



FISH AND FISHERIES

NEWS LETTER OF THE FISHERIES TECHNOCRATS FORUM - MADRAS

January 1996

Number 8

*Best Wishes for a
Happy and Prosperous 1996*

WHITHER DEEP SEA FISHING

Deep sea fishing has almost been synonymised with shrimp trawling in our country. Shrimp trawling is essentially coastal fishing upto a depth of about 50-60 m which can be done by wooden mechanised boats and small trawlers of steel and FRP construction. Out rigger steel trawlers of 22-28 m engaged in shrimp fishing are actually coastal trawlers. Some of them have of course conducted deep sea trawling in 300-350 m depth for deep sea lobsters and deep sea prawns in Kerala and Andaman waters. The Govt. in their wisdom considered vessels of 20 m and above as deep sea fishing vessels for the purpose of funding and subsidies. But deep sea fishing in the true sense of the word can be referred to stern trawlers and factory trawlers, capable of conducting bottom and midwater/pelagic trawling, tuna longlining, tuna purse-seining, large squid-jiggers etc. An analogy can be drawn to the deep sea trawlers of North Sea Banks, Georges Bank etc. which fish for the cod, haddock etc. The chartered foreign fishing vessels, test fishing vessels, tuna longliners and factory trawlers ranging in length from 40-110 m permitted by the Govt. are the ones we refer to as deep sea fishing vessels. Now let us see what are the scopes for deepsea fishing in India.

Deep sea trawling offers good scope for development. The survey conducted by the Fishery Survey of India (FSI) have revealed the availability of several species in high concentration especially off Gujarat, Kerala, Wadge Bank, Gulf of Mannar and Northern Tamil Nadu - Southern Andhra Pradesh Coast. These include the

Threadfin Bream, Big Eye, Blackruff, Green Eye, Crabs, Drift fish, Scads, Barracudas, etc. Perches, Horse mackerels, ribbon fish, catfish and sciaenids abound medium depth especially along northwest coast. The white meat fish, Threadfin Bream has been found to be best-suited for Surimi or fish analogue. Test fishing by several companies like Oriental High Sea Fisheries Ltd., Sovin Sea Food Ltd. and Kanchana Ganga Sea Foods Ltd. has yielded very encouraging results.

Midwater/Pelagic trawling by the Polish, Dutch and Danish vessels operated by FSI along the northwest coast have yielded encouraging results. The major resources amenable to midwater trawling are the horse mackerel, ribbon fish, sardines and catfish. It must be pointed out here that midwater trawling can be controlled in such a way that it captures fish from sea bed to sea surface. The fishing industry has however not shown any interest in this area.

Tuna long-lining is one area where the fishing industry has shown keen interest ever since the FSI and CIFNET demonstrated the availability of high concentration of Yellow Fin Tuna. Several companies brought in tuna longliners, fishing with conventional Japanese multifilament longlines and the American monofilament longlines. These companies are reported to be satisfied with the catch but problems other than availability of resources are affecting their operations. M/s. Fishing Falcon Ltd. and Savi Jena Sea Food Ltd. (test fishing) were getting attractive catches.

Tuna purse-seining for skipjack and small yellow fin is a major area of deep sea fishing offering excellent scope for development but practically nothing has been done in this direction. Seychelles Islands in the Indian Ocean made history when the tuna purse-seiners from Spain and France migrated there for tuna purse-seining around 1983 and the tuna catches increased from 39,000 t to 1,51,000 t in 1989. India also lies in the same tuna belt and the skipjack is likely to be abundant in the Laccadives and Andaman-Nicobar Islands. In fact, M/s. Indus Foods Ltd. in their short-lived operations obtained 400 t of skipjack in single operation.

Squid jigging for squids which are the third major item of sea food export from India, is another important area of deep sea fishing. Large squid jiggers with a series of automatic squid jigging machines are in operation in the Atlantic and Pacific oceans and this could be tried out in our country also.

Now, with all these rosy pictures, why deep sea fishing is not making any progress? There are several reasons. One is quick money and high returns. This is

possible only in shrimping for the low volume-high value shrimps. Accent has all the while been in developing shrimp fishing industry which is now in doldrums for various reasons. The second is the charter policy which was again yielding quick money for Indian charterers. Chartering of foreign fishing vessels was permitted to enable Indian companies to acquire necessary experience in deep sea fishing besides training of Indian crew, but it was continued for more than two decades as if there is no substitute for chartering. The third is opposition from the traditional, motorised and mechanised boats sectors on the grounds of destruction of marine ecology and so on. They forget that trawling itself is a destructive method of fishing and fishing itself is destroying the wild fish life! Perhaps the most important is 'too many cooks spoiling the broth'— the fragmented fisheries administration by Ministries of Agriculture, Food Processing Industries, Commerce etc.

T.E. SIVAPRAKASAM
Formerly Director,
Fishery Survey of India,
Bombay

CEPHALOPOD FISHING*

Cephalopod resources in Indian seas are exploited with several kinds of gear. But for some areas, they are caught only as by catch in gear operated for finfishes and crustaceans. In the Palk Bay, the squid, *Sepioteuthis lessoniana* are fished in a small shore seine with palm leaf flares and also hand lines. In Vizhinjam area on the southwest coast cuttlefishes are caught with a kind of indigenous hand jig. The bulk of squid and cuttlefish catches in India are obtained in trawl nets and the rest in hooks and lines, shore seines, boat seines and fixed bag nets.

In Car Nicobar Islands octopods are speared at night with light attraction of burning coconut leaf torches. Octopods are fished in Lakshadweep by spearing.

The cephalopod production of India is increasing remarkably over the last two and quarter decades. The estimated annual landings in 1993 amounted to 96,889 tonnes contributing 4.3% to total marine production.

Kerala, Maharashtra, Gujarat and Tamil Nadu are leading states in cephalopod production. Exploratory fishing has indicated the availability of good quantities of squids and cuttlefish in the continental shelf which could be exploited.

The distribution of the oceanic squids, *Symplectoteuthis oulaniensis* in Bay of Bengal and Arabian Sea revealed by experimental fishing shows that there are possibilities for exploitation of the squids.

There are very good prospects which exist for raising cephalopod production of India further from the present level by increasing effort put in exploitation of the resources in area beyond 50 m. depth. Ocean squids are exploited by using specific gear like midwater trawl, hooks and lines and jigs with light attraction.

K.S. RAO
Madras Research Centre of
C.M.F.R. Institute, Madras - 600 006.

*Abstract of the paper presented at the Seminar on 'Fisheries—A Multibillion Dollar Industry' held on 17th August 1995 at Madras.

Ready for sale:

Proceedings of the Seminar on
FISHERIES—A MULTIBILLION DOLLAR INDUSTRY

Price : Rs. 350/-

Order your copies to : Fisheries Technocrats Forum
C/o. Directorate of Fisheries Library,
Teynampet, MADRAS - 600 006.

CRAB FARMING POTENTIAL IN INDIA*

The resource potentials of suitable land, conducive water environments, wild seed and hatchery technology envisage high prospects of commercial culture of mud crab in India. Mud crab culture has been proved as viable venture in number of countries. Various technologies are adopted to culture the young ones to commercial size in cages, tidal pens, net impoundments and coastal ponds in Southeast Asian countries including India. Resourceful grounds and season for the occurrence of natural seed have been identified. Young crabs of indiscriminate fishing do not fetch better prices and such rejected size group are collected for further rearing under suitable culture system. Shrimp farming ponds have been converted for mud crab culture since the environmental requirements are more or less the same. Being euryhaline, mud crab is more tolerant of wide changes in salinity. The growth, survival, production and return of investment depends upon the system of culture, size of the seed, stocking density and farm maintenance. Techniques are employed in monoculture with single size and multiple

size stocking, polyculture with single size stocking and milkfish, fattening of gravid females and water crab. The average growth rate is 12-17 mm/25-75g/month. Maximum weight input at the rate of 75-100g/m was noticed in the size group of 9-13 cm(cw). This is the determining factor to select the size of seed for fattening. This technology is preferred for generating the income frequently. In monoculture system in brackishwater pond with optimum stocking density of 10,000/ha. an average present production of 1650 kg can be increased to 2400kg/har/crop of 4-6 months. In polyculture trials additional income is realised. The growth influencing factors are observed in larval rearing trials as well as in farming. Crab farming will soon become as practicable and profitable as shrimp farming in the country.

R. MARICHAMY
CMFRI

*Abstract of the paper presented at the Seminar on 'Fisheries—A Multibillion Dollar Industry' held on 18th August 1995 at Madras.

PROSPECTS FOR HATCHERY AND CULTURE OF SEA CUCUMBERS IN INDIA*

Earlier only seed of *Isostichopus japonicus* was produced in China, Japan, Korea and in recent years in Russia also. Seed of *Actinopyga echinites* was produced in recent years from Taiwan. Although *Holothuria scabra* is the most important sea cucumber commercially and distributed and forms a fishery in several parts of the world it is surprising that the seed of this species was not produced earlier. For the first time seed of *H. scabra* was produced at Tuticorin Research Centre of CMFRI in 1988. Since then seed of this species is produced on a number of occasions. Culture is attempted for the first time.

For the production of seed first the spawning season of the sea cucumber has to be determined. When the specimens are subjected to thermal stimulation only during the breeding season they spawn. *Holothuria scabra* spawns chiefly during February to April and also during November and December. *Holothuria atra* chiefly spawns during August and September at Tuticorin. In hatchery practice it is important to use only chlorinated sea water since the sea water filtered through biological filter and UV filter is still found to have bacteria. The larvae are maintained in one tonne tanks at the rate of three to four lakhs. Ninety per cent of the water is daily exchanged and larvae are taken out on every alternate day. They are fed on the microalga *Isochrysis galbana*. The larvae

settle down to the bottom of the tank at the end of 13-15 days. Then they are fed with the extract of *Sargassum* sp. sieved through 40 microns. They thrive well on this extract and grow fast. At the end of two months the juveniles reach a length of 20 mm. At this stage they have to be transferred to the sea.

The seed produced in the hatchery is grown in the sea in old one tonne tanks, rectangular cages, velon screen cages, netlon cages and in cement rings which are used in the construction of wells. The number of juveniles which can be stocked in rectangular cage is limited due to limited space. The netlon material cannot stand for long in the sea water. The velon screen cages get blocked due to small mesh. The cement rings remain for a long time in sea but the sea cucumbers tend to burrow and escape out. The best method to culture them is to produce seed in large quantities and broadcast them in suitable enclosed areas which has direct connection to sea so that the water is renewed during the high tide and low tide.

D. B. JAMES
CMFRI

*Abstract of the paper presented at the Seminar on 'Fisheries—A Multibillion Dollar Industry' held on 18th August 1995 at Madras.

K. CHIDAMBARAM — a Profile



Chidambaranar District in Tamil Nadu is named after V. O. Chidambaram for his bold attempt to launch a first Swadeshi Ship in the Gulf of Mannar between Tuticorin and Colombo. Hailing from the same District is our **Kanthimathinathan CHIDAMBARAM** who spent his career in exploring the wealth of the sea and with special emphasis on export trade and industry. He was born in Kulasekharapatnam, south of Tiruchendur on 9th February 1918. He had a brilliant academic career throughout culminating in a First Class B.Sc. (Honours) degree in Zoology from the premier Presidency College, Madras. He joined the Department of Fisheries of the then Madras Presidency when he was 20 years old as Research Assistant, then became Assistant Director of Fisheries (Marine Biology) in 1943. He is one of the pioneer research workers in the Madras State Fisheries Department and his numerous research papers were guide to all scholars who were working on Fish and Fisheries. His Bulletin on 'Common Food Fishes of Madras Presidency' is worth mentioning in this context. After serving in various posts including as Deputy Director of Fisheries, he moved to the Ministry of Agriculture, Government of India at New Delhi as Assistant Fisheries Development Adviser in 1952. He was in charge of Grow More Food Scheme, Foreign Aid Programmes like TCM, FAO etc., implementation and coordination of FAO Programmes and Indo-Norwegian Project. From then on he never looked back. A stickler for hard work and excellence, he did yeomen service in whichever post he adorned in his long career to follow. He was deputed to the Gujarat State in 1961 after the States Reorganisation to organise and establish a separate Department of Fisheries. The present stature of fisheries activities in this State bears testimony to the several development measures he undertook in the nascent department with a deep vision and foresight.

He was a member of very many Government delegations and committees and visited countries too many to mention, which experience stood him in good stead to lay down suitable policies for an all round development of fisheries in our country, both marine and inland.

He played an active role in the negotiations and in the establishment of the Indo-Norwegian Project with headquarters at Cochin and similar centres at Mandapam (Tamil Nadu) and Karwar (Karnataka).

With the International financial aid and technical expertise thus obtained, these three areas saw an intense development of fisheries activity in mechanised fishing,

infrastructural facilities like ice plant, cold storage, fish meal plant, boat building, fishermen training in modern methods of fishing, handling, processing for export and internal marketing etc.

As chairman of a technical committee constituted by the Government of Tamilnadu, after taking into account the potential of marine fishery resources and the infrastructure facilities of the Tamilnadu Coast a report was submitted on the modalities of orderly exploitation of the marine fisheries wealth by the traditional and coming up mechanised fishermen thus avoiding the tension and friction between these two groups that is seen elsewhere.

As Special Officer of the Ministry of Commerce of the Central Government his single handed and untiring efforts culminated in his authoring of a well documented and monumental report on the export potential of marine products from India which runs to 2500 pages—indeed a *magnum opus*—for Indian Institute of Foreign Trade. The recommendations contained therein have been accepted by the Government and saw the establishment of the Marine Products Export Development Authority in 1972 by an act of Parliament with Mr. Chidambaram as its founder Director. The export trade in fish and fisheries products came under the purview of this Authority in the Ministry of Foreign Trade. This is a single most important contribution of Mr. Chidambaram in the field of International Trade in Fisheries and the present annual earnings of foreign exchange to the tune of Rs. 3,500 crores as compared to about Rs. 200 crores in the 1960s speak nolumes of his work as Director. He attained superannuation in August 1977 after serving for 38½ years in State and Central Government.

Not content to enjoy his well earned rest, Mr. Chidambaram was active as Chairman of Matsyasagar Consultancy Services (P)Ltd. from 1978 to 1990 and is keeping his hands full as Godfigure Chairman of the Fisheries Technocrats Forum at Madras.

He lost his life partner a few years ago and is now fully engaged in consultancy work. He has two children, a son well settled in the U.S. and a daughter with whom he is staying now.

He is mild mannered and pleasant to talk to on anything on fisheries and one will get the impression of having met a super technocrat authority in the field of fisheries. He looks very humble and is very active at this age of 78 years. What is the secret of his success? Yes, it is *Chidambara Rahasya*.