A Study on Faunal Diversity of Tighra Reservoir, Gwalior, M.P

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Abstract: Biodiversity is an essential component of ecosystem stability and environmental sustainability. Freshwater reservoirs support a wide range of fauna, including fish, amphibians, reptiles, and birds. The present study was conducted to document the faunal diversity of Tighra Reservoir, located near the Gwalior district of Madhya Pradesh, India. The study was carried out during the period from January 2024 to December 2025. Field surveys and observational methods were used to identify various faunal species present in the reservoir ecosystem. A total of 113 faunal species were recorded, including 48 fish species, 7 amphibian species, 4 reptile species, and 54 bird species belonging to several orders and families. The fish diversity was dominated by the family Cyprinidae, while avian diversity was mainly represented by water birds and migratory species. The conservation status of species was assessed using the IUCN Red List, which revealed that most species belong to the Least Concern (LC) category, while a few species, such as Golden Mahseer, Common Pochard, and Wallago attu, fall under threatened categories. The findings highlight the ecological importance of Tighra Reservoir as a significant habitat for aquatic and wetland fauna and emphasise the need for proper conservation and management practices.

INTRODUCTION

Biodiversity refers to the variety of living organisms present in a particular ecosystem, including plants, animals, and microorganisms. It plays a crucial role in maintaining ecological balance, supporting ecosystem services, and sustaining environmental health (1). Aquatic ecosystems such as rivers, lakes, and reservoirs are known for supporting diverse faunal communities (2).

Reservoirs provide suitable habitats for many aquatic and semi-aquatic organisms, including fish, amphibians, reptiles, and birds. These organisms form complex food webs and contribute to nutrient cycling and ecological stability (3). The diversity of fauna in aquatic ecosystems is influenced by several factors, such as water quality, vegetation, climate, and availability of food resources (4).

Tighra Reservoir is one of the major freshwater bodies located near the Gwalior district in Madhya Pradesh. Apart from being an important source of drinking water and irrigation, the reservoir supports rich biodiversity. The wetland areas around the reservoir provide ideal habitats for aquatic organisms and migratory birds (5).

Studies on faunal diversity are essential for understanding the species composition, ecological relationships, and conservation status of organisms in a particular habitat. Such studies also help in monitoring environmental changes and developing biodiversity conservation strategies (6).

The present study aims to document and analyse the faunal diversity of Tighra Reservoir, including fishes, amphibians, reptiles, and birds during the period from January 2024 to December 2025.

STUDY AREA

Tighra Reservoir is located near the Gwalior district in the state of Madhya Pradesh, India. The reservoir was constructed on the Sank River and serves as an important water source for drinking and irrigation purposes in the region.

The reservoir area consists of different ecological habitats, including:

- Open water bodies
- Shallow marshy areas
- Shoreline vegetation
- Wetland patches

These habitats provide favourable conditions for various aquatic organisms and migratory birds. The climatic conditions of the region include hot summers, moderate monsoon rainfall, and cool winters, which influence the seasonal occurrence of many species.

OBJECTIVES OF THE STUDY

The main objectives of the present study were:

1. To document the faunal diversity of Tighra Reservoir.
2. To identify fish, amphibian, reptile, and bird species present in the reservoir ecosystem.
3. To analyse the conservation status of recorded species based on the IUCN Red List.

4. To understand the ecological importance of Tighra Reservoir in supporting biodiversity.

MATERIALS AND METHOD

The present investigation was carried out over a period of two years, from January 2024 to December 2025.

Sampling and Observation Methods

The faunal diversity of Tighra Reservoir was studied using the following methods:

- Direct field observation
- Photographic documentation
- Species identification using standard taxonomic guides
- Interaction with local fishermen for fish identification

Bird species were recorded using binocular observation and field photography. Amphibians and reptiles were identified based on morphological characteristics and habitat observations.

Species Identification

Species were identified using standard reference books and taxonomic keys related to fish, amphibians, reptiles, and birds.

Conservation Status

The conservation status of recorded species was determined according to the IUCN Red List Categories, including:

- LC – Least Concern
- NT – Near Threatened
- VU – Vulnerable
- EN – Endangered

RESULTS

Fish Diversity

A total of 48 fish species belonging to several orders and families were recorded from Tighra Reservoir. The dominant order was Cypriniformes, particularly the family Cyprinidae.

S.no.	Order	Family	Scientific Name	Common Name	IUCN
1.	Cypriniformes	Cyprinidae	Labeo Catla	Catla	LC
2.			*Cirrhinus mrigala*	Mrigal	LC
3.			*Cirrhinus reba*	Reba carp	LC
4.			*Labeo rohita*	Rohit	LC
5.			*Labeo calbasu*	Black rohu	LC
6.			Labeo gonius	Kuria Labeo	LC
7.			Labeo boggut	Boggut labeo	LC
8.			Labeo bata	Minor carp	LC
9.			Labeo fimbriatus	Fringed-lipped peninsula carp	LC
10.			Cyprinus carpio	Eurasian carp	VU
11.			Puntius sarana	Olive Barb Peninsular	LC
12.			Puntius ticto	tic tac-toe barb	LC
13.			Puntius chonchonius	Rosy barb	LC
14.			Puntius sophore	Spotfin Swamp barb	LC

15.			Tor putitora	Golden Mahseer	EN
16.			Osteobrama cotio	Hafo	LC
18.		Danionidae	Salmostoma bacaila	Large Razorbelly minnow	LC
19.			Salmostoma clupeoides	Bloch Razorbelly minnow	LC
20.			Rasbora daniconius	Slender Barb	LC
21.			Laubuca laubuca	Indian glass-barb	LC
22.			Amblypharyngodon mola	Mola Carplet	LC

23		Xenocyprididae	Ctenopharyngodon Idella	Grass carp	LC
24.			hypophthalmichthys molitrix	Silver carp	NT
25	Piciformes	Capitonidae	Puntius amphibious	scarlet-banded barb	VU
26.		Channidae	Channa marulius	Great Snakehead	LC
27.			Channa striata	Snakehead Murrel	LC
28.			Channa punctata	Spotted Snakehead	LC
29.			Channa gachua	Dwarf Snakehead	LC
30.		Ambassidae	Parambassis ranga	Indian glassfish	LC
31.	Beloniformes	Belonidae	Xenentodon cancila	Garfish	LC
32.	Synbranchiformes	Mastacembelidae	Mastacembelus armatus	Ray-finned fishes	LC
33.			Mastacembelus pancalus	Indian Spiny eel	LC
34.	Osteoglossiformes	Notopteridae	Notopterus chitala	Clown Knifefishes	NT
35.			Notopterus	Bronze featherback	LC
36.	Siluriformes	Bagridae	Sperata seenghala	Giant river catfish	LC
37.			Sperata aorella	Bagrid Catfish	LC
38.			Mystus seenghala	Giant river catfish	LC
39.			Rita rita	Badrid Catfish	LC
40.			Mystus bleekeri	Singorah	LC
41.			Mystus cavasius	Kinger	LC
42.		Siluridae	Wallago attu	Shark Catfish	VU
43.			Ompok bimaculatus	Indian butter-catfish	NT
44.		Clariidae	Clarias batrachus	Walking Catfish	LC
45.		Heteropneustes	Heteropneustes fossilis	Stinging Catfish	LC
46.	Tetraodontiformes	Monacanthidae	Thamnaconus modestus	Black Scraper g	LC
47.	Gobiiformes	Gobiidae	Glossogobius giuris	Bareye Goby	LC
48.	Clupeiformes	Clupeidae	Gudusia chapra	Indian River Shad	LC

Most fish species recorded belong to Least Concern, while a few species fall under Vulnerable and Near Threatened categories.

Amphibian Diversity

The study recorded 7 amphibian species belonging mainly to the order Anura.

Important amphibian species include:

S.no.	Order	Family	Scientific Name	Common Name	IUCN
1	Anura	Ranidae	Rana Tigrina	Bullfrog	NA
		Hylidae	Hyla	Tree frog	NA
		Phrynobatrachidae	Phrynobatrachus krefftii	Toad	EN
		Bufonidae	Bufo	Frog	NA
			Duttaphrynus melanostictus	black-spined toad	LC
		Dicroglossidae	euphlyctis tigerina	Indian Bullfrog	LC
			Euphlyctis cyanophlyctis	skittering frog	LC
	Urodela	Ambystomatidae	Ambystoma tigrinum	Tiger Salamander	LC

Amphibians play a vital role as bioindicators of environmental health due to their sensitivity to habitat changes.

Reptile Diversity

A total of 4 reptile species were recorded from the reservoir ecosystem.

Important reptiles include:

S.no.	Order	Family	Scientific Name	Common Name	IUCN
	Testudines	Geoemydidae	Tricarinate Hill Turtle	Three-Keel Land Turtle	EN
		Trionychidae	Trionychidae	softshell turtles	LC
	Squamata	Colubridae	Xenochrophis	Keelback	LC
		Homalopsidae	Enhydris	Rainbow mud Snake	LC

These reptiles contribute to the aquatic food chain and help regulate populations of fish and amphibians.

Avian Diversity

A total of **54 bird species** were recorded from Tighra Reservoir, belonging to different families and orders.

The bird community includes:

S.no.	Order	Family	Scientific Name	Common Name	IUCN
1	Anseriformes	Anatidae	Aythya farina	Common Pochard	VU
2			Aythya fuligula	Tufted Duck	LC
3			Anas acuta	Northern Pintail	LC
4			Anas poecilorhyncha	Indian Spot-billed Duck	LC

5			Maraca strepera	Gadwall	LC
6			Spatula clypeata	Northern Shoveler	LC
7			Netta rufina	Red Crested Pochard	LC
8			Nettapus coromandelianus	Cotton Pygmy Goose	LC
9			Sarkidiornis melanotos	Comb duck	LC
10			Anas crecca	Common teal	LC
11			Anser anser	Greylag Goose	LC
12			Dendrocygna javanica	Lesser Whistling-duck	LC
13			Anas platyrhynchos	Mallard	LC
14			Tadorna ferruginea	Ruddy Shelduck	LC
15			Anser indicus	Bar-headed Goose	LC
16			Tadorna tadorna	Common Shelduck	LC
17	Pelecaniformes	Threskiornithidae	Pseudibis papillosa	Red-naped Ibis	LC
18			Ardea intermedia	Intermediate Egret	LC
19			Platalea leucorodia	Eurasian spoonbill	LC
20			Egretta garzetta	Little Egret	LC
21			Bubulcus ibis	Cattle Egret	LC
22			Ardea purpurea	Purple Heron	LC
23			Ardeola grayii	Indian Pond-Heron	LC
24			Nycticorax nycticorax	Night Heron	LC
25		Ardeidae	Ardea cinerea	Grey Heron	LC
26			Ardea alba	Great White Egret	LC
27		Threskiornithidae	Eudocimus albus	White Ibis	LC
28	Ciconiiformes	Ciconiidae	Ephippiorhynchus asiaticus	Black Necked Stork	NT
29			Mycteria leucocephala	Painted Stork	NT
30			Anastomus oscitans	Asian Openbill	LC
31			Ciconia episcopus	Woolly-necked stork	VC
32			Ciconia nigra	Black Stork	LC
33	Charadriiformes	Scolopacidae	Tringa ochropus	Green Sandpiper	LC

34			Tringa totanus	Common Redshank	LC
35			Actitis hypoleucos	Common Sandpiper	LC
36			Calidris minuta	Little Stint	LC
37		Jacanidae	Hydrophasianus chirurgus	Pheasant-tailed Jacana	LC
38			Metopidius indicus	Bronze-winged Jacana	LC
39		Charadriidae	Charadrius dubius	Little Ringed Plover	LC
40			Vanellus indicus	Red-wattled Lapwing	LC
41		Burhinidae	Burhinus oedicnemus	Eurasian Thick-knee	LC
42		Laridae	Larus marinus	Great Black-backed Gull	LC
43		Recurvirostridae	Himantopus himantopus	Black-winged Stilt	LC
44	Gruiformes	Rallidae	Fulica atra	Common Coot	LC
45			Amaurornis phoenicurus	White-breasted Waterhen	LC
46			Gallinula chloropus	Common Moorhen	LC
47		Gruidae	Antigone Antigone	Sarus Crane	VC
48	Coraciiformes	Alcedinidae	Ceryle rudis	Pied Kingfisher	LC
49			Halcyon smyrnensis	White-breasted Kingfisher	LC
50			Alcedo atthis	Common Kingfisher	LC
51	Suliformes	Phalacrocoracidae	Microcarbo niger	little cormorant	
52			Phalacrocorax carbo	Great Cormorant	
53		Anhingidae	Anhinga rufa	Darter	
54	Passeriformes	Motacillidae	Motacilla alba	White Wagtail	

The presence of migratory species indicates that Tighra Reservoir serves as an important wintering ground for migratory birds.

DISCUSSION

The results of the present study reveal that Tighra Reservoir supports rich faunal diversity. The presence of a large number of fish species indicates favourable ecological conditions for aquatic life.

The dominance of the Cyprinidae family suggests suitable environmental conditions for carp fishes, which are common in Indian freshwater ecosystems.

Bird diversity recorded during the study highlights the importance of the reservoir as a wetland habitat. Many migratory birds were observed during the winter months, indicating that the reservoir acts as a seasonal refuge.

Amphibians and reptiles recorded in the study contribute significantly to ecological balance and act as important components of the aquatic ecosystem.

However, anthropogenic activities such as fishing pressure, water pollution, and habitat disturbance may affect the biodiversity of the reservoir. Therefore, effective conservation and sustainable management practices are necessary.

CONCLUSION

The present study documented a rich faunal diversity in Tighra Reservoir during the period January 2024 to December 2025.

The study recorded:

- 48 fish species
- 7 amphibian species
- 4 reptile species
- 54 bird species

The majority of species belong to the Least Concern category, while a few species are categorised as Vulnerable, Near Threatened, or Endangered.

The results highlight the ecological importance of Tighra Reservoir as an important habitat for aquatic fauna and migratory birds. Continuous monitoring and conservation efforts are necessary to protect and maintain the biodiversity of the reservoir ecosystem.

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