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Ichthyofaunal diversity of various water bodies of Kokrajhar district, BTAD, Assam

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Abstract

Background: Kokrajhar district of Assam is endowed with myriads of rivers and beels which in turn house a rich variety of fish species. **Methodology:** The present study deals with the extensive ichthyological field survey conducted over a period of one year from June 2014 to May 2015. **Results:** The survey revealed the occurrence of inexplicable diversity of fishes representing 77 species distributed under ---9 orders, 26 families and 53 genera. *Labeo* genus with 7 species was the most diverse followed by the genus *Channa* with 6 species. The fishes were divided into seven broad categories namely Indian major/minor carps, Exotic carps established in Assam, Live fishes, Cat fishes, Feather back, ornamental fishes and river fishes representing 10, 4, 10, 23, 2, 18 and 10 species respectively. Out of the 77 species recorded 74 were considered as food fish while only 3 species viz. *Erethistes pusillus*, *Tetradon cutcutia* and *Aplocheilus panchax* as not food fishes, 36 were commercially important food fish. *Chitala chitala* and *Tor tor* had sport values in addition of being commercially important food fish. Conservation status revealed that *Tor putitora* was the only fish species that was under endangered category. Apart from this a total of 2, 10, 47, 16 and 1 species represented vulnerable, near threatened, least concerned, not evaluated and data deficient categories respectively.

Keywords: *Assam; fish diversity; food fishes; Kokrajhar; Ichthyofaunal; India; ornamental fishes.*

1. Introduction

Fish is one of the important groups of vertebrates. Fishes greatly influence the nutritional aspect of human being in overcoming especially the protein deficiency[1]. Fishes play a novel role in the improvement of economic status of a country[2]. Fishes have vital importance in the aquatic system nourishment.

The North East region of India is one of the global hotspots of fish faunal biodiversity in the world[3]. Fish locally referred to as *Mash* (Assamese) and *Na* (Bodo). Assam has an excellent subtropical climate for the development of fresh water fish culture in a plenty of water bodies. The state of Assam is enriched with the Brahmaputra and the Barak water systems and their many tributaries.

The Bodoland Territorial Area Districts (BTAD) is a part of the Indian state of Assam comprising of four districts namely Kokrajhar, Chirang, Baksa and Udalguri. BTAD is enriched with a number of water bodies covering an area of about 1,558 ha area of registered beels, 900 ha unregistered beels and swamps, 2,334 ha ponds and tanks and 671 ha area of waste land[4]. Some of the important water bodies include rivers like Manas, Aie, Champamoti, Saraibhanga, Gaurang, Sonkosh, Tipkai and beels like Taiparjhar, Debitola, Diplai.

Going through the literature though we encountered a number of investigation of Ichthyofaunal diversity of Assam[5-8] but various water bodies of Kokrajhar district has not been exploited.

Thus keeping this in mind the present study was designed to document the scientific information with respect to the taxonomic position, vernacular name,

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edible status and conservation status of this little known emblem of nature that is fishes. The sampling was conducted bimonthly.

2. Materials and methods

A thorough survey of various water bodies of the Kokrajhar district was pursued from June 2014 to May 2015. Fishes were collected from different beels and rivers using fishing gears like gill nets, cast net, hooks and lines and different local bamboo traps like *Jekhai*, *Sen*, *Khoka* etc.

Apart from this, fishes were also procured from local market during early morning and evening. They were photographed in fresh condition and later preserved in 10% formalin after proper identification with the help of standard keys[9,10]. Secondary data on the vernacular names were collected by interviewing the local people and fisherman and also from the concerned authority. The evaluation of the conservation status has been followed as per the IUCN red list of threatened species, 2010.

3. Results and discussion

So far as the Ichthyofaunal diversity is concerned during the present study, seventy seven ichthyospecies belonging to 53 genera, 26 families and 9 orders have been recorded from the different aquatic systems of Kokrajhar District of BTAD, Assam, India. Table I depicts the scientific name of the fish species encountered along with their order, family, vernacular name (*Assamese* and *Bodo*), food status and conservation status (IUCN). The fishes were divided into seven broad categories namely Indian major/minor carps, Exotic carps established in Assam, Live fishes, Cat fishes, Feather back, ornamental fishes and river fishes representing 10, 4, 10, 23, 2, 18 and 10 species respectively. Of the nine orders, Cypriniformes was the most dominant with thirty one species (40.26%) followed by the order Siluriformes with twenty three species (29.87%) (Figure I). The results are in accordance with previous record[7,11]. The order Perciformes, Synbranchiformes, Clupeiformes, Osteoglossiformes was represented by 12, 3, 3, 2 species respectively. Only single species were recorded from the order Beloniformes, Cyprinodontiformes and Tertaodontiformes. Among the 26 families, Cyprinidae with 26 ichthyospecies (37.66%) was the most diverse followed by Bagridae with 7 species (9.09%) (Figure II). Similar results were also obtained by other researchers[7,8,12]. Channidae had 6 species. Siluridae housed four species whereas families Sisoridae and Schilbeidae were represented by three species each. Five families viz. Clariidae, Clupeidae, Mastacembelidae, Notopteridae and Osphronemidae lodged two species each. *Labeo* genus with 7 species was the most diverse followed by the genus *Channa* with 6 species. Out of the 77 species recorded 74 were considered as food fish while only 3 species viz. *Erethistes pusillus*, *Tetradon cutcutia* and *Aplocheilus panchax* as not food fishes, 36 were commercially important food fish[5]. *Chitala chitala* and *Tor tor* had sport values in addition of being commercially important food fish[5]. Conservation status (IUCN) revealed that *Tor putitora* was the only fish species that was under endangered category. Out of the rest 76 recorded species *Labeo dero* and *Cyprinus carpio* were vulnerable (Vu) (2.60%), 10 near threatened (NT) (12.99%), 47 least concerned (LC) (61.04%), 16 not evaluated (NE) (20.78%) and single species *Channa barca* was data deficient (Figure III).

Conclusion

Ichthyological survey showed that Kokrajhar district of BTAD, Assam is rich in fish fauna with good economic potential. The diversity can be conserved and maintained

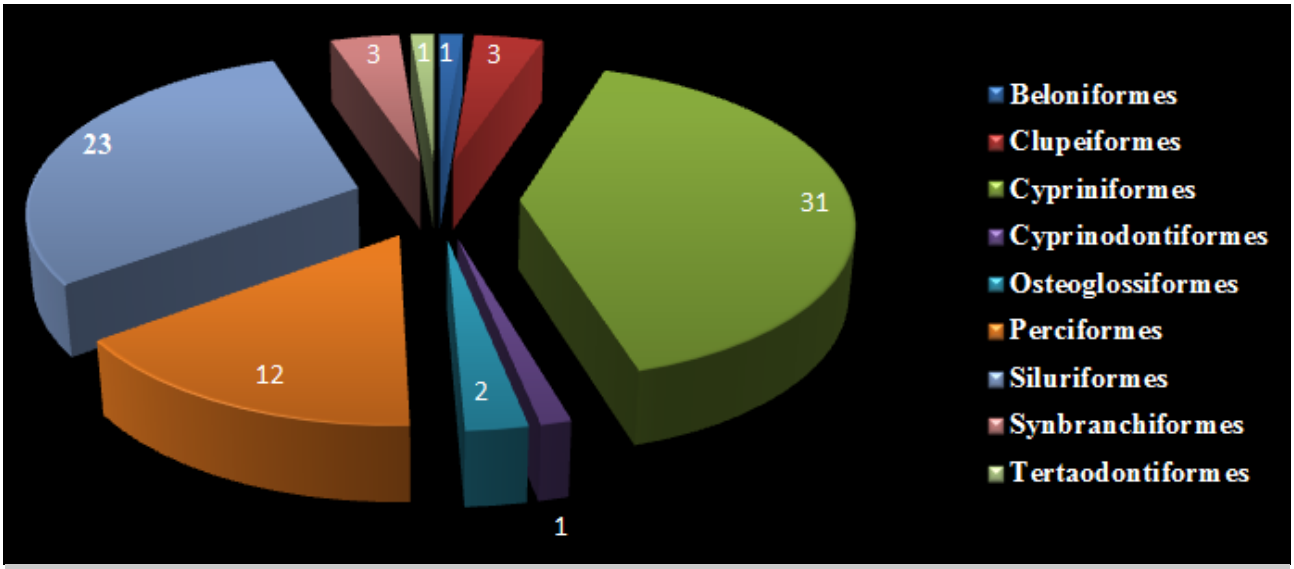

Figure I: Number of species under various orders

Table1: Showing the diversity of fishes with special reference to their taxonomic distribution, vernacular name, habitat and conservation status

Order	Family	Name of the Species	Bodo name	Assamese name	Habitat/Water bodies	Food Fish	Con. status*
Indian Major/Minor Carps							
Cypriniformes	Cyprinidae	*Labeo rohita*	Rhou	Rhou	Rivers/beels/tanks & ponds	Yes	LC
Cypriniformes	Cyprinidae	*Labeo bata*	Bata	Bata	Rivers/beels/tanks & ponds	Yes	LC
Cypriniformes	Cyprinidae	*Labeo calbasu*	Bahu	Kalbasu	Rivers/beels/tanks & ponds	Yes	LC
Cypriniformes	Cyprinidae	*Labeo gonius*	Kursa	Gonia	Rivers/beels/tanks & ponds	Yes	LC
Cypriniformes	Cyprinidae	*Labeo dero*	Maso	Gorea	River running water	Yes	Vu
Cypriniformes	Cyprinidae	*Labeo dyocheilus*	-	Lasu	Brahmaputra river	Yes	LC
Cypriniformes	Cyprinidae	*Labeo nandina*	-	Nandani	Rivers/beels/tanks & ponds	Yes	NT
Cypriniformes	Cyprinidae	*Catla catla*	Catla	Catla	Rivers/beels/tanks & ponds	Yes	LC
Cypriniformes	Cyprinidae	*Cirrhinus mrigala*	Mirkha	Mirika	Rivers/beels/tanks & ponds	Yes	LC
Cypriniformes	Cyprinidae	*Cirrhinus reba*	Lasim	Laseem	Rivers/beels/tanks & ponds	Yes	LC
Exotic Carps but established in Assam							
Cypriniformes	Cyprinidae	*Cyprinus carpio*	Common carp	Common carp	Rivers/beels/tanks & ponds	Yes	Vu
Cypriniformes	Cyprinidae	*Ctenophryngodon idella*	Grass carp	Grass carp	Rivers/beels/tanks & ponds	Yes	NE
Cypriniformes	Cyprinidae	*Hypothalmichthys molitrix*	Silver carp	Silver carp	Rivers/beels/tanks & ponds	Yes	NE
Cypriniformes	Cyprinidae	*Hypothalmichthys nobilis*	Big head carp	Big head carp	Rivers/beels/tanks & ponds	Yes	NE
Live Fishes							
Perciformes	Channidae	*Channa punctata*	Gwri	Goroi	Beels/low-lying area/tanks / ponds	Yes	LC
Perciformes	Channidae	*Channa striata*	Shol	Shol	Beels/low-lying area/tanks / ponds	Yes	LC
Perciformes	Channidae	*Channa gachua*	Nasrai	Cheng	Beels/low-lying area/tanks / ponds	Yes	LC
Perciformes	Channidae	*Channa marulius*	Nasrai nisla	Chengeli	Beels/low-lying area/tanks / ponds	Yes	LC
Perciformes	Channidae	*Channa stewartii*	Sal	Sal	Beels/low-lying area/tanks / ponds	Yes	LC
Perciformes	Channidae	*Channa barca*	Nasrai Borkhaw	Garaka cheng	Beels/low-lying area/tanks / ponds	Yes	DD
Synbranchiformes	Synbrachidae	*Monopterus cuchia*	Cuchia	Cuchia	Beels/low-lying area/tanks / ponds	Yes	LC
Synbranchiformes	Mastacembelidae	*Mastacembelus armatus*	Bami	Bami	River/beels/low-lying area/tanks / ponds	Yes	LC

Con. Status: Conservation status based on IUCN report (2010); EN: Endangered; Vu: Vulnerable; NT: Near threatened; LC: Least concern; NE: Not evaluated; DD: Data deficient

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Synbranchiformes	Mastacembelidae	*Mastacembelus pancalus*	Thuri	Tura/Tora	River/beels/low-lying area/tanks / ponds	Yes	NE
Perciformes	Actinopterygii	*Anabus testudineus*	Kawai	Koi	Beels/low-lying area/tanks / ponds	Yes	NE
Cat Fishes							
Siluriformes	Siluridae	*Wallago attu*	Borali	Borali	River/beels/low-lying area/tanks / ponds	Yes	NT
Siluriformes	Siluridae	*Ompok pabo*	Phabo	Pabhoh	River/beels/low-lying area/tanks / ponds	Yes	NT
Siluriformes	Siluridae	*Ompok pabda*	Phabo	Pabda	River/beels/low-lying area/tanks / ponds	Yes	NT
Siluriformes	Siluridae	*Ompok bimaculatus*	Phabo	Pabhoh	River/beels/low-lying area/tanks / ponds	Yes	NT
Siluriformes	Bagridae	*Mystus tengra*	Thengana	Tingorah	River/beels/low-lying area/tanks / ponds	Yes	LC
Siluriformes	Bagridae	*Mystus cavasius*	Thengera gidid	Bor Singorah	River/beels/low-lying area/tanks / ponds	Yes	LC
Siluriformes	Bagridae	*Mystus vittatus*	Thengera khujri	Haru Tingorah	River/beels/low-lying area/tanks / ponds	Yes	LC
Siluriformes	Bagridae	*Hemibagrus menoda*	-	Gagol	River/beels/low-lying area/tanks / ponds	Yes	LC
Siluriformes	Bagridae	*Aorichthyus aor*	Aari	Aari	River/beels/low-lying area/tanks / ponds	Yes	NE
Siluriformes	Schilbeidae	*Eutropiichthyus vacha*	-	Basa	River/beels/low-lying area/tanks / ponds	Yes	NE
Siluriformes	Pangasiidae	*Pangasius pangasius*	Pangas	Pangas	River/beels/low-lying area/tanks / ponds	Yes	LC
Siluriformes	Clariidae	*Clarias batrachus*	Magur	Magur	Beels/low-lying area/tanks / ponds	Yes	LC
Siluriformes	Clariidae	*Clarias gariepinus*	Thailand magur	Thailand magur	Beels/low-lying area/tanks / ponds	Yes	LC
Siluriformes	Heteropneustidae	*Heteropneustes fossilis*	Singi	Singi	Beels/low-lying area/tanks / ponds	Yes	LC
Siluriformes	Sisoridae	*Gagata cenia*	-	Keyakatta	Beels/low-lying area/tanks / ponds	Yes	LC
Siluriformes	Sisoridae	*Gagata gagata*	-	Keyakatta	Beels/low-lying area/tanks / ponds	Yes	LC
Siluriformes	Sisoridae	*Bagarius bagarius*	-	Garua	River/beels/low-lying area/tanks / ponds	Yes	NT
Siluriformes	Schilbeidae	*Cluisoma garua*	-	Neria	River/beels/low-lying area/tanks / ponds	Yes	NE
Siluriformes	Chacidae	*Chaca chaca*	-	Kurkuri	River/beels/low-lying area/tanks / ponds	Yes	LC
Siluriformes	Bagridae	*Rita rita*	Ritha	Ritha	River/beels/low-lying area/tanks / ponds	Yes	LC
Siluriformes	Erithistidae	*Erithistes pusillus*	-	Sakmaka	River/beels/low-lying area/tanks / ponds	No	NE
Siluriformes	Bagridae	*Batasio batasio*	-	Batachi	River/beels/low-lying area/tanks / ponds	Yes	LC
Siluriformes	Schilbeidae	*Ailia coila*	-	Kadali	River/beels/low-lying area/tanks / ponds	Yes	NT
Feather back							
Osteoglossiformes	Notopteridae	*Chitala chitala*	Sital	Chital	River/beels/low-lying area/tanks / ponds	Yes	NT

Con. Status: Conservation status based on IUCN report (2010); EN: Endangered; Vu: Vulnerable; NT: Near threatened; LC: Least concern; NE: Not evaluated; DD: Data deficient

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Osteoglossiformes	Notopteridae	*Notopterus noptopterus*	-	Kanduli	River/beels/low-lying area/tanks / ponds	Yes	NE
Ornamental Fishes							
Perciformes	Osphronemidae	*Trichogatser fasciata*	-	Kholihana	Beels/low-lying area/tanks / ponds	Yes	NE
Perciformes	Osphronemidae	*Trichogatser colisa*	-	Bhasaylee	Beels/low-lying area/tanks / ponds	Yes	NE
Tertaodontiformes	Tetraodontidae	*Tertradon cutcutia*	Gangatopa	Gangatope	Beels/low-lying area/tanks / ponds	No	NE
Perciformes	Ambassidae	*Chanda nama*	Chanda	Chanda	Beels/low-lying area/tanks / ponds	Yes	LC
Perciformes	Cichlidae	*Oreochromis mossambicus*	Japani Kawai	Japani Koi	Beels/low-lying area/tanks / ponds	Yes	NT
Cypriniformes	Cobitidae	*Neoeucirrhichthys maydelli*	Bala Bothia	Botia	Beels/low-lying area/tanks / ponds	Yes	LC
Cypriniformes	Botiidae	*Botia dario*	Bala Khwa	Rani botia	Beels/low-lying area/tanks / ponds	Yes	LC
Cypriniformes	Cyprinidae	*Pethia ticto ticto*	Pitikri	Puthi	Beels/low-lying area/tanks / ponds	Yes	LC
Cypriniformes	Cyprinidae	*Systomus sarana*	Chinese puthi	Cheniputhi	River/beels/low-lying area/tanks / ponds	Yes	LC
Cypriniformes	Cyprinidae	*Barbonymus gonionotus*	Jaba puthi	Java puthi	Beels/low-lying area/tanks / ponds	Yes	LC
Cypriniformes	Cyprinidae	*Rasbora daniconius*	Donkina	Darikona	Beels/low-lying area/tanks / ponds	Yes	LC
Cypriniformes	Cyprinidae	*Rasbora elanga*	Eleng	Eleng	Beels/low-lying area/tanks / ponds	Yes	NE
Cypriniformes	Cyprinidae	*Danio dangila*	-	Laupati	Beels/low-lying area/tanks / ponds	Yes	LC
Cypriniformes	Cyprinidae	*Amblypharyngodon mola*	Mawa	Mola	Beels/low-lying area/tanks / ponds	Yes	LC
Cypriniformes	Cyprinidae	*Aspidoparia morar*	Boirali	Boriala	Beels/low-lying area/tanks / ponds	Yes	LC
Perciformes	Nandidae	*Nandus nandus*	Thotha-jambhi	Bhetki	Beels/low-lying area/tanks / ponds	Yes	LC
Clupeiformes	Clupeidae	*Gudusia chapra*	Korti	Karoti	Beels/low-lying area/tanks / ponds	Yes	LC
Clupeiformes	Engraulidae	*Setipinna phasa*	-	Salo/Chato	Beels/low-lying area/tanks / ponds	Yes	LC
River Fishes							
Clupeiformes	Clupeidae	*Tenualosa ilisha*	Ilish	Ilish	Brahmaputra river	Yes	LC
Cypriniformes	Cyprinidae	*Chela atpar*	-	Selkona	Brahmaputra river	Yes	NE
Cypriniformes	Cyprinidae	*Chela cachius*	-	Laupati	Brahmaputra river	Yes	LC
Cypriniformes	Cyprinidae	*Oxygatser gora*	-	Gora Chela	Brahmaputra river	Yes	NE
Cypriniformes	Cyprinidae	*Tor tor*	-	Pithia	River running water	Yes	NT
Cypriniformes	Cyprinidae	*Tor putitora*	Jonga	Jonga pithia	River running water	Yes	EN
Beloniformes	Belonidae	*Xenentodon cancila*	Khankhila	Kokila	River/beel/tanks & ponds	Yes	LC
Cyprinodontiformes	Aplocheilidae	*Aplocheilus panchax*	-	Kanopna	River	No	LC
Cypriniformes	Cyprinidae	*Barilius barna*	-	Balisonda	River	Yes	LC
Cypriniformes	Cyprinidae	*Barilius bendelisis*	-	Karan	River running water	Yes	LC

Con. Status: Conservation status based on IUCN report (2010); EN: Endangered; Vu: Vulnerable; NT: Near threatened; LC: Least concern; NE: Not evaluated; DD: Data deficient

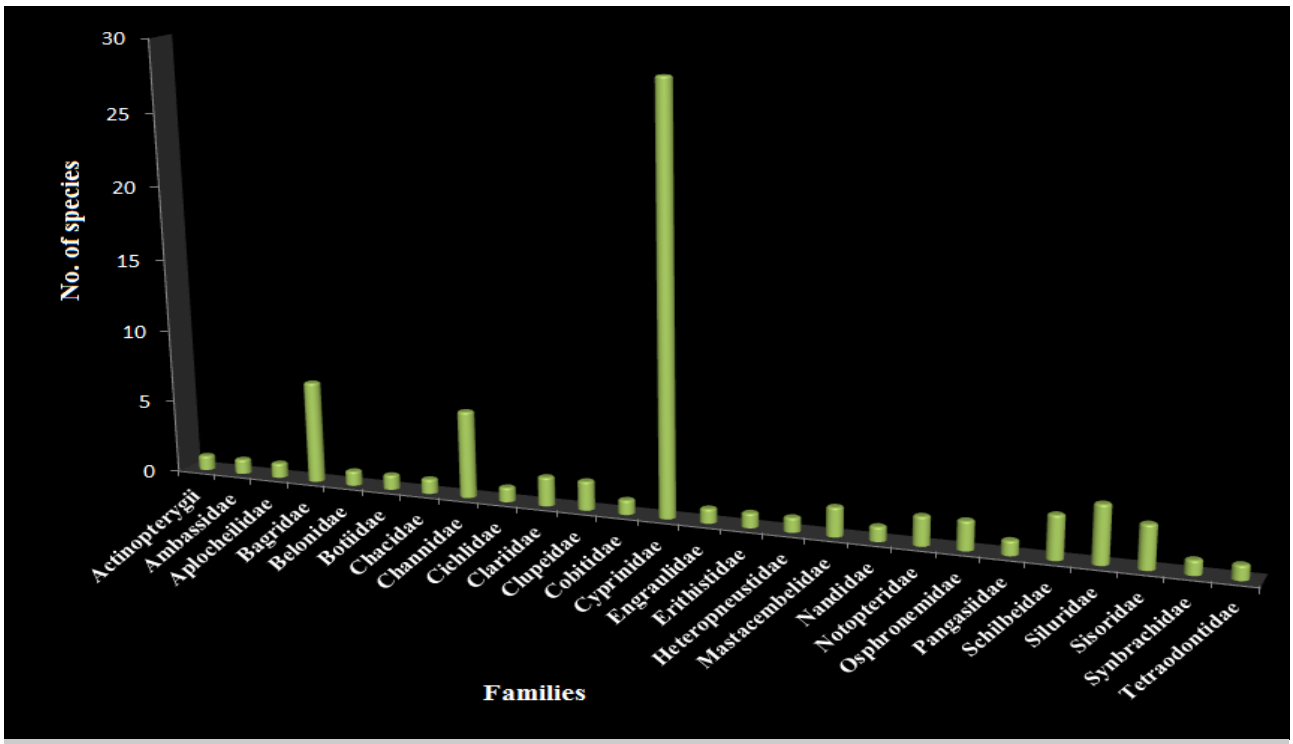

Figure II: Number of species distributed under each family

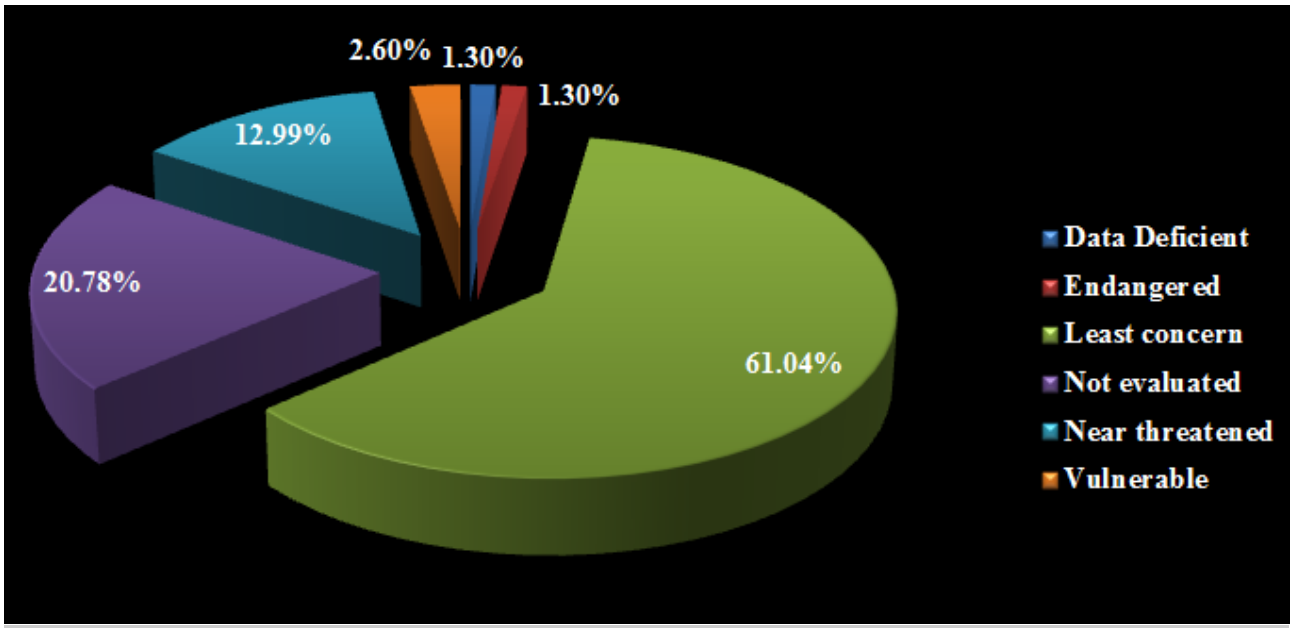

Figure III: Percentage of species under various categories as per IUCN status

by regularly monitoring the fish fauna, assessing water quality of the different aquatic systems and controlling the anthropogenic activities.

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Conflict of interest

The author's declares none.

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