



MORPHOMETRIC AND MERISTIC ANALYSIS OF *GUDUSIA CHAPRA* (HAMILTON 1822) OR KOROTI FISH FROM DIHING RIVER, DIBRUGARH DISTRICT, ASSAM

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Abstract

In the present study morphometric and meristic characters of *Gudusia chapra* (Hamilton, 1822) were analysed, collected from Dihing River, Dibrugarh District Assam. A total number of 60 specimens were examined to evaluate variations in body measurements and countable characters. Total 30 morphometric characters of each specimen were examined, including shape and colour of the body, mouth size, total length, body length, standard length, fork length, head length, penduncle depth etc. and 5 meristic characters of each specimen were examined such as dorsal pectoral, pelvic, caudal and anal fin rays. The mean of total length and standard length were recorded as 10.2 cm and 8.2 cm, respectively. Meristic examination revealed dorsal fin rays ranging from 7–13, pectoral fin rays from 7–15, pelvic fin rays from 7–11, anal fin rays from 13–22, and caudal fin rays from 14–25. Comparative graphical representation of ten samples indicated proportional growth and limited intra-specific variation. The results provide reliable morphometric and meristic benchmarks that are useful for species identification, stock assessment, and sustainable fisheries management of *G. chapra* in the Dehing River ecosystem.

Keywords: *Gudusia chapra*; Morphometric analysis; Meristic characters; Dehing River; Fisheries biology.

INTRODUCTION

Morphometric and meristic characters are helpful in easy and correct identification of fish species in laboratory as well as at natural places (Jayaram,1999). Morphometric study is a powerful tool for characterising strains / stock of the same species, which involves detection of subtle variation of shape, independent of size (Saroniya *et al.*,2013). In morphometric analysis, measurements of external body structures and their proportional relationships are calculated so that variations in shape, growth, and population structure can be examined. In meristic analysis, counts of fin rays, gill rakers, and other structural elements are made, as such characters are regarded as reliable diagnostic features in fish taxonomy. Morphometric characters are important for identifying fish species and their habitat as well as ecological criteria in any stream, lake or sea.(Saroniya *et al.*,2013)

The *Gudusia chapra* (Hamilton, 1822) or koroti fishes are tropically freshwater fishes belonging to the Clupeidae family, commonly known as Indian River shed. The body of the fish is characterised as slivery, smooth and laterally compressed. The average size is measured at 5-10 cm, though in some cases it is recorded up to 20 cm. This small sized fish is very popular in Assamese cuisine. Koroti fish is the cheap source of protein for village people. Even though it is small in size, it is eaten a lot and sold in village markets. Koroti fish is commonly found in rivers, ponds, wetlands and floodplains of Assam. It is a seasonal fish that is most abundantly found during the monsoon (June-October) and post-monsoon months. Koroti fish feeds mainly on zooplankton, phytoplankton and detritus. It is being a planktivorous fish. According to Viswanath *et al.*, (2007) and Jayaram (1999) and IUCN (2013) *Gudusia chapra* been categorized as least concern (LC).

Numerous studies on Morphometric and Meristic analysis of *Gudusia chapra* have been performed by different authors. In a study at Kaptai lake Bangladesh, 22 morphometric and 9 meristic characters of 280 *Gudusia chapra* (30 -210 mm length) were performed (Azadi *et al.*,2008). A total of 300 species (male-166 and female 134) of *Gudusia chapra* (12.7-16.5 cm length) were studied from Rupsha river, Bangladesh (Khan *et al.*, 2023). In another study by Chanda *et al.*, (2022), 22



morphometric and 14 meristic features of 170 numbers of *Gudusia chapra* were analysed from Rupnarayan and Kangsabati river, West Bengal.



Gudusia chapra (Hamilton, 1822)

Phylum : Chordata

Class : Actinopterygii

Order : Clupeiformes

Family : Clupeidae

Genus : *Gudusia*

Species : *G. chapra* (Hamilton, 1822)

Common Name(s)

Local: Koroti (Assamese), Wana manbi (Manipuri)

English : Indian River Shad

Red list Category & Criteria: LC

REVIEW OF LITERATURE

1. MOHAMMAD ALI AZADI AND A.S.M.SHARIFUR RAHMAN (2008). Twenty-two morphometric and nine meristic characters of 280 *Gudusia chapra* (Total length 30-210mm) and 264 *Gonialosa manmina* (Total length 40-150 mm), the two important clupeids from the Kaptai lake, were studied during 1996-1997 to detect the plastic and non-plastic characters.
2. Md. Yeamin Hossain, Jun Ohtomi, Zoarder Faruque Ahmed (2009). This study described the morphometric, meristic characteristics and threatening factors for the critically endangered species *Puntius sarana* (Hamilton, 1822) in the lower part of Ganges River, northwestern Bangladesh. A total of 87 specimens ranging from 9.30-21.70 mm TL (total length) and 10.05-189.25 g body weight (BW) were used for the studies of the morphometric and meristic characteristics.
3. R. K. Saroniya , D. N. Saksena and N. S. Nagpure (2013). Four species of genus *Puntius*, collected from central India, were studied for twenty six morphometric measurements and seventeen meristic counts. The minimum and maximum range, mean, standard deviation, percentage of various parameters in total length and head length were estimated. The correlation and regression analysis was carried out for some important characters in relation to total length and head length. The coefficients of correlation (r) for various characters ranged from 0.240- 0.994 for *Puntius conchonus*, 0.567- 0.996 for *P. chola*, 0.786-0.997 for *P. sophore* and 0.237-0.997 for *P. ticto*.
4. NITIN KAMBOJ and VISHAL KAMBOJ (2019). The study was carried out in Ganga River from Devprayagto Haridwar district of Uttarakhand to analyse Morphometric measurement and meristic count of some selected fish species during April 2017 to March 2018. 20specimens of each fish species were collected from different zones of river Ganga and twenty four Morphometric measurements and eight meristic count parameters were studied for each fish



species. The total length and weight of Cyprinus carpio ranged from 14–18 cm and 60–78 g; Mahseer fish species ranged from 21–28 cm and 120–185 g; 20–26 cm and 100–160 g (Labeo rohita) and 17–25 cm and 20–34 g (Xenontodon canceilia) respectively were recorded during the study period.

5. Angsuman Chanda, Monalisa Malik Mukherjee, Purnachandra Das, Sanjat Kumar Sahu (2022). In the current study, 22 morphometric and 14 meristic features of Gudusia chapra were analysed, collected from the Rupnarayan and Kangsabati river systems of India. A total of 170 specimens of Gudusia chapra were collected from Rupnarayan River and 54 specimens from Kangsabati River separately. Results depict that the number of pectoral fin rays of specimen from Rupnarayan River ranges from 13 to 14 but it is 14 in all specimens collected from river Kangsabati; anal fin rays vary from 19 to 21 for specimen collected from Rupnarayan River while same is from 19 to 20 for specimen from Kangsabati River; lateral line scale varies from 79 to 91 for specimen of Rupnarayan River and the same varies from 80 to 82 for specimen from Kangsabati River. Major differences were noted for abdominal scute counts, it varies from 31 to 32 for specimen from Rupnarayan River and the same varies from 25 to 26 for the specimens from Kangsabati River.
6. P. Kumaladewi, Mufasirin, Nunuk Dyah Retno Lastuti, Mochammad Amin Alamsjah, Win Darmanto and Sapto Andriyono (2022). This study aims to determine the diversity of Rasbora sp. in East Java. Samples were taken at five different locations, specifically: Nganjuk (Brantas Watersheds), Ngawi (Bengawan Solo Watersheds), Silowo Springs Tuban, Umbulan Springs Pasuruan and the Setail river (Sampean Watersheds Banyuwangi). The main parameters observed were morphology including morphometric and meristic. Based on the morphometric and meristic analysis, it is known that the species of Rasbora in Nganjuk and Ngawi regencies are Rasbora argyrotaenia and the species of Rasbora in Tuban, Pasuruan and Banyuwangi regencies are Rasbora lateristriata.
7. MD. NURUZZAMAN KHAN, ISRAT JAHAN TISSA, WASIM SABBIR, SAROWER MAHFUJ, MD. ASADUJJAMAN AND ATASHI DAS (2023). The main focus of this study is to state the sex ratio, growth pattern, length-length relationship, form factor, Fulton's condition factor and relative weight of G. chapra harvested from the Rupsha River (south-west Bangladesh). Altogether 300 specimens (male=166 and female=134) were harvested with the help of commercial fisher folks on seasonal basis (summer, rainy and winter) during 2022. Body weight and length of individual specimen were recorded with digital balance and measuring board. Total length varied between 12.7 to 16.5 cm for males and 13.0 to 17.3 cm for females. Further, body weight ranged between 15.82 to 42.48 g for male and 18.36 to 46.65 g for female. Moreover, the length-length relationships were found highly correlated for both sexes.

MATERIALS AND METHODS

Study Area :

Dibrugarh district is situated in between 27.4705° N latitude and 94.9125° E longitude in the state of Assam. Brahmaputra fishing sites of Bogibeel, Santipara and Barbaruah fish market was selected as study area.

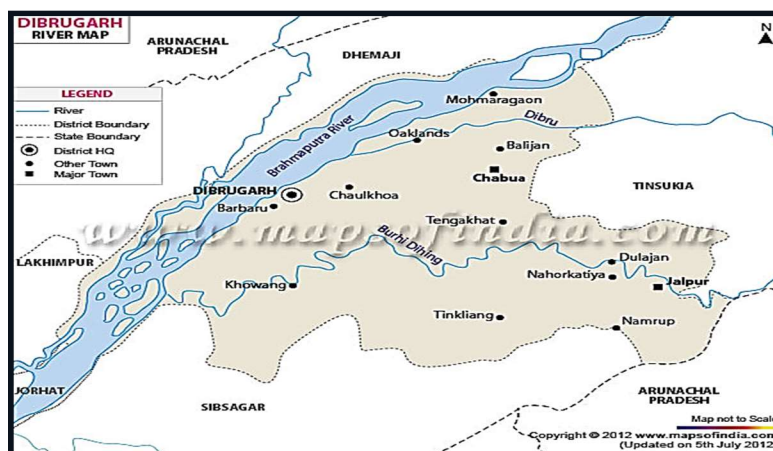


Fig.2-Brahmaputra river map of Dibrugarh district



Sample Collection

The Sample collection for present study was conducted in Bogibeel fishing sites of river Brahmaputra and also in the local fish markets of Barbaruah and Santipara of Dibrugarh, during the month of July 2025, i.e. from July 1st to July 30th July 2025.

All collected specimens were examined with the help of standard tools and instruments. The total weights of the samples were measured by using a weighing balance and the length of individual specimen was recorded with the help of a measuring scale. For proper identification and documentation, photographs of each specimen were also taken. These photographs were used to record external body features such as shape, coloration, and size, for the taxonomic identification and comparative analysis.

During this time, a total no of 60 species were collected and recorded.

OBSERVATION AND RESULTS

The body of *Gudusia chapra* is deep, fusiform and laterally compressed. The body is light silvery in colour with golden tinge and the dorsal side is slightly blackish. The Abdominal edge keeled with a row of scutes. Upper jaw with notch for lower jaw occlusion. Body scales are cycloid, small and irregular except on upper flank. Length of the species were found to be falls in between 8-13.06 cm. Barbel is absent and the mouth size of the fish is comparatively wide. Dorsal, Ventral, Pectoral, Anal and Caudal fins are present. Tail is homocercal (Fig-3).

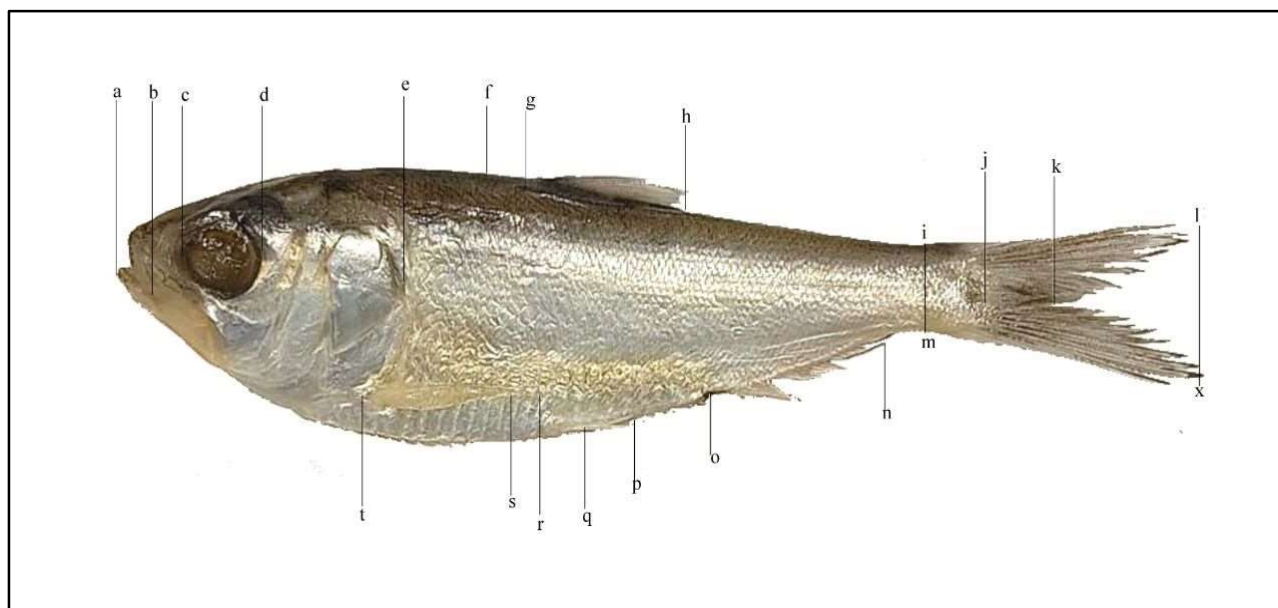


Fig -2: Showing measurements of morphometric characters (a-x) including length and shape and body colour of *Gudusia chapra* (Hamilton, 1822)

al :Total length, **ak** : Fork length, **aj**: Standard length, **ae**: Head length ,**cd**: Eye diameter, **ac**: Inter orbital length, **ac**: Pre orbital length , **de**: Post orbital length , **gr**: Body depth , **ag** :Pre dorsal length, **gh** :Dorsal fin length ,**at** : Pre pectoral length , **ts** :Pectoral fin length , **ar** :Pre pelvic length , **rp**: Pelvic fin length , **ao** : Pre anal fin length , **on**: Anal fin length , **jk** :Caudal fin length , **im** : Penducle depth ,**ix** : Caudal fin height .



Fig-3:- Showing Dorsal, Pectoral, Ventral, Anal and homocercal Caudal fin of *Gudusia chapra*



Fig-4: Showing rays found in dorsal fin of *G. chapra*

A total no of 60 specimen of *Gudusia chapra* was used for the study of morphometric and meristic characteristics. The morphometric and meristic data for the 60 species of fishes are given in the **Table.1(a-f)** and **Table.2** respectively. Morphometric analysis of *G. chapra* is carried out through the study of linear body measurements such as total length (TL), standard length (SL), head length (HL), body depth (BD), eye diameter (ED), pre-dorsal length, pre-anal length, and caudal peduncle dimensions (Fig.2)

Meristic analysis is performed through the counting of fin rays and spines. In *Gudusia chapra*, only rays were observed. Dorsal fins are observed with 4–12 rays, pectoral fins with 3–11 rays, pelvic fins with 1–6 rays, anal fins with 3–18 rays, and caudal. The absence of a lateral line is also recorded as an important meristic character, consistent with other clupeid fishes.

Gudusia chapra are available in the monsoon season, i.e. from June -October and price is 400 per kg (Table- 3)



Table.1 (a-g): Morphometric analysis of *Gudusia chapra* (Hamilton,1822) (n=30) captured, Dibrugarh district, Assam

Table.1 (a): Showing morphological characters of <i>Gudusia chapra</i> (N=60)		
Serial no.	Characters	Comments
1	Shape of the body	Compressed, elongated
2	Body colour	Slivery
3	Mouth size	Wide
4	Mouth position	Superior
5	Barbel	Absent
6	Teeth	Present
7	Type of tail	homocercal
8	Gill racker	Present
9	Dorsal, Pectoral, Pelvic, Anal and Caudal fin	Present
10	Second dorsal fin	Absent
11	Lateral line	Present

Table 1(b): Morphometric analysis of *Gudusia chapra* (Hamilton, 1822) (n=60)

Table-1(b)							
S.N	Characters	Species 1	Species 2	Species 3	Species 4	Species 5	Species 6
1.	Total length	9.8 cm	11.1 cm	10.5 cm	10.8 cm	10.1 cm	11.7 cm
2.	Standard length	7.7 cm	8.7 cm	8.5 cm	8.8 cm	8.4 cm	8.7 cm
3.	Head length	2.8 cm	2.9 cm	2.8 cm	2.8 cm	2.8 cm	2.9 cm
4.	Head depth	2.2 cm	2.4 cm	2.3 cm	2.4 cm	2.4 cm	2.4 cm
5.	Eye diameter	0.7 cm	0.8 cm	0.7 cm	0.7 cm	0.6 cm	0.8 cm
6.	Inter orbital Length	0.5 cm	0.6 cm	0.6 cm	0.6 cm	0.5 cm	0.6 cm
7.	Fork Length	8.3 cm	9.3 cm	8.7 cm	9 cm	8.9 cm	9.3 cm
8.	Gap of mouth	1.2 cm	1.4 cm	1 cm	1.3 cm	0.9 cm	1.4 cm
9.	Body depth	2.5 cm	2.6 cm	2.6 cm	2.5 cm	2.6 cm	2.6 cm



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10.	Pre orbital Length	0.6 cm	0.5 cm	0.5 cm	0.5 cm	0.6 cm	0.5 cm
11.	Post orbital Length	1.5 cm	1.6 cm	1.6 cm	1.5 cm	1.6 cm	1.6 cm
12.	Pre dorsal fin Length	4 cm	4.3 cm	4.1 cm	4.2 cm	4 cm	4.3 cm
13.	Dorsal fin base L	0.8 cm	0.9 cm	1 cm	1.1 cm	1.3 cm	0.9 cm
14.	Dorsal fin Height	1.4 cm	1.6 cm	1.5 cm	1.5 cm	1.4 cm	1.6 cm
15.	Dorsal fin Length	1.2 cm	1.1 cm	1.2 cm	1.3 cm	1.1 cm	1.1 cm
16.	Pre pectoral fin Length	2.5 cm	2.6 cm	2.5 cm	2.6 cm	2.7 cm	2.6 cm
17.	Pectoral fin base	0.3 cm	0.3 cm	0.3 cm	0.3 cm	0.3 cm	0.3 cm
18.	Pectoral fin length	1.3 cm	1.2 cm	1.6 cm	1.5 cm	1.3 cm	1.2 cm
19.	Pectoral fin Height	1.5 cm	1.4 cm	1.4 cm	1.3 cm	1.5 cm	1.4 cm
20.	Pre pelvic fin Length	4 cm	4.6 cm	4.3 cm	4.5 cm	4.2 cm	4.6 cm
21.	Pelvic fin base length	0.1 cm	0.1 cm	0.1 cm	0.1 cm	0.1 cm	0.1 cm
22.	Pelvic fin L	0.6 cm	0.7 cm	0.9 cm	0.9 cm	0.7 cm	0.7 cm
23.	Pelvic fin H	0.8 cm	0.9 cm	0.8 cm	0.8 cm	0.8 cm	0.9 cm
24.	Pre anal fin L	5.4 cm	6 cm	5.7 cm	5.9 cm	5.6 cm	6 cm
25.	Anal fin base Length	1.4 cm	1.3 cm	1.6 cm	1 cm	0.9 cm	1.3 cm
26.	Anal fin height	0.7 cm	0.8 cm	0.7 cm	0.9 cm	0.7 cm	0.8 cm
27.	Anal fin length	0.8 cm	0.9 cm	0.9 cm	1.1 cm	0.8 cm	0.9 cm
28.	Caudal fin Length	0.5 cm	0.5 cm	0.7 cm	0.6 cm	0.5 cm	0.7 cm
29.	Caudal fin Height	1.5 cm	1.6 cm	1.9 cm	1.8 cm	1.8 cm	1.9 cm
30.	Penducle depth	0.8 cm	0.8 cm	0.9 cm	0.9 cm	0.8 cm	0.9 cm

Table-1(c)

S.N	Characters	Species 7	Species 8	Species 9	Species 10	Species 11	Species 12
1.	Total length	10 cm	9.7 cm	9.1 cm	10.1cm	10.3 cm	11.4 cm
2.	Standard length	7.7 cm	7.7 cm	7.3 cm	8.2 cm	8.1 cm	9.2 cm
3.	Head length	2.7 cm	2.8 cm	2.4 cm	2.7 cm	2.8 cm	2.9 cm
4.	Head depth	2.3 cm	2.2 cm	2.2 cm	2.2 cm	2.5 cm	2.5 cm
5.	Eye diameter	0.6 cm	0.6 cm	0.7 cm	0.7 cm	0.7 cm	0.7 cm
6.	Inter orbital length	0.5 cm	0.5 cm	0.4 cm	0.5 cm	0.5 cm	0.6 cm
7.	Fork length	8.3 cm	8.1 cm	7.7 cm	8.7 cm	8.7 cm	9.8 cm



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8.	Gap of mouth	0.9 cm	1.2 cm	1 cm	1.2 cm	1 cm	1.2 cm
9.	Body depth	2.5 cm	2.5 cm	2.4 cm	2.3 cm	2.7 cm	2.8 cm
10.	Pre orbital length	0.4 cm	0.6 cm	0.4 cm	0.6 cm	0.5 cm	0.5 cm
11.	Post orbital length	1.4 cm	1.5 cm	1.3 cm	1.5 cm	1.5 cm	1.7 cm
12.	Pre dorsal fin L	3.9 cm	3.8 cm	3.7 cm	4.1 cm	4.2 cm	4.4 cm
13.	Dorsal fin base length	1 cm	0.8 cm	0.8 cm	1 cm	1 cm	1 cm
14.	Dorsal fin Height	1.3 cm	1.4 cm	1.4 cm	1.4 cm	1.5 cm	1.6 cm
15.	Dorsal fin L	1.2 cm	1.2 cm	1 cm	1.1 cm	1.2 cm	1.5 cm
16.	Pre pectoral fin Length	2.5 cm	2.5 cm	2.3 cm	2.5 cm	2.6 cm	2.9 cm
17.	Pectoral fin base length	0.2 cm	0.3 cm	0.2 cm	0.3 cm	0.2 cm	0.3 cm
18.	Pectoral fin Length	0.8 cm	1.3 cm	1 cm	1.3 cm	1.4 cm	1.6 cm
19.	Pectoral fin Height	1.1 cm	1.5 cm	1.3 cm	1.5 cm	1.6 cm	1.4 cm
20.	Pre pelvic fin L	4.4 cm	4.3 cm	3.9 cm	3.9 cm	4.3 cm	4.8 cm
21.	Pelvic fin base L	0.1 cm	0.1 cm	0.1 cm	0.1 cm	0.1 cm	0.1 cm
22.	Pelvic fin Length	0.7 cm	0.6 cm	0.5 cm	0.6 cm	0.5 cm	1 cm
23.	Pelvic fin Height	0.9 cm	0.8 cm	0.7 cm	0.8 cm	0.8 cm	0.9 cm
24.	Pre anal fin Length	5.3 cm	5.4 cm	5.1 cm	5.6 cm	5.8 cm	6.8 cm
25.	Anal fin base Length	0.9 cm	1.4 cm	1.4 cm	1.5 cm	1.3 cm	1.6 cm
26.	Anal fin height	0.6 cm	0.7 cm	0.6 cm	0.6 cm	0.6 cm	1.4 cm
27.	Anal fin length	0.8 cm	0.8 cm	0.8 cm	0.8 cm	0.8 cm	1.3 cm
28.	Caudal fin Length	0.5 cm	0.4cm	0.4 cm	0.6 cm	0.5 cm	0.7 cm
29.	Caudal fin height	1.6 cm	1.4 cm	1.6 cm	1.5 cm	2 cm	1.9 cm
30.	Penducle depth	0.8 cm	0.8 cm	0.8 cm	0.8 cm	0.9 cm	0.8 cm

Table-1(d)

S.N	Characters	Species 13	Species 14	Species 15	Species 16	Species 17	Species18
1.	Total length	10.7 cm	9.4 cm	10 cm	9.7 cm	9.4 cm	9.1 cm
2.	Standard length	8.6 cm	7.5 cm	7.7 cm	7.8 cm	7.5 cm	7.1 cm
3.	Head length	2.8 cm	2 cm	2.7 cm	2.6 cm	2 cm	2.5 cm



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4.	Head depth	2.4 cm	2.4 cm	2.3 cm	2.1 cm	2.4 cm	1.9 cm
5.	Eye diameter	0.7 cm	0.6 cm	0.6 cm	0.6 cm	0.6 cm	0.6 cm
6.	Inter orbital length	0.6 cm	0.5 cm	0.5 cm	0.4 cm	0.5 cm	0.5 cm
7.	Fork length	8.9 cm	7.7 cm	8.3 cm	8.8 cm	7.7 cm	7.5 cm
8.	Gap of mouth	0.9 cm	1 cm	0.9 cm	1.2 cm	1 cm	1 cm
9.	Body depth	2.7 cm	2.5 cm	2.5 cm	2.6 cm	2.5 cm	2.3 cm
10.	Pre orbital length	0.7 cm	0.5 cm	0.4 cm	0.4 cm	0.5 cm	0.5 cm
11.	Post orbital length	1.7 cm	1.3 cm	1.4 cm	1.5 cm	1.3 cm	1.4 cm
12.	Pre dorsal fin L	4.3 cm	3.6 cm	3.9 cm	3.9 cm	3.6 cm	3.7 cm
13.	Dorsal fin base length	1 cm	1.2 cm	1 cm	0.9 cm	1.2 cm	0.8 cm
14.	Dorsal fin Height	1.6 cm	1.3 cm	1.3 cm	1.2 cm	1.3 cm	1.5 cm
15.	Dorsal fin L	1.1 cm	1.4 cm	1.2 cm	1.1 cm	1.4 cm	1.4 cm
16.	Pre pectoral fin Length	2.8 cm	2.3 cm	2.5 cm	2.4 cm	2.3 cm	2.4 cm
17.	Pectoral fin base length	0.3 cm	0.3 cm	0.2 cm	0.2 cm	0.3 cm	0.2 cm
18.	Pectoral fin Length	1.9 cm	1 cm	0.8 cm	1.4 cm	1 cm	1.2 cm
19.	Pectoral fin Height	1.6 cm	0.9 cm	1.1 cm	0.9 cm	0.9 cm	1.4 cm
20.	Pre pelvic fin L	4.5 cm	3.9 cm	4 cm	3.9 cm	3.9 cm	3.8 cm
21.	Pelvic fin base L	0.1 cm	0.1 cm	0.1 cm	0.1 cm	0.1 cm	0.1 cm
22.	Pelvic fin Length	0.8 cm	0.7 cm	0.7 cm	0.7 cm	0.7 cm	0.6 cm
23.	Pelvic fin Height	0.9 cm	0.6 cm	0.9 cm	0.6 cm	0.6 cm	0.8 cm
24.	Pre anal fin Length	6 cm	5.1 cm	5.3 cm	5.1 cm	5.1 cm	5 cm
25.	Anal fin base Length	1.4 cm	1.2 cm	0.9 cm	1.2 cm	1.2 cm	1.3 cm
26.	Anal fin height	0.8 cm	0.7 cm	0.6 cm	0.7 cm	0.7 cm	0.5 cm
27.	Anal fin length	1.1 cm	0.9 cm	0.8 cm	0.9 cm	0.9 cm	0.7 cm
28.	Caudal fin Length	0.7 cm	0.6 cm	0.5 cm	0.6 cm	0.6 cm	0.5 cm
29.	Caudal fin height	1.9 cm	1.7 cm	1.6 cm	1.7 cm	1.7 cm	1.3 cm
30.	Penducle depth	0.9 cm	0.8 cm	0.8 cm	0.8 cm	0.8 cm	0.7 cm



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Table-1(f)

S.N	Characters	Species 25	Species 26	Species 27	Species 28	Species 29	Species 30
1.	Total length	10.1 cm	10.2 cm	10.3 cm	10.2cm	10.7 cm	8.8 cm
2.	Standard length	8.4 cm	8.2 cm	8.1 cm	8.2 cm	8.6 cm	7.5 cm
3.	Head length	2.8 cm	2.7 cm	2.6 cm	2.7 cm	2.8 cm	2.5 cm
4.	Head depth	2.4 cm	2.2 cm	2.1 cm	2.2 cm	2.4 cm	2.1 cm
5.	Eye diameter	0.6 cm	0.7 cm	0.7 cm	0.7 cm	0.7 cm	0.6 cm
6.	Inter orbital length	0.5 cm	0.5 cm	0.5 cm	0.5 cm	0.6 cm	0.4 cm
7.	Fork length	8.9 cm	8.6 cm	8.7 cm	8.6 cm	8.9	8.1
8.	Gap of mouth	0.9 cm	1.2 cm	1.5 cm	1.2 cm	0.9 cm	1.2 cm
9.	Body depth	2.6 cm	2.3 cm	2.4 cm	2.3 cm	2.7 cm	2.6 cm
10.	Pre orbital length	0.6 cm	0.6 cm	0.4 cm	0.6 cm	0.7 cm	0.5 cm
11.	Post orbital L	1.6 cm	1.5 cm	1.5 cm	1.5 cm	1.7 cm	1.1 cm
12.	Pre dorsal fin L	4 cm	4.1 cm	3.9 cm	4.1 cm	4.3 cm	3.6 cm
13.	Dorsal fin base length	1.3 cm	1 cm	1 cm	1 cm	1 cm	0.9 cm
14.	Dorsal fin H	1.4 cm	1.4 cm	1.5 cm	1.4 cm	1.6 cm	1.6 cm
15.	Dorsal fin L	1.1 cm	1.1 cm	1.1 cm	1.1 cm	1.1 cm	1.5 cm
16.	Pre pectoral fin L	2.7 cm	2.5 cm	2.7 cm	2.5 cm	2.8 cm	2.3 cm
17.	Pectoral fin base length	0.3 cm	0.3 cm	0.3 cm	0.3 cm	0.3 cm	0.3 cm
18.	Pectoral fin L	1.3 cm	1.3 cm	1.4 cm	1.3 cm	1.9 cm	1.6 cm
19.	Pectoral fin H	1.5 cm	1.5 cm	1.5 cm	1.5 cm	1.6 cm	0.9 cm
20.	Pre pelvic fin L	4.2 cm	3.9 cm	4.2 cm	3.9 cm	4.5 cm	3.9 cm
21.	Pelvic fin base length	0.1 cm	0.1 cm	0.1 cm	0.1 cm	0.1 cm	0.1 cm
22.	Pelvic fin L	0.7 cm	0.6 cm	0.5 cm	0.6 cm	0.8 cm	0.6 cm
23.	Pelvic fin H	0.8 cm	0.8 cm	0.7 cm	0.8 cm	0.9 cm	0.7 cm
24.	Pre anal fin L	5.6 cm	5.6 cm	5.7 cm	5.6 cm	6 cm	5.7 cm
25.	Anal fin base L	0.9 cm	1.5 cm	1.3 cm	1.5 cm	1.4 cm	1.3 cm
26.	Anal fin height	0.7 cm	0.6 cm	0.6 cm	0.6 cm	0.8 cm	0.6 cm
27.	Anal fin length	0.8 cm	0.8 cm	0.8 cm	0.8 cm	1.1 cm	1.5 cm



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28.	Caudal fin L	0.5 cm	0.6 cm	0.6 cm	0.6 cm	0.7 cm	0.6 cm
29.	Caudal fin H	1.8 cm	1.5 cm	2 cm	1.5 cm	1.9 cm	1.4 cm
30.	Penducle depth	0.8 cm	0.8 cm	0.9 cm	0.8 cm	0.9 cm	0.8 cm

Table 2 (a-j): Meristic analysis of *Gudusia chapra* (n=60) captured from the Brahmaputra River, Dibrugarh

Table 2(a)													
SL. NO	Characters	Species1		Species2		Species3		Species4		Species5		Species6	
		spine	ray	spine	ray	spine	ray	spine	ray	spine	ray	spine	ray
1	Dorsal fin	0	13	0	10	0	10	0	8	0	8	0	9
2	Pectoral fin	0	12	0	9	0	7	0	8	0	7	0	7
3	Pelvic fin	0	7	0	6	0	7	0	7	0	6	0	7
4	Anal fin	0	22	0	17	0	17	0	18	0	20	0	19
5	Caudal fin	0	24	0	19	0	22	0	15	0	22	0	21

Table 2(b)													
SL NO	Characters	Species7		Species8		Species9		Species10		Species11		Species12	
		ray		spine ray		spine ray		spine ray		spine ray		spine ray	
1	Dorsal fin	0	12	0	9	0	10	0	7	0	9	0	8
2	Pectoral fin	0	15	0	10	0	7	0	9	0	7	0	8
3	Pelvic fin	0	12	0	8	0	7	0	7	0	7	0	6
4	Anal fin	0	15	0	17	0	17	0	19	0	17	0	19
5	Caudal fin	0	22	0	19	0	21	0	20	0	20	0	17

Table 2(c)													
SL.no	Characters	Species13		Species14		Species15		Species16		Species17		Species18	
		spine	ray	spine	ray	spine	ray	spine	ray	spine	ray	spine	ray
1	Dorsal fin	0	11	0	8	0	8	0	9	0	13	0	9
2	Pectoral fin	0	7	0	7	0	7	0	8	0	9	0	7
3	Pelvic fin	0	6	0	6	0	8	0	7	0	7	0	5
4	Anal fin	0	16	0	14	0	16	0	17	0	20	0	18
5	Caudal fin	0	23	0	20	0	22	0	22	0	23	0	22



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Table 2(d)

SL. no	Characters	Species19		Species20		Species21		Species22		Species23		Species24	
		spine	ray	spine	ray	spine	ray	spine	ray	spine	ray	spine	ray
1	Dorsal fin	0	10	0	12	0	13	0	9	0	12	0	13
2	Pectoral fin	0	9	0	9	0	13	0	7	0	10	0	10
3	Pelvic fin	0	6	0	8	0	11	0	7	0	8	0	7
4	Anal fin	0	21	0	15	0	16	0	16	0	18	0	20
5	Caudal fin	0	24	0	21	0	20	0	22	0	23	0	25

Table 2(e)

SL.no	Characters	Species25		Species26		Species27		Species28		Species29		Species30	
		spine	ray	spine	ray	spine	ray	spine	ray	spine	ray	spine	ray
1	Dorsal fin	0	13	0	7	0	11	0	7	0	11	0	7
2	Pectoral fin	0	12	0	9	0	10	0	7	0	11	0	9
3	Pelvic fin	0	7	0	7	0	7	0	6	0	7	0	8
4	Anal fin	0	17	0	17	0	16	0	18	0	21	0	17
5	Caudal fin	0	25	0	20	0	21	0	22	0	21	0	22

Table.3: Morphometric counts of *G.chapra* (Hamilton,1822) (N=60 species)

Serial no.	Characters	Mean	Range (cm)
1.	Total length	10.2	8.8-11.7
2.	Standard Length	8.2	7.1-9.2
3.	Head length	2.6	2.0-2.9
4.	Head depth	2.32	2.1-2.7
5.	Eye diameter	0.67	0.6-0.8
6.	Inter orbital length	0.51	0.4-0.6
7.	Fork length	8.61	7.7-9.8
8.	Gap of mouth	1.11	0.9-1.5



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9.	Body depth	2.52	2.3-2.8
10.	Pre orbital length	0.51	0.4-0.7
11.	Post orbital length	1.47	1.1-1.7
12.	Pre dorsal fin Length	4.00	3.6-5.5
13.	Dorsal fin base length	1.00	0.8-1.3
14.	Dorsal fin Height	1.44	1.3-1.6
15.	Dorsal fin Length	1.25	1-1.5
16.	Pre pectoral fin Length	2.55	2.2-3.5
17.	Pectoral fin base length	0.2	0.2-0.3
18.	Pectoral fin length	1.34	0.8-1.9
19.	Pectoral fin Height	1.36	0.9-1.7
20.	Pre pelvic fin Length	4.25	3.8-5.8
21.	Pelvic fin base Length	0.1	0.1-0.2
22.	Pelvic fin Length	0.73	0.5-1.0
23.	Pelvic fin Height	0.79	0.6-1.0
24.	Pre anal fin length	6.47	5.0-7.3
25.	Anal fin base length	1.31	0.9-1.6
26.	Anal fin height	0.75	0.6-1.4
27.	Anal fin length	1.03	0.7-1.7
28.	Caudal fin length	0.56	0.4-0.7
29.	Caudal fin height	1.7	1.4-2.0
30.	Penducle depth	0.82	0.7-0.9

Table :4- Meristic counts of *G. chapra* (N=60)

Serial no.	Characters	Mean	Range (cm)
1	Dorsal fin rays	10.5	7-13
2	Pectoral fin rays	9.85	7-15



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3	Pelvic fin rays	7.41	7-11
4	Anal fin rays	17.68	13-22
5	Caudal fin rays	20.21	14-25

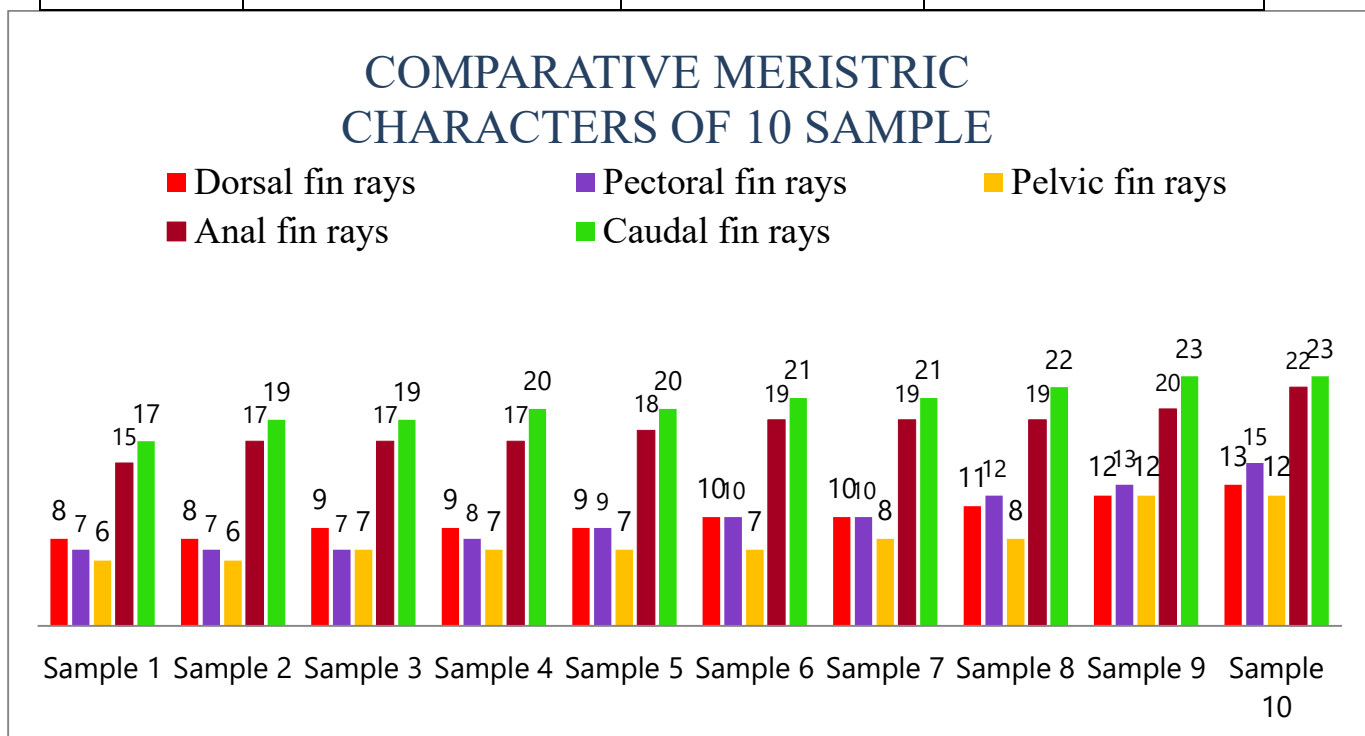


FIG 10: Showing histogram, containing numbers of dorsal, pectoral, pelvic, anal caudal fin rays of *G.chapra* among 10 species

Table.5- Seasonal availability and Price of *Gudusia chapra*

Sl no.	Months	Season	Seasonal availability	Price (Rs/kg)
1	March-May	Pre monsoon	Not available	-
2	May-October	Monsoon	Available	400
3	October-November	Post monsoon	Not available	-

DISCUSSION

The research work was focused on Morphometric and meristic parameters during July 1st to 30st 2025. In *Gudusia chapra* both morphometric and meristic characters were studied to understand the body structure and variation of the species. Morphometric characterization is a most cost-effective tools for identification of the fish specimen (Cadrin & Silva, 2005;



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Chaklader et al., 2015; Sidik et al., 2021). The total length of the fish was recorded between 8cm to 13.06 cm, and body depth in between 2 cm to 2.8 cm which belongs to a small-size group of freshwater fishes. However Hossain *et al.*, (2021) reported TL ranged between 6.20 to 15.10 cm. Sheikh *et al.*, (2017) specified that TL for adult *G. chapra* ranged between 7.1 -12.95 cm from Dalani wetland ecosystem of Assam. Angsuman *et al.*, 2022 reported that the highest total length of *G. chapra* was 12.10 cm from the Kangsabati river, compared to maximum records of 20 cm in Bangladesh, 19 cm in Pakistan and 17.6 cm TL for the specimens from the River Ganga in India (Sarkar *et al.*, 2013). *G. chapra* was observed that the eye diameter and interorbital length were almost the same in most of the specimens. The pectoral fin base length and pelvic fin base length were recorded as 0.3 and 0.1 respectively in many specimens, indicating balance in the paired fins. Similarly, the caudal fin length and caudal peduncle depth were also found to be nearly the same in most of the fish, which reflects stability in swimming structures. In addition, variation possibly resultant because of seasonality, sex, availability of feed and physiological condition (Gosavi et al. 2019; Le Cren 1951).

The meristic traits such as the number of the spines and rays of dorsal fin, pectoral, pelvic, anal fin, caudal fin were studied and it was observed that 7-13, 7-15, 7-11, 13-22, 13-25 respectively. In a study performed by Azadi *et al.*, 2008, the meristic counts of dorsal fin, pectoral, pelvic, anal, caudal fin rays were found to be 14-15, 13-14, 7-8, 23-25, 18-19 respectively. Angsuman *et al.*, 2022, observed that the meristic counts of dorsal fin contains 16-17 finrays with soft impression without any spine and the pectoral, pelvic, anal and caudal fin were 13-15, 8, 19-21 and 19-20 respectively.

In the recent research work, it was observed that almost all the examined specimens of *Gudusia chapra*, Koroti fish showed similar morphometric characters, and no major changes were noticed. However, factors such as overfishing, water pollution, habitat degradation, and seasonal changes will influence both morphometric and meristic characters of the fish, and slight variations will be seen among the individuals. The availability of food and the quality of water will also affect the body shape and fins of the fish in the future. These factors will directly affect the growth, breeding, and survival of the species in their natural habitat. Therefore, the fish will need to be protected through proper care and conservation so that the population will be maintained for the future.

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SIGNIFICANCE OF THE STUDY

This study helps to identify a particular fish species accurately and completely. It helps in determination of morphological differences between the sexes. It also helps in identify the differences of a particular species existing in different habitats and localities. It also helps in differentiated the fishes having similar morphological features which are not same.

CONCLUSION

It was observed that *Gudusia chapra* is an important small fish species found in rivers, ponds, and wetlands. It was considered a cheap and good source of protein for rural people and was mostly used in both fresh and dry form. Its role in the food chain was also seen as important because it was feeding on plankton and was serving as food for larger fishes. Through morphometric and meristic studies, it was clear that the no of dorsal fin rays, pectoral fin rays, pelvic fin rays, anal fin rays and caudal fin rays of *Gudusia chapra* remained constant in all fish specimens having different body length it shows that the meristic counts are independent with body size. It was concluded that *Gudusia chapra* has ecological, nutritional, and economic value, and its conservation was needed for maintaining biodiversity and for supporting the livelihood of local communities.



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