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RESEARCH PAPER

Age and growth of *Trichiurus lepturus* (Linnaeus) of Konkan coast, Maharashtra, India

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ABSTRACT

Age and growth of the large head ribbonfish, *Trichiurus lepturus* (Linnaeus, 1758) was studied by length frequency analysis of 52, 641 fish specimens collected from the coast of Maharashtra, India. The fish attains an average length of 48.77, 79.89, 98.95, 110.75, 118.05, 122.52 and 125.37 cm in one to seven years. The von Bertalanffy growth equation was fitted, which has the parameters L_∞=128 cm, K = 0.5 and t_0 = - 0.009 years. The length-at-age data obtained in this study were compared favourably well with the similar data on the same species both within and outside India. The growth parameters will help in designing fishing policies for efficient management of *T. lepturus* fishery off Maharashtra coast (India).

Key words : Cutlass fish, Trichiucrus lepturus, Length frequency analysis, L_∞, K, t_0, length-at-age

Successful fishery management greatly depends on the size or growth attained by fish at a particular age. As such, both age and growth in fish are closely interlinked. Further, they also help in providing information on other factors like rate of growth, age at first sexual maturity, age at 50% maturity, age at first capture, age composition of a population, maximum size attained before death, etc. which are important for fishery administrators. A thorough knowledge of the age and growth of a fish is, therefore, an essential pre-requisite for the efficient management of its fishery. Apart from determining the amount of fish that could be produced in relation to time, it helps in properly understanding the age-class structure of the stock, fluctuation in fishery, mortality and survival rates in various year classes, success of the yearly broods, etc. all of which are necessary for rational exploitation of any stock. (James, 1967 and Qasim, 1973).

MATERIALS AND METHODS

In the present study, a total of 52,641 specimens of *Trichiurus lepturus* were examined for from the catches obtained from Mirkarwada at Ratnagiri and New Ferry Wharf and Versova at Mumbai, representing Southern and Northern zones of the Konkan coast of Maharashtra (India), respectively. Random sampling method was employed for measurements. A representative sample was also brought to the laboratory for biological studies. The sampling was carried out continuously for a period of 15 days in both zones by undertaking at least 3 fortnightly visits to each landing centre. Length frequency data of total length "TL" in centimeters of *Trichiuru lepturus* thus obtained on each sampling day, was then pooled up month wise by grouping it into 4 cm class interval. The month wise data collected for the two years of study period was further pooled to one calendar year by taking average values of the corresponding months and then converted to the percentage of sample total. This formed the basic data for the estimation of age and growth parameters.

The estimation of growth parameters was done by using FiSAT (FAO-ICLARM Stock Assessment Tools) computer software package developed by (Gayanilo *et al*., 1996), which includes Direct fit of length frequency data by ELEFAN-I (Electronic Length Frequency Analysis) method introduced by Pauly and David (1981) and developed in to a computer software package by Gayanilo *et al*. (1996); Modal progression analysis by (Bhattacharya 1967) method; Growth Increment Analysis (GIA) (Gulland and Holt, 1959), Faben's method (1965) and Appeldoorn's method (1987) and Analysis of length-at-age data.

Estimation of growth performance index phi-prime (∅') was obtained by Pauly and Munro method (1984), longitivity was estimated by the size of largest specimen and length at first maturity was estimated by considering specimens in maturity stage III and above as mature.

RESULTS AND DISCUSSION

Growth in length:

The growth parameters, obtained by using different methods, are given in Table 1. Similarly the estimated size (in cm) at the end of I to VII years obtained by different methods are given in Table 2.

The "L" value of 127.95 (say 128 cm) obtained by