

ABNORMALITIES IN THE VERTEBRAL COLUMN OF INDIAN MACKEREL

G. M. KULKARNI

Karwar Research Centre of CMFR Institute, Karwar.

ABSTRACT

Some abnormalities noticed in the constituents of the vertebral columns of 9 specimens of mackerel are reported. These include ossified haemal braces forming plate-like structures, fused as well as closely apposed vertebrae, bifid haemal spine, super-numerary neural and haemal arches and spines, absence of neural spine and fused proximal halves of neural spines which distally remain separate.

The extant records of abnormalities in the mackerel, *Rastrelliger kana-gurta* (Cuvier) relate to morphological features (George *et al* 1959, Jones and Silas 1962, Bapat and Radhakrishnan 1968, Noble 1972) and reproductive system (Prabhu and Antony Raja 1959, Rao 1962, Antony Raja and Bande 1972). As yet, abnormalities in the vertebral column have not been reported.

As part of the investigations on the sub-populations of the mackerel, vertebral characteristics have been studied. During the period July 1973-December 1974, 928 specimens ranging in total length from 95 to 261 mm collected from different centres along a 40-km stretch of the coast extending from Karwar to Belambar were examined. Of these, nine individuals showed some abnormal features in the constituents of the vertebral columns, the particulars of which are given below.

In the first specimen the left haemal brace of 17th vertebra and in the seventh specimen the right haemal brace of the 14th vertebra have been ossified into a plate-like structure. The second abnormal mackerel had the first and second precaudal vertebrae fused. The composite piece, no larger than one normal vertebra, had two neural arches and spines. In the third specimen a bifid haemal spine on 25th vertebra formed a V shaped structure. In the fourth specimen 7-9 vertebrae and in the fifth specimen 5-17 vertebrae were closely apposed to each other. Length and thickness are equal in the middle of the vertebrae. The unusual occurrence of two neural and haemal arches and spines on 11th vertebra was noticed in the sixth specimen. The additional pair is

situated in the middle of the vertebra forming a prominent ridge (Septum) on one side. Absence of the same on the other side suggests that no two vertebrae are fused. The eighth specimen had three neural and haemal arches and spines on 11th vertebra. Incomplete ridges (Septa) were formed on sides by additional pairs. Neural spine absent from 9th vertebra. The last specimen showed the proximal halves of neural spines fused while distally separate on 16th and 17th vertebrae.

As observed earlier (Gnanamuthu 1959), 31 vertebrae (including urostyle) are generally met with in the mackerel, and occasionally with 30 and 32. 29 vertebrae have also been recorded, in one specimen, in the course of the study. Generally, the vertebrae are longer than thick by about 2 mm. There are as many neural spines as vertebrae. Though the first haemal arch occurs on the 10th vertebra, spine formation commences from 11th through 13th vertebrae and the first complete haemal spine originates from the 14th vertebra. The haemal braces form circular openings on both sides of the vertebral column.

The present observation, based on the total number of specimens examined, indicated the possibility of the occurrence of one abnormal fish out of every hundred normal ones. The abnormalities observed may be due to defects in early stages of development or injuries sustained subsequently.

I am grateful to Dr. K. V. Sekharan for critically going through the manuscript and offering suggestions and to Dr. M. V. Pai, for his encouragement.

- ANTONY RAJA, B. T. AND V. N. BANDE. 1972. *Indian J. Fish.*, **19** (1 & 2): 176-179.
- BAPAT, S. V. AND N. RADHAKRISHNAN. 1968. *J. mar. biol. Ass. India*, **8** (2): 363-364 (1966).
- GEORGE, P. C., M. H. DHULKHED AND V. RAMAMOHANA RAO. 1959. *J. Bombay nat. Hist. Soc.*, **56** (1): 32-38.
- GNANAMUTHU, J. C. 1971. *Indian J. Fish.*, **13** (1): 1-26 (1966).
- JONES, S. AND E. G. SILAS. 1962. *Proc. Symposium on Scombroid Fishes, Pt. I*: 255-282. *Mar. biol. Ass. India*.
- NOBLE, A. 1972. *Indian J. Fish.*, **18** (1 & 2): 187-191 (1971).
- PRABHU, M. S. AND B. T. ANTONY RAJA. 1959. *Curr. Sci.*, **28** (2): 73-74.
- RAO, V. RAMAMOHANA. 1962. *J. mar. biol. Ass. India*, **4** (2): 241-243.