

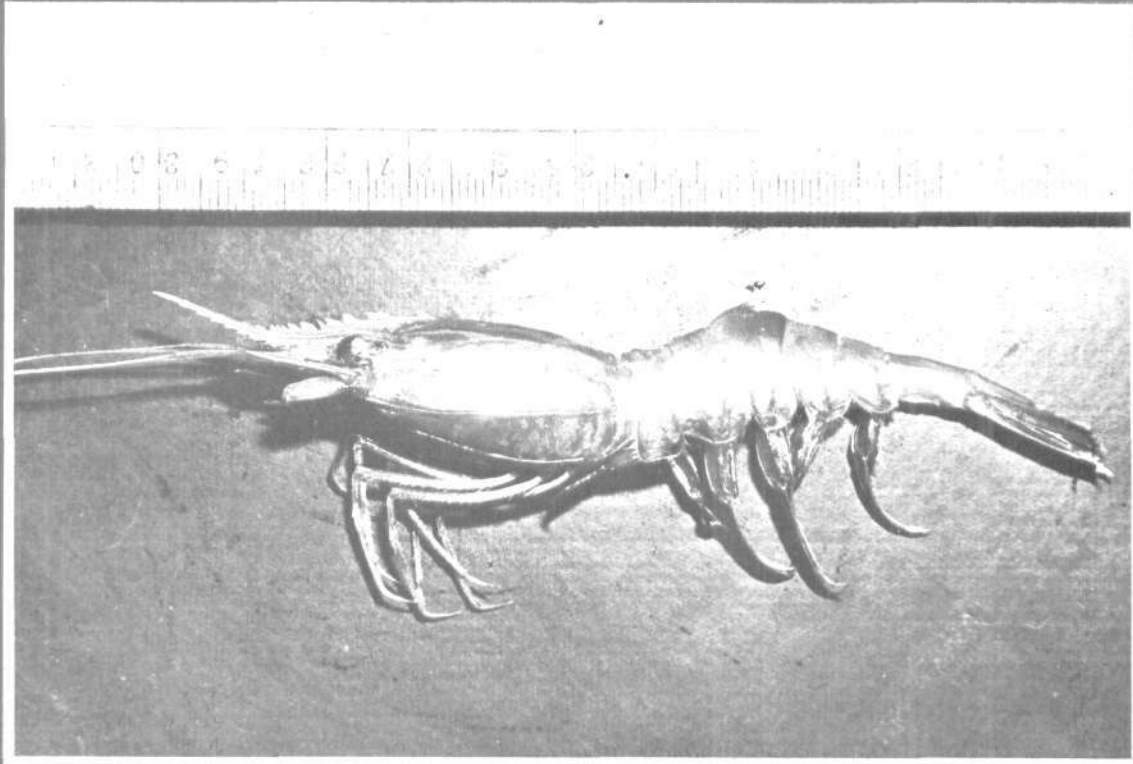


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INDIAN COUNCIL OF AGRICULTURAL RESEARCH

# HIGH ABUNDANCE OF LARGE SIZED ROCK CODS (*EPINEPHELUS* SPP.) OFF KARNATAKA COAST DURING THE POSTMONSOON MONTH OF SEPTEMBER\*

## Introduction

Mechanised trawl fishery along the Mangalore and Malpe coasts resumes in September every year after a ban of 3 months on mechanised fishing during monsoon. Till 1994, trawling operation during September-October was of less intensity and mostly carried out by few single-day units in the inshore waters. Multi-day units usually start their operation by mid October or early November. However, during September 1994, some of the multi-day units ventured into deeper waters (60-80 m) and obtained good catches of reef cods (Fig. 1) along with threadfin breams and cuttle fishes. Encouraged by this, more number of multi-day units were put into operation in September of the following year (1995) and got still better catches of reef cods. This large scale landing of rock cods was again observed during September 1996 also. Due to this phenomenal occurrence of the high value rock cods in sizeable quantities during the post- monsoon month of September for the last three years, a study of the fishery was carried out; the details of which are presented here.



Fig. 1. Heap of rock cods ready for transportation.

## Fishery

### Catch and effort

During September 1994, an estimated 142 tonnes of rock cods were landed at Mangalore

and Malpe at a catch rate of 183 kg/unit (Fig. 2). In September of the following year, a sharp increase in the number of units operated (from 774 to 2,304) was observed. The landing of large size rock cods was 534 t and it formed 13.5% of the multi-day trawl catch. The catch in September alone constituted 40% of the annual reef cod catch. This heavy landing lasted only upto the 3rd week of September and thereafter the catch started to decline and from October onward the rock cod catch consisted exclusively of juveniles of the spinycheek grouper, *Epinephelus diacanthus*. Landings of reef cods during September 1996 were estimated at 584.4 tonnes forming 18.26% of the trawl catch at a catch rate of 300 kg/unit. There was a marginal fall in the number of units operated as well as actual fishing hours as compared to the corresponding month of previous year. Nevertheless, the landing of rock cods registered an increase of 50.7 tonnes (Table 1). Apart from rock cods, dominant groups present in multi-day fleet catch were cuttlefishes and threadfin

TABLE 1. Details of catch, effort and catch rate of rock cods at Mangalore and Malpe during September and the biological characteristics of dominant species

Particulars	September 1994	September 1995	September 1996
No. of units operated	774	2,304	1,945
Trawling hours	18,110	94,529	80,332
Total trawl catch (t)	899	3,950.211	3,199.6
Catch of rock cods (t)	141.9	533.671	584.4
% in total catch	15.79	13.51	18.26
% in annual catch	14	40	-
Catch rate (kg/unit)	183.3	231.6	300.5
Dominant species	<i>E. diacanthus</i>	<i>E. diacanthus</i>	<i>E. diacanthus</i>
Length range (cm)	-	25-48	22-44
Mean size (cm)	-	32.4	32.96
Mean weight (g)	-	476	457
Length-weight relationship	-	-	a = 0.018015 b = 2.660619

\* Prepared by: P.U. Zacharia, H.S. Mahadevaswamy, S. Kemparaju and G. Sampathkumar, Mangalore Research Centre of CMFRI, Mangalore - 575 001

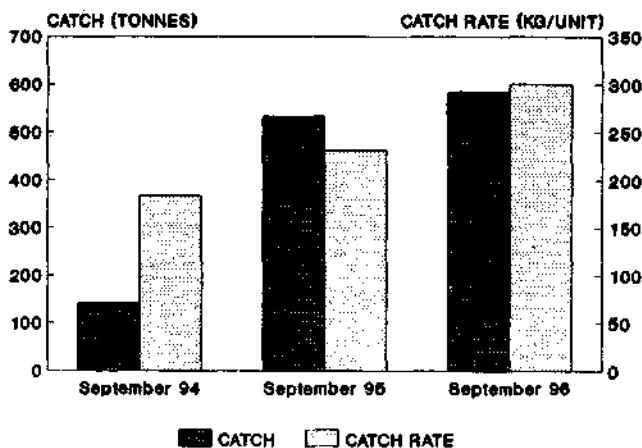


Fig. 2. Catch and catch rate of rock cods during September of last three years at Mangalore-Malpe.

breams (Fig. 3). Crustaceans were caught only in less quantities.

### Depth of operations and craft and gear employed

During September 1994 trawling along Karnataka coast was carried out in depths ranging from 60 to 80 m. Fishing was mainly of four day/night duration. In the following year (1995), fishing was extended to still deeper waters and in September 1996 trawling was carried out between 72 and 108 m depth. The area of operation was north of Mangalore upto Karwar. The details of the craft and gear employed by multi-day fleet are given elsewhere (Zacharia et al. 1996, *Mar. Fish. Infor. Serv., T & E Ser., No. 143*).

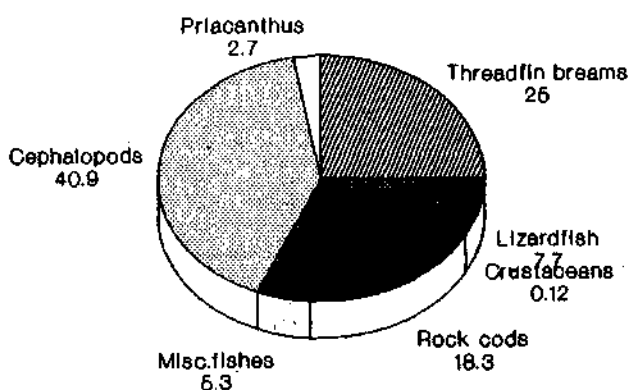


Fig. 3. Percentage occurrence of different groups in the multi-day trawl catch at Mangalore-Malpe during September 1996.

### Species and length composition

The rock cod catch during September 1995 and 1996 consisted of five species namely, *Epinephelus diacanthus* (82.65%), *E. epistictus* (7.71%), *E. malabaricus* (4.6%), *E. latifasciatus* (3.21%) and *E. chlorostigma* (1.9%). The size range of *E. diacanthus* was 25-46 cm and the modal size group was 30-34 cm (Fig. 4). During October 1995 the catch consisted of small sized *E. diacanthus* in the length range of 20-32 cm with modal size at 24-26 cm. In September 1996 the length of *E. diacanthus* ranged from 22 to 44 cm with the mean length at 33 cm. The average weight of each specimen during September 1995 and 1996 was more or less the same (Table 1). The length range of *E. malabaricus* was 60-64 cm.

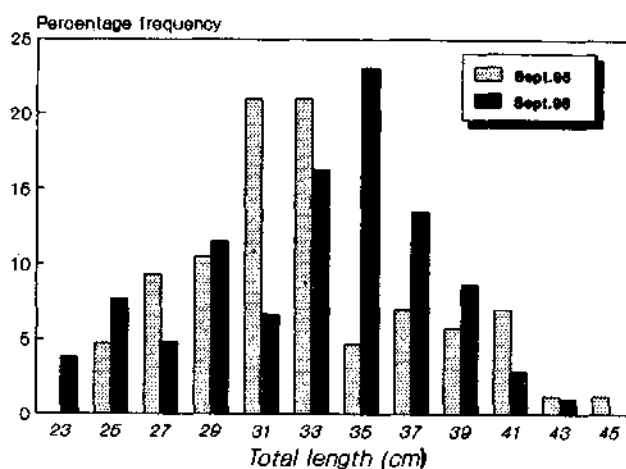


Fig. 4. Length frequency distribution of *E. diacanthus* at Mangalore in September 1996.

### Price structure and marketing

The small sized fishes were sold in local market and others were sent to neighbouring states. The price per kg/of fish varied between Rs. 8 and 20 at the landing centres.

### Remarks

The exploratory handline operations carried out by R.V. *Varuna* between 8°N and 14°N of the southwest coast yielded good quantities of perches abundant with the species of *Epinephelus*, *Lutjanus* and *Lethrinus* indicating good perch grounds (Silas, 1969, *Bull. CMFRI*, No. 12). Exploratory trawl surveys during 1992-'95 by Indo-Danish Fisheries Project, IDFP (1995) indicated high concentration of reef cods along Karnataka coast between 50-125 m depth associated with areas of coral and rocky bottom.

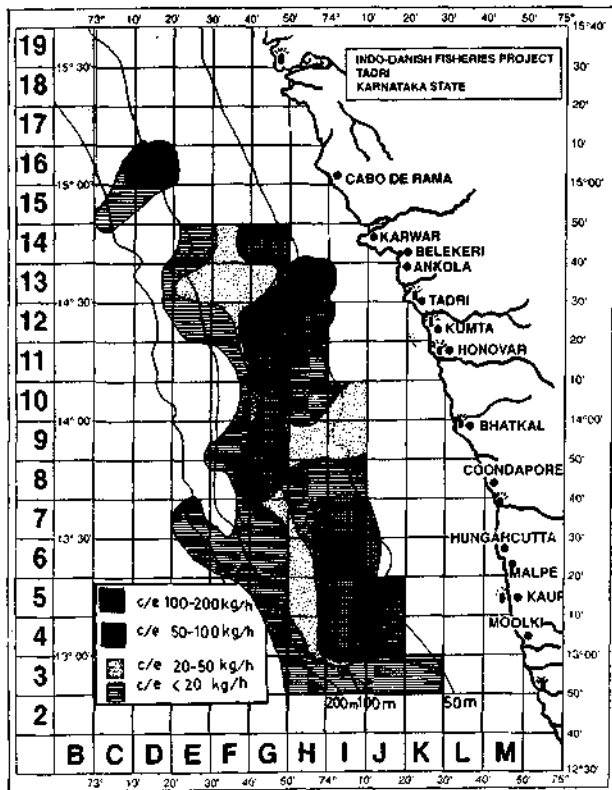


Fig. 5. Map showing the distribution pattern of rock cods along the Karnataka coast (Reproduced from Fishery Charts - Konkan coast published by IDFP, Tadri, Karnataka).

Considerable quantities of the juveniles of the spinycheek grouper, *Epinephelus diacanthus* used

to land every year during October-March (Zacharia *et al.* 1995, *Mar. Fish. Infor. Serv., T & E Ser., No. 139*). The multi-day units recently ventured into deeper waters during September and landed large quantities of rock cods, threadfin breams and cuttlefishes making the trawling operation in this month very profitable. The catch and effort data for the past four years indicate the rise in the number of multi-day units in September every year. The effort increased from 274 fishing hours in 1993 to 80,332 hours in 1996. The average rock cod catch for the entire Karnataka state during 1985-'89 period was 311.6 tonnes whereas the catch from Mangalore-Malpe alone now stands at 1,344 tonnes (1995/'96).

Reef cods are shoaling fishes found near the bottom. IDFP reports (1995) show that highest concentration was in August-October and maximum catch rate of 35 kg/hr was during August. The areas of high abundance are between Ankola-Tadri and Coondapur-Mangalore (Fig. 5). The study indicated that many areas in deeper waters along the Karnataka coast are also rich in cephalopod, threadfinbream and lizardfish resources which can be exploited by the traditionally used trawl boats with provisions like steel wire rops and fish finding equipments and high opening nets.

IDFP 1995. Fishery Charts - Konkan coast. Published by Indo-Danish Fisheries Project, Tadri, elaborated by Dept. of Fisheries, Govt. of Karnataka and sponsored by DANIDA.