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Fish Diversity of River Pachin, Eastern Himalaya

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Abstract

A survey of fish diversity of river Pachin of Arunachal Pradesh was done from July2014 to June 2015.45 numbers of species belonging to 34 genera and 14 family were recorded. Cyprinidae family was represented by maximum number of species followed by Balitoridae. Endangered fish like Tor putitora was abundant where as Amblyceps arunachalensis was rare during the catch.

Keywords: Pachin, Fish, Cyprinidae.

Introduction

Eastern Himalaya a major biodiversity hot spot where Arunachal Pradesh with 83,743 square km is a part. This is endemic to rich species diversity. The Brahmaputra river is the major river basin of Eastern Himalaya. River Pachin is one of the tributary of Dikrong river which ultimately falls into the river Brahmaputra. The length of the Pachin river ($26^0$50' N and $93^0$25' E) is around 28 km. It flows through the main capital city of Itanagar-Naharlagun. It is a perennial river with small boulder all across the river. The current flow is moderate. The river water is highly turbid during rainy season due to siltation. Due to urbanization of twin city of Itanagar and Naharlagun, anthropogenic pressure is created on every day on the water quality of river which ultimately affects the biota in it. The river Dikrong is home to many fish species[1-2]. While working on Senki stream workers have reported 40 species from the river Pachin[3]. Pachin is the main stream moving across the capital city of Itanagar before it merges with the river Dikrong. The river Pachin being the tributary of Dikrong, the movement of fish from Dikrong to Pachin might be affected by the anthropogenic habitat alteration that is why an attempt has been made to study the fish diversity of Pachin river. This work was carried during August 2014 –July 2015 for a period of one year with the funding support of UGC, NERO, Guwahati.

Materials and Methods

Study area selection was mainly based upon the urban area. This is because the river coming from the hills and forest area reaches to dikrong river before passing through the twin city of Itanagar-Naharlagun. Before studying the fish diversity, it is pertinent to know the pHysico-chemical parameters of river water. It affects the distribution, richness and abundance of species. Water sample were collected from the river site. The dissolved oxygen was fixed on the spot and was analysed in the laboratory. Where as pH and temperature were recorded immediately. Analysis of total alkalinity of water samples were done in the laboratory. All these analysis were done as per standard methods[4]. Fishes were collected with the help of nets like dragnet, cast net, gillnet and scoop nets were used during fishing. Fishes were also collected from the local fisherman who were netting on the spot at that time. There was no fixed period for the fish sample collection. It was done during early morning, afternoon and night also. Shallow fishing was also done. Colour, spots and other morpHological characters were noted on the spot and then specimens were preserved in 10% formaline. Species identification were done with the help of available literature[5].

Results and Discussion

PHysico-chemical parameters like pH, Temperature, Dissolved oxygen and Total alkalinity were done. Results of the all the six sites were pooled and expressed in range (Table-1). There were seasonal variation between rainy and winter. This may be due to the the increase in turbidity during rainy season. During winter the water was transparent.

Table-1
PHysico-chemical parameters of river Pachin

Parameters	Range
Temperature (^{0} C)	18-26
pH	7.1-7.3
Dissolved Oxygen (mg/l)	8.2-9.5
Total Alkalinity(mg/l)	45.3-63.4

Fishes collected from the river Pachin throughout the year is kept in the department museum. 45 species of 34 genera belonging to 14 family were recorded and the results is presented in Table-2. Cyprinidae represents the dominant family in terms of species richness with 20 species followed by

balitoridae which represents 6 species (Table-3). Nath et al. (2000) also reported 38 species from the same river. Debashree Dam[6] reported 30 species from cyprinidae family with 15 are common in my study. *Labeo pangusia* was not reported by any of the worker. During the fishing it was observed that the size of the fish was less. No species were more than 200gm.Since there is no barrier between river Dikrong and Pachin there is migration of fish. Hence there is more common species in both Dikrong and Pachin[2]. This may be due to the different netting methods. While studying on the species abundance and evenness, the results was alarming. *Barilius barila* was always a dominant species in surface netting followed by *Cyprinion semiplotum*. However *Barilius barila* was also not reported either. Where as bottom fishing indicates a higher index for *Schistura devdevi*. During winter fishing *Tor puttitora* and *Cyprinion semiplotum* which is threatened species had the higher index. Presence of vulnerable species like *Botia rostrata* is a clear indication of species richness of the lotic system. The greatest diversity of Shistura genera was observed by the author is related to unrealistic fishing operated by locals which was collected from them. On a given day out of 641 species captured 311 number of species was represented by *Barilius barila* followed by 164 *Schistura devdevi*. On another occasion out of 121 fish captured 66 species was represented *Cyprinion semiplotum* followed by 27 species of *Tor puttitora*.

Some species like *Chaca chaca* and *Aborichthys kempi* were rare. Their abundance index was lowest among the fishes. Species like *Garra gotyla* and *Barilius barila* were present throughout the year. There is a need to document regularly to have a clear database of Dikrong river and its adjoining stream like Senki and Pachin in particular. Catching of fish of small size and lack of mesh size regulation is the main reason of less growth of the fish. More over it was observed that fishing during breeding season is a common among the local resident. There is no any fishing regulation operated to prevent such occurring.

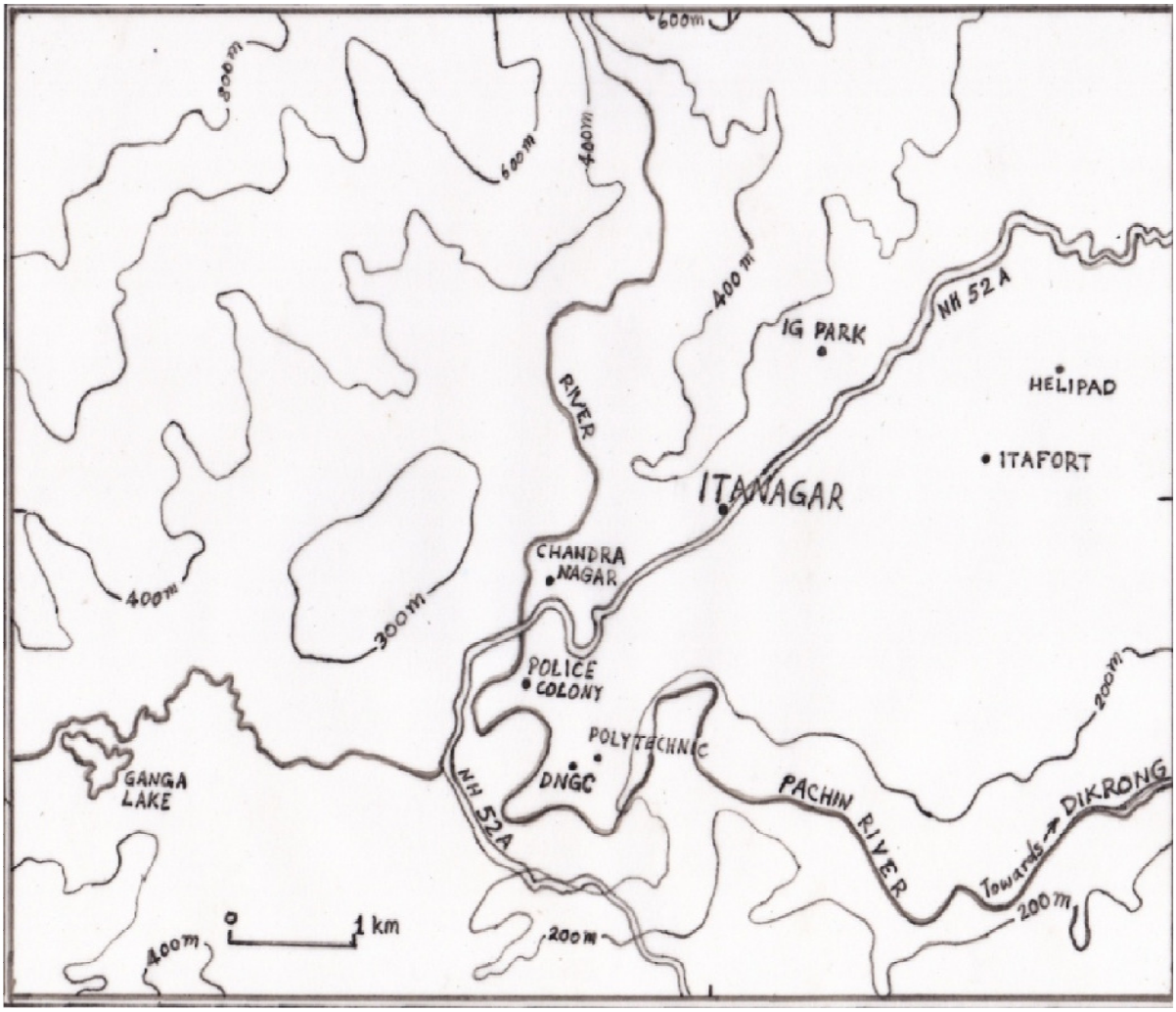

Figure-1
Locational Map of Study Area (93°25'E & 26°50'N)

Table–2
Fish diversity of River Pachin

Serial	Name of species	IUCN status
Family -Cyprinidae		
1	*Tor tor* (Hamilton)	Near Threatened
2	*Tor putitora* (Hamilton)	Endangered
3	*Neolissocheilus hexagonolepis* (McClelland)	Near Threatened
4	*Garra gotyla* (Gray)	Least Concerned
5	*Garra lissorynchus* (McClelland)	Least Concerned
6	*Garra lamta* (Hamilton)	Least Concerned
7	*Garra annadalei* (Hora)	Least Concerned
8	*Barilius barila* (Hamilton)	Least Concerned
9	*Barilius bendelisis* (Hamilton)	Least Concerned
10	*Barilius vagra* (Hamilton)	Least Concerned
11	*Barilius barna* (Hamilton)	Least Concerned
12	*Devario dangila* (Hamilton)	Least Concerned
13	*Devario aequipinnatus* (Hamilton)	Least Concerned
14	*Pethia ticto* (Hamilton)	Least Concerned
15	*Systomus sarana* (Hamilton)	Least Concerned
16	*Puntius chola* (Hamilton)	Least Concerned
17	*Chagunius chagunio* (Hamilton)	Least Concerned
18	*Bangana dero* (Hamilton)	Least Concerned
19	*Labeo pangusia* (Hamilton)	Near Threatened
20	*Cyprinion semiplotum* (McClelland)	Vulnerable
Family- Balitoridae		
21	*Schistura rupicula* (McClelland)	Least Concerned
22	*Schistura devdevi* (Hora)	Near Threatened
23	*Schistura arunachalensis*	Least Concerned
24	*Schistura bevani* (Gunther)	Least Concerned
25	*Acanthocobitis botia* (Hamilton)	Least Concerned

Serial	Name of species	IUCN status
26	*Aborichthys kempi* (Chaudhury)	Near Threatened
	Family- Cobitidae	
27	*Botia rostrata* (Gunther)	Vulnerable
28	*Botia dario* (Hamilton)	Least Concerned
29	*LepidocepHalichthys guntea* (Hamilton)	Least Concerned
Family- Channidae		
30	*Channa punctata* (Bloch)	Least Concerned
31	*Channa orientalis* (Schneider)	Not Evaluated
Family- Bagridae		
32	*Mustus vittatus* (Bloch)	Least Concerned
33	*Mystus tengara* (Hamilton)	Least Concerned
Family-Olyridae		
34	*Olyra horae*	Data Deficient
35	*Olyra longicaudata* (McClelland)	Data Deficient
Family-Heteropneustidae		
36	*Heterpneustes fossilis* (Bloch)	Least Concerned
Family-Chacidae		
37	*Chaca chaca* (Hamilton)	Least Concerned
Family-Anguillidae		
38	*Anguilla bengalensis* (Gray)	Near Threatened
Family-Sisoridae		
39	*Conta conta* (Hamilton-Buchanan)	Data Deficient
40	*Glyptothorax platypogonides* (Bleeker)	Not Evaluated
41	*Pseudochenesis sulcata* (McClelland)	Least Concerned
Family-Anabantidae		
42	*Anabas testudineus* (Bloch)	Data Deficient
Family-Amblycipitidae		
43	*Amblyceps* arunachalensis (Nath &Dey)	Endangered

Serial	Name of species	IUCN status
Family-Psilorynchidae		
44	*Psilorynchus balitora* (Hamilton)	Least Concerned
Family-Erethistidae		
45	*Pseudolaguvia viriosa* (Ng and Tamang)	Not Evaluated

Table-3
Fish diversity of River Pachin

Serial No.	Family	Genus	Species
1	*Cyprinidae*	13	20
2	*Balitoridae*	3	6
3	*Cobitidae*	2	3
4	*Channidae*	2	2
5	*Bagridae*	2	2
6	*Olyridae*	2	2
7	*Heteropneustidae*	1	1
8	*Chacidae*	1	1
9	*Anguillidae*	1	1
10	*Sisoridae*	3	3
11	*Anabantidae*	1	1
12	*Amblycipitidae*	1	1
13	*Psilorynchidae*	1	1
14	*Erithistidae*	1	1
Total	14	34	45

Conclusion

River pachin is a tributary of Dikrong river of Brahmaputra basin. Distribution of fish species in river Pachin also indicating the migration route of fishes and the quality of aquatic environment. 45 of number species in a small stream is clear indication of the above fact as well as species richness. During my study abundance of species like *Cyprinion semiplotum* a vulnerable species and *Tor puttitora* an endangered species bears lot of significance. This is high time to protect this small stream from the urbanization and anthropogenic disturbance as it is passing through the capital city of Itanagar.Proper implementation of ban of unrealistic fishing ,non interference with the river course and ban of fishing during breeding season is required for the conservation of fish genetic diversity of River Pachin.

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