Fish Diversity Of Sille River, East Siang, Arunachal Pradesh, India

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Abstract
Arunachal Pradesh situated in the north-eastern region of India, is endowed with rich in fishery resources. A Short survey was undertaken from April 2017 to February 2018 on fish biodiversity of Sille River, East Siang district, Arunachal Pradesh. Sille River is one of the major river of Sille-Oyan Circle of East Siang which originated from Miglung and culminate at mighty Brahamaputra river. The sampling of fish was done from two sites of river using cast net, gill net and with the available local fishing gear and technique. A total of 21 species of fishes belong to 11 families were identified. Cypriniformes dominates with 8 species followed by Siluriformes with 7 families.

Keywords: Fish diversity, Sille River, ichthyodiversity, East Siang, Arunachal Pradesh, Northeast India

Introduction

The fish are invariably one of the most important cold-blooded animals of water bodies. Fish constitutes almost half of the total number of vertebrates in the world. These organisms are important food resource for human being, also act as good indicators of the ecological health of the waters they inhabit. The Northeastern region of India is one of the hot spots of freshwater fish biodiversity in the world (Kottelat and Whitten, 1996). However, the rich biodiversity of the freshwater has been rapidly dwindling because of increasing anthropogenic activities.

Arunachal Pradesh is located between 26.28°N and 29.30°N latitude and 91.20°E and 97.30° E longitude and has 83,743square km which is about 2.6% of India's land and are the largest state among the North Eastern states of the country. The state is encompassed within the Himalaya biodiversity hotspot supported with diverse habitats and wide topographical variation with considerable faunal endemicity. The fishery resources of these waterbodies had not been completely explored because of their location in unapproachable mountainous terrain with dense forest cover.

The scientific studies on the systematics of Indian freshwater fish fauna started in early 19th century with Hamilton (1822) describing a total of about 1400 species from river Ganges and its tributaries. Regarding Arunachal Pradesh Nath & Dey (2000) reported the availability of 131 species of fishes. While compiling the checklist of ichthyofauna of Arunachal Pradesh, Bagra et al. (2009) reported a total of about 213 fish species from water bodies of the state. Several studies were carried out in diverse water bodies of the state from remote past to till date. However, there is hardly any mention of systematic explorations and ichthyofaunal documentation from the river sille except few scanty works like 'Range extension of *Conta Pectinata* Ng, 2005 (Teleostei: Sisoridae) in upper Brahmaputra River drainage in Arunachal Pradesh' by Tamang et al (2012) and 'Additional record of *Batasio merianiensis* (Chaudhuri 1913), A Catfish (Teleostei:Bagridae) in upper Brahmaputra river drainage in Arunachal Pradesh'. Therefore, this study is an attempt to explore the ichthyofauna diversity of this river to generate primary data which may strengthen the state fish data base further for future research on the subject.

Materials and Methods

The area of the present study is the East Siang District of Arunachal Pradesh with its headquarter at Pasighat. It is situated between longitude 94°42'E to 95°35'E and latitude 27°43'N to 29°20'N. The district has an area of 4,687 sq.km. The Sille River is one of the major river systems of Sille-Oyan circle of East Siang district of Arunachal Pradesh. From its point of origin in Miglung of East Siang district of Arunachal Pradesh and river finally merges with the mighty Brahmaputra in Assam. The people of Sille-Oyan circle depends on Sille River for its vital resources like fisheries, irrigation, construction materials etc.

The fish has been collected in the month of September 2019 to March 2020 from Sille river from two different sites, site I (27°52′16″ N and 95°18′43″E) and site II ((27°54′48″ N and 95°16′45″E) using cast net, gill net and with the available local fishing gear and technique. The collected specimens were immediately transfer in 10% formalin in a large container that allowed proper spreading of their fins as per the protocol of Jayaram (1999).Identification of fishes were carried out by following the standard procedures of Talwar and Jhingran (1991) , Nath and Dey (2000) and Vishwanath et al (2007). The evaluation of the conservation status of specimens were also examined (IUCN, 2020).

Result:

From the preliminary study a total of 21 species has been recorded from Sille river which belong to 11 families (Tab.1). The study revealed that among the them, 8 fishes were found belonging the order Cypriniformes accounting a percentage of 38% (Figure 1), 7 fishes were found belonging the order Siluriformes accounting 33% share which is followed by 3 fishes of order Perciformes accounting 14%.These are further followed by 2 fishes of order Synbranchiformes accounting for 10% share and 1 fish of order Ostariophysi accounting for 5%. Among the 21 species

recorded, 5 fishes belong to family Cyprinidae (Tab.2), 3 family each of family Bagridae & Danionidae, 2 fishes each of family Amblycipitidae & Mastacembelidae and 1 fish of Channidae, Clariidae, Nandidae, Notopteridae & Siluridae family were found. As per IUCN(2020), out of 21 species observed 15 species is listed under Least Concerned (LC) with 71% followed by 4 species were listed under Not Evaluated(NE) with 19% and followed by 1 species each listed under Endangered (EN) and Near Threatened (NT) with 5% share each.

Table.1 showing the IUCN data

Sl.No	Order	Family	Species	Economic value	Status (IUCN)
1	Cypriniformes	Danionidae	*Barilius bendelis*	F;O	LC
2	Cypriniformes	Danionidae	*Barilius vagra*	F;O	LC
3	Cypriniformes	Danionidae	*Devario devario*	F;O	LC
4	Cypriniformes	Cyprinidae	*Pethia ticto*	F;O	LC
5	Cypriniformes	Cyprinidae	*Puntius chola*	F;O	LC
6	Cypriniformes	Cyprinidae	*Puntius sophore*	F;O	LC
7	Cypriniformes	Cyprinidae	*Systomus sarana*	F	LC
8	Cypriniformes	Cyprinidae	*Puntius sarana*	F;O	LC
9	Ostariophysi	Notopteridae	*Notopterus notopterus*	F;O	LC
10	Perciformes	Channidae	*Channa punctatus*	F	LC
11	Perciformes	Nandidae	*Nandus nandus*	F;O	LC
12	Perciformes	Osphronemidae	*Trichogaster fasciata*	F;O	LC
13	Siluriformes	Amblycipitidae	*Amblyceps arunachalensis*	F	EN
14	Siluriformes	Bagridae	*Mystus dibruggrensis*	F	NE
15	Siluriformes	Bagridae	*Mystus prabini*	F;O	NE
16	Siluriformes	Clariidae	*Clarius magur*	F	NE
17	Siluriformes	Bagridae	*Mystus vittatus*	F;O	LC
18	Siluriformes	Siluridae	*Ompok pabo*	F	NT
19	Siluriformes	Amblycipitidae	*Amblyceps mangois*	F	LC
20	Synbranchiformes	Mastacembelidae	*Mastacembelus armatus*	F	NE
21	Synbranchiformes	Mastacembelidae	*Macrognathus aral*	F	LC

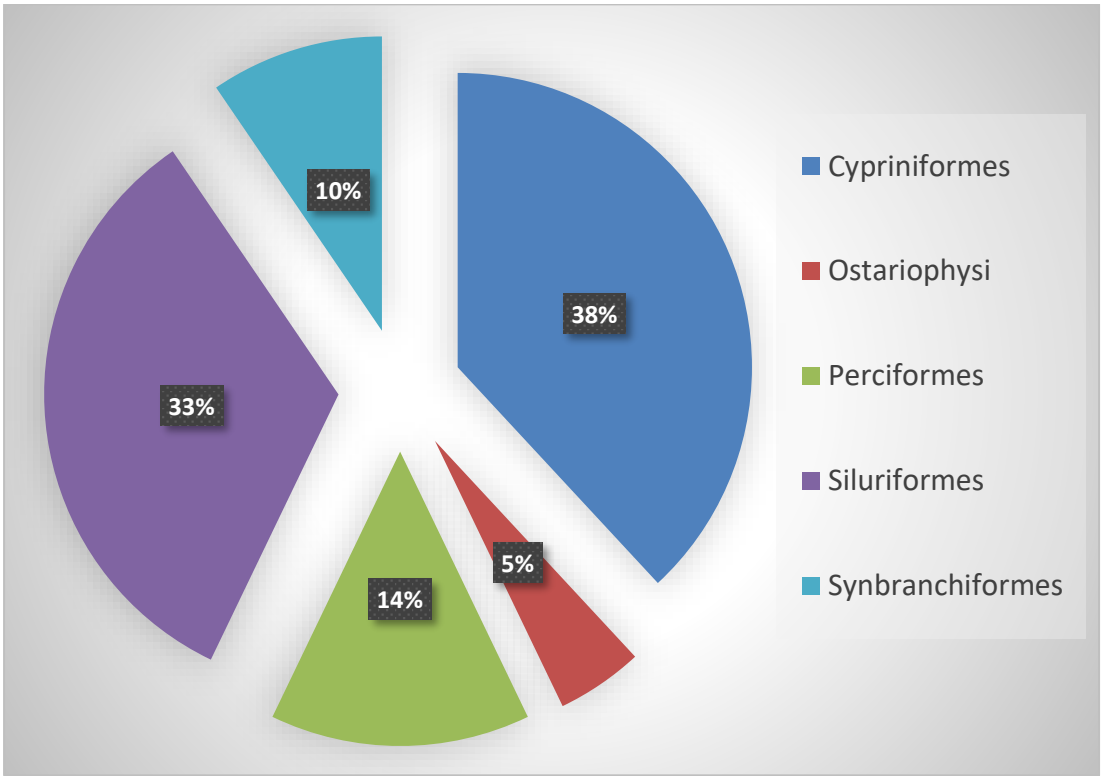

Fig.1. Pie Chart showing Order wise distribution of Fish in Sille River

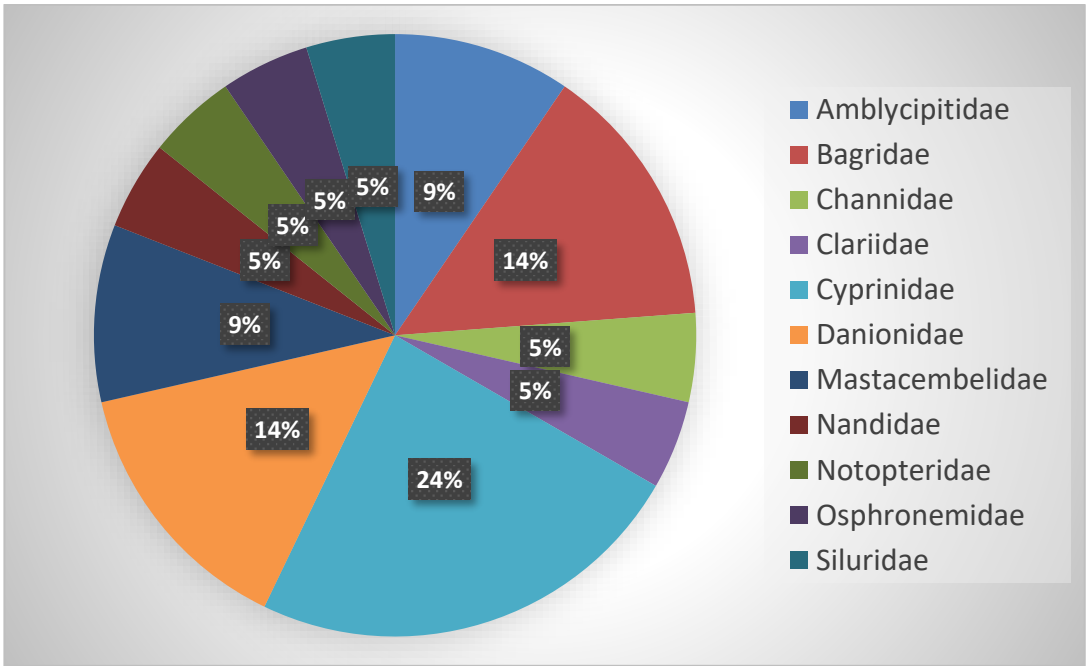

Fig.2. Pie Chart showing Family wise distribution of Fish in Sille River

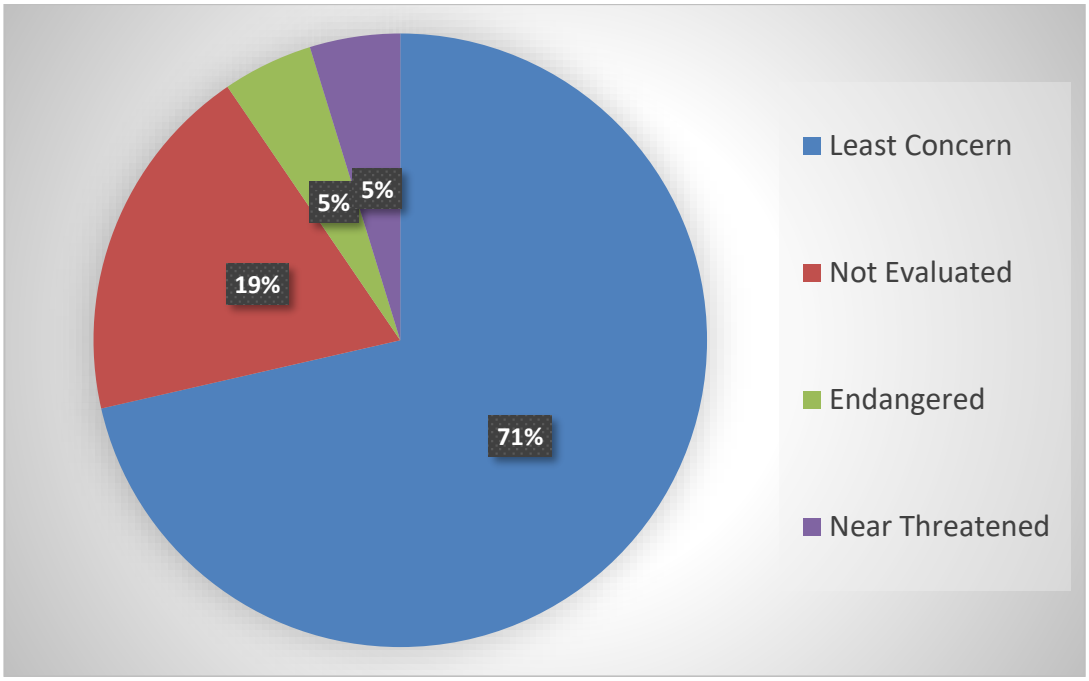

Fig.3. Pie Chart showing Economic Status of Fish

Conclusion: The diversity of organisms relies heavily on the overall health of an ecosystem, which in turn influences the composition and dynamics of ichthyofauna. Consequently, environmental conditions, biotic factors, and their interactions play a vital role in determining the richness and variation of fish communities in any aquatic system. A comprehensive assessment of these ecosystem components can offer valuable insights for sustainable resource utilization, conservation efforts, and the formulation of effective riverine fishery management strategies for the benefit of society. This short study for generating primary data which may strengthen the state fish data base further for future research on the subject.

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