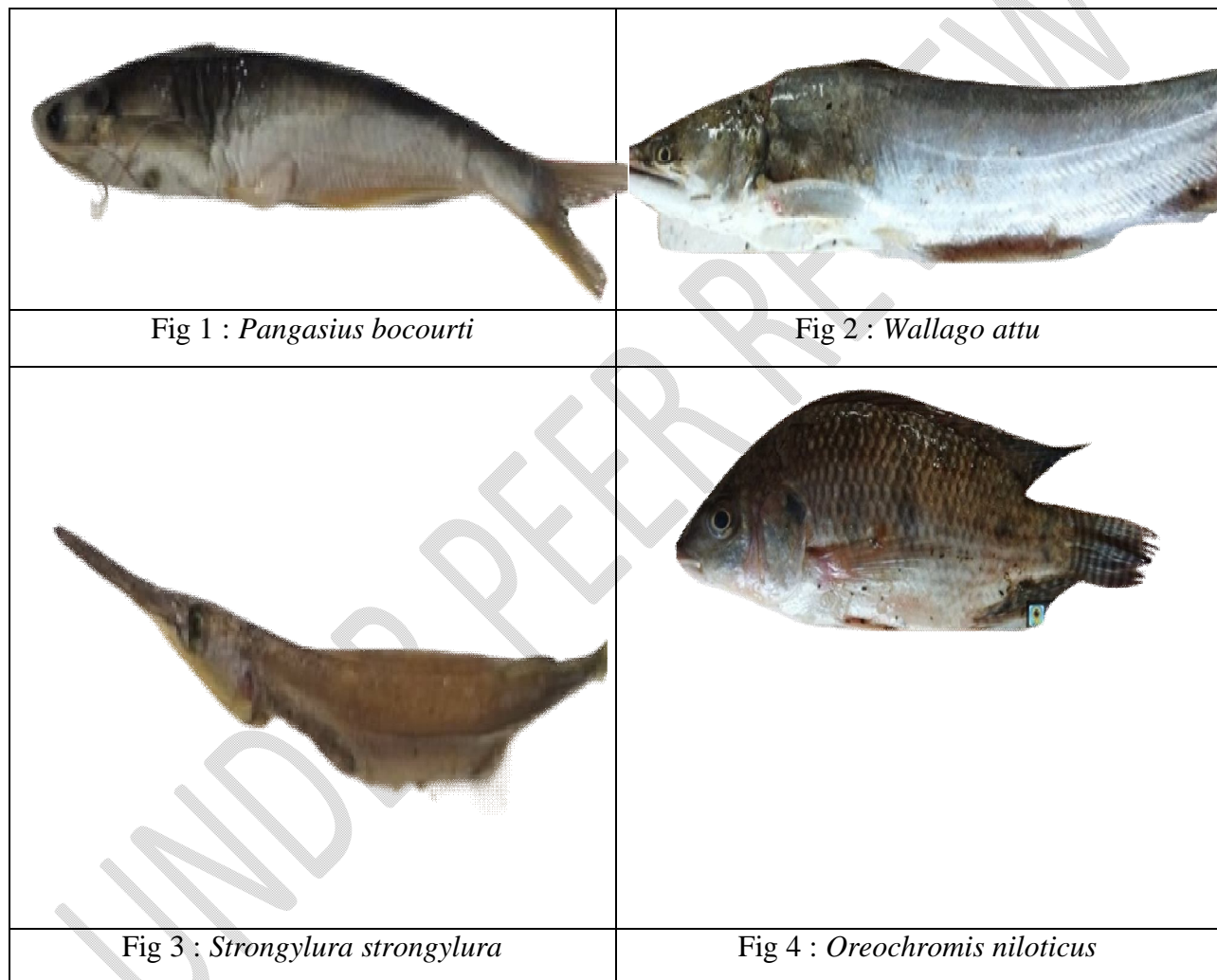




Fig 5 : *Sperataseenghala*



Fig 6 : *Cirrhinus mrigala*



Fig 7 : *Chitalachitala*



Fig 8 : *Ctenopharyngodonidella*



Fig 9 : *Mystusnigriceps*



Fig 10 : *Amblypharyngodonmola*



Fig 11 : *Systemus sarana*



Fig 12 : *Puntius sophore*

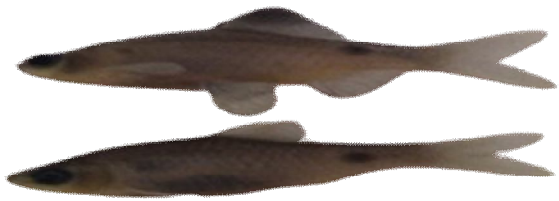


Fig 13 : *Pethia ticto*



Fig 14 : *Cirrhinus reba*



Fig 15 : *Labeo rohita*



Fig 16 : *Labeo bata*



Fig 17 : *Alosa alosa*

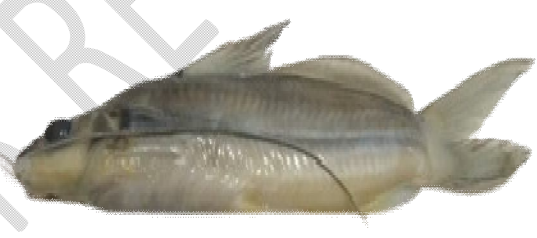


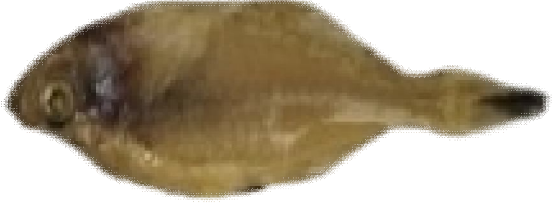




Fig 18 : *Mystus cavasius*



Fig 19 : *Glossogobius giuris*



Fig 20 : *Chanda nama*

	
<p>Fig 21 : <i>Parambassisranga</i></p>	<p>Fig 22 : <i>Channapunctata</i></p>
	
<p>Fig 23 : <i>Mastacembelusarmatus</i></p>	<p>Fig 24 : <i>Poblanaferdebueni</i></p>
	
<p>Fig 25 : <i>Catlacatla</i></p>	

DISCUSSION

The present study during exploration, a total of 25 species of fishes belonging to different 13 families and 11 orders were identified. The details being Siluriformes 5 species (*Pangasiidae* - *Pangasius bocourti*, *Siluridae*- *Wallago attu*, *Bagridae* - *Sperataseenghala*, *Mystusnigriceps*, *Mystuscavasius*), *Beloniformes* 1 (*Belonidae* - *Strongylura strongylura*), *Cichliformes*1 (*Cichlidae*- *Oreochromis niloticus*), *Cypriniformes* 10 (*Cyprinidae* - *Cirrhinus mrigala*, *Cyprinus bata*, *Ctenopharyngodonidella*, *Amblypharyngodonmola*, *Systemussarana*, *Puntius sophore*, *Pethiaticto*, *Labeorohita*, *Labeobata*, *Catlacatla*), *Osteoglossiformes*1 (*Notopteridae* -

Chitalachitala), Gobiiformes 1 (Gobiidae - *Glossogobiusgiuris*), Perciformes2 (Ambassidae - *Chanda nama*, *Parambassisranga*) Anabantiformes 1 (Channidae - *Channapunctata*) Synbranchiformes1 (Mastacembelidae-*Mastacembelusarmatus*) Atheriniformes1 (Atherinopsidae- *Poblanaferdebueni*) and Clupeiformes1 (Alosidae- *Alosaalosa*). As per species wise fish diversity of Tapi District of Gujarat, India is concerned, Cypriniformes dominated with 10 species, followed by Siluriformes 5, Beloniformes 1, Cichliformes 1, Osteoglossiformes 1, Gobiiformes 1, Perciformes 2, Anabantiformes 1, Synbranchiformes 1, Atheriniformes 1 and Clupeiformes 1. Present conservation status of these fishes being out of 25 species of fishes identified 1 species Critically Endangered (CR), 1 species come under Not evaluated (NE), 2 species come under Lower risk-near threatened (LR-NT), and 21 under least concern (LC) so far.

CONCLUSION

In the present study 25 species of freshwater fishes were recorded. The conservation status of the fishes 1 species Critically Endangered (CR), 1 species come under Not evaluated (NE), 2 species come under Lower risk-near threatened (LR-NT), and 21 under least concern (LC). Commercially important species were being reduced in certain landing centers along left flank of TBR and alien species were occupying the native species niches. To monitor the continuous potential fish yield of the reservoir, adequate release of carp seeds, utilizing the other vacant niches, monitoring the illegal fishing actives along the reservoir and continuous annual documentation of fish catches is necessary.

- To preserve fish species and increase fish productivity, particularly for Indian major carps, rigorous adherence to fishing regulations is necessary. Major carps in India are expensive fish, but the population is downing. Nets with a mesh size of less than 2 cm should be completely prohibited in order to protect Indian big carp, especially during breeding season.
- Establishing a fish sanctuary is necessary to protect native fishes.
- Fishermen should be made more aware of the value of ornamental fish species and how to get a better price through awareness programmers.

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Details of the AI usage are given below:

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- 2.
- 3.

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