

DECAPOD LARVAE FROM THE NEARSHORE WATERS OF KARWAR

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ABSTRACT

Abundance of decapod larvae at three stations in Binge Bay, Karwar has been reported based on surface collections taken during the period October 1975 to September 1976. The larvae were very common in the Bay and the postmonsoon months sustained their steady population. Larvae of *Lucifer hansenii* Nobili constituted the major part. Alpheid larvae and porcellanid zoea were uniformly distributed at the three stations. *Acetes*, penaeid, axiid, pagurid and brachyuran larvae gradually increased from 5 m to 15 m depth area. Penaeid larvae were represented by *Metapenaeus dobsoni* (Miers), *Parapenaeopsis stylifera* (Milne Edwards) and *Trachypenaeus curvirostris* (Stimpson). *T. curvirostris* is a new record for Karwar region.

A quantitative study of the zooplankton from the Binge Bay, Karwar has already been reported (Nair, 1978). In the present communication, a detailed account of the different families of decapod larvae encountered in the collections has been presented. Investigations on the decapod larvae from the Indian Ocean were reviewed by Menon and Paulinose (1973) and Paulinose and George (1976). Considerable amount of work has been done on the abundance of the larvae of commercially important species of penaeid prawns from the estuaries and coastal waters of southwest coast of India (see review by George and Goswami, 1977; Achuthankutty, George and Goswami, 1977). The present study forms the first report on the decapod larvae from Binge Bay.

Binge Bay is a prominent Bay in North Kanara. Zooplankton samples were collected monthly, from October 1975 to September 1976, from three stations located between 14°45' to 14°47' N lat. and 74°05' to 74°08' E long. Stations 1, 2 and 3 were located approximately at 5, 10 and 15 m depth. Surface zooplankton collections of 5 minutes duration were made between 0900 to 1000 hours using a HT net (mouth area 0.25 m²; mesh size 0.3 mm) with a flowmeter attached. No sampling could be done in March and May to July, 1976. Observations were made for surface temperature, salinity and oxygen. Minimum temperature of 26.04°C was noted in January and maximum of 29.98°C was observed in April. Salinity values varied from 25.46‰ in August to 36.02‰ in April. The dissolved oxygen values ranged between 3.87 ml/l in April to 6.07 ml/l in January.

Decapod larvae were very common in the Bay and they were relatively richer at stations 2 and 3 (Fig 1). Maximum number of 59625/100 m³ was recorded from station 2 in October when they formed the second abundant group in the sample (Nair, 1978). In general, the postmonsoon months December and January, sustained steady populations.

The abundance of the different types of larvae found in the samples is given in Table I. Sergestids formed the dominant component of decapod larvae in the collection.

Larvae of *Lucifer*, represented by the single species *Lucifer hanseni* Nobili were found through out the period of observation. Maximum density of this species amounting to 596/100 m³ was obtained from Station 2 in October. *Acetes* spp. were relatively more in station 3 and the larvae were more abundant in April and August than in other months. Other sergestids were rarely obtained from stations 2 and 3.

Penaeid larvae were represented by three species *Metapenaeus dobsoni* (Miers), *Parapenaeopsis stylifera* (Milne Edwards) and *Trachypenaeus curvirostris* (Stimpson). *M. dobsoni* was the most abundant penaeid species occurring in maximum numbers from December to January. *P. stylifera* was the next common penaeid species confined to stations 2 and 3. This species was reported to be absent in brackish waters (Rao, 1970) and whenever present mostly confined to the mouth of estuaries (Achuthankutty, George and Goswami, 1977). In the present samples they are conspicuously absent at station 1, located close to the shore. The peak breeding period of this species seems to be in January. *T. curvirostris* was recorded from the southwest coast of India (Paulinose and George, 1976). In the Binge Bay the occurrence of this species is limited to the months December-January and April.

Alpheid larvae were very common in the samples and maximum density of 136/100 m³ was noted in January at station 3. They were absent in August and September. Axiid larva³ were absent in August and September. They were mostly obtained from station 3 and in September alone their incidence was observed at stations 1 and 2. Pandalidae, Palaemonidae, other Caridae and Thalassinidae were rarely encountered in the collections.

Porcellanid zoea and brachyuran zoea were commonly found in the collections. Porcellanid zoea showed a more or less uniform pattern of distribution at the three stations. Brachyuran larvae were more common at stations 2 and 3. The postmonsoon months October-January appeared to be the period of maximum abundance for zoea.

Ramamurthy (1965) reported that off Karwar, decapod larvae were common in April and their breeding takes place from October to April. In the present observation maximum abundance was noted in October with relatively steady populations from December-January. The distribution of decapod larvae in the Binge Bay showed certain characteristic features during the period of study. Larvae of *Lucifer hanseni*, Alpheidae and Porcel-

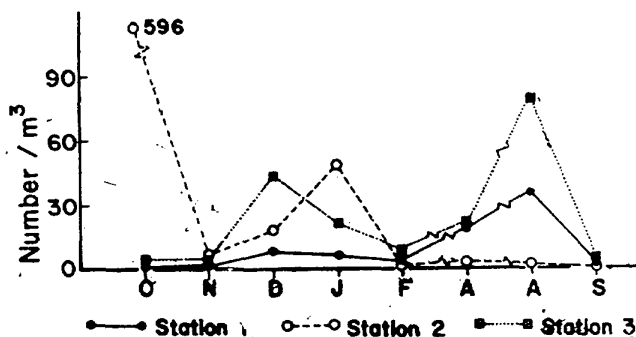


Fig. 1. Variation in the abundance of total decapod larvae at the three stations.

Table 1. Abundance of different types of decapod larvae found at the three stations in the Binge Bay during October 1975 to September 1976. Values given are counts/100 m³.

Month	<i>Lucifer hanseni</i>	<i>Acetes</i> spp.	Other Serge- stidae	<i>M. dob- soni</i>	<i>P. sty- lifer</i>	<i>T. curvi- rostris</i>	Panda- lidae	Alphei- dae	Palae- moni- dae	Other Cari- dae	Axi- idae	Thala- ssini- dae	Paguri- dae	Porcel- lanidae	Brachy- ura
STATION 1															
October '75	90							7							
November	72														
December	610			8										8	
January '76	570					25	13	130					24	65	
February	290							4					104	5	
April	1437	117		13				104	52					5	2
August	3514	84						26						52	
September	212									7					26
											13			13	
STATION 2															
October '75	50610							5							
November	597							39							10
December	1680			63	2			65							52
January '76	3909	104		156	104	10		52	52				100	65	
February	3							42	15					10	512
April	265	27						13				13		4	151
August	42	104		100			13			4					
September	172			13							26			2	
STATION 3															
October '75	42	100													
November	360	25					40	90			126				80
December	4280			5	12	5		15			60			5	35
January '76	1440	12	4	40	33	40		2	6		60			8	10
February	404	120	10	1				136	65				100	3	280
April	1368	500						7		3					25
August	8030	303		104	17					13		52	52	52	156
September	206	3		8							31	13	13	5	40

lanidae were almost uniformly distributed at the three stations. Abundance of larvae of *Acetes*, Penaeid, Axiidae, Paguridae and Brachyura gradually increased from station 1 to 3, suggesting their preference to 10–15 m depth area than the 5 m depth station. The remaining rare groups did not show any specific pattern of incidence.

Karwar had been proved to be an important prawn trawling ground for *M. affinis*, *M. dobsoni* and *P. stylifera* (Radhakrishnan, 1965). Even though the data are not sufficient to make any definite conclusions, the presence of larvae of *M. dobsoni* and *P. stylifera* in the present collections would indicate that they are spawning close to the inshore waters with a peak breeding from December–January. *T. curvirostris* is an addition to the list of penaeid prawns from this area.

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REFERENCES

- Achuthankutty, C. T., M. J. George and S. C. Goswami, 1977. Larval ingress of penaeid prawns in the estuaries of Goa. *Proceedings of the Symposium on Warm Water Zooplankton*, Special Publication, NIO, 412–424.
- George, M. J. and S. C. Goswami, 1977. Observations on the larvae of penaeid prawns of commercial importance in the coastal waters of Goa. *Proceedings of the Symposium on Warm Water Zooplankton*, Special Publication, NIO, 146–154.
- Menon, P. G. and V. T. Paulinose, 1973. Distribution of the decapod larvae in the Indian Ocean. *Handbook to the International Zooplankton Collections*, Indian Ocean Biological Centre, NIO, 5: 163–171.
- Nair, V. R., 1978. Zooplankton from the nearshore waters of Karwar. *Indian Journal of Marine Sciences*, 7: 283–287.
- Paulinose, V. T. and M. J. George, 1976. Abundance and distribution of penaeid larvae as an index of penaeid prawn resources of the Indian Ocean. *Indian Journal of Fisheries*, 23: 127–133.
- Radhakrishnan, N., 1965. On the prawn resources of the Karwar region. *Proceedings of the Symposium on Crustacea*, Marine Biological Association of India, 4: 1421–1423.
- Ramamurthy, S., 1965. Studies on the plankton of the North Kanara coast in relation to the pelagic fishery. *Journal of the Marine Biological Association of India*, 7: 127–149.
- Rao, P. Vedavyasa, 1970. Synopsis of biological data on the penaeid prawns *Parapenaeopsis stylifera* (H. Milne Edwards, 1837). *FAO Fisheries Report* (57), 4: 1575–1605.