

SEASONAL ABUNDANCE OF PENAEID POSTLARVAE IN THE KALI ESTUARY, KARWAR

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ABSTRACT

Postlarvae of five species of penaeid prawns, viz. *Penaeus merguensis*, *Penaeus canaliculatus*, *Monoceros dobsoni*, *Monoceros monoceros* and *Monoceros affinis* were encountered in the seed samples collected from the Kali estuary. The occurrence of *P. merguensis* was discontinuous with the peaks in April and October-November. Postlarvae of *M. dobsoni* appeared in samples throughout the year with two peaks of abundance, one in April and the other in July-September. Occurrence of *M. monoceros* was continuous whereas that of postlarvae of *M. affinis* was discontinuous with a peak in May.

Key-words: Postlarvae, Kali estuary.

The general life history of many species of penaeid prawns involves both a marine and an estuarine phase, with adults spawning in the open sea. The planktonic larvae enter the estuary as postlarvae and spend several months there as juveniles before migrating back to the open sea (Idyll, 1957). Since prawn culture in India depends mainly upon natural seeds, knowledge of the availability and peak period of abundance of various species of penaeid postlarvae in the estuary is a prerequisite for formulating a successful selective prawn culture operation. Besides, such studies give useful information on the seasonal pattern of postlarval immigration.

Although considerable work has been done on the occurrence and abundance of penaeid postlarvae in the estuaries along the southwest coast of India (George, 1962; Selvakumar, George, Achuthankutty and Goswami, 1977) information on these aspects from the Kali estuary is lacking. The present paper deals with the seasonal abundance of postlarvae in the Kali estuary, Karwar.

Regular fortnightly collections of penaeid prawn seed samples were made at shallow waters (<1 m depth) for a period of 12 months from December 1986 to November 1987 from five stations in the Kali estuary, Karwar (Fig.1). Seed sample was collected with a standard velon screen drag net (mesh size 2 mm) of length 2 m and width 1 m by covering an area of 10 m². Penaeid seed measuring 10 mm and below in total length were considered as postlarvae.

Postlarvae of five species of penaeid prawns were present in the samples. These in their order of abundance were *Metapenaeus dobsoni* (56.49%), *Penaeus merguensis* (28.01%), *M. monoceros* (14.19%), *M. affinis*

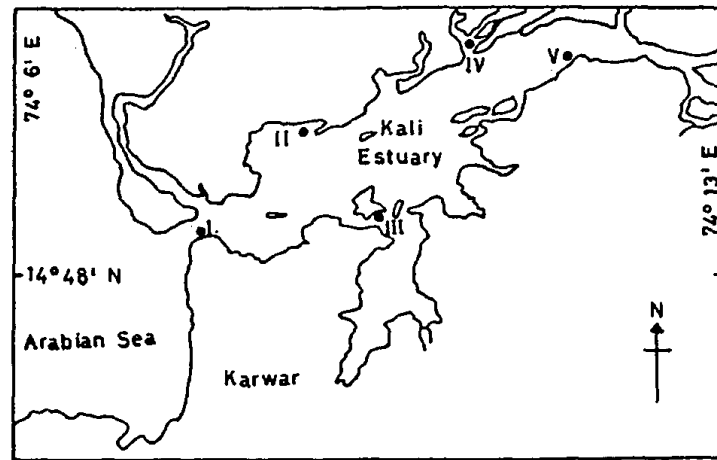


Fig.1. Map of the Kali estuary showing sampling stations.

(1.26%) and *P. canaliculatus* (0.05%), *M. dobsoni* was the dominant species at all the stations except at station II. The percentage contribution of *M. dobsoni* was the highest (72.32%) at station IV. *P. merguensis* at station II (45.31%) and *M. monoceros* at station I (26.98%) (Table I).

Table I – Station-wise percentage composition of postlarvae.

Species	Stations				
	I	II	III	IV	V
<i>P. merguensis</i>	24.46	45.31	35.98	10.18	16.94
<i>P. canaliculatus</i>	0.72	-	-	-	-
<i>M. dobsoni</i>	45.68	35.69	58.54	72.32	70.36
<i>M. monoceros</i>	26.98	16.85	3.51	16.69	12.70
<i>M. affinis</i>	2.16	2.15	1.98	0.81	-

Monthwise occurrence of postlarvae of different species at stations I to V is shown in Table II. Monthly variations in the abundance of postlarvae at station I indicated that May and August were the productive months. Maximum abundance of *P. merguensis* was recorded in May (15.5/10 m²), *M. dobsoni* in August (36.5/10 m²) and *M. monoceros* in May (16/10 m²). At station II, two peaks of abundance of *P. merguensis* were observed, one in April and the other in November. With the onset of southwest monsoon the abundance of *M. dobsoni* increased considerably and reached the maximum in September. *M. monoceros* occurred in varying numbers in all the months except in June and July. At station III, *P. merguensis* occurred in fairly good quantities in December 1986 and November 1987. As can be seen in Table II the maximum postlarvae of *M. dobsoni* occurred in April, when the average number of postlarvae was 76 per 10 m². At station IV, two peaks

Table II — Monthwise occurrence (average numbers/10 m²) of postlarvae of different species of penaeid prawns at stations I to V.

Species	Month & Year											
	Dec 1986	Jan 1987	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Station I												
<i>P. merguensis</i>	-	5.5	0.5	5	5.5	15.5	1	-	0.5	-	0.5	-
<i>P. canaliculatus</i>	-	-	-	-	-	-	-	-	-	1	-	-
<i>M. dobsoni</i>	0.5	-	-	-	-	3	8.5	9.5	36.5	2.5	2	1
<i>M. monoceros</i>	6.5	-	-	-	5	16	1	1	-	-	1.5	6.5
<i>M. affinis</i>	-	-	-	-	-	-	-	2.5	0.5	-	-	-
Station II												
<i>P. merguensis</i>	5	1	-	29.5	99	43	4.5	-	7	7	9	89.5
<i>M. dobsoni</i>	13	1.5	0.5	-	0.5	9	3	76.5	23	102	-	3
<i>M. monoceros</i>	8	0.5	33	15.5	12	2.5	-	-	3	2.5	16.5	16
<i>M. affinis</i>	-	-	1.5	0.5	-	10	2	-	-	-	-	-
Station III												
<i>P. merguensis</i>	28.5	7	5	14.5	12.5	1.5	2.5	-	-	15	0.5	31
<i>M. dobsoni</i>	29	5.5	-	1	76	18	0.5	10	1.5	30.5	20	-
<i>M. monoceros</i>	-	-	-	2.5	-	0.5	0.5	1	0.5	-	6.5	-
<i>M. affinis</i>	-	-	-	5.5	0.5	0.5	-	-	-	-	-	-
Station IV												
<i>P. merguensis</i>	3	1.5	-	7	-	-	-	-	-	-	26	-
<i>M. dobsoni</i>	1	1	6	2.5	91	1	17	67.5	24	51	4.5	-
<i>M. monoceros</i>	-	0.5	0.5	44.5	6.5	4	-	3.5	0.5	1	-	0.5
<i>M. affinis</i>	-	-	3	-	-	-	-	-	-	-	-	-
Station V												
<i>P. merguensis</i>	6.5	0.5	1	-	-	-	-	-	-	-	94.5	1.5
<i>M. dobsoni</i>	9	15	30.5	24.5	125	0.5	19.5	93.5	51	49	6	8.5
<i>M. monoceros</i>	0.5	-	2.5	68	-	-	4.5	1.5	-	0.5	0.5	-

of *M. dobsoni*, one in April and the other during July-September period and a peak of *M. monoceros* in March were noticed. In general, the pattern of occurrence and variation of postlarvae at station V were more or less similar to that at station IV except for the conspicuous absence of *M. affinis*.

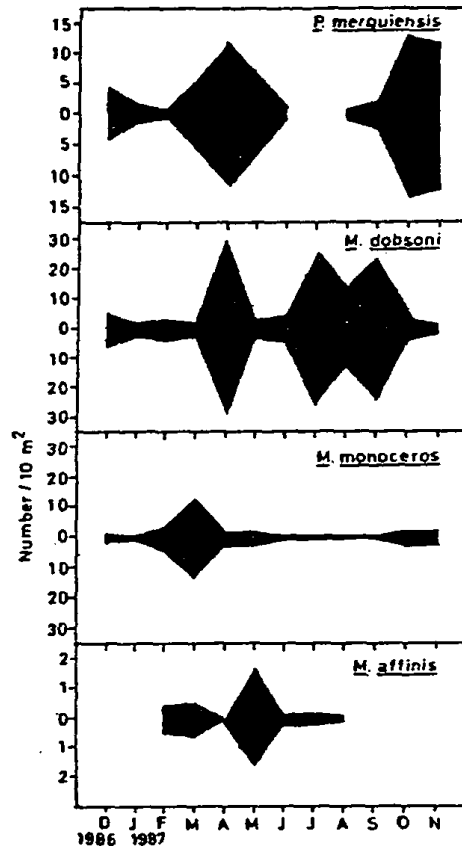


Fig.2. Monthly distribution of postlarvae of *P. merguensis*, *M. dobsoni*, *M. monoceros* and *M. affinis* in the Kali estuary (mean of all stations).

In the Kali estuary as a whole, April was the period of greater abundance. Appearance of large number of postlarvae during pre-monsoon season (41.11%) in the present study is in conformity with the observation of Goswami and George (1978) who noted the maximum abundance of penaeid larvae and postlarvae during pre-monsoon season in the Goa waters. Species-wise, *P. merguensis* showed two peaks of occurrence one in April and the other during October-November. Occurrence of this species was negligible during June-September period. Selvakumar, George, Achuthankutty and Goswami (1977) also reported similar findings in the Mandovi estuary, Goa. In the case of *M. dobsoni* the two peak periods of postlarval abundance were April and July-September. As regards *M. monoceros* Subramanyam and Ganapati (1971) observed two peaks of occurrence in Gautami-

Godavari estuary, one from November to January and the other from March or April to June. In the present study postlarvae of *M. monoceros* showed a peak in March. Pre-monsoon season sustained the maximum density of *M. affinis* (Fig.2).

ACKNOWLEDGEMENT

The authors wish to express their gratitude to Dr. U.G. Naik for drawings.

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