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**OCCURRENCE OF LARVAE AND
YOUNG MACKEREL (*RASTRELLIGER
CANAGURTA* CUVIER) OFF
VIZHINJAM, NEAR TRIVANDRUM**

This note deals with the appearance of spawners, juveniles, young ones and post-larvae of the mackerel, *Rastrelliger canagurta* off Vizhinjam (near Trivandrum) from late March to early August in 1955 and early March to the end of August in 1956. Certain eggs believed to be of mackerel along with a few hatchlings have also been obtained from the plankton. Delsman¹ described mackerel eggs in 1926 but later expressed doubts about his earlier identification.

According to Devanesan and John² the spawning of mackerel begins about June and continues till September. Panikkar,³ Chidambaram *et al.*,⁴ Pradhan⁵ and Sekharani⁶ state that breeding starts from May or even April.

The smallest size of mackerel recorded on the West Coast, off Calicut is 40 mm. in June 1940.⁷ On the East Coast, Rao and Basheeruddin⁸ have observed 40-100 mm. stages off Madras in March-April 1953. Mackerel of 31 mm. size have also been observed by Rao from the Madras Coast in May 1955 (unpublished data).

Off Vizhinjam, during March-April 1955 and 1956, adult mackerel with ripe gonads (stages IV-VII) were obtained to the extent of 80% of the total number examined. The remaining ones were with spent gonads (stage VII). Spent ones continued to occur in the catches in May, June and July. Ova from the mature fish measure 0.6-0.84 mm. while the unshed ova in spent ovaries range from 0.81-0.84 mm. in diameter. Length frequency studies show that 88% of the adults belongs to the 220-240 mm. group with the 230 mm. group dominating. After July no mature or spent fish has been recorded. On the other hand, immature fish ranging from 180-200 mm. formed a small fishery in August 1956.

Juvenile (100-160 mm.) and very young mackerel (20-90 mm.) were found as stray specimens among shoals of white bait (*Anchoviella* spp.), and sometimes with silver-bellies (*Leiognathus* spp.) and rainbow-sardine (*Dussumieria* spp.) during March-August in 1955 and 1956. 27-50 mm. mackerel were first recorded at Vizhinjam from the shore-seine catches of 28th March 1955. Smaller mackerel measuring 24 mm. were subsequently collected in April. In 1956 a more intensive study was made. Table I shows the number of days when young fish appeared, the number measured and their size range.

TABLE I

Month	.. March	April	May	June	July	Aug.
Tackle	.. shore-seine	shore-seine	boat-seine	boat-seine	boat-seine	boat-seine
No. of days juveniles appeared	.. 2	15	21	11	11	2
Number measured	.. 83	1091	2296	1225	1297	200
Range of size in mm.	.. 70-160	40-150	30-140	30-130	60-180	100-160
Dominant size in mm.	.. 150	110	40	70	120	130
And its percentage	.. 70	19.9	15.1	27.6	29.1	47
Range of dominant size groups in mm.	..	100-130	35-90	50-80	100-130	120-130
and their percentage	..	66.1	80.5	80.6	74.6	78
Percentage of size groups below 60 mm.	..	2.0	65.7	46.7
Percentage of size groups below 40 mm.	..	0.2	23.6	7.3

An analysis of length-frequency studies of the very young mackerel for the two years of 1955 and 1956 shows that specimens of 40-70 mm. are dominant in the samples of May and June, and those of 100-120 mm. in July. On the 21st and 23rd May 1956 when very young mackerel occurred in extremely large numbers, a closer examination revealed still smaller specimens and post-larvæ between 11 mm. and 25 mm. sticking to the *omals* (fish receptacles made of palmyrah leaves). In the specimens below 17 mm., the posterior finlets had not differentiated.

Plankton hauls made on the 23rd May 1956 on the spot where the fishermen were engaged in fishing showed pro-larvæ measuring 2.8 mm. and 5 mm. Hauls made in the 18-25 fathom area, off Vizhinjam, during all the months from March to May showed a few eggs of 0.84-1.009 mm. diameter which are tentatively assigned to mackerel. The identification requires confirmation. Attempts to rear the eggs have not been a success.

The fact that spawners, young mackerel and post-larvæ have been obtained at several places between Vizhinjam and Cape Comorin (Vizhinjam, Pulluvila, Poovar, Kolachel, Muttom and Cape Comorin) proves that there is a spawning ground off this region. Since they are as yet found only in small numbers, they are probably stragglers from the main shoal and the actual spawning ground seems to lie beyond the present fishing area, which is confined to the 25 fathom limit within three miles from the shore. The earliest occurrence of a 27 mm.-larva on 28-3-1955 shows that the spawning starts much earlier than hitherto believed. The appearance of spent individuals in late July suggests that the period of breeding is probably prolonged.

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