ON THE OCCURRENCE OF OILSARDINE IN THE SPAWNING STAGE OFF VIZHINJAM

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ABSTRACT

The occurrence of ripe and spawning oilsardine, *Sardinella longiceps* Val. off Vizhinjam is reported for the first time. Ova-diameter studies reveal a bi-modal distribution of ova and fecundity estimates of the primary and secondary modes were about 46.000 and 88,000 ova respectively.

Records of oozing specimens and|or planktonic eggs of *Sardinella longiceps* are found in the reports of Devanesan (1943), Nair (1953 and 1959) and Antony Raja (1967). As all these reports relate to the area off Calicut, it would be of interest to report the occurrence of ripe and running specimens

of the oilsardine at Vizhinjam. On 6th August 1973, a catch of 183 kg of oilsardine in the ripe and running stage of the size range 156-184 mm (modal size, 170 mm) was landed by boat seine that operated at about 4 a.m. on the grounds approximately 5 km off Vizhinjam. The observations on 29 (14 male and 15 female of the maturity stages IV to VI) of these specimens with special reference to ova diameter and fecundity aspects are presented in this account.

The length and weight of the fish, sex, and stage of maturity were noted in the fresh condition. The weight of the gonads was recorded after fixing them in 5% formalin. Samples of ova from the anterior, middle and posterior regions of the left ovary of 5 fish of stages IV-VI alone were taken, and a hundred ova from each region measured for ova diameter studies. Although ova from 5 micrometer divisions (1 m.d. = 0.0196 mm) and above were measured, for processing the data, the count up to 10 m.d. was omitted and the percentages were calculated for the remaining ova only. Stage VI ovaries used for this study were all oozing.

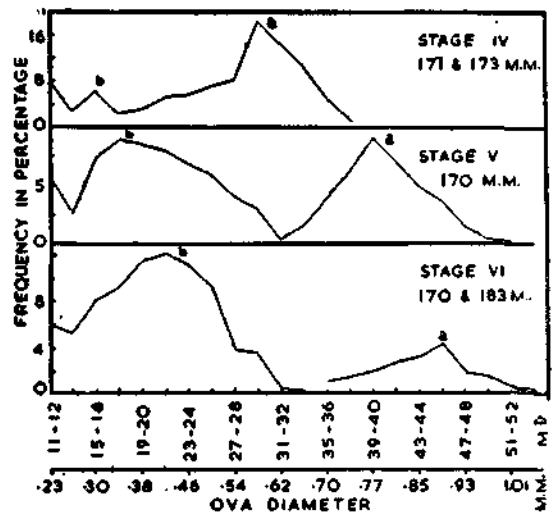

FIG. 1. Ova-diameter frequency of *Sardinella longiceps* Val.

Fig. 1 gives the frequency curves of the ova-diameter measurements. In stage IV and V the bimodal distribution of the ova can be seen (Antony Raja 1967 and Dhulkhed 1967). In stage VI, the two modes "a" and "b" are far apart and the group represented by mode a having only 19.3% of ova as against 38.4% in stage V. This appears to indicate that the spawning has already begun. The range and mode of diameter of oozing ova were from 0.70 to 1.05 mm and 0.89 mm respectively. The ova had a single oil globule having a diameter range 0.09-0.16 mm.

Fecundity estimates were made on three fish measuring 171, 170 and 170 mm and in maturity stages IV, V and VI respectively. The stage VI ovary in the present case was fully ripe with transparent ova, though oozing had not commenced. The ovaries were removed from fresh fish after noting their lengths *in situ* and preserved in 5% formalin for one week and in modified Gilson's fluid for another week. Ova measuring 11 m.d. and above only were counted and separate estimates made for ova 11 to 30 m.d. in size and of those larger in size (Table 1).

TABLE 1. *Fecundity estimates of oil-sardine.*

Length of fish (TL mm)	Weight of fish (g)	Stage of maturity	Micrometer divisions	Total numbr of ova	Percentage of the total
171	51.5	IV	11 - 30	82,517	58.0
			31 - 36	59,186	42.0
170	62.5	V	11 - 30	130,995	70.0
			31 - 52	55,434	30.0
170	55.5	VI	11 - 30	50,299	67.0
			31 - 54	24,732	33.0
Average			11 - 30	87,937	65.0
			> 30	46,451	35.0

The average number of ova of the batches represented by the primary and secondary modes was 46,450 and 87,937 respectively (Table 1). The ova in the secondary mode were always more numerous, to the extent of 65% of the total number. Earlier estimates of the fecundity of this fish have varied between 37,000 and 80,000 (Devanesan 1943, Nair and Chidambaram 1951, Nair 1959, Balan 1971 and Antony Raja 1972). This wide difference is probably due to the difference of opinion they have on the spawning frequency of this fish. Nair (1959) and Balan (1971) are of the opinion that the shedding of the eggs takes place in one batch within a short time. It would appear that they had considered all the maturing ova in their counts. The former author gives the average fecundity as 78,000 eggs and the latter as 48,000. Antony Raja (1967 and 1972) has reported that two batches of ova develop in the ovaries towards maturation, but considered only the primary batch, i.e. ova measuring 0.45 mm and above, as the fecundity of the fish and got an average of 37,000 to 38,000 ova per fish. The present estimate of the number of ova in the primary batch is slightly greater.

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