



## ICHTHYOFAUNAL DIVERSITY OF TAPI RIVER FLOWS THROUGH DHULE AND NANDURBAR DISTRICTS OF NORTHWEST KHANDESH (MAHARASHTRA), INDIA.

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### ABSTRACT

The Nandurbar and Dhule districts (Northwest Khandesh region of Maharashtra State (India) are traversed by the river Tapi and its principal tributaries viz., Panzara, Burai, Arunavati, Gomai, Vaki, Daheli etc constituting together a length of 190 Km. Ichthyofaunal diversity were undertaken during November 2013 to April 2014. The survey was made from six collection centers of both districts. The results of the present investigation reveal that occurrence of 32 species belonging to 23 different genera in 6 orders and 12 families were recorded. The member of family Cyprinidae were dominated by 16 (50 %) species followed by Bagridae and Chandidae each with three species, Channidae with two species, Balitoridae, Belonidae, Cichlidae, Clupeidae, Gobidae, Notopteridae, Schilbeidae and Siluridae contribute each with single species. As no attempt had been made in the past to explore the ichthyofaunal diversity of this region. All the species reported in present investigation are reporting first time under mopping survey programme. It is concluded that the fish in this area are under threat due to anthropogenic activities such as overfishing and organic and inorganic pollution of the river. Therefore site based conservation action plants are needed for conservation of rare and threatened fish in this area.

**Key words:** Ichthyofauna, Khandesh, Tapi, Tributaries, Anthropogenic, Rare, Conservation.

### INTRODUCTION

Fish is a valuable source of protein and occupied a significant position in the socio-economical fabric of South Asian countries (Jayaram, 2010). Fishes are the only major group of vertebrate which very much effect on human civilization from ancient time to date (Ubarhande and Sonawane, 2012). It is one of good and cheapest source of protein food for economic as well as high class people so it is essential to study the distribution and availability of fish from freshwater rivers and pond (Shinde et al., 2009). Fish constitute half the total number of vertebrates in the world and live in almost all conceivable aquatic habitats. Around the world approximately 22,000 fish species have been recorded out of which 2500 (11 %) species are found in India (Nagma and Khan, 2013). India is one of the mega biodiversity countries in the world and occupies the 9th position in terms of freshwater mega biodiversity (Shinde et al., 2009).

Studies on Ichthyofaunal diversity have been of immense interest to researchers of all times (Hamilton, 1822; Day, 1978 and Menon, 1992) etc. Many workers are studied taxonomy, biodiversity and distribution of freshwater fishes from various part of India. i.e. Menon (1987) from Himalayan rivers, David (1963) from Godavari and Krishna river, Jayaram (2010) from Cauvery river, Yadav (2004) from Pench National Park, Nagpur (M.S.), Jadhav et al (2011) from Koyana river, Singh (1990) form Dhule district (M.S.), Singh and Kamble (1987) from Jalgaon district (M. S.) Joshi et al (2012) from Buldhana district (M.S.), Kharat et al (2012) from Krishna river at Wai, Western Ghats, Nagma and Khan (2013) from Bijnor

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district in western Uttar Pradesh and Kalbande et al (2013) from Rawanwadi lake of Bhandara district (M.S.). Very recently, Sheikh (2014) from Pranhita River, Sironcha district- Gadchiroli (M.S.), Khodke et al (2014) from Jamkhedi reservoir, Dhule (M.S.) and so on. However, no attempt has been made so far to explore the freshwater fish fauna of Nandurbar and Dhule district in spite of district is transversed by Tapi and its tributaries river system. Hence attempt has been made here to present piscine inventory from this well known region. Tapi River harbors a very rich fish fauna in its various tributaries including ponds and lakes.

### MATERIALS AND METHODS

To study the ichthyofauna of Tapi river flows through Nandurbar and Dhule district, fish sample were collected/ purchased from six stations (i. e. Shirpur, Shindkheda, Prakasha, Taloda, Khapar and Sarangkhedha) during November 2013 to April 2014.

The fish specimens collected were instantly fixed in 4 % formaldehyde solution and subsequently after 4-8 h fixation and washing with tap water, transferred to 70 % ethanol. The large sized specimen was given incision on belly.

Identification of fishes was done up to species level while identifying its natural color, pattern scales, fins, mouth pattern, identification marks like black or red spots, blotch on operculum, paired and unpaired fins and body parts with the help of standard literature by Day (1978), Menon (1987), Datta Munshi and Srivastava (1988), Beaven (1990), Talwar and Jhingran (1991), Jayaram (1981, 2002, 2010) etc.

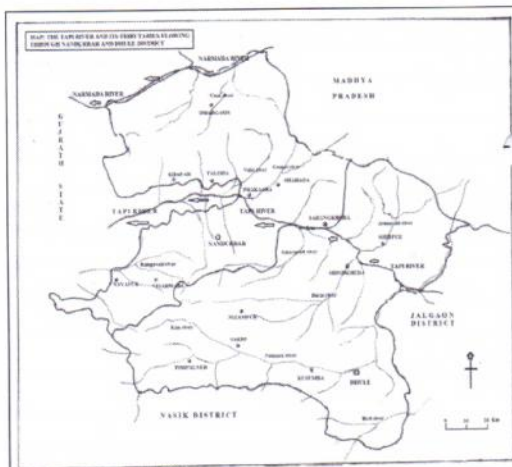
Fish species which were not identified was sent to Zoological Survey of India, Western Regional Station (WRS), Pune. The identified fishes and their valid scientific names have incorporated in the present paper.

### STUDY AREA

The River Tapi flows from the East to the West and is second largest inter-state rivers, spread across the areas of Maharashtra, Madhya Pradesh and Gujarat. It originates from Mahadeva Mountain at Baitul (Dist-Nemad, M.P.) Its basin is located at 210- 48 North latitude and 780-15 East longitude. The basin of Tapi is surrounded by Saputara mountain range in the North, Ajanta and Satmala mountain range in the South and Mahadeva mountain range in the East. It meets the Arabic Ocean in the West. The river surrounded from three sides, flows through Madyapradesh (282 K.M.), Maharashtra (228 K.M.) and Gujarat with its estuaries (262 K.M.). Its total catchment area is around 65145 sq. Kms, out of which 80% lies in the Maharashtra region

Collection centers: A total six collecting stations was made from where fish sample were purchased from local fisherman. The collecting stations with district and number of sample collected are shown in the parenthesis, as below;

1. Shirpur (Dhule district, 25)
2. Shindkheda Dhule district, 08)
3. Prakasha (Nandurbar district, 06)
4. Taloda (Nandurbar district, 16)
5. Khapar (Nandurbar district, 17) and
6. Sarangkhedha (Nandurbar district, 11).





## RESULTS AND DISCUSSION

A list of principal tributaries and sub tributaries of Tapi River including their origin and meet, latitude and longitude, length of river flow etc are shown in table-1. While the ichthyofaunal diversity of collected and identified fish species from six collecting stations are shown in table-2. During the study of 32 species of freshwater fishes belonging to 6 orders, 12 families and 23 genera recorded from different stations are carried out during November 2013 to April 2014. The member of order Cypriniformes were dominated by 17 species followed by Perciformes with 7 and Siluriformes with 5 species, Beloniformes, Clupeiformes and Osteoglossiformes contribute 1 species each.

Cypriniformes with 17 species was dominant group in the assemblage composition in which *Mystus bleekeri*, *Labeo boggut*, *Labeo calbasu*, *Tenualosa ilisha*, *Puntius sarana*, *Puntius sophore*, *Rasbora doniconius* and *Ompak bimaculatus* etc are more common and abundantly distributed. Its dominance may due to more fecundity of fishes and suitable environmental condition relatively higher population density of this order was evident in the water bodies. In these reported fishes, family Cyprinidae was comparatively more dominance (50 %) than remaining 11 families. Most of earlier workers viz., Phare (2001), Shinde et al (2009), Ubarhande et al (2011), Nagma and Khan (2013), etc. have reported the strong dominance of Cyprinidae family in their investigation on ichthyofaunal diversity. Our results are corroborating with these findings. The fishing operation was carried out for 6 months. It is suggested that the fishery authorities should investigate and practice the proper exploitation and management of this fishery resources according to ecological principles. Scientific fishing standard and fishing quotas are to be worked out; this will play an important role in protection of the reservoir biodiversity. Thus it is duty of each one to play an important role to conserve fish diversity at this plays and handover the valuable biodiversity in the healthy condition to the future generation. The work will provide further strategies for development and fish fauna conservation of Tapi River.

## CONCLUSION

It may be concluded that the tributaries and sub tributaries of the Tapi river hosts a number of freshwater fish species. However, the fish fauna especially rare and moderate species is at risk due to several anthropogenic activities like over fishing and recreational activities besides water pollution. Since the fish fauna in both districts also supports the livelihood of several economic classes. Therefore, there is an urgent need to understand the conservation priorities. Our valuable ichthyofauna can be protected by regulating killing of fishes, giving protection to eggs, fry, fingerlings or juvenile by observing close period. Formation of fish ladder, fish sanctuary and putting ban on killing, sale and poaching of threatened species; initiating and encouraging the conservation movement among fisherman are some of the urgent steps to be taken by N. G. O's and fisheries department of government.

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Table -1: list of tributaries and sub tributaries of Tapi River

Sr. No	Tributary	Origin at	Latitude	Longitude	Meet Tapi river at	Length (Km)	Sub-tributaries
01	Panzara	Hanuman Near Pimpalner, Tal - Sakri Dist- Dhule (MS).	20 <sup>0</sup> – 52 N	73 <sup>0</sup> – 55 E	Mulavad Tal- Shindkheda Dist- Dhule (MS).	136	Kan, Jamkhedi, Umbara nala, Katsal nala, Khara nala, Hirakhan, Kanher nala, Sonwad nala.
02	Burai	Kondaibari Tal- Sakri Dist- Dhule (MS).	21 <sup>0</sup> – 10 N	74 <sup>0</sup> – 4 E	Shindkheda Dist- Dhule	88	Pan, Rodi
03	Madari	Chimthana Tal- Shindkheda Dist- Dhule	--	--	Shirpur Dist- Dhule	--	--
04	Arunavati	Satpuda mountain- Kolki, near Salvan Dist- W. Nemad (MP)	21 <sup>0</sup> – 33 N	75 <sup>0</sup> – 11 E	Vanaval, near Shirpur Dist- Dhule (MS)	53	Zirbavi, Dhul, Chondi, Ambad
05	Amravati	Thanepada, Tal & Dist- Nandurbar (MS)	21 <sup>0</sup> – 13 N	74 <sup>0</sup> – 15 E	Sarangkheda Tal- Shahada (Nandurbar)	--	Nai, Bhogvati, Kanan.
06	Gomai	Satpuda mountain near Morvani village Dist- Nemad (MP)	21 <sup>0</sup> – 47 N	74 <sup>0</sup> – 46 E	Prakasha Dist- Nandurbar	70	Tipriya, Umari, Sukhi, Susri, Bharmer
07	Vaki	Satpuda mountain near Ban village Dist- Dhule	21 <sup>0</sup> – 44 N	74 <sup>0</sup> – 18 E	Bahurupa – Balda, Tal- Nizar Dist- Surat(Gujrat)	70	--
08	Daheli	Hira village, Tal- Taloda Dist- Nandurbar (MS)	--	--	Vadgaon Tal - Nizhar (Gujrat)	38.5	--
09	Bhad	Dhanora mountain Dist- Nandurbar	--	--	Nizhar (Gujrat)	--	--
10	Nagan	Kondaibari Tal- Sakri Dist- Dhule (MS)	--	--	Near Surat (Gujrat)	--	Kodari, Vandriyaval, Sanpal
11	Nesu	Near Ashta Dist- Nandurbar	21 <sup>0</sup> – 16 N	74 <sup>0</sup> – 9 E	Narayanpur Dist- Surat	--	--
12	Shiva/ Shivan	Khadaki Dist- Nandurbar	21 <sup>0</sup> – 12 N	74 <sup>0</sup> – 6 E	Velda Tal - Nizar (Gujrat)	--	--
13	Rangavali	Mountains of Dist- Nandurbar / Dhule (MS)	--	--	Villages of Dist- Nandurbar / Dhule (MS)	--	--
14	Survad						
15	Patalganga						
16	Kordi						
17	Valer						
18	Manki						

“--” Indicate Information not available.

\* Tributaries data Source - Bhalerao, S. M., 2007

Table-2: Ichthyofauna of Tapi River Flows through Dhule and Nandurbar Districts

Sr. No	Order/ Family/Fish species	Local name	Availability	Collection centre
<b>Order- Siluriformes; Family-Bagridae.</b>				
01	<i>Aorichthys aor</i> (Hamilton)	Ek-kati	Moderate	Shirpur, Khapar.
02	<i>Mystus bleekeri</i> (Day)	Chichva	Common	Shirpur, Taloda, Khapar , Sarangkhedha
03	<i>Mystus cavasius</i> (Hamilton)	Chichva	Rare	Shirpur.
<b>Order- Cypriniformes; Family-Balitoridae.</b>				
04	<i>Acanthocobitis mooreh</i> (Sykes)	Mooree	Modearate	Shirpur, Khapar.
<b>Order- Beloniformes; Family-Belonidae.</b>				
05	<i>Xenentodon cancila</i> (Hamilton)	Vam	Modearate	Shirpur, Taloda.
<b>Order- Perciformes; Family-Chandidae.</b>				
06	<i>Chanda nama</i> (Hamilton)	Kach-masa	Modearate	Taloda, Prakasha
07	<i>Parambasis lala</i> (Hamilton)	Dhebri	Rare	Taloda
08	<i>Parambasis ranga</i> (Hamilton)	Dhebri	Common	Shirpur, Taloda, Sarangkhedha.
<b>Order- Perciformes; family-Channidae.</b>				
09	<i>Channa gachua</i> (Hamilton)	Dok	Modearate	Shirpur, Khapar
10	<i>Channa punctata</i> (Bloch)	Dod	Common	Shirpur, Shindkheda, Taloda .
<b>Order- Perciformes; Family-Cichlidae.</b>				
11	<i>Oreochromis mossambicus</i> (Peters)	Shilpi	Rare	Shirpur.
<b>Order- Clupeiformes; Family-Clupeidae.</b>				
12	<i>Tenualosa ilisha</i> (Hamilton)	Bhat-masa	Common	Shirpur, Taloda, Khapar, Sarangkhedha.
<b>Order- Cypriniformes; Family-Cyprinidae.</b>				
13	<i>Amblypharyngodon mola</i> (Hamilton)	--	Moderate	Taloda , Khapar.
14	<i>Barilius bendelisis</i> (Hamilton)	Zora	Moderate	Shirpur, Khapar.



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15	<i>Cirrhinus reba</i> (Hamilton)	--	Common	Shirpur, Shindkheda, Taloda.
16	<i>Cyprinus carpio</i> Linnaeus	Combda	Moderate	Shirpur, Prakasha.
17	<i>Garra mullya</i> (Sykes)	Mhya	Moderate	Shirpur, Khapar .
18	<i>Labeo boggut</i> (Sykes)	Ger	Abundance	Shirpur ,Taloda, Khapar, Shindkheda, Sarangkheda,
19	<i>Labeo calbasu</i> (Hamilton)	--	Common	Shirpur, Taloda , Khapar, Sarangkheda.
20	<i>Labeo rohita</i> (Hamilton)	Rahu	Moderate	Shirpur, Khapar.
21	<i>Osteobrama vigorsii</i> (Sykes)	--	Rare	Shindkheda
22	<i>Puntius amphibious</i> (Val)	--	Rare	Prakasha
23	<i>Puntius sarana</i> (Hamilton)	Kundar	Common	Shirpur, Taloda, Khapar, Sarangkheda.
24	<i>Puntius sophore</i> (Hamilton)	Lal-Dhebri	Abundance	Shirpur, Shindkheda, Sarangkheda, Prakasha.
25	<i>Puntius ticto</i> (Hamilton)	Dhebri	Rare	Khapar.
26	<i>Rasbora doniconus</i> (Hamilton)	Zora	Abundance	Shirpur, Taloda, K hapar, Shindkheda, Sarangkheda, Prakasha.
27	<i>Salmostoma bacaila</i> (Hamilton)	Chal	Rare	Sarangkheda.
28	<i>Salmostoma balookee</i> (Sykes)	--	Common	Shirpur, Sarangkheda, Taloda.
<b>Order- Perciformes; Family-Gobiidae.</b>				
29	<i>Glossogobius giuris</i> (Hamilton)	Khavalya	Rare	Shirpur
<b>Order- Osteoglossiformes; Family-Notopteridae.</b>				
30	<i>Notopterus notopterus</i> (Pallas)	Patoda	Common	Shirpur, Taloda, Khapar , Shindkheda.
<b>Order- Siluriformes; Family-Schibeidae.</b>				
31	<i>Clupisoma garua</i> (Hamilton)	Vavadi	Common	Shirpur, Sarangkheda, Khapar.
<b>Order- Siluriformes; Family-Siluridae.</b>				
32	<i>Ompok bimaculatus</i> (Bloch)	Papada	Common	Shirpur, Taloda, Khapar, Shindkheda.

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