

**Morphological variation analysis of Frigate tuna
(*Auxis thazard*) in selected coastal water bodies in Sri
Lanka; Negombo, Beruwala and Galle fish landing
sites**

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Abstract

The present study was carried out with an aim with identifying frigate tuna (*Auxisthazard*) stocks separately which harvesting at the Negombo, Beruwala and Galle while analyzing their morphometric differences. For this research 140 frigate tuna fish samples were collected as 43, 47 and 50 samples representing respectively from Beruwala, Galle and Negombo fish landing sites. A total of 34 morphological characters were measured which included 22 morphometric variables (M) and 12 meristic variables (m). Some meristic characters overlapped among species however, and were therefore of limited use for distinguishing among species. Multivariate analysis was conducted by using 18 morphometric variables to identify the stocks. Cluster analysis and MANOVA of conventional morphometric measures showed a high divergence among the populations. These results showed that the tested fish samples could be grouped into its respective collection site based on the morphometric characters. Principal Component Analysis (PCA) was performed using 18 standardized morphometric data measurements for each individual from three sites to distinguish morphometric variables which are distinguish three stocks. Variables of snout to end of the pectoral fin, head Depth, standard length, total length, fork length, body depth, pelvic fin length, pectoral fin length, base length of second dorsal fin, snout length, length of the finlets, snout to origin of pectoral fin, origin of dorsal fin to insertion of pelvic fin and base length of dorsal fin are the variables which are help to distinguish three stocks. The morphometric differences between the populations may have appeared due to either genetic differences or environmental factors. By analyzing those morphometric variables of three samples it can be concluded that samples which were collected from Negombo, Beruwala and Galle landing sites were from three different frigate tuna fish stocks.