

## PRAWN SEED RESOURCES AROUND CALICUT AREA\*

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### ABSTRACT

The prawn seed resources around Calicut area have been presented based on a study conducted during the years 1983-85. Their availability and abundance during different periods of the year have been described qualitatively and quantitatively. The important seed grounds are located around West Hill, Elathur, Eranhical and Thiruvangoor regions and the main species are *Penaeus indicus*, *P. monodon* and *Metapenaeus dobsoni*. June-July period appears to be the important season for prawn seed in this area. The nature of the seed grounds has been described along with the environmental conditions.

### INTRODUCTION

THE KNOWLEDGE about the availability of natural seed resources of the desired prawns is one of the prerequisites for successful prawn culture practice. The prawn culture project of the Central Marine Fisheries Research Institute at Calicut necessitated an investigation on the resources of prawn seeds in the region and a study was made during the years 1983-85. The study revealed the existence of some important seed grounds in the Calicut area and has provided useful data for assessing the abundance and periods of availability in the different centres. So far no report is available on the availability of prawn seeds in the Calicut area except for a brief mention by Mohan (1984).

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### MATERIAL AND METHODS

The shallow areas of estuaries and tidal pools have been found to be an excellent habitat for the prawn larvae. Hence the tidal pools and creeks in the coastal area between Kadalundi in the south and Korapuzha Estuary in the north covering a total distance of 34 km was sampled regularly. At West Hill regular monitoring of the surf was made. A dragnet with 2 mm mesh size, made out of cotton mosquito net of size 3 × 1.5 m was used for the collections in the estuaries and tidal pools. The surf collections were made with a 1 m × 60 mm rectangular velon screen net of mesh 0.3 mm. Tightly held at both ends by two persons the net was slowly dragged along the bottom upto a convenient distance and slowly lifted up. The nets were usually operated upto one metre depth. Collections were mainly done during low tide in the morning hours from estuaries and from the surf it was made both in the morning and evening hours, irrespective of the tidal conditions. Collections from the

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estuaries and tidal pools were made by repeated hauls from different transects and the density of the seed stock was estimated based on the area of each water body. For the surf collection the number of hauls were restricted to five.

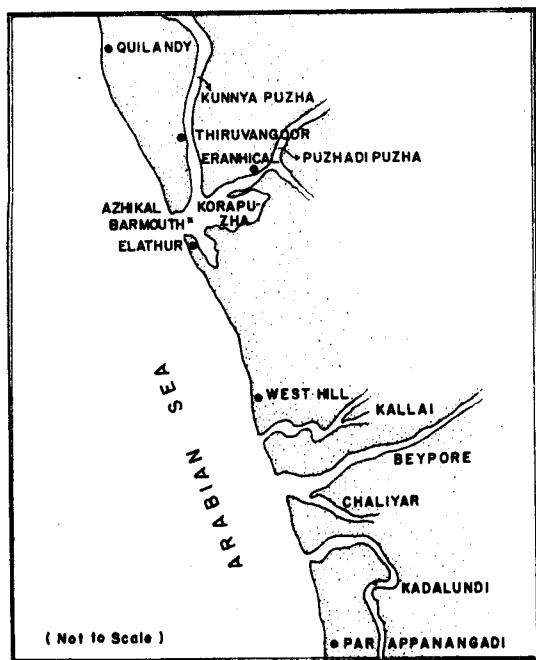


Fig. 1. Study area.

Only culturable prawn seeds encountered in the collections were recorded and their abundance is expressed as number per unit area of 100 m<sup>2</sup>. The pooled data for three years are given.

## RESULTS

**Seed grounds :** A preliminary survey was conducted before starting the regular observations to locate areas where prawn seeds were available in good quantities. The regions which offered good supply of seed were West Hill, Elathur, Erannical and Thiruvangoor. Excepting the first region, all the other regions were influenced by the Korapuzha Estuary

which extends from Koraphuzha in the south to Quilandy in the north. The surf of Kampuram Beach in the West Hill region is found to be an ideal place for the seeds of *Penaeus indicus* and *Metapenaeus dobsoni*.

Occasionally *P. monodon* and *M. monoceros* seeds were also encountered in small numbers. In the Elathur area the creeks around Mattuvayil and Azhikkal provides seeds of *P. indicus* and *P. monodon*. This area gets saline water during high tide through the Azhikkal Barmouth by which the Korapuzha Estuary opens into the sea. The Puzhadipuza with its mangroves present at the Erannical region harbours plenty of *P. indicus* seed. Here the ground is marshy with very little vegetation. The Thiruvangoor area is flooded by the Kunnyapuzha, a tributary of Korapuzha. During high tide the creeks are connected to the 'Kettu' which harbour plenty of *P. indicus* seed. Some times, during the high tide periods these creeks used to get inundated also. Here also the ground is marshy with very little vegetation on the banks. The ditches along the banks of Kunnyapuzha, which are also used for retting coconut husks, provide seeds of *P. monodon* in addition to *P. indicus* and *M. dobsoni*.

### *Occurrence and seasonal abundance of the important seeds*

The details about the prawn seeds collected from the different centres and the environmental parameters of the seed grounds are given in Table 1. The important seeds which formed the resources of the area according to their order of abundance are *Penaeus indicus*, *Metapenaeus dobsoni*, *P. monodon* and *M. monoceros*.

***Penaeus indicus* :** The white prawn seed was the most dominant prawn seed in the Calicut area both in the surf as well as in the estuarine regions. It was found in plenty in the surf of Calicut during February - May and

September - December periods during the study period. Their abundance ranged between 1160 and 2225 number per 100 m<sup>2</sup>, in the first peak and between 145 and 3315 in the second peak. The seed was small in size and they ranged in size from 6 to 12 mm. Next to West Hill surf, *P. indicus* seed was found in plenty in

found to tolerate a wide range of salinity from 7.00‰ in the estuarine region to 35.6‰ in the surf region. There was not much difference in the dissolved oxygen and pH values of the surf and estuarine grounds and they ranged respectively between 3.8 and 4.5 ml/l and 7.9 and 8.3.

TABLE 1. Details of the prawn seeds and environmental parametres of the seed grounds

Species	Areas of occurrence	Peak season	Size range (mm)	Potential availability (range) during the peak season (no/100 m <sup>2</sup> )	Environmental parametres of the seed grounds			
					Temperature (°C)	Salinity (ppt)	Oxygen (ml/l)	pH
<i>P. indicus</i>	Eranhical	May - July	25-36	120-2600	27.5-31.0	7.0-7.9	3.9-4.1	8.0-8.2
	Elathur	June - July	25-31	150-2700	28.5-30.0	7.5-7.9	4.0-4.2	8.0-8.1
	Thiruvangoor	May - July	23-30	1584-2850	28.0-30.0	8.0-8.3	3.8-4.5	8.0-8.1
	West Hill	Feb. - May	8-12	1160-2225	29.0-30.1	33.4-35.6	3.8-4.1	8.0-8.3
		Sept. - Dec.	6-10	145-3315	28.5-29.4	32.5-34.4	4.1-4.3	7.9-8.1
<i>P. monodon</i>	Elathur	June - July	32-35	8-260	28.5-30.5	7.9-8.2	4.2-4.3	8.0-8.1
	Eranhical	July	27-30	11-214	28.4-30.4	7.6-7.9	4.1-4.3	8.0-8.1
	Thiruvangoor	July	24-35	44-470	29.0-29.5	4.5-5.2	4.0-4.1	8.0-8.1
	West Hill	March - July	9-15	23-210	29.0-31.1	34.6-35.4	4.2-4.6	8.0-8.1
		Nov. - Dec.	10-14	14-150	28.0-29.5	32.4-33.8	4.1-4.5	7.9-8.1
<i>M. dobsoni</i>	Eranhical	June - July	19-24	740-1754	29.0-31.0	7.0-7.9	3.9-4.1	8.0-8.1
	Thiruvangoor	June - July	15-26	850-2650	28.5-31.0	7.5-8.0	3.9-4.9	7.9-8.0
	West Hill	April - June	8-16	545-3840	29.5-31.1	34.5-35.6	4.1-4.5	7.8-8.1
		Nov. - Dec.	5-12	762-4341	28.5-29.4	32.5-34.4	4.1-4.3	7.9-8.1
<i>M. monoceros</i>	West Hill	April - May	19-23	50-446	30.0-31.5	34.6-35.4	4.3-4.7	8.0-8.1
		Nov. - Dec.	17-22	74-560	29.0-31.0	31.8-33.5	4.2-4.6	7.8-8.1

the Thiruvangoor estuarine region with a maximum density of 2850 per 100 m<sup>2</sup>. It was available in plenty during May to July in sizes 23 - 30 mm. In the other two areas, Elathur and Eranhical, also this seed was found more when compared to the other prawn seeds available in the area. The estimated number in these two areas ranged between 150 and 2700 per unit area and 120 and 2600 respectively. The size range of the seed (25 - 36 mm) found in these two areas was almost the same.

The water temperature in the surf region varied from 28.5 to 30.1°C. The seed was

*Metapeneus dobsoni* : The seed of *M. dobsoni* was the second important component among the prawn seeds of Calicut area, in terms of abundance. It was found in good numbers in the surf of West Hill and in the estuarine regions of Eranhical and Thiruvangoor areas. The peak season for this seed resource appeared to be from April to June and from November to December in the surf with a maximum concentration of 4341 number per unit area in the November - December season and 3840 in the April - June season. The size of the seed ranged in between 5 and 16 mm during the

above seasons. In the Eranhical and Thiruvangoor areas also this seed was available in plenty with a slight change in the peak period of occurrence (June-July) as well as size (15-26 mm). The maximum number recorded was 1754 per unit area in the Eranhical area and 2650 in the Thiruvangoor area. There was not much of a difference in the size of the seed available in these regions when compared to the ones available in the surf region.

The water temperature in the seed grounds varied between 28.5 and 29.4°C with salinity ranging between 32.5 and 35.6‰ in the surf region and 7.0 to 8.0‰ in the estuarine regions. The oxygen and pH values in the seed grounds varied between 3.8 and 4.9 ml/l and 7.8 and 8.1 respectively.

*Penaeus monodon* : The seed of the tiger prawn was found in all the regions in small numbers during the study period. It was found more in numbers in the estuarine regions than in the surf region. Its maximum abundance has been estimated as 470 per unit area at Thiruvangoor, 260 at Elathur, 214 at Eranhical and 210 at West Hill surf. It was recorded only in the month of July at Thiruvangoor and Eranhical areas and during June-July months in the Elathur region. At West Hill as in the case of other varieties, it had two seasons, one during March-July and the other during November-December months. The seed found in the surf region had a size of 9-15 mm and that of the estuaries 24-35 mm.

The water temperature observed in the *P. monodon* seed grounds ranged between 28.0 and 31.1°C. As in the case of other varieties this species was also found to tolerate a wide range of salinity ranging from 4.3‰ in the estuary to 35.4‰ in the surf region. The dissolved oxygen and pH values fluctuated within a narrow range of 4.0 - 4.6 ml/l and 7.9 - 8.1 respectively.

*Metapenaeus monoceros* : The seed of *M. monoceros* was encountered only in the surf of Calicut during the study period and was in the size range 17 - 23 mm. It had two seasons, one during April-May and the other during November-December months. It was available with a density ranging from 50-446 per unit area in the first season and 74-560 in the second season.

The ranges of temperature, salinity, dissolved oxygen and pH values recorded in the surf at the time of collection of this seed were : 29.0 - 31.0°C, 31.8 - 35.4‰, 4.2 - 4.7 ml/l and 7.8 - 8.1 respectively.

#### REMARKS

The seeds of prawns such as *Metapenaeus dobsoni*, *M. monoceros*, *Penaeus indicus* and *P. monodon* were reported to be available in the premonsoon season in the backwaters in the vicinity of the Vytilla fish farm of the Kerala Agricultural University (Anon. 1978). Mohan (1984) while presenting the hydrobiological characters of the surf waters of Calicut, mentioned that the peak period of occurrence of postlarvae of *P. indicus* is February-May and September-December, for *P. monodon* March-May and November-December, and for *M. dobsoni* and *M. monoceros* April-May and November-December. These two reports are useful to understand the prawn seed seasons of the area. By incorporating the earlier findings with the present observations some conclusions on the seasonal occurrence of the cultivable prawn seeds can be arrived at as far as the Calicut area is concerned. They are February to July and September to December for *P. indicus*, March-July and November - December for *P. monodon*, April-July and November-December for *M. dobsoni* and April-May and November-December for *M. monoceros*.

The study indicates that the varieties of prawn seed available in this locality can support

to some extent the need of the prawn farmers of the area. Some of the agencies can even take up the programme of collection and supply of the seeds to prawn farmers of this area or elsewhere on an organised basis which will help the development of prawn culture programmes in the locality.

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