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Study of Fish Species Diversity with the River Tamas in Baghelkhand Region of Madhya Pradesh

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ABSTRACT

This study investigates the fish species diversity within the Tamas River, situated in the Baghelkhand region of Madhya Pradesh, India. The Tamas River, a significant tributary of the Ganges, traverses through diverse landscapes, including forested areas, agricultural fields, and human settlements. Despite its ecological importance, comprehensive studies on the fish fauna of this river are lacking, particularly in the context of the Baghelkhand region.

Through systematic field surveys conducted at various locations along the Tamas River, we assessed the fish species composition, abundance, and distribution patterns. Sampling techniques including seine netting, gill netting, and angling were employed to capture fish specimens across different habitats and seasons. Additionally, environmental parameters such as water quality indicators and habitat characteristics were recorded to elucidate their potential influence on fish diversity.

Preliminary findings indicate a rich diversity of fish species inhabiting the Tamas River, including both indigenous and exotic taxa. The study documented the presence of economically important species alongside those of conservation concern. Moreover, spatial and temporal variations in species composition were observed, likely influenced by habitat heterogeneity and anthropogenic activities.

This research contributes valuable insights into the fish biodiversity of the Tamas River within the Baghelkhand region, providing baseline data essential for informed conservation and management strategies. Furthermore, it underscores the importance of preserving the ecological integrity of riverine ecosystems in the face of growing anthropogenic pressures and climate change. Future research endeavors should focus on long-term monitoring initiatives and interdisciplinary approaches to comprehensively understand and safeguard the aquatic biodiversity of the Tamas River and similar river systems in the region.

Introduction

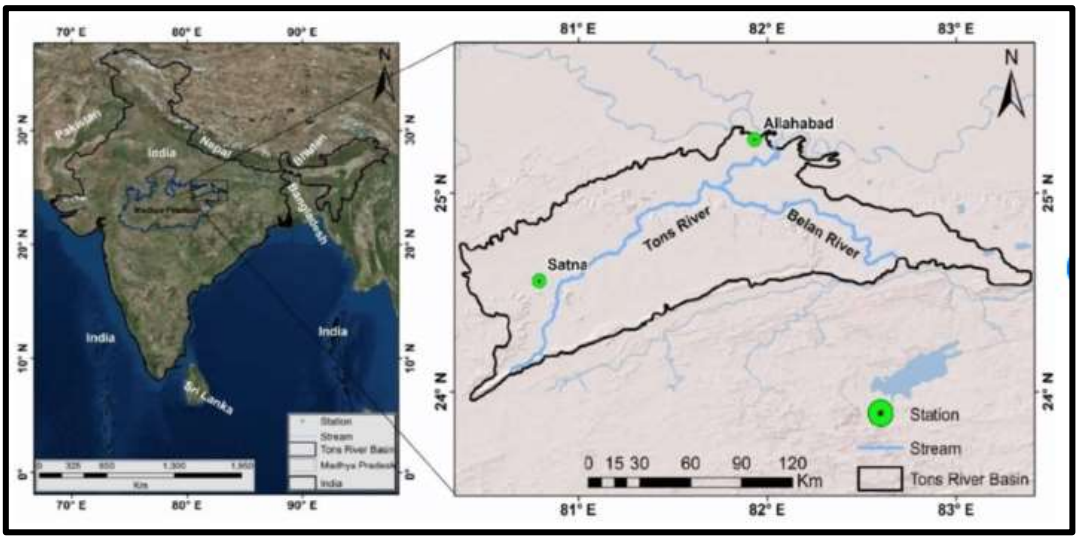
As the Tamsa River cascades down the Rewa Plateau, it embarks on a northward course, where it encounters a dramatic 70-meter drop, famously known as Purwa Falls. Along its journey through the rugged terrain of the plateau, several other remarkable waterfalls grace its tributaries. Among these, Chachai Falls stands out, plummeting 127 meters along the Beehar River, a significant tributary of the Tamsa. Additionally, the Mahana River, another tributary, boasts the majestic Keoti Falls, descending 98 meters amidst picturesque surroundings. Further enhancing the landscape, the Odda River contributes to the spectacle with its impressive Odda Falls, plunging 145 meters before joining the Belan River, which eventually converges with the Tamsa. The river has a diverse habitat and harbors a variety of flora and fauna. More than 70 fish species reside in the river, along with other biotic communities.

Fishes play a crucial role in the economies of numerous nations, serving as a staple food in the diets of many communities (Shukla Pallavi et al., 2013). Documenting the ichthyofauna, or fish species, holds significant importance as it allows for the analysis of their status. Furthermore, such documentation aids in future planning endeavors aimed at enhancing and conserving biodiversity (Bose A.K. et al., 2013).

All human endeavors rely on biological resources, as we utilize plants and animals for sustenance and raw materials across diverse societies. Fish, in particular, hold a direct association with human consumption, serving as a vital source of food. In this investigation, we focused on five perennial water bodies within the Rewa district: the Beehar River, Tons River, Govinddarh Lake, Gorama Dam, and Jarmohra Tank, to evaluate the threats faced by the ichthyofauna in this region.Our study revealed varying degrees of fish species richness across these water bodies, with the Tons River harboring the highest count of 46 species, while the Gorama Dam supported the lowest count of 29 species. Various fishing methods and gears are employed in the region to catch fish, typically targeting commercially valuable species. Unfortunately, during these fishing activities, non-targeted species are often discarded, disregarding their ecological significance.In this study, we aimed to identify declining fish species by gathering information from local residents, fishermen, and through direct observations. This assessment provides insights into the changing dynamics of fish populations in the region, facilitating informed conservation and management strategies.

Location of study Area:

The Tons River originates from Tama-kund nestled within the Kaimur Range, its source situated at an elevation of 610 meters (2,000 feet) above mean sea level. Meandering through the picturesque landscapes of the Satna and Rewa districts in Madhya Pradesh, the Tons River graces the region with its presence. Along its journey, this majestic river creates numerous mesmerizing waterfalls, particularly adorning the Rewa district with their breathtaking beauty. Tons river is only the major river system of Rewa District. It originates from Tamasa Kund (23°59'N latitude and 80°22'E longitudes) near Jhukehi station of Satna district.



Material and methods:

For the study of Ichthyofauna of Tons River, five sample spots were selected one each at Patehra, Jawa, Chilla, Teonthar & Chakghat The fish samples were collected throughout the one year.

To study fish biodiversity, designated sample points were visited regularly to gather specimens. Local individuals and fishermen assisted in the collection process, which sometimes involved experimental fishing. Additionally, valuable information regarding fishery activities was documented during these visits. The collected specimens were preserved in 8% formalin solution for subsequent analysis. Smaller fish were immersed directly in the formalin solution, while larger ones underwent an abdominal incision before preservation. Plastic jars were utilized for both collection and preservation purposes.

Results and Discussion:

Throughout the study, five sampling sites were chosen. The specimens collected during each sampling were identified and listed in Table 1.

S.No	Name of fishes	Family	Local Name	Tons
1	Amblypharyn- godon microlepsi	Cyprinidae	irksyk	+++
2	C. bacaila	Cyprinidae	psyok	+
3	C. laubuca	Cyprinidae	psyok	+
4	C. marulius	Channidae	cdsyk	+
5	C. reba	Cyprinidae	egk'ksj	+
6	Catla catla	Cyprinidae	eksjok	++
7	Chanda nema	Ambassidae	dryk	++
8	Channa gachua	Channidae	fexy	+
9	Channa striatus	Channidae	xksVfj;k	++
10	Chela untrahi	Cyprinidae	jksgw	+++
11	Cirrhinus mrigla	Cyprinidae	Hkxu	+

12	Esomus danricus	Cyprinidae	djkSNj	++
13	Eutropiichthys vacha	Schilbeidae	vjaxh] jb;k-	+
14	Heteropneustes fossilis	Heteropneustidae	dqlhZ	++
15	L. angra	Cyprinidae	dkjh	+++
16	L. bata	Cyprinidae	dkjh	+
17	L. boga	Cyprinidae	iFkjpVh	+++
18	L. boggat	Cyprinidae	dkjh	+
19	L. calbasu	Cyprinidae	iFkjpVh] ckVk	++
20	L. gonius	Cyprinidae	fl?knh	++
21	L. nukta	Cyprinidae	ckjcj	+
22	L. pongusia	Cyprinidae	fl/kjh	+
23	L. potail	Labeoninae	fl/kjh	+
24	Labeo rohita	Cyprinidae	iksVh	++
25	M. aor	Regalecidae	MsMqvk] Mjbyh	+
26	M. cavasius	Bagridae	ty diwj	++
27	M. pancalus	Mastacembelidae	ikonk	+++
28	M. seenghala	Mastacembelidae	ikfM+u	+
29	M. tengra	Bagridae	Vsxjk	++
30	M. vittatus	Bagridae	Vsxjk	++
31	Mastacembelus armatus	Mastacembelidae	Vsxjk	+++
32	N. chitala	Notopteridae	Vsxjk	+
33	Nandus nandus	Nandidae	Vsxjk	++
34	Notopterus	Notopteridae	ykaHkj] xksp	+
35	O. pabda	Siluridae	flyan	++
36	Ompok bimacu- latus	Siluridae	pj[kh	++
37	P. chola	Cyprinidae	fla?kh	++
38	P. chrysopterus	Pomacentridae	ekxqj	+++
39	P. sophore	Cyprinidae	lqtuk	+++
40	P. ticto	Scombridae	lkSj	++
41	P. titus	Scombridae	lkSj	+
42	Rasbora dani- conius	Cyprinidae	lkSj	+
43	Tor tor	Cyprinidae	pdM+h	+
44	Wallago attu	Siluridae	cke	++
45	Xenentodon cancila	Belonidae	cke] funksg	+++

The abundance and species richness were evaluated with the help of following sources:

- Department of Fishery District Rewa (M.P.)
- Local Persons
- Fisher men
- Nearby fish market
- Experimental and direct observations.

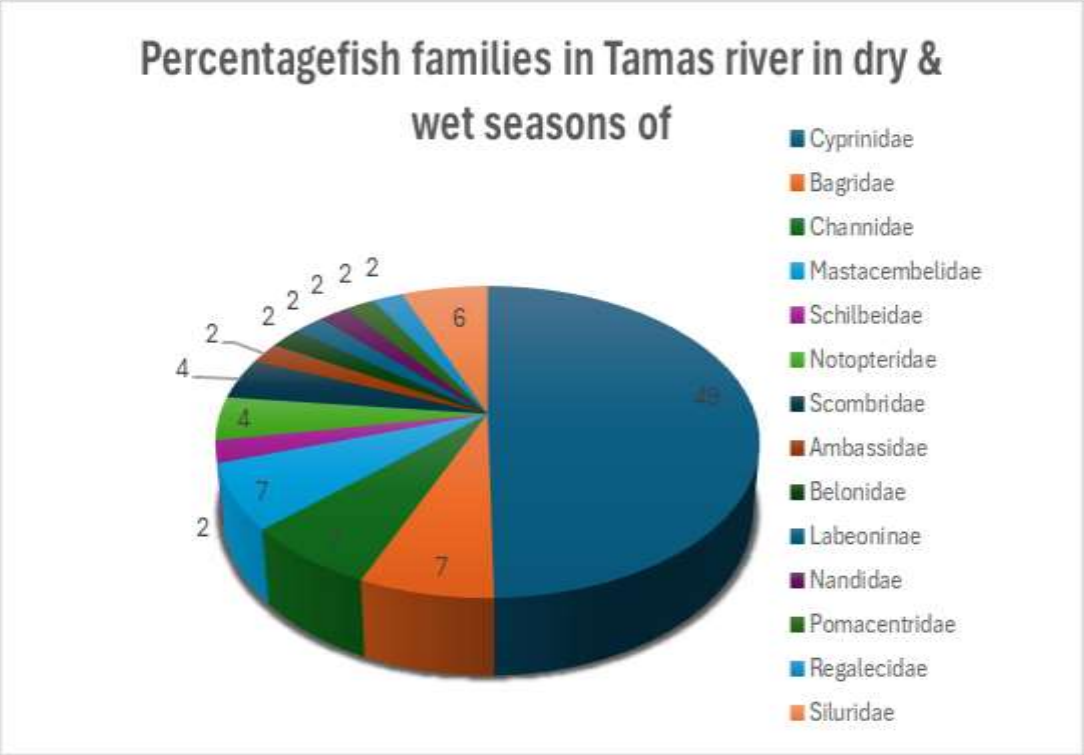
On the basis of collected in formations the distribution and abundance are presented with the help of following abbreviations:

i. + = Low abundance

ii. ++ = Medium abundance

iii. +++ = Rich in species

A total 45 species of fishes recorded from selected sites of Tons river at Vindhya region belonging to 15 families. Among species, family Cyprinidae was the most dominant with 22 species and the percentage composition is 45% of fishes followed by 4 species Bagridae , Channidae, Mastacembelidae, and Schilbeidae 6 % with 3 species, Notopteridae and Scombridae 5% with 2 species, Claridae, Notopteridae and Mastacembellidae 4% with 2 species and Ambassidae , Belonidae, Heteropneustidae, Labeoninae, Nandidae, Pomacentridae, Regalecidae, Schilbeidae, represented with single species of fish in each family with 2% of each. The diversity was low in pre monsoon probably due to the shrinkage of water. Information collected from fisherman communities displayed high decline of fish diversity. Deforestation, water scarcity, pollution,



Family	Number of species	Percentage
Cyprinidae	22	49
Bagridae	3	7
Channidae	3	7
Mastacembelidae	3	7
Schilbeidae	1	2
Notopteridae	2	4
Scombridae	2	4
Ambassidae	1	2

Belonidae	1	2
Labeoninae	1	2
Nandidae	1	2
Pomacentridae	1	2
Regalecidae	1	2
Siluridae	3	6

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