A NOTE ON THE FOOD OF YOUNG MACKEREL

THE food of the Indian mackerel, *Rastrelliger kanagurta* (Cuvier), has been investigated in some detail but the studies have largely been based upon samples of higher size-groups. Not only is the information available on the food of young mackerel limited, but there is also no agreement among the workers on the nature of their food. Chidambaram (1944) and Devanesan & Chidambaram (1948) found the young mackerel feeding on the fish, *Stolephorus*, thereby indicating a carnivorous habit in the young fish. On the other hand, the observations made by Bhimachar and George (1952), Pradhan (1956), George and Annigeri (1960) and George (1964), showed no appreciable difference between the food of the young and the adult, both being almost exclusive plankton feeders. Rao, K. V. (1964) in his account of the distribution of the young stages of mackerel also has touched on the food of the juveniles caught from different centres. Investigations carried out at Waltair (Rao & Rao, 1957 ; Rao, K. V. N. 1964) revealed that the young fish (32 to 89 mm.) were carnivorous, larval whitebait forming one of the chief items of food ; while there was no trace of fish larvae in the food of the adults. Basheeruddin & Nayar (1962) recorded post-larval fish in the stomachs of juvenile mackerel (90 to 100 mm.) obtained from the coastal waters of Madras. According to Kuthalingam (1956), the ' post-larvae' (5-6 mm.) are strictly herbivorous, ' juveniles ' (15-25 mm.) omnivorous and the ' adults ' (35-225 mm.) carnivorous. Appanna Sastry (1969) observed the juvenile mackerel at Kakinada to be a predominantly plankton feeder. In view of

such conflicting opinions regarding the food of young mackerel (while the adult is generally recognised as a plankton feeder) there seems to be need for additional information particularly on the food of young mackerel. The following account of three samples of small-sized mackerels caught off Calicut would be of interest in this context.

Good numbers of small-sized mackerel of length 64 to 113 mm. were caught off Vellayil, Calicut, at about 9 metres and 22-24 metres depth by *nethal vala* and *odam vala* respectively, on 9-6-1966 and 26-6-1966. While one sample was taken for examination from the catches of 9-6-1966, two samples (designated as sample A and sample B) were taken from the catches of two different boats on 26-6-1966, as greater numbers of young mackerel were obtained on the latter date. The size range of the sample obtained on 9-6-66 was from 74 to 113 mm. and of the samples on 26-6-66 was from 64 to 101 mm.; 25 specimens from each sample were examined for stomach contents individually and the food constituents were estimated in terms of percentage by volume and by visual inspection under a binocular microscope (Pearse, 1915). The stomachs were classified as gorged, full, half-full and quarter-full depending upon the state of distension of the stomach.

The table given below shows the details of capture, size and particulars of stomach contents. The stomachs were mainly gorged or full, the percentage of such stomachs

TABLE I

Details of stomach contents of young mackerel

Date	Net	Depth in metres	No. of fish examined	Size range (mm.)	Nature of stomach	*Stomach contents in percentage* Fish remains and scales	Copepods	Rest
9-6-66	*Nethal vala*	9	25	74-113	G=20% F=80%	96.04	1.60	2.36
26-6-66 (sample A)	*Odam vala*	22-24	25	69-101	G=24% F=64% ¾F=8% ½F=4%	95.32	3.00	1.68*
26-6-66 (sample B)	*Odam vala*	22-24	25	64-98	G=8% F=56% ¾F=8% ½F=82%	98.60	0.64	0.76

G=Gorged ; F=Full * This includes 0.08% digested matter.

varying from 64 to 100 in the total stomachs examined. Whole fish, soft parts of fish or fish scales constituted the bulk of the stomach contents (about 96%). A juvenile oil sardine, *Sardinella longiceps*, was found in the stomach of one specimen. Copepods (spp. of *Pseudodiaptomus*, *Euterpina*, *Coryceaus* etc.), dinoflagellates (*Peridinium*, *Ceratium*, *Ornithocercus* etc.), tintinnids and cypris larvae constituted about 1%. Digested matter formed an insignificant portion of the stomach contents and that too in some specimens in one sample.

The presence of fish, parts of fish (some of them half digested) and fish scales in the stomachs of all the specimens in the samples obtained on different occasions shows the actively carnivorous food habits of the young mackerel. The absence of sand grains in the stomachs shows that the fish must have fed either at the surface or below surface and not at the bottom. Based on the specimens examined at Waltair (Rao & Rao, *op. cit.*; Rao, K. V. N. *op. cit.*), at Madras (Basheeruddin & Nayar, *op. cit.*) and on the present instance, it can generally be stated that the fish below 10 to 11 cm. in total length show an inclination to a carnivorous diet.

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