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THE OIL-SARDINE FISHERY-

A RETROSPECT AND A PROSPECT

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One of the responsibilities of a fishery scientist is to find out a reliable correlation between some factor within or outside the fishery and the catch variations, so that he could warn the industry of any impending crisis. In fishery science parlance, the essence of prediction is the ability "to recognise one event that is followed by others, to recognise that event as the beginning of a sequence of 'results' of a particular 'cause' " (Revelle, 1960). The author's studies have revealed that the main reason for a decline in the oil-sardine fishery has been recruitment failure which is brought about by an environment hostile for successful spawning. Such a recruitment failure is foretold by a biological phenomenon of extensive atresia (breakdown of ova) in the ovaries which interestingly coincides with a meteorological event of inadequate rainfall during the spawning period. Thus, the kind of correlation the writer has postulated is that, if the average daily rainfall during the spawning fortnights, at a representative centre like Calicut, falls below a stipulated minimum of 25 mm for June-July or 20 mm for June-August months, the fishery for the juveniles would register a reduction (Antony Raja, 1972 b).

Retrospect

Based on the above criterion and encouraged by successful forecasts he has made earlier, the author publicised one last year in this Journal to the effect that the prospects for the oil-sardine fishery of 1972–73 season were bleak and that it would not be a surprise if the crop should fall even below that on two earlier similar occasions of recruitment failure, in 1965–66 and 1969–70, because of comparatively less support from the adult population (Antony Raja, 1972a). The prediction has been proved correct by the estimated oil-sardine landings for the 1972–73 season by the Fishery Survey & Statistics Division of the Central Marine Fisheries Research Institute. The Kerala-Mysore seaboard, which contributes to 99% of our country's total oil-sardine production, has netted 108,589 tonnes during the season just completed, as compared to 198,191 and 194,577 tonnes recorded for the 1965–66 and 1969–70 seasons respectively. In the following table the average quarter-wise landings, in tonnes, for the past 10-year period from 1962–63 to 1971–72 are compared with the landings of 1972–73 season; the percentages of the

respective quarters in the season's total are shown in parentheses.

	Jul.-Sep.	Oct.-Dec.	Jan.-Mar.	Apr.-Jun.	Total
Average of past 10 seasons	30398 (14.3)	114844 (53.9)	55743 (26.1)	12115 (5.7)	213100
1972-73	12063 (11.1)	40368 (37.2)	34894 (32.1)	21284 (19.6)	108589

It may be seen from the above figures that, but for the unusually greater contribution during the second half of the season, when 52% of the total was realised as against an average of 32% credited in the past, the yield would have been poorer still. The season's total catch of 108,589 tonnes represents only a half of the previous 10 years' average and also the lowest since 1963–64 season, when the catch amounted to 55,870 tonnes.

Prospect

The past season having registered a considerable reduction in the fishery yield of not only the oil-sardine but also its pelagic twin, the mackerel, the serious and anxious question of the indigenous fishing community of the southwest coast of India, whose socio-economic welfare is largely dependent on these two fisheries, is — what is the prospect for the ensuing season? As far as the oil-sardine is concerned, unfortunately, the outlook is certainly not rosy, nay, it is rather dim, for the fishery may suffer a setback worse than that of the last season. During the current southwest monsoon, the average daily rainfall at Calicut was 19.0 mm for June-July and 16.9 mm for June-August, well below the threshold values. Although the gonadial evidence indicates the advent of spawning season a little ahead this year (by May), there has been very extensive atresia in the ovaries, suggesting that the spawning potential would be affected adversely.

The 1963–64 season was the worst for the last 13 seasons; it was also a season characterised by very poor rainfall during the spawning months and was preceded by a season when the oil-sardine catch was also roughly similar to the season just ended. Though it is only a matter of rare coincidence with no importance suggesting a cycle, nonetheless, the similarity in the situation after an interval of 10 years cannot be missed. Since the 1972 year-class was not rich enough to offset the expected fall in the recruitment of the juveniles in the ensuing season and if a guess can be hazarded based on the 37% reduction seen from 1971–72 to 1972–73 as well as on the presumption that the factors affecting recruitment would have been the same during the last and the present seasons, it can be predicted that the yield from the oil-sardine resource for 1973–74 is likely to be nearer to that of 1963–64 season than to any other lean season since the beginning of the sixties.

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