

**A NOTE ON THE BIOLOGY OF THE 'KOTH',  
OTOLITHOIDES BRUNNEUS (DAY)**

WHILE the importance of the 'Koth' as a trawl fishery of considerable importance in the Bombay Coast has been shown by Jayaraman *et al.* (1956) and Rao (1967), accounts on the biology of the species are lacking except for some observations on the scales and otoliths for age determination by Kutty (1961) and a few notes included in the studies on its fishery, cited above. With a view to a fuller understanding of the biology of the 'Koth' investigations on this fish occurring along the Bombay coast were made during the years 1958-1961, a summary of the results of which is presented in the present note.

The 'Koth' fishery is mainly constituted by juveniles. Young juveniles ('O' year class) and less commonly adults appear in the 'dol' nets (stationary bag nets) (see Setna, 1949 for a description of 'dol' net) whereas the older juveniles (I and II year classes mainly) and adults are caught in the offshore trawl catches. A good gill-net fishery exists exclusively for adult 'Koth' along with the 'Dara' (*Polydactylus indicus*) and the 'Ghol' (*Pseudosciaena diacanthus*) off Bedi in the Gulf of Kutch during March-April (Bhatt *et al.* 1964).

'Koth' ranging in total length between 3 and 159 cm. have been studied and the total length and weight relationship formula has been arrived at as shown below :

$$\text{Log } Y = -1.8065 + 2.7584 \text{ Log } X, \text{ where } X = \text{total length of fish in centimetres and } Y = \text{weight of fish in grams.}$$

'Koth' attains first maturity at about 120 cm. in size. 'Koth' ovary of about 1 kg. in weight was found to contain more than six million ova. Seasonal sequence of maturity stages could not be followed completely due to the often insignificant and irregular occurrence of adult specimens in the catches, but the indications are that spawning of 'Koth' begins by about the end (August-September) of the south-west monsoon season and extends in all probability over a period of five to six months. Young juveniles first appear in the inshore areas in Bombay in April and continue to occur over a period of six months, i.e., upto September. During the south-west monsoon period the juveniles occur in the creeks.

Analysis of the stomach contents of about 1,000 specimens has shown a very clear picture of the food items and their seasonal variations. The method followed in this study is the points method of Swinnerton and Worthington (1949) as modified by Hynes (1950). 'Koth' mainly feed on fishes such as *Coilia dussumieri*, *Bregmaceros maclellandi*, *Polydactylus heptadactylus*, *Harpodon nehereus* and *Sciaena* spp. and prawns such as *Acetes indicus*, *Leander styliferus*, *Parapenaeopsis hardwickii*, *P. stylifera*, *P. sculptilis* and *Metapenaeus affinis*, and other crustaceans such as crabs (*Charybdis* sp.) and *Squilla*. There is a qualitative change in the food habits of juvenile 'Koth' during the south-west monsoon period (C.M.F.R.I. Reports). It is found that the feeding intensity in the juveniles is least during the cold season from November to February.

The usefulness of the scales and otoliths of the 'Koth' as age indicators was demonstrated (Kutty, *op. cit.*). Scales have been found to be decidedly of more use for age determination than the otoliths. More growth checks or rings are formed in the otoliths than in the scales. The first scale annulus is found to correspond with the third check in the otolith. Annuli upto a maximum number of 13

were counted on the scales of the fish. The average lengths of fish with 1 to 13 rings in their scales were found to be 41.8, 60.0, 74.1, 83.1, 107.9, 127.9, 127.1, 134.7, 136.1, 138.5, 142.0, 148.2, 149.0 and 152.0 cm. respectively. The validity of the first 3-4 annuli in the scale was checked up with the length frequency analysis. The first three modes in the length frequency curves were found to be at 38.5, 59.5 and 80.5 cm. in 1958-59, 24.5, 59.5 and 73.5/80.5 cm. in 1960-61. The marginal character of the scale has shown that the annuli are formed during the period from November to February which happens to be the period of lowest feeding intensity in the fish and also the period of lowest bottom and surface temperature in the coastal waters of Bombay.

Observations of the author as well as those made more recently by Rao (*op. cit.*) suggest a decline in the trend of catches of 'Koth' as judged from the landings of trawlers at Bombay. 'Koth' being an important constituent of the trawl fishery of the coast, the latter observation especially points out to the need for a closer watch on the fishery and population of the 'Koth'.

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