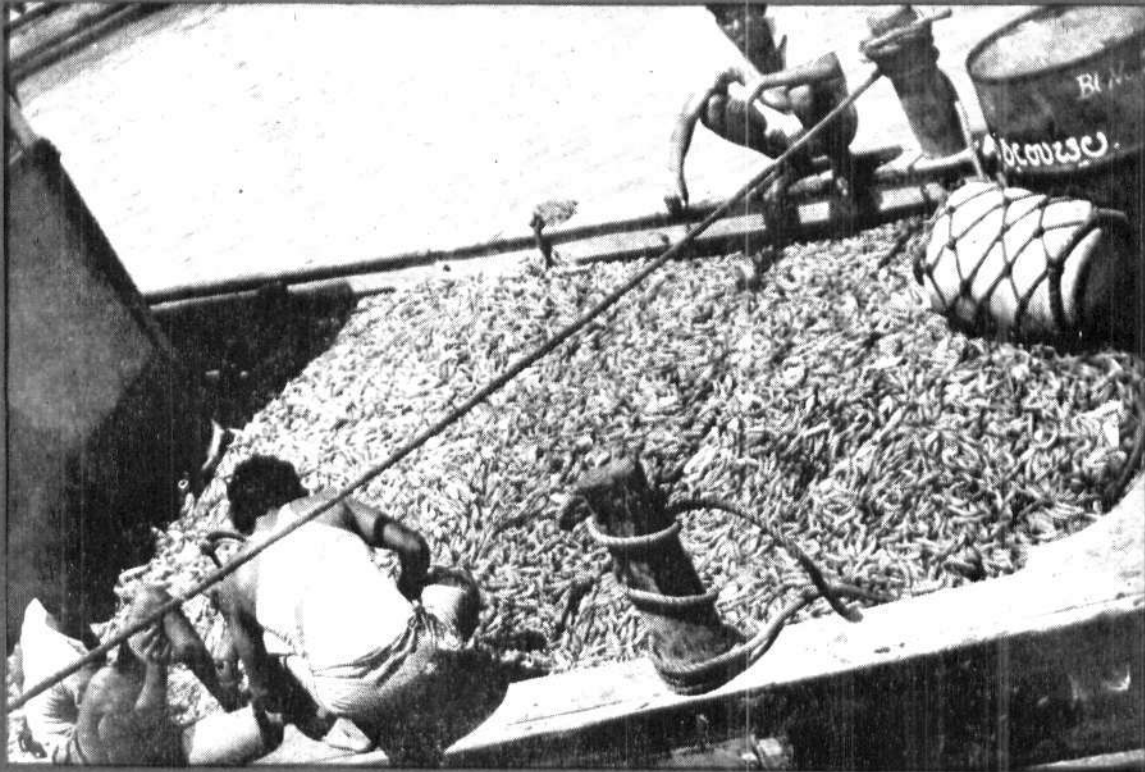




MARINE FISHERIES INFORMATION SERVICE



No. 65

OCTOBER, NOVEMBER
DECEMBER
1985

Technical and Extension Series

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 National Marine Living Resources Data Centre (NMLRDC) 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. 65: 1985

GROWTH AND SURVIVAL OF TIGER PRAWN, *PENAEUS MONODON* IN THE SANDY BEACH PONDS AT CALICUT*

Introduction

Fast growing species of prawns which could yield short-term harvests are the most suitable species for intensive farming. At present there are about 35 species of penaeid prawns used for culture purposes in the different parts of the world. Of these, *Penaeus monodon* is one of the important species contributing to the traditional culture fisheries of the Southeast Asian countries and to the well established intensive or semi-intensive culture practices of the Indo-Pacific region. It is being cultured in Taiwan, Philippines, Thailand, Malaysia, Indonesia, Bangladesh, India and Kuwait. In India, they are cultured in the 'Pokkali' paddy fields and perennial fields of Kerala, 'Bheries' of Sunderban area in West Bengal, salt pan reservoirs of the Godavari estuary in Andhra Pradesh and in some of the earthen ponds in the east and west coasts of India. But, nowhere culture of this species has been attempted in the polyethylene film-lined ponds made in the sandy beach. Therefore, the hardy and fast growing tiger prawn, which occurs in small quantities in Malabar area, was selected for culture experiment in a polyethylene lined sandy beach pond of the Central Marine Fisheries Research Institute between 17-7-'84 and 25-10-'84.

Material and methods

One newly lined pond with a water area of 200 m² and depth of 1 m was used for the experiments. Juvenile *P. monodon* with a mean size of 48.5 mm collected from Thiruvangoor and Perumthuruthi area of the Korapuzha estuary using a mosquito dragnet were used for the experiment. After the collection, the prawns were transported to the fish farm where they were conditioned overnight in plasticraft pools. The next day morning, the active young ones were selected, counted and stocked at a density of 5,000/ha. The stocking density could not be increased further due to nonavailability of juvenile *P. monodon* in the area. On 2-8-'84, i.e., 16 days after stocking 200 numbers of *Mugil cephalus* collected from the same grounds with a mean size of 25.8 mm were stocked in the same pond at the rate of 10,000/ha after acclimatisation. The prawn was harvested after 100 days of rearing and the fish was allowed to grow further. Stocking and harvest details of the prawn are given in Table 1 and the growth of fish (upto the time of prawn harvest) is given in Table 2.

*Prepared by S. Lazarus and K. Nandakumaran, Calicut Research Centre of C.M.F.R.I., Calicut.

Table 1. Stocking and harvest details of *P. monodon*

Duration of the experiment (days)	: 100
Area of the pond (m ²)	: 200
Number of seed stocked	: 100
Rate of stocking (no./ha)	: 5000
Number of prawns harvested	: 83
Survival rate (%)	: 83
Quantity harvested (kg)	: 3.1
Mean size at stocking (mm)	: 48.5
Mean weight at stocking (g)	: 0.9
Mean size at harvest (mm)	: 165.6
Mean weight at harvest (g)	: 37.3
Increase in length per day (mm)	: 1.17
Increase in weight per day (g)	: 0.36

Table 2. Growth of *Mugil cephalus* in the pond

Date of sampling	Mean length (mm)	Mean weight (g)
† 2-8-'84	25.8	0.18
16-8-'84	69.3	4.50
31-8-'84	98.5	13.60
15-9-'84	121.4	23.50
29-9-'84	132.6	32.50
15-10-'84	145.3	39.60
25-10-'84	152.4	42.20

†Date of stocking.

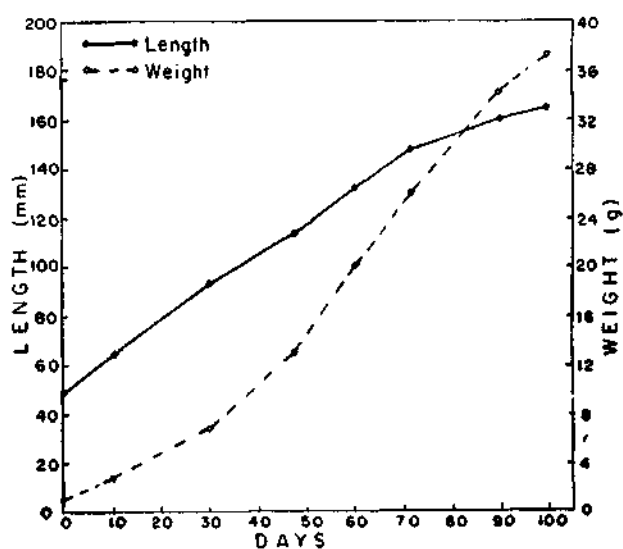


Fig. 1. Length-weight relationship of tiger prawn cultured in polyethylene film lined pond.

Water was pumped into the pond by using a 5 H.P. diesel pump. Periodical cleaning of the pond was done with a diesel pump by either pumping out the bottom water containing the debris or by siphoning out the water with a 3" flexible hose after thoroughly agitating the bottom water. A compounded feed made out of groundnut oil cake, prawn head powder and tapioca waste in a dough form was given once daily by keeping it in a tray which was kept in one of the corners of the pond near the bottom. The growth of the stock was recorded once in 15 days. Temperature, salinity, dissolved oxygen content and pH of the pond water were monitored twice weekly. The salinity ranged from 12.5 to 20.7‰ and the temperature from 28.0 to 35.5°C. The dissolved oxygen content and pH fluctuated between 3.8 and 4.6 ml/l and between 8.3 and 8.9 respectively.

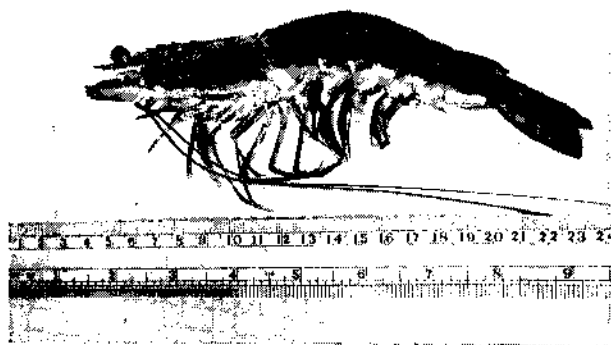


Fig. 2. Growth of *Penaeus monodon* in the pond.

Results and discussion

The growth trend of *P. monodon* in the pond is shown in Fig. 1. From the figure it is seen that the length increment was comparatively faster during the first two months and a half and slowed down considerably thereafter. The weight increment seemed to be slow during the first month as well as after the completion of the third month. However, the prawn showed an overall growth increment of 1.17 mm and 0.36 g per day thus attaining an average size of 165.6 mm and 37.3 g in 100 days Fig. 2. These results are encouraging when compared to the results obtained in Taiwan where almost at similar stocking densities (5,000-8,000/ha) a growth rate of 40 g in 90 days was achieved in ponds where *Chanos chanos* and prawns were grown together (Chen, 1976. *Fishing News (Books) Ltd., London*, 162 pp.)

and in Madras (Santhome) *P. monodon* in a monoculture experiment at a stocking density of 20,000/ha and stocking size of 20.0-45.0 mm (42.3 mm average) reached only 32.26 g in 80 days of growth (Sundarajan *et al.*, 1979. (*Aquaculture*: 16 (1): 73-75).



Fig. 3. *Penaeus monodon* harvested from the polyethylene lined beach pond in Calicut.

The percentage of recovery in the present study was 83.0 Fig. 3. According to Krantz and Norris (*Proc. 6th Ann. Workshop, Maricult. Soc., Seattle, Washington, U.S.A.* pp. 27-31, 1975) survival of 60-80% can be expected under suitable rearing conditions with the absence of predators, suboptimal temperatures and salinities. Further, the present data on the growth rate and percentage of recovery suggest that the culture conditions maintained in the experimental pond at Calicut were suitable for obtaining better results.

Further, it is expected that better production rate can be achieved by increasing the stocking density to an optimum level which, however, could not be carried out due to scarcity of material during the present experiment. However, the data suggest that by increasing the stocking density to 2/m² as suggested by Venkatesan and Bose (*Proc. Symp. Coastal Aquaculture*, 1982, I: 146-150) and suitably altering the grow-out period, the production rate could be increased to a greater extent.

The authors wish to express their sincere gratitude to Dr. E. G. Silas, former Director, Central Marine Fisheries Research Institute, Cochin for his constant encouragement and suggestions. They are also thankful to Shri M. Kumaran, Officer-in-charge, for going through the manuscript.

