CENTRAL MARINE FISHERIES
RESEARCH INSTITUTE

Activities and Achievements

Karwar Research Centre

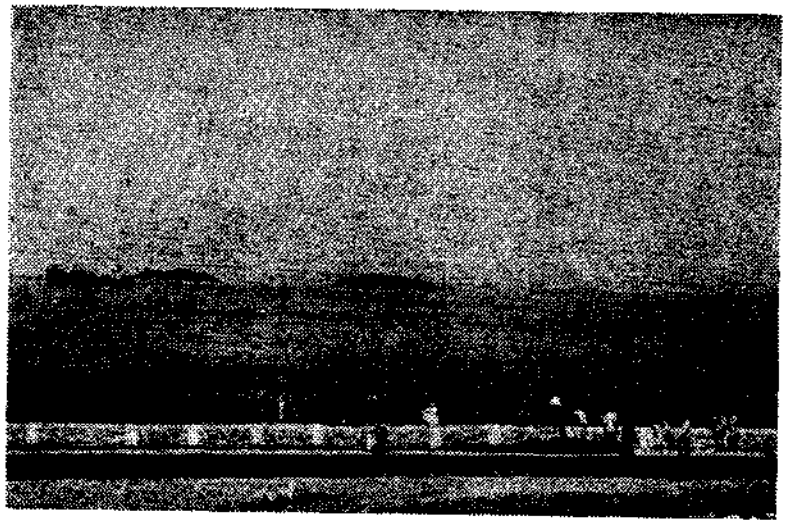
Uttar Kannada District of Karnataka State covering a coastline of 160 km in length, extending from Majali in the north to Sirur in the South is known for rich resources of pelagic fishes viz oil sardine, mackerel, crustaceans and other shellfishes. With the aim of development and conservation of these resources, the Central Marine Fisheries Research Institute established a Research Station at Karwar in 1948. This Station then known as 'Mackerel Research Unit of the Institute, was housed in a rented building. In the year 1958 the present building was acquired and the Unit was raised to the status of a "Sub-station" in 1965. Since the mid seventies, it has been known as the Karwar Research Centre of C.M.F.R. Institute. With increased activities of research, the demand for more space has been felt and to meet this, a wet laboratory has been recently established on a leased land.

MAJOR ACTIVITIES AND ACHIEVEMENTS

The main objective of this Research Centre is to monitor and assess the resources of pelagic and demersal fish species and their conservation, as these fishes are subject to wide fluctuations in space and time. The entire economy of the fishermen of this region depends upon the success of these fisheries. As such, investigations on the two most important pelagic fishes of this region viz., oil sardine and mackerel are being carried out. Introduction of mechanised boats for trawling in late fifties has indicated rich demersal fish and prawn resources. These also form an integral part of the investigations. Various extensive estuaries and coastal water bodies support molluscan resources, the potentials of which have been taken up for studies.

Pelagic Fisheries

Oilsardine, mackerel, tuna, seer fish, cat fish, carangids and pomfrets comprise major pelagic fish resources and account for more than 75% of the total catches of all fishes put together. With the introduction of purse seine in mid-seventies and their increased fleet strength have entirely changed the pattern of capture fisheries. Not only the catches have increased by leaps and bounds but new re-



Shore seine rampan — a famous gear of Karwar

Huge haul of oil sardine by purse seine

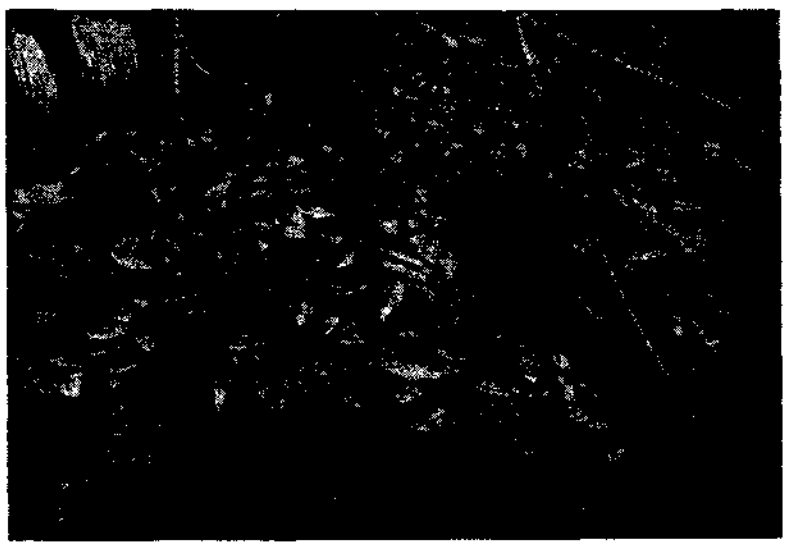
sources which have remained untapped by the artisanal gears came to the fore.

Investigations have revealed that the oilsardine fishery in the Karwar area has almost been stabilized. This is amply proved by the catches of purse seiners during the last decade. There is an upward trend in the yield and the investigations on the stocks indicate that there is still some scope to increase the catches. Studies have also revealed that heterogeneous stocks constitute the fishery and is supported by the 0 year class (<15 cm) and to a certain extent by the 1 year (<18 cm) and 2 year (>18 cm) classes. There appears to be a reciprocal relationship between 0 and 1 year classes in the fishery to make it successful. The recruitment of youngones could serve as an index for forecasting the fishery. Mortality studies have shown that the values are within permissible limits and that there is some scope to increase the rate of exploitation. The spawning in oil sardine is protracted and the sex distribution has shown that either sex is not exploited at the cost of the other.

Boat brimful of little tuna E. affinis

With the operation of the purse-seiners in the mid-seventies in Karwar waters, the lesser sardine resource comprising *S. dayi, S. gibbosa, S. fimbriata* and *S. albella* has assumed greater importance. To elucidate further information various biological parameters are being collected.

Mackerel is one of the most important pelagic fish resources of this coast, next only to oilsardine in quantity, but quality-wise ahead of it. Investigations carried out have revealed that the fishery is supported by 0 year (<15 cm) and one year (<22 cm) classes and to a certain extent by the two year class The occurrence of new recruits, especially during August - October period and their abundance may serve as an index to forecast the fishery in the ensuing season. Of late, the exploitation of gravid mackerel during the August-October period is causing concern as is evidenced by dwindling yield over the years. It appears that different stocks constitute the fishery. A close watch is being maintained on the purse seine fishing and its adverse effect, if any, on the artisanal fishery.



Rich haul of black pomfrets

A new resource — Dolfin fish

Among the pomfrets all the three species *P. argenteus, P. chinensis, Parastromateus niger* occur in these waters, the second species in more quantity than the others. The fishery is supported by 1 and 2 year classes (< 270 mm).

In addition to this, small sized black pomfrets occur, especially in indigenous gears. Regarding silver pomfrets, one and two year classes (<270 mm) support the fishery. Studies on the rate of growth, potential stocks and MSY are being carried out.

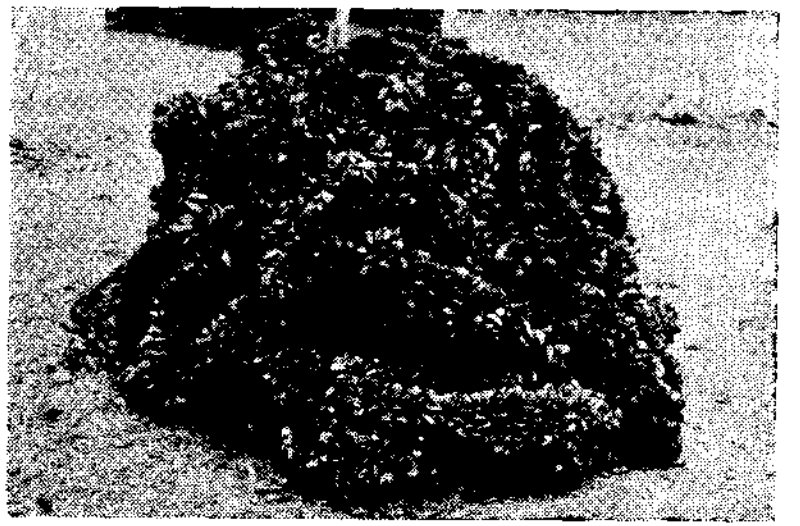
Demersal Fishery Resources

The demersal fishery resources are rich in this region and are almost exclusively exploited by the mechanised boats. The important sources are silver bellies, butter fish, lizard fishes, thread fin breams, cat fishes and sciaenids. The resource characteristics of these are continuously monitored to assess their potentials.

Bumper catch of catfishes with eggs.

Molluscan Fishery Resources

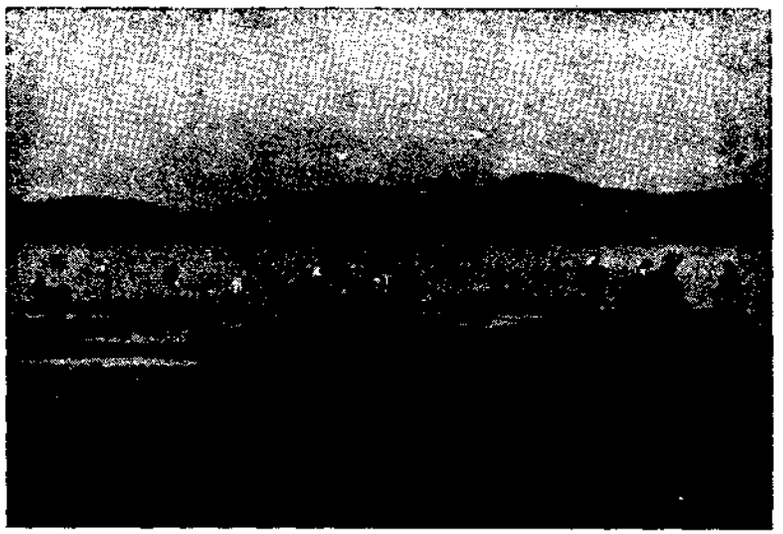
Squids and cuttle fishes though constitute a small segment of trawler catches, nevertheless bring in better returns because of their export value. In view of this, greater thrust has been made to study the resources characte-



Rich harvest of rope cultured mussels

ristics of *Loligo duvaucelii*, the main cephalopod resource. It is also landed in small shore seine units as the squids migrate shorewards to breed in the months of August to October.

The *Kali* and *Aghanashini* Estuaries support the bivalves, *Meretrix meretrix*, *M. casta var. ovum* and *Villorita*



Clams picking in the Kali estuary, Karwar

cyprinoides, among which the first species is commercially important. Studies have shown that the standing stock of these clams per unit area is highly variable and can very well be exploited from these estuaries, as there is an ever increasing demand for shell fishes. Oysters *(Crassostrea madrasensis* and *C. cucullata)* constitute a sustenance fishery and as such this resource is also being investigated.

Crustacean Fishery Resources

Penaeid prawns comprising *Metapenaeus dobsoni, M. affinis, Penaeus merguiensis, P. indicus, P. monodon* and *Parapenaeopsis stylifera* form rich resource of this region and are practically accounted by mechanised boats. It appears that this resource is subjected to fishing pressure over the years thereby resulting in their reduced sizes observed in recent years. It has been observed that during monsoon *M. dobsoni* and *P. merguiensis* form a good fishery by indigenous gears. This period coincides with their spawning and hence any unrestricted exploitation of gravid prawns is a cause for concern. Rich nursery grounds have been located for some penaeid prawns in the estuaries and their viability for supporting culture operations is being studied.

Fishery Environment Management

Physical and chemical aspects of the nearshore waters of Karwar together with their productivity potentials are investigated for assessing the productivity of waters and their bearing on the commercial fisheries. Depth-wise profile studies have indicated distinct layers and wide fluctuations at the sub-surface levels and also at the bottom. During post-monsoon period, the hydrographic conditions narrow down to a minimum and this serves as an ideal condition for pelagic fishes. Primary and secondary production studies have shown that their seasonal abundance and area are closely related to the pelagic fisheries.

CULTURE FISHERIES

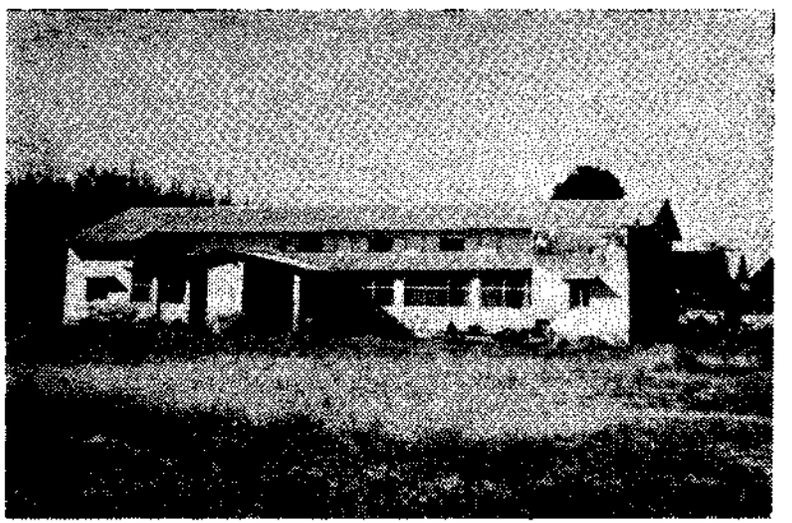
Culture experiments of the green mussel, *Perna viridis* by suspension method from floating rafts have shown that the mussel has attained marketable size within a period of almost 4 or 5 months thereby indicating the profitability for the entrepreneurs to go in for mussel culture in this part of the coast. A metre length of the rope can yield an average of 10 kg of mussels.

TRANSFER OF TECHNOLOGY

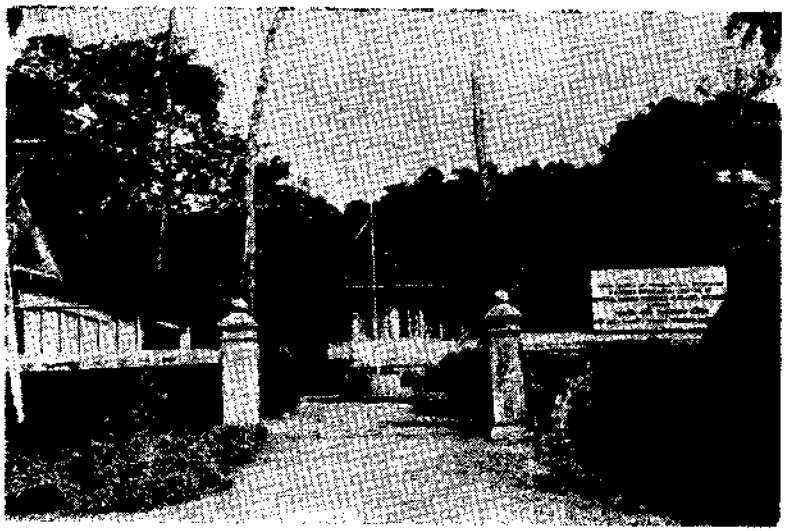
Under the Lab-to-Land Programme, fishermen of Binaga village near Karwar have been actively associated with the transfer of technology of mussel culture, thus helping in rural upliftment. At the behest of some maritime states, a training course in mussel culture has been conducted wherein officers deputed from the states are trained in various aspects for a period extending over 4 months.

Staff Strength and Infrastructure Facilities

The Research Centre has at present the following staff strength: Scientific 6, Technical 10, Ministerial 4 and Supporting 11. Scientific and technical staff handle 14 on-going research projects. The laboratory has essential equipments such as microscopes, pH meter, spectro-photometer, electrophoretic apparatus, air compressor, hot air ovens, BOD incubator, physical, chemical and electrical balances, refrigerators, deep freezer, photographic cameras, *camera lucida* and culture tanks. The museum consists of representative fish collections of this region and the skeleton of a sperm whale. The library houses important references



Wet laboratory of CMFRI



A view of Karwar Research Centre of CMFRI

on taxamony, fishery biology, oceanography, marine biology, aquaculture, statistics etc., including some important periodicals. A jeep and a Pablo boat are the facilities available for field work.

FUTURE PROGRAMMES

The existing research projects will be pursued with a multidisciplinary approach and a thrust to obtain further insight into the marine fishery resources of Karwar coastal region. A hatchery programme contemplated would be initiated to make the culture programme more self-supporting and economically viable.