FISH FAUNA OF PERIYAR TIGER RESERVE[1]

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The status and distribution of fishes in the rivers and the lake of Periyar Tiger Reserve, Kerala was studied and 35 species belonging to 7 orders and 11 families were recorded. The family Cyprinidae contained maximum number of species (13). Thirteen species of fishes collected during the study are endemic to Southern Western Ghats. Two new species, namely *Lepidopygopsis typhus* (Schizothoracinae) and *Crossocheilus periyarensis* (Cyprinidae) were recorded from Periyar while another, *Echathalakanda* (*Barbus*) *ophiocephalus* (Cyprinidae) was rediscovered from Periyar river.

Introduction

The rivers in Kerala once harboured a rich fish fauna according to earlier investigators like Pillay (1929), John (1936), Hora (1941a,b), Raj (1941a,b), Chacko (1948), Silas (1951a, b). But very little information is available on the present status of the freshwater fishes of Kerala, which are threatened by over exploitation, introduction of exotic fishes, habitat destruction and pollution. In the midlands and lowlands of Kerala many fishes have become locally extinct and are disappearing fast. A limited number of them remain in the hills; in protected areas.

Periyar is known to support several interesting and important fishes. Some preliminary studies were done on the fish fauna of Periyar (Raj 1941a,b; Chacko 1948, Silas 1951a, b). Very little is known about the current status of fish fauna in this reserve. Chacko, made an attempt to make a survey of the indigenous fish fauna in 1946, with a view to develop the fishery. He listed 35 species of fishes in the lake. Raj (1941a) has described a small scaled schizothoracine, *Lepidopygopsis typus* Raj, from the Periyar river and Hora (1941a) has described, from Mr. Jone's collection a Homalopterid loach, *Travancoria jonesi*, from Travancore.

Menon and Jacob (1991) have more recently described a small scaled Barbel, *Crossocheilus periyarensis* and rediscovered a Cyprinid fish *Barbus (Puntius) ophiocephalus* (Raj) from the Periyar river adding two more species of fishes to the fish fauna of Periyar Tiger Reserve.

The purpose of this paper is to present a status report of the fish fauna of Periyar Tiger Reserve for making comparative studies in future. It will also be helpful to identify the conservation problems and recommend management measures.

Study area

Periyar Tiger Reserve lies between 9° 16' and 9° 40' N. lat. and between 76° 55' and 77° 25' E. long. It is bordered by Kottayam and Pathanamthitta districts in the west and south, Peermade Taluk of the Idukki District in the north and Madurai district of Tamil Nadu in the east. The elevation of the Reserve ranges from 800 to 2019 m. Several peaks rise above 1600 m the prominent peak being Vellimala (2019 m).

River, Periyar which originates from Chokkampetti-Kallimalai side, about 58 Km from Thekkady with its various tributaries form the main drainage of the area. The lake, which was formed as a result of the construction of the dam has an area of 26 sq. km. Maximum depth of water at highest water level is 46 m. Two other rivers, Pamba and Azhutha also flow along the border of the reserve in the Vallakkadavu range.

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TABLE 1
FISH FAUNA OF PERIYAR TIGER RESERVE

Name of the Species	Local/Tribal Name	Locality	Relative abundance	General distribution
Order CYPRINIFORMES				
Family CYPRINIDAE				
Subfamily CYPRININAE				
1. *Cyprinus carpio communis* (Linn.)	Goldfish	Lake only	Common	Exotic species
2. *Puntius melanostigma* (Day)	Kudukunda	River & Lake	Very common in lake	India; Hill streams of Kerala, Nilgiris.
3. *Puntius melanampyx* (Day)	Kudukunda	River & Lake	Very common in lake	India; Hill streams of Kerala, Nilgiris.
4. *Puntius amphibius* (C. & V.)	Kooral	Azhutha, Pamba	Common	India; Peninsular India, Sri Lanka.
5. *Puntius mahecola* (Val.)	Karuva/Paral	" "	"	"
6. *Puntius filamentosus* (Valenciennes)	_	" "	"	
7. *Echathalakanda ophiocephalus* (Raj)	Eetilakanta	River above Mlappara Ummikkuppanthodu	Rare	India; Kerala Hill stream. Rediscovered from Mlappara.
8. *Tor khudree* (Sykes)	Kuyil	River & Lake	Common	India; Deccan and P. India; Sri Lanka.
9. *Garra mullya* (Sykes)	Kallemutti	River & Reservoir	Common	India; Hill streams of P. India.
10. *Garra gotyla stenorhynchus* (Jerdon)	"	" "	"	India; Western Ghats, Cauvery & Krishna drainages.
11. *Hypsilobarbus kurali* (Menon & Rema Devi)	Kooral	Stream & Lake	"	India; Dakshina Kannada to Travancore Hills.
12. *H. periyarensis* (Raj)	Kariyan	Fast flowing rivers	"	India; Kerala, Periyar.
13. *Crossocheilus periyarensis* (Menon & Jacob)	Karimbachy	River above Thannikudy	Rare	"
Subfamily SCHIZOTHORACINAE				
14. *Lepidopygopsis typus* Raj	Brahmana Konda	Periyar above river	"	India; Kerala, Periyar river system.
Subfamily RASBORINAE				
15. *Parluciosoma daniconius* (Ham.)	Kannanjon	Lake, Azhutha stream	Very common	India; Sri Lanka, Pakistan, Nepal, Bangladesh, Myanmar (Burma), Thailand.
16. *Barilius bendelisis* (Ham.)	Pavukan	Thannikudy, Lake, River	Common	India; Pakistan, Nepal, Bangladesh.
17. *B.bakeri* Day	"	"	"	India; Kerala, W. Ghats.
18. *B. gatensis* (C. & V.)	"	"	"	Peninsular India, W. Ghats.
19. *Danio aequipinnatus* (McClell.)	--	Azhutha, Pamba	Very common	India; Nepal, Bangladesh, Myanmar, Thailand.
Family HOMALOPTERIDAE				
20. *Travancoria jonesi* Hora	Kallotty	Rivers above Thannikudy	Rare	India; W.Ghats, High Ranges of Kerala.
Family COBITIDAE				
21. *Lepidocephalus thermalis* (C. & V.)	Ayira	Lake/River	Common	P. India; Sri Lanka.
22. *Noemacheilus botia*	Ayira	Small streams	Rare	Hill stream of Travancore.
23. *N. triangularis*	"	"	"	India; W. Ghats.

TABLE 1 (Contd.)

Name of the Species	Local/Tribal Name	Locality	Relative abundance	General distribution
24. *N. evezardi*	Ayira	Small streams	Rare	India; W. Ghats and Madhya Pradesh.
Order SILURIFORMES				
Family HETEROPNEUSTIDAE				
25.*Heteropneustes fossilis*	Kary (Bloch)	Lake	Very Common	India; Pakistan, Sri Lanka, Nepal.
Family SILURIDAE				
26. *Ompok bimaculatus* (Bloch)	Chottavala	Lake		India; Pakistan, Nepal, Bangladesh, Myanmar, Thailand, Java, Sumatra, Borneo.
Family SISORIDAE				
27.*Glyptothorax madraspatanum*	Parayotti (Day)	Thannikudy	Uncommon	India; W. Ghats.
Order ANGUILLIFORMES				
Family ANGUILLIDAE				
28. *Anguilla bengalensis*	Mlanjil	Azhutha	Uncommon	India; Pakistan, Sri Lanka, Myanmar.
Order ATHERINIFORMES				
Family CYPRINODONTIDAE				
29. *Aplocheilus lineatus lineatus*	Poonjan	River & Lake	Very Common	Peninsular India.
Order PERCIFORMES				
Family CICHLIDAE				
30. *Oreochromis mossambica* (Peters)	Thilapi	Lake	Very common	Introduced.
Family CHANNIDAE				
31. *Channa striata* (Bloch)	Varal	Lake	Rare	India; Sri Lanka, Pakistan, Bangladesh, Nepal, Myanmar, Malaya, Malaya Archipelago, Thailand up to Philippines.
32. *C.orientalis* (Bloch & Schn.)	Vatton	Lake & Rivers	"	India; Iran, Afganistan, Nepal, Pakistan, Sri Lanka, Bangladesh, Myanmar, Thailand, Yunan, Malaya, Malay Archipelago, Hainan, and Taiwan.
33. *C. marulius*	Cherumeen	Azhutha, Pamba	"	India; Pakistan, Sri Lanka, Bangladesh, Nepal, Myanmar, Thailand, Sumatra, Borneo, China.
Order MASTACEMBELIFORMES				
Family MASTACEMBELIDAE				
34. *Mastacembelus armatus* (Lacep.)	Aaron	River, Lake	Common	Pakistan, Sri Lanka, Nepal, Thailand, India, Myanmar, Malaya to South China.
35. *Macrognathus aral* (Bloch & Schn.)	"	Vazhukkappara stream	Rare	India; Pakistan, Sri Lanka, Vietnam, Bangladesh, Nepal, Myanmar, Thailand, Laos, Malaya and East Indies.

MATERIALS AND METHODS

Fish samples were collected from January, 1992 to December, 1994 from different localities in the rivers and lakes while conducting wildlife studies. The collections were made from the Periyar river, Mullayar river, and their tributaries and different areas of the reservoir; boat landing, near dam, Mullakkudy, Manakkavala, Swamikkayam and

Padikkayam. Fishes were also collected from rivers Pamba and Azhutha.

Fishes were collected by gill-nets, cast-nets, hooks and bait. Worms, grasshoppers, small fishes, fruits of some trees, boiled tapioca and even rice paste were used as baits. For collecting small fishes, a special method called "Vatty" was used. Some were collected from local fisherman. Fishes were preserved in 5% formalin and identified in the laboratory.

Results and Discussions

Thirtyfive species of fishes, representing 21 genera and 11 families were collected and identified (Table 1). Morphological particulars of these species are available in Day (1876-88), Hora (1941a,b), Silas (1951a,b), Munro (1955), Talwar and Jhingran (1991). Out of the 33 species mentioned in the list of Chacko (1948), species like *Mystus cavasius* (Ham.), *M. vittatus* (Bloch), *Notopterus notopterus* (Pallas), etc., were neither found in the reservoir nor in the tributaries of Periyar and Pamba during this survey.

The species *Parluciosoma daniconius* (Ham.), *Puntius melanamphyx* (Day), *Hypsilobarbus kurali* (Menon & Rema Devi), *Garra mullya* (Sykes) were collected from almost all localities of the reservoir. Among these 35 species, about 13 species are usually found in upper streams and are adapted to lotic torrential waters. They are *Travancoria jonesi* (Hora), *Garra mullya* (Sykes), *Garra gotyla stenorhynchus* (Jerdon), *Tor khudree* (Sykes), *Hypsilobarbus periyarensis* (Raj), *Crossocheilus periyarensis* (Menon & Jacob), *Barbus ophiocephalus* (Raj), *Lepidopygopsis typus* (Raj), *Noemacheilus evezardi* (Day), *Glyptothorax madraspatanum* (Day), *Barilius bakeri* (Day), *B.bendelisis* (Ham.) and *B. gatensis* (Cuvier & Val.). Some of them are adapted to cling to the substratum by some attachment devices, e.g. *Garra, Travancoria* and *Glyptothorax.*

Fishes like *Heteropneustes fossilis* (Bloch), *Ompaok bimaculatus* (Bloch), *Channa striatus* (Bloch), *C.orientalis* (Bloch & Schn.), *C.marulius* (Ham.), *Cyprinus carpio communis* (Linn.), *Oreochromis mossambica* (Peters), etc., are restricted to lentic waters of the reservoir.

Among the hillstream fishes *Crossocheilus periyarensis* (Menon & Jacob), a rare species was a new discovery from Periyar. Another fish which was believed to be extinct, *Barbus ophiocephalus* (Raj) was rediscovered. *Lepidopygopsis typus* (Raj), *Hypsilobarbus kurali* (Menon & Rema Devi), *Tor khudree* (Sykes), *Travancoria jonesi* (Hora) are some of the endemic species of the Southern Western Ghats. Preliminary studies on the food habits of Tor (through stomach content examination) have indicated that this species took a variety of fruits.

Conservation and Management

"Mannan" and "Paliyans" (local tribals) above forty years of age speak of abundant fish in all the rivers, especially in Periyar and in the reservoir in the past. According to them, this abundance was due to undisturbed conditions of Periyar, Mullayar and their tributaries. But now all these areas are disturbed by indiscriminate fishing, deforestation, hunting, etc. In addition, new exotic fishes which were introduced to the reservoir, namely *Oreochromis mossambica* (Peters) and *Cyprinus carpio communis* compete with native species of fishes for food and habitat.

Recommendations

1. Fishing activities in Periyar should be controlled.
2. Fishing during monsoon, which is the breeding season of most of the fishes should be banned.
3. Research should be conducted for assessing population density and habitat requirements of fishes in the rivers and lake.
4. Remove the introduced fishes from the reservoir and restock with fingerlings of species like *Tor khudree* (Sykes), which has sport value.
5. Sport fisheries could be developed to cater to

the needs of tourists in the tourist zone which could generate revenue for the Government.

6. *Puntius melanampyx* could be used as an aquarium fish.
7. Plant trees on the lake edges for providing food for species like Tor.

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