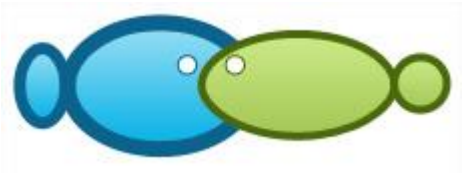

Morphometric and meristic characteristics of tank goby *Glossogobius giuris* (Hamilton, 1822) in the Shibsa River, southwestern Bangladesh using multi-linear dimensions

[1†]Shahanaj Parvin, [1,2†]Shawon Ahmmed, [1]M. Abu Naser, [1]Debashis Kumar Mondal, [1]M. Latiful Islam, [3]Yahia Mahmud

[1] Bangladesh Fisheries Research Institute, Brackishwater Station, Paikgacha, Khulna-9280, Bangladesh; [2] Aquatic Animal Health Group, Department of Fisheries, Faculty of Biological Sciences, University of Dhaka, Dhaka-1000, Bangladesh; [3] Bangladesh Fisheries Research Institute, Head Quarter, Mymensingh-2201, Bangladesh. [†]Equally contributed to this work. Corresponding author: M. L. Islam, latiful.bfri@gmail.com

Abstract. Both morphometric measurements and meristic counts were covered in this study and established morphological relationships especially the length-length and the length-weight relationships (LLRs and LWRs) of tank goby *Glossogobius giuris*. In total, 120 specimens were collected from the Shibsa River in southwestern Bangladesh from November 2021 to October 2022. All morphometric lengths of collected fishes were measured to the closest 0.01 cm in addition to the individual body weight (BW), which was determined with an accuracy of 0.01 g. An amplifying glass was used to count the fin rays and scales, including the lateral line scale. The total length (TL) and BW were ranged from 8.00 to 34.40 (mean±SD = 18.71±6.19) and 4.95 to 307.65 (mean±SD = 75.37±77.85) respectively. The length-weight relationships (LWRs) were significantly higher ($p \leq 0.0001$) with all R^2 values ≥ 0.947. Out of the 13 LWRs equations, the LWRs by BW vs TL and BW vs SL were the best-fitted models based on the R^2 value. There was also found a high correlation ($p \leq 0.0001$; $R^2 \geq 0.959$) between the length-length relationships (LLRs). Based on the highest R^2 value among the 12 LLRs equations, the models that were found most appropriate viz., LLR by TL vs SL and TL vs PoDL2. The fin formula of the studied *G. giuris* was D1: 6; D2: 9-11; P: 18-20; PV: 8-11; A: 8-10 and C: 17-22, correspondingly. The findings of this study would be valuable for identifying tank goby, management, and stock assessment of this species in the Shibsa River, southwestern Bangladesh, as well as adjacent ecosystems.
Key Words: fin formulae, *Glossogobius giuris*, meristic, morphometric.

Introduction. The tank goby *Glossogobius giuris* (Hamilton, 1822), belonging to family Gobiidae, is found in rivers, canals, beels, haors, oxbow lakes, ponds, ditches, floodplains, man-made reservoir, lakes etc. in Bangladesh, India, Myanmar, Pakistan, Sri Lanka and Thailand (Hossain et al 2009; Froese & Pauly 2021; Yeasmine et al 2021). It dwells in transparent to turbid streams with rock, gravel, or sand bottoms (Azad et al 2020). It is found in not only freshwater but also brackishwater (Rahman 2005; Achakzai et al 2014; Azad et al 2018; Phan et al 2021; Yeasmine et al 2021). This fish, locally known as *bele* or *baila* in Bangladesh, plays a pivotal role as a substantial source of protein and micronutrients to the health and nutrition of the people (Islam & Joadder 2005; Islam et al 2014; Azad et al 2018; Yeasmine et al 2021).

Using morphometric and meristic characters it is simple to accurately identify and differentiate between fish species that are similar to one another (Hossen et al 2016; Nawer et al 2017; Parvin et al 2018; Rahman et al 2019; Islam et al 2020; Tanjin et al 2020). The variation in morphometric and meristic traits indicates that fishes have been significantly influenced by different locations and surrounding environmental settings (Hossain 2010; Hossain et al 2013; Azad et al 2018). Understanding any deviation of

morphometric and meristic features is crucial for the management, conservation, their overall condition of the entire fish community (Pinheiro et al 2005; Tanjin et al 2020).

Expanding our knowledge, some studies were conducted on morphometric relationship, length-weight relationship, morphology, and biology, as well as pituitary gland (PG)-induced breeding on this species from different habitats (Islam & Mollah 2013; Kaur & Rawal 2015; Saha et al 2016; Azad et al 2018; Ghosh et al 2021; Phan et al 2021). However, more studies are needed to enrich our knowledge about this species on this topic. Using various sizes of *G. giuris* individuals, this study is mainly an attempt to mark out the morphometric characters using multilinear dimensions and meristic counts along with fin rays.

Material and Method. Individuals of *G. giuris* were collected from Shibsa River (Latitude: 22°35'22.64'' N; Longitude: 89°19'33.38'' E), the southwestern region of Bangladesh (Figure 1). The mapping of the sampling site along with the Shibsa River was created using ArcGIS version 10.8.

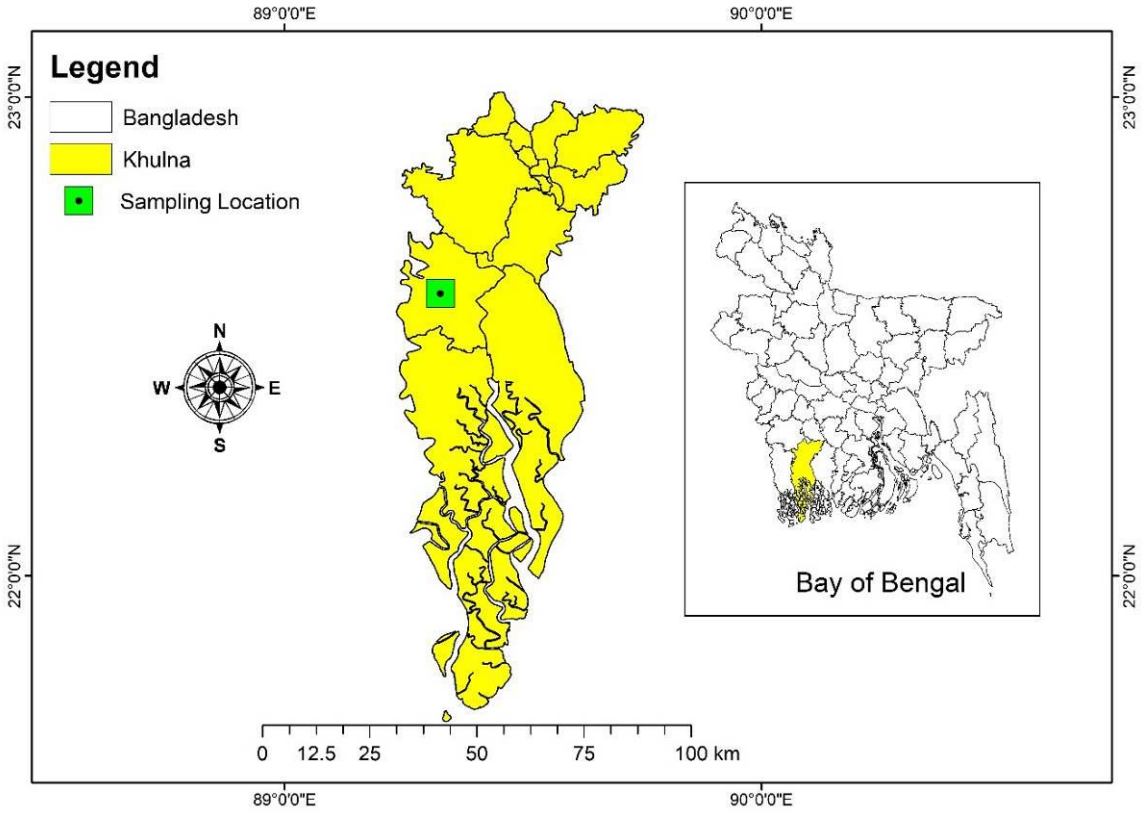

Figure 1. Mapping of the sampling site along with the Shibsa River in southwestern Bangladesh.

The study was conducted from November 2021 to October 2022 and fish were collected from the local fishermen in every month. Fishes were kept in the fish box with crushed ice immediately after collection and carried back to the laboratory. A total of 120 various sizes of tank goby fish were collected. The body weight (BW) of individual fish specimens was determined using an electric digital weighing scale with an accuracy of 0.01 g. A total of 14-morphometric traits viz., 13 different lengths i.e., total length (TL), standard length (SL), head length (HL), pre 1st dorsal length (PrDL1), pre 2nd dorsal length (PrDL2), post 1st dorsal length (PoDL1), post 2nd dorsal length (PoDL2), pre pectoral length (PrPecL), post pectoral length (PoPecL), pre pelvic length (PrPelL), post pelvic length (PoPelL), pre anal length (PrAL), post anal length (PoAL), and body weight were selected for each fish (Figure 2).All morphometric features were measured using digital slide calipers to the closest precision of 0.01 cm according to Hubbs & Lagler (1958).

In addition, a magnifying glass was used to determine the number of fin rays (the soft rays and spines that support the fins' bony structure) as well as scales (including lateral line scale). The length-weight relationships (LWRs) were estimated using the power curve equation: $BW = a \times L^b$, where BW is the body weight in 'g' and L is 13 diverse lengths in 'cm'. With linear regression analysis, length-length relationships (LLRs) were analyzed in this study. The regression parameters 'a' and 'b' were calculated by linear regression analysis based on natural logarithms: ln (BW) = ln(a) + bln(L). The coefficient of determination (R^2) and the 95% confidence limits (CL) for 'a' and 'b' were estimated. The superlative model for both LWRs and LLRs was chosen by the top value of R^2. All the statistical tests were performed at the 0.05 probability level. Microsoft Excel 2016 and SPSS 25 were used to conduct the statistical analysis.

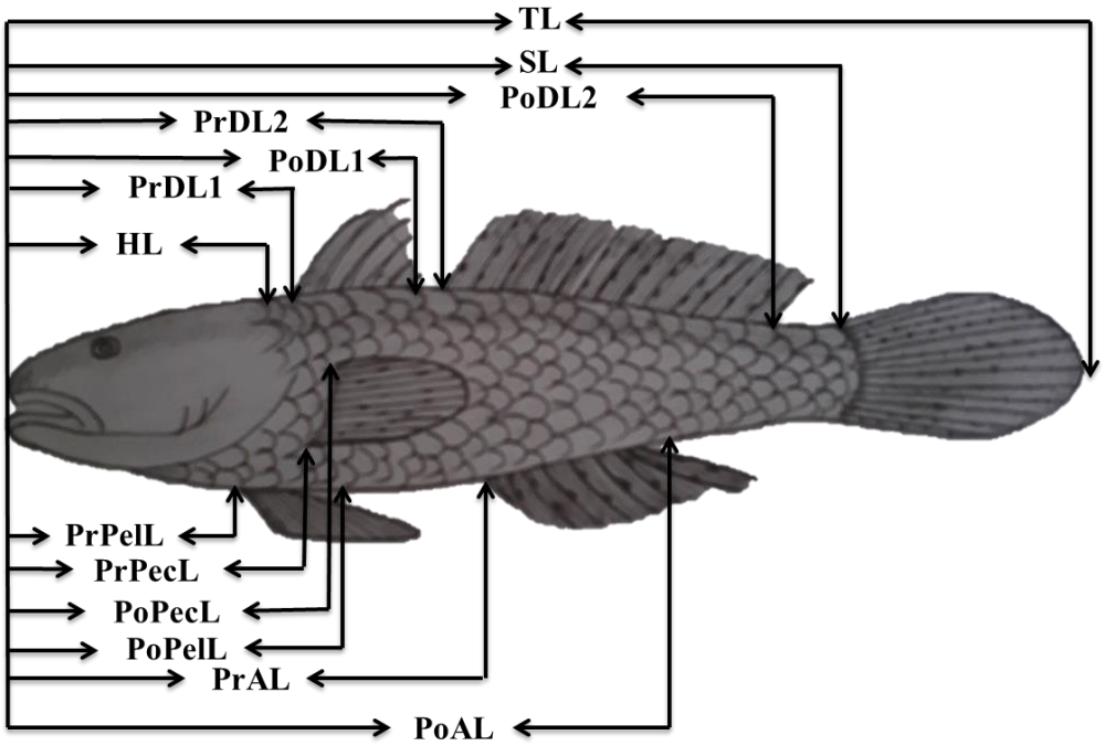

Figure 2. Morphometric measurements of *G. giuris* in the Shibsa River of Bangladesh.

Results. This species has an extended, anteriorly cylindrical, and posteriorly compressed body. Head of tank goby usually pointed and depressed. Lips are thick, mouth is slightly slanted, and lower jaw is longer than upper jaw. Anal fin along with second dorsal fin, pointed posteriorly. The caudal fin is either rounded or pointed. The unified pelvic formed a sucking disc. There is a small gap between the two dorsal fins. The body color is greenish yellow. Yellowish green dorsal and caudal fins spotted with brown edge. Pectoral fins are faintly speckled, although anal and pelvic regions are pale. Both TL and BW were prolonged from 8.00 to 34.40 (mean±SD = 18.71±6.19) and 4.95 to 307.65 (mean±SD = 75.37±77.85) respectively (Table 1). The descriptive statistics for morphometric measurements of tank goby, as well as the regression parameters 'a' and 'b' with a 95% confidence limit, the coefficient of determination (R^2) for LWRs, and the growth type of *G. giuris* are presented in Table 2 and Figure 3. The LWRs had all R^2 values ≥ 0.947 and were highly significant ($p \leq 0.0001$). Out of 13 equations, the LWRs by BW vs SL and BW vs TL were the ideal model based on the R^2 value. High correlation was found between the LLRs ($p \leq 0.0001$; $R^2 \geq 0.959$). Based on the highest R^2 value among the 12 equations, the most appropriate models were LLR by TL vs SL and TL vs PoDL2. Table 3 showed the derived parameters together with the co-efficient of determination (R^2), and Figure 4 displayed the LLRs. In this study, the following fin formulas were examined: D1 = 6, D2 = 9-11, P = 18-20, PV = 8-11, A = 8-10, and C = 17-22 (Table 4 and Figure 5).

Table 1

Morphometric measurements of *G. giuris* (n = 120) collected from the Shibsa River in southwestern Bangladesh

Measurements	*Min (cm)*	*Max (cm)*	*Mode (cm)*	*Mean±SD*
TL (total length)	8.00	34.40	20.00	18.71±6.19
SL (standard length)	6.50	25.00	14.20	14.28±4.48
HL (head length)	1.90	7.80	4.40	4.37±1.39
PrDL1 (pre 1st dorsal length)	2.50	9.30	5.00	5.44±1.69
PrDL2 (pre 2nd dorsal length)	3.40	15.00	8.50	8.39±2.63
PoDL1 (post 1st dorsal length)	3.10	14.40	6.80	7.82±2.56
PoDL2 (post 2nd dorsal length)	5.10	20.20	11.20	11.25±3.56
PrPecL (pre pectoral length)	1.90	7.60	3.50	4.25±1.31
PoPecL (post pectoral length)	2.10	8.90	4.70	4.71±1.50
PrPelL (pre pelvic length)	1.60	7.90	4.00	4.39±1.40
PoPelL (post pelvic length)	1.80	8.90	4.00	4.85±1.58
PrAL (pre anal length)	3.90	15.60	8.60	8.76±2.76
PoAL (post anal length)	5.20	19.50	10.30	10.99±3.56
BW (body weight)#	4.95	307.65	34.41	75.37±77.85

Note: n = sample size; Min = minimum; Max = maximum; SD = standard deviation; CL = confidence limit; #BW in g.

Table 2

Descriptive statistics with the estimated parameters of the length-weight relationships of *G. giuris* (n = 120) collected from Shibsa River in southwestern Bangladesh

Equation	*Regression parameters*		*95% CL of a*	*95% CL of b*	R^2	*GT*
	a	*b*				
$BW = a*TL^b$	0.012	2.873	0.011-0.016	2.789-2.920	0.984	A^-
$BW = a*SL^b$	0.020	2.980	0.017-0.024	2.911-3.049	0.984	A^-
$BW = a*HL^b$	0.855	2.842	0.721-1.013	2.726-2.959	0.951	A^-
$BW = a*PrDL1^b$	0.368	2.973	0.312-0.434	2.875-3.072	0.968	A^-
$BW = a*PrDL2^b$	0.104	2.958	0.087-0.124	2.874-3.042	0.976	A^-
$BW = a*PoDL1^b$	0.164	2.840	0.138-0.194	2.762-2.928	0.975	A^-
$BW = a*PoDL2^b$	0.043	2.966	0.036-0.051	2.893-3.039	0.982	A^-
$BW = a*PrPecL^b$	0.713	3.021	0.592-0.858	2.892-3.151	0.947	I
$BW = a*PoPecL^b$	0.572	2.963	0.490-0.669	2.862-3.065	0.965	A^-
$BW = a*PrPelL^b$	0.790	2.886	0.662-0.942	2.766-3.006	0.950	A^-
$BW = a*PoPelL^b$	0.650	2.830	0.557-0.758	2.732-2.929	0.964	A^-
$BW = a*PrAL^b$	0.089	2.971	0.076-0.106	2.894-3.049	0.979	A^-
$BW = a*PoAL^b$	0.056	2.885	0.047-0.066	2.816-2.955	0.982	A^-

Note: n = sample size; a = intercept; b = slope; CL = confidence limit; R^2 = coefficient of determination; GT = growth type; I = isometric; A^- =negative allometric.

Table 3

Descriptive statistics with the estimated parameters of the length-length relationships of *G. giuris* (n = 120) collected from Shibsa River in southwestern Bangladesh

Equation	*Regression parameters*		*95% CL of a*	*95% CL of b*	R^2
	a	*b*			
TL = a+b*SL	-0.987	1.379	-1.238 to -0.737	1.362 to 1.396	0.995
TL = a+b*HL	-0.451	4.381	-1.069 to -0.166	4.246 to 4.515	0.972
TL = a+b*PrDL1	-0.999	3.626	-1.562 to -0.435	3.526 to 3.725	0.978
TL = a+b*PrDL2	-0.898	2.336	-1.342 to -0.455	2.286 to 2.386	0.986
TL = a+b*PoDL1	-0.014	2.395	-0.467 to -0.438	2.340 to 2.450	0.984
TL = a+b*PoDL2	-0.76	1.730	-1.083 to -0.436	1.703 to 1.758	0.992
TL = a+b*PrPecL	-0.989	4.638	-1.765 to -0.213	4.463 to 4.813	0.959

TL = a+b*PoPecL	-0.548	4.085	-1.087 to -0.008	3.976 to 4.194	0.979
TL = a+b*PrPelL	-0.499	4.372	-1.120 to -0.122	4.237 to 4.507	0.972
TL = a+b*PoPelL	-0.165	3.890	-0.671 to -0.340	3.791 to 3.989	0.980
TL = a+b*PrAL	-0.806	2.228	-1.271 to -0.341	2.178 to 2.279	0.984
TL = a+b*PoAL	-0.312	1.730	-0.708 to -0.084	1.696 to 1.765	0.988

Note: n = sample size; a = intercept; b = slope; CL = confidence limit; R^2 = coefficient of determination.

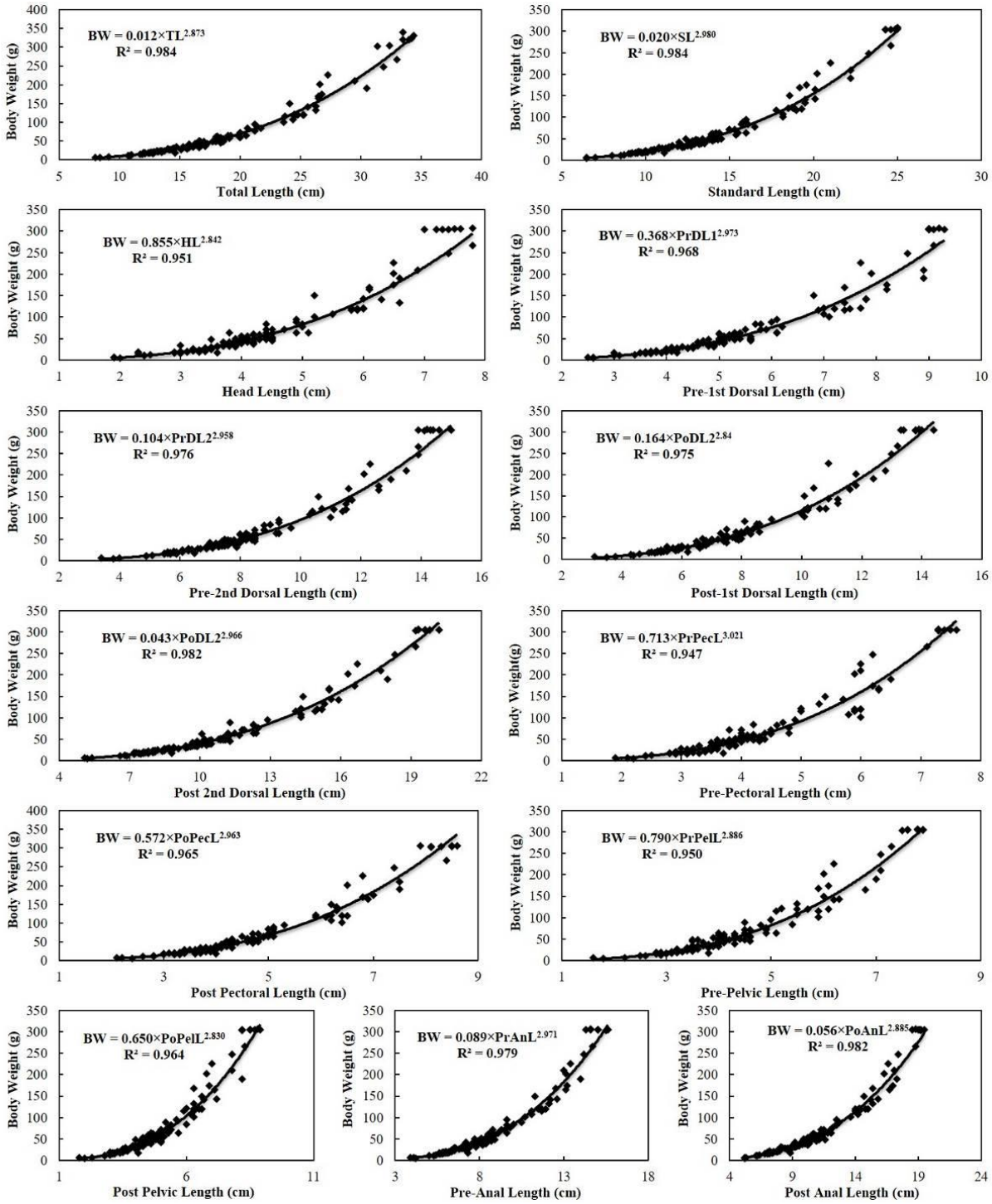

Figure 3. Scatter plots showing the length-weight relationships of *G. giuris* in the Shibsa River of southwestern Bangladesh.

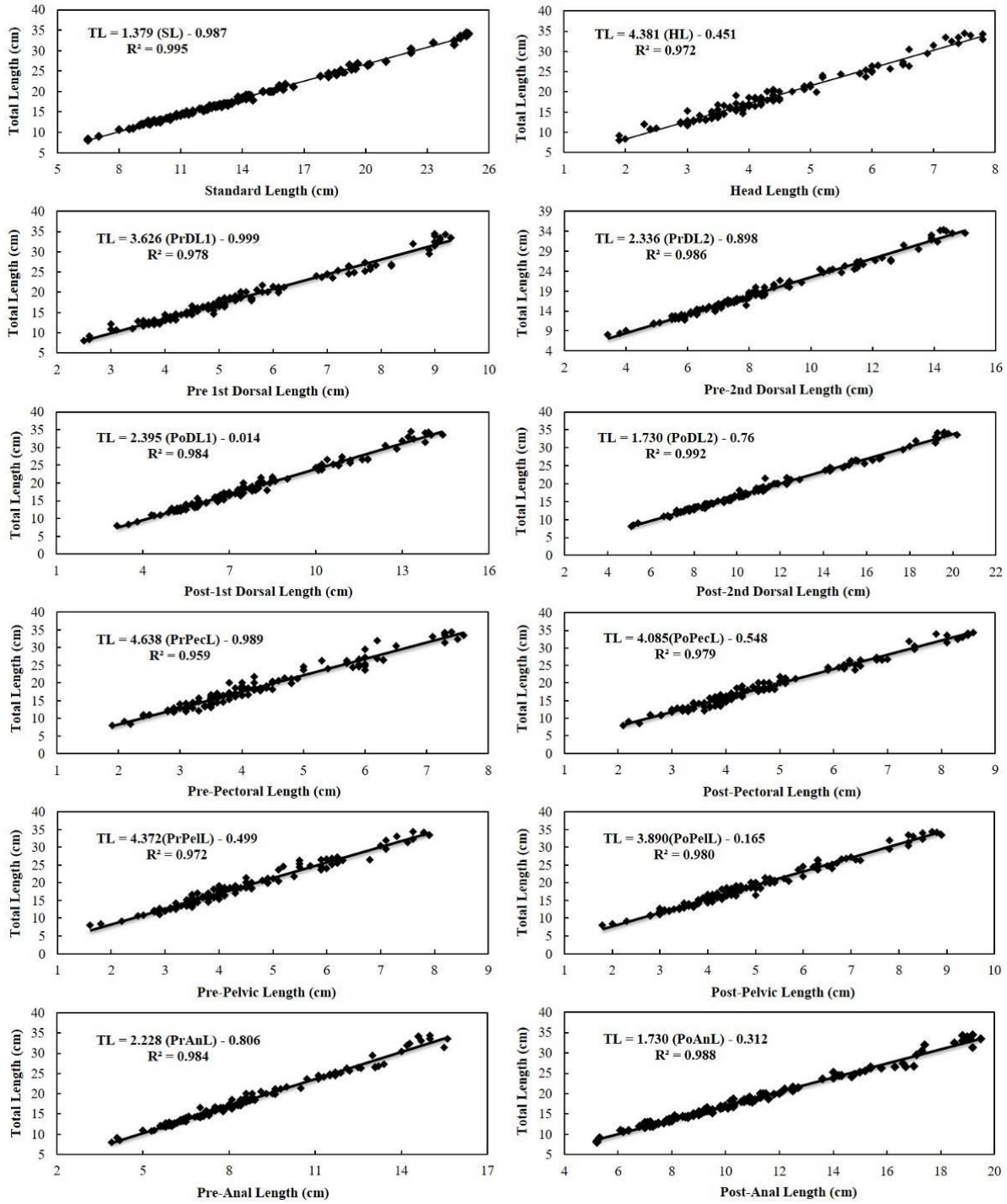

Figure 4. Scatter plots showing the length-length relationships of *G. giuris* in the Shibsa River in southwestern Bangladesh.

Table 4

Meristic counts of *G. giuris* (n = 120) collected from the Shibsa River in Bangladesh

Meristic characters	*Observed data*	*Reference*	
		Islam et al (2016)	*Mollah et al (2012)*
1st Dorsal fin rays	6	6	6
2nd Dorsal fin rays	9-11	9-11	9-11
Pectoral fin rays	18-20	15-22	15-21
Pelvic fin rays	8-11	8-12	9-11
Anal fin rays	8-10	8-10	8-10
Caudal fin rays	17-22	12-26	13-18

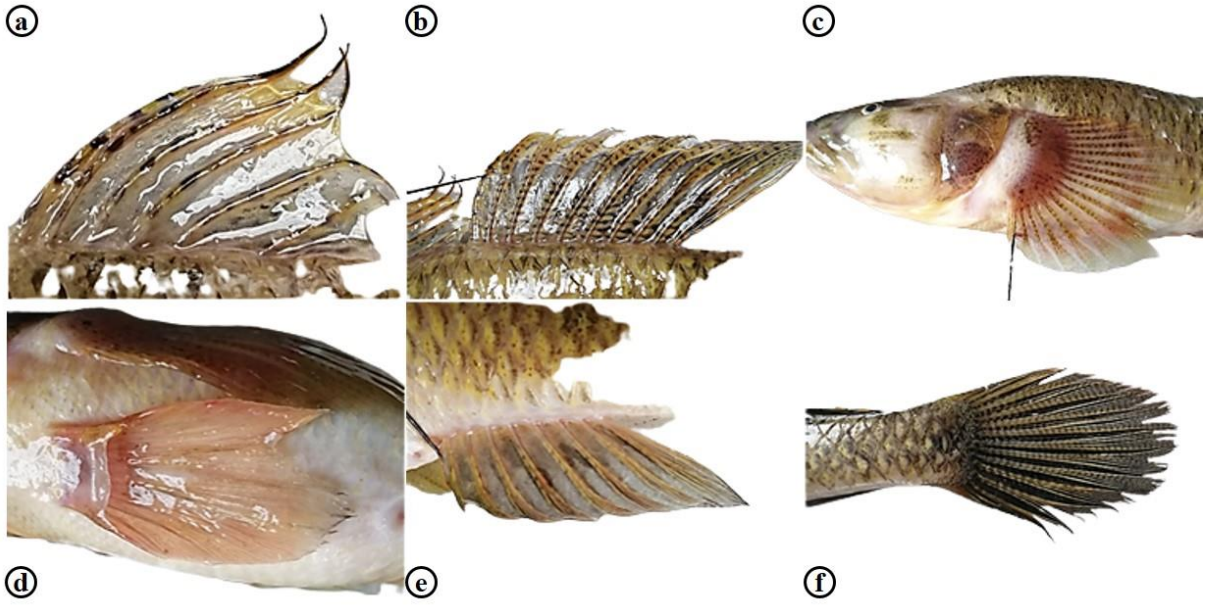

Figure 5. (a) 1st dorsal fin; (b) 2nd dorsal fin; (c) pectoral fin; (d) pelvic fin; (e) anal fin; (f) caudal fin of *G. giuris* in the Shibsa River of Bangladesh.

Discussion. There is little or almost no evidence of morphometric and meristic characteristics of *G. giuris* in the southwest coastal region. This study used multi-linear dimensions to provide a comprehensive understanding of the morphometric and meristic characteristics of *G. giuris*. In this research, samples of *G. giuris* that were different in size were collected monthly from the local market located in Paikgacha, Khulna for a period of one year from September 2021 to August 2022. The highest TL found in the current study was 34.40 cm, which is greater than the value of 26.9 cm (Azad et al 2018) and 28.0 cm (Azad et al 2020) from Gorai River, Bangladesh. Knowing the similarities and differences between fish populations from various locations and accurately determining the maximum lengths of fish holds crucial significance for estimating both asymptotic length and growth coefficient, playing a pivotal role in the field of fisheries resource planning and management strategies (Ahmed et al 2012; Hossain et al 2017; Parvin et al 2018; Rahman et al 2019; Hossain et al 2022). In this research, the estimated value for all allometric coefficient (b) were within the range 2.83-3.02 but the allometric coefficient (b) values of LWRs may differ from 2.0 to 4.0 and are more common values ranging between 2.5 and 3.5 (Carlander 1997; Froese 2006). Our research marked that one is isometric and the rest of the negative allometric growth form for *G. giuris* in the southwest coastal region of Bangladesh. Similarly, the 'b' values within the range 2.89-2.93 and 2.67-2.91 marked as negative allometric growth pattern in the Garai River, SW Bangladesh (Azad et al 2018; Azad et al 2020 respectively).

Moreover, the growth pattern of *G. giuris* in the Ganges, northwestern Bangladesh marked negative allometric, isometric, and positive allometric (b = 2.95-3.29) by Hossain et al (2009). Besides, all the LLWs were extremely correlated which is quite similar to Azad et al (2018). Therefore, in the present study, we employed a range of lengths based on the coefficient of determination to present the best model among different LWRs and LLRs equations. The findings from this study could be highly effective for comparative studies in the future. In our present work, 6 fin rays in 1st dorsal fin and 9-11 in 2nd dorsal fin, 18-20 pectoral fin rays, 8-11 rays attached in pelvic fin, 8–10 fin rays in the anal fin, and 17-22 caudal fin rays were noticed, that was similar with the studies done by Mollah et al (2012) and Islam et al (2016). Moreover, this study did not consider several factors, including organ growth, physiological variation, preservation methods, sex, habitat availability, and seasonal variation of collected specimens, as observed in other studies (Froese 2006; Hossen et al 2016; Nawer et al 2017; Hasan et al 2020).

Conclusions. Out of 13 equations, LWRs by TL against BW and SL vs BW were idyllic models based on the R^2 value. In addition, LLR by TL vs SL along with the TL vs PoDL2 were best-suited relations within the 12 equations depending on the utmost value of R^2. Furthermore, the following fin formulas were evaluated in this study: D1 = 6; D2 = 9-11; P = 18-20; PV = 8-11; A = 8-10; C = 17-22. These results could assist taxonomists in identifying tank goby (*G. giuris*) and fisheries managers as well as biologists to initiate stock assessments of the enduring stocks. Moreover, it will also offer baseline information for future research in the Shibsa River and adjoining ecosystems.

Acknowledgements. This work was supported by the corresponding research project (Code no. BFRI/BS/06: 2021-22) entitled "Domestication, breeding and seed production of some commercially important brackishwater fishes" financed by Sustainable Coastal and Marine Fisheries Project, Ministry of Fisheries and Livestock, Bangladesh. The authors also would like to acknowledge the efforts of Abdur Rahman Al Akil, MS Student, Aquaculture Branch, Department of Fisheries, University of Dhaka for helping to create the map of the sampling location using ArcGIS.

Conflict of interest. The authors declare that there is no conflict of interest.

References

Achakzai W. M., Achakzai S. W. M., Baloch W. A., Qambrani G. R., Soomro A. N., 2014 Length-weight relationship and condition factor of tank goby *Glossogobius giuris* (Hamilton and Buchannan, 1822) from Manchar Lake District Jamshoro, Sindh, Pakistan. Sindh University Research Journal-SURJ (Science Series) 46(2):213-216.

Ahmed Z. F., Hossain M. Y., Ohtomi J., 2012 Modeling the growth of silver hatchet chela *Chela cachius* (Cyprinidae) from the Old Brahmaputra River in Bangladesh using multiple functions. Zoological Studies 51(3):336-344.

Azad M. A. K., Hossain M. Y., Khatun D., Parvin M. F., Nawer F., Rahman O., Hossen M. A., 2018 Morphometric relationships of the tank goby *Glossogobius giuris* (Hamilton, 1822) in the Gorai River using multi-linear dimensions. Jordan Journal of Biological Sciences 11(1):81-85.

Azad M. A. K., Hossain M. Y., Hasan M. R., Mawa Z., Rahman M. A., Islam M. A., Chowdhury A. A., Rahman O., Rahman M. A., Khatun D., Parvin M. F., 2020 Temporal variation of relative growth pattern and condition of *Glossogobius giuris* (Hamilton, 1822) in the Garai River, SW Bangladesh. Jordan Journal of Biological Sciences 13(2):231-236.

Carlander K. D., 1997 Handbook of freshwater fishery biology: Volume 3. Iowa State University Press, 397 pp.

Froese R., 2006 Cube law, condition factor and weight–length relationships: history, meta-analysis and recommendations. Journal of Applied Ichthyology 22(4):241-253.

Froese R., Pauly D., 2021 FishBase. Available at: https://www.fishbase.se/summary/Glossogobius-giuris. Accessed: November, 2024.

Ghosh R., Ganguly S., Bhattacharjee P., Pal A., 2021 Morphology and biology of freshwater tank goby, *Glossogobius giuris* (Hamilton, 1822) from Indian subcontinent: a review. Uttar Pradesh Journal of Zoology 42(17):123-135.

Hasan M., Mawa Z., Ul-Hassan H., Rahman M., Tanjin S., Ahmed Abro N., Gabol K., Bashar M. A., Jasmine S., Ohtomi J., Hossain M., 2020 Impact of eco-hydrological factors on growth of the Asian stinging catfish *Heteropneustes fossilis* (Bloch, 1794) in a wetland ecosystem. Egyptian Journal of Aquatic Biology and Fisheries 24(5):77-94.

Hossain M. Y., 2010 Morphometric relationships of length-weight and length-length of four Cyprinid small indigenous fish species from the Padma River (NW Bangladesh). Turkish Journal of Fisheries and Aquatic Sciences 10(1):131-134.

Hossain M. Y., Ohtomi J., Ahmed Z. F., Ibrahim A. H. M., Jasmine S., 2009 Length-weight and morphometric relationships of the tank goby *Glossogobius giuris* (Hamilton, 1822) (Perciformes: Gobiidae) in the Ganges of the Northwestern Bangladesh. Asian Fisheries Science 22(3):961-969.
Hossain M. Y., Rahman M. M., Abdallah E. M., Ohtomi J., 2013 Biometric relationships of the pool barb *Puntius sophore* (Hamilton 1822) (Cyprinidae) from three major rivers of Bangladesh. Sains Malaysiana 42(11):1571-1580.
Hossain M. Y., Hossen M. A., Khatun D., Nawer F., Parvin M. F., Rahman O., Hossain M. A., 2017 Growth, condition, maturity and mortality of the Gangetic leaf fish *Nandus nandus* (Hamilton, 1822) in the Ganges River (Northwestern Bangladesh). Jordan Journal of Biological Sciences 10(1):57-62.
Hossain M. Y., Rahman M. A., Rahman O., Islam M. A., Rahman M. A., Hasan M. R., Mawa Z., Tanjin S., Sarmin M. S., Nima A., Chowdhury A. A., Bashar M. A., Mahmud Y., 2022 Morphological characteristics and length-weight relationships of Hilsa shad *Tenualosa ilisha* (Hamilton, 1822) (Actinopterygii: Clupeidae) in the Ganges River, Bangladesh. Acta Zoologica Bulgarica 74(1):75-83.
Hossen M. A., Hossain M. Y., Pramanik M. N. U., Nawer F., Khatun D., Parvin M. F., Rahman M. M., 2016 Morphological characters of *Botia lohachata*. Journal of Coastal Life Medicine 4(9):689-692.
Hubbs C. L., Lagler K. F., 1958 Fishes of the Great Lakes region. University of Michigan Press, Ann Arbor, Michigan, 213 pp.
Islam M. A., Mawa Z., Hossain M. Y., Rahman M. A., Hasan M. R., Khatun D., Chowdhury A. A., Rahman O., Rahman M. A., Tanjin S., Hassan H. U., Ohtomi J., 2020 Morphometric and meristic characteristics of spotted snakehead *Channa punctata* (Bloch, 1793) in a wetland ecosystem (NW Bangladesh) using multi-linear dimensions. Indian Journal of Geo Marine Sciences 49(8):1442-1446.
Islam M. N., Joadder M. A. R., 2005 Seasonal variation of the proximate composition of freshwater gobi, *Glossogobius giuris* (Hamilton) from the River Padma. Pakistan Journal of Biological Sciences 8(4):532-536.
Islam M. R., Mollah M. F. A., 2013 Morphological observation and PG-induced breeding of *Glossogobius giuris* (Hamilton 1822). Journal of Science and Technology 11:171-180.
Islam M. R., Nahar M. T., Mia J., Akter M. M., Mehbub M. F., 2016 Morphological seclusion among three isolated river stocks of tank goby (Gobiidae: *Glossogobius giuris* Hamilton, 1822) based on truss network analysis. World Journal of Fish and Marine Sciences 8(1):36-46.
Islam M. S., Tuly D. M., Hasnahena M., Bahadur P., Hasan M. R., 2014 Induced breeding of freshwater goby, *Glossogobius giuris* (Hamilton, 1822) in the captivity: a preliminary study. Journal of Fisheries and Aquatic Science 9(1):24-32.
Kaur V., Rawal Y. K., 2015 Length-weight relationship in *Glossogobius giuris* (Ham.) from Sukhna Lake, Chandigarh. International Journal of Science and Research 4(9): 2007-2009.
Mollah M. F. A., Yeasmine S., Hossen M. B., Ahammad A. K. S., 2012 Landmark-based morphometric and meristic variations of *Glossogobius giuris* in three stocks. Journal of the Bangladesh Agricultural University 10(2):375-384.
Nawer F., Hossain M. Y., Hossen M. A., Khatun D., Parvin M. F., Ohtomi J., Islam M. A., 2017 Morphometric relationships of the endangered ticto barb *Pethia ticto* (Hamilton, 1822) in the Ganges River (NW Bangladesh) through multi-linear dimensions. Jordan Journal of Biological Sciences 10(3):199-203.
Parvin M. F., Hossain M. Y., Sarmin M. S., Khatun D., Rahman M. A., Rahman O., Islam M. A., Sabbir W., 2018 Morphometric and meristic characteristics of *Salmostoma bacaila* (Hamilton, 1822) (Cyprinidae) from the Ganges River in Northwestern Bangladesh. Jordan Journal of Biological Sciences 11(5):533-536.
Phan G. H., Linh L. T. T., Dinh Q. M., Truong N. T., Nguyen T. H. D., 2021 Length-weight relationship, growth pattern and condition factor of *Glossogobius giuris* caught from coastal areas in the Mekong Delta. AACL Bioflux 14(3):1478-1485.

Pinheiro A., Teixeira C. M., Rego A. L., Marques J. F., Cabral H. N., 2005 Genetic and morphological variation of *Solea lascaris* (Risso, 1810) along the Portuguese coast. Fisheries Research 73(1-2):67-78.
Rahman A. K. A., 2005 Freshwater fishes of Bangladesh. 2nd edition. Zoological Society of Bangladesh, Dhaka University, Bangladesh, 412 pp.
Rahman M., Islam M., Hossain M., Hasan M., Islam M., Khatun D., Rahman O., Parvin M., Mawa Z., Chowdhury A. A., 2019 Morphometric and meristic characteristics of the banded gourami, *Trichogaster fasciata* (Bloch & Schneider, 1801) in a wetland ecosystem from Northwestern Bangladesh. Jordan Journal of Biological Sciences 12(5):561-566.
Saha B. K., Hassan M. F., Saha A., 2016 Some aspects of biology of the bar-eyed goby *Glossogobius giuris* (Hamilton, 1822) (Perciformes: Gobiidae) from Netrakona. Journal of the Asiatic Society of Bangladesh, Science 42(1):95-106.
Tanjin S., Sabbir W., Hossain M., Rahman M., Mawa Z., Hasan M. R., Rima F. A., Rahman O., Sarmin M., Sarker B. K., Habib K. A., 2020 Morphometric and meristic features of Gangetic hairfin anchovy, *Setipinna phasa* (Hamilton, 1822) in the Bay of Bengal (Bangladesh). Journal of King Abdulaziz University: Marine Sciences 30(2):71-83.
Yeasmine S., Rahman M. A., Sarower-E-Mahfuj M., Sku S., Hossen M. N., Rahman M. A., Mollah M. F. A., 2021 Development of induced breeding technique for freshwater fish gobi, *Glossogobius giuris* (Hamilton, 1822) using pituitary gland (PG) extract. Annual Research and Review in Biology 36(1):24-35.

Received: 29 August 2024. Accepted: 09 November 2024. Published online: 14 February 2025.
Authors:
Shahanaj Parvin; Bangladesh Fisheries Research Institute, Brackishwater Station, Paikgacha, Khulna-9280, Bangladesh; e-mail: etee2407@gmail.com
Shawon Ahmmed; Bangladesh Fisheries Research Institute, Brackishwater Station, Paikgacha, Khulna-9280, Bangladesh; Aquatic Animal Health Group, Department of Fisheries, Faculty of Biological Sciences, University of Dhaka, Dhaka-1000, Bangladesh; e-mail: shawon.ahmmed@du.ac.bd
Md. Abu Naser; Bangladesh Fisheries Research Institute, Brackishwater Station, Paikgacha, Khulna-9280, Bangladesh; e-mail: a.n.mison2017@gmail.com
Debashis Kumar Mondal; Bangladesh Fisheries Research Institute, Brackishwater Station, Paikgacha, Khulna-9280, Bangladesh; e-mail: debbfri@gmail.com
Md. Latiful Islam; Bangladesh Fisheries Research Institute, Brackishwater Station, Paikgacha, Khulna-9280, Bangladesh; e-mail: latiful.bfri@gmail.com
Yahia Mahmud; Bangladesh Fisheries Research Institute, Head Quarter, Mymensingh-2201, Bangladesh; e-mail: yahiamahmud@yahoo.com

How to cite this article:
Parvin S., Ahmmed S., Naser M. A., Mondal D. K., Islam M. L., Mahmud Y., 2025 Morphometric and meristic characteristics of tank goby *Glossogobius giuris* (Hamilton, 1822) in the Shibsa River, southwestern Bangladesh using multi-linear dimensions. AACL Bioflux 18(1):383-392.