

A Study on Fish Diversity of Meghalaya

Bashemphang Snaitang¹, Shiparna Saxena¹, Hameka Papang² and M.K. Yadav^{1*}

¹Department of Aquaculture, School of Agriculture,

Sanjeev Agrawal Global Educational (SAGE) University Bhopal (Madhya Pradesh), India.

²Professor, Superintendent of Fisheries, Mawkyrwat District, Shillong (Meghalaya), India.

(Corresponding author: M.K. Yadav*)

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ABSTRACT: An attempted has been made to know fish biodiversity of Meghalaya. In the current study it was concluded that that the total of one hundred two (102) species were found in Meghalaya and many fish species were belong to family Cyprinidae. The data collection was done by using different types of nets (cast nets, gill nets, drag nets and triangular scoop nets) and help of local fish farmers of Meghalaya. It is concluded that the Order Cypriniformes has the maximum number of species in the Meghalaya River that entails of 53 species followed by Siluriformes that entail of 34 species. Perciformes has the lowest number of species that it consists of only one species. The research deals with biodiversity of fish fauna from different rivers of Meghalaya. In the future, this study will be of great assistance in developing a strategy for the conservation of Meghalaya's fish biodiversity.

Keywords: Diversity, Abundance, Vulnerable, Endangered, Least Concern.

INTRODUCTION

Fish are the most visible and well-known aquatic animals that lives in water, including both fresh water and marine ecosystems. They are an important source of food for humans as well as many other organisms (Arunkumar, 2018). Fish Diversity means or refers to the variety of fish species that are present in the particular Habitat or ecosystem. They are essential by providing important ecological, economic and cultural services. The fish diversity is form by various factors including habitat, water quality, Climate, ecological niche, etc. Despite the importance of the diversity of fish, they are threatened by various harmful factors, including overfishing population, deforestation, waste generation, energy consumption, habitat destruction and the Change of the Climate (Kar *et al.*, 2006). Therefore program and conservation process are responsible to protect and sustain fish Diversity, to ensure the growth, reproduction, and survival which is the essential of the overall health and Functioning of aquatic ecosystem and Human well being Aquatic major components of fish are water, sunlight, nutrient cycling, aquatic plant, planktons, bacteria and other organisms. They are essential for the growth, survival and reproduction of fish according to Borahand Des (2020); Britz *et al.* (2018); Dey *et al.* (2015). The southern rivers shaped deep gorges laterally the southern edge of the plateau as a consequence of vast destruction by these rivers, which is recognized to the up liftmen of the plateau (Romero and Green 2005; Sen, 2003; Imsong *et al.*, 2016). The rich fish diversity in Meghalaya is demonstrated by the miscellaneous climatic zones, from subtropical to sub alpinas, and the Meghalaya comprises both Himalayan

and Indo-Burma hot spot zones according to Vaiphei and Gupta (2013).

MATERIAL AND METHOD

Study area: The study was done during 9th July, 2022 to 14th January, 2023. The survey was conducted for one year to enlist the diversity of fish species. The study area (Ranikor river) lies between latitude 25.23553"north and longitude 91.22234" East, (Umpung river) lies between latitude -25.22384" north and longitude -91.35534 east (Dawki river) lies between latitude -25.23758" north and longitude - 91.99082" east.

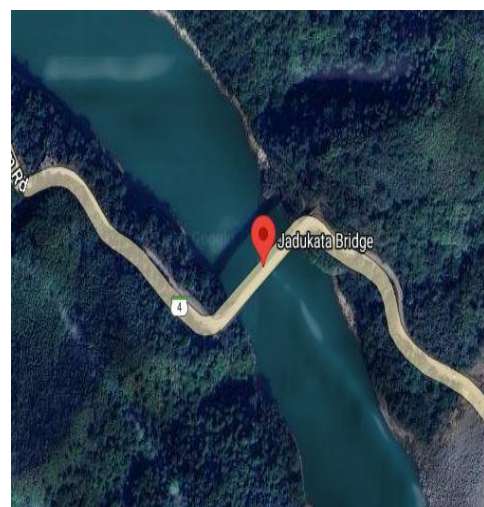


Fig. 1. Ranikor river.



Fig. 2. Umpung river.



Fig. 3. Dawki river.

Sampling and Data Collection: A range of methods, such as gill nets, cast nets, scoop nets, hook & lines, seining, traps, are used to sample fish at each site. These methods vary in terms of the size of fish they capture and the type of habitat they are best suited to.

RESULT AND DISCUSSION

The fish fauna is an important aspect of fishery potential of a water body. In the present study the Order "Cypriniformes" was dominant with 53 Species and the Family "Cyprinidae" was found abundance with 38 Species.

Table 1: Calculating the order of Species during the research period.

Order	Collected	Total
<i>Cypriniformes</i>	53	53
<i>Siluriformes</i>	24	24
<i>Perciformes</i>	11	11
<i>Synbranchiformes</i>	6	6
<i>Cyprinodontiformes</i>	2	2
<i>Osteoglossiformes</i>	2	2
<i>Anguilliformes</i>	1	1
<i>Beloniformes</i>	1	1
<i>Tetradontiformes</i>	1	1
<i>Clupleiformes</i>	1	1
Total	102	102

In the present study the fish diversity of Meghalaya, there I was found 10 order fishes and the most abundance order was found there "Cypriniformes" with 53 fish species.

Table 2: calculating the Family of Species during the research period.

Family	Collected	Total
Cyprinidae	38	38
Bagridae	8	8
Cobitidae	7	7
Balitoridae	6	6
Sisoridae	5	5
Channidae	5	5
Siluridae	4	4
Psilorhynchidae	3	3
Synbranchidae	3	3
Mastacembelidae	2	2
Erethistidae	2	2
Notopteridae	2	2
Claridae	2	2
Belontiidae	2	2
Aplocheilidae	1	1
Poeciliidae	1	1
Chandidae	1	1
Anabantidae	1	1
Tetradontidae	1	1
Chacidae	1	1
Nandidae	1	1
Anguillidae	1	1
Beloridae	1	1
Gobidae	1	1
Clupleidae	1	1
Heteropneustidae	1	1
Olyridae	1	1
Family-27	Total no. 102	102

In this trail I was found that there were 27 fish family and the most abundance fish family was found "Cyprinidae" with 38 fish species.

The present study suggests that Meghalaya and its river have a rich in fish diversity. The availability of a good numbers related to their suitable ecology of the water body which provides breeding ground for fish.

List of Fish Species in Meghalaya with their Economic Importance and IUCN Status during 2022-2023.

Order	Family	Species	Economic Importance	IUCN status
Cypriniformes	Cyprinidae	<i>Salmophasia bacaila</i>	Food	LC
		<i>Tor mosal</i>	Food	EN
		<i>Labeo rohita</i>	Food	NT
		<i>Cirrhinus reba</i>	Food	VU
		<i>Poropontius clavatus</i>	Food	EN
		<i>Barilius vagra</i>	Food	VU
		<i>Garra nasuta</i>	Food	LC
		<i>Crossochilus latius</i>	Food	LC
		<i>Barius shacra</i>	Food	NT
		<i>Labeo catla</i>	Food	VU
		<i>Tor tor</i>	Food	EN
		<i>Tor putitora</i>	Food	EN
		<i>Bangana elangana</i>	Food	LC
		<i>Chagunius chagunio</i>	Food	LC
		<i>Cirrhinus mrigala</i>	Food	VU
		<i>Chela cachius</i>	Food	LC
		<i>Cyprinus carpio</i>	Food	VU
		<i>Danio dangila</i>	Food	LC
		<i>Labeo bata</i>	Food	LC
		<i>Barilius bendelisis</i>	Food	NT
		<i>Garra gotyla</i>	Food	VU
		<i>Garra kempi</i>	Food	VU
		<i>Puntius sarana</i>	Food	VU
		<i>Puntius terio</i>	Food	VU
		<i>Puntius shalynius</i>	Food	VU
		<i>Puntius sophore</i>	Food	NT
		<i>Puntius chola</i>	Food	VU
		<i>Puntius conchoniuis</i>	Food	VU
		<i>Garra lamta</i>	Food	VU
		<i>Raiamas bola</i>	Food	VU
		<i>Raiamas guttaus</i>	Food	EN
		<i>Salmostoma phulo</i>	Food	NE
		<i>Devario aequipinnatus</i>	Food	LC
		<i>Lepidocephalichthys guntea</i>	Food	LC
		<i>Lepidocephalichthys annandalei</i>	Food	LC
		<i>Ctenopharyngodon Idella</i>	Food	NE
		<i>Hypophthalmichthys molitrix</i>	Food	NE
				<i>Poropontius clavatus</i>
	Balitoridae	<i>Schistura beavani</i>	Food	LC
		<i>Schistura prabadi</i>	Food	EN
		<i>Schistura multifasciatus</i>	Food	VU
		<i>Schistura denisoni</i>	Food	LC
		<i>Aborichthys garoensis</i>	Food	EN
	Cobitidae	<i>Lepidocephalichthys scaudofuractus</i>	Food	NE
		<i>Lepidocephalichthys guntea</i>	Food	LC
		<i>Lepidocephalichthys sannadalei</i>	Food	LC
		<i>Botia rostrata</i>	Food	VU
		<i>Botia lohachata</i>	Food	NE
		<i>Canthophrys gongata</i>	Food	NT
		<i>Neoeucirrhichthys maydelli</i>	Food	LC
	Psilorhynchidae	<i>Psilorhynchus balitora</i>	Food	NE
		<i>Psilorhynchus gracilis</i>	Food	EN
		<i>Psilorhynchus ssucatio</i>	Food	EN
Siluriformes	Bagridae	<i>Aorichthys seenghala</i>	Food	NE
		<i>Baasio batasio</i>	Food	NE
		<i>Mystus bleekeri</i>	Food	VU
		<i>Mystus cavasius</i>	Food	NT

		<i>Mystus montanus</i>	Food	VU
		<i>Mystus cavasius</i>	Food	NT
		<i>Mystus tengara</i>	Food	NE
		<i>Mystus vittatus</i>	Food	VU
		<i>Neotropius atherinoides</i>	Food	NE
		<i>Spereta aor</i>	Food	LC
	Sisoridae	<i>Gagata cenia</i>	Food	LC
		<i>Glyptothorax striatus</i>	Food	NT
		<i>Glyptothorax telchitta</i>	Food	NT
		<i>Glyptothorax ventrolineatus</i>	Food	NE
		<i>Bagarius yarelli</i>	Food	NT
	Siluridae	<i>Ompok bimaculatus</i>	Food	EN
		<i>Ompok pabo</i>	Food	NT
		<i>Wallago attu</i>	Food	NT
	Clariidae	<i>Clarias magur</i>	Food	LC
		<i>Clarias gariepinus</i>	Food	LC
	Chacidae	<i>Chaca chaca</i>	Food	EN
	Olyridae	<i>Olyra longicaudata</i>	Food	LC
	Heteropneustidae	<i>Heteropneutes fossilis</i>	Food	VU
	Erethistidae	<i>Conta conta</i>	Food	NE
		<i>Erethister shara</i>	Food	NE
Perciformes	Channidae	<i>Channa gachua</i>	Food	LC
		<i>Channa marulius</i>	Food	NE
		<i>Channa punctatus</i>	Food	NT
		<i>Channa orientalis</i>	Food	NE
		<i>Channa stewartia</i>	Food	LC
	Belontiidae	<i>Pollyacanthus fasciatus</i>	Food	NT
		<i>Pollyacanthus lalius</i>	Food	LC
	Gobiidae	<i>Glossobius giuris</i>	Food	NT
	Anabantidae	<i>Anabastes tudineus</i>	Food	VU
	Masacembelidae	<i>Macrogathus aral</i>	Food	NT
	Chandidae	<i>Parambassis baculis</i>	Food	LC
Synbranchiformes	Mastacembelidae	<i>Macrogathus cuchia</i>	Food	NT
		<i>Macrogathus pancalus</i>	Food	LC
		<i>Mastacembelu sarmatus</i>	Food	LC
	Synbranchidae	<i>Momopterus cuchia</i>	Food	NT
		<i>Monopteros albus</i>	Food	LC
cyprindontiformes	Aplocheilidae	<i>Aplocheilus panchax</i>	Food	VU
	Poeciliidae	<i>Poecilia reticulata</i>	Food	NE
Osteoglossiformes	Notopteridae	<i>Chitala chitala</i>	Food	EN
		<i>Notopterus notopterus</i>	Food	NT
Anguilliformes	Anguillidae	<i>Anguilla bangalensis</i>	Food	EN
Beloniformes	Belonidae	<i>Xenentodon cancila</i>	Food	NT
Tetradontiformes	Tetradontidae	<i>Tetratodon cutcutia</i>	Food	NT
Clupeiformes	Clupeidae	<i>Hilsa hilsa</i>	Food	VU

LC-Least Concern; NT-Near Threatened; VU-Vulnerable; NE-Not Evaluated; EN Endangered.

In the present study we found that there were so many fish species found in concern of their availability like LC-Least Concern, NT-Near Threatened, VU-Vulnerable, NE-Not Evaluated, and EN Endangered. In this study we found that least concern (LC) fish's family was found 27, Near Threatened (NT) 15, Vulnerable (VU) 20, Not Evaluated (NE) 14 and Endangered 21 fish's families found in Meghalaya.

DISCUSSION

If we discussed about water quality parameters of present study, there was found all water quality parameters in suitable range. The physicochemical and geological conditions happening in the Mountain Rivers impact the physiology and biology of the fish fauna (Khanna and Singh 2003). The present study showed that the maximum fish diversity is present in Meghalaya, the present study was strongly supported by

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Ramanujam *et al.* (2010); Rapsang and Joshi (2012). Most obvious reasons of biodiversity loss have been habitat loss, over-exploitation, and introduction of invasive species. Despite the discovery of several new species to date, the rate of increase of pressure on this fauna is high that extinction may be expected even before discovery. The main riverine system of the eastern and central part of Meghalaya plateau that movement near the north Umiam, Umkhri and Digaru (Mahapatra *et al.*, 2003); Nath *et al.* (2016). These results will sustenance to take up more studies on diversity of fish fauna in Meghalaya.

CONCLUSIONS

Fish diversity plays a crucial role in nutrient cycling food chain and food web, or stable the ecosystem, Fish species provide benefits in the economy, supporting various trade such as aquariums, and are significant for

cultural and spiritual in many communities Aquatic life is also impacted by various activities including Human activities, urbanisation, Industrialisation, waste water discharge pollution, overfishing, climate change, habitat destruction To prevent and conserve the aquatic life in the ecosystem, agent and research should and must conduct a situation analysis and problem identification process by sharing knowledge to fish farmers stakeholders and local communities so that they can improve to increase productivity, sustainability, valuing their traditional knowledge in the aquaculture sectors.

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Conflict of Interest. None.

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