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ICTHYOFAUNAL DIVERSITY OF BHARATHAPUZHA RIVER AT PALAKKAD DISTRICT, KERALA.

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ABSTRACT

Aquatic populations interact with the physico-chemical and biological factors in their habitat. Any change in the habitat can induce stress on the life forms. The major water bodies and rivers in Kerala are not free from the pollution stress of varying degrees due to the influx of effluents from nearby factories, pesticides and fertilizers from cultivating areas, besides urban and rural sewages.The survey yielded 23 species of fresh water fishes belonging to 10 families and 5 different orders. *Oreochromis mossambica* and *Oncorhychus mykiss* were recorded as introduced species. Cyprindae members were the dominant forms in all sampling stations. Fishes were more abundant during monsoon season.

KEYWORDS: **Icthyofauna, Cyprindae, *Oreochromis mossambica, Oncorhychus mykiss.***

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INTRODUCTION

Kerala is a land of rivers which harbor a rich and diversified fish fauna characterised by many rare and endemic fish species. The Western ghats are recognized as one of the 21 biodiversity hotspots of the world (Magesh *et al*., 2013).A database on fish biodiversity is essential as a decision making tool for conservation and management of fish Declaration of part of rivers as aquatic sanctuaries, protection and preservation of endangered species and mitigation of anthropogenic activities so as to fulfill India's obligations under conventions on biological diversity with special reference to Articles 6 and 8 of UNEP (1992). Notable studies on the fresh water fish fauna of Kerala are those of Day (1889); Pillai (1929); Kurup (1994);); Biju *et al*., (1999); Kurup and Ranjeet (2002).In the current investigation an attempt has been made to prepare a consolidated list of fresh water fishes of Bharathapuzha river of Palakkad and to assess their biodiversity status as per International Union for conservation of Nature (IUCN) criteria.

MATERIALS AND METHODS

Bharathapuzha river or 'Nila river' is the second largest river in Kerala state with a total length of about 209 km (Biju Kumar 2006). It takes its origin at Kovittola Betta at Kundra reserve forest of Tamil Nadu, Western ghats at an elevation of 2,336 m and flows through Coimbatore district of Tamil Nadu and Palakkad, Malappuram and Thrissur districts of Kerala and finally empties into Lakshadweep sea at Ponnani. In the present study, three stations were selected for the namely Parli, Ottapalam and Shornur. The study conducted was for a period of two years (June 2011- May 2013). All seasons were covered for the collection of fish specimens. Fishes were collected using different types of net namely gill net, cast net and bamboo basket net and also by local fisherman. Formalin of 10% was used for fixation of specimens and transferred to 70% alcohol for permanent preservation. Photographs of fishes were taken. The specimens were identified at species level using the methods adopted by Day (1889), Talwar and Jhingran (1991), Barman (1993), Jayaram (2010). The conservation status of fish species was based on IUCN red list of 2012 (IUCN, 2012).

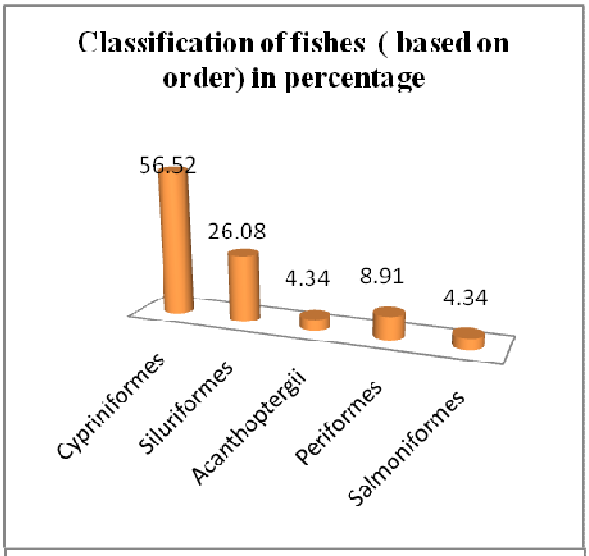
RESULTS

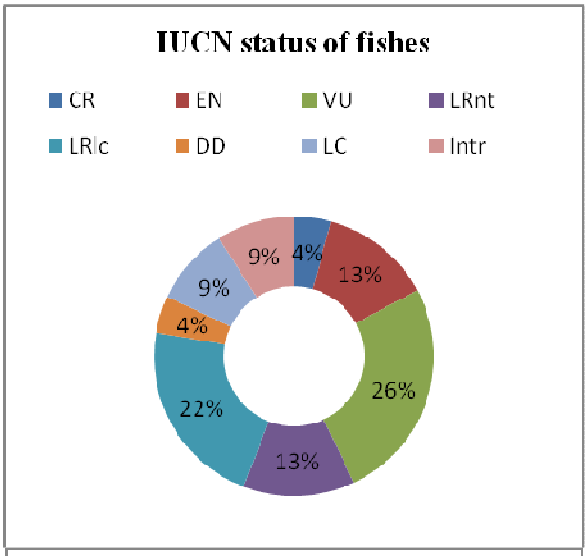
In the present study, a total of 23 species of fresh water fishes belonging to 10 families and 4 different orders were recorded (Table 1). Eleven members were recorded in Cyprinidae, three in Bagridae, two in Balitoridae, followed by Siluridae, Salmonidae, Schilbeidae, Channidae, Heteroproustidae and Gobiidae etc. Among the samples investigated the order Cypriniformes presented 13 different species, Siluriformes had 7, Perciformes with 2 species and Salmoniformes with 2 species. Six species were recorded as vulnerable, three as endangered and two as introduced. Nine species were recorded as ornamental and fourteen as food fish. Fishes are comparatively more abundant during the post monsoon season and less during pre-monsoon period. *Batasio travancoria* is an endemic fish to Kerala was reported by Sushama *et al*.,2004. In earlier reviews *Barillius bendelesis* was reported to occur in Kerala, and the present survey confirms its presence in Bharathapuzha river.

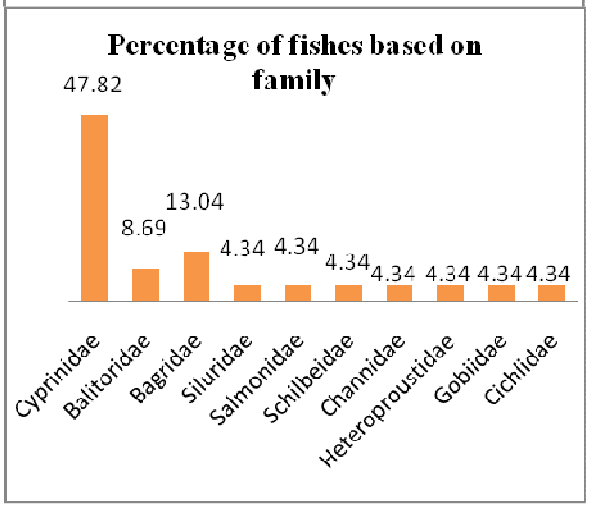
Table 1
List of Freshwater fish species reported from Bharathapuzha River

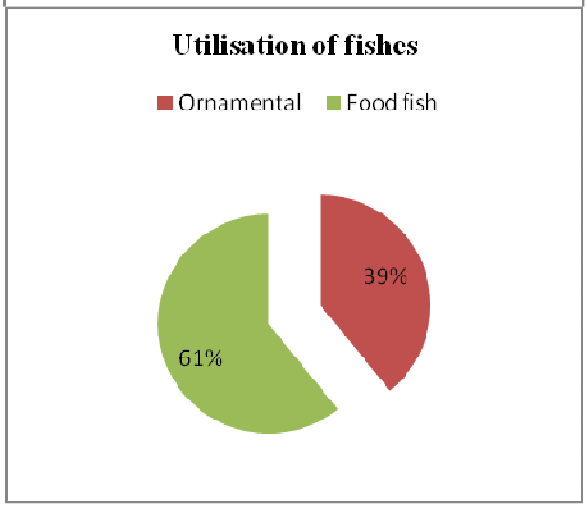
Sl. No.	Name of the Species	Order	Family	Ornamental / Food fish	IUCN Status
1	*Gassa menoni*	Cypriniformes	Cyprinidae	Ornamental	VU
2	*Homaloptera pillai*	Cypriniformes	Balitoridae	Ornamental	VU
3	*Batasio travancoria*	Siluriformes	Bagridae	Ornamental	VU
4	*Horabagrus brachysoma*	Siluriformes	Bagridae	Food fish	EN
5	*Gonoproktopterus curmuca*	Cypriniformes	Cyprinidae	Food fish	LC
6	*Ompok malabaricus*	Siluriformes	Siluridae	Food fish	LC
7	*Puntius sarana sarana*	Cypriniformes	Cyprinidae	Food fish	VU
8	*Puntius sarana subnasutus*	Cypriniformes	Cyprinidae	Food fish	VU
9	*Puntius sophore*	Cypriniformes	Cyprinidae	Ornamental	LRnt
10	*Rasbora daniconius*	Cypriniformes	Cyprinidae	Ornamental	LRnt
11	*Oncorhychus mykiss*	Salmoniformes	Salmonidae	Food fish	Intr
12	*Horalobiosa joshuai*	Cypriniformes	Cyprinidae	Ornamental	CR
13	*Mystus armatus*	Siluriformes	Bagridae	Food fish	LRlc
14	*Ompok malabaricus*	Siluriformes	Siluridae	Food fish	CR
15	*Barillius bendelesis*	Cypriniformes	Cyprinidae	Ornamental	LRnt
16	*Pseudeutropius mitchelli*	Siluriformes	Schilbeidae	Food fish	DD
17	*Channa striatus*	Periformes	Channidae	Food fish	LRlc
18	*Garra mullya*	Cypriniformes	Cyprinidae	Ornamental	LRlc
19	*Heteropneustes fossils*	Siluriformes	Heteroproustidae	Food fish	EN
20	*Homaloptera menoni*	Cypriniformes	Balitoridae	Ornamental	EN
21	*Cirrhinus mrigala*	Cypriniformes	Cyprinidae	Food fish	LRlc
22	*Glossogobius giuris*	Perciformes	Gobiidae	Food fish	LRlc
23	*Tor khudree*	Cypriniformes	Cyprinidae	Food fish	VU

CR- critically Endangered, EN- Endangered, VU- Vulnerable, LRnt- Low Risk nearly threatened, LRlc - Low risk least concern, DD-Data deficient, LC- Least concern, Intr - Introduced.









DISCUSSION

Out of 23 species of the reported list 11 belongs to the family Cyprinidae. Species of this family enjoying the Indian fresh water habitats, in most of the reports on freshwater fishes in India, the family Cyprinidae is dominant (Sarkar *et al*., 2008). The local fisherman use the nylon nets of sieve size from small to large, because of small sieve size, the number of individuals of all species of pre-breeding stage are reduced. Experts opinioned that transfer of fishes to different habitats within same country should also be done with care (Kottelat and Whitten, 1996). Flow regulation by means of check dams, pollution, large scale clay and sand mining, destruction of natural pools and reverine vegetation and unscientific fishing methods are the major threats to the fish fauna.The study demonstrated a strong link between environmental stress and biodiversity levels at various scales: genes, individuals, populations, and communities (Nevo *et al.*, 2001). The relationship between genetic diversity and environmental stress has been elucidated in natural populations (Shingles *et al*., 2001). Sudden changes in water conditions can be stressful to fishes. Thus suddenly raising or lowering the temperature, changing the pH, changing the water hardness and other chemical parameters are stresses to a fish. A series of morphological, biochemical and physiological changes occur as a result of stress in higher animals collectively constitute the General Adaptation Syndrome (GAS) (Selye, 1973).

CONCLUSION

The present study shows that the rivers and streams of Kerala have exceptional fish biodiversity with respect to Bharathapuzha river. Long term management plans are needed to conserve and preserve this treasury of fish germplasm. Measures should include standardization of captive breeding and seed production technology of endangered and critically endangered fishes and their massive ranching. Investigation on the invasive nature of exotic species in the natural habitats should be carried out with a view to establish how many of them could achieve natural breeding populations and also to what extend their feeding spectrum habits overlap with that of the indigenous species.

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