

## Minor fishery for the Indian oil sardine (*Sardinella longiceps*) along Saurashtra coast

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### ABSTRACT

During October 1987 to March 1988 the total estimated oil sardine, *Sardinella longiceps*, landed by cast net at Porbander was about 1 300 tonnes with an average monthly landings of about 215.9 tonnes. The length (L)-weight (W) relationships of male and female were  $W = 4.514 + 2.744 L$  and  $4.237 + 2.617 L$ , respectively. The mean modal length increased from 75 mm in October - November to 155 mm in February - March. The stage of maturity progressed from immature in October to maturing (stage IV) in March.

Major landings of oil sardine in India are from the southwest coast (Anthony Raja 1969, Anonymous 1986). Fotedar and Savaria (1988) reported oil sardine landings along the Saurashtra coast during November 1986 - February 1987. The present study was conducted to know whether the oil sardine occurs regularly along the Saurashtra coast.

### MATERIALS AND METHODS

Data on effort and landings were collected from Porbander landing centre by adopting the stratified random sampling (Silas *et al.* 1976). The canoes landing oil sardine were randomly selected on the days of observations. The values recorded were raised to monthly estimates. Observations were carried out between October 1987 and March 1988.

During different months, 116 randomly selected specimens were collected and studied for length-weight relationship, sex ratio and

maturity stages. For the length-weight relationship, 54 males and 62 females were examined. The length-weight relationship was derived for each sex separately using the formula  $W = aL^n$ , where W, weight of the fish in grams; L, length of the fish in millimetre; and a and n, constants. The relationships among males, females and both combined are given by the following regression equations:

Males	$\log W = 4.514 + 2.744 L, r = 0.9582$
Females	$\log W = 4.237 + 2.617 L, r = 0.9531$
Combined	$\log W = 4.378 + 2.682 L, r = 0.9557$

### RESULTS AND DISCUSSION

The major sardine landings centres in Saurashtra were Miyani, Porbander, Navibunder and Madhavpur. The sardine fishing usually commenced in the last week of October and extended up to the following March along the inshore waters at a depth of 6-8 m. The fishing was done by cast nets with mesh size 21-27 mm, operated from dugout canoes or fibre-glass boats. The duration of fishing ranged from 2 to 8 hr depending upon the availability

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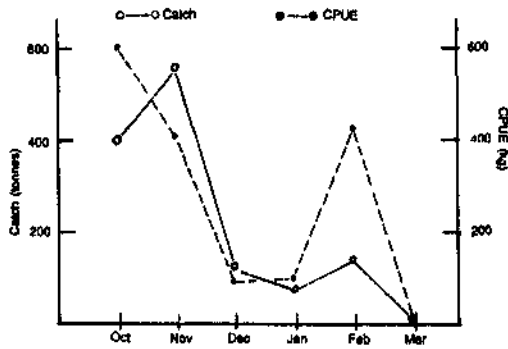


Fig. 1. Catch and catch per unit effort of *Sardinella longiceps* caught by cast net at Porbander.

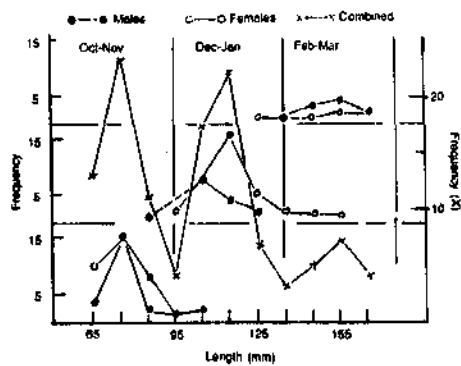


Fig. 2. Frequency distribution of size groups (mm) of *Sardinella longiceps* caught by cast net at Porbander.

of sardine shoal; on an average, the duration of fishing of each unit was 5 hr.

The estimated monthly landings of oil sardine at Porbander during the period ranged from 75 to 550 tonnes with an average estimated monthly catch of about 215.9 tonnes (Fig. 1). The peak landings (550 tonnes) were during November. However, the catch per unit effort (CPUE) declined from the commencement of the fishery in October (600 kg/unit) to January (100 kg/unit); subsequently the CPUE increased remarkably in February (430 kg/unit). The lowest CPUE was in December when the effort was maximum.

During October–November the shoals

were composed of smaller fish of 65–95 mm size with dominant size at 75 mm (Fig. 2). The size increased from 95 to 135 mm with a mode at 115 mm during December–January. In the last part of the season (February–March) the size increased from 135 to 165 mm with mode at 155 mm. Similar trends were observed in both the sexes. This indicated that *S. longiceps* had grown by about 80 mm in about 6 months.

During most of the months, the sex ratio (F:M) was 1:1 except during December–January when it was 2:1. Majority of the females were immature (stage II) during October–November while they were in maturing stage (stage III, 60%; stage IV, 31%) in December–January. In February–March most of them were in stage IV (66.6%). The shift in the stages during different months was in conformity with the length-frequency distribution.

Findings on length-weight relationship (Fig. 3) were similar to those reported by Dhulkhed (1963) in *S. longiceps* and by Sekharan (1968) in *S. gibbosa*, even though there were variations in the a and b values which may be attributed to the variations in the habitat (e.g. temperature) conditions occur-

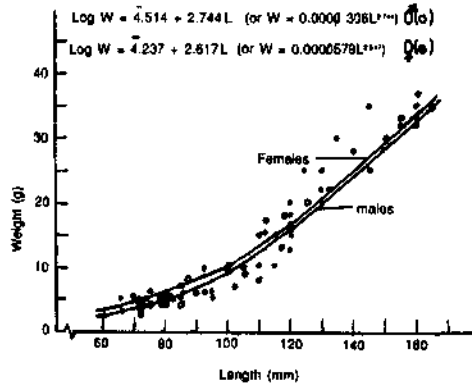


Fig. 3. Length-weight relationship of *Sardinella longiceps* (male, female and combined) caught by cast net at Porbander.

ring in the northwest and southwest. Since the information on hydrological conditions of the northwest region was scanty, no definite inferences could be drawn as to the origin of the stocks in this region.

The results support the observations of Fotedar and Savaria (1988) that there was a good scope for oil sardine fishery along Saurashtra coast during October to March. Detailed studies on this species and introduction of efficient pelagic gears on experimental basis may provide valuable information on improving the fishery and origin of stock.

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