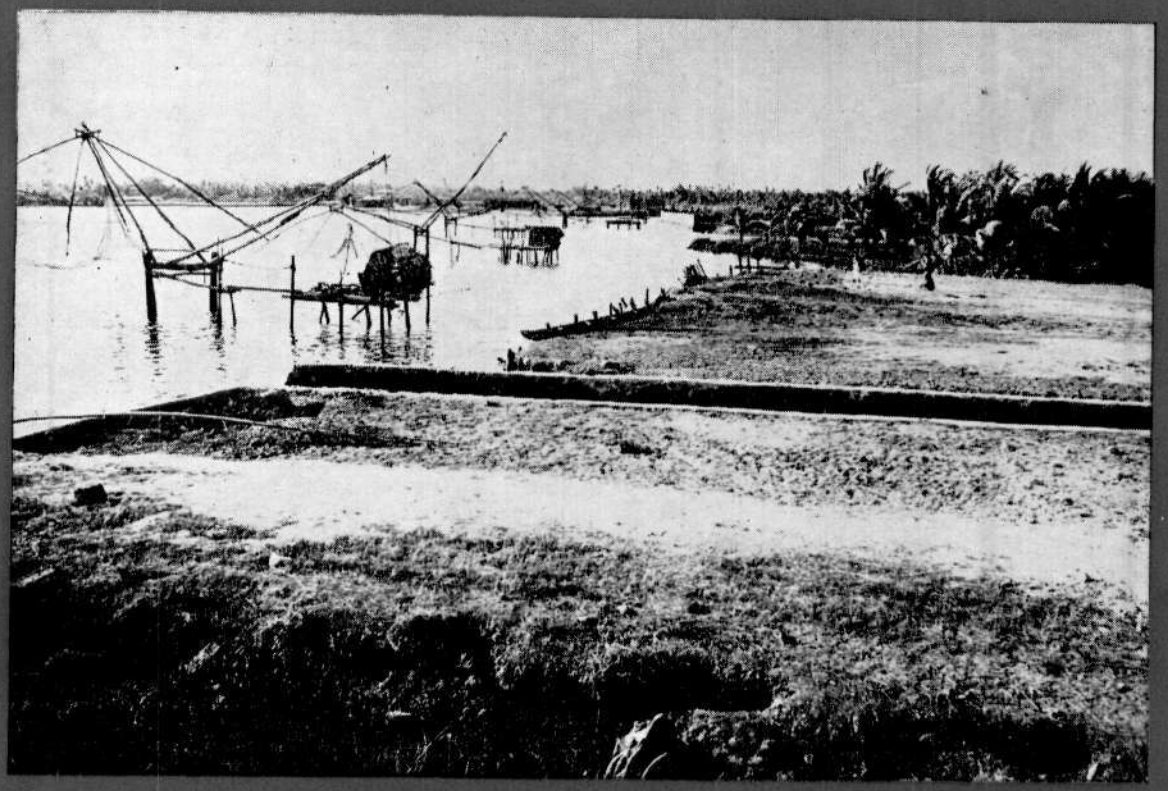
MARINE FISHERIES INFORMATION SERVICE



No. 73
JULY 1987

Technical and Extension Series

CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
COCHIN, INDIA

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

ON AN UNUSUAL CATCH OF BIGEYE SCAD *SELAR CRUMENOPHTHALMUS* (BLOCH) IN SHORE SEINE AT VIZHINJAM*

An unusually heavy catch of the carangid *Selar crumenophthalmus* (Bloch) was obtained close to the shore at Vizhinjam on 3rd December, 1985. The bumper catch was landed by shore seines operated on the southern side of the Inspection Bungalow of the Vizhinjam Harbour Project. This area is a short stretch of sandy beach caved into the rocky shore (Fig.1). Here fishing activities are normally scarce and one or two shore seines may be operated in a day, that too occasionally.

On 3rd December, 1985, this beach became very active and continuous operation of shore seines was noticed. In the morning of that day, some fishermen who started shore seine fishing, sighted a huge fish shoal close to the shore. The first haul itself was quite encouraging and the news immediately spread around. All the shore seine units available in the village were brought to the centre and were soon put into operation. Even before one net was completely hauled up, another was cast around the first one. Likewise 2–3 nets, one encircling the other, were in the sea at the same time. The fishing activities started at about 0800 hrs and continued till around 1900 hrs and 10 units were operated during this period at the same area.

The catch

The shore seines were operated within one kilometre from the shore (Fig. 1). The total catch was estimated to be around 33.4 tonnes caught by 10 units. The catch per effort was thus 3.34 tonnes. The catch in individual units ranged from over half a tonne to say 11 tonnes. The number of fish in each effort ranged from 3,500 to 57,100; totalling to 1,75,650 fish. The total catch by weight, number of fish in each effort, *etc.* are presented in Table 1.

The catch was exclusively of the single species of carangid *Selar crumenophthalmus* (Bloch) commonly known as Bigeye scad and locally called 'Kannan kozhiyala' (Fig. 2). Such a huge catch of bigeye scad

*Prepared by P. N. Radhakrishnan Nair and N. Gopalakrishna Pillai, Vizhinjam Research Centre of CMFRI, Vizhinjam.

has never been observed in this area during the past years. Also, the shoals were present in the coastal waters only for one day.

Fig. 1. A view of the landing centre and the fishing activities.

Table 1. *Total catch of* Selar crumenophthalmus *by weight* (kg) *and by number caught on 3rd December, 1985 at Vizhinjam in each unit of shore seine along with total income and price rate. (The serial number of units is not in sequence of operation)*

Gear unit	Catch by wt (kg)	Number of fish	Total income (Rs.)	Average cost per fish (Rs.)
1	4,351	22,900	22,500	0.98
2	1,414	7,440	12,100	1.63
3	1,049	5,520	5,000	0.91
4	718	3,780	5,200	1.38
5	2,048	10,780	16,000	1.48
6	994	5,230	5,000	0.96
7	665	3,500	4,700	1.34
8	6,536	34,400	34,000	0.99
9	4,750	25,000	25,000	1.00
10	10,849	57,100	55,000	0.96
Total	33,374	1,75,650	1,84,500	1.05

Biological observations

Length measurements of random samples revealed that the size of fish ranged from 210 to 300 mm in total length with an average size at 252 mm. Nearly 70% of the fish ranged between 240 and 269 mm. The major mode was located at 255 mm. Two minor modes, at 230 and 280 mm were also noticed (Fig. 3).

The fish collected for biological studies showed that the weight of individual fish ranged from 110 g for a fish measuring 210 mm to 259 g for a fish of 283 mm total length. The average weight of fish was 190 g. The length-weight relationship of the fish was analysed based on 50 fish. The length-weight formula was derived as–

$$\log W = -5.1550 + 3.0954 \log L \text{ or}$$
$$W = 0.000006998\ L^{3.0954}.$$

The correlation coefficient ('r' value) was found to be $r = 0.9692$. The length-weight plot is given in Fig. 4.

Stomach content analysis of the samples showed that the percentage occurrence of stomachs in different degrees of fullness was 38% ½ full, 30% ¼ full and 32% empty. This shows that majority of the fish (62%) was in poorly fed condition. The food items were mainly pteropods (8%) and semidigested and digested matter (91%) with a few fish scales (1%).

Fig. 2. A portion of the bumper catch.

In the analysis of the maturity stages of the fish examined, 6% immature, 38% resting, 52% maturing and 4% mature gonads were noticed. The sex-ratio between males and females was 46:54.

Disposal of catch

From the landing centre the fish was loaded in canoes and brought for auctioning to the main fish landing and marketing centres situated inside the Vizhinjam bay. The fish from a single unit was auctioned in different lots. The price of a single fish in a lot was fixed through open bidding and later raised to the total number of the fish in that lot. By this method of auctioning the actual count of the fish per effort could be conveniently available from the owners of the gear.

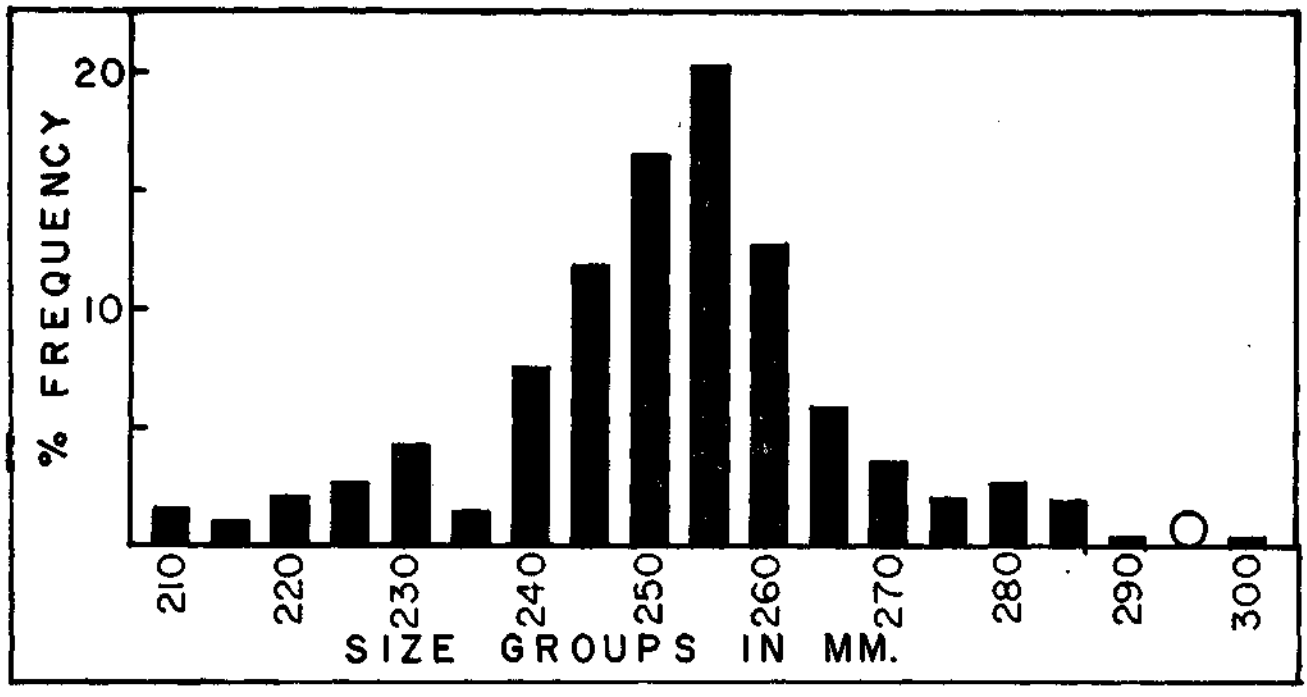


Fig. 3. The percentage size-frequency distribution of *Selar crumenophthalmus* from shore seine at Vizhinjam on 3–12–1985.

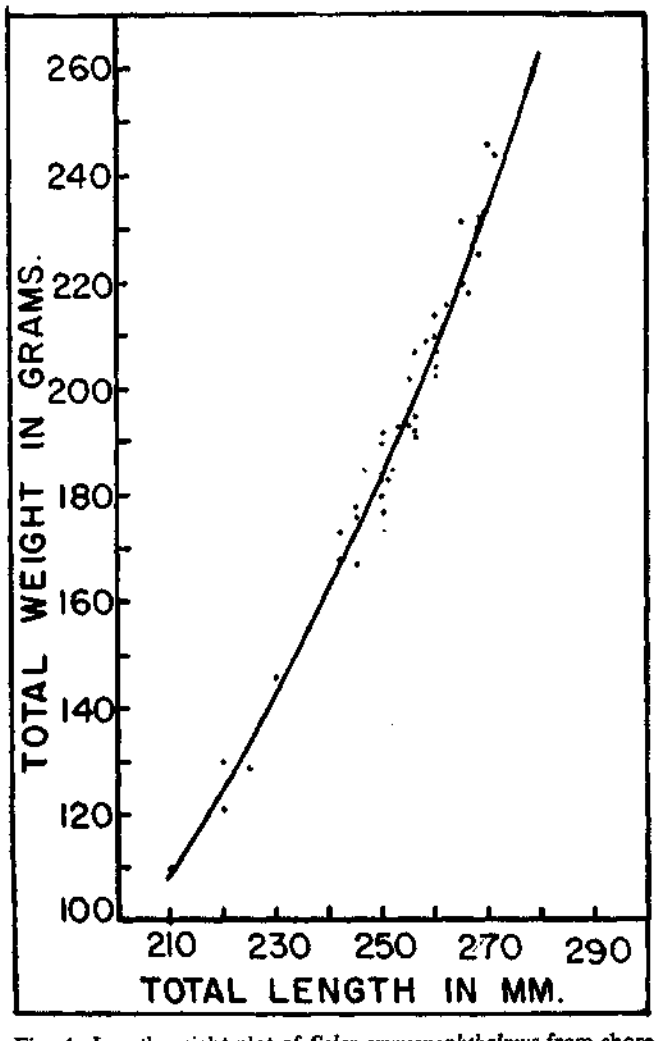


Fig. 4. Length-weight plot of *Selar crumenophthalmus* from shore seine at Vizhinjam on 3–12–1985.

From this the catch by weight was computed later. The price of a fish varied from Rs. 1.60 in the morning to Rs. 0.50 in the evening when more and more catch came ashore. The sale figures obtained later from the owners showed that the day's income from this bumper catch was around Rs. 1,84,500. From this the average price of a fish could be calculated as around Rs. 1.05 (Table 1). The fish in fresh condition was moved to the local markets by small traders, but bulk of the catch was iced and transported to the major fish markets at Trivandrum, Balaramapuram, Neyyattinkara *etc.*

Remarks

S. crumenophthalmus forms a fishery at Vizhinjam during August to March with a peak period from November to March. In some gears it has been observed in very small quantities in April to May also. In 1985–'86 the season started in June and was continuing with gaps in July and October, and the estimated catch, excluding the present bumper catch, during June to December, 1985 was 53.7 tonnes. On an average the annual contribution of this species to the total carangid catch was estimated as 5.3%.

The Bigeye scad generally does not come so close to the shore, but occasionally it reaches the inshore area in small schools and is caught in shore seines. This fish is normally caught in drift net, boat seine and hooks and line. The studies conducted at Vizhinjam since 1980, on the resources of carangids, have shown that the percentage of catch of Bigeye scad by these gears is 52.2 by drift net, 20.4 by hooks and line and 20.2

by boat seine. All these gears are normally operated at 20–30 fathom depth zone, 4–5 km away from the shore. In shore seine its percentage of catch is only 7.2. Neither the condition of the gonads nor the food of the fish sampled gave any clue for possible migration of the fish in such huge shoals into the shallow waters. Similarly, the hydrographic studies also showed that the water properties such as surface temperature (30.9°C), dissolved oxygen (4.5 ml/l), salinity (34.7‰) and pH (8.2) were only normal for the season and thus do not indicate any special circumstance for the present bumper catch.

The authors are thankful to Shri C. Mukundan, (Head of Demersal Resources Division), Vizhinjam Research Centre of Central Marine Fisheries Research Institute for critically going through the manuscript and suggesting suitable modifications.