

Biodiversity Status of Fishes from Vettathukadavu, Kayamkulam Backwater, Kerala

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Abstract: The fishes are one of the most important, vertebrate, provided rich protein sources for human and several animals and important elements in the economy of many countries. Fish diversity essentially represents the fish faunal diversity. The survey was undertaken during the period from February 2016 to July 2016 in the region of Vettathukadavu, in Kayamkulam backwater, Kerala. The major objective of this study was to find out the biodiversity status of fishes in the Vettathukadavu region of Kayamkulam backwater, Kerala. Conservation status of fishes was assessed by IUCN Conservation status. The Survey of the studied stretch of backwater were resulted in recording of 25 fish species belonging to 6 orders and 15 families. Of the 25 species reported during the study, 15 are least concern, 1 is critically endangered, 1 is vulnerable, 6 species are not evaluated and 2 species are not reported in IUCN Red.

Keywords: Ichthyofauna, Biodiversity, IUCN, Endangered.

1. INTRODUCTION

Fishes are the most dominant members of the lower vertebrates and constitute nearly about 35000 species which inhabit the various types of water bodies. India is one of the mega biodiversity countries in the world and occupies the ninth position in terms of fresh water mega biodiversity (Mittermeier and Mittermeier, 1997). In India there are 2500 species of fishes of which 930 live in fresh water and 1570 are marine (Kar et al., 2003). In spite of being a renewable resource, indiscriminate harvesting of fishes from the natural water bodies is likely to cause serious depletion, particularly of those species which are already under the threat of extinction endangerment. Present investigation was undertaken to study the fish diversity from Vettathukadavu the region of Kayamkulam back water. Various indigenous and commercial fishes of importance were identified in this area. Perciformes fishes are one of the most important group of vertebrates for man and influencing his life in various ways. Considering the importance, in the present study an attempt has been made with the major objectives was to assess the states of these fishes as IUCN(2011).

2. MATERIALS AND METHODS

STUDY AREA:

Vettathukadavu a small region in Kayamkulam back water is selected as the study area. Kayamkulam is located as 9°10' north latitude and 76°28' east longitude. The average depth of the lake is 1.77 meters - 2.5 meters. Kayamkulam estuary is a shallow brackish water lagoon stretching between Panmana and Karthikapally. It has an outlet to the Arabian Sea at the Kayamkulam barrage.

COLLECTION AND IDENTIFICATION OF FISHES:

Fishes were collected from Vettathukadavu with the help of local fisherman using different types of net namely gill nets, cast nets and drag nets. Fishes brought to laboratory were preserved in 10% formalin solution in separate specimen jar according to the size of species. Small fishes were directly placed in the 10% formalin solution. Fishes were collected from the study area and the meristic and morphometric characters were measured and fishes were identified up to the species, with the help of standard keys given by Day(1967), Jayaram(1999), Talwar and Jhingaran(1991) and Nelson(2004).

3. RESULTS

Biodiversity reflects the number, variety and variability of living organisms as well as how these change from one location to another and overtime. In view of global deterioration of environment, documentation of fauna from all the eco systems has become important to know the present status of biodiversity. The taxonomic composition of the fish fauna in vettathukadavu includes a total of 25 species belonging to 15 families and 6 orders were identified from the Vettathukadavu during the study period, February 2016 – July 2016 and was given in the table one. Consideration status of the fishes from the Vettathukadavu is presented in table 2 and percent occurrence of fish under IUCN conservation status is given table 3 and figures one. The status of fishes in IUCN were categorized in to 9 different groups of fish viz; not evaluated (NE), data deficient (DD), least concern (LC), near threatened (NT), vulnerable (VU), endangered (EN), critically endangered (CR), extinct in the wild (EW), and extinct (EX). Out of 25 species reported in the present study

Table1: Systematics of the fish fauna in Vettathukadavu during February 2016 to July 2016

SL NO	ORDER	FAMILY	GENUS	SPECIES
1	Perciformes	Ambassidae	Ambassis	<i>ambassis</i>
2	Perciformes	Ambassidae	Ambassis	<i>gymnocephalus</i>
3	Anguliformes	Anguillidae	Anguilla	<i>anguilla</i>
4	Anguliformes	Anguillidae	Anguilla	<i>bicolor</i>
5	Perciformes	Ambassidae	Parambassis	<i>thomassi</i>
6	Perciformes	Ambassidae	Parambassis	<i>dayi</i>
7	Perciformes	Terapontidae	Terapon	<i>jarbua</i>
8	Perciformes	Siganidae	Siganus	<i>javus</i>
9	Perciformes	Scatophangidae	Scatophagus	<i>argus</i>
10	Perciformes	Gobiidae	Glossogobius	<i>giuris</i>
11	Siluriformes	Bagridae	Mystus	<i>gulio</i>
12	Perciformes	Lutjanidae	Lutjanus	<i>kasmira</i>
13	Elopiformes	Elopidae	Elops	<i>machnata</i>
14	Perciformes	Carangidae	Caranx	<i>ignobilis</i>
15	Clupeiformes	Clupeidae	Nematalosa	<i>nasus</i>
16	Perciformes	Cichlidae	Etroplus	<i>suratensis</i>
17	Perciformes	Cichlidae	Etroplus	<i>maculates</i>
18	Perciformes	Leiognathidae	Leiognathus	<i>brievirostris</i>
19	Perciformes	Cichlidae	Oreochromis	<i>mossambicus</i>
20	Perciformes	Leiognathidae	Gazza	<i>minuta</i>
21	Clupeiformes	Engraulidae	Thyrssa	<i>mystax</i>
22	Perciformes	Leiognathidae	Leiognathus	<i>dussumieri</i>
23	Pleuronectiformes	Cynoglossidae	Cynoglossus	<i>cynoglossus</i>
24	Perciformes	Lutjanidae	Lutjanus	<i>ruselli</i>
25	Clupeiformes	Clupeidae	Sardinella	<i>longiceps</i>

Table 2: List of fishes recorded from Vettathukadavu and their IUCN Status

SL NO	SPECIES	IUCN STATUS
1	<i>Ambassis ambassis</i>	LC
2	<i>Ambassis gymnocephalus</i>	LC
3	<i>Anguilla anguilla</i>	CR
4	<i>Anguilla bicolor</i>	NE
5	<i>Parambassis thomassi</i>	LC
6	<i>Parambassis dayi</i>	LC
7	<i>Terapon jarbua</i>	LC
8	<i>Siganus javus</i>	NE
9	<i>Scatophagus argus</i>	LC
10	<i>Glossogobius giuris</i>	LC
11	<i>Mystus gulio</i>	LC
12	<i>Lutjanus kasmira</i>	NE
13	<i>Elops machnata</i>	LC
14	<i>Caranx ignobilis</i>	NE
15	<i>Nematolasa nasus</i>	LC
16	<i>Etroplus suratensis</i>	LC
17	<i>Etroplus maculatus</i>	LC
18	<i>Leiognathus brevirostris</i>	NE
19	<i>Oreochromis mossambicus</i>	NT
20	<i>Gazza minuta</i>	LC
21	<i>Thyrssa mystax</i>	LC
22	<i>Leiognathus dussumieri</i>	-
23	<i>Cynoglossus cyniglossus</i>	-
24	<i>Lutjanus ruselli</i>	NE
25	<i>Sardinella longiceps</i>	LC

Table 3: Percentage occurrence of fishes of Vettathukadavu under the conservation status IUCN

	IUCN STATUS									Not reported in IUCN
	NE	DD	LC	NT	VU	EN	CR	EW	EX	
Number of species	6	0	15	0	1	0	1	0	0	2
% Contribution	24	0	60	0	4	0	4	0	0	8

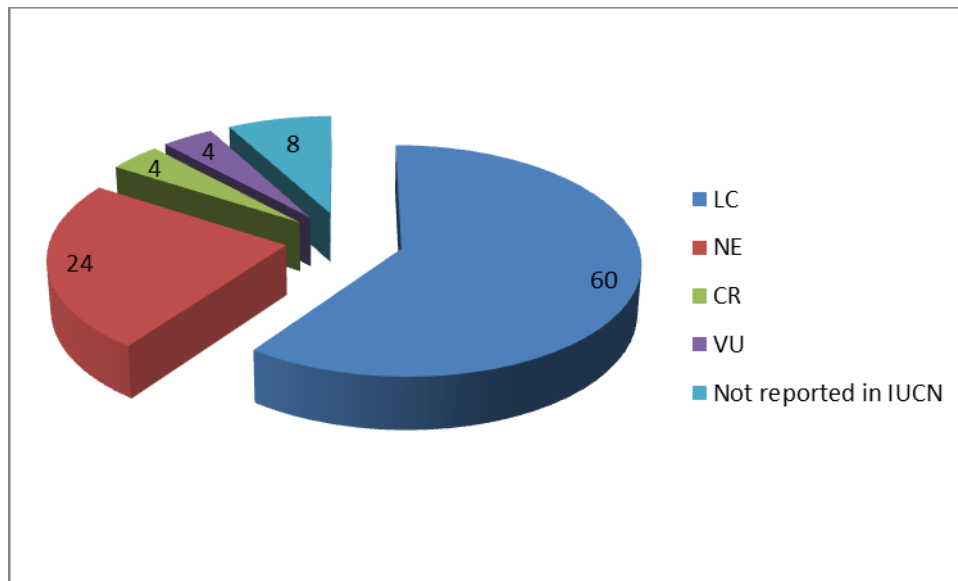


Fig.1: Percentage of species under various threat categories as per IUCN status

4. DISCUSSION

Biodiversity is essential for stabilization for ecosystem nproduction of overall environmental quality for understanding intrinsic worth of all species on the earth (Ehrlich and Wilson,1991).Fish diversity essentially represents the fish faunal diversity and the abundance .Fishes are the key stone species which determine the distribution and abundance of other organisms in the ecosystem they represent and are good indicators of the water quality and the health of ecosystem(Moyle and Leidy,1992). In the present ichthyofaunal, 25species of different 15 families and 6 orders were recorded from the Vettathukadavu during the period, February 2016 – July 2016. The general pattern of distribution and abundance has been reported from other lakes also (Stephens *et al.*, 1974; Allen and Horn, 1975;Sthephenon and Dredge,1976). While assessing the threat status of these fishes according to the IUCN red list status some species are included in the list of least concern some are not evaluated some others are critically endangered and others are vulnerable. Similar studies were also reported from Chalakkudy river (Raghavan *et al.*, 2008) Periyar tiger reserve (Radhakrishnan & Kurup, 2010) and by Ali *et al.* (2011). The informations collected from the fisherman and local people also show that the number and species of fishes in Kayamkulam back water is decreasing year after year. This may be due to the pollution of the water body with domestic wastes and waste water. Previous studies on the fresh water fish fauna of Kerala are those of Kurup(1994), Easa and Shaji (1995),Biju *et al* (2008), Radhakrishnan & Kurup, (2010) and by Ali *et al.*

5. CONCLUSION

The fish fauna of this lake are being threatened due to several anthropogenic activities including introduction of exotic fish species, habitat degradation, pollution, irrational fishing. Due to different anthropogenic activities the fish diversity of this water body is in declining mode. To conserve this inherent treasure of Ashtamudi lake, the wetland of international importance, a long term management plan should be adopted. Effective implementation on the regulation on mesh size and fishing gear is much needed to prevent over exploitation. Strict management measures with large public awareness would be essential to save the fish germplasm and its time to make proper policies and take necessary actions to improve conservation measures so that the future generations get the fish live on the earth rather than the photographs in the literature. This study would serve as a frame of reference for future initiatives in studying fish biodiversity and conservation management.

ACKNOWLEDGEMENT

We are grateful to Dr.Bindhu.L, Asst Professor MSM College Kayamkulam for her constant encouragements. We are thankful to Mr. Reju(Local fisherman) for help in accruing the specimen.

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