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A Review on the Ichthyofauna of Nagaland, North-East India

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ABSTRACT

North-East India is a region with many native freshwater fishes and is one of the ichthyofaunal hotspots of the world. According to the current study, a total of 197 valid species of fish has been reported from Nagaland, India, which consists of 10 orders, 26 families and 87 genera, from various lotic and lentic habitats. Family Cyprinidae consists of the highest record of 75 fish species and Osphronemidae, Gobidae, Scianenidae and Chacidae families with the lowest record of one fish species in each.

Keywords: North-East India, Ichthyofaunal hotspots, lotic and lentic habitat, Nagaland, Cyprinidae

1. INTRODUCTION

Northeast is known as one of the hot spots of the global biodiversity of freshwater fish that include substantial fish germplasm reserves. This region of India comprises eight states, viz: Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim. The abundance of ichthyofaunal diversity in this region is by forming part of the Himalayas and Indo-Burma. A total of 422 species belonging to 39 families is present in the Northeast region.

Nagaland is a small hilly mountainous state, in the northwestern corner of the country. It is situated between 25°6'-27°4' N latitudes and between 93°2'-95°1' E longitudes. The state of Nagaland has many rivers and hill streams blessed by the unusual exotic fish fauna.

The state has 11 major rivers, viz: Dhansiri, Dikhu, Doyang, Intangki, Meguiki, Milak, Shili, Tizit, Tizu, Tsurang, and Zungki, and 10 minor rivers viz: Arachu, Chathe, Chokla, Dzulakie, Dzuna, Lanyi, Likhimro, Seidzu, Tepuiki and Tesuru that discharge their content to the three drainage system, viz: Brahmaputra drainage, Chindwin drainage and Barak drainage.

The present effort was taken up to review the fish fauna recorded from Nagaland based on the available works of literature.

Table 1. Check list of fishes.

Sl. No	List of fishes	Order	Family
1	<i>Amblypharyngodon mola</i>	Cypriniformes	Cyprinidae
2	<i>Cabdio morar</i>	Cypriniformes	Cyprinidae
3	<i>Bangana dero</i>	Cypriniformes	Cyprinidae
4	<i>Barilius barila</i>	Cypriniformes	Cyprinidae
5	<i>Opsarius barna</i>	Cypriniformes	Cyprinidae
6	<i>Opsarius barnoides</i>	Cypriniformes	Cyprinidae
7	<i>Opsarius bendelisis</i>	Cypriniformes	Cyprinidae
8	<i>Opsarius dogarsinghi</i>	Cypriniformes	Cyprinidae
9	<i>Opsarius shacra</i>	Cypriniformes	Cyprinidae
10	<i>Opsarius tileo</i>	Cypriniformes	Cyprinidae
11	<i>Barilius vagra</i>	Cypriniformes	Cyprinidae
12	<i>Chagunius chagunio</i>	Cypriniformes	Cyprinidae
13	<i>Chagunius nicholsi</i>	Cypriniformes	Cyprinidae
14	<i>Chela cachius</i>	Cypriniformes	Cyprinidae
15	<i>Laubuka laubuca</i>	Cypriniformes	Cyprinidae
16	<i>Ctenopharyngodon idella</i>	Cypriniformes	Cyprinidae
17	<i>Cirrhinus mrigala</i>	Cypriniformes	Cyprinidae
18	<i>Cirrhinus reba</i>	Cypriniformes	Cyprinidae
19	<i>Crossocheilus burmanicus</i>	Cypriniformes	Cyprinidae
20	<i>Crossocheilus latius</i>	Cypriniformes	Cyprinidae

21	<i>Cyprinion semiplotum</i>	Cypriniformes	Cyprinidae
22	<i>Cyprinus carpio</i>	Cypriniformes	Cyprinidae
23	<i>Danio dangila</i>	Cypriniformes	Cyprinidae
24	<i>Danio rerio</i>	Cypriniformes	Cyprinidae
25	<i>Devario acuticephala</i>	Cypriniformes	Cyprinidae
26	<i>Devario aequipinnatus</i>	Cypriniformes	Cyprinidae
27	<i>Devario devario</i>	Cypriniformes	Cyprinidae
28	<i>Devario naganensis</i>	Cypriniformes	Cyprinidae
29	<i>Esomus danrica</i>	Cypriniformes	Cyprinidae
30	<i>Garra Rupecula</i>	Cypriniformes	Cyprinidae
31	<i>Garra annandalei</i>	Cypriniformes	Cyprinidae
32	<i>Garra gotyla</i>	Cypriniformes	Cyprinidae
33	<i>Garra gravely</i>	Cypriniformes	Cyprinidae
34	<i>Garra kemp</i>	Cypriniformes	Cyprinidae
35	<i>Garra lamta</i>	Cypriniformes	Cyprinidae
36	<i>Garra maclellandi</i>	Cypriniformes	Cyprinidae
37	<i>Garra notate</i>	Cypriniformes	Cyprinidae
38	<i>Garra lissorhynchus</i>	Cypriniformes	Cyprinidae
39	<i>Garra naganensis</i>	Cypriniformes	Cyprinidae
40	<i>Garra nasuta</i>	Cypriniformes	Cyprinidae
41	<i>Gymnostomus ariza</i>	Cypriniformes	Cyprinidae
42	<i>Hypophthalmichthys molitrix</i>	Cypriniformes	Cyprinidae
43	<i>Hypophthalmichthys nobilis</i>	Cypriniformes	Cyprinidae
44	<i>Labeo angra</i>	Cypriniformes	Cyprinidae
45	<i>Labeo bata</i>	Cypriniformes	Cyprinidae
46	<i>Labeo boga</i>	Cypriniformes	Cyprinidae
47	<i>Labeo calbasu</i>	Cypriniformes	Cyprinidae

48	<i>Labeo catla</i>	Cypriniformes	Cyprinidae
49	<i>Labeo dyocheilus</i>	Cypriniformes	Cyprinidae
50	<i>Labeo fimbriatus</i>	Cypriniformes	Cyprinidae
51	<i>Labeo gonius</i>	Cypriniformes	Cyprinidae
52	<i>Labeo pangusia</i>	Cypriniformes	Cyprinidae
53	<i>Labeo rohita</i>	Cypriniformes	Cyprinidae
54	<i>Neolissochilus hexagonolepis</i>	Cypriniformes	Cyprinidae
55	<i>Neolissochilus hexastichus</i>	Cypriniformes	Cyprinidae
56	<i>Osteobrama cotio</i>	Cypriniformes	Cyprinidae
57	<i>Puntius chola</i>	Cypriniformes	Cyprinidae
58	<i>Pethia conchonius</i>	Cypriniformes	Cyprinidae
59	<i>Dawkinsia filamentosus</i>	Cypriniformes	Cyprinidae
60	<i>Systemus sarana</i>	Cypriniformes	Cyprinidae
61	<i>Pethia shalynius</i>	Cypriniformes	Cyprinidae
62	<i>Puntius sophore</i>	Cypriniformes	Cyprinidae
63	<i>Puntius terio</i>	Cypriniformes	Cyprinidae
64	<i>Pethia ticto</i>	Cypriniformes	Cyprinidae
65	<i>Systemus clavatus</i>	Cypriniformes	Cyprinidae
66	<i>Raiamas bola</i>	Cypriniformes	Cyprinidae
67	<i>Raiamas guttatus</i>	Cypriniformes	Cyprinidae
68	<i>Rasbora daniconius</i>	Cypriniformes	Cyprinidae
69	<i>Rasbora rasbora</i>	Cypriniformes	Cyprinidae
70	<i>Schizothorax richardsonii</i>	Cypriniformes	Cyprinidae
71	<i>Salmostoma bacaila</i>	Cypriniformes	Cyprinidae
72	<i>Salmostoma acinaces</i>	Cypriniformes	Cyprinidae
73	<i>Tor progeneius</i>	Cypriniformes	Cyprinidae
74	<i>Tor putitora</i>	Cypriniformes	Cyprinidae

75	<i>Tor tor</i>	Cypriniformes	Cyprinidae
76	<i>Paracanthocobitis botia</i>	Cypriniformes	Balitoridae
77	<i>Paracanthocobitis zonalternans</i>	Cypriniformes	Balitoridae
78	<i>Balitora brucei</i>	Cypriniformes	Balitoridae
79	<i>Balitora burmanica</i>	Cypriniformes	Balitoridae
80	<i>Homalopteroides rupicola</i>	Cypriniformes	Balitoridae
81	<i>Schistura reticulofasciata</i>	Cypriniformes	Balitoridae
82	<i>Neonoemacheilus assamensis</i>	Cypriniformes	Balitoridae
83	<i>Scistura tirapensis</i>	Cypriniformes	Balitoridae
84	<i>Schistura beavani</i>	Cypriniformes	Balitoridae
85	<i>Schistura kangjupkhulensis</i>	Cypriniformes	Balitoridae
86	<i>Schistura manipurensis</i>	Cypriniformes	Balitoridae
87	<i>Schistura multifasciatus</i>	Cypriniformes	Balitoridae
88	<i>Schistura nagaensis</i>	Cypriniformes	Balitoridae
89	<i>Mustura prashadi</i>	Cypriniformes	Balitoridae
90	<i>Schistura savona</i>	Cypriniformes	Balitoridae
91	<i>Schistura scaturigina</i>	Cypriniformes	Balitoridae
92	<i>Schistura sikmaiensis</i>	Cypriniformes	Balitoridae
93	<i>Schistura singhi</i>	Cypriniformes	Balitoridae
94	<i>Schistura sijuensis</i>	Cypriniformes	Balitoridae
95	<i>Schistura reticulofasciata</i>	Cypriniformes	Balitoridae
96	<i>Schistura vinciguerrae</i>	Cypriniformes	Balitoridae
97	<i>Bagarius yarrelli</i>	Siluriformes	Sisoridae
98	<i>Exostoma bermorei</i>	Siluriformes	Sisoridae
99	<i>Exostoma labiatum</i>	Siluriformes	Sisoridae
100	<i>Exostoma stuarti</i>	Siluriformes	Sisoridae
101	<i>Exostoma vinciguerrae</i>	Siluriformes	Sisoridae

102	<i>Gagata cenia</i>	Siluriformes	Sisoridae
103	<i>Glyptosternon maculatum</i>	Siluriformes	Sisoridae
104	<i>Glyptothorax saisii</i>	Siluriformes	Sisoridae
105	<i>Glyptothorax cavia</i>	Siluriformes	Sisoridae
106	<i>Glyptothorax coheni</i>	Siluriformes	Sisoridae
107	<i>Glyptothorax sinensis</i>	Siluriformes	Sisoridae
108	<i>Glyptothorax platypogonides</i>	Siluriformes	Sisoridae
109	<i>Glyptothorax manipurensis</i>	Siluriformes	Sisoridae
110	<i>Glyptothorax telchitta</i>	Siluriformes	Sisoridae
111	<i>Glyptothorax indicus</i>	Siluriformes	Sisoridae
112	<i>Glyptothorax trilineatus</i>	Siluriformes	Sisoridae
113	<i>Myersglanis jayarami</i>	Siluriformes	Sisoridae
114	<i>Nangra nangra</i>	Siluriformes	Sisoridae
115	<i>Pseudecheneis sulcata</i>	Siluriformes	Sisoridae
116	<i>Sisor rabdophorus</i>	Siluriformes	Sisoridae
117	<i>Batasio batasio</i>	Siluriformes	Bagridae
118	<i>Mystus armatus</i>	Siluriformes	Bagridae
119	<i>Mystus bleekeri</i>	Siluriformes	Bagridae
120	<i>Mystus cavasius</i>	Siluriformes	Bagridae
121	<i>Mystus tengara</i>	Siluriformes	Bagridae
122	<i>Mystus vittatus</i>	Siluriformes	Bagridae
123	<i>Olyra kempfi</i>	Siluriformes	Bagridae
124	<i>Olyra longicaudata</i>	Siluriformes	Bagridae
125	<i>Olyra horae</i>	Siluriformes	Bagridae
126	<i>Olyra burmanica</i>	Siluriformes	Bagridae
127	<i>Sperata aor</i>	Siluriformes	Bagridae
128	<i>Sperata seenghala</i>	Siluriformes	Bagridae

129	<i>Botia almorhae</i>	Cypriniformes	Cobitidae
130	<i>Botia Dario</i>	Cypriniformes	Cobitidae
131	<i>Botia histrionica</i>	Cypriniformes	Cobitidae
132	<i>Botia rostrata</i>	Cypriniformes	Cobitidae
133	<i>Lepidocephalichthys berdmorei</i>	Cypriniformes	Cobitidae
134	<i>Lepidocephalichthys guntea</i>	Cypriniformes	Cobitidae
135	<i>Lepidocephalichthys irrorata</i>	Cypriniformes	Cobitidae
136	<i>Lepidocephalichthys annandalei</i>	Cypriniformes	Cobitidae
137	<i>Pangio pangia</i>	Cypriniformes	Cobitidae
138	<i>Canthophrys gongota</i>	Cypriniformes	Cobitidae
139	<i>Channa barca</i>	Perciformes	Channidae
140	<i>Channa gachua</i>	Perciformes	Channidae
141	<i>Channa marulius</i>	Perciformes	Channidae
142	<i>Channa punctatus</i>	Perciformes	Channidae
143	<i>Channa stewartii</i>	Perciformes	Channidae
144	<i>Channa striata</i>	Perciformes	Channidae
145	<i>Channa orientalis</i>	Perciformes	Channidae
146	<i>Ompok bimaculatus</i>	Cypriniformes	Siluridae
147	<i>Ompok pabda</i>	Cypriniformes	Siluridae
148	<i>Pterocryptis berdmorei</i>	Cypriniformes	Siluridae
149	<i>Pterocryptis indicus</i>	Cypriniformes	Siluridae
150	<i>Pterocryptis gangelica</i>	Cypriniformes	Siluridae
151	<i>Wallago attu</i>	Cypriniformes	Siluridae
152	<i>Conta conta</i>	Siluriformes	Erethistidae
153	<i>Erethistes horai</i>	Siluriformes	Erethistidae
154	<i>Erethistes pusillus</i>	Siluriformes	Erethistidae
155	<i>Erethistes hara</i>	Siluriformes	Erethistidae

156	<i>Erethistes jerdoni</i>	Siluriformes	Erethistidae
157	<i>Ailia coila</i>	Cypriniformes	Schilbeidae
158	<i>Clupisoma garua</i>	Cypriniformes	Schilbeidae
159	<i>Eutropiichthys vacha</i>	Cypriniformes	Schilbeidae
160	<i>Eutropiichthys murius</i>	Cypriniformes	Schilbeidae
161	<i>Clarias batrachus</i>	Siluriformes	Clariidae
162	<i>Clarias magur</i>	Siluriformes	Clariidae
163	<i>Clarias gariepinus</i>	Siluriformes	Clariidae
164	<i>Heteropneustes fossilis</i>	Siluriformes	Clariidae
165	<i>Psilorhynchus balitora</i>	Cypriniformes	Psilorhynchidae
166	<i>Psilorhynchus homaloptera</i>	Cypriniformes	Psilorhynchidae
167	<i>Psilorhynchus sucatio</i>	Cypriniformes	Psilorhynchidae
168	<i>Amblyceps apangi</i>	Siluriformes	Amblycipitidae
169	<i>Amblyceps arunachalense</i>	Siluriformes	Amblycipitidae
170	<i>Amblyceps mangois</i>	Siluriformes	Amblycipitidae
171	<i>Macrogathus aral</i>	Perciformes	Mastacembelidae
172	<i>Macrogathus pancalus</i>	Perciformes	Mastacembelidae
173	<i>Mastacembelus armatus</i>	Perciformes	Mastacembelidae
174	<i>Chanda nama</i>	Perciformes	Chandidae
175	<i>Parambassis baculis</i>	Perciformes	Chandidae
176	<i>Parambassis ranga</i>	Perciformes	Chandidae
177	<i>Trichogaster fasciatus</i>	Anabantiformes	Belontidae
178	<i>Trichogaster lalius</i>	Anabantiformes	Belontidae
179	<i>Trichogaster chuna</i>	Anabantiformes	Belontidae
180	<i>Chitala chitala</i>	Osteoglossiformes	Notopteridae
181	<i>Notopterus notopterus</i>	Osteoglossiformes	Notopteridae
182	<i>Anguilla bengalensis</i>	Anguilliformes	Anguillidae

183	<i>Gudusia chapra</i>	Anguilliformes	Anguillidae
184	<i>Xenentodon cancila</i>	Cyprinodontiformes	Belonidae
185	<i>Strongylura strongylura</i>	Cyprinodontiformes	Belonidae
186	<i>Monopterus albus</i>	Synbranchiformes	Synbranchidae
187	<i>Monopterus cuchia</i>	Synbranchiformes	Synbranchidae
188	<i>Badis badis</i>	Anabantiformes	Nandidae
189	<i>Nandus nandus</i>	Anabantiformes	Nandidae
190	<i>Anabas testudineus</i>	Anabantiformes	Anabantidae
191	<i>Anabas cobojii</i>	Anabantiformes	Anabantidae
192	<i>Oreochromis niloticus</i>	Cichliformes	Cichlidae
193	<i>Oreochromis mossambicus</i>	Cichliformes	Cichlidae
194	<i>Osphronemus goramy</i>	Anabantiformes	Osphronemidae
195	<i>Glossogobius giuris</i>	Perciformes	Gobidae
196	<i>Johnius coitor</i>	Perciformes	Scianenidae
197	<i>Rhinomugil corsula</i>	Muguliformes	Chacidae

2. DISCUSSION

The present review shows the presence of 197 valid fish species belonging to 10 orders, 26 families and 87 genera. The list of fish species recorded from Nagaland is given in **Table 1**. Cyprinidae lead the record with 75 species followed by Balitoridae with 21 species, Sisoridae with 20 species, Bagridae with 12 species, Cobitidae with 10 species, Channidae with 7 species, Siluridae with 6 species, Erethistidae with 5 species, Schilbeidae and Clariidae with 4 species, Psilorhynchidae, Amblycipitidae, Mastacembelidae, Chandidae and Belontidae with 3 species each, Notopteridae, Anguillidae, Belonidae, Synbranchidae, Nandidae, Anabantidae and Cichlidae with 2 species each and Osphronemidae, Gobidae, Scianenidae and Chacidae with one species each, as shown in **Table 2**.

Earlier reports represented 149 fish species from Nagaland. Later Goswami *et al.* in 2012 reported 187 fish fauna from Nagaland. Acharjee *et al.* also in 2012 added 2 more known fish species during their ichthyological survey at Dhansiri River. Odyuo and Nagesh as well added one more known fish species during their fishery and management status assessment of Doyang Reservoir in 2012. Imnatoshi and Ahmed afterward in 2013 added 3 more known fish fauna during their survey in Doyang River. Humtsoe and Bordoloi then in 2014 during its survey in 12 streams, viz: Engorotchu, Kyotchu, Lungkitchu, Nhyatsutchu, Nitsutchu, Tchulumo, Tchupvu, HumtsoTsupvu, Sosirotschu, Vekhvurotschu, YikhumSanga and Tsurang of Wokha

district Nagaland added one known fish species. The whole record of fish fauna known from Nagaland were further examined from Eschmeyer's Catalog of Fishes Online Database (2019) for their current status and validity.

Table 2. Number of fishes identified from different families from Nagaland.

Family	Total no of fishes
Cyprinidae	75
Balitoridae	21
Sisoridae	20
Bagridae	12
Cobitidae	10
Channidae	7
Siluridae	6
Erethistidae	5
Schilbeidae	4
Clariidae	4
Psilorhynchidae	3
Amblycipitidae	3
Mastacembelidae	3
Chandidae	3
Belontiidae	3
Notopteridae	2
Anguillidae	2
Belonidae	2
Synbranchidae	2
Nandidae	2
Anabantidae	2
Cichlidae	2
Osphronemidae	1
Gobiidae	1
Scianenidae	1
Chacidae	1

3. CONCLUSION

Although the state of Nagaland records 197 species of fish and is characterized by plentiful rivers and streams, it is not yet assessed and explored, due to its remoteness and inaccessibility. The Department of fisheries of Nagaland and similar organizations should therefore, take up the lead role in exploring and documentation of fish fauna. To develop a proper planning and create awareness amount the local mass, for sustainable exploitation and for conservation of fish fauna, lest fish fauna deplete due to anthropogenic and other activities.

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