
Population dynamics and the management of the Indian national fish, Indian mackerel (*Rastrelliger kanagurta*) from the Arabian Sea

Jitendra Kumar^{*†1}, S Benakappa^{*1}, Gangadhara Gowda^{*1}, and Harsha Nayak^{*1}

¹Karnataka Veterinary, Animal and Fisheries Sciences University – College of Fisheries, Mangalore – 575 002, India, India

Abstract

The knowledge in fish biology and population dynamics of a species is necessary for the rational exploitation. Indian Mackerel, *R. kanagurta* is a very important pelagic fishery resource along the West coast of India. The present investigation was based on the observation of a total of 3165 *R. kanagurta* individuals ranging in size from 9 to 29 cm total length (TL). Fortnightly samples were collected from Mangalore fish landing centre from September 2014 to March 2016 formed the study material. Electronic Length Frequency Analysis (ELEFAN-I) was used to estimate the population parameters. The growth parameters L_{∞} , K were estimated 29.4 cm and 1.2/yr respectively. The growth performance index (ϕ) was found to be 3.01. The length of fish in commercial catches in Mangalore coast (South-west coast of India) ranged from 9 cm to 29 cm of total length. The smaller sized fish (9-19 cm) represented nearly 27.9 per cent. 72.1 per cent of fish were contributed by the size range 19-29 cm. The estimated values of total, natural and fishing mortality rates of *R. kanagurta* were 3.89/yr, 1.96/yr and 1.93/yr. respectively. As the exploitation ratio (E) was 0.5 and the fishing mortality was moreover equal to the natural mortality [$F=Z-M$ (3.88-1.96)=1.93/yr]. Therefore, the mackerel fishery along Mangalore coast was exploited to the optimum level. Variation in M can be explained as a natural phenomenon which is controlled by density dependent (predation, availability of food etc.) as well as density independent factors (disease, natural calamities etc.) and varies within same species in different location. One major recruitment peak per year was observed in *R. kanagurta* in the study area. Exploitation level of *R. kanagurta* was slightly equal to the optimum level of exploitation. Equal fishing mortality of *R. kanagurta* verses the natural mortality observed from the present study indicated the balance position in the stock. This information would be very useful to prevent the decline of fish populations and for its sustainable fishery management along Mangalore coast, Karnataka.

Keywords: Population Dynamics, Mackerel, Fishery Management, Karnataka coast

*Speaker

†Corresponding author: jitenderanduat@gmail.com