A NOTE ON THE PRAWN FISHERY IN THE GULF OF KUTCH DURING 1962-63

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ABSTRACT

The monsoon fishery of August-September in the creeks, and the winter fishery of October-November in the gulf form the two main prawn-fishing seasons in the Gulf of Kutch. The monsoon fishery is supported by *Metapenaeus kutchensis*, while the winter fishery, by *M. kutchensis*, *M. brevicornis* and *Penaeus indicus*. The pattern of distribution of these species indicates that there is a higher abundance of *M. kutchensis* in the inner gulf and *P. indicus* and *M. brevicornis* in the outer gulf.

The average growth rate of juveniles of *M. kutchensis* is found to be 6.7 mm per month. Sex-ratio distribution shows preponderance of females in the catches. The fluctuation in the landings of the monsoon months shows correlation with the salinity of the creek; relatively better landings occur coinciding with the lowering of salinity.

The creek system in the Gulf of Kutch forms an important fishing ground for prawns; the annual production of prawns and shrimps from this region has been estimated to be nearly 700 tonnes. The general distribution of the different species of prawns along the Kutch coast and the nature of the prawn fishery of the area during 1959-62 have been studied by Ramamurthy (1963, 1967). The present communication deals with the investigation carried out from September 62 to December 63 on the prawn fishery of the gulf with particular reference to *Metapenaeus kutchensis* George, George and Rao, which contributes to the major portion of the prawn landings of this area.

The material for the present study was collected from the commercial catches at Surbari, Kandla, Tekra and Luni. When the samples from these centres could not be procured from the commercial catches in the offseasons, the prawns were obtained by operating a 'Gunja' net at Kandla and Surbari. The prawn samples were analysed for species, sex and total length (measured from the tip of rostrum to the extremity of telson).

Although, the fishing, as it is seen in one or the other part of the gulf area, is carried out round the year, the main fishing season alternates between the monsoon fishery in the creeks and the winter fishery in the gulf area. Of these, the monsoon fishery which extends from August to September, contributes

two thirds of the total catches. Small bag nets locally called 'Gunja' are the important gear operated during this period. *Metapenaeus kutchensis* is the dominant species caught by these units. In 1962 season, the monsoon fishery of the area accounted for 145 tonnes of prawns, while in 1963 season, the fishery was a total failure.

The winter fishery, which is mainly carried out at Kandla, Tekra and Luni, commences in early October and lasts till April. At Kandla and Tekra, the bag nets (Gunja) are employed for fishing, while at Luni, small barrier nets, called 'Patti', are operated. The prawn catches of these centres are mainly composed of juveniles of *M. kutchensis, M. brevicornis* and *P. indicus*. At Kandla, the percentage contribution of *M. kutchensis* varies from 51.7 in February to 100 in October (Table 1). Appreciable quantities of *M. brevicornis* are landed in December and February while *P. indicus* in April. Although, *M. kutchensis* is the most abundant species at Tekra (Table 1), *M. brevicornis* and *P. indicus* are represented by greater numbers as compared to the fishery at Kandla. At Luni, *M. kutchensis* was predominant in the catches only in October 62, December 62, January 63 and May-June 63. In other months, *P. indicus* dominated the fishery. It is interesting to note that a gradual reduction in the percentage contribution of *M. kutchensis* occurs in the fishery from the inner gulf towards the outer region, while the abundance of *M. brevicornis* and *P. indicus* increases. This observation on the abundance and distribution pattern of these prawns in the catches of different centres agrees with that of Ramamurthy (1963), who attributed this phenomena to the nature of sea bottom.

At Kandla the size of *M. kutchensis* ranged between 26 mm and 125 mm; but relatively large-sized prawns, ranging in size between 41 mm and 140 mm, were encountered at Tekra and Luni. The commercial catch of the species in all the centres was composed of juveniles of 61-95mm size group.

In order to study the growth rate of species, the monthly length-frequency distribution of the prawns at Surbari was plotted (Fig. 1) and the progression of size modes in different months traced. In February 63 the modal size of the juveniles was observed at 31-35 mm and this mode gradually progressed to 41-45 mm in April. In May and June, this mode did not appear in the fishery, but in July it was seen at 61-65 mm; thus indicating a growth of 30 mm during a period of 5 months, the average growth rate being 6 mm per month. Similarly, the modal size seen at 31-35 mm in May, gradually shifted to 46-50 mm in July, registering a growth of 15 mm in 2 months. The observations indicate that the species within the size range of 31 mm and 61 mm grows at an average rate of 6.7 mm per month.

The sex-ratio distribution of the species showed higher proportion of females in the catches. The overall male-to-female ratios were 47.9:52.0, 48.7:51.3, and 42.6:57.3 at Kandla, Tekra and Luni respectively.

TABLE 1. *Species composition (numerical percentage) of prawns in the Gulf of Kutch during 62-63.*

	Aug 62	Sep	Oct	Nov	Dec	Jan 63	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
At Kandla																	
M. kutchensis	100	82.6	—	85.8	92.6	73.1	51.7	78.0	84.0	91.0	—	84.5	91.4	79.7	100	73.5	69.8
M. brevicornis	—	4.6	—	1.0	—	6.3	41.2	6.0	—	—	—	2.0	3.0	—	—	1.5	23.5
P. indicus	—	—	—	—	—	4.2	0.5	1.0	7.0	1.0	—	2.3	0.7	2.4	—	1.5	3.9
Others	—	12.8	—	13.2	7.4	16.4	5.6	15.0	9.0	8.0	—	11.2	4.9	17.9	—	23.5	2.8
At Tekra																	
M. kutchensis	—	—	20.0	76.8	72.0	53.7	72.5	86.4	84.0	52.0	—	—	—	—	—	—	—
M. brevicornis	—	—	—	8.8	6.5	26.8	16.0	1.8	—	—	—	—	—	—	—	—	—
P. indicus	—	—	80.0	14.4	21.5	12.5	11.5	4.5	16.0	31.0	—	—	—	—	—	—	—
Others	—	—	—	—	—	7.0	—	7.3	—	17.0	—	—	—	—	—	—	—
At Luni																	
M. kutchensis	—	11.5	100	10.0	57.7	94.0	4.4	29.1	35.0	54.0	65.0	29.6	27.0	50.0	—	—	—
M. brevicornis	—	51.7	—	—	4.0	—	6.6	1.0	7.0	4.0	—	2.2	24.0	17.7	—	—	—
P. indicus	—	36.8	—	90.0	39.3	—	89.0	68.4	56.0	42.0	34.0	58.0	49.0	21.0	—	—	—
Others	—	—	—	—	—	6.0	—	0.5	—	—	—	10.2	—	11.3	—	—	—

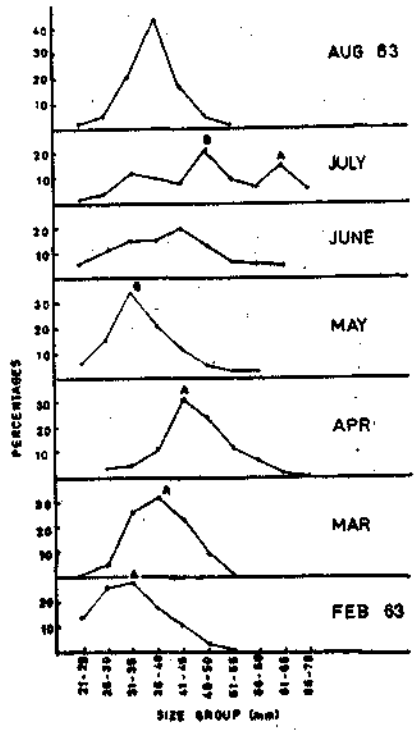

FIG. 1. Length-frequency of *M. kutchensis* at Surbari.

Wide fluctuations are observed in the catches of prawns landed during July-October (monsoon period) in different years. Ramamurthy (1967) found a direct correlation with the rainfall and the prawn landings of the area and observed that an active monsoon indicated a successful prawn fishery. Table 2 gives the prawn landings during July-October and the salinity values recorded at Kandla during 1961, 62 and 63.

TABLE 2. *Prawn landings and salinity of the creek water during July-October in different years.*

Year	Prawn landing in tonnes	Salinity-range (‰)	
1961	700	25.40-26.70	(1967)
1962	145	38.45-39.64	
1963	—	38.25-41.70	Annual report of CMFRI

In 1961, when the prawn fishery was relatively better, the salinity of the creek water ranged between 25.40‰ and 26.70‰ while in 1962 and 63 the fishery was poor and the salinity values were high. This observation indicates that, although the factors such as success or failure of recruitment of larvae and juveniles may influence the abundance of prawns in the area, the rainfall and the consequent lowering of the salinity of the creek waters play an important role and affect the prawn landings of the creek system.

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