MARINE FISHERIES INFORMATION SERVICE

TECHNICAL AND
EXTENSION SERIES

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CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
COCHIN, INDIA

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

THE MARINE FISHERIES INFORMATION SERVICE: Technical and Extension Series envisages the rapid dissemination of information on marine and brackish water fishery resources and allied data available with the Fishery Data Centre and the Research Divisions of the Institute, results of proven researches for transfer of technology to the fish farmers and industry, and of other relevant information needed for Research and Development efforts in the marine fisheries sector.

Abbreviation – *Mar. Fish. Infor. Serv. T & E Ser.*, No. 1 : 1978

CONTENTS

PREFACE

Over the years, a considerable amount of information on various aspects of the living resources of our seas, estuaries and brackish water areas has accrued with the Fishery Data Centre and the Research Divisions of the Central Marine Fisheries Research Institute. The data pertains to the major and minor fisheries on regional and all-India basis, biological information on constituent species, environmental features, new and exploitable resources, coastal aquaculture and information on fishing villages, landing centres, fishing population, craft and gear, fishing effort and socio-economics. The Fishery Data Centre receives data on fish and fisheries from a net work of 43 Research and Field Centres of the Institute located along the coastline and from other collaboration arrangements with agencies such as the Exploratory Fisheries Projects of the Government of India and the fishing industry. There is an urgent need for the rapid dissemination of these data for the benefit of the maritime states and the fishing industry as evidenced from the increasingly large number of enquiries being received by the Institute from fishermen, fish farmers, private entrepreneurs, the industry, administrators and planners concerned with fisheries development. It has not been possible so far to put this into practice except through regular publications of the Institute such as the Indian Journal of Fisheries, CMFRI Bulletins and CMFRI Newsletters. Certain special reports are also published to highlight important projects of work.

With a view to rapidly disseminating the information available with the Institute and for transfer of technology of tested research results the **MARINE FISHERIES INFORMATION SERVICE:** Technical and Extension Series has been initiated. It is envisaged to provide the various organizations and individuals synoptic pictures of the different fisheries, such as prawns, along the entire coastline of India, both mechanised and non-mechanised, involving total landings, catch rate and various biological parameters such as sizes and maturity conditions of constituent species in relation to the environmental features and any other information involving catch statistics of various marine fisheries at regular intervals. It is also intended to include forecasting of the ensuing pattern of the major fisheries and the data relevant to the management and conservation of the resources. National and International Fisheries news and data of topical interest and relevance to Indian Fisheries will also find a place in this series. The present publication, the first number in the series, highlights a synoptic picture of the prawn fishery of the country for the period January to March 1978.

The co-ordination and publication of the series and the various activities connected with the same have been entrusted with a Committee consisting of Dr. M. J. George, Shri S. K. Dharmaraja and Shri G. Subbaraju.

It is hoped that the **MARINE FISHERIES INFORMATION SERVICE** would be helpful to the various sectors of the fishing industry, fishermen, fish farmers, research and development organizations, and public sector undertakings engaged in the exploitation, development and management of the marine fisheries of the country.

E. G. SILAS

DIRECTOR

1. SYNOPSIS OF MARINE PRAWN FISHERY OF INDIA FOR THE FIRST QUARTER OF 1978*

Introduction

World fisheries statistics show that India has reached the top rank in prawn production in 1973 and ever since, this is being kept up. The fishery constituted by the penaeid and nonpenaeid prawns is mostly from the west coast of India. The demand for the prawns is ever increasing and all possible measures are being sought for exploitation of the capture fishery both along the east and west coasts of India. Besides the 14400 mechanised boats and about 75 larger trawlers introduced thus far, small and medium sized trawlers are being introduced into the fishery by the various maritime states in increasing numbers. This would result in a considerable increase in effort.

The trend in the prawn production over the past decade and a half shows that there has been steady increase of total landings up to 1973. After this there is an yearly fluctuation, reaching 220 thousand tonnes in 1975 and again coming down to less than 200 thousand tonnes in 1976. This trend is to be watched carefully for proper management of the resources. With a view to assess the overall situation of the capture fishery, the entire data available on the catch and the various fishery biological parameters are being anlysed to develop monthly synoptic picture of the fishery along the entire coastline of India. The results of the first quarter of 1978 are presented.

Total Catch

Data on the total catch† of prawns for the quarter, the Statewise catch during the months January, February and March 1978 and the gearwise catch of prawns during these periods along with some idea of the effort expended are shown in figures 1 and 2 and tables 1 and 2. The total catch of prawns amount to 33,208 tonnes out of which 21,947 (66.0%) is contributed by the penaeid prawns and the rest 11,262 (34%) by nonpenaeid prawns. Comparison with the figures for the same quarter of the previous year (table 3) shows that there has been a reduction in this quarter. This is mostly contributed by the nonpenaeid prawns from States other than Maharashtra (table 4), especially in January and March.

As usual, Maharashtra contributes to 47.3% of the total catch with a production of 15678 t. of which 10524 t. (67.1%) belong to nonpenaeid prawns, the catch of February being the highest (tables 2 and 3). This constitutes 93.6% of the total nonpenaeid prawns, the landings of which in other States being quite negligible. The catch mostly consists of two species namely the sergestid *Acetes indicus* and the palaemonid *Palaemon tenuipes*. Among other States, Kerala and Tamil Nadu contribute to 5193 t. (15.7%) and 4392 t. (13.3%) respectively. The increase in the percentage of landings of prawns along the Tamil Nadu coast is noteworthy. It is all the more interesting to note that the catches from Tamil Nadu coast (fig. 5) is mostly contributed by the species growing to large size such as *Penaeus semisulcatus*, *P. merguiensis* and *P. indicus* which would fetch much higher prices than more or less equivalent quantity of smaller prawns landed along the Kerala and Karnataka coasts. The catches of Tamil Nadu has picked up only recently and the reason for the increasing concentration of larger number of trawlers along the Tamil Nadu coasts is understandable. The contribution of prawns along the Karnataka coast also is equally encouraging, being 3518 t. (10.6%). Gujarat and Andhra Pradesh landed 6.1% and 4.4% of total landings of prawns. The landing in Goa was only 1.8%. The catch of West Bengal, Pondicherry and Orissa are considerably less.

Monthwise analysis show that in the overall total catch of the quarter, the landings were more or less evenly distributed in the three months. In Maharashtra, February showed the maxium of 7048 t. out of the total of 15678 t. and in March it was the minimum of 4235 t. While Kerala showed the major portion of the catch in March (3484 t.) and minimum in February (814 t.) Karnataka had maximum in January (2224 t.) with minimum in March (497 t.). In Tamil Nadu the catches were more or less equally distributed in the months of the quarter, maximum being in January (1708 t.). In Gujarat also the major portion of the catch was in January. Goa had the maximum catch in March (328 t. out of 613 t.) West Bengal and Pondichery landed the maximum catch in February.

Analysis of the data for gearwise catch in different States (table 5) would show that the catch from the indigenous nets dominated, the percentage catch of trawl nets being 47.5, 26.6 and 52.2% respectively in January, February and March. Out of the total catch of 33208 t. in the quarter, only 13929 t. (41.9%) have been landed by trawlers (upto 13m). The percentage catch by trawlers show the highest of 34.9 and 25.2 in Kerala and Karnataka respectively.

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*Prepared by the Members of Crustacean Fishery Resources team.
†The catch figures are provisional.

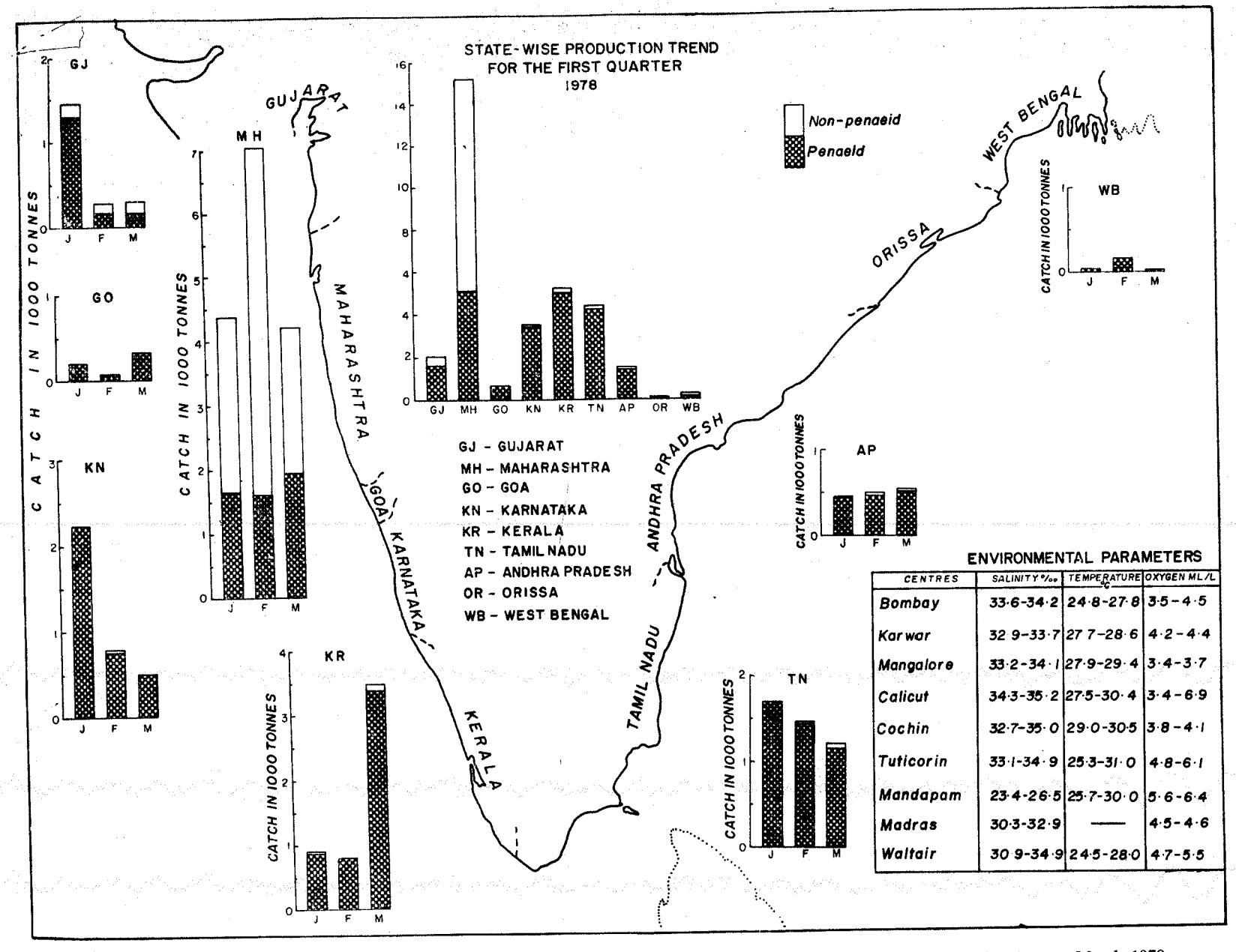


Fig. 1. Penaeid and nonpenaeid prawn landings and environmental parameters of the sea in different martitime States during January-March 1978.

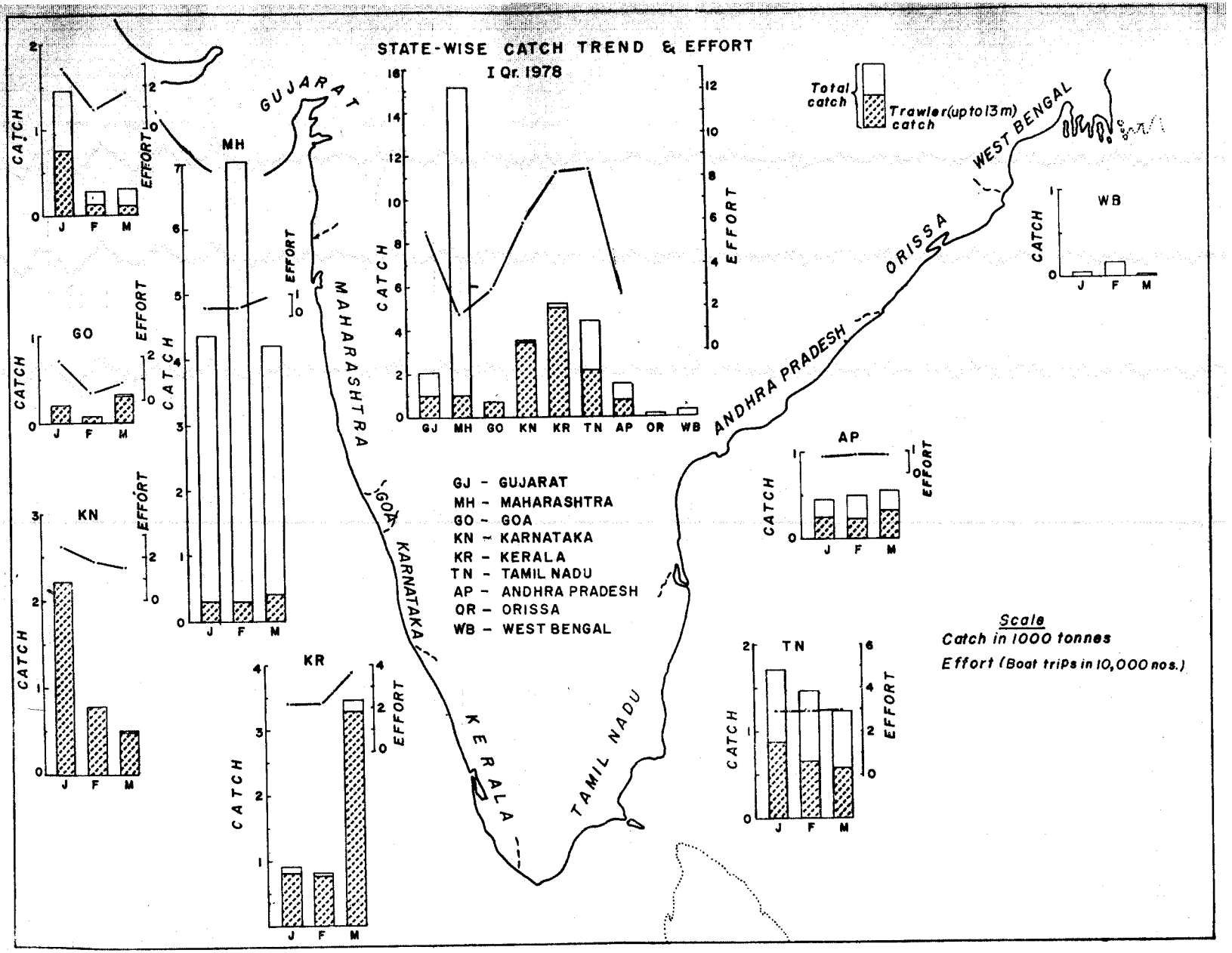


Fig. 2. Prawn landings by commercial shrimp trawlers in relation to the total prawn catch and the fishing effort during January-March 1978.

Species composition and other biological aspects at Selected Centres

From each State one or two representative centres were selected for detailed biological studies of the catch and these data are presented in figures 3 to 6. The data from Cochin and Neendakara, two important landing centres for prawns in Kerala has been pooled together and presented. Data from another centre in Kerala namely, Calicut also is given.

Table 1. *Prawn Landings in different maritime states from January to March* 1978

Maritime States	Prawn catch in tonnes			
	January	February	March	Total for I Qr.
Gujarat	1455	285	293	2033
Maharashtra	4395	7048	4235	15678
Goa	206	79	328	613
Karnataka	2224	797	497	3518
Kerala	895	814	3484	5193
Tamil Nadu	1708	1472	1212	4392
Pondicherry	1	62	10	73
Andhra Pradesh	455	483	536	1474
Orissa	4	1	–	5
W. Bengal	34	167	28	229
ALL INDIA TOTAL	11377	11208	10623	33208
Month-wise percentage	34.3	33.6	32.1	

Cochin: The total prawn landings in Cochin and Neendakara (combined) showed a decrease in February, again reaching above the level of the catch of January in March (Fig. 3). At the same time the catch per hour showed a steady decline in February and March. Among the 5 species of prawns contributing to the fishery, *Metapenaeus dobsoni* (*Poovalan*) with prominent sizes in males and females ranging from 66-80 mm was the dominant species in January and March. *Parapanaeopsis stylifera* (*Karikkaadi*) with modal lengths of 81-95 mm was second in abundance in all the three months. But in February *Penaeus indicus* (*Naaran*) with prominent sizes of 121-161 mm was the dominant species. The other two species of *Metapenaeus,* namely *M. affinis* (*Kazhanthan*) and *M. monoceros* (*Chooden*) were absent in February while present in smaller numbers in the other months. *M. dobsoni* consisted of more mature females in January while *P. stylifera* had mature females more in March.

Calicut: The catches were highest in January, thereafter showing a decrease (Fig. 3). *M. dobsoni* with modal length at 78-93 mm was dominant in January while *P. stylifera* of modal length at 78-88 mm was more abundant in both February and March.

Table 2. *State-wise penaeid and non-penaeid prawn catch from January to March* 1978

Maritime States	Landings in tonnes							
	January		February		March		Total for I Qr.	
	Penaeid	Non-Penaeid	Penaeid	Non-penaeid	Penaeid	Non-penaeid	Penaeid	Non-penaeid
Gujarat	1298	157	187	98	154	139	1639	394
Maharashtra	1626	2769	1606	5442	1922	2313	5154	10524
Goa	206	—	79	—	328	—	613	—
Karnataka	2224	—	791	6	497	—	3512	6
Kerala	872	23	805	9	3393	91	5070	123
Tamil Nadu	1708	—	1462	10	1177	35	4347	45
Pondicherry	1	—	62	—	10	—	73	—
Andhra Pradesh	446	9	454	29	526	10	1426	48
Orissa	4	—	1	—	—	—	5	—
W. Bengal	24	10	60	107	24	4	108	121
ALL INDIA TOTAL	8409	2968	5507	5701	8031	2592	21947	11261
Month-wise Percentage	38.4	26.4	24.9	50.7	36.7	22.9		

Table 3. *State-wise prawn landings and percentage for the First quarter of* 1977 *and* 1978

Maritime States	Prawn landings in tonnes		Percentage	
	1977	1978	1977	1978
Gujarat	1289	2033	3.2	6.2
Maharashtra	26765	15678	66.5	47.3
Goa	263	613	0.6	1.8
Karnataka	1190	3518	2.9	10.6
Kerala	6292	5193	15.4	15.7
Tamil Nadu	1370	4392	3.4	13.3
Pondicherry	8	73	..	0.1
Andhra Pradesh	2281	1474	5.7	4.4
Orissa	509	5	1.3	..
W. Bengal	401	229	1.0	0.6
ALL INDIA TOTAL	40268	33208	100.0	100.0

P. indicus was caught only during the month of March. The size range of modal sizes of this species was 128-153 mm. Small quantities of other spceies viz. *P. monodon* and *M. affinis* were also landed during all these months. The percentage of mature females was more in March for *P. stylifera* while more females were mature in *M. dobsoni* during February.

Panaji: (Fig. 4) Out of 6 species represented, *M. monoceros* dominated in the catches during February and March. But in January *P. stylifera* was most abundant. The dominant size in *M. dobsoni* was 73-98 mm and in *P. stylifera* 88-113 mm. About half of the females of *M. dobsoni* were mature in February. The percentage of mature females of *P. stylifera* was 53.8 and 67.5 in January and March respectively.

Bombay: The major fishery was for nonpenaeid prawns dominated by *Acetes indicus* and *Palaemon tenuipes.* The

Table 4. *State-wise penaeid and non-penaeid prawn landings and their percentage for the First Quarter of* 1977 *and* 1978

Maritime States	Landings in tonnes & percentage							
	1977				1978			
	Penaeid	%	Non-penaeid	%	Penaeid	%	Non-penaeid	%
Gujarat	1273	6.5	16	0.1	1639	7.5	394	3.4
Maharashtra	7276	37.0	19489	94.5	5154	23.5	10524	93.6
Goa	263	1.3	—	—	613	2.8	—	—
Karnataka	1190	6.0	—	—	3512	16.0	6	—
Kerala	6117	31.1	75	0.4	5070	23.2	123	1.0
Tamil Nadu	1368	7.0	2	—	4347	19.9	45	0.4
Pondicherry	7	0.1	1	—	73	0.1	—	—
Andhra Pradesh	1376	7.0	905	4.4	1426	6.5	48	0.5
Orissa	508	2.6	1	—	5	—	—	—
W. Bengal	267	1.4	134	0.5	108	0.5	121	1.1
ALL INDIA TOTAL	19645	100.0	20623	100.0	21947	100.0	11261	100.0

Mangalore: (Fig. 4): The landings as well as the catch rate show a steady decrease from January to March. The catches are composed of all the 5 species available along the Kerala coast. *P. stylifera* was dominating in the catch during all the months, the prominent size range being 83-108 mm.

M. dobsoni ranked second in abundance during January and February with dominant sizes of 73-98 mm. But in March *M. monoceros* with modal sizes 108-148 mm was second. Appreciable quantities of penaeid prawn catches were mostly constituted by *Solenocera indica, Parapenaeopsis hardwickii, P. stylifera* and *M. affinis.*

Veraval: The prawn catches dominated by *Parapenaeopsis stylifera* were the highest in January, showing a decline in February and March.

Tuticorin & Mandapam (Fig. 5): The dominant species was *P. semisulcatus* with modal sizes of 113-173 mm. The landings of this species showed a steady decline

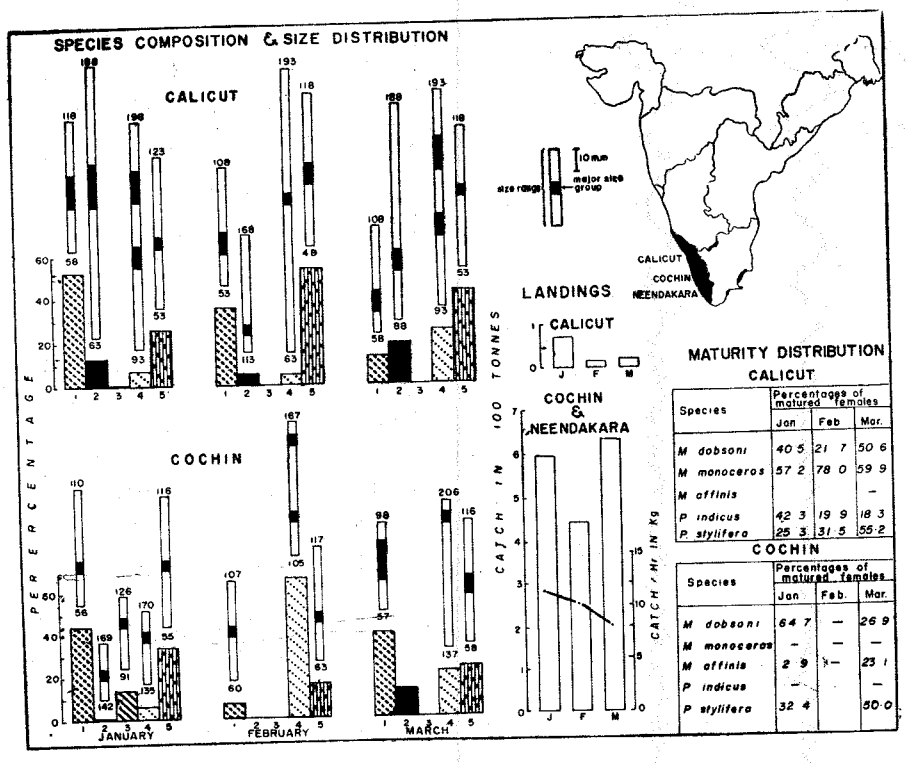


Fig. 3. Catch trend, species composition and biological features of prawns at Cochin, Neendakara and Calicut.

1. *Metapenaeus dobsoni*
2. *M. monoceros*
3. *M. affinis*
4. *Penaeus indicus,*
5. *Parapenaeopsis stylifera*

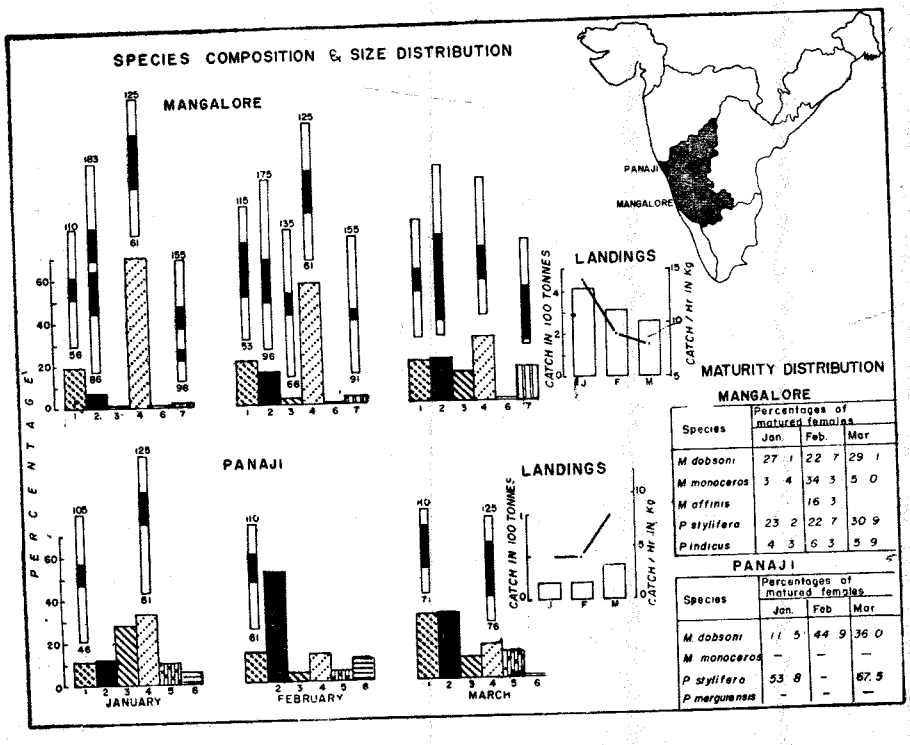


Fig. 4. Catch trend, species composition and biological features of prawns at Mangalore and Panaji

1. *M. dobsoni,*
2. *M. monoceros,*
3. *M. affinis,*
4. *P. stylifera,*
5. *Penaeus merguiensis,*
6. *P. monodon,*
7. *P. indicus*

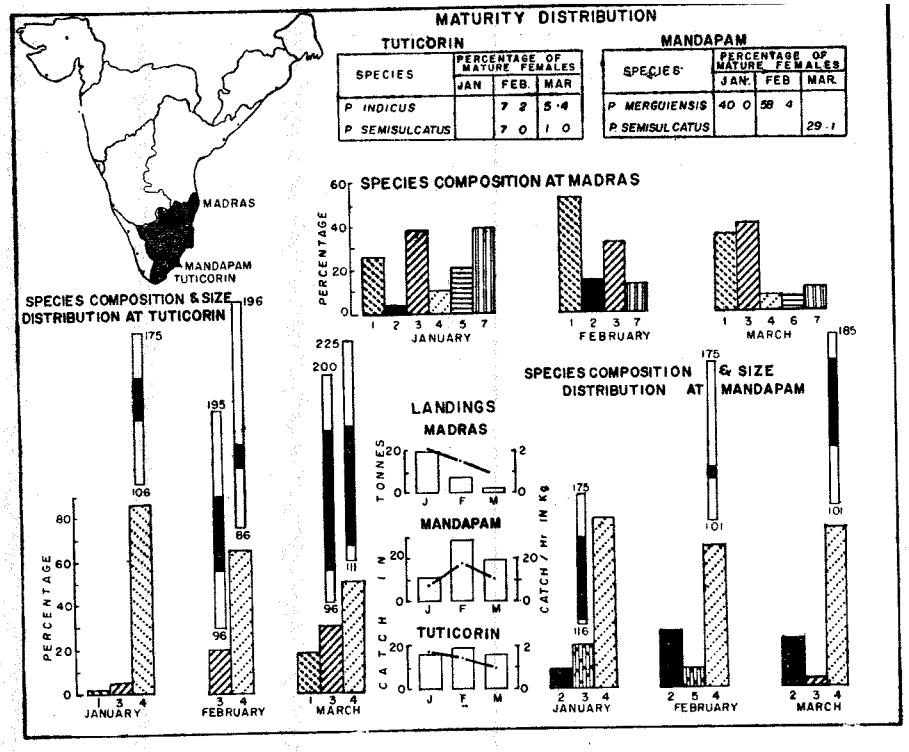


Fig. 5. Catch trend, species composition and biological features of prawns at Tuticorin, Mandapam and Madras.

1. *M. dobsoni,* 2. *M. affinis,* 3. *P. indicus,*
4. *P. semisulcatus* 5. *P. merguiensis,* 6. *M. monoceros,*
7. *P. monodon.*

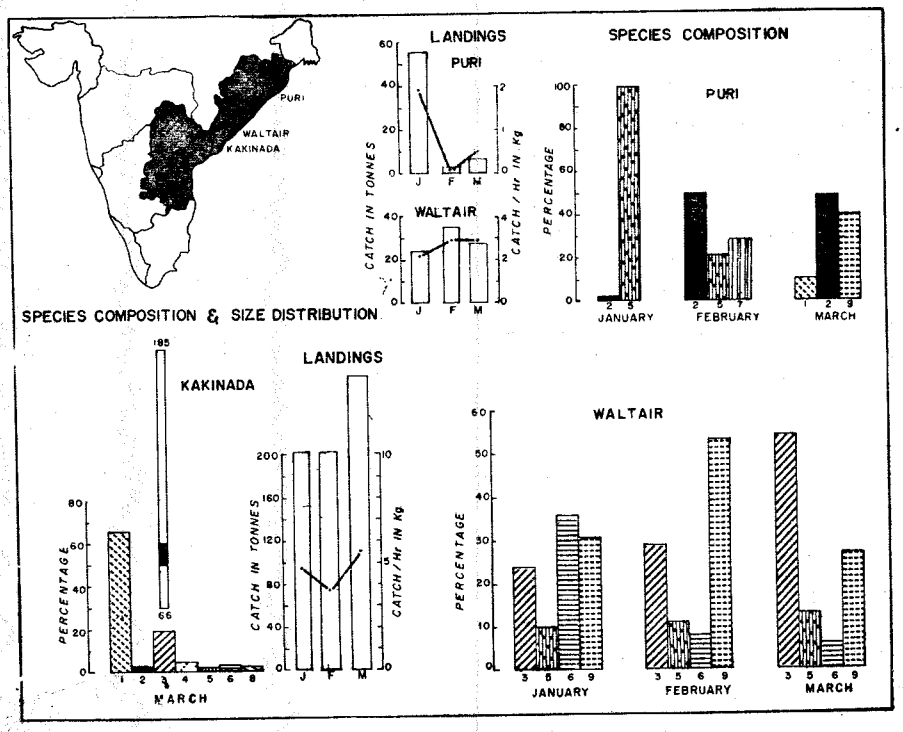


Fig. 6. Catch trend, species composition and biological features of prawns at Kakinada, Waltair and Puri.

1. *M. dobsoni,* 2. *M. affinis,* 3. *M. monoceros,*
4. *M. brevicornis* 5. *P. indicus,* 6. *P. monodon,*
7. *P. merguiensis,* 8. *P. stylifera* 9. Other species

Table 5. *Prawn landings by commercial shrimp trawlers in relation to the total prawn catch during January-March, 1978*

Maritime States	Landings in tonnes								
	January		February		March		Total for I Qr.		
	Total prawn catch	Prawn catch by shrimp trawlers	Total prawn catch	Prawn catch by shrimp trawlers	Total prawn catch	Prawn catch by shrimp trawlers	Total prawn catch	Prawn catch by shrimp trawlers	State-wise %
Gujarat	1455	784	285	135	293	112	2033	1031	7.4
Maharashtra	4395	304	7048	286	4235	422	15678	1012	7.3
Goa	206	206	79	79	328	318	613	603	4.3
Karnataka	2224	2224	797	797	497	496	3518	3517	25.2
Kerala	895	788	814	781	3484	3296	5193	4865	34.9
Tamil Nadu	1708	874	1472	661	1212	580	4392	2115	15.2
Pondicherry	1	—	62	—	10	—	73	—	—
Andhra Pradesh	455	223	483	241	536	322	1474	786	5.6
Orissa	4	—	1	—	—	—	5	—	—
West Bengal	34	—	167	—	28	—	229	—	—
ALL INDIA TOTAL	11377	5403	11208	2980	10623	5546	33208	13929	
Monthly percentage		47.5		26.6		52.2		41.9	

from January to March. *P. indicus* was next in abundance at Tuticorin while at Mandapam *M. affinis* ranked second in quantity of landings during February and March. In January *P. merguiensis* was second in abundance in the total prawn landings at Mandapam. Small quantities of *M. dobsoni* were also landed at Tuticorin in January and March. Percentage of mature females of *P. semisulcatus* and *P. indicus* was more during February at Tuticorin.

Madras (Fig. 5): *P. monodon* dominated the catch in January while *M. dobsoni* was most abundant in February. *P. indicus* was the dominant species during March although it was ranking second in the other two months. Other species represented in the trawl landings at Madras were *M. affinis, M. monoceros.* and *P. semisulcatus.*

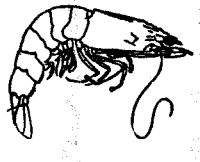
Kakinada (Fig. 6): The most important species was *M. dobsoni* in March. *M. monoceros* stood next in abundance. *M. affinis, M. brevicornis, P. merguiensis, P. monodon* and *P. stylifera* were the other constituents in the prawn landings at Kakinada.

Waltair (Fig. 6) *P. monodon* was most abundant in January while in the other months *M. monoceros* was dominating. The other species caught was *P. indicus.*

Puri (Fig. 6): *P. indicus* dominated in January, contributing to almost the entire catch, the range of larger sizes being 148-163 mm. In February and March the most important species was *M. affinis,* with the prominent size ranging from 133-138 mm. *P. merguiensis* of modal sizes 168-178 was next in abundance In January *P. indicus* females were mostly spent recovering while mature females of *M. affinis* were about 61% in January and 30% in March. 62.5% of females of *P. merguiensis* were mature in February.

Environmental Parameters (Fig. 1)

In Maharashtra there seems to be a direct correlation between the landings and the temperature and oxygen content of the seawater. The maximum catch were recorded in February when the oxygen content was maximum and the temperature minimum. Similarly in Karnataka also during January oxygen content was maximum and temperature minimum with maximum landings of prawns. The same is the condition in Cochin in March. Although not very clear, along the Tamil Nadu coast also a similar trend was evident.



2. FAO NEWS

Fish Production

The world fish production reached an all time high of 73.47 million tonnes in 1976 as compared to 69.89 million t. in the previous year. The production from the Indian Ocean was only 4.5% of this, amounting to 3.29 million t. Out of this, India's contribution was 2.40 million t., of which Marine Fisheries accounts for 1.35 million t.

In total fish production in the world during 1976 India occupies 8th place, the other countries in their order of production (in million tonnes) being Japan (10.62), U. S. S. R (10.13), China (6.88), Peru (4.34), Norway (3.44), U. S. A. (3.00) and Republic of Korea (2.41), However, in shrimp production India ranks first with 196,000 t. followed by U. S. A. (183,000 t.) Thailand (110,000 t.) and Mexico (72,000 t.)

(FAO Year book of Fishery Statistics Vol. 42, 1976)

Aquaplosion - Dr. T. V. R. Pillay predicts

In a report to the second FAO Technical Conference on aquaculture at Kyoto, Japan in May-June 1976, Dr. T. V. R. Pillay, Chief Fisheries Resources Officer, Department of Fisheries, FAO of the United Nations, predicted that world aquaculture production will double by 1985–from the current 6 million to 12 million tonnes. According to him aquaculture was receiving greater attention today because of increased costs of fishing, expected changes in laws of the sea and the need for relocating and finding employment for excess fishermen and under-employed farmers.

The more important advances related to the improvement and modernisation of traditional practices. Whether the increases would be of low or high priced species depended largely on national policies rather than aquaculture technology. To achieve a projected five fold to ten fold increase in aquaculture production in three decades, massive financial investments, suitable legislation, intensive research, manpower training, development of institutions and other essential infrastructures were needed.

3. ANNOUNCEMENT

SEMINAR ON

The Role of Small-scale Fisheries and Coastal Aquaculture in Integrated Rural Development

DATES

December 6-9, 1978

VENUE

Madras Research Centre of Central Marine Fisheries Research Institute
9, Commander-in-Chief Road
Madras-600 008

BACKGROUND

In the recent years, the imperative need for uplifting the rural sector for achieving an overall development of the Nation's economy and status has been recognised. The coastal sector is essentially rural and is composed predominantly of fishing villages. The uplift of this sector would thus largely depend upon the improvement of the economic and social status of the fishermen communities.

Along the 6100 km long coastline of India, about 3 million fisherfolk live in about 1800 villages spread over the maritime States and Union Territories. Employing 0.219 million indigenous non-mechanised crafts and 2.5 million numbers of different types of gear, one million active fishermen are engaged in the traditional small-scale fisheries in the coastal region. This sector contributes to about 65% of the total marine fish production of 1.4 million tonnes of the country, 0.5% of the gross domestic product and 60% of the foreign exchange earnings of the marine products. In spite of the significant role played by this sector, the majority of the fishermen belong to the low-income group and economically backward segment of the society and live below the poverty line. The small-scale fisheries sector is not organised and the operational and marketing aspects are still individual-based beset with middle-man problems. The benefits of development programmes are yet to reach the small fishermen to any notable extent.

New technologies in fisheries, particularly in the field of coastal aquaculture, are being developed in India for increasing the production from the coastal and brackishwater areas and these are in the process of being transferred to the field. It is envisaged that these technologies could advantageously be blended with the existing avocation of the fishermen as well as with the agricultural and live-stock practices. Aquaculture has great potential for converting the long coastline and vast brackish water areas into units of production ideally for the benefit of landless labour. However, it is necessary to identify the technologies with reference to their adaptability by small fishermen and landless labour, possible areas of operation, investments needed, and, above all, the social and economic benefits that would accrue to the communities. Such programmes need an integrated approach and active participation of fishermen, fish farmers, technologists, social and financial agencies. In this context, the seminar on the "*Role of small-scale fisheries and coastal aquaculture in integrated rural development*" is organised at

which fisheries and agricultural scientists, administrators, social scientists, economists, financial organisations, fish farmers and fishermen themselves could deliberate for evolving an integrated strategy and an action plan for the development of the coastal rural sector.

OBJECTIVES

The seminar would review the present status of the traditional small-scale fisheries and the new technologies of coastal aquaculture, identify the areas which are ready for immediate transfer to the field for large-scale operations, consider measures for integrating these operations with agricultural and livestock practices along with the necessary inputs, and discuss the social, economic and financing problems to evolve an integrated approach for accelerated coastal rural development.

PLAN OF TECHNICAL SESSIONS

i. Present status of the small-scale fisheries and coastal aquaculture.

ii. Socio-economic conditions of the coastal rural sector.

iii. Resource potential for capture and culture fisheries in the coastal region.

iv. Technological base for integrated rural development.

v. Post-harvest technology.

vi. Man-power requirements and training.

vii. Financing of integrated projects.

viii. Public policies and planning of rural fisheries.

ix. Concluding session.

Specialists will deliver keynote addresses in the Technical Sessions which will be followed by presentation of invited papers and discussion.

PARTICIPATION

Scientists, technologists, administrators, sociologists, economists, financing agencies, fishermen and fish farmers who could make meaningful contributions to the discussions and proceedings can participate in the seminar. They are requested to inform the Director, Central Marine Fisheries Research Institute, Cochin, of their intention to participate before November 4, 1978. Acceptance of participation will be communicated.

All correspondence relating to the seminar may be addressed to:

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4. HIGHLIGHTS OF MARINE PRODUCTS EXPORTS FROM INDIA

Export of marine products from India in 1977

No.	Items	Quantity (in tonnes)	Value (in thousand Rs.)
1.	Frozen shrimp	47,239	15,62,206
2.	Frozen lobster tails	596	38,804
3.	Frozen frog legs	2,834	65,967
4.	Frozen fish	3,765	38,566
5.	Frozen cuttle fish	1,088	17,314
6.	Canned shrimp	128	5,221
7.	Dried shrimp	235	1,711
8.	Dried fish	4,220	22,730
9.	Shark fins & fish maws	287	22,469
10.	Frozen crab meat	23	651
11.	Canned crab meat	50	3,144
12.	Canned tuna	22	349
13.	Beche-de-mer	67	1,947
14.	Fish oil	45	122
15.	Fish meal	3,594	8,027
16.	Miscellaneous	771	8,146
	Total	64,964	17,97,374

(Source: Statistics of Marine Products Exports-1977. The Marine Products Export Development Authority, India.)

5. RECENT CMFRI PUBLICATIONS

1. CMFRI Special publication No. 1–Pearl culture training

   CMFRI Special publication No. 2–Mariculture research and developmental activities

   CMFRI Special publication No. 3–Summer Institute in breeding and rearing of marine prawns.

2. CMFRI News letter No. 6 April-September, 1977

3. CMFRI Bulletin 27—Exploited marine fishery resources of India. A synoptic survey with comments on potential resources.

4. Krishi Vigyan Patrika–Mariculture Series 1. Krishi Vijyan Kendra for mariculture. (In English and Malayalam) Mariculture Series 2

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