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Threatened Fishes of the World *Sperata seenghala* (Sykes, 1839): Recommendations for Sustainable Conservation

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ABSTRACT

The Giant River Catfish (*Sperata seenghala*, Sykes 1839) is an important freshwater species recognized for its high ecological value and economic contribution throughout South and Southeast Asia. The research compiles information on its taxonomy, biological traits, habitat range, nutritional value, growth, reproductive biology, and conservation condition in order to assess major threats and suggest management approaches. The species' natural populations face serious decline due to excessive fishing, destruction of habitats, sand mining activities, and pollution, making them increasingly vulnerable. To ensure long-term conservation, actions such as spawning-season closures, mesh and size regulations, habitat safeguarding, brood stock management at the basin level, and community involvement are advised. The study provides essential insights that can guide research and management actions directed at ensuring the persistence of *S. seenghala*, alongside strengthening food security, sustainable livelihoods, and biodiversity protection.

Introduction

The Giant River Catfish *Sperata seenghala* (Sykes 1839), known locally as "Guizza Air" (henceforth just "Guizza"), has great aquacultural importance and conservational benefits (Rahman et al. 2014). A member of the Bagridae family of catfishes, *S. seenghala* (Sykes 1839), can reach a length of approximately 150 cm (Acharya et al. 2019). It was found across various freshwater habitats in Afghanistan, Pakistan, India, Bangladesh, Thailand, Myanmar, and Nepal, including rivers, reservoirs, lakes, floodplains, inundated marsh fields, ditches, and canals (Saini et al. 2008). There have been reports of its availability in the Chinese seas (Jayaram 1977). This species is tolerant of a wide variety of salinity, temperature, and water conditions (Chondar 1999). Due to its superior flavor and lower intramuscular bone content, *S. seenghala* is more expensive in India than carps (Saini et al. 2008). Due to its perceived greater nutritional value, abundance of essential amino acids, and good trace metal (Zn and Fe) content, *S. seenghala* is a popular food fish and a popular choice among consumers (Mohanty et al. 2012). However, within national boundaries, *S. seenghala*

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is classified as vulnerable by the IUCN Bangladesh Red List (2015).

Natural populations are meeting all of the demand for this fish through capture, which could result in population extirpation or depletion (Mohanty et al. 2012). Additionally, anthropological forces have changed the ecosystem of its environment through overexploitation, sand mining, dam construction, and the outflow of household or industrial waste (Saini et al. 2008). This results destruction of habitats and breeding grounds for *S. seenghala*.

Table 1. Available studies on *Sperata seenghala* from different countries

Country/Waterbody	Aspects	Reference
India	Population genetics	Acharya et al. (2019)
Meghna River, Bangladesh	Microplastic pollution in the gastrointestinal tract	Arafat et al. (2023)
India	Development and characterization of 15 novel polymorphic microsatellites	Acharya et al. (2018)
Ganga River, India	Nutrient Profile	Mohanty et al. (2012)
Bangladesh	Development of artificial breeding techniques	Rahman et al. (2005)
Bangladesh	Evaluation of growth and production	Rahman et al. (2011)
India	Genetic diversity and demographic history	Kumari et al. (2016)
India	Morphometric Characterization	Kaur (2022)
Harike wetland, Maharana Pratapsagar lake	Genetic Variability Analysis	Saini (2010)
Harike Wetland, India	Biometrics and Genetic Variability	Datta et al. (2022)
Desh Bondhu Hatchery of Mymensingh, Bangladesh	Captive breeding and seed production techniques	Hasan et al. (2016)
Pakistan	Transportation and Acclimatization	Ali et al. (2015)
Tapi River, India	Food and Feeding Habits Analysis	Gamit et al. (2023)
Indus River Sindh, Pakistan	Complete mitochondrial genome	Lashari (2014)

Taxonomy

Kingdom: Animalia
Phylum: Chordata
Subphylum: Vertebrata
Class: Actinopterygii
Order: Siluriformes
Family: Bagridae
Genus: *Sperata*
Species: *Sperata seenghala*

Identification

The bodily features of *S. seenghala* have been previously well recorded by Talwar and Jhingran (1991) and Gupta (2015) and are summarized here:
Body without scales, elongated and compressed, with a depth five to seven times that of a normal length, abdomen wide and convex. Snout broad and spatula, having the longer upper jaw. Mouth sub-terminal, its width about one third of head length; barbels four pairs, expanded either beyond the anal fin or posteriorly to the pelvic fins. Dorsal spine weekly serrated on its posterior edge; adipose fin base short, about as long as rayed dorsal fin base. The caudal fin is deeply forked, has a larger upper lobe, and bends downward at the tip. The palatine teeth in a continuous crescentic line.
Fin formula:
D. I/7; P1.I/9; P2.I/5; A.11-12. (Rahman 1989).
D. I/7; A iii 8-9; P I 9, V i 5; C 19-21 (Talwar and Jhingran 1991)
D.1/7; P.1/9; V.6; A.11-12 (3/8-9); C.19-21, Barbels four pairs. (Das 2021)

Figure 1: *Sperata seenghala*

Common name

Air, Guizza in Bangladesh (Ahmed 1991; Rahman 1989; 2005); Aor, Air, Aoyeer, Guji in India (Daniels 2002; Chandy 1970; Lipton 1983); Kanti, Seenghari,

Sujaha, Tenger and Tengra in Nepal (Shrestha 1994; Shrestha 2008); Tengara in Pakistan (Misra 1976).

Distribution and abundance

In Afghanistan, Pakistan, India, Bangladesh, Thailand, Myanmar, and Nepal, it was discovered in a variety of freshwater environments, such as rivers, lakes, reservoirs, floodplains, inundated marsh fields, ditches, and canals (Saini et al. 2008). It is also reported that *S. seenghala* also available in China (Jayaram 1977). Availability of *S. seenghala* among these 8 countries are given in Table 2.

reported that *S. seenghala* are omnivorous (Gupta 2015). Chacko and Job (1948) have observed that this fish species has a herbivorous diet. According to several scholars, the diet of *S. seenghala* contains insects, insect larvae, prawns, shrimp, crustaceans, mollusks, worms, and, seldom, algae and water weeds (Gupta 2015). According to Chacko and Job (1948), the main food items in its diet are algae such as *Pinnularia, Oscillatoria, Spirogyra, and Navicula*. The majority of juveniles are bottom and marginal feeders; they are mostly piscivorous and eat fish fingerlings and fry, prawns, shrimp, insects, crustaceans, and infrequently plant stuff, such as leaves (Saigal 1982).

Table 2. Distribution of *Sperata seenghala*

Country Name	Distribution	Referances
Bangladesh	Choto Jamuna River.	Galib et al. (2013)
	Widespread in rivers, canals, khals, *beels*, lakes, ditches, and inundated fields.	Ahmed (1991)
India	Ganga, Yamuna, Brahmaputra, Krishna, Godavari, and Cauvery river systems.	Menon (1999)
Pakistan	Indus river system.	Menon (1999)
	North West Frontier Province, Punjab, Sindh and Kashmir	Mirza (2003)
China	Yunnan	Jayaram (2006)
Nepal	Gangaki, Bagmati, Karnali, Mahakali rivers and inundated rice fields	Shrestha et al. (2008)
Thailand	Reported from Mae Hong Son	Monkolprasit et al. (1997)

Habitat and ecology

It's a freshwater; brackish; demersal; potamodromous species (Riede 2004). This species is found in flooded fields, rivers, canals, ditches, beels, and other watery habitats (Talwar et al. 1991). According to Menon (1999), *S. seenghala* is a native species of Brahmaputra, Cauvery, Ganges, and Indus rivers. It is reported that *S. seenghala* is a native species of Adma River, Buxa River, Jayanti River (Ray et al. 2011), Choto Jamuna (Galib et al. 2013), Godavari (Talwar et al. 1991), Krishna River (Chandrashekhariah et al. 2000).

Food and feeding habits

Adult *S. seenghala* is a column feeder species (Sarkar 1959). It is also reported that *S. seenghala* are carnivorous (Rahman 2005). Some researchers

Nutritional profile

S. Seenghala contains protein, fat, vitamin A, calcium, iron. The relative estimates for the moisture, crude protein, crude fat, and ash content were 79.40 ± 0.09, 20.06 ± 1.13, 1.40 ± 0.79, and 0.90 ± 0.08% (Mohanty et al. 2012). Amounts of various elements are given in Table 3.

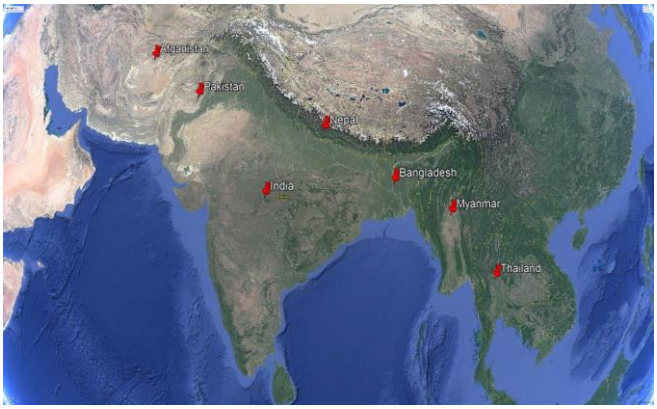

Figure 2: Distribution of *Sperata seenghala* in South Asian regions

Growth pattern

S. seenghala in the Indus River has shown positive allometric development for females and isometric growth for males and combined sexes (Jatoi et al. 2013). According to Sani et al. (2010), the Brahmaputra, Betwa, and Gomti rivers, respectively, show negative allometric growth for combined sex.

Reproductive biology

The urinogenital papilla, a tiny, robust protrusion located directly above the urino-genital pore that is absent in females, is an outward characteristic that distinguishes male *S. seenghala* from females (Chacko 1955). The gonadosomatic index (GSI) of *S. seenghala* increased from November, peaked in March–April, and declined thereafter, confirming a single annual spawning season during March–April with fecundity ranging from 21,500 to 31,000 eggs depending on body size and gonad weight (Ali 2015). Ali (2015) also observed that the fecundity of *S. seenghala* was positively correlated with total length, body weight, and gonad weight, with larger fish producing more eggs, and its spring spawning cycle contrasts with the monsoon breeding pattern observed in many Indian freshwater teleosts.

According to research by Hoque and Hossain (1993), Bhuiyan et al. (2006), Roy & Hossain (2006), and Musa & Bhuiyan (2007), *S. seenghala* fertility was positively and linearly correlated with total body weight, total length, and ovary weight. This suggests that larger fish with heavier ovaries produced more

Table 2. Distribution of *Sperata seenghala*

Name	Amount	Unit	Body Parts	Matter Type	Specimen	References
Protein	16.9	g/100g	muscle	wet	freshwater	Jabeen et al. (2016)
Calcium	64.100	mg/100g	muscle	wet	mixed	Mohanty et al. (2016)
Iron	1.300	mg/100g	muscle	wet	mixed	Mohanty et al. (2016)
Vitamin A	16.860	µg/100g	muscle	wet	mixed	Mohanty et al. (2016)
Zinc	0.230	mg/100g	Whole Parts	wet	mixed	Shaheen et al. (2013)
Total Omega-3 PUFA	0.098	g/100g	muscle	wet	mixed	Mohanty et al. (2015)

Form factor

According to Froese (2006), the form factor ($a_{3.0}$) is an arbitrary number that generally predicts the possible body shape of a teleost. The form factor is calculated using the equation $a_{3.0} = 10^{\log a - s(b-3)}$ (Froese 2006), in which *a* and *b* are the regression parameters of the LWRs and *s* is the slope of log *a vs. b*. The log *a vs. b* regression analysis was conducted with a mean slope (*s*) of -1.358. According to Table 4, the computed form factor ($a_{3.0}$) was to range from 0.0055 to 0.1227, which indicates a fusiform body shape.

Table 4: Form factor of *Sperata seenghala* from different waterbodies

Habitat locality	Form factors ($a_{3.0}$)	References
Indus River, Taunsa Barrage, Pakistan	0.0047	Muhammad et al. (2017)
Panchet Reservoir, India	0.0048	Sandhya et al. (2020)
Betwa and Gomti Rivers, India	0.0056	Sani et al. (2016)
Indus River, Sindh, Pakistan	0.0053	Jatoi et al. (2013)
Basantar River, India	0.0049	Sharma et al (2015)
Indus River, Sindh, Pakistan	0.0044	Jatoi et al. (2013)

eggs.

S. seenghala's mean relative fecundity was 19.74 eggs per gram of body weight, indicating a negative relationship between body size and egg production, with larger individuals producing less eggs per unit mass. *M. seenghala* and *Wallago attu* have shown similar patterns (Bhat et al. 1977).

Genetics

According to Srivastava et al. (1969), the Haploid/gametic (n) chromosome number is 25 and the Diploid/zygotic (2n) chromosome number is 50 – 50. It is also reported that *S. seenghala* has 27 Haploid/ gametic(n) chromosomes and 54-54 Diploid/ zygotic chromosomes (Sharma et al. 1986).

Conservation status

This species was assessed as Endangered (IUCN Bangladesh 2000); nevertheless, it is now listed as vulnerable in Bangladesh (IUCN Bangladesh 2015).

Threats

The whole demand of this fish species in domestic fish markets has been satisfied by catch fishing, and the aquaculture potential of *S. seenghala* has not been thoroughly investigated in the past (Gupta 2015). There are a number of reasons why this fish species is not aquacultured: It is challenging to artificially spawn brood fishes, and they are quickly agitated and sensitive to changes in water quality (Rahman et al. 2011). Natural populations of *S. seenghala* have recently declined significantly as a result of both natural and man-made disasters, the deterioration of the aquatic environment, and the loss of numerous Bangladeshi wet lands and water regions.

Impact of Climate and Environmental Change

Climate and environmental variations influence the ecology and population dynamics of *S. seenghala* in South Asian river systems, causing mostly negative but sometimes favorable effects. A species like *S. seenghala* that spawns in relation to monsoon and seasonal temperature cues, warmer water and altered thermal regimes can shift spawning timing, reduce egg/larval survival if optimum windows are missed, and increase disease susceptibility (Mohanty et al. 2010). More frequent extreme weather events (cyclones, heatwaves) can cause abrupt drops in dissolved oxygen, sudden salinity intrusion in coastal river reaches, and mass mortalities, risks that are elevated by climate change in Bangladesh and neighboring regions (Paul et al. 2024). Recent work has documented microplastic ingestion by *S. seenghala* in major Bangladesh rivers, indicating an additional sub-lethal stressor that may affect feeding, condition and long-term health, interacting negatively with climate and pollution pressures (Arafat et al. 2023). Overfishing reduces the population's resilience to environmental change. Hatchery and seed production systems are themselves vulnerable to small temperature/rainfall shifts, threatening restocking and aquaculture efforts aimed at supplementing wild stocks (Gupta 2015).

Conservation action

In Bangladesh, several investigations on ecology, biology and life history of this species have been carried out (Rahman et al. 2005).

Conservation recommendations

According to Acharya et al. (2019), basin-level management units for *S. seenghala* should forbid brood-stock mixing between basins and require genetic verification before restocking. A closed season from May to August, which corresponds with the species' monsoon-aligned spawning, minimum size limitations set at or above local L_m, and mesh-size regulations are also implemented to safeguard recruitment (Jabed et al. 2021). During the pre-monsoon/spawning season, priority breeding habitats, rocky or sandy substrates required for nesting, should be surveyed and shielded from dredging and sand mining (Sumon et al. 2023).

In connection with the Sustainable Development Goals (SDGs)

The conservation of *S. seenghala* is closely linked with the United Nations Sustainable Development Goals (SDGs), as its sustainable management contributes to multiple global priorities. As a nutrient-rich and protein-dense fish, it supports SDG 2 (Zero Hunger) and SDG 3 (Good Health and Well-Being) by enhancing food security and reducing malnutrition. Its high economic value and potential for aquaculture can generate employment opportunities, aligning with SDG 8 (Decent Work and Economic Growth), while responsible fishing practices and seed production address SDG 12 (Responsible Consumption and Production). Furthermore, protecting its habitats such as rivers, wetlands, and floodplains directly supports

SDG 14 (Life Below Water) and SDG 15 (Life on Land) by maintaining freshwater biodiversity and ecosystem resilience. Therefore, conserving *S. seenghala* not only safeguards a vulnerable fish species but also contributes significantly to sustainable development through ecological balance, improved livelihoods, and long-term food and nutritional security.

Conflict of interest

There are no competing interests that might influence the study.

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Author contributions

Humayon Ahmmed: Conceptualization, writing original draft. Mst. Meherun Nesa, Tasnim Akter Akhi, Chayanika Pondit, Nusrat Hossain Nushy, Md. Shohag Hossen, Sakariye Ahmed Hashi, Md. Ashabul Hoque: collected and analyzed the data and wrote the manuscript. Karim Gabol: reviewed and edited the manuscript.

References

Acharya AP, Pavan-Kumar A, Gireesh-Babu P, Joshi CG, Chaudhari & Krishna G (2019). Population genetics of Indian giant river-catfish, *Sperata seenghala* (Sykes, 1839) using microsatellite markers. Aquatic Living Resources, 32 (4).

Ahmed M (1991). A model to determine benefits obtainable from the management of riverine fisheries of Bangladesh. WorldFish.

ALI MR (2015). Pond Culture and Reproductive Performance of Seengharee, *Sperata Seenghala (Sykes)*. Doctoral dissertation, Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi, Pakistan.

Arafat ST, Tanoiri H, Yokota M, Nakano H, Arakawa H, Terahara T & Kobayashi T (2023). Microplastic pollution in the gastrointestinal tract of giant river catfish *Sperata seenghala* (Sykes, 1839) from the Meghna River, Bangladesh. Environmental Science and Pollution Research, 30(38), 89627-89637.

Bhatt VS, Dalal SG & Abidi SAH (1977). Fecundity of the freshwater catfishes *Mystus seenghala* (sykes), *Mystus cavasius* (Ham), *Wallagonia attu* (Bloch) and *Heteropneustes fossilis* (Bloch) from the plains of northern India. Hydrobiologia, 54, 219-224.

Bhuiyan AS, Islam K & Zaman T (2006). Fecundity and ovarian characteristics of *Puntius gonionotus* (Bloch/Bleeker) (Cyprinidae: Cypriniformes). Journal of Bio-Science, 14, 88-102.

Chacko PI (1955). Observations on the biology and ecology of the inland water fishes of Madras with special reference to their suitability for culture. Fisheries Station Reports and Year Book, Department of Fisheries, Madras.

Chacko PI, Job SV (1948). On the nutrition of the young stages of certain freshwater fishes of Madras.

Chandrashekhariah HN, Rahman MF & Raghavan SL (2000). Status of fish fauna in Karnataka. Endemic Fish Diversity of Western Ghats, 98-135.

Chandy M (1970). Fisheries of India. Fishes. National Book Trust, New Delhi, 109-128.

Chondar SL (1999). Biology of finfish and shellfish. SCSC Publishers, India, 281-293.

Daniels RR (2002). Freshwater fishes of peninsular India. Universities press.

Das D & Banik S (2021). New reports of the catfish *Sperata seenghala* (Sykes, 1839) from Gomati River of Tripura, India. Egyptian Journal of Aquatic Biology and Fisheries, 25(4), 201-209.

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

Galib SM (2008). A study on fish diversity and fishing gears of Chalan beel with reference to preservation of catches. Honors dissertation submitted to the Department of Fisheries, University of Rajshahi, Bangladesh, 172.

Galib SM, Naser SA, Mohsin ABM, Chaki N & Fahad MFH (2013). Fish diversity of the River Choto Jamuna, Bangladesh: Present status and conservation needs. International Journal of Biodiversity and Conservation, 5(6), 389-395.

Gupta S (2015). Review on *Sperata seenghala* (Sykes, 1839), a freshwater catfish of Indian

subcontinent. Journal of Aquaculture Research & Development, 6(290), 2.

Hoque MA & Hossain MA (1993). Sexual maturity and fecundity of the freshwater catfish *Mystus vittatus* (Bloch). Rajshahi University Journal of Zoology, 12, 9-13.

IUCN, International Union for Conservation of Nature, Bangladesh Country Office, Dhaka, Bangladesh, pp. xvi+360.

Jabed N, Hossain MA, Mian S, Kabir MA, Mazumder SK & Iqbal MM (2021). Some Aspects of Reproduction in Long Whiskered Catfish, *Sperata aor* (Hamilton 1822), from North-East Bangladesh. Aquaculture Studies, 21, 47-54. http://doi.org/10.4194/2618-6381-v21_2_01

Jabeen F & Chaudhry AS (2016). Nutritional composition of seven commercially important freshwater fish species and the use of cluster analysis as a tool for their classification. Journal of Animal and Plant Sciences, 26(1), 282-290.

Jatoi S, Baloch WA, Soomro AN & Gachal GS (2013). Length-weight relationship of the Silurid catfish *Sperata seenghala* Sykes 1839 (Bagridae) from Indus River, Sindh, Pakistan. Sindh University Research Journal (Science Series), 45, 661-664.

Jayaram KC (1977). Aid to the Identification of the Siluroid Fishes of India, Burma, Sri Lanka, Pakistan, and Bangladesh (Vol. 1). Director, Zoological Survey of India.

Jayaram KC (2006). Catfishes of India. Narendera Publishing House.

Kaur S, Tewari G, Singh P & Datta SN (2022). Morphometric characterization of giant river catfish, *Sperata seenghala* from river Sutlej, Punjab (India). Indian Journal of Ecology, 49(3), 864-868.

Kumari P, Pavan-Kumar A, Kumar G, Alam A, Parhi J, Gireesh-Babu P & Krishna G (2017). Genetic diversity and demographic history of the giant river catfish *Sperata seenghala* inferred from mitochondrial DNA markers. Mitochondrial DNA Part A, 28(6), 920-926.

Lipton AP (1983). Fish fauna of Tripura. Matsya, 9, 110-118.

Menon AGK (1999). Check list - fresh water fishes of India. Records of the Zoological Survey of India: Miscellaneous Publication, Occasional Paper, 175, 366 p.

Mirza MR (2003). Checklist of freshwater fishes of Pakistan. Pakistan Journal of Zoology Supplementary Series, 3, 1-30.

Misra KS (1976). Pisces. Delhi, Manager of Publications, 3, 351 p.

Mohanty B, Mahanty A, Ganguly S, Sankar TV, Chakraborty K, Rangasamy A, Paul B, Sarma D, Mathew S, Asha KK, Behera B, Aftabuddin Md, Debnath D, Vijayagopal P, Sridhar N, Akhtar MS, Sahi N, Mitra T & Banerjee S (2014). Amino acid compositions of 27 food fishes and their importance in clinical nutrition. Journal of Amino Acids, 2014(269797), 1-7.

Mohanty B, Mohanty S, Sahoo J, & Sharma A (2010). Climate change: impacts on fisheries and aquaculture. Climate change and variability, 119, 978-53.

Mohanty BP & Karunakaran D (2015). Nutritional composition of food fishes from India. Nutrient database: Nutrifishin, Cifri - India.

Mohanty BP, Paria P, Das D, Ganguly S, Mitra P, Verma A & Sharma AP (2012). Nutrient profile of giant river-catfish *Sperata seenghala* (Sykes). National Academy Science Letters, 35(3), 155-161.

Mohanty BP, Sankar TV, Ganguly S, Mahanty A, Anandan R, Chakraborty K & Sridhar N (2016). Micronutrient composition of 35 food fishes from India and their significance in human nutrition. Biological trace element research, 174(2), 448-458.

Monkolprasit S, Sontirat S, Vimollohakarn S & Songsirikul T (1997). Checklist of Fishes in Thailand. Office of Environmental Policy and Planning, Bangkok, Thailand, 353 p.

Muhammad H, Iqbal Z, Bashir Q & Hanir MA (2017). Length-weight relationship and condition factor of catfish species from Indus River, Pakistan. Punjab University Journal of Zoology, 32(1), 35-38.

Musa ASM & Bhuiyan AS (2007). Fecundity of *Mystus bleekri* (Day 1877) from the river Padma near Rajshahi city. Turkish Journal of Fisheries and Aquatic Sciences, 7, 161-162.

Paul P, Rahi MF, Saiquit IH, Sarower MG, Rouf MA, Parvez MS, ... & Rahman SM (2024). Climate Change Effects on the Small-scale Fisheries in the Northern Part of Bangladesh and

Associated Adaptation Measures. Khulna University Studies, 33-46.

Rahman AKA (1989). Freshwater fishes of Bangladesh. Zoological Society of Bangladesh, University of Dhaka, Dhaka, Bangladesh, 364 pp.

Rahman AKA (2005). Freshwater fishes of Bangladesh. Zoological Society of Bangladesh, Dhaka, Bangladesh.

Rahman MA, Arshad A & Amin SN (2011). Evaluation of growth and production of the threatened giant river catfish, *Sperata seenghala* (Sykes) in polyculture with indigenous major carps. African Journal of Biotechnology, *10*(15), 2999-3008.

Rahman MA, Arshad A, Yusoff FM, Amin SMN, Marimuthu K & Ara R (2014). Development of captive breeding and seed production techniques for giant river catfish *Sperata seenghala*. North American Journal of Aquaculture, 76(2), 97-103.

Rahman MA, Uddin KMA, & Zaher M (2005). Development of artificial breeding techniques for long-whiskered catfish, *Sperata aor* and giant river catfish, *Sperata seenghala* of Bangladesh.

Ray D & Mishra R (2011). Freshwater ecosystem services and biodiversity values at Buxa, West Bengal, 123-189 p.

Riede K (2004). Global register of migratory species - from global to regional scales. Final Report of the R&D-Projekt 808 05 081. Federal Agency for Nature Conservation, Bonn, Germany, 329 p.

Roy PK & Hossain MA (2006). The fecundity and sex ratio of *Mystus cavasius* (Hamilton) (Cypriniformes: Bagriae), Journal of Life & Earth Sciences, 4, 65-66.

Saigal BN (1982). Biology and fishery of *Mystus (Osteobagrus) aor* (Hamilton) *and Mystus (Osteobagrus) seenghala* (Sykes) with a review of the taxonomic status of the genus *Mystus scopoli* (Doctoral dissertation, Ph. D. Thesis, Calcutta University, Calcutta, India.

Saini A, Dua A, Mohindra V (2008). Comparative morphometrics of two populations of giant river catfish (*Mystus seenghala*) from the Indus river system. Integrative Zoology, 3, 219-226.

Sandhya KM, Karnatak G, Sarkar UK, Kumari S, Mishal P, Kumar V & Naskar B (2020). Length-weight relationships of eighteen species of freshwater fishes from Panchet Reservoir in Ganges basin, Jharkhand, India. Indian Journal of Fisheries, 67(1), 47-55.

Sani R, Gupta BK, Sarkar UK, Pandey A, Dubey VK & Lakra WS (2016). Length-weight relationships of 14 Indian freshwater fish species from the Betwa (Yamuna River tributary) and Gomti (Ganga River tributary) rivers. Journal of Applied Ichthyology, 26, 456-459.

Sarkar HL (1959). Studies on the morpho-histology of the digestive system in relation to the food and feeding habits in a siluroid fish *Mystus* (Osteobagrus) *seenghala* (Sykes). Proceedings of the Zoological Society, Calcutta, 12, 97-109.

Shaheen N, Rahim ATMA, Mohiduzzaman M, Banu CP, Bari ML, Tukun AB, Mannan MA, Bhattacharjee L & Stadlmayr B (2013). Food Composition Table For Bangladesh. First Edition. Janata Bank Ltd, Bangladesh, 226 p.

Sharma NK, Mir JI, Singh R, Akhtar MS & Pandey NN, 2015. Length-weight relationships for eight fish species from the Ravi River, north-western India. J. Appl. Ichthyol. 31:1146-1147.

Sharma OP & Tripathi NK (1986). Karyotypic diversity in genus *Mystus* (Bagridae: Pisces). Cytologia, 51(1),1-9.

Shrestha J (1994). Fishes, fishing implements and methods of Nepal.

Shrestha TK (2008). Ichthyology of Nepal: a study of fishes of the Himalayan waters.

Srivastava MDL & DAS B (1969). Somatic chromosomes of teleostean fish. Journal of Heredity, 60(2), 57-58.

Sumon MAA, Kabir MA, Kari ZA, Iqbal MM, Wei LS, Gabr MH & Molla MHR (2023). Effects of environmental enrichments on ovarian development of Buitta Catfish (Sperata sp.: Family Bagridae) in captivity. Egyptian Journal of Aquatic Research, 49(1), 81-86.

Talwar PK & Jhingran AG (1991). Inland fishes of India and adjacent countries. Volume 2. A.A. Balkema, Rotterdam, i-xxii + 543-1158, 1 p.

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