



FISHERY RESOURCES OF AKATHUMURI BACKWATERS, SOUTH WEST COAST OF INDIA: A PRELIMINARY STUDY

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Abstract: Proper understandings of the fish fauna and their habitats are of great importance for the effective utilization of the valuable ecosystem and to plan out developmental and successive Management Programmes for their conservation. Studies on the diversity and richness of fishes of minor backwaters or estuaries are very scanty. Hence this work is aimed to study the fishery resources, diversity and species richness of the fish fauna of Akathumuri back water southern Kerala coast, which has not received any attention hither to. Monthly sample collections were made from three stations regularly for a period of one year and the collection was done by netting with cast net and gill net. A total of 50 species under 40 genera comprising 35 families belonging to 11 orders of fin fish fauna were recorded from Akathumuri backwater along with 2 species each of prawns and crabs. Further studies are required to ascertain the reasons for variations in fish faunal diversity of the backwater ecosystem.

Key words: Fish fauna, diversity, estuary, conservation, shell fish, biodiversity

INTRODUCTION

Estuaries and backwaters are well known for their high productivity, high carrying capacity and ability to support rich biodiversity. They are such a different ecosystem in which, the ecotones of sea and fluvial environments. Apart from the resident species, a variety of migratory fishes, birds and invertebrates are also residing in this ecosystem. They are the nursery grounds for a variety of commercial fish species of the ocean. Of about 20000 recognized species of teleost fishes in 410 families (Greenwood *et al.*, 1966) and 0.6% of the total numbers of the fish families contribute to estuarine fish fauna. Conservation of biodiversity and sustainable development has become the major global disquiet. It is high time that measures to preserving the wealthy and varied aquatic fauna and flora of the tropical waters of peninsular India. The understanding of the biological diversity related to an ecosystem

rests on the identification of the biota in their habitat. The Kerala state is abundantly rich in marine, brackish water and freshwater resources, which make the state to the foremost positions in aquatic biodiversity of India. The estimated area of fishable backwaters of Kerala comprises 46130 hectares (Nair, 1997). Proper understandings of the fish fauna and their habitats are of great importance for the effective utilization of the valuable ecosystem and to plan out developmental and successive management programmes for their conservation. Studies on the diversity and richness of fishes of minor backwaters or estuaries are scanty. Likewise, fishery resource of Akathumuri back water, southern Kerala coast has received any attention hither to. This paper explains about the fishery resources, diversity and species richness of the fish fauna of Akathumuri back water.

MATERIALS AND METHODS

The Akathumuri backwater (8°41' - 8°44' N; 76°46' 8'41' - 76°48' E) is situated in the southern part of Kerala, 34 km north of Trivandrum District of Kerala and has no permanent connection with the Arabian Sea (Fig.1). The river Vamanapuram drains into this water system and flows into the Arabian Sea through a bar mouth at Perumathura. Monthly collections were taken from three stations regularly for a period of one year. The collection was done by netting with cast net and gill net. The collected fishes were washed and then stored in 7% formalin. In the laboratory, specimens were examined in detail and identified to species level by using Day (1878), Munro (1955), Talwar and Jhingran (1991), Jayaram (1981) and Fischer and Bianchi (1984).

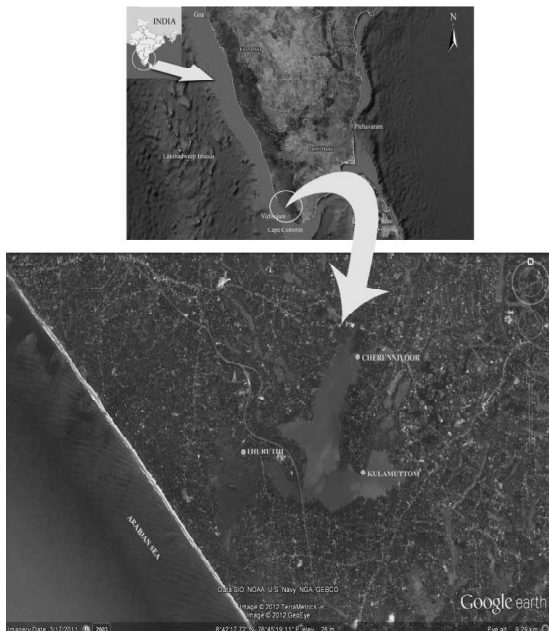


Fig. 1. Map showing the study stations of Akathumuri backwater

RESULTS AND DISCUSSION

The fishery resources of a brackish water system is generally composed of marine and freshwater organisms which can adapt to waters of different and varying salinities and truly resident estuarine

species (Jhingran, 1975). A total of 50 species under 40 genera comprising 35 families belonging to 11 orders of fin fish fauna were recorded in Akathumuri backwater (Table 1). Further, prawns such as *Penaeus indicus*, *Macrobrachium canare*, and *Macrobrachium latimanus* crabs such as *Scylla serrata* and *Portunus pelagicus* were also recorded during the present study (Table 2).

A total of 1362 fishes were collected from all the three stations; the fish abundance was 521 from Station 1 (40 species), 345 from Station 2 (31 species) and 496 from Station 3 (39 species). Some species were recorded only in certain months, while some others were common in all months. The common species of fishes recorded from Akathumuri backwater are *Etroplus maculatus*, *Etroplus suratensis*, *Oreochromis mossambicus*, *Caranx malabaricus*, *Dayella malabaricus*, *Mystus gulio*, and *Euryglossa orientalis*.

As there is no baseline data of fish fauna from this ecosystem, inference could not be made on changes in fish fauna. Surveys of the fish fauna of geographically closer estuarine and backwater systems have been made already. Azis and Nair (1980) reported 21 species from the Edava-Nadayara Paravur backwater. Nair *et al.* (1983a) reported 97 species of fishes belonging to 39 families in Ashtamudi backwater. Nair *et al.* (1983b) recorded 67 species of fishes from Kadinamkulam backwater. Shibu (1991) revealed the presence of 24 species classified under 17 families in Paravur Kayal. Rajukumar (2005) recorded 38 species from Anchuthengu backwater. Jayasree (1995) reported 36 species belonging to 24 families from Veli backwater; the most abundant species were *E. suratensis*, *E. maculatus*, *Mugil cephalus* and *Liza tade*. Shibu (1991) recorded that the *E. suratensis* and *E. maculatus* as the most dominant species throughout his study in Paravur backwater. During the present study, *Etroplus suratensis*, *E. maculatus* and *Caranx malabaricus* were found to be the dominant species as that of the neighboring backwater bodies. Rajukumar (2005) reported *Ambasis commersonii* and

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Chanda nama as the most dominant species in Anchuthengu backwater. Our study revealed the presence of 4 species of the genus *Puntius* with ornamental value, namely *P. sarana*, *P. amphibious*, *P. filamentosis* and *P. ticto* from the Akathumuri. Shibu (1991) also reported previously *P. sarana*, *P. vittatus* from the Paravur Kayal. Perciformes, Cypriniformes, Siluriformes, Clupiformes, Mugiliformes and Beloniformes were the most common groups contributing substantially to the fisheries. This study also showed that Akathumuri backwater system, like other bigger estuaries, serves as a nursery for many commercially valuable marine species.

In our present study, highest shannan-diversity index recorded was 2.6483 and dominance index, 0.5510, which is almost similar pattern as that of Anjuthengu back water (highest Shannon diversity index was recorded as 2.6 where as dominance index was maximum up to 0.72 (Raju kumar, 2005). Overall abundance of fish diversity was maximum in pre-monsoon season in Anchuthngu Backwater (Rajukumar, 2005). In the present study also, fish diversity was maximum in the pre-monsoon season (Fig. 3).

Table 1. Systematics of the fish fauna in Akathumuri backwater

| Order | Family | Species |
|---------------|--------------|--|
| Elopiiformes | Megalopidae | <i>Megalops cyprinoides</i> |
| Anguilliforms | Anguillidae | <i>Anguilla bicolor</i> |
| Clupeiformes | Clupidae | <i>Sardinella gibbosa</i> |
| | Engraulidae | <i>Stolephorus indicus</i> |
| | Dussumeridae | <i>Dayella malabaricus</i> <i>Thryssa malabaricus</i> |
| | Claridae | <i>Clarius batrachus</i> |
| Siluriformes | Siluridae | <i>Ompok bimaculatus</i> |
| | Bagridae | <i>Mystus gulio</i> |
| | Arridae | <i>Arius arius</i> |

| | | | | |
|--------------------|---------------|--|--|---|
| Mugiliformes | Mugilidae | <i>Mugil cephalus</i> <i>Lisa tade</i> | | |
| | Belonidae | <i>Strongylura leiura</i> | | |
| Beloniformes | Hemiramphidae | <i>Hyporhamphus xanthopterus</i> | | |
| | Channidae | <i>Channa striatus</i> <i>Channa marulius</i> | | |
| Ophiocephaliformes | Ambassidae | <i>Ambassis commersonii</i> <i>Chanda nama</i> | | |
| | Theraponidae | <i>Therapon jarbua</i> | | |
| | Sillaginidae | <i>Silago sihama</i> | | |
| | Carrangidae | <i>Caranx malabaricus</i> <i>Alepes Kleinii</i> <i>Caranx caeruleopinnatus</i> | | |
| | | Leiognathidae | <i>Leiognathus equulus</i> <i>Leiognathus brevisrostris</i> <i>Secutor insidator</i> | |
| | | | Gerridae | <i>Gerrus filamentosis</i> <i>Gerres abbreviatus</i> <i>Gerres oyena</i> |
| Perciformes | Cichlidae | | | <i>Eetroplus suratensis</i> <i>Eetroplus maculatus</i> <i>Oreochromis mossambicus</i> |
| | | Gobidae | | <i>Glossogobius giuris</i> |
| | | Scomberidae | | <i>Scomberoides tol</i> |
| | Stromateidae | <i>Pampus chinensis</i> | | |
| | Siganidae | <i>Siganus javus</i> | | |
| | Anabantidae | <i>Anabas testudineus</i> | | |
| | Lutjanidae | <i>Lutjanus argentimaculatus</i> <i>Lutjanus johnii</i> | | |
| Chanidae | | <i>Chanos chanos</i> | | |

| | | |
|-------------------|-----------------|--------------------------------|
| | Lobotidae | <i>Lobotes surinamensis</i> |
| | Serranidae | <i>Epinephelus malabaricus</i> |
| Cypriniformes | Cyprinidae | <i>Puntius filamentosis</i> |
| | | <i>Puntius sarana</i> |
| | | <i>Puntius amphibious</i> |
| | | <i>Puntius ticto</i> |
| Pleuronectiformes | Cynoglossidae | <i>Cynoglossus macrostomus</i> |
| Tetradontiformes | Soleidae | <i>Euryglossa orientalis</i> |
| | Tetradontidae | <i>Chaelonodon patoca</i> |
| | Triacanthodidae | <i>Triacanthus biaculatus</i> |

A total of 30 species, which were previously not reported by the earlier authors from the neighboring backwaters are reported during the present investigation. 17 species reported previously (Raju Kumar, 2005) from Anjuthengu were not reported during our present study, clearly indicates the variation of fish faunal diversity among the backwaters of Kerala. *Puntius vittatus*, *Rasbora daniconius*, *Macropodus cupanus*, *Wallago attu*, *Tachysurus subrostatus*, *Caranx sexfaciatus*, and *Carangoides pracustus* were the fish species which were reported from Paravur Kayal (Shibu, 1991) and not recorded during the present study, which clearly demonstrate the variation in diversity. Detailed further study is needed for this backwater system to document the grounds for the variation in the fish faunal diversity so that, effective management measures can be implemented to conserve the fish biodiversity.

Table 2. Total number of shell fishes reported from the Akathumuri backwater

| No. | Species | Station-1 Thuruthi | Station-2 Cherunniyoor | Station-3 Kulamuttam | Total |
|-------|----------------------------------|-----------------------|---------------------------|-------------------------|-------|
| 1 | <i>Paeneus indicus</i> | 10 | 5 | 46 | 61 |
| 2 | <i>Macrobrachium rosenbergii</i> | 5 | 0 | 20 | 25 |
| 3 | <i>Macrobrachium canarae</i> | 3 | 0 | 5 | 8 |
| 4 | <i>Macrobrachium latimanus</i> | 1 | 3 | 2 | 6 |
| 5 | <i>Scylla serrata</i> | 26 | 4 | 11 | 41 |
| Total | | 45 | 12 | 84 | 141 |

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