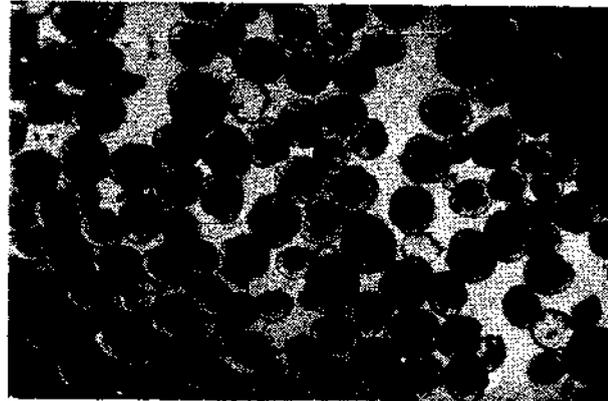


**CENTRAL MARINE FISHERIES
RESEARCH INSTITUTE**

Activities and Achievements

Vizhinjam Research Centre



History

Situated about 16 km south of Trivandrum, the Vizhinjam Research Centre of Central Marine Fisheries Research Institute had its inception in 1951 as a small survey centre. This was later elevated to the status of a research unit in 1965 and subsequently to a sub-station in 1969. With the addition of more research programmes and personnel over the years, it has grown into the present full-fledged Research Centre. The Centre has been carrying out pioneering research, contributing substantially to the knowledge about the marine fisheries of this region.

Major Activities and achievements

The activities of the Centre varied from the estimation of the marine fish landings initially, to the present multifarious research projects in capture and culture fisheries. Studying the biology, monitoring the resource characteristics for stock assessment of major pelagic and demersal groups of fishes, experimental trawling and light fishing, mussel and pearl culture, survey of molluscan fish and prawn seed resources, fishery environmental studies, coral reef ecosystems, minor resources such as seaweeds, sponges and gorgonids, and micro-algal culture are covered in the past and present research projects. Among the notable achievements are the rope culture of mussels on floating rafts and the success in developing indigenous technique of pearl culture.

Capture fisheries

For the last two decades this Research Centre has been engaged in studying the biology, fishery and resource characteristics of the major commercially important species of fish and shellfish. The complexity in the types of fishing gear used and the multiplicity of species landed, together with the additional facilities which would be



The fish landing centre at Vizhinjam

available on account of the fishing harbour now under way, make this area all the more important in that a large variety of species with seasonal domination provide very good fishery throughout the year. The traditional crafts mostly consisting of catamarans, plank-built and dugout canoes and gear such as shore seine, boat seine, drift net, 'chala vala', 'netholi vala', 'konchu vala', 'nandu vala' and hooks and line, to mention some, account for the fish catch landed at Vizhinjam.

Mechanisation of catamarans and canoes by fitting out-board motors has already made its beginning and this trend is gaining momentum. The average annual landings at Vizhinjam for the last few years is around 6,500 tonnes. Nearly 60% of this is landed during June to October. This peak fishing season coinciding with the southwest monsoon is yet another peculiarity of this area.

Pelagic Fishery Resources

Forming over three-fourths the total marine fish landings, the pelagic fishery resources comprise mainly ribbonfishes (22.6% of total fish catch), carangids (13.3%), tunas (8.1%), anchovies (6%) and sardines (5.6%); the rest is constituted by other fishes and shellfish such as lactarius, Sphyraena, Istiophorus, Corypheana, Tylosurus, Acetes and squids. Detailed studies on the biological and resources characteristics including length-frequency, maturity, spawning, sex-ratio, feeding habits, age and growth, fishing effort, catch composition, and other related aspects of ribbonfishes, carangids, sardines, anchovies, tunas and



Catch ready for marketing.



Mackerel
Carangids — a dominant fishery at Vizhinjam

mackerel are carried out at this Research Centre giving emphasis on the stock assessment of important species.

Demersal Fishery Resources

The demersal fishery resources of Vizhinjam are not fully explored nor exploited as trawling is not practised because of the rocky and coralline nature of the bottom. However, nearly 20% of the marine fish catch is constituted by fishes of demersal habitat such as perches, silver-

bellies, catfishes, balistids, sciaenids, lizard fishes, rays and cuttlefish which are taken in boat seine, hooks and line and bottom-set gill net. Some of these groups such as perches and threadfin-breams contribute to seasonal fisheries and are being studied in detail.

Experimental trawling off Vizhinjam using 'R. V. Cadalmin' has shown the abundance of juveniles of many demersal fishes, particularly *Nemipterus*, *Saurida*, silverbellies and the cuttlefish *Sepia pharaonis*. The prawns *Penaeus indicus* and *P. monodon* were also obtained in good numbers.

Molluscan Fishery Resources

Cephalopods :

Realising the importance of squids and cuttlefish as a major foreign exchange earner, investigations on their biology and fishery were initiated in 1976. Annually they form about 3.7% of the total marine fish catch. The peak fishing season is from August to October. The species contributing to the fishery are the squids *Loligo duvaucelii* and *Doryteuthis sibogae* and the cuttlefish *Sepia pharaonis*. Almost the entire catch is taken in boat seine and by hooks and line. Studies on the essential aspects of the biology of these species having been completed, the present investigations are aimed at making the stock assessment and surveying these resources in the Exclusive Economic Zone.

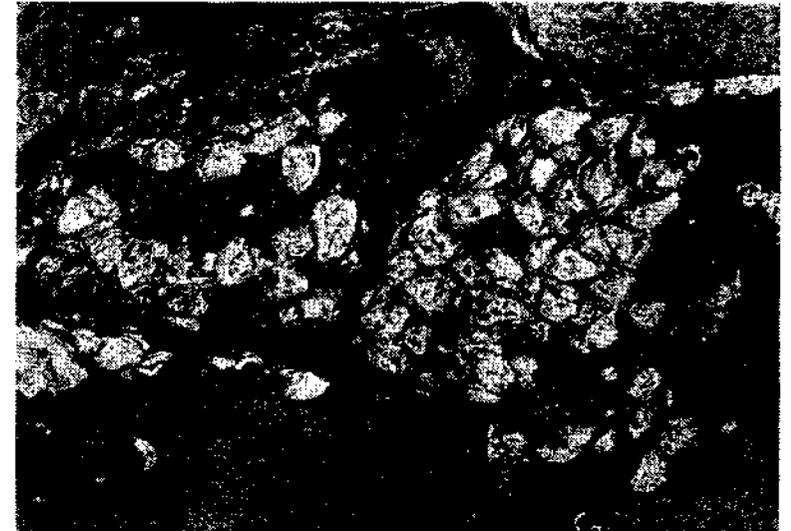


Squids — important foreign exchange earners

Bivalves and Gastropods

A survey of about 150 km intertidal coast line from Kanyakumari to Quilon indicated the availability of many commercially important species of mussels, oysters, clams and chanks. The brown mussel *Perna indica* forms a good seasonal fishery along the coast. It is estimated that there is a potential stock of 500 to 600 tonnes of mussels from Kanyakumari to Vizhinjam, of which 220-225 tonnes are

exploited every year. The occurrence of five species of pearl oysters has been noticed along the rocky stretches of the coast, especially at Muttom, Colachel, Enayam and Vizhinjam. A survey to assess the distribution and exploitation of clam resources in eight estuaries of southern Kerala, as part of the preparation of a clam resources atlas of Kerala and Karnataka, has shown that there are extensive beds of clams belonging to many genera such as *Villorita*, *Katalysia* and *Meretrix*. There is an extensive clam fishery for both shell and meat. Frozen clam meat



The rocky coast along Vizhinjam has a rich resource of rock-oysters



Sacred chank, an important resource on the west coast of Kerala.

is now an item of export from India. A new method of chank fishing by long-lining practised at Vizhinjam has been reported.

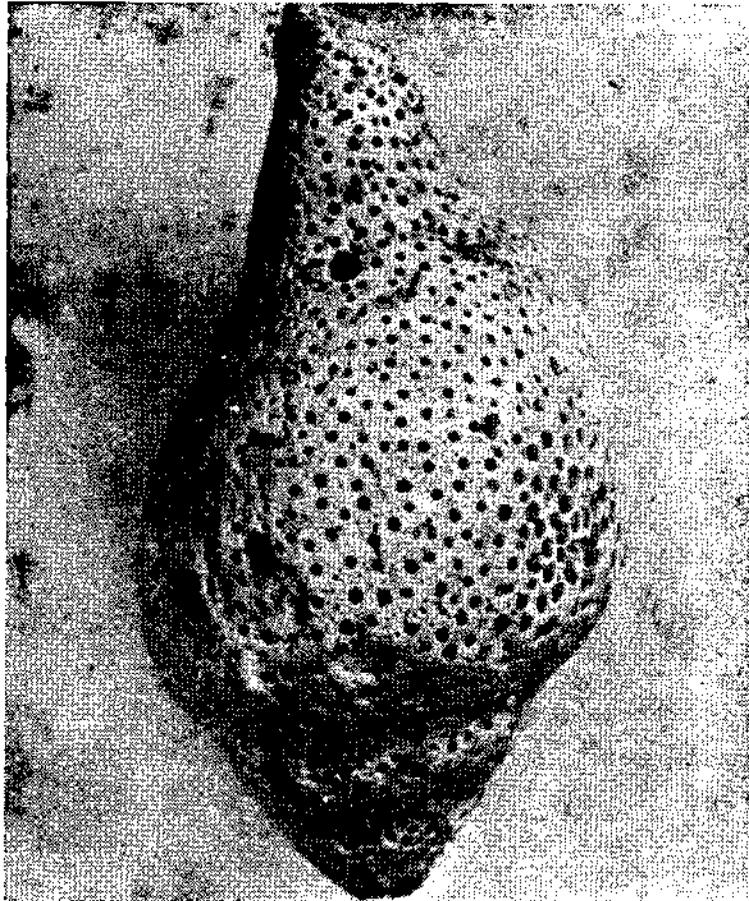
Fishery Environment Management

Plankton studies :

Plankton studies conducted in the Vizhinjam Bay and the open sea showed that the maximum standing crop of



Katelysia opima from Ashtamudi lake



A sponge-bored chank



A gorgonid of commercial value

zooplankton coincides with the peak seasons of pelagic fisheries. Blooms and swarms of certain groups are almost regular during the monsoon periods. Ichthyoplankton studies indicate that the nearshore waters of Vizhinjam provide a good spawning and nursery ground for many

commercially important fishes. It is also observed that the peak period of primary production corresponds to the monsoon months.

Fouling and Boring Sponges :

Investigations show that 32 species of sponges colonise the molluscan culture rafts and 6 species among them bore into the shells of the cultivated molluscs. The number of boring sponge species inhabiting the culture system was found to be more than in the natural habitats.

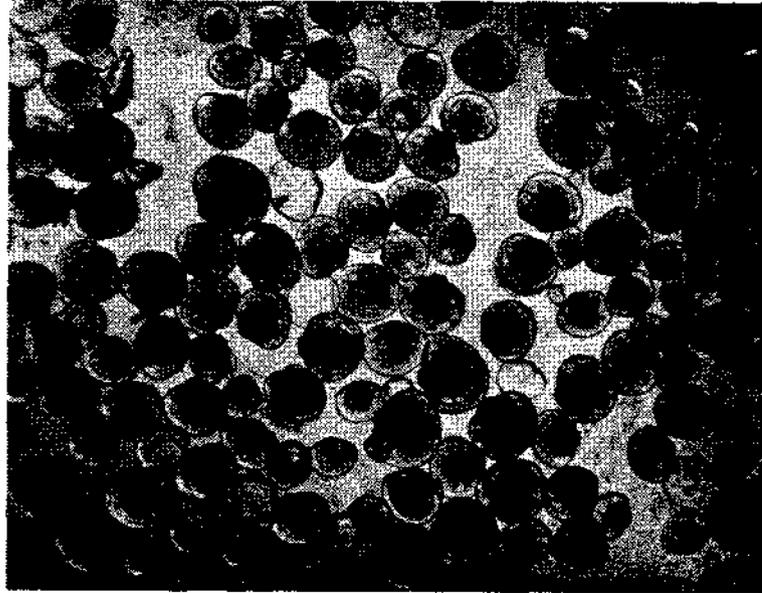
Gorgonids :

Gorgonids which are used for the extraction of prostaglandin have become an item of export. Studies indicate that about 4 tonnes of gorgonids comprising 22 species are being exported from India mostly from the Gulf of Mannar annually.

CULTURE FISHERIES

Rearing of Anchovies

Rearing experiments on anchovies in captivity showed that one species, *Stolephorus buccaneeri*, could be kept in cages for about 3 months in healthy condition and this result points to the possibility of utilizing the species as a live-bait in tuna fishing.



Laboratory-reared mussel larvae — before settlement

Mussel Culture

This Research Centre has shown for the first time in the country that mussels could be grown successfully on ropes hung from floating rafts. During these experimental studies this method of mussel culture yielded a maximum of 150 tonnes/ha from the Bay and 180 tonnes/ha from the open sea. Many aspects of mussel farming such as spat settlement, seed transportation, breeding, fouling, predation and related environmental factors were studied

in detail. The Centre has also evolved a successful technique for hatchery production of brown mussel seed.

Pearl Culture

The pearl culture experiments conducted here developed new designs of breeding hapas, spat collectors and oyster stocking cages to economise on operational cost, and could perfect the indigenous know-how for producing quality pearls.

Other Culture-related Projects

Investigation on the biocoenosis to improve culture ecosystems by evolving procedures for systems management in aquaculture development, the ecophysiological factors influencing developmental biology of clams, and the isolation and mass culture of planktonic micro-algal organisms such as *Isochrysis galbana*, *Pavlova* sp. and *Chlorella* sp. to be used as food in mussel hatchery experiments are currently under way at this Centre.

Inter-Divisional Projects

With a view to locating areas of availability of the seed of culturable species of fish and shellfish, and to assess their abundance in time and space, a seed resources survey was carried out in the estuaries and rivermouths between Kanyakumari and Neendakara. This revealed good abundance of fry and juveniles of mullets, pearl-spot, milk-fish, sillago, prawns and seeds of mussels, oysters and clams.



Pearl oyster shell bored by polychaete, Polyclora sp.

Transfer of Technology

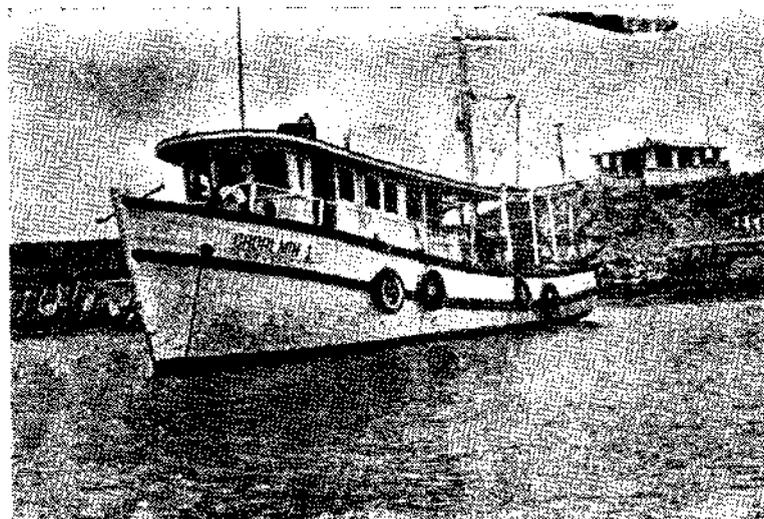
The mariculture technologies developed at this Research Centre for the rope culture of brown mussel and

for the indigenous method of pearl culture were approved by the National Research Development Corporation (NRDC) and were transferred to the Department of Fisheries, Government of Kerala in 1979, who took up two Pilot Projects at Vizhinjam.

This Research Centre has also been giving practical training in mussel culture and demonstration classes on various research projects to post-graduate and doctoral students of the Centre of Advanced Studies and to the ARS probationers.

Staff strength and infrastructure facilities

The present complement of staff is as follows: Scientific 10, Technical 18, Ministerial 4 and Supporting 9. There are 27 ongoing research projects handled by the scientific and technical staff. The Laboratory is equipped with microscopes, hot-air ovens, centrifuge, pH meter, autoclave, microtome, chemical, physical and electrical balances, air compressors, water-lifting pumps, refrigerators, deep freezer, slide projectors, overhead projector, culture tanks and photographic cameras. There is a museum and a library with the holding of over 1,300 books and periodicals. A jeep and a 43½ footer Research Vessel (Cadalmín - I) add to the infrastructure facilities. The University of Kerala has recognised this as a Centre for advanced research leading to the Ph.D. degree.



Cadalmín I at anchor in the Vizhinjam Bay.

Future Programmes

While most of the monitoring projects under capture fisheries will continue with emphasis on stock assessment of major resources, the following thrust areas are to be taken up for future investigations. The coral formations off Vizhinjam will be studied in detail to locate suitable areas for establishing a marine park of tourist interest. Vessel-borne programmes like trawling and experimental fishing will be initiated. Cage culture of finfish is another proposition.