

ON THE TREND OF PRAWN CATCHES IN BOTTOM TRAWLS IN INSHORE WATERS OFF KAKINADA (ANDHRA PRADESH)

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INTRODUCTION

Panikkar and Menon (1955) reviewing the prawn fishery of India, have emphasised its importance as being only second to the United States. On the East Coast, in particular, Naumov (1961) observed the stocks of prawns to be practically virgin. The above remarks are based mainly on the catches landed by indigenous fishing gear. With the advent of mechanised fishing, many attempts have been made to catch more prawns employing the trawling technique (Kuriyan 1964). These efforts till recently were mostly concentrated along the West Coast of India.

Although many attempts (Hornell 1916; Raj 1929; John *et al* 1959) were made to introduce trawl fishing along the East Coast, the method gained impetus only after establishment of Off Shore Fishing Station at Visakhapatnam in 1960. Subsequently, the survey work undertaken by Fisheries Training Institute and the establishment of Central Institute of Fisheries Technology Substation at Kakinada made intensification of the trawling operation possible.

Poliakov (1963) working off Visakhapatnam reported that prawns constitute only 1.5% of the total catches. Rao and Akbar (1963) trawling off Kakinada found the prawn composition in the catch to be 2.5%, while Sebastian *et al* (1965) recorded 30% at the rate of 12.53 kg per trawling hour. These observations, however were based on either the preliminary survey or experimental results pertaining to a limited period. In the present communication, therefore, an attempt is made to review round the year availability of prawns and the areas which abound in them. These observations are based on the results of fishing operations off Kakinada during August, 1963 to July, 1966.

MATERIALS AND METHODS

Fishing boat: Fish Tech No. 1, a 9.1 m (30') boat fitted with 36 H. P. engine was used for experiments. The boat was provided with a mechanical winch having a drum capacity of 250 m of 9.3 mm (3/8") dia flexible G. I. wire rope and a pair of stern rollers for guiding the warp.

Gear: Two bottom trawls viz; 12.9 m (42.5') two seam (Satyanarayana & Nair

1962) and 11.89 m (39') two seam net, a modified version of 12 m net (Pokliakov 1962), made of cotton twine were used for fishing. These nets were operated with three types of otter boards viz; flat rectangular, horizontal curved, and oval hydrofoil (Mukundan *et al* 1967).

Areas of fishing

Fishing was done off Kakinada in the areas between latitude 16° 50' N and longitude 82° 20' - 30' E and latitude 17° 10' N and longitude 82° 20' - 30' E. The depth varied from 5 to 35 m. The bottom consisted of mainly mud.

RESULTS

The results of fishing operations are given in the Table I wherein the fishing effort and the total catches along with the catch per hour and percentage of prawns in the catch are given for the three years.

It is evident from table I that even though there was fluctuation in the catch per trawling hour, the yield of prawns showed a definite upward trend year after year. The monthly fluctuation in prawns landed in relation to total fish catch is shown in the Fig. 1. Although prawns are available round the year, their abundance is confined to a few months each year.

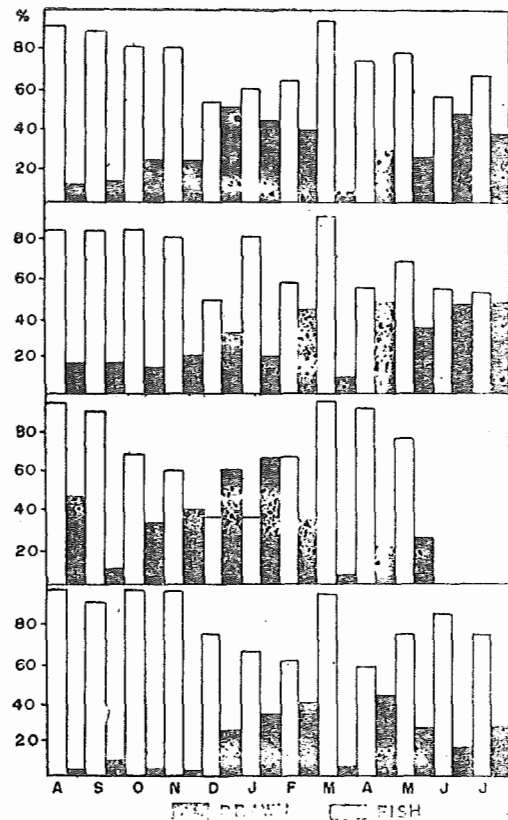


Fig. 1. Percentage composition of prawns in relation to fish.

DISCUSSION

Catch per Unit Effort: The catch per trawling hour of prawn on the average (Table I) is 12.3 kg. The figure is equal to only what was recorded by Sebastian *et al* (*op cit*) inspite of the extended area

TABLE I YEARLY CATCH RATE AND COMPOSITION OF PRAWN

Year	Efforts in hauls/ Trawling time (Hours-Minutes)	Catch in kg of		Catch/Tr. Hr. (Kg)		Total	% of prawn in total catch
		Prawn	Fish	Prawn	Fish		
1963-64 (Aug. to July)	$\frac{566}{479 - 20}$	3,413.5	20,705.5	7.12	43.19	50.31	14.16
1964-65 (Aug. to July)	$\frac{802}{653 - 20}$	11,650.0	35,734.0	17.82	54.69	72.52	24.60
1965-66 (Aug. to July)	$\frac{731}{639 - 13}$	6,797.5	16,771.5	10.64	26.23	36.87	28.84
Total effort and catch with averages	$\frac{2,099}{1,771 - 53}$	21,861.0	73,211.0	12.33	41.32	53.65	22.53

and period of fishing operations. The catch rate can be considered as economical for a small mechanised boat, being nearly 23% of the total catch. Further, the rate is relatively much more than 4.29 kg / hour recorded off Tuticorin and 3.75 kg / hour off Waltair (Kagwade 1967). The results of the studies therefore indicate the need for exploring more rationally the inshore areas of the East Coast.

Abundance of prawns in trawl catches

(i) Period: The monthly catch variation of prawn in terms of kg / hour is shown in Fig 2.

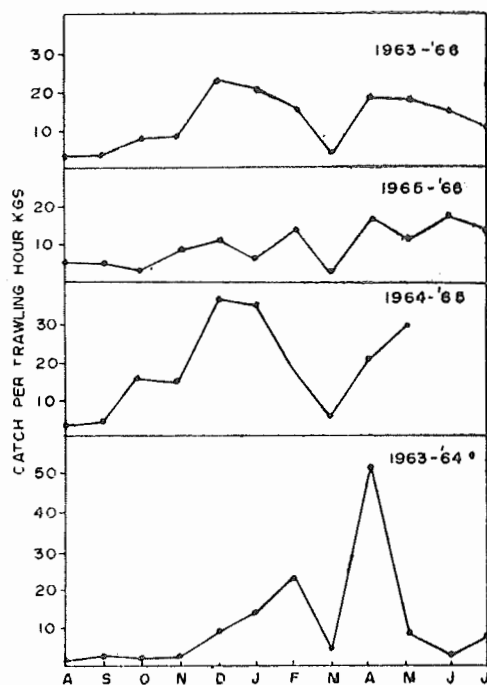


Fig 2. Monthly catch per unit effort of prawns.

It is evident from Figs 1 & 2 that although prawns are available throughout the year, their abundance beyond 20% level of the total catch is restricted to certain months. The seasons are from November to February and again from April to July. The average catch rate of prawns per trawling hour during November to February was 15.71 kg, while during April to July it was 16.37 kg.

(ii) Area and depth: The average catch per hour, the percentage frequency of catch per hour at various depths and the areas of their abundance are shown in Figs 3, 4 and 5 respectively.

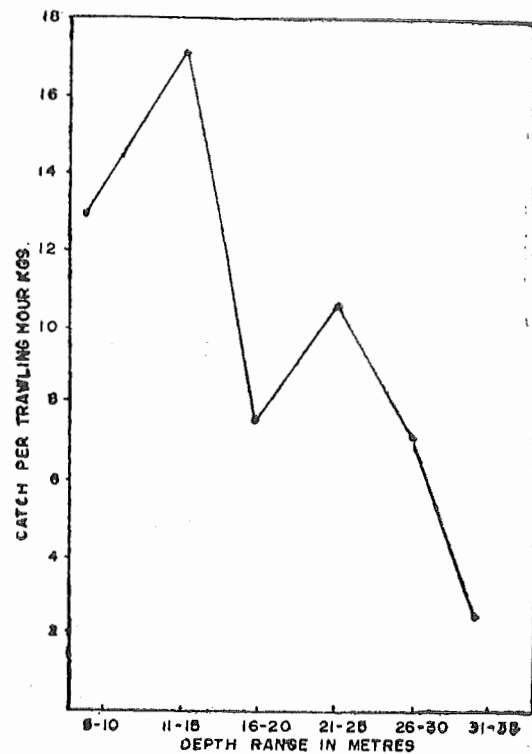


Fig 3. Catch per unit effort of prawns at different depths.

It is seen from figures 3 and 4 that most productive depth range for prawns is 11-15 m with the highest catch rate and the best frequency of the optimum catch rate i. e. 11-20 kg per trawling hour.

The peculiarity of this abundance of prawn is that it occurs in two areas A & B noted in Fig 5. They were found to be abundant in 'A' during November to February while from April to July they abound in 'B' at depths noted earlier. Further, among the prawns caught in 'A' *Metapenaeus dobsoni* formed the major species, while in 'B' the prawn catch was dominated by *M. monoceros*.

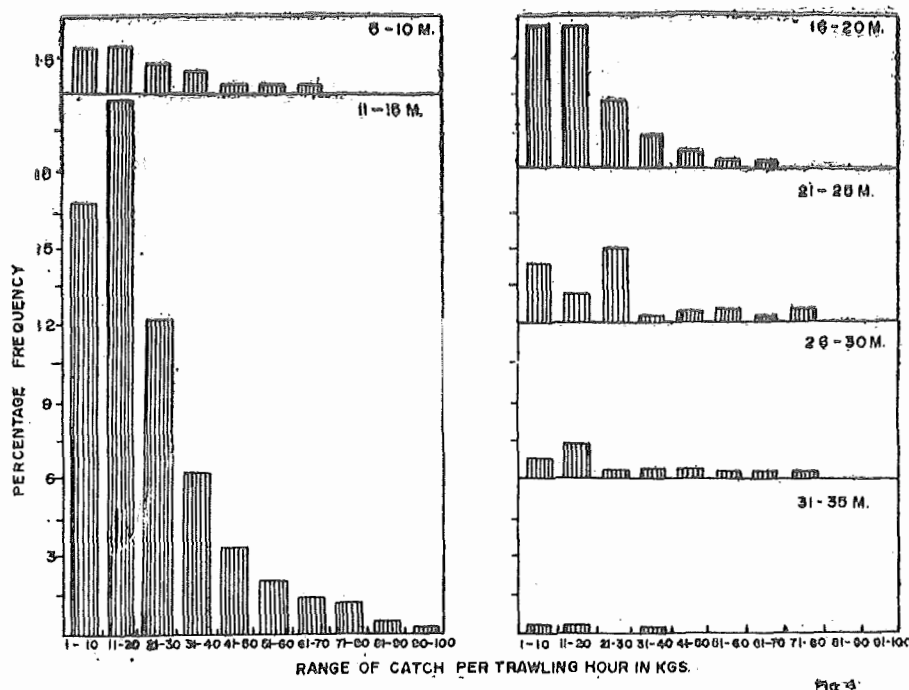


Fig 4. Percentage frequency of catch per hour at different depth ranges.

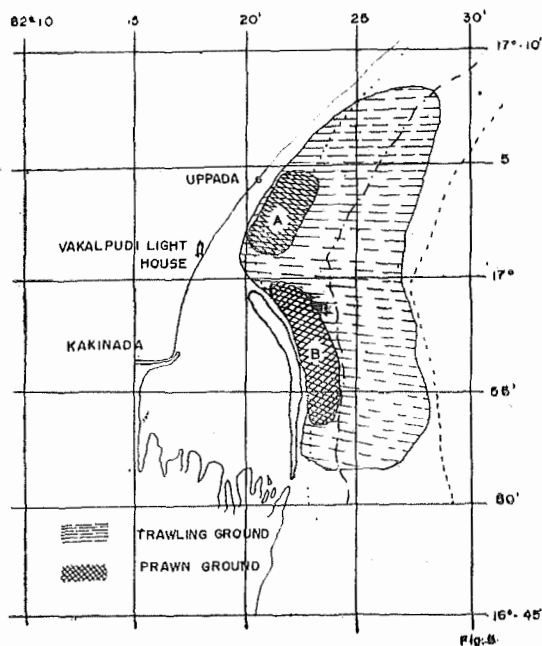


Fig 5. Areas of prawn abundance in inshore Trawling Grounds.

SUMMARY

From the results of fishing operations during 3 years (from August 1963 to July 1966) attempts were made to study the extent of availability of prawns for bottom

trawls. It was found that prawns formed 22.5% of the total catch on an average of the catch rate of 12.3 kg per trawling hour. The prawns were found to be abundant during two periods viz; from November to February and again from April to July. The depth range of 11-15 m yielded better catch rate with best frequency of the optimum catch per hour.

ACKNOWLEDGEMENT

The authors are grateful to Shri. G. K. Kuriyan, Fishery Scientist and Shri. A. V. V. Satyanarayana, Junior Fishery Scientist, Central Institute of Fisheries Technology, for their kindness in going through the manuscript and for their valuable suggestions in bringing out this paper in the present form.

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