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Original Research Article

Statistical Relationship between Liver Weight and Length of Intestine of *Carcharhinus limbatus* (J. P. Muller & Henle, 1839) From Sassoon Docks

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Abstract: The present research was carried out to establish relationship between Liver Weight and Length of intestine of *Carcharhinus limbatus* from Sassoon docks. The mean value of Liver Weight is 3.66 ± 0.49, while that of Length of intestine is 6.9 ± 0.96. The kurtosis value of both the features is negative. So the distribution curve of Liver Weight and Length of intestine is Platykurtic. The Skewness of both the features is slightly positively skewed. The Linear Regression equation between Liver Weight (X) and Length of intestine (Y) of *Carcharhinus limbatus* is Y = -0.076 + 1.907X. Similarly the Correlation value between Liver Weight (X) and Length of intestine (Y) of *Carcharhinus limbatus* is 0.96 i.e. Positive correlations. Thus as Liver Weight increases the Length of intestine also increases subsequently.
Keywords: Elasmobranchs, Mean, Median, Mode, Correlation, Regression.

INTRODUCTION

Elasmobranch resource comprised of sharks, skates and rays have assumed commercial importance in India recently [1]. The elasmobranchs are ecologically and economically very important category of fishes. They are basically targeted for commercial fishery. Of the various shark species which comes under the elasmobranchs one of the most important among them is the *Carcharhinus limbatus.* This shark species which was earlier abundantly found in warm temperate, subtropical and tropical waters is now entered into the IUCN Red List of Threatened Species as Near Threatened Species[5].

Carcharhinus limbatus basically lives in inshore and offshore waters, but is not a truly pelagic species. They are often spotted near the shores around river mouths, bays, mangrove swamps and estuarine waters. They never venture into freshwaters. They are found in deep waters and also in the vicinity of coral reefs. *Carcharhinus limbatus* is locally known as Black -fin shark or Black – tipped shark [2],

Carcharhinus limbatus has a sloping nape grading smoothly into a high back. The snout is moderately long and pointed with small anterior nasal flaps. The first dorsal fin is large, falcate and erect with a pointed apex and short free rear tip and is also much larger than second dorsal or anal fins. The first dorsal fin originates over as slightly anterior of pectorals. Second dorsal fin large and high, with a short free tip and originates over or slightly anterior to the anal fin. Interdorsal ridge is absent. Pectoral fins are long, semifalcate and narrow - tipped. The tips of the first and second dorsal fins, pectoral fins, upper and lower lobes of caudal fin distinctly black – tipped. Pelvic fins sometimes black tipped but anal fin usually completely white, including tip, a conspicuous white band on each flank [3].

Carcharhinus limbatus meat is consumed basically by the local people. Whereas, the fins are dried and used in preparing shark – fin soup. In some countries the *Carcharhinus limbatus* hides are used for preparing leather. The livers from *Carcharhinus limbatus* are used to extract oil which is a rich source of vitamin A & D and is of great medicinal importance [4].

This study aims to examine the statistical tools on the two features i.e. Liver weight and Length of intestine of *Carcharhinus limbatus* collected from Sassoon docks. Biometric study is carried out to find out the relationship between Liver weight and Length of intestine of *Carcharhinus limbatus.*

MATERIAL AND METHODS

Freshly landed thirty samples of *Carcharhinus limbatus* were collected from the Sassoon Docks. The samples were then immediately brought to laboratory for measurements. The Liver weight and Length of

intestine of each and every specimen was noted. The data collected was subjected to further statistical analysis.

Data analysis

Mean, Median, Mode, Maximum, Minimum, Standard Deviation (S.D.), Kurtosis and Skewness were estimated for both the characters Liver weight and Length of intestine through the functions available in Microsoft Excel software. And to estimate the relationship between both the characters correlation value and linear regression equation was determined using the same software.

RESULTS

Table No. 1: Descriptive analysis of Data from Liver weight and Length of intestine of *Carcharhinus limbatus*

Character	N	Mean	Median	Mode	Maximum	Minimum	S.D.
Liver Weight (gms)	30	3.66	3.60	3.17	4.7	2.73	0.49
Length of intestine (cms)	30	6.9	6.76	5.94	8.8	5.1	0.96

Table–2: Relationship analysis of Data from Liver weight and Length of intestine of Carcharhinus limbatus

Character	N	Kurtosis	Skewness	Correlation	Linear Regression
Liver Weight (gms) (X)	30	- 0.73	0.25	0.96	Y = -0.076 + 1.907X
Length of intestine (cms) (Y)	30	- 0.80	0.30		

CONCLUSION AND DISCUSSION

The value of mean, median and mode of the Liver Weight in the sample of *Carcharhinus limbatus* from the Sassoon Docks are 3.66, 3.60 and 3.17 respectively. The difference between mean, median and mode is marginal and hence the distribution is near normal. The skewness of the distribution is 0.25 i.e. the distribution is slightly positively skewed. The kurtosis of the distribution is – 0.73 which is below 0; hence the distribution curve of Liver Weight is platykurtic.

The value of mean, median and mode of the Length of intestine in the sample of *Carcharhinus limbatus* from the Sassoon Docks are 6.9, 6.76 and 5.94 respectively. The difference between mean, median and mode is marginal and hence the distribution is near normal. The skewness of the distribution is 0.30 i.e. the distribution is slightly positively skewed. The kurtosis of the distribution is - 0.80 which is below 0; hence the distribution curve of Length of intestine is platykurtic.

The Linear Regression equation between Liver Weight (X) and Length of intestine (Y) of *Carcharhinus limbatus* is Y = -0.076 + 1.907X.

Similarly the Correlation value between Liver Weight (X) and Length of intestine (Y) of *Carcharhinus limbatus* is 0.96 i.e. Positive correlations. This explains that when value of one variable increases there is also increase in the value of another variable. Thus as Liver Weight increases the length of intestine also increases subsequently.

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