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MORPHOMETRIC AND MERISTIC VARIATIONS IN FINS OF *CHANNA PUNCTATUS* FROM FRESH WATER HABITATS IN AMRAVATI REGION (M.S.)

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ABSTRACT

The freshwater fish which has been selected for present study were *Channa punctatus* which is locally called as dhok. Fishes were collected from the local wadali lake of Amravati region. Morphometric study of fins were done by the measured as different fins their characterstics such as fin length, fin width and number of fin rays. Fin variables relationship were observed with standard lengths of fish *Channa punctatus.* The meristic characters are the countable structure useful for differentiation and identification of species and populatiom. Channa *punctatus* showed L/W ratio and also gave phenotypic differences between different fins regarding its length, width and number of fin rays and growth pattern with their increasing body length.

KEYWORDS: Morphometric, Meristic, variation, fin, *Channa punctatus*

The success of fishery industry largely depends on the growth and reproductive potential of the concerned fish species. The development and improvement of the species mostly depends on the knowledge of the biology. Majority of the people need fish throughout the year as a necessary food, its demands the wide aquaculture resources are utilized widely. The shape and structure of fins and fin rays of fishes show modifications due to varied swimming habits, habitat, sex, growth factors, age and size of the fishes, **Ugwumba and Adebbisi (1992)**, **Ugwumba and Ugwumba (1993), Weisel (1995), Oyekanmi (2000),**. It is also known that the morphometric and meristic parameters are influenced by environmental factors, **Dynes *et. al.,* (1999).** Information on the morphometric and meristic characterstic of fins of fishes are useful in marking sex determination, species identification and in ascertaining the suitability of cultivable species.

Channa punctatus, locally known as Dhok, were found in rivers, canals, lakes and other aquatic habitats along with other species of same genus **Wee (1982)**. The fish belonging to genus *Channa* contribute a lot to the commercial fishery of inland waters of India high market price, tolerance to a variety of habitats and carnivorous food habitat make them an important element of fish farming which demands an understanding of their biology and ecological requirements **Omnoniyi and Agborn (2008)**. These fishes contain high protein, substantive iron and low fat content which is beneficial for human health.

It is not easy to identify the different species through colour and marking as it is with other fish. Nearly all snakeheads have different colours and making as juveniles compared to an adult species. Also some snakeheads can change their colour and marking within seconds depending on the situation. Thus in present investigation morphometric and meristic study such as fins length, width and finrays numbers were studied to give clear idea and identification of *Channa punctatus* fish from other species of same genus.

MATERIAL AND METHODS

The *Channa punctatus* which is locally called as dhok were collected from the local wadali lake of Amravati region. After collection healthy fishes were selected (size 30-150mm in length and 30-60gm in weight) and washed with dilute solution of potassium paramagnet (KMno4, 1.0mg/l) to remove dermal infection and acclimatized in laboratory condition for 10 days.

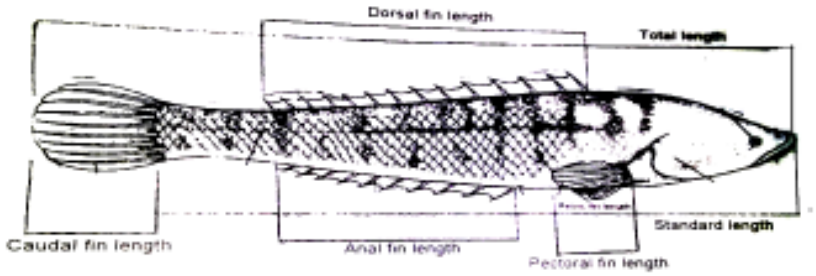

Figure 1: Measurement of *Channa Punctatus*

Morphometric and meristic study of fins was done by the measurement of different fins their characterstics such as fin length, fin width and number of fin rays. Fin variables relationship is observed between standard length of fish *Channa punctatus.*

OBSERVATION AND RESULTS

Morphometrically dorsal fin length measured as 4.28 + 2.36, width 0.46 + 0.19, and fin rays were 24.48 + 4.89, anal fin length 3.2 + 2.36, width 0.3 + 0.005, fin rays were 18.8 + 2.77, caudal fin length 1.58 + 1.14, width 0.66 + 0.42 and finrays was 13.18 + 5.26, pectoral fin 1.56 + 0.82, width 0.66 + 0.42, and fin rays were 13.18 + 5.26, pectoral fin 1.56 + 0.82, width of fin 0.56 + 0.36 and fin rays were 12.22 + 3.50. Pelvic fin length 0.94 + 0.01, width 0.31 + 0.12, and fin rays were 6.02 + 0.33 observed in fish length of *Channa punctatus* were ranges 30-130 mm respectively (Table 1) were found in between 18-30; mean 24.48 respectively. While relationship between body length of fish and dorsal fin length of *Channa punctatus* fish was found to be Y= -0.2179 + 0.49X

The coefficient of correlation of the fish *Channa punctatus* was r = 0.63 showed Substantial degree of co-relation. The relationship between body length and dorsal fin width were found to be Y= -0.7916 + 0.04X. The coefficient correlation r=0.64 showed substantial degree of correlation. While the relationship between body length and dorsal fin rays was found to be Y= -14.366 + 1.22X

The coefficient correlation r= 0.76 showed substantial degree of correlation. The relationship between body length and anal fin length was found to be Y = -0.8621 + 0.49X.

Table 1: Morphometric and Meristic study of different fins with their fin length, width and fin rays numbers of freshwater fish *Channa punctatus*

Fins	Fish length (Ranges)	Length	Width	Fin Rays
Dorsal Fin	30-130 mm	4.28 ±2.36	0.46 ± 0.19	24.48 ± 4.84
Anal Fin		3.2 ± 2.36	0.3 ±0.005	18.8 ±2.77
Caudal Fin		1.58 ± 1.14	0.66 ± 0.42	13.18 ± 5.26
Pectoral Fin		1.56 ± 0.82	0.56 ± 0.36	12.22 ± 3.50
Pelvic Fin		0.94 ± 0.00	0.3 ± 0.12	6.02 ± 0.00

Table 2: Relationship between fish length and Morphometric and Meristic study of different fins of freshwater fish *Channa punctatus*

Fins	Fin length	Fin Width	Fin Rays
Dorsal Fin	y = -0.2179+0.49X r= 0.63	y = -07916+0.04x r = 0.64	y = -14.366+1.22x r = 0.76
Anal Fin	y = 0.8621+ 0.49x r = 0.63	y = 0.183+0.014x r = 0.60	y = -12.997+0.70x r = 0.76
Caudal Fin	y = - 0.5754+ 0.26x r = 0.69	y = -0.0382+0.07x r = 0.54	y = -6.548+0.80 r = 0.46
Pectoral Fin	y = 0.0151+0.19x r = 0.70	y = 0.708+0.059x r = 0.49	y = -4.759+0.90x r = 0.77
Pelvic Fin	y = 0.6351+0.19X r = 0.66	y = 0.151+0.017x r = 0.43	y = -6+0x r = 0.0

The coefficient of correlation r = 0.63 showed substantial degree of correlation. The relationship between body length and anal fin width was found to be Y = -0.183+0.014x. The coefficient of correlation r = 0.60 showed substantial correlation between body length Anal width. The relation between body length and Anal fin rays was found to be Y= -12.997+0.70x. The coefficient of correlation r = 0.76 showed substantial degree of correlation between body length anal fin rays. The relation between fish length and

pectoral fin length was found to be Y= 0.0151+0.19x. The coefficient of correlation r = 0.70 showed substantial degree of correlation. The relation between body length and pectoral fin width of *Channa punctatus* was found to be Y = -0.708+0.059x. The coefficient correlation r = 0.49 showed moderate degree of correlation. The relation between body length and pectoral fin rays was found to be Y = -4.759+0.90x. The coefficient correlation r = 0.77 showed moderate degree of correlation.

In the relationship between body length of fish *Channa punctatus and* different fin length was found that regression coefficient of dorsal fin length and Anal fin length was more than caudal fin length, pelvic fin length and pectoral fin length while coefficient correlation was near about same that was 0.63, 0.63, 0.69, 0.66, and 0.70 respectively. The relationship between body length of *Channa punctatus* fish and different fin width was found that regression coefficient of caudal fin width and dorsal fin width was observed larger as compared to fin width of pectoral fin, pelvic fin and anal fin. While coefficient correlation in dorsal fin width and anal fin width was observed more that is 0.64 and 0.60 and coefficient correlation of caudal fin width, pectoral fin width, pelvic fin width was seen as 0.54, 0.49, and 0.43, respectively. While the relationship between body length of fish and number of fin rays of different fins was found that regression coefficient as dorsal fin rays were more following pectoral, caudal and anal fin rays. But pelvic fin rays showed regression coefficient as 0. Same way coefficient correlation of pelvic fin rays was also found to be 0.The coefficient correlation of dorsal fin rays, Anal fin rays, pectoral fin rays and caudal fin rays was found to be 0.76, 0.76, 0.77, 0.46 respectively; (table no.**2**).

The above values showed that increase in body length; fin length, width and fin rays also changes and showed increase in them with substantial, moderate degree of correlation respectively .In case of pelvic fin, even with increase in body length of the fish *Channa punctatus* there is no increase in number of fin rays thus showed coefficient correlation as r=0.00

DISCUSSION

The present morphometric analysis of different fins of *Channa punctatus* showed variation in length, width and number of fin rays'. It was observed that with the growth of fish, body length, fin length and fin width and fin rays number also increase with high degree of correlation was also shown in fin rays such as 0.76, 0.76, 0.77, 0.46 for dorsal fin, anal fin, pectoral fin and caudal fin respectively. But pelvic fin showed no change or increase in number of fin rays r =0.

According to **Turan *et.al*., (2005)** and **Omoniyi and Agbon (2008)** distinct environmental structure causes the high morphometric variation and plasticity which response to differences in environmental condition such as food abundance and temperature. **Usha (2000)** reported that anal, caudal, pectoral, and pelvic fins of *Catla catla* were longer than *Cyprinus carpio* and *Labeo rohita* due to its surface feeding suited ecologically which is rich in vegetation and species of *Clarias gariepinus.* They belong to benthic habitat and have robust bodies and large pectoral fins which allow them to withstand current on smaller, smoother substratum. **Dynes *et.al.*, (1999)** found that dorsal and pectoral fin lengths of pelagic fish were shorter than littoral ones in brooke chart, *Salvelias fountinalis*. The morphometric study of fins of *Channa punctatus* were seen broadly by their location, shape and size. In *Channa punctatus* species long dorsal fin, anal fin, lobed shaped caudal fin, two pectoral fin, two pelvic fins.and varying number of fin rays were also noticed.

The increase in size of the fins was accompanied by branching and segmentation of fin rays. Such increase was noticed in number of fin rays once these were formed because a constant number of rays are characteristic of a particular species, genus or family **(Lagler 1962, Usha and Prakasam 2005).** The sequential development of pectoral fin followed by caudal and dorsal fins appeared to be related to the timely uses of these fins as suggested by **(Whitehead 1975, Devenport 1993).** In the present analysis of fresh water fish C*hanna punctatus* showed the phenotypic differences between different fins regarding its length, width and number of fin rays and growth pattern with their increasing body length.

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