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Morphometric characters and their relationship in relation total length in *Cirrhinus reba* (Hamilton) from Manchar Lake, District Jamshoro, Sindh, Pakistan

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Abstract: For morphometric analysis of *Cirrhinus reba* fish specimens were procured during March- November 2013 from Manchar Lake, Sindh Pakistan. The results of the present study revealed that the significant (P > 0.05) diference was noticed in the values of head length, pelvic fin length and pectoral fin length in case of male and fork length, anal fin length and girth in female. Rest of the body parameters exhibited no significant (P > 0.05) morphometric difference among the sexes of *Cirrhinus reba* from Manchar Lake.

Keywords: *Cirrhinus reba*, Manchar Lake, Morphometric Parameters, Meristic Counts.

1. INTRODUCTION

Morphometric characters in fish are widely used for the taxonomic study and it contributes in the identification of population and species inhabiting the different water bodies in different geographical region. Statistical relationship between the measurements of various body parameters has been recorded in systematic studies throughout the world. Although some works on morphometric study of *Cirrhinus reba* and other fishes have been studied from different waters of Pakistan, Bangladesh and India (Gosh *et al*, 1968; Hoque and Islam, 1985; Narejo *et al*. 2000; Lashari, *et al* 2004; Narejo, 2010).

Cirrhinus reba belongs to the family cyprinidae of the order cypriniforms, having commercial importance (Rehman, 1989). It is known by its high nutritional and market value, though this fish is small in size its flesh possesses less intra- muscular bones and having good taste. Its culture is also easy and could be reared with major carps. No work has been done from Manchar Lake, District Jamshoro, Sindh, Pakistan. Present information on various body parts of *C. reba* and its mathematical equation could be helpful for future researcher.

2. MATERIALS AND METHODS

For morphometric measurement 256 specimens of *C. reba* were obtained from Manchar Lake ranged between 95-330 mm. and 78-480g in total length and weight. Morphometric parameters analyzed by using verner caliper, while meristic counts were enumerate with the help of hand lanse. 10 body parameters like Total Length (TL), Standard length (SL) Fork length (FL),Head length (HL), Eye diameter (E.D), Dorsal fin length (DFL), Pectoral fin length (PEC.FL) Pelvic fin length (PEL length),Anal fin length (AFL) and girth were taken into account. Five meristic characters like dorsal, pelvic, pectoral, anal fin rays and lateral line scales count.

3. RESULTS

10 body parameters of either sex in *Cirrhinus reba* from Manchar Lake, computed and described in **(Table 1, 2).** Coefficient of correlation values (r.) and regression (b) in different parameters with respect to TL exhibits in Table 1 and 2. It may be seen from the graphical presentations and tables of different parameters the values of fork length (FL), head length (HL), Pelvic fin length (Pel. FL) and pectoral fin length (Pec. FL) indicated better correlation (r = 0.99, 0.98, 0.99 and 0.99) verses TL in the case of male Table 1. Fork length (FL), anal fin length (AFL) and girth (G) represent better correlation (r = 0.99, 0.99, and 0.99) Table 2 in female. The diference was observed in the values of few body parameters like head length, pelvic fin length and pectoral fin length in male and fork length, anal fin length and girth in female. The regression analysis was performed to test the relationship of various parameters in relation to total length. In case of male the regression analysis between total length verses dorsal fin length (b = 2.03) and girth (b=2.64) showed satisfactory relation to total length while in case of female only head length (b=2.48) showed satisfactory growth inrelation to total length, rest of the body parameters exhibited no morphometric difference among the sexes of *Cirrhinus reba* from Manchar Lake. The range and mean values of meristic counts observed no difference among the sexes in *C. reba* **(Table 3).**

4. DISCUSSIONS

Different researchers like Lashari, *et al* (2004) *Cirrhinus reba*, Narejo *et al*., (2000), Narejo (2010)

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Gudusia chapra, Dars *et al*., (2012). *Channa punctatus*, reported coefficient condition values high in small group of fishes and lowest in large length. That supports the observations of the present investigations. During the course of investigations and morphometric parameters of minor carp, *Cirrhinus reba*. It was concluded that the Fork length (FL), Head length (HL) Pectoral FL (Pec.FL) and Pelvic FL length (Pel. Fl) exhibited better correlation 0.98, 0.99 and 0.99 in relation to TL in case of male. Fork length (FL), Girth (G) and anal fin length (AFL), exhibited better correlation 0.99, 0.99, and 0.99, in case of female. The range and mean values of meristic counts showed no significant ($p>0.05$) difference, when applied "t" test. Male and female of *Cirrhinus reba* possess significant ($P > 0.05$) difference in various meristic counts from Manchar Lake district Jamshoro, Sindh, Pakistan.

Table 1. Regression equation and coefficient of correlation of different morphometric characters in relation to total length in male, *Cirrhinus reba* (Hamilton) from Manchar Lake district Jamshoro, Sindh, Pakistan

Morphometric Character	Coefficient of Correlation (r.)	Regression Equation
Standard Length	0.96	TL =0.71+0.17 SL
Fork length	0.99	-0.03+0.81FL
Head Length	0.98	TL =-1.81+1.84 HL
Eye Diameter/HL	0.96	HL =2.03+1.68ED
Dorsal Fin Length	0.92	TL =-1.14+2.03 DFL
Pectoral Fin Length	0.99	TL =0.1+1.03 Pec. FL
Pelvic Fin Length	0.99	TL =0.70+0.84 Pel. FL
Anal fin length	0.92	TL =-0.03+1.14 TFL
Girth	0.96	TL =3.20+2.64 Girth

Table 2. Regression equation and coefficient of correlation of different morphometric characters in relation to total length in female, *Cirrhinus reba* (Hamilton) from Manchar Lake district Jamshoro, Sindh, Pakistan

Morphometric Character	Coefficient of Correlation (r.)	Regression Equation
Standard Length	0.96	TL =1.22+0.01 SL
Fork length	0.99	TL=1.29+0.96FL
Head Length	0.92	TL = 0.51+2.48HL
Eye Diameter/HL	0.94	HL =1.34+0.40 ED
Dorsal Fin Length	0.96	TL =-0.15+1.44 DFL
Pectoral Fin Length	0.92	TL =1.89+1.22 Pec. FL
Pelvic Fin Length	0.90	TL = 0.53+0.01Pel. FL
Anal Fin Length	0.99	TL -1.17+1.26=AFL
Girth	0.99	TL =0.86+0.25 Girth

Table. 3. Mean and range values of meristic counts of minor carp, *Cirrhinus reba* (Hamilton) from Manchar Lake District Jamshoro, Sindh, Pakistan.

Meristic Characters	Male Range Mean		Female Range Mean	
Meristic Characters	Male Range Mean	Female Range Mean	Meristic Characters	Male Range Mean
Dorsal fin ray	10-12	11 ± 1.0	Dorsal fin ray	10-12
Pectoral fin ray	12-14	13 ± 1.0	Pectoral fin ray	12-14
Pelvic fin ray	8-10	9 ± 1.0	Pelvic fin ray	8-10
Anal fin ray	7- 9	8 ± 1.0	Anal fin ray	7- 9

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