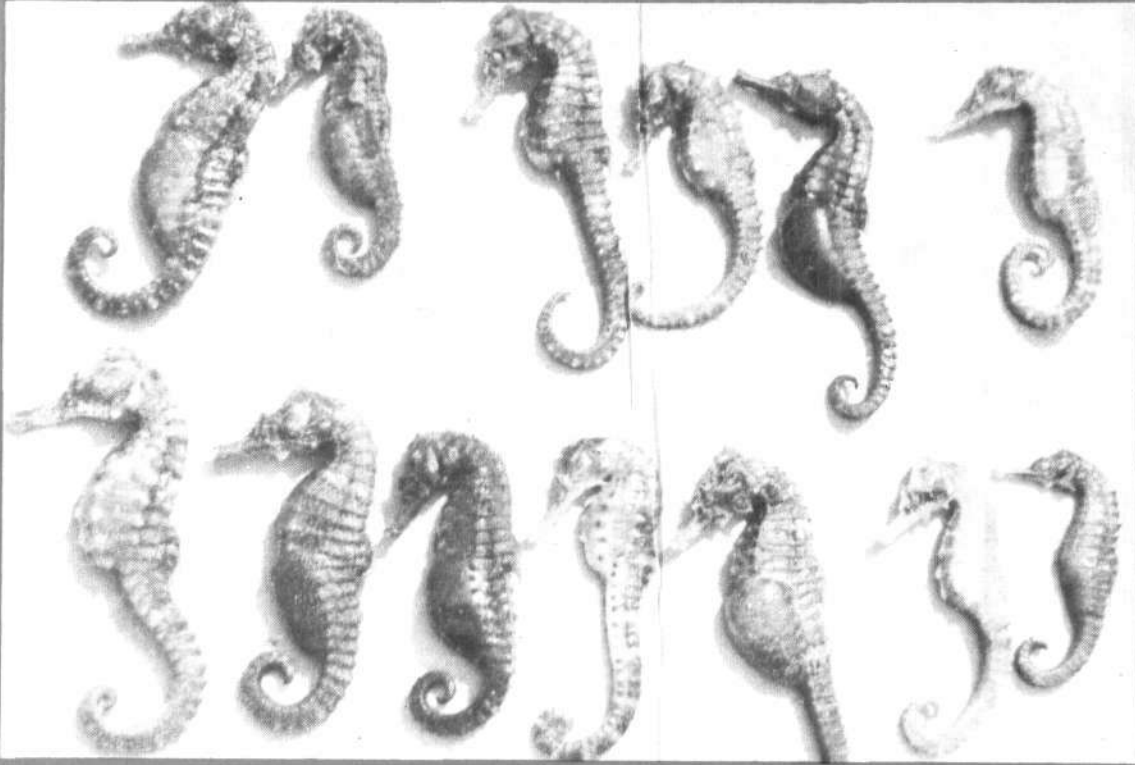




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INDIAN COUNCIL OF AGRICULTURAL RESEARCH

CLAM FISHERY OF NORTH VEMBANAD LAKE

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Clams form an important group of molluscs inhabiting estuaries, backwaters and other aquatic habitats. They are mostly sedentary which makes their fishing easy. Eventhough clam meat is rich in protein, it is relished by only a small section of the society. However, it is used in prawn hatcheries as feed for broodstock and also as poultry feed. Recently clam meat is gaining popularity as supplementary feed in semi-intensive prawn farming. Clam shell which is rich in calcium carbonate is extensively used in the manufacture of paper, chemicals, poultry feed, polyfibre and cement. It forms the main source of raw material in lime based industries.

Area of study

Vembanad lake, extending from Azhikode in north to Alleppey in south (90 km N-S) with a water spread of 300 sq km has rich clam resource. This article deals with the results of investigations carried out on clam resources and its fishery in the northern part of Vembanad lake, covering the region from Azhikode in the north to Chellanam in the south. There are two permanent passages to the Arabian Sea, one at Cochin and the other at Azhikode (Fig. 1).

The survey

A preliminary survey was conducted in 1987 to collect information on the clam fishing and landing areas. Depending on the magnitude of fishery, clam landing centres at Nettur, Chellanam, Maltankara and Munambam were selected for studying the fishery of *Villorita cyprinoides*, *Meretrix casta* and *Paphia malabarica*. Monthly samples were collected and analysed for studying the level of exploitation, seasonal abundance and price structure of catches. Detailed study was also made to understand the fishing method, marketing and utilization of these clam resources. These observations were made during the period from 1989 to 1991 on *V. cyprinoides* and from 1987 to 1989 on *M. casta* and *P. malabarica*.

Observations

Villorita cyprinoides, locally known as "Karuthakakka" (black clam), *Meretrix casta* or yellow clam and *Paphia malabarica* "Poovankakka" are the main clam resources of the area studied. These showed clear zonation pattern in distribution. In addition to these, *Modiolus* sp. is also exploited in a limited scale and used as manure

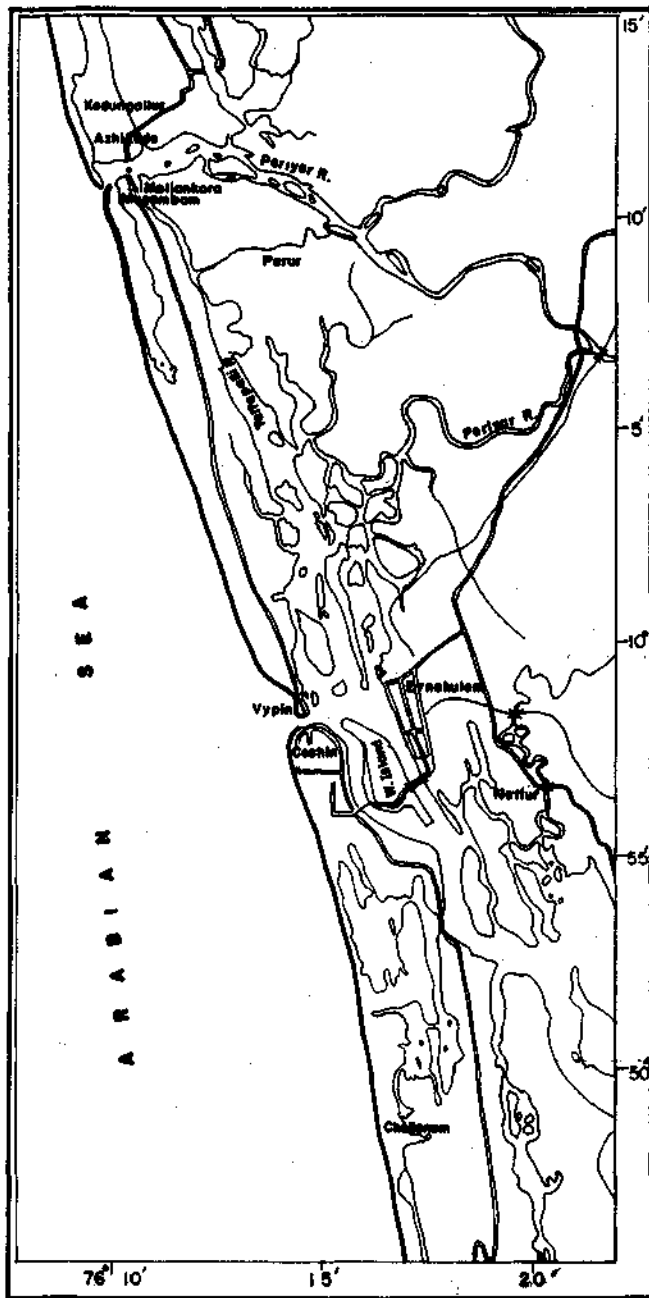


Fig. 1. Map of north Vembanad Lake.

for coconut palms and as poultry feed.

Fishery of *Villorita cyprinoides*

V. cyprinoides formed the predominant clam resource, contributing to 80% of the clams exploited, inhabiting the upper and middle portions of the estuary covering an area of 200 ha where the salinity did not exceed 28-29‰. Dense settlement of this clam was noted in the prawn culture fields of Vypin Island and neighbouring places.

Fishing method

Traditional clam fishermen collect the clams during low tide by diving and gathering them into a scoop net. The scoop net is shaken well to remove sand and silt particles before emptying the clams into the canoe. Fishing is done for four to five hours till the canoe is full. On an average 40-60 kg of clam is fished per day by a single clam fisher. In shallow areas where the depth is less than half a metre, fisherwomen as well as children handpick the clams during low tide. Fisherwomen harvest the clams from deeper areas where the depth is less than one and half meter by a different method. First they identify or locate a clam bed by their feet. The clams in that area are accumulated in a particular spot and pushed into a basket by their feet without diving. The clams thus collected are emptied into the canoe.

Fishing season

During the period April 1989 to March 1991 an estimated total of 200 t and 377 t of clam were landed at Chellanam and Nettur (Fig. 2). Clam fishing was done throughout the year with peak fishing during January to May. At both the places average maximum landing of 13 t and 30 t was in May and minimum landing of 3 t and 4 t in August. The number of fishing days varied from 10 each in August-September to 27 in May. The heavy southwest monsoon hinders clam fishing activities in June-July and in August-September some fishermen as well as fisherwomen go for paddy harvesting/sowing etc. which is more remunerative.

Clams of length 11 to 41 mm contributed to the fishery (Fig. 5). During September-October 1990, two to three tonnes of seed clam of size 8 to 15 mm were exploited in the Nettur-Panangad area. Some fishermen sorted out the seed clams and stocked them in the adjacent backwater. They were grown for two to three months and then harvested. In general it was noted that large sized clams occurred in the fishery at Nettur while at Chellanam, clams below 35 mm contributed to the fishery. During April 1989 to May 1990, 58.4% of the clams harvested at Nettur were above 25 mm while only 35.2% of the clams harvested were above this size at Chellanam.

Utilisation

The clams harvested are boiled for five to ten minutes in large aluminium vessels. The

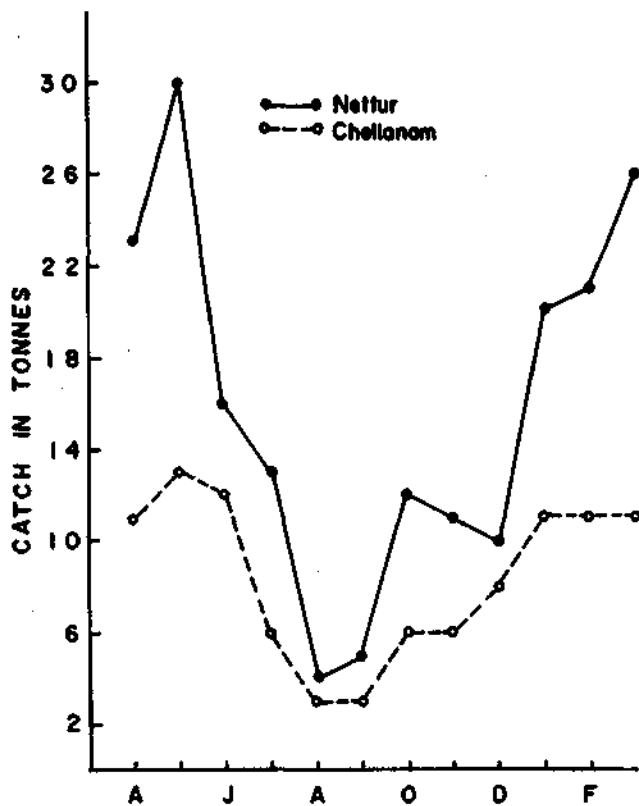


Fig. 2. Average monthly catches of *Villorita cyprinoides* landed at Nettur and Chellanam during 1989-'91.

boiled shell-on clams are shaken well in a small basket to separate the meat from the shell. The meat thus removed is sold in the local market on the same day at Rs. 3 to 5 per kg. The shells accumulated are later sold as raw materials to industries at Rs. 4 per 10 kg. The entire fisherman family irrespective of age and sex participates in all the activities from clam fishing to clam marketing. If the quantity of the clam harvested is large, part of it is stocked in the adjacent backwater and the meat removed only the next day. Recently the meat of *V. cyprinoides* is used widely as supplementary feed in the semi-intensive prawn culture farms. In the Nettur-Panangad area it is gaining popularity as duck feed also.

Fishery of *Meretrix casta*

Locally known as "Manjakakka" this is the second dominant clam species of north Vembanad lake. Scattered beds of this clam are located near Azhikode barmouth and towards the interior, upto Mallankara covering about one square kilometer area. Near the barmouth, *M. casta* formed mixed population with *Sunetta scripta*.

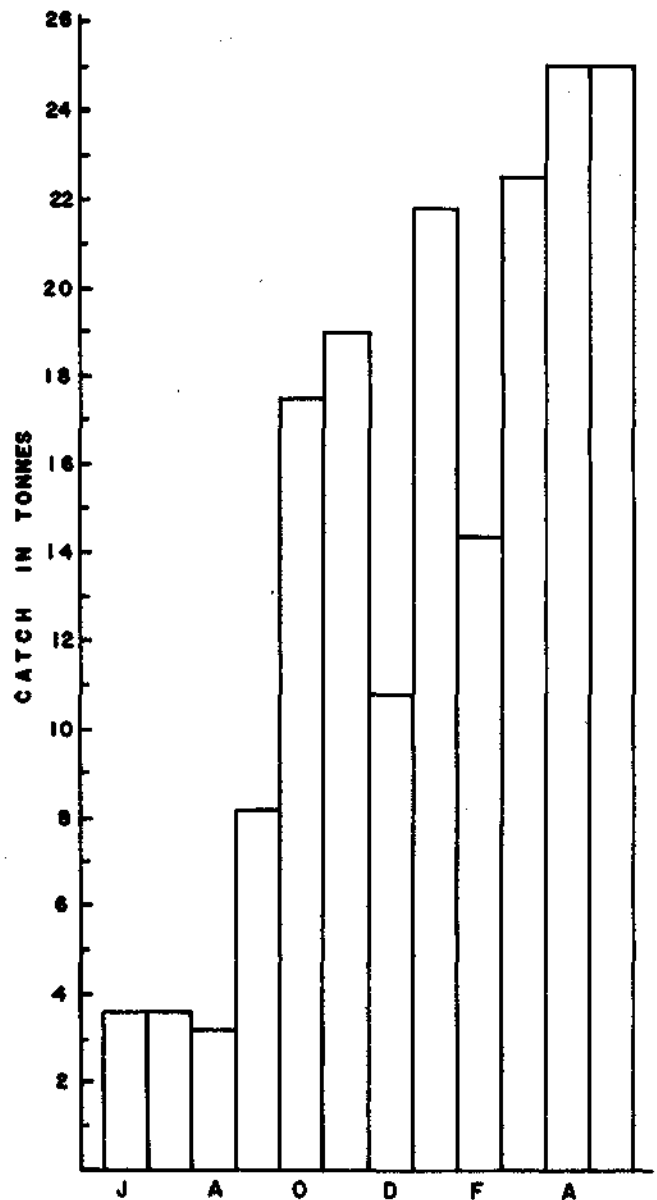


Fig. 3. Monthly catches of *Meretrix casta* at Mallankara during 1987-'88.

However, towards the interior it formed single species population.

Fishing method

Fishermen either singly or in groups of two or four reach the clam bed in large canoes of 11.5 m length, or in small canoes of 7.5 m length. A hand operated dredge with a long wooden handle attached with a rectangular iron frame with iron spikes is used for fishing. A nylon net is attached to this iron frame. The hand dredge is dragged

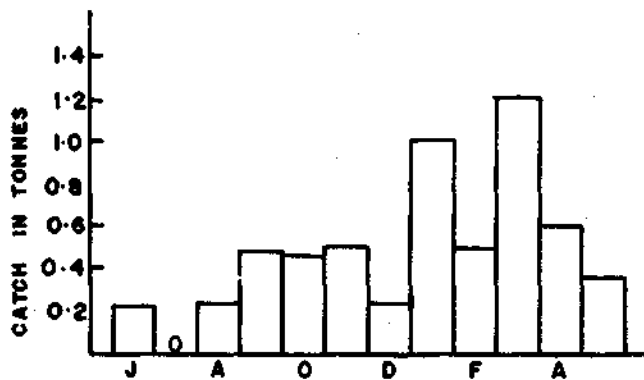


Fig. 4. Monthly catches of *Paphia malabarica* at Munambam during 1987-88.

along the clam bed and the clams collected in the net are emptied into the canoe. Fishing is done usually during low tide for about four to five hours. In each boat about 100 to 150 kg of clams are collected per day. Unlike the fishery of *V. cyprinoides*, *M. casta* fishing is done mainly by fishermen. Fisherwomen take part only in the marketing.

Fishing season

Fishing is done mainly during January to May. The turbulent nature of the backwaters caused by the fishing of Periyar river water hinders fishing activity in the monsoon.

Clams of length 4 to 36 mm contribute to the *M. casta* fishery (Fig. 6). However, 85.3% of the clams harvested are of the size range 19-27 mm. During the period June 1987 to May 1988, 174.6 t of *M. casta* was harvested (Fig. 3). Of this 18.6, 69.1 and 86.9 t contributing to 10.6, 39.6 and 49.8 per cent were landed during the monsoon, postmonsoon and premonsoon respectively. Minimum clam landing of 3.2 t was noted in August and maximum of 25.0 t in April-May, indicating considerable variations in the catch. The catch/person varied from 15 kg in June to 25 kg in April-May period. The effort was minimal in monsoon as only ten fishermen were employed in clam fishing while in the following months the number of fishermen actively engaged in clam fishing rose to 40-45.

The clam meat is utilized locally for gastronomic purpose and as feed for prawn. Shell is sold for industrial use through agents.

Fishery of *Paphia malabarica*

P. malabarica belongs to the group of clams popularly called "textile clams". This clam is

fished exclusively for its meat. The shell is very light and is not used commercially for lime extraction. Small patches of the clam bed were observed in the canals and creeks adjacent to Azhikode barmouth. Mats of *Modiolus* sp. were found to occur along with *Paphia* sp.

Fishing method and season

Local fishermen, women and children harvest the clam using a scoop net during low tide. During May 1987 to April 1988 about 5.8 t (Fig. 4) of this clam of length 19-43 mm were exploited (Fig. 7). Local fishermen harvest the clam for their own use. Maximum landings of 2.66 t contributing to 45.8% of the annual landing occurred during the premonsoon period from February to May 1987. After the monsoon of 1988, in August, the entire clam population was wiped off. However, it was reestablished after December 1988. By enquiry it was found that such type of disappearance of clam population during monsoon and reestablishment of the same during postmonsoon is a common phenomenon for *P. malabarica*.

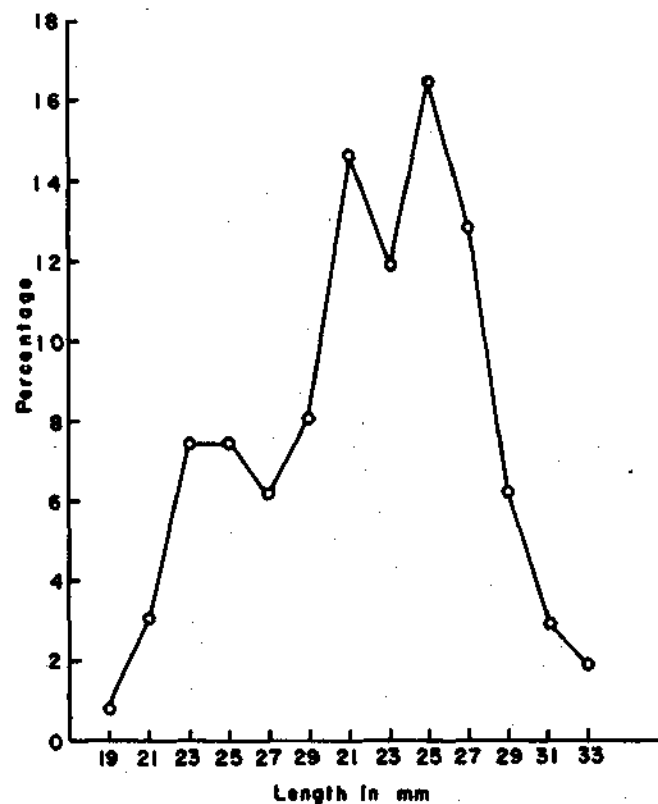


Fig. 5. Annual length-frequency distribution of *Villorita cyprinoides* during 1980-91.

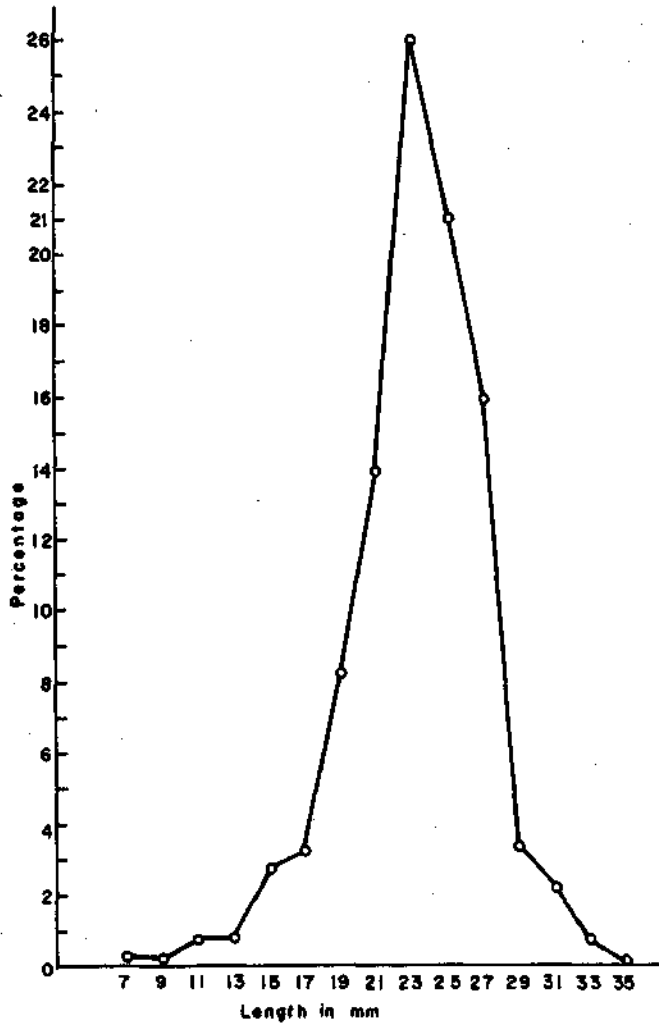


Fig. 6. Annual length-frequency distribution of *Meretrix casta* during 1987-'88.

Recommendations

The Vambanad lake is rich in clam resources and it forms the source of livelihood of several fishermen. The present study has

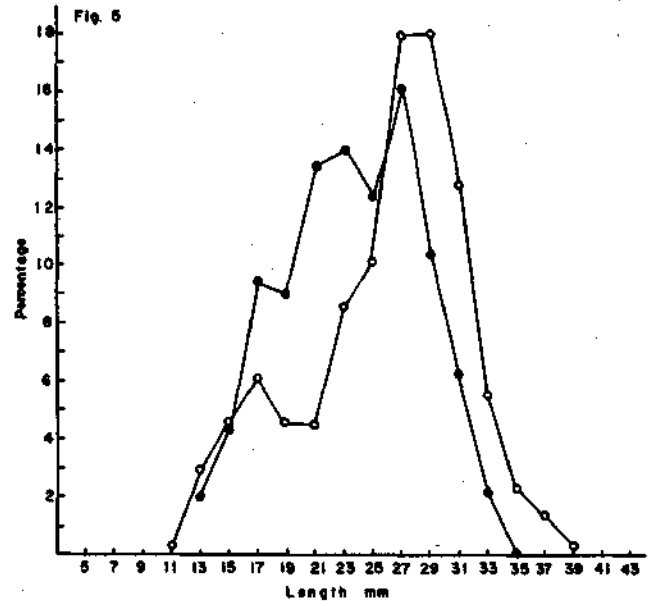


Fig. 7. Annual length-frequency distribution of *Paphia malabarica* during 1987-'88.

brought to light that the clam resources though exploited regularly, are not utilised properly. For the effective utilization of the clam resources, the following recommendations are proposed.

1. Development of value added clam meat product for utilization as human food and popularisation of the same by extension activities highlighting its nutritive value.
2. Establishment of clam fishermen co-operative society to assist the fishermen in marketing of clams and to attend to their welfare activities.
3. Culture of clam by simple transplantation method for preventing stock depletion.