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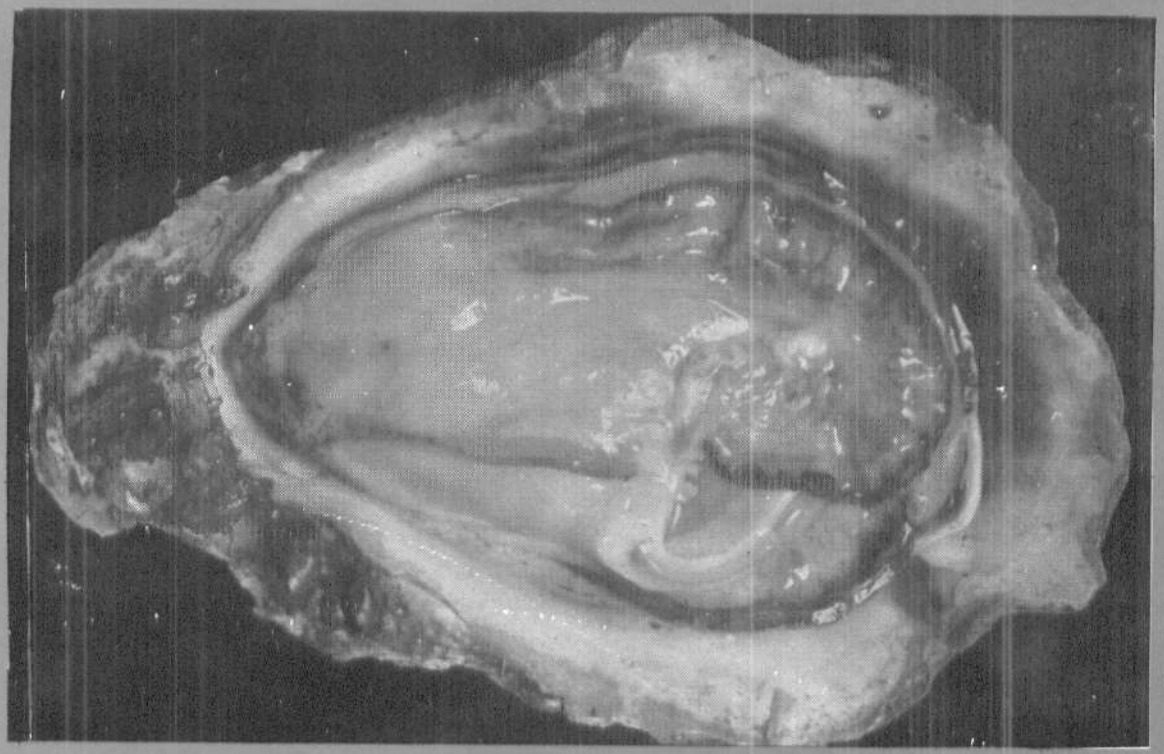

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847 A SMALL CONCENTRATION OF *PENAEUS JAPONICUS* OFF THE NORTH TAMIL NADU COAST

V. Thangaraj Subramanian
Madras Research Centre of CMFRI, Chennai – 600 006, India

Introduction

The Kuruma prawn, *Penaeus japonicus*, which is endemic to northwest and western central Pacific regions around Japan, Korea and Papua-Guinea has been reported to occur in small concentrations off the Indian coasts in isolated areas. It forms a small fishery off Mumbai. Its juvenile abundance has been reported from the backwaters adjoining Chennai. Being a larger species fetching better price, its availability in the Cuddalore region arouses considerable commercial interest.

Although trawlers are operated from four bases, namely, Cuddalore, Devinampatnam, Porto Novo and Pazhayar, they share the common fishing grounds. The present observations

were restricted to the landings at Cuddalore, the largest centre with more fleet strength and infrastructure facilities.

Fishery

P. japonicus formed a small fishery along the Cuddalore coast and part of it is landed at Cuddalore. The fishery was seasonal during April-November, with major abundance in May-September. During 1986-'87, a total of 2,029 kg was landed and the season started from April with a catch of 104 kg (0.5 % of prawns) and shot up sharply to the maximum of 840 kg forming 2.6 % of prawns in May. Afterwards the catch decreased gradually till September and totally disappeared. During the following year, 1987-'88, when a total of 2,402 kg were landed, the fishery had a slightly extended period from April to November. The season commenced with a small catch of 85 kg in April and increased during May-September, showing two peak catches of 573 kg at 0.06 kg/hr in June and 520 kg at 0.08 kg/hr in August (Table 1). Other grooved prawns which occurred along with *P. japonicus* were *P. canaliculatus* and *P. latisulcatus* and they were present in traces coinciding with the same season.

TABLE 1. *Details of catch, CPUE and percentage contribution of* P. japonicus *landed at Cuddalore during 1986-'88*

Period	1986-'87			1987-'88		
	Catch (kg)	CPUE (kg/hr)	%	Catch (kg)	CPUE (kg/hr)	%
Apr.	104	0.02	0.5	85	0.03	0.3
May	840	0.08	2.6	458	0.07	0.4
Jun.	436	0.04	0.7	573	0.06	0.3
Jul.	326	0.03	0.5	376	0.05	0.3
Aug.	310	0.06	0.2	520	0.08	1.2
Sep.	13	-	-	240	0.03	0.2
Oct.	-	-	-	114	0.03	0.9
Nov.	-	-	-	36	0.01	0.1
Dec.	-	-	-	-	-	-
Jan.	-	-	-	-	-	-
Feb.	-	-	-	-	-	-
Mar.	-	-	-	-	-	-
Total	2,029	-	-	2,402	-	-

Length-weight relationship

In general, females were larger and heavier. The mean length of 153.7 and 174.1 mm calculated for the male and female population landed during the period are estimated to weigh correspondingly 38.0 and 57.1 g.

Size distribution

The overall size-distribution of the entire population landed (Fig.1) reveals a wide sexual disparity, female being distinctly larger. The size-range of males was 113-185 mm with a mode at 161-170 mm. Females ranged between 113 and 234 mm with a peak between 171 and 180 mm.

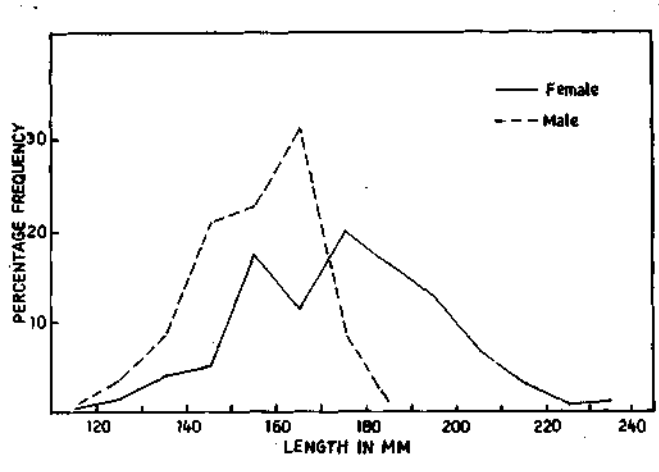

Fig. 1. Size-distribution of male and female *P. japonicus* landed at Cuddalore during 1987-'88.

The monthly size-distribution during the season, 1987-'88 is given in Fig. 2, which reveals that the fishery was often supported by more than one dominant age-group. The fishery in April-May, revived after a break of six months and was supported by a group measuring 141-160 mm in both sexes and another older group with a mode at 171-180 mm, among females alone. While the younger group continued to dominate the catches during the succeeding months, yet another distinctly older group of females, measuring over 200 mm appeared suddenly in the catches in June and disappeared soon. Another fresh group that entered later into the fishery in July-August dominated the catches

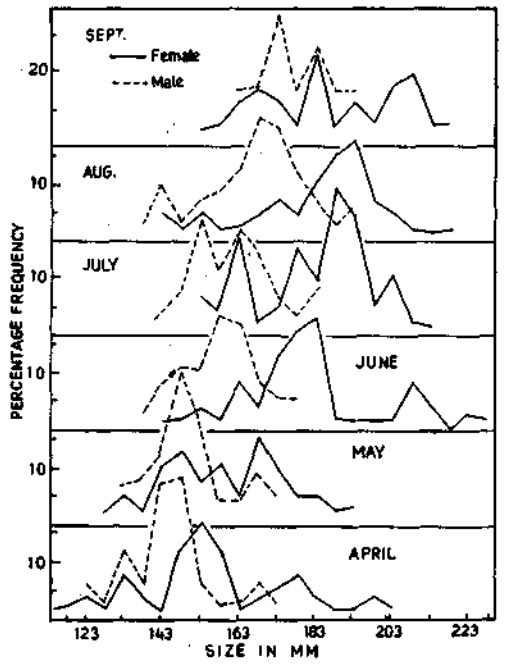

Fig. 2. Size-frequency of *P. japonicus* landed at Cuddalore during 1987-'88.

subsequently until all the group totally disappeared from the scene by November.

Growth rate

The growth rate of both sexes could be traced from modal progression of size through several months. Among females, the modal-size at 151-155 mm in April shifted to 191-'95 mm in September, registering a growth rate of 8.0 mm/month and during the same period, males had moved from 141-145 mm to 176-180 mm, giving a growth rate of 7.0 mm/month. Another group of females with the modal-length at 161-165 mm in July could be traced to 181-185 mm in September and among males during the period the modal-size had moved from 151-155 mm to 171-175 mm and the growth rate calculated for this modal progression in both sexes was 10.0 mm/month. The average growth rate for the two mode-chains was 9.0 and 8.5 mm/month for females and males respectively. Slower growth rate among the older individuals was evident from a size mode at 176-180 mm in April among females having moved to 201-205 mm in September, which would give a growth rate of 5.0 mm/month.

Sex ratio

The overall sex ratio was 58.9 : 41.1, in favour of female, which was also dominant throughout the season, with the monthly ratio varying between 55.5 and 66.7 % (Table 2). The

TABLE 2. *Percentage distribution of maturity stages of females and sex-ratio of* P. japonicus *landed at Cuddalore during 1987-'88*

Month's	Maturity stages					Sex-ratio	
	I	II	III	IV	V	M	F
Apr.	10	25	45	10	10	41.1	58.9
May	5	12	36	32	16	38.1	61.9
Jun.	–	8	24	46	22	41.9	58.1
Jul.	15	10	32	23	20	39.7	60.3
Aug.	5	12	29	44	16	42.2	57.8
Sep.	–	25	34	26	15	44.5	55.5
Oct.	–	15	30	35	20	33.3	66.7
Nov.	–	–	–	–	–	–	–
Dec.	–	–	–	–	–	–	–
Jan.	–	–	–	–	–	–	–
Feb.	–	–	–	–	–	–	–
Mar.	–	–	–	–	–	–	–
Average	5	15.3	32.0	30.8	17	41.1	58.9

sex ratio specific to size showed about equal proportion upto 140 mm length, above which disparity appeared in favour of one sex or the other. Males were dominant among 141-170 mm size-range, beyond that females were numerous and above 185 mm size only females were represented in the catches.

Breeding

The fishery along this region was virtually supported by mature population. Three-fourth of the females analysed were in advanced stages of maturity and immature accounted for hardly 5 %. The smallest gravid female recorded in the samples measured 137 mm length and females above 150 mm size were mature. Gravid females, which included 'mature' and 'spent' stages of maturity, were abundant throughout the season

with higher incidence in June and August.

General remarks

Review of information reveals that *P. japonicus* occurs in traces along the Indian coasts, except a small concentration off Bombay on the northwest coast and the present area, which is diagonally opposite on the southeast coast. The fishery season off Cuddalore is April-October, with major abundance in May-September period and dispappears on the arrival of peak monsoon rains in November-December. Peak abundance off Bombay was similarly noted in May-September, which was contrastingly the mid-monsoon season for the region. However, the major biological features of the population from both areas have more similarities.

Although the fishery existed for a short season, a wide range of size-groups supported the catches throughout. Young and old entered the catches from the beginning and disappeared totally from the scene by the end of the season. The juveniles of the species were observed to occur in the adjoining Killai-Backwaters, but not in a matching abundance to that of adult. Most of the population, therefore, may have distinct origin. Part of the young population could be linked with the juvenile population in the backwaters of Chenni (Kathirvel, 1985, *Mar. Fish. Infor. Serv., T&E Ser.*, 65, 12-14). But movements of the older-groups off this area remained to be obscune considering the non-existence of a fishery of the species along the other parts of southeast coast. The revival of fishery with larger size-groups after a break of six months, abrupt entry and immeidate disappearance of older-group of over 200 mm size and long break between the seasons substantiated seasonal visits of varied size-groups of population in these grounds.