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Finfish resources around Andaman and Nicobar islands

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ABSTRACT

The average catch rate of finfishes obtained by *FORV Sagar Sampada* from the survey area in the Andaman Sea was 259 kg/hr and the yield ranged from 8.6 to 1260 kg/hr. Silver bellies was the most abundant component (37.5%) with a catch rate of 96.9 kg/hr. Carangids, elasmobranchs and perches accounted for 20.3%, 11.9% and 8.0% of the total catch and the corresponding catch rates were 52.5, 31.1 and 20.8 kg/hr respectively. The highest catch rate of 1260 kg/hr was recorded from 13°10'N - 92°37'E at a depth of 65m. The catch rate indicated that the depth zone 51-100 m is productive and yielded 84.7% of the total catch at a catch rate of 501.4 kg/hr. Although the pelagic trawl was operated at 38 stations, the catch realised was negligible (0.83 kg/hr).

INTRODUCTION

The Andaman and Nicobar waters (596554 km^2) forms about 29.6% of the total area of Indian EEZ, which is considered as one of the dominant upwelling areas of Indian Ocean and hence very productive for several fish resources. The earlier limited surveys indicated that the area is rich in tuna and tuna like fish, sharks, cephalopods and pelagic shoaling fish (Sudarsan, 1978; Sudarsan & Somvanshi, 1988, Sudarsan *et al.* 1988). Though the present fish production from this region is only 22339 tonne, the estimated potential yield is 139000 tonne which gives ample scope for intense exploitation (Anon, 1991). This vast potential demands extensive surveys in this region to locate and estimate various finfish resources in different zones, seasons and depths. Earlier surveys conducted by *FORV Sagar Sampada* during 1985-'88 period located high fishable concentration of threadfin breams, bull's eye, lizard fish etc. in the Andaman and Nicobar islands waters (James & Pillai, 1990). Bande *et al.* (1990) estimated regionwise and bathymetric abundance of bull's eye and its potential yield based on the 1985-88 survey data of *FORV Sagar Sampada*. Similarly, the abundance of the threadfin breams and lizard fish along the Andaman and Nicobar region was estimated by Nair & Reghu (1990). With an objective to confirm the results

obtained by earlier surveys as well as to get a more accurate picture on the finfish availability and abundance in the sea around Andaman and Nicobar islands the present study was carried out.

MATERIALS AND METHODS

FORV Sagar Sampada carried out six exclusive cruises (April 1988 to January 1989) in the area lat. 07°53' - 14°30'N; long. 90°30' - 94°54'E. The location of twelve stations from where the finfish were caught by bottom trawls is marked in Fig.1. Due to uneven rocky/coral grounds, bottom trawling could be carried out only from about 10% of the total stations sampled. However, all the pertinent data on the rate of yield, species composition and bathymetric abundance of various fishes are analysed and results presented in this account.

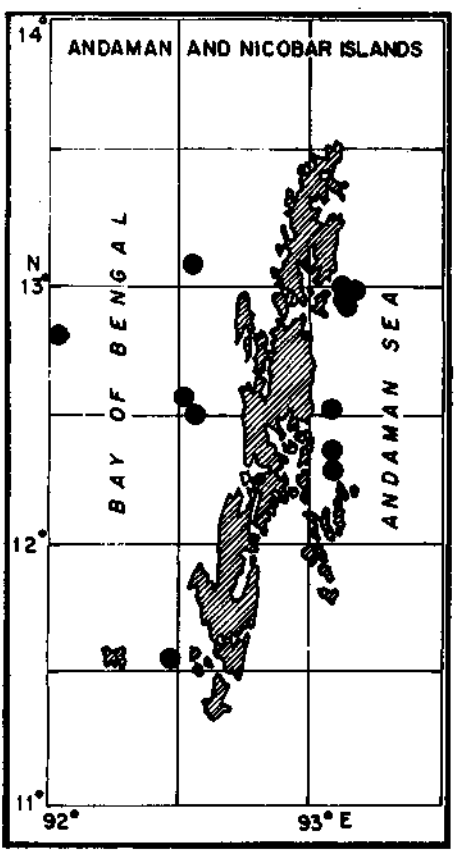

Fig.1 - Stations indicating the positions where the bottom trawling was conducted

RESULTS

Demersal resources

Bottom trawling operations in this region produced a total catch of 270 kg fish with an average catch rate of 259.3 kg/hr. In all the six cruises, bottom trawl could be operated only at 12 stations and yield ranged from 8.6 to 1260 kg/hr (Fig. 1). The groupwise catch rate and their percentage composition in the island waters is given in Table 1. In this region silver bellies formed the major catch (98.9 kg/hr) accounting for 37.5% of the total fish production. Carangids were the next important item (52.5 kg/hr) forming 20.3% followed by elasmobranchs (31.1 kg/hr and 11.9%), perches (*Epinephelus* spp, *Lutjanus* spp, *Lethrinus* spp) with a catch rate of 20.8 kg/hr (8.0%) and *Arioma indica* (11.3 kg/hr and 4.3% of total catch). Generally the catches were low in most of the stations. The highest catch of 1260 kg/hr was recorded from 13°10'N, 92°37'E at a depth of 65m and composed mostly of silver bellies (51.1%) and carangids (17.1%).

Table 1 - Fish production, abundance and percentage composition of major groups in the Andaman and Nicobar region

Groups	Production (kg)	Abundance (kg/hr)	Catch (%)
Silver bellies	775	96.9	37.5
Carangids	420	52.5	20.3
Miscellaneous fish	265	32.8	12.8
Elasmobranchs	247	31.1	11.9
Arioma indica	90	11.3	4.3
Lethrinus spp	79	9.9	3.8
Epinephelus spp	55	6.9	2.7
Lizard fish	32	4.0	1.5
Lutjanus spp	32	4.0	1.5
Ribbon fish	30	3.8	1.4
Barracudas	20	2.5	1.0
Other perches	15	1.9	0.7
Nemipterids	11	1.4	0.5
Bull's eye	3	0.4	0.1
Total	2074	259.4	

The total fish yield, catch rate and percentage composition of dominant fish in the depth zones 0-50, 51-100 and 101-150 m are presented in Table 2. In coastal waters of 50 m depth the catch rate was 204.8 kg/hr, which accounted for 7.4% of the total production. The main groups of fish caught were *Epinephelus* spp (950.5 kg/hr) and *Lethrinus* spp (47.9 kg/hr) forming 24.7% and 23.4% respectively of the total yield from 0-50 m depth zone. The highest catch rate of 501.4 kg/hr was recorded from 51-100 m depth zone forming 84.7% of the total fish production. Silver bellies (44%), carangids (22.1%), elasmobranchs (9.8%) and *A.indica* (5.1%) were the main fishes landed from this depth belt. Only 7.9% of the total catch was realised from the depth zone 101-150 m with a low rate of production of 59.6 kg/hr. The catch from this depth strata composed chiefly of elasmobranchs (25.1%), carangids (8.5%) and *Epinephelus* spp (7.9%). In general <100 m depths yielded high catch rates of silver bellies (261.5 kg/hr), carangids (155.4 kg/hr), perches (92.9 kg/hr) and elasmobranchs (87.2 kg/hr); whereas the area >100 m depth yielded low catch rates of elasmobranchs (26.9 kg/hr), carangids (5.1 kg/hr) and *Epinephelus* spp (4.7 kg/hr).

Out of 12 stations trawled elasmobranchs were recorded from 5 stations with catch rate of 8 to 163.5 kg/hr. The highest catch was from 12°18'N, 93°09'E at a depth of 65 m. The nemipterid landing was very low (0.5 to 5 kg/hr) in this region. The rate of production of carangids fluctuated from 1.3 to 480 kg/hr in the 8 positive (successful hauls) stations and the peak catch was from 12°30'N, 92°32'E at a depth of 90 m. The production of lizard fish and "bull's eye" were low with catch rate ranging from 0.4 to 12 kg/hr and 0.4 to 2 kg/hr respectively. Though *A.indica* was caught only from one station (12°30'N, 93°05'E) the rate of production was fairly high (360 kg/hr) from the depth of 90 m. The yield of perches ranged from 5 to 165.8 kg/hr and that of silver bellies from 0.1 to 770 kg/hr.

Table 2 - Depthwise fish resource abundance in the Andaman and Nicobar region

Depth (m)	Total catch (kg)	Catch (%)	Catch rate (kg/hr)	Major groups (kg/hr)
0 - 50	154	7.4	204.8	*Epinephelus* spp (50.5kg) - 24.7% in total catch of the depth zone
				Lethrinus spp (47.9kg) - 23.4%
				Carangids (26.6kg) - 13.0%
51 - 100	1755	84.7	501.4	Silver bellies (220.6 kg) - 44% Carangids (110.6kg) - 22.1% Elasmobranchs (49.1kg)- 9.8% *Arioma indica* (25.7kg)- 5.1%
101 - 150	165	7.9	59.6	Elasmobranchs (26.9kg)- 25.1% Carangids (5.1kg) - 8.5% *Epinephelus* spp (4.7kg)- 7.9%

Pelagic resources

Pelagic trawl was operated at 38 stations during 5 cruises to assess the pelagic resources. The total yield was only 32.5 kg with a catch rate of 0.83 kg/hr. The catch comprised mainly of *Decapterus* spp, *Caranx* spp, *Diaphus* spp, juveniles of *Lethrinus* spp, *Caesio* spp and *Lutjanus* spp. In general the catch obtained by pelagic trawling was negligible. The major catch was *Decapterus* spp, *Diaphus* spp and *Caranx* spp weighing about 28.5 kg caught at 4 stations. The rest of the 13 positive trawling operations yielded only 4 kg of fish mainly constituted by juvenile fishes. No catch was obtained at 21 stations.

DISCUSSION

Although *FORV Sagar Sampada* surveyed the Andaman and Nicobar waters during April 1988 to January 1989 and covered 124 stations, in six cruises, the bottom trawl was operated only from 12 stations by expending 8 hours effort, chiefly due to the uneven non-trawlable grounds in most of the stations. Further, the mean catch rate of 259.3 kg/hr is slightly higher than what was reported (247.1 kg/hr) by Sivakami (1990) from the same region in 1985-88 period. Fishes such as silver bellies (30%), carangids (17.2%), elasmobranchs (11.7%) and perches (10.3%) were the major groups available in this region (Sivakami, 1990). This observation is in perfect agreement with the current data of 1988-89 from Andaman and Nicobar waters. As regards the depthwise abundance of fishes, the highest catch rate of 230.9 kg/hr was recorded from 0-50 m and 27.8 kg/hr and 17.9 kg/hr from 51-100 and 101-150 m depth respectively by Sivakami (1990). On the other hand the present survey data indicates that the peak catch rate of 501.4 kg/hr was from 51-100 m depth belt. As most of the shelf area of this region is unsuitable for demersal trawling, in future surveys, intense efforts need be expended to long-lining, gillnetting, purse-seining and pelagic trawling in order to chart the areas of concentration of different finfishes.

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