

# ICHTHYOFAUNAL DIVERSITY OF KORAPUZHA RIVER, CALICUT, KERALA

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## ABSTRACT

In the present study, an attempt has been made to understand the diversity of freshwater fishes of Korapuzha River along with their conservation status, as far as possible. Eighteen species of fishes belonging to 8 orders and 13 families were recorded. The order with diverse species composition is Siluriformes (4 species, and 3 families), followed by Cypriniformes (3 species and 1 family) and Perciformes (3 species and 3 families). The most diverse family is Cyprinidae with 3 species, followed by Bagridae (2 species), Cichlidae (2 species) and Clupeidae (2 species). Out of the 18 riverine fishes collected from the study area, *Horabagrus brachysoma* and *Hyporhamphus xanthopterus* are under vulnerable category.

**Key words:** Freshwater fish, Diversity, Biodiversity richness, Korapuzha River.

## INTRODUCTION

Water is the most significant building block of nature without which life can't exist. As the aquatic ecosystem is highly significant, it plays a vital role in ecosystems over the planet (Smith, 1980). Fishes are the most affordable primary source of protein for nearly 1 billion people across the globe making it the most important aquatic natural product. Fishes form one of the most significant form of vertebrates which influences life in numerous ways (Shinde et al., 2009). India is rich in diverse varieties of marine and freshwater fishes (Gopi and Mishra, 2015). India constitutes nearly 10% of the total number of fishes from the fresh and marine waters in the world. (Chandra et al., 2020; Fricke et al., 2021). Around 750 species of freshwater taxa have been recorded in India, out of which 350 taxa are labelled as endemic in Western Ghats. (Jayaram, 1981). Western Ghats comprises 85 endemic and 15 taxa in adjacent areas.

The present study was carried out to investigate the ichthyofaunal diversity in Korapuzha River of Calicut district and to measure the morphometric and meristic characters of the specimens collected. The IUCN conservation status was also evaluated.

## MATERIALS AND METHODS

The study was undertaken as an attempt to understand and measure the status of diversity of fishes in Korapuzha River in Calicut district, Kerala. Korapuzha River is a short river of 40 km, with a drainage area of 624 km<sup>2</sup>, flowing through the Kozhikode district of the state Kerala in India. It is also known as Elathur River. It is formed by the confluence of two streams, Akalapuzha and Punoor puzha which originate in the mountains of Wayanad district. The Korapuzha empties into the Arabian Sea at Elathur.

One to ten specimens of eighteen species of fishes were collected from different sites of Korapuzha river viz. Elathur, Pavayil and Atholi for a period of 5 months from October 2020 to February 2021. Fishes were caught using stake net and cast net by local fishermen. The specimens were photographed and preserved in 10% formalin. The species were identified based on the key given by Talwar and

Jhingran (1991) and Jayaram (1999, 2010). The combination of measurements and counts used follows Hubbs and Lagler 1947. The morphometric measurements were done with the aid of ruler to the nearest centimeters and the meristic characters were counted. A total of 15 morphometric measurements and 4 meristic counts were taken for each specimen.

Table 1: List of fish species collected from the Korapuzha River

Sl. No.	ORDER	FAMILY	SCIENTIFIC NAME	COMMON NAME	IUCN CONSERVATION STATUS
1	Siluriformes	Bagridae	<i>Horabagrus brachysoma</i>	Yellow catfish	Vulnerable
2	Siluriformes	Bagridae	<i>Mystus armatus</i>	Long whiskered Mystus	Least Concern
3	Siluriformes	Ariidae	<i>Arius sp.</i>	White catfish	--
4	Siluriformes	Heteropneustidae	<i>Heteropneustes fossilis</i>	Asian stinging catfish	Least Concern
5	Cypriniformes	Cyprinidae	<i>Dawkinsia filamentosa</i>	Blackspot barb	Least Concern
6	Cypriniformes	Cyprinidae	<i>Amblypharyngodon melettinus</i>	Attentive carplet	Least Concern
7	Cypriniformes	Cyprinidae	<i>Devario malabaricus</i>	Malabar danio	Least Concern
8	Perciformes	Ambassidae	<i>Ambassis gymnocephalus</i>	Bald glassy perchlet	Least Concern
9	Perciformes	Lutjanidae	<i>Lutjanus indicus</i>	NA	Not Evaluated
10	Perciformes	Scatophagidae	<i>Scatophagus argus</i>	Spotted scat	Least Concern
11	Anabantiformes	Anabantidae	<i>Anabas testudineus</i>	Climbing perch	Least Concern
12	Anabantiformes	Channidae	<i>Channa striata</i>	Chevron snakehead	Least Concern
13	Cichliformes	Cichlidae	<i>Etroplus suratensis</i>	Pearl spot	Least Concern
14	Cichliformes	Cichlidae	<i>Pseudetroplus maculatus</i>	Spotted Etroplus	Least Concern
15	Clupeiformes	Clupeidae	<i>Nematolosa nasus</i>	Gizzard shad	Least Concern
16	Clupeiformes	Clupeidae	<i>Dayella malabarica</i>	Day's round herring	Least Concern
17	Carangiformes	Carangidae	<i>Caranx heberi</i>	Blacktip trevally	Least Concern
18	Beloniformes	Hemiramphidae	<i>Hyporhamphus xanthopterus</i>	Red-tipped halfbeak	Vulnerable

Figures of fish species collected from Korapuzha River



*Anabas testudineus*



*Hyporhamphus xanthopterus*



*Pseudetroplus maculatus*



*Dawkinsia filamentosa*



*Dayella malabarica*



*Scatophagus argus*



*Horabagrus brachysoma*



*Channa striata*



*Amblypharyngodon melettinus*



*Devario malabaricus*



*Mystus armatus*



*Ambassis gymnocephalus*



*Etroplus suratensis*



*Arius sp.*



*Lutjanus indicus*



*Caranx heberi*

*Nematolosa nasus**Heteropneustes fossilis*

Table 2. Morphometric and meristic characters of collected fishes

Characters	<i>Anabas testudineus</i>	<i>Hyporhamphus xanthopterus</i>	<i>Pseudotroplus maculatus</i>	<i>Dawkinsia filamentosa</i>	<i>Dayella malabarica</i>	<i>Scatophagus argus</i>	<i>Horabagrus brachysoma</i>
Total length (cm)	8 – 14.5	16.6 – 17.4	5.2 – 7.7	10.3 - 11	7.2 – 7.5	7 – 7.1	14 - 17
Standard length (cm)	6.5 – 11.5	14.2 – 14.6	4.2 – 5.8	7.9 – 8.5	5.9 - 6	5.7 – 5.8	10.9 – 13.5
<b>Measurements in % of Standard length</b>							
Head length	21.7 - 32.3	32.87 – 35.21	32.75 - 50	24.69 – 28.23	25 – 28.33	34.48 – 35.08	25.92 – 30.53
Preorbital length	4.6 – 7.4	19.86 – 22.53	11.90 – 17.24	6.09 – 7.59	8.33 - 10	10.34 – 10.52	7.2 – 9.16
Eye diameter	6.8 – 10.0	4.22 – 4.79	6.89 – 9.52	7.05 – 8.86	8.33 – 8.47	10.34 - 10.52	4.95 – 5.69
Postorbital length	9.6 – 18.5	8.21 – 8.45	8.62 – 26.19	8.86 – 14.11	6.66 – 10.16	13.79 – 14.03	11.85 – 16.8
Predorsal length	34.1 – 45.6	80.2 – 83.56	42.85 – 46.55	47.61 – 54.11	50 – 53.33	32.75 – 40.35	36.64 – 38.84
Preanal length	55.7 – 73.5	78.87 – 82.19	53.44 – 60	75.94 – 83.95	75-78.33	67.24 – 68.42	62.38 – 70.37
Dorsal fin height	13.6 – 21.4	9.15 – 9.58	12.72 – 15.51	22.35 – 28.04	20 – 21.66	20.68 – 28.80	20.32 – 22.31
Dorsal fin base length	46.6 – 65.2	13.38 – 13.69	64.28 – 70.90	17.28 – 20.73	10 -11.66	59.64 – 60.34	7.43 – 9.75
Anal fin height	12.3 – 57.6	7.53 – 8.45	11.90 – 15.51	13.41 – 15.47	10 – 11.66	12.28 – 15.51	9.62 – 13.76
Anal fin base length	13.6 – 50.0	11.64 – 12.67	40.47 – 54.76	9.52 – 11.76	16.66 – 18.33	27.58 – 36.84	22.13 – 26.44
Depth	33.9 – 51.4	13.69 – 14.08	50 – 52.72	31.64 – 37.03	25 – 28.33	63.79 – 66.66	24.79 – 31.19
Caudal peduncle length	6.1 – 9.1	9.15 – 9.58	8.62 – 11.90	9.52 – 10.58	11.66 – 13.33	8.62 – 8.77	7.40 – 10.56

Caudal peduncle depth	14.8 – 20.0	4.22 – 4.79	14.28 – 16.66	12.65 – 14.11	10 -11.66	13.79 – 15.78	13.00 – 16.52
<b>Meristic Counts</b>							
Dorsal fin	7 - 9	13	8 – 9	8	5 - 6	16	5 - 6
Anal fin	8 - 9	13	7 - 8	5 - 6	16 - 17	14	20 - 23
Pectoral fin ray	14-16	10	12-13	14 - 15	4	16 – 17	6 – 7
Pelvic fin ray	5	6	11-12	8	7	5	5 - 6

Table 3. Morphometric and meristic characters of collected fishes

Characters	<i>Channa striata</i>	<i>Amblypharyngodon melettin</i>	<i>Devario malabaricus</i>	<i>Mystus armatus</i>	<i>Ambassis gymnocephalus</i>	<i>Etroplus suratensis</i>	<i>Arius sp.</i>
Total length (cm)	16.4 – 22.8	7.5 - 8	6.4	7.8	11.8	6.4 – 6.6	17.9 – 18.2
Standard length (cm)	13.7 – 19.2	6.2 – 6.5	5.1	6.3	9	5.2	14.4 - 15.3
<b>Measurements in % standard length</b>							
Head length	31.25 – 33.98	25.39 – 29.03	23.52	26.92	42.2	34.61 – 42.30	28.47 – 29.41
Preorbital length	6.56 – 8.10	4.76 – 6.45	7.84	7.93	11.11	11.53 – 11.53	9.02 – 9.14
Eye diameter	3.64 – 4.37	6.15 – 6.45	7.84	6.34	11.11	9.61 – 9.61	3.92 – 4.16
Postorbital length	20.83 – 23.52	14.06 – 16.12	7.84	12.69	20	13.46 – 21.15	15.27 – 16.33
Predorsal length	34.64 – 36.49	54.83 – 62.5	58.82	39.68	46.66	48.07 – 53.84	37.25 – 37.5
Preanal length	52.08 – 55.47	66.15 – 72.58	68.62	71.42	63.33	53.84 - 57.69	64.05 – 65.27
Dorsal fin height	13.02 – 15.54	22.58 – 23.80	17.64	12.69	24.44	15.38 – 15.38	16.33 – 17.36
Dorsal fin base length	55.55 – 58.33	10.76 – 12.5	29.41	17.46	36.66	67.30 – 71.15	9.02 – 9.15
Anal fin height	10.13 – 12.5	12.69 – 14.51	15.68	14.28	15.55	13.46 – 13.46	12.41 – 13.19
Anal fin base length	36.48 – 37.22	10.76 – 11.29	21.56	15.87	23.33	50 – 50	13.72 – 13.88
Depth	17.51 – 18.30	26.15 – 28.57	31.37	25.39	34.44	59.61 – 65.38	24.80 – 26.38
Caudal peduncle length	7.81 – 9.48	15.62 – 17.74	7.84	15.87	6.66	3.84 – 3.84	14.37 – 15.27
Caudal peduncle depth	10.13 – 11.67	11.11 – 12.90	11.76	12.69	11.11	17.30 – 19.23	8.33 – 8.49

Meristic counts							
Dorsal fin	33 - 39	7 - 8	12	7	9	14 - 15	6 - 7
Anal fin	21 - 26	6 - 7	16	9	9	11	19
Pectoral fin ray	13 - 15	11-12	11	8	13	11	10
Pelvic fin ray	5	8-9	7	5	5	4	6

Table 4. Morphometric and meristic characters of collected fishes

Characters	<i>Lutjanus indicus</i>	<i>Caranx heberi</i>	<i>Nematalosa nasus</i>	<i>Heteropneustes fossilis</i>
Total length (cm)	13	12 – 12.2	16.5	16.9
Standard length (cm)	10.1	8.8 – 9.5	12.6	14.9
Measurements in % standard length				
Head length	40.59	34.09 – 38.94	29.36	12.75
Preorbital length	14.85	6.81 – 9.47	7.14	4.02
Eye diameter	8.91	8.42 – 9.09	9.52	2.68
Postorbital length	16.83	18.18 – 21.05	12.69	6.04
Predorsal length	47.52	41.05 – 47.72	51.58	33.55
Preanal length	64.35	52.27 – 56.84	70.63	38.92
Dorsal fin height	14.85	17.89 – 20.45	20.63	12.75
Dorsal fin base length	54.45	53.68 – 57.95	18.25	3.35
Anal fin height	16.83	17.89 – 19.31	7.93	9.39
Anal fin base length	16.83	40 – 43.18	19.04	60.40
Depth	37.62	42.10 – 45.45	42.85	18.79
Caudal peduncle length	18.81	6.81 – 7.36	6.34	4.02
Caudal peduncle depth	13.86	4.54 – 5.26	12.69	6.71
Meristic counts				
Dorsal fin	14	20	14	6
Anal fin	9	19	19	64
Pectoral fin ray	16	10 – 11	15	7
Pelvic fin ray	5	5	8	6

## Results and Discussion

The survey results indicate that the the fish faunal diversity of Korapuzha River is diverse. The ichthyofaunal diversity is recorded and the details of morphometric and meristic characters are presented in Table 1 and Table 2 respectively. The taxonomic composition of the river consists of 18 fish species belonging to 8 orders and 13 families are dealt within the present study.

.. Among these, Siluriformes topped the list with 3 families and 4 species followed by Perciformes with 3 families and 3 species, Cypriniformes with 3 species belonging to a single family, ; Anabantiformes (2 families and 2 species), The orders Cichliformes and Clupeiformes were represented by single family and 2 species each). The orders Carangiformes and Beloniformes were represented by single family with single species each). Siluriformes is the largest order that contributes most fishes to the study area. It consists of three families Bagridae (2 species), Ariidae (1 species) and Heteropneustidae (1 species) followed by Cypriniformes and Perciformes. The least number of fish species were reported in Carangiformes and Beloniformes. Maximum percentage of fishes of this river belong to the family Cyprinidae (17%), followed by Bagridae, Cichlidae and Clupeidae (11% each). The most common species of fishes in terms of number of individuals were *Anabas testudineus*, *Dayella malabarica*, and *Horabagrus brachysoma*.

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