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RECORD CATCH OF ROCK PERCH, *EPINEPHELUS FASCIATUS* BY BOTTOM TRAWLING OFF RATNAGIRI

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ABSTRACT

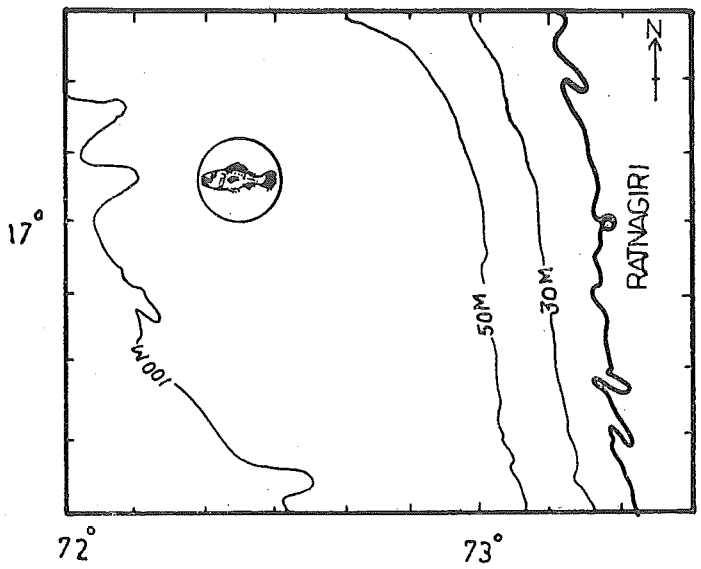
A productive fishing ground for rock perch (*Epinephelus fasciatus*) was located off Ratnagiri between 17° 00' to 17° 10' N latitude and 72° 20' to 72° 30 E longitude, around a depth of 96 m during November, 1983. An average catch of 2 ton/hr. was recorded. Length frequency studies of *E. fasciatus* indicate the probability of a nursery ground consisting of three brood stock. Hydrographic studies of the ground revealed that the bottom water was oxygen deficient below a strong thermocline extending from 15-75 m depth with the recorded bottom temperature amounting to 20.5°C.

INTRODUCTION

Immediate attention is needed to exploit the deeper zone of Indian ocean where the marine fish potential is far more than the present yield (Dwivedi, 1981). In the above context M. V. Saraswati (CIFE, Bombay) is being extensively used for the training cum research cruises of the Institute within the EEZ limit. The vessel 36.57 m long is equipped with modern navigational and fish finding equipments. During her cruises which covered the EEZ between Mangalore and Dwarka, the vessel was used for bottom and pelagic trawling, longlining and hydrographic studies. The surveys had been valuable in fishery resource assessment and in studying the relationship between fishery and hydrographic conditions of the region.

MATERIAL AND METHODS

The XVIth cruise of M. V. Saraswati covered the area between 16° 30' — 19° 10' N latitude and 71° 50' — 73° 00' E longitude within a depth range of 25 to 100 m for bottom trawling during 9th to 17th November, 1983 (Ravindranathan *et al.*, 1983). Position fixing was done with the Satellite navigator. Echosounders EQ 30 and EQ 50 and Sonar were used for fish finding. Fishing was done using a bottom trawl 40 m long of 50 mm mesh size. The catch reported presently was made in the area 17-72/IC (Fig. 1).



g. 1 : Map showing the location of rock perch fishing ground off Ratnagiri.

Hydrographic parameters were studied at the fishing ground from varying depths (0, 15, 30, 50, 75 & 95 m). Surface sample was collected with a bucket and the temperature was recorded by an ordinary thermometer. Subsurface samples were collected by Nansen Reversing bottle fitted with protected reversing thermometer. pH was measured by the Digital pH meter 550 (Germany). Dissolved oxygen and salinity were analysed after Strickland & Parson (1968) and nutrients according to Carlberg (1972).

296 fishes (*E. fasciatus*) were measured for total length on millimeter scale and the weight was taken on a spring balance. Length frequency composition was tabulated in class interval of 10mm and actual frequency and % frequency were calculated. Running average was calculated by the formula $\frac{a+2b+c}{4}$ where a = frequency of previous class interval; b = frequency of class interval under consideration ; c = frequency of class interval next to class interval under consideration inorder to remove chance fluctuations while collecting the data.

RESULTS AND DISCUSSION

Epinephelus fasciatus locally known on Kalava belonging to Family Serranidae, generally inhabiting the waters of coral and rocky areas has the following identification characteristics according to FAO (1979).

1. Orange-red colour on head and fins with an oblong and somewhat robust body.
2. A red band from tip of snout along dorsal part of head through eye to the front of dorsal fin; 6 red bands on the body margin of spinous dorsal fin black.
3. Preoperculum with a convex finely serrated upper edge, its angle slightly produced and bearing enlarged spinules.
4. Dorsal fin with 11 spines and 16 soft rays, caudal fin rounded.

A total of 6.9 tons of *E. fasciatus* was caught in three hauls expending 3 hours, 30 min. of fishing effort at a catch per unit effort (cpue) of about 2 tons/ hour (Table). A record catch of 4.5 tons was caught in a single haul of 1 hour, 30 min. duration of trawling. Average weight of the fish was recorded to be 777.03 g.

Table-1 : Fishing particulars and the catch date of rock perch

Area	Fishing depth (m)	Fishing effort (hr.-min)	Total catch (tons)	Catch/hour (tons)
17-72/1C	93-96	1 — 00	0.4	0.4
,,	,,	1 — 00	2.0	2.0
,,	,,	1 — 30	4.5	3.0

As the *E. fasciatus* is a inhabitant of rocky and coral grounds, it was being generally caught by handliningor longline fishing as the bottom trawling operations in these grounds hamper the gear and also involve risk. Hence locating a high productive rock perch ground suitable for bottom trawling operations along Maharashtra coast is a new finding. However, during the year 1965, R. V. Varuna had conducted exploratory survey of rock perch on the southwest coast of India. Many of the fishing grounds were located by acoustic survey and fish was caught by handlining (Silas, 1969). Fewer information is available today on the location of rock perchgrounds in the west and north west coast of India and very few reports are available on the catches of rock perch by bottom trawling operations except from a large portion of Wadge Bank off Kerala coast.

The length frequency analysis (Fig. 2) indicates the exploited stock in the range of 180 mm to 450 mm. Dominant length group ranged between 351 mm to 361 mm constituting 8.78% of the total catch. Running average resulted in 3 distinct modes in the class intervals of 291 mm – 300 mm (7.43% of the total numbers), 341 mm – 350 mm (7.77%) and 381 mm – 390 mm (6.08%). That, only the adult individual were caught shows the area was probably a nursery ground for *E. fasciatus*. Spawning of the fish is likley to be taking place in some other ground away from the exploited ground. 3 distinct modes reveal that the exploited stock of E. *fasciatus* consists of 3 different broods released at very short interval of 2 to 3 months. The exact age of the fishes of different modes cannot be found out because of discontinuity in the observed data.

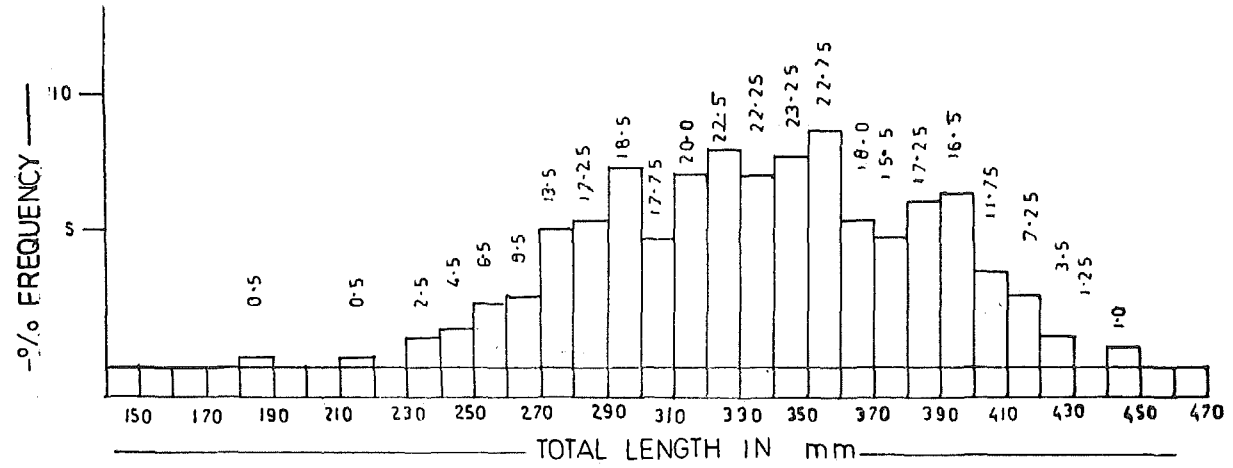


Fig. 2 : Histogram for length frequency of *E. fasciatus*. (Figures above the histogram indicate running average).

Results of the hydrographic parameters recorded at varying depth of the fishing ground is shown in Fig. 3. Water temperature ranged between 27.6°C (10 m) to 20.5°C (bottom) where surface temperature was 27.2°C. Dissolved oxygen levels were recorded in the decreasing order, 4.66 ml/l at surface and 0.67 ml/l at the bottom. Salinity ranged between 33.13 to 32.53‰ from surface to bottom and pH measured was in the range of 8.57 to 8.03.

Minimum phosphate values (0.62 µg-at/1) was recorded at 15m depth and maximum (1.70 µg-at/1) at 75 m. Phosphate level at the surface was found to be 0.81 µg-at/1 and bottom 0.72 ug-at/1. Nitrite concentration was minimum at 15 m (0.03 ug-at/1) and maximum at bottom (2.0 µg-at/1). Surface nitrite level was observed to be 0.03 µg-at/1.

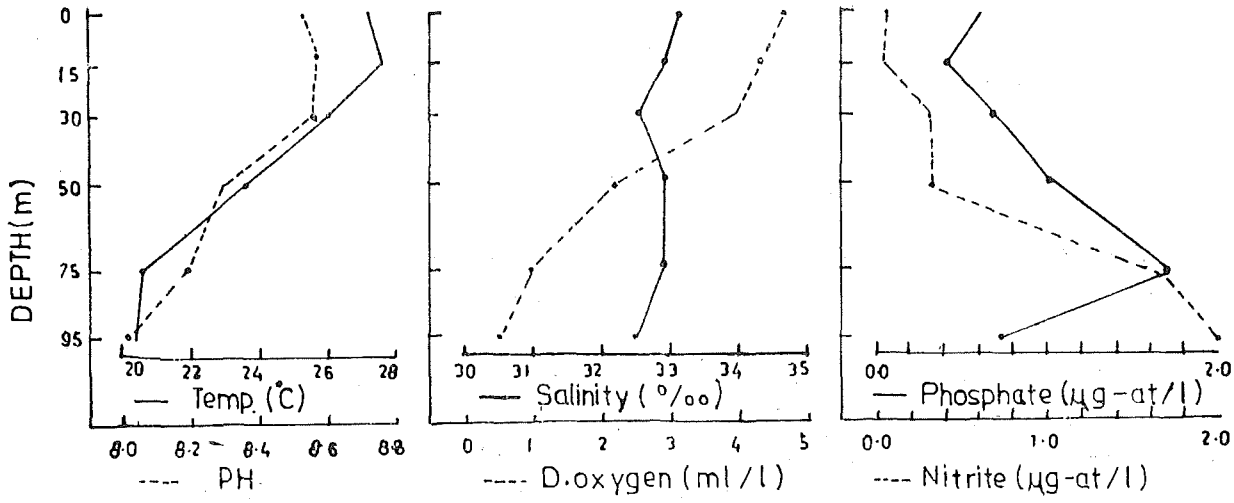


Fig. 3 : Vertical distribution of physico-chemical characteristics at the fishing ground.

Hydrobiological conditions at the bottom have great impact on the fish populations. Bottom characteristics studied at the ground explains that the temperature (20.5°C), salinity (32.53‰) and pH (8.03) observed in the normal ranges are favourable for *E. fasciatus*. Low dissolved oxygen levels recorded at and near the bottom (Fig. 3) indicate the tolerance of the fish to low oxygen levels. High concentrations of nutrients (Fig. 3) at 75 m and the bottom, reveals the positive environmental conditions for the rock perch *E. fasciatus*.

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