



FISH & FISHERIES

NEWS LETTER OF THE FISHERIES TECHNOCRATS FORUM - MADRAS

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SHRIMP FISHERIES OF INDIA

Number 10

INTRODUCTION

Prior to the sixties, the exploitation of edible shrimps was carried out by indigenous crafts and gears and small quantities of dried shrimps were exported. The exploratory mechanised trawling and the introduction of new fishing gears during the sixties have brought to light the rich potential of shrimp resources in the inshore and deep water regions of the Indian Exclusive Economic Zone. In the following three decades, the shrimp fishery has witnessed a phenomenal growth, resulting in earning of several millions of rupees annually in the sea-food export trade. The informations gathered from various sources are pooled together and presented here in a nutshell.

ALL INDIA PRODUCTION

Year	Production (tonnes in lakhs)	
	Penaeid Shrimps	Non-Penaeid Shrimps
1950	0.38	0.37
1955	0.53	0.53
1960	0.32	0.36
1965	0.35	0.41
1970	0.89	0.32
1975	1.41	0.79
1980	1.12	0.59
1985	1.21	0.67
1990	1.64	0.79
1994	2.25	0.74

MARITIME STATE-WISE PRODUCTION

(Av. for 1981-85)

State	Production (tonnes in lakhs)	
	Penaeid Shrimps	Non-Penaeid Shrimps
Gujarat	11349	6459
Maharashtra	37477	42738
Goa	4364	9
Karnataka	5940	21
Kerala	26189	140
Tamil Nadu	13512	331
Pondicherry	508	19
Andhra Pradesh	7892	3765
Orissa	2014	117
West Bengal	701	2217
Andamans	112	1

CRAFT-WISE PRODUCTION

State	Mechanised Craft		NonMechanised Craft	
	Percentage shared by			
	Penaeid Shrimp	NonPenaeid Shrimp	Penaeid Shrimp	NonPenaeid Shrimp
Gujarat	63.8	36.2	60.9	39.1
Maharashtra	52.4	47.6	48.0	52.0
Goa	100.0	---	100.0	---
Karnataka	98.1	1.9	100.0	---
Kerala	100.0	---	89.1	10.9
Tamil Nadu	99.1	0.9	94.6	5.4
Pondicherry	95.9	4.1	98.2	1.8
Andhra Pradesh	90.6	9.4	86.0	14.0
Orissa	88.9	11.1	98.5	1.5
West Bengal	7.9	92.1	22.1	77.9

PRODUCTION RATE

Region	Range-Catch per unit effort in kg.	
	Penaeid Shrimps	Non-Penaeid Shrimps
Northwest coast	58-340	18-55
Southwest coast	27-74	2
Southeast coast	13-39	2
Northeast coast	22-90	1-15

PEAK PERIOD OF PRODUCTION

Region	Range-Catch per unit effort in kg.	
	Penaeid Shrimps	Non-Penaeid Shrimps
Northwest coast	Sep-Jan	Apr-May & Oct-Nov
Southwest coast	Jul-Mar	Jun-Aug
Southeast coast	Aug-Feb	Apr-Sep
Northeast coast	Oct-Mar	Oct-May

BANANA SHRIMP CULTURE IN GUJARAT

Seeds of Banana shrimp (*Penaeus merguensis*) collected from wild were reared in a well-prepared 0.68 ha pond, on a diet of CP & Higashimaru feed for a period of 127 days. Reared shrimps attained an average size of 17.5 g by the end of culture period. A production of 870 kg was achieved at 49.7% survival, which worked out to 1279 kg/ha/127 days.

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ESTUARINE SHRIMP FISHERIES

Estuary	Period	Av. annual landings in tonnes	Important species (in order of abundance)
Little Rann of Kutch	1959-62	575	10 & 13
	1973	381	
	1980	2312	
Zuari estuary	1972-77	2	7, 8, 1, 4 & 2
Kali estuary	1968-75	5	7, 8, 1, 4 & 2
	1981-88	73	
Nethravathi estuary	1963-67	3	7, 8 & 1
	1981-88	10	
Korapuzha estuary	1968-88	71	7, 8 & 1
Cochin backwater	1970-86	1365	7, 8, 1, 3 & 9
Ashtamudi lake	1983-84	163	7, 1, 8, 3 & 5
Manakkudy lake	1972-73	4	1, 7, 2 & 8
Estuaries in Ramanathapuram dt. in Tamil Nadu	1967-68	10	1, 7, 8, 2 & 9
Vellar estuary	1967-74	26	1, 8, 7 & 2
Killai backwater	1970-71	99	1, 8, 7 & 2
	1974	41	
Kovalam backwater	1972-73	12	1, 8, 7 & 2
Adyar estuary	1962-65	3	1, 8, 7 & 2
Ennore estuary	1972-76	13	1, 8, 7 & 2
	1981-86	23	
Pulicat Lake	1965-80	496	1, 8, 7 & 2
Estuary near Machilipatnam	1972-73	54	8, 7, 12, 2, 3, 9 & 12
Kakinada backwater	1974-77	320	8, 7, 12, 2, 3, 9 & 12
	1981-86	493	
Chilka Lake	1975-65	1029	1, 2, 7 & 11
Estuary near Puri	1972-76	12	1, 2, 8, 12 & 4
	1981-84	28	
Estuary near Paradeep	1986-88	33	8, 1, 7 & 2
Hooghly-Matlah estuarine system	1964-76	1354	5, 2, 3, 8, 7, 11, 10 & 13
	1984-91	2475	

1. *Penaeus indicus*; 2. *P. monodon*; 3. *P. semisulcatus*; 4. *P. merguensis*; 5. *P. latisulcatus*; 6. *P. penicillatus*; 7. *Metapenaeus dobsoni*; 8. *M. monoceros*; 9. *M. affinis*; 10. *M. kutchensis*; 11. *M. moyebi*; 12. *M. brevicornis*; 13. others.

EXPORT OF SHRIMP

Year	Quantity (in tonnes)	Value (in million rupees)
1960	2259	14.8
1965	9984	56.4
1970	26246	290.5
1975	47191	950.5
1980	48251	1850.8
1985	59580	3146.8
1990	61910	6061.5
1994	105358	25513.0

POTENTIAL RESOURCE IN EEZ.

	Penaeid shrimps	Non-Penaeid shrimps
Potential Yield (in tonnes)	1,80,000	1,05,000
Present level of exploitation (% based on 1975-94)	77.9	65.2

Salt-Brine Shrimp (*Artemia*)-Tiger Shrimp (*Penaeus monodon*) in saline water

In Vinh Chau district, Vietnam, farmers produce 371 tonnes of salt and 84kg of brine shrimp during the dry season and 64kg of the tiger shrimp during the rainy season per hectare. The process involves the use of *Artemia* biomass to feed the shrimp. The waste water containing algae from the shrimp pond is pumped into *Artemia* pond, which serves as feed for brine shrimp and gets cleaned. The high saline and algae-free water from the brine shrimp ponds is utilised for salt production

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SHRIMP SPECIES EXPLOITED IN EEZ OF INDIA

Region	Habitat	Species	
		Penaeid Shrimps	Non-Penaeid Shrimps
Northwest coast	Inshore sea	7, 11, 12, 13, 14, 15, 17, 27, 29, 30, 34, 35, 37, 38, 39, 40, 44.	1, 2, 3, 4, 8, 22.
Southwest coast	Inshore sea	11, 13, 17, 30, 33, 34, 38, 40.	2, 8, 22
	Deep sea	5, 6, 19, 24, 32, 45.	9, 10, 23, 41, 42.
Southeast coast	Inshore sea	11, 12, 13, 14, 16, 17, 18, 20, 21, 24, 25, 26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38, 40, 43, 44, 46, 47.	1, 2, 3, 4, 8, 22.
Northesat coast	Inshore sea	11, 12, 13, 14, 15, 17, 30, 34, 35, 37, 38, 39, 40.	2, 3, 8, 22.

1. *Acetes erythraeus*; 2. *A. indicus*; 3. *A. japonicus*; 4. *A. sibogae*; 5. *Aristeus alcocki*; 6. *Aristomorpha woodmasoni*; 7. *Atypopenaeus stenodactylus*; 8. *Exopalaemon styliferus*; 9. *Heterocarpus gibbosus*; 10. *H. Woodmasoni*; 11. *Metapenaeus affinis*; 12. *M. brevicornis*; 13. *M. dobsoni*; 14. *M. ensis*; 15. *M. kutchensis*; 16. *M. lysionassa*; 17. *M. monoceros*; 18. *M. moeybi*; 19. *Metapenaeopsis andamanensis*; 20. *M. mogiensis*; 21. *M. stridulans*; 22. *Nematopalaemon tenuipes*; 23. *Parapandalus spinipes*; 24. *Parapenaeus longipes*; 25. *Parapenaeopsis cornuta*; 26. *P. coromandelica*; 27. *P. hardwickii*; 28. *P. maxillipedo*; 29. *P. sculptilis*; 30. *P. stylifera*; 31. *P. uncta*; 32. *Penaeopsis jerryi*; 33. *Penaeus canaliculatus*; 34. *P. Pindicus*; 35. *P. japonicus*; 36. *P. latisulcatus*; 37. *P. merguensis*; 38. *P. mondon*; 39. *P. penicillatus*; 40. *P. semisulcatus*; 41. *Plesionika ensis*; 42. *P. martia*; 43. *Sicyonia lancifera*; 44. *Solenocera crassicornis*; 45. *S. hextii*; 46. *Trachypenaeus curvirostris*; 47. *T. sedili*.

M. KATHIRVEL

INTEGRATED FISH FARMING

Fish-Agriculture-Animal Husbandry in freshwater

Recent Newspaper reports indicate that there is a spurt in development of integrated fish farms in different districts of Tamil Nadu. The technical and economic feasibility of such farming practices have been demonstrated in several countries. Integration of crops, animals and fish could be much more efficient than crop-livestock systems.

The farming systems concept aims at developing farm-household systems and rural communities for all round benefits. Having accepted the fact that land is generally a valuable, sometimes scarce, resource, the multipurpose use of the same for crop, animal and fish production will have to be based on proper planning and management. Land evaluation lead to possible farm systems criteria for production of crops, vegetables, livestock, poultry and of course fish. The feasibility of combinations of fish culture and animal husbandry; crops and fish; and crops, fish and other animals in order to achieve maximum sustainable benefits leads to successful integrated fish farming. Under such conditions, available natural resources need to be efficiently utilized and recycled in order to increase and maintain the overall production rate. In determining appropriate management principles of integrated fish farming systems, the technical efficiency of different combinations and economic feasibility need to properly worked out.

Dr. VGOPALAKRISHNAN

FISH IN MEDICINE

Crohn's disease: Chronic inflammation of bowel.

Fish oil has been reported to be effective in curing this disease!

Mysterious asthma cure using live fish!

Some fish have been known for ages to possess medicinal properties. But the reports from Hyderabad (AP) that lakhs of asthma patients gathered there on June 8 this year (Auspicious Mrigasira Karti day) to take a secret medicine carried by small live murrel fish in its mouth, are staggering! Some reports indicate that the drug mixture was served to vegetarians with jaggery. A hopeful patient reported that the small fish remains alive inside the patient for several minutes and the movements of the fins and tail clean the respiratory system. The composition of the yellow paste administered to the patients with the live fish (or jaggery) is a family secret! Since no real cure of asthma is available in modern medical practices, the 'fish cure' needs proper scientific appraisal!

Dr. V. Gopalakrishnan

RECORD HARVEST OF TIGER SHRIMP (*Penaeus monodon*) FROM KARNATAKA

In two semi-intensive trials, a production of 3.18 to 8.5 tonnes per ha was achieved in 130 days rearing. The stocking rate ranged from 1.2 to 3.6 lakhs/ha. The average size of shrimp at harvest was 35 g with a survival rate of 75-76%. The feed conversion rate (FCR) was 1:1.6 to 1:1.65.

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Anti-Cancer drugs from marine sponge

The New Zealand Scientists have found that the anti-cancer properties are present in the deep water sponge *Lissodendoryx*. The Halicondrin B, a chemical produced by the sponge, has been found to inhibit the growth of cancer. Hence, attempts were made to cultivate the deep water sponge. It was observed that the sponge grew faster in cooler water by increasing its size by 500% in a month. The chemical present in the sponge, nicknamed as "Yellow Slimy" can combat the ovarian cancer and melanomas. Research is also being carried out on another sponge called *Latrun-culia*, which possesses anti-tumour properties.

Infofish International 1/96 (1996)

NEW EXECUTIVE COUNCIL FOR FISHERIES TECHNOCRATS FORUM, MADRAS-6.

The Fifth Annual Meeting of the General Body of the Fisheries Technocrats Forum held on 8-6-1996 at Madras had elected the following Executive Council Members for 1996-97.

Shri. K. CHIDAMBARAM	- Chairman
Shri. DAVIDSON THOMAS	- Vice Chairman
Shri. M. KATHIRVEL	- Secretary
Shri. A.S. VIJAYAKUMAR	- Treasurer
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Shri. P.T. MEENAKSHISUNDARAM	- Member
Dr. K. ALAGARAJA	- Member

CONTROLLED BREEDING AND CULTURE OF MARINE GROUPERS IN SAUDI ARABIA

Adults of the groupers (*Epinephelus polyphkadion*, 3-5kg; *E. fuscoguttatus*, 12-16kg) were maintained in 25-ton fibre glass tanks at a stocking density of 1-2 kg per square metre. Sex ratio was 2 females per male. The water was exchanged at 500% per day. The salinity, temperature, dissolved oxygen and pH of water used was 43ppt, 29-30 °C, 5-6 mg/l and 7.4-8.0 respectively. The reared fish were fed with trash fish/cuttlefish initially and later with fresh sardines injected with cod liver oil. Natural spawning occurred once in a month during March-August in relation to lunar periodicity, i.e., 2-5 days before or after full or new moon. Spawning was observed either in the night or in the early morning. The number of eggs released were 2.6 million in the case of *E. polyphkadion* and 2.3 million for *E. fuscoguttatus*. The fertilization and hatching rates were 95-100% for both the species. The feeds offered for larvae were rotifers, brine shrimp (*Artemia*) nauplii and adult, copepods, freshwater cladocerans (*Moina* sp), minced fish and shrimp meat and formulated pellets. Hatchery raised seeds were reared in floating cages fixed in a lagoon for a period of 10-15 months on a diet of trash fish. The size attained at harvest was 0.8kg for *E. polyphkadion* by 15th month and 0.6 kg *E. fuscoguttatus* by 10th month.

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BOOK NEWS

FAO Traning Series 24 - Handbook on Small-Scale Freshwater Fish Farming. Compiled by V.Gopalakrishnan and A.G. Coche

Published by FAO, Rome. The publication provides simple and profusely illustrated information on freshwater fish farming in ponds, pens and cages. The target group would be rural farmers, extention workers, technicians and teachers.

Correspondence for copies should be addressed to the Director, Publications Division, Food and Agriculture Organization of the United Nations (FAO), via delle Terme di Caracalla, 00100 Rome, Italy.

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