

DIVERSITY OF AQUATIC FAUNA IN THAKABAI LAKE AT SINDEWAHI TEHSIL, DISTRICT CHANDRAPUR (M.S.) INDIA

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ABSTRACT- Comprehensive study was conducted to evaluate the biodiversity, species composition, and ecological structure of aquatic and semi-aquatic fauna in Thakabai Lake, Sindewahi located in Chandrapur District, Maharashtra, India. Field surveys carried out across four sampling stations representing distinct microhabitats revealed a total of 27 species belonging to 19 families and 14 orders. The documented faunal assemblage comprised Crustacea (1 species, 3.70%), Aquatic Insects (3 species, 11.11%), Mollusca (4 species, 14.81%), Ichthyofauna (8 species, 29.63%), Amphibians (2 species, 7.41%), and Avifauna (9 species, 33.33%). Presence of diverse trophic groups indicates that Thakabai Lake supports a structurally complex and ecologically functional aquatic food web. However, rising anthropogenic activities, agricultural runoff, and littoral habitat degradation pose potential threats to the long-term sustainability of the lake ecosystem. The baseline empirical data generated from this investigation provides vital scientific insights for formulating sustainable fishery management practices, biodiversity conservation strategies, and habitat restoration efforts in the freshwater bodies of the Vidarbha region.

Keywords: Aquatic Fauna, Biodiversity, Thakabai Lake, Conservation

1. INTRODUCTION

Ecosystems, particularly lentic water bodies such as lakes, ponds, and reservoirs, host a disproportionate share of global aquatic biodiversity. These water bodies play a critical role in maintaining regional ecological stability, regulating biogeochemical cycles, supporting food webs, and providing vital socio-economic services to rural and semi-urban communities. Aquatic fauna comprising zooplankton, benthic macroinvertebrates, and ichthyofauna (fishes) serve as sensitive biological indicators of ecosystem health, water quality, and environmental change. A diverse and structurally balanced aquatic faunal community reflects a resilient aquatic environment capable of sustaining both wild populations and commercial fisheries. The Vidarbha region of Maharashtra, specifically the Chandrapur district, is endowed with numerous natural and man-made freshwater lakes and irrigation tanks. Among these local aquatic resources, Shindewahi Lake functions as a primary water body in the Sindewahi region, fulfilling crucial roles in local agricultural irrigation, pisciculture, groundwater recharge, and supporting local biodiversity. The lake hosts varied microhabitats ranging from shallow littoral zones dominated by macrophytes to open limnetic zones which collectively provide feeding, breeding, and nursery grounds for a wide array of aquatic organisms. Despite the ecological and socio-economic importance of local lentic ecosystems in Central India, many water bodies are experiencing degradation due to anthropogenic pressures, including agricultural runoff, domestic sewage input, siltation, over-exploitation of fisheries, and habitat fragmentation. To design effective conservation strategies and sustainable fishery management plans, establishing baseline scientific documentation of the existing aquatic fauna is essential. Systematic inventories of species richness, spatial-temporal distribution, and relative abundance of aquatic organisms in Sindewahi Lake remain limited. All these aquatic faunal diversity well documented by Ali, S. (2002), Daniel, J. C. (2002), Grimmett, et al (2011), Jayaram, K. C. (2010), Ramakrishna, & Dey, A. (2007), Rao, N. V. S. (1989), Subramanian, K. A., & Sivaramakrishnan, K. G. (2007), Talwar, P. K., & Jhingran, A. G. (1991), Tonapi, G. T. (1980). Therefore, the present investigation was undertaken to evaluate the diversity, community structure, and seasonal variations of the aquatic fauna in Sindewahi Lake. This study provides an updated empirical dataset on faunal composition with particular emphasis on ichthyofaunal diversity and macroinvertebrate distribution and assesses the ecological health of the lake in relation to local environmental factors. The findings from this research aim to serve as a baseline for future ecological monitoring, biodiversity conservation efforts, and the sustainable utilization of aquatic resources in the district.

2. MATERIALS AND METHODS

Thakabai Lake is a Lake which is located in Sindewahi, Dist.Chandrapur, Maharashtra and nearby to Kargata, Gadmausi and Bheokund. It is also nearby Agriculture Training (PKV) Centre Sindewahi . The Area of this lake is approximately in 25 acres. The

latitude of Thakabai Lake is 20.30931, and the longitude is 79.69171 with the GPS coordinates of 20° 18' 33.51" N and 79° 41' 30.15" E. Sampling of fauna was done from the selected water bodies in study area. Fish samples were collected on the bank of lake with the help of fisherman's community, for the purpose of collection of samples continuous contacts were made with the fisherman community in the study area. For observation of diversity of fishes fish markets from rural areas and towns are also used. Samples were photographed and they were Identified with the help of different keys.

3. OBSERVATION

Fishes and birds represented the most dominant biotic components of the wetland ecosystem. Among ichthyofauna, the order Cypriniformes was predominant (representing 50% of total fish species), with *Labeo rohita*, *Catla catla*, and *Cirrhinus mrigala* forming the primary commercial catch. Gastropods of the family Thiaridae (*Melanoides tuberculata*) showed significant abundance along the littoral margins, while Coleoptera (*Rhantus suturalis* and *Paederus fuscipes*) dominated the aquatic insect community. The avifauna was heavily represented by wading and water-dependent species belonging to Pelecaniformes (4 species) and Charadriiformes (2 species). Field surveys carried out across four sampling stations representing distinct microhabitats revealed a total of 27 species belonging to 19 families and 14 orders. The documented faunal assemblage comprised Crustacea (1 species, 3.70%), Aquatic Insects (3 species, 11.11%), Mollusca (4 species, 14.81%), Ichthyofauna (8 species, 29.63%), Amphibians (2 species, 7.41%), and Avifauna (9 species, 33.33%).

Table 1: Diversity of Aquatic Fauna in Thakabai Lake

Sr No	Major Group	Scientific Name	Common Name	Family	Order
1	Crustacea	<i>Fenneropenaeus indicus</i>	Indian White Prawn	Penaeidae	Decapoda
2	Insects	<i>Rhantus suturalis</i>	Predaceous Diving Beetle	Dytiscidae	Coleoptera
3	Insects	<i>Paederus fuscipes</i>	Rove Beetle	Staphylinidae	Coleoptera
4	Insects	<i>Ranatra filiformis</i>	Water Scorpion	Nepidae	Hemiptera
5	Mollusca	<i>Bellamya bengalensis</i>	Freshwater Snail	Viviparidae	Architaenioglossa
6	Mollusca	<i>Melanoides tuberculata</i>	Red-rimmed Melania	Thiaridae	Sorbeoconcha
7	Mollusca	<i>Indoplanorbis exustus</i>	Asian Apple Snail / Ramshorn	Planorbidae	Hygrophila
8	Mollusca	<i>Lymnaea luteola</i>	Freshwater Pond Snail	Lymnaeidae	Hygrophila
9	Fishes	<i>Labeo rohita</i>	Rohu	Cyprinidae	Cypriniformes
10	Fishes	<i>Cirrhinus mrigala</i>	Mrigal Carp	Cyprinidae	Cypriniformes
11	Fishes	<i>Catla catla</i>	Catla	Cyprinidae	Cypriniformes
12	Fishes	<i>Puntius sophore</i>	Pool Barb	Cyprinidae	Cypriniformes
13	Fishes	<i>Clarias magur (C. batrachus)</i>	Magur	Clariidae	Siluriformes
14	Fishes	<i>Wallago attu</i>	Basa	Heteropneustidae	Siluriformes
15	Fishes	<i>Rasbora argyroteenia</i>	Silver rasbora	Donionidae	Cypriniformes
16	Fishes	<i>Rasbora daniconius</i>	Slender Rasbora	Donionidae	Cypriniformes
17	Amphibians	<i>Polypedatus megacephalus</i>	Spot legged tree frog	Dicroglossidae	Anura
18	Amphibians	<i>Polypedates maculatus</i>	Indian Tree Frog	Rhacophoridae	Anura
19	Birds	<i>Charadrius dubius</i>	Plover	Charadriidae	Charadriiformes
20	Birds	<i>Sterna aurantia</i>	Indian river tern	Laridae	Charadriiformes
21	Birds	<i>Threskiornis melanocephalus</i>	Ibises	Threskiornithidae	Pelecaniformes
22	Birds	<i>Pseudibis papillosa</i>	Red-naped Ibis	Threskiornithidae	Pelecaniformes
23	Birds	<i>Ardea cinerea</i>	Grey heron	Ardeidae	Pelecaniformes
24	Birds	<i>Ardea alba</i>	Great egret	Ardeidae	Pelecaniformes
25	Birds	<i>Streptopelia decaocto</i>	Eurasian collared dove	Columbidae	Columbiformes
26	Birds	<i>Anthus rufulus</i>	Paddyfield pipit	Motacillidae	Passeriformes
27	Birds	<i>Anser anser</i>	Goose	Anatidae	Anseriformes

Table 2 : Taxonomic Summary of Aquatic Fauna Documented at Thakabai Lake

Sr No	Major Group	Orders	Families	Species Count	Relative Abundance (%)	Dominant Taxon / Family
1	Crustacea	1	1	1	3.70%	Penaeidae
2	Insects	2	2	3	11.11%	Coleoptera
3	Mollusca	1	4	4	14.81%	Thiaridae
4	Fishes	4	5	8	29.63%	Cypriniformes
5	Amphibians	1	1	2	7.41%	Anura
6	Birds	5	6	9	33.33%	Pelecaniformes
7	Total	14	19	27	100.00%	----

4. RESULTS AND DISCUSSION

The present investigation reveals a rich biodiversity inhabiting Thakabai Lake , Chandrapur district, Maharashtra. A total of 27 species belonging to major aquatic and semi-aquatic taxonomic groups were recorded (Fig. 1- Fig- 26). The faunal assemblage comprised 1 species of Crustacea (3.70%), 3 species of Insects (11.11%), 4 species of Mollusca (14.81%), 8 species of Fishes (29.63%), 2 species of Amphibians (7.41%), and 9 species of Avifauna (33.33%) (Table 1). Fishes and birds collectively constituted the majority of the recorded biodiversity, highlighting the ecological capability of the lake to support higher trophic levels.

Photographic Plate 1



Fig. 1: *Fenneropenaeus indicus*
(Indian Prawn)



Fig. 2: *Rhanthus suturellus*
(Ranthus)



Fig. 3: *Paederus fuscipes*
(Rove Beetle)



Fig. 4: *Ranatra filiformis*
(Water Scorpion)



Fig. 5: *Indoplanorbis exustus*
(Asian Apple Snail)



Fig. 6: *Melanoides tuberculata*
(Red rimmed melania)

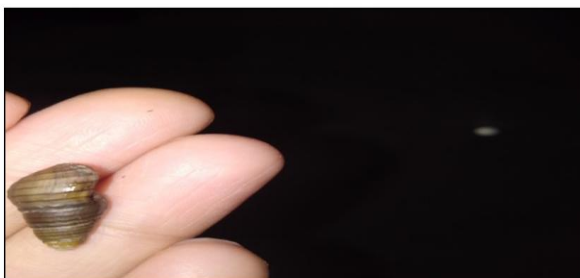


Fig. 7: *Lymnaea luteola*
(Pond Snail)



Fig. 8: *Bellamya bengalensis*
(Freshwater Snail)



Fig. 9: *Labeo rohita*
(Rohu)



Fig. 10: *Cirrhinus mrigala*
(Mrigal Carp)

Photographic Plate 2



Fig. 11: *Catla catla*
(Catla)



Fig. 12: *Puntius sophore*
(Pool Barb)

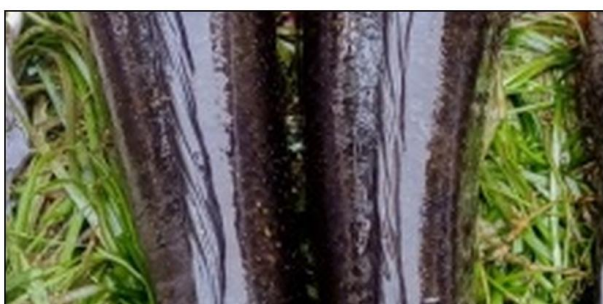


Fig. 13: *C. batrachus*
(Magur)



Fig. 14: *Wallago attu*
(Basa)



Fig. 15: *Rasbora argyroteenia*
(Silver rasbora)



Fig. 16: *Rasbora daniconius*
(Slender Rasbora)



Fig. 17: *Polypedatus megacephalus*
(Spot legged tree frog)



Fig. 18: *Polypedatus maculatus*
(Indian or Chaunam tree frog)



Fig. 19: *Charadrius dubius*
(Plover)



Fig. 20: *Sterna aurantia*
(Indian river tern)

Photographic Plate 3

Fig. 21: *Threskiornis melanocephalus*
(Ibises)



Fig. 22: *Pseudibis papillosa*
(Red naped ibises)



Fig. 23: *Ardea cinerea*
(Grey heron)



Fig. 24: *Ardea alba*
(Great egret)



Fig. 25: *Streptopelia decaocto*
(Eurasian collared dove)



Fig. 26: *Anthus rufulus*
(Paddyfield pipit)

1. Crustacea

The crustacean fauna in Thakabai Lake was represented by a single decapod species, *Fenneropenaeus indicus* (Indian white prawn), belonging to the family Penaeidae. The occurrence of *F. indicus* in the sampling sites indicates its ecological adaptability and commercial value for local artisanal fisheries. The dominance and persistence of penaeid species in coastal and inland modified saline/brackish environments of Maharashtra have been well documented. Similar findings regarding the distribution and commercial importance of penaeid prawns were reported by Saksena et al. (2008) in the Kharland ponds of Ratnagiri, Maharashtra.

2. Aquatic Insects

Aquatic insects were represented by 3 species spanning 2 orders. The order Coleoptera emerged as the dominant group, primarily represented by *Rantus* spp. (Dytiscidae) and Rove beetles (Staphylinidae). Aquatic beetles act as key bioindicators of water quality and secondary consumers in freshwater food webs. The prevalence of coleopterans suggests the presence of rich littoral vegetation and organic substrate along the lake margins. This structural pattern aligns with the findings of Wankhade et al. (2014), who observed a similar dominance of Coleoptera while assessing insect diversity at the Sawanga-Vithoba Lake in Amravati District, Maharashtra.

3. Mollusca

A total of 4 molluscan species, all belonging to the class Gastropoda, were recorded during the study period. These species were distributed across four distinct families: Viviparidae, Thiaridae, Lymnaeidae, and Planorbidae. Among these, the family Thiaridae exhibited maximum dominance, with empty shells heavily scattered along the littoral margins of the lake. Thiarids are benthic

detritivores that thrive in substrates rich in organic matter and microalgal mats. Their high population density is consistent with the observations of Misar et al. (2020), who reported a similar dominance of gastropod families—specifically Thiariidae—in Junona Lake, Chandrapur District, Maharashtra.

4. Ichthyofauna

The fish community represented the dominant aquatic vertebrate group, comprising 8 species distributed across 4 orders, 5 families, and 7 genera. The order Cypriniformes was the most dominant taxonomic group, accounting for 4 species (50% of total fish species), followed by Siluriformes and Perciformes. The structural dominance of cyprinids is a hallmark of tropical freshwater ecosystems in the Deccan Plateau, driven by their wide ecological tolerance and omnivorous feeding habits. These results correlate well with earlier freshwater surveys; for instance, Jadhav and Bhosale (1996) recorded a cyprinid-dominated fish fauna (13 species) in the Bhima River at Pedgaon, Ahmednagar District, Maharashtra.

5. Amphibians

Amphibian diversity was represented by 2 species, both belonging to the order Anura and family Dicroglossidae / Rhacophoridae. The presence of anurans underlines the availability of healthy ecotones (land-water interface) required for their biphasic life cycles. Amphibians serve as critical link species between aquatic and terrestrial food webs. The recorded species composition is supported by the observations of Wagh et al. (2017), who noted similar anuran distribution patterns across varied freshwater habitats in the Amravati District.

6. Avifauna

A total of 9 avian species spread across 5 orders were documented utilizing the lake for foraging, resting, and nesting. The order Pelecaniformes (waterbirds such as herons and egrets) was the most dominant, represented by 4 species. Order Charadriiformes (waders) was represented by 2 species, while Anseriformes, Columbiformes, and Passeriformes were represented by 1 species each. The high representation of Pelecaniformes and Charadriiformes highlights the lake's functional status as a wetland habitat offering abundant prey base (fishes, molluscs, and insects) and shallow wading areas. Broadly similar avifaunal patterns in freshwater wetlands were recorded by Lad and Patil (2015) in the wetlands of Thane District, Maharashtra.

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