

## Icthyofaunal diversity in a floodplain Wetland of Darrang district, Assam

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### ABSTRACT

The present study was undertaken from Jan 2009 to December 2010 in Rowmari beel of Sipajhar revenue circle of Darrang district of Assam. Rowmari beel is one of the most important beel of the district among which is rich in Icthyofaunal diversity. A total of 54 species including exotic species belonging to 40 genera, 21 families and 9 orders were recorded. Among these according to IUCN (2013), 4 species are Near threatened (NT) which are *Chitala chitala*, *Wallago attu*, *Ailia coila*, *Parambassis lala*; status of 4 species are not evaluated (NE); 1 species remain data deficient (DD), which is *Anabas testudineus* and the rest 45 species are in the status of least concern (LC.) The taxonomic composition of the fish fauna suggests, 20 species are recorded from Cyprinidae family followed by Bagridae having 4 species, Channidae, Ambassidae, and Mastacembelidae with 3 species each, Notopteridae, Cobitidae, Schilbeidae, Nandidae, Osphronemidae with 2 species each and the rest Clupeidae, Balitoridae, Siluridae, Sisoridae, Clariidae, Heteropneustidae, Belonidae, Aplocheilidae, Gobiidae, Anabantidae and Tetraodontidae have single species. Cyprinidae is the most dominant family among others. However the beel is in continuous state of exploitation and facing degradation due to uneconomic use of fishing gears, over growth of macrophytes, agricultural practices in marginal areas during winter season.

**Keywords:** Fish diversity, IUCN status, Rowmari beel, Darrang.

### INTRODUCTION

Assam is the second largest state of

the North Eastern region of India endowed with 1.03 lakhs ha natural lentic water

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bodies including swamps, associated with the river Brahmaputra and Barak and their tributaries. The mighty Brahmaputra with its numerous tributaries, wetlands and hill streams provides the main source of Ichthyofauna in the state. The North Eastern part of India is hence considered as 'global hotspot' for fresh water fish diversity. Wetlands form a major component of the hydrologic regime in Assam where they are popularly known as 'Beels' (Sharma & Goswami, 1993). The beels are not only important source of fishery but also a part of folk culture and has immense impact on socio-economic aspects of people living around the beel. Darrang district is gifted with vast wetland resources comprising of beels, ponds, ox-bow lakes, dead river courses, low lying swamp and marshes and tributaries. The total area of registered beels in the district during 2009-2010 is 388.50 ha and Unregistered beels is 173 ha. (District Fishery Office, Darrang, 2010) There are 31 number of beels of which 17 are registered beels (CICFRI, 2000). Though many workers have undertaken studies on the Ichthyofauna of this region, no references regarding inventory on fish biodiversity are available on Rowmari beel of the Brahmaputra river system. Realising the need for Ichthyological investigation in *Rowmari beel*, the present study was initiated to understand the beel values and detailed morphometric examination, identification and classification of fishes with their conservation status.

## MATERIALS AND METHODS STUDY AREA

*Rowmari beel* falls in the flood plain area of the river Brahmaputra, located between  $26^{\circ} 19' 0.7''$  N -  $26^{\circ} 19' 58''$  N latitude to  $91^{\circ} 55' 50''$  E -  $91^{\circ} 56' 46''$  E longitude at 44 MSL. It is located towards southwest direction at about 35 kms from district headquarter Mangaldai. The National highway 52 is at about 25 kms north from the beel. Toward north eastern side of *Rowmari beel* lies *Arimari beel* at a position  $26^{\circ} 19' N$  -  $26^{\circ} 19' 45'' N$  latitude to  $91^{\circ} 55' 19'' E$  -  $91^{\circ} 56' 17'' E$  longitude. It is shallow having length of 2.21 kms and breadth 26 m with total area 0.18 sq kms. It connects to Tuldhung at  $26^{\circ} 19' 0.8'' N$  latitude to  $91^{\circ} 55' 41'' E$  longitude through a canal of 134 m long. Tuldhung which lies near the outlet of *Rowmari beel* measures 508.77 m in length and 138.01 m in breadth. It covers an area of 0.05 sq kms and extends geographically  $26^{\circ} 18' 59'' N$  -  $26^{\circ} 19' 0.8'' N$  latitude to  $91^{\circ} 55' 29'' E$  -  $91^{\circ} 55' 44'' E$  longitude. It connects to *Rowmari beel* by a canal of width 50 m at centre and 229 m long. Area of *Rowmari beel* is 50 hectares as per government records

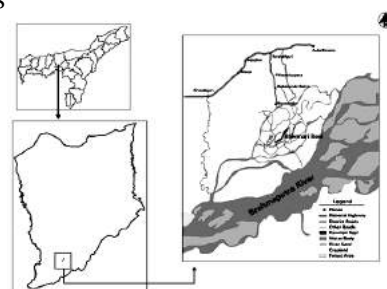


Figure 1. Location map of Rowmari beel

**DATA COLLECTION**

Data is collected from fish landing sites on weekly basis from January 2009-December 2010. Secondary data were also collected through observation and interview with fishers through questionnaire. Identification of fishes was done following after Talwar & Jhingran (1991) and Vishwanath (2002). Conservation status of all the fishes was compiled as per CAMP (1998) and IUCN (2013).

**RESULTS AND DISCUSSION**

The present study on Icthyofaunal diversity of Rowmari beel has revealed occurrence 54 species of fishes belonging to 40 genera, 21 families and 9 orders which indicates rich Icthyofaunal diversity. The fishes belong to following orders-

Osteoglossiformes, Clupeiformes, Cypriniformes, Siluriformes, Beloniformes, Cyprinodontiformes, Synbranchiformes, Perciformes and Tetraodontiformes. The rich ichthyofaunal diversity in the wetland of Assam has been reported by a number of previous workers (Dey, 1981; Lahon, 1983; Goswami, 1985; Deka *et al.*, 2013) from their studies in a number of wetlands. Their studies indicate the presence of 57 fishes in Chandubi (Goswami, 1985); 62 in Dora (Lahon, 1983); and 63 species in Tamranga wetland (Agarwala, 1994), 44 in Barbila wetland (Deka *et al.*, 2013). The 54 fishes recorded during present investigation belongs to 40 genera, 21 families and 9 orders. A detailed systematic list of the available species of fishes along with local names and relative status has been incorporated (Table 1).

**Table 1.** List of fishes recorded in Rowmari beel during study period

Order	Family	Name of Fish Species	Vernacular Name	IUCN Status	CAMP status
Osteoglossiformes	Notopteridae	<i>Chitala chitala</i> (Hamilton,1822)	Chital	NT	EN
		<i>Notopterus notopterus</i> (Pallas,1769)	Kandhulee	LC	LRnt
Clupeiformes	Clupeidae	<i>Gudusia chapra</i> (Hamilton,1822)	Korati	LC	LRlc
		<i>Amblypharyngodon mola</i>	Moa	LC	LRlc
Cypriniformes	Cyprinidae	<i>Cabdio morar</i> (Hamilton ,1822)	Boriala	LC	LRnt
		<i>Chela cachius</i> (Hamilton,1822)	Chela	LC	NE
		<i>Cirrhinus mrigala</i> (Hamilton,1822)	Mirika	LC	LRnt
		<i>Cirrhinus reba</i> (Hamilton,1822)	Lasim	LC	VU
		<i>Esomus danricus</i> (Hamilton,1822)	Darikana	LC	LRlc
		<i>Salmophasia bacaila</i> (Hamilton,1822)	Chelekona	LC	LRlc
		<i>Salmophasia phulo</i> (Hamilton,1822)	Chelekona	LC	NE
		<i>Catla catla</i> (Hamilton,1822)	Bhakua	NE	VU
		<i>Labeo bata</i> (Hamilton,1822)	Bhangan	LC	LRnt
		<i>Labeo rohita</i> (Hamilton,1822)	Rou	LC	LRnt
		<i>Labeo calbasu</i> (Hamilton,1822)	Mahler,Mali	LC	LRnt
		<i>Labeo gonius</i> (Hamilton,1822)	Kurhi	LC	LRnt
		<i>Cyprinus carpio</i>	Common carp	NE	NE

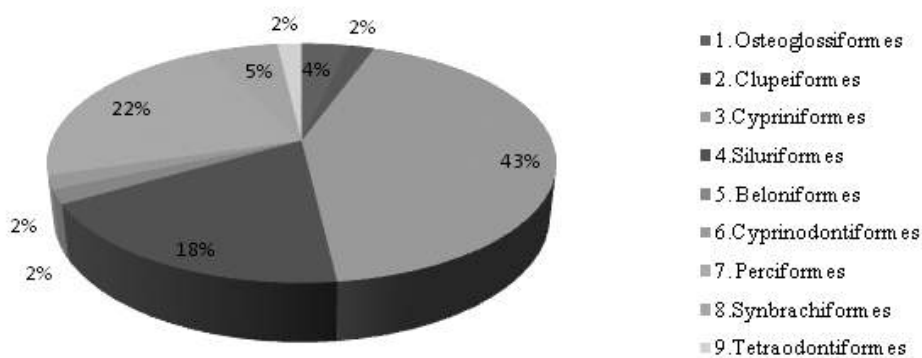
Order	Family	Name of Fish Species	Vernacular Name	IUCN Status	CAMP status
Cypriniformes		<i>Ctenopharyngodon idella</i>	Grass carp	NE	NE
		<i>Puntius chola</i> (Hamilton, 1822)	Puthi	LC	VU
		<i>Puntius sophore</i> (Hamilton, 1822)	Sendori puthi	LC	LRnt
		<i>Pethia conchonius</i> (Hamilton, 1822)	Chokori puthi	LC	VU
		<i>Pethia ticto</i> (Hamilton, 1822)	Chokori puthi	LC	LRnt
		<i>Rasbora daniconius</i> (Hamilton, 1822)	Darikana	LC	LRnt
	Balitoridae	<i>Acanthocobitis botia</i> (Hamilton, 1822)	Bali botia	LC	LRnt
		<i>Botia dario</i> (Hamilton, 1822)	Bagh botia/ Rani	LC	NE
	Cobitidae	<i>Lepidocephalichthys guntea</i> (Hamilton, 1822)	Bakhar botia	LC	NE
		<i>Mystus cavasius</i> (Hamilton, 1822)	Barsingarah	LC	LRnt
	<i>Mystus tengara</i> (Hamilton, 1822)	Koli tengara	LC	NE	
	Bagridae	<i>Mystus vittatus</i> (Bloch, 1794)	Tengra	LC	VU
		<i>Sperata seenghala</i> (Sykes, 1839)	Ari	LC	NE
Siluriformes	Siluridae	<i>Wallago attu</i> (Bloch & Schneider, 1801)	Borali	NT	LRnt
		<i>Ailia coila</i> (Hamilton, 1822)	Bapati/ Kadali	NT	VU
	Schilbeidae	<i>Neotropius atherinoides</i> (Bloch, 1794)	Bardia	LC	EN
	Sisoridae	<i>Gagata cenia</i> (Hamilton, 1822)	Ngarang, Keyakatta	LC	NE
	Heteropneustidae	<i>Heteropneustes fossilis</i> (Bloch, 1794)	Singhi	LC	VU
	Clariidae	<i>Clarias batrachus</i>	Magur	LC	VU
Beloniformes	Belonidae	<i>Xenentodon cancila</i> (Hamilton, 1822)	Kakila	LC	LRnt
Cyprinodontiformes	Aplocheilidae	<i>Aplocheilus panchax</i> (Hamilton, 1822)	Kanpona	LC	DD
		<i>Macrornathus aral</i> (Bloch & Schneider, 1801)	Tora	LC	LRnt
Synbranchiformes	Mastacembelid	<i>Macrornathus pancalus</i> Hamilton, 1822	Turi	LC	LRnt
		<i>Mastacembelus armatus</i> (Lacepède, 1800)	Bami	LC	LRnt

Order	Family	Name of Fish Species	Vernacular Name	IUCN Status	CAMP status
Perciformes	Ambassidae	<i>Chanda nama</i> Hamilton, 1822	Sonda	LC	NE
		<i>Parambassis lala</i> (Hamilton, 1822)	Chanda	NT	NE
		<i>Parambassis ranga</i> (Hamilton, 1822)	Senduri chanda	LC	NE
	Nandidae	<i>Badis badis</i> (Hamilton, 1822)	Randolnee	LC	NE
		<i>Nandus nandus</i> (Hamilton, 1822)	Gedgedi	LC	LRnt
	Gobiidae	<i>Glossogobius giuris</i> (Hamilton, 1822)	Pani mutura	LC	LRnt
	Anabantidae	<i>Anabas testudineus</i> (Bloch, 1792)	Kawoi	DD	VU
	Osphronemidae	<i>Trichogaster lalius</i> (Hamilton, 1822)	Lolkholisha	LC	NE
		<i>Trichogaster chuna</i> (Hamilton,1822)	Bhasaylee	LC	NE
	Channidae	<i>Channa punctata</i> (Bloch, 1793)	Goroi	LC	LRnt
		<i>Channa striata</i> (Bloch, 1793)	Sol	LC	LRlc
		<i>Channa orientalis</i> (Bloch & Schneider, 1801)	Chengali	NE	VU
Tetraodontiformes	Tetraodontidae	<i>Tetraodon cutcutia</i> Hamilton, 1822	Gangatope	LC	LRnt

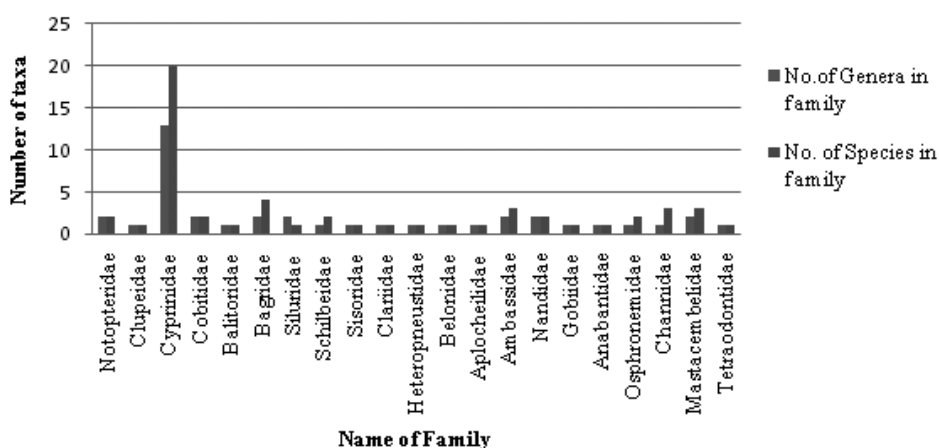
**CAMP Abbreviation:** EN-Endangered; VU-Vulnerable; LRnt-Lower risk near threatened; LRlc-Lower risk least concern IUCN Abbreviation: NT-Near threatened; LC-Least concern; DD-Data deficient; NE-Not evaluated (Nomenclature as per [www.fishbase.org](http://www.fishbase.org) (accessed on 22.01.2014) and IUCN-2013.2, <http://www.iucnredlist.org> (accessed on 22.01.2014))

It was observed that, out of 54 fish species, Cyprinidae was the single largest group which recorded with 20 species, followed by Bagridae with 4 species, Channidae, Ambassidae, and Mastacembelidae with 3 species each, Notopteridae, Cobitidae, Schilbeidae, Nandidae, Osphronemidae with 2 species

each and the rest Clupeidae, Balitoridae, Siluridae, Sisoridae, Clariidae, Heteropneustidae, Belonidae, Aplocheilidae, Gobiidae, Anabantidae, Tetraodontidae had single species each in Rowmari beel during the period of study. (Table 1 and Figure 2 and 3)



**Figure 2.** Percentage contribution of different orders of fishes found in Rowmari beel during 2009 - 2010



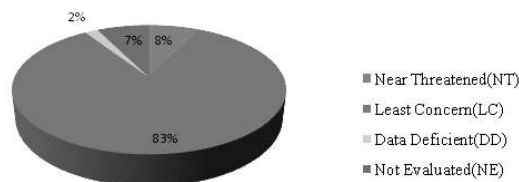
**Figure 3.** Total number of genera and species in a family found in Rowmari beel during 2009 - 2010

**Table 2.** Percentage occurrence of fishes of Rowmari beel under conservation status CAMP(1998) and IUCN (2013)

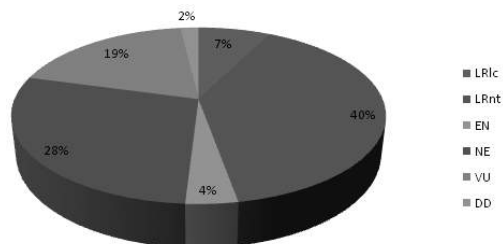
Rowmari beel: 2009-2011		EN	VU	NT	LRnt	LRlc	LC	DD	NE
CAMP(1998)	No. of Fish species	2	10	....	21	4	..	1	15
	% contribution	4%	19%	..	39%	7%	..	2%	28%
IUCN(2013)	No. of Fish species	..	0	4	...	...	45	1	4
	% contribution	...	..	7%	....	...	83%	2%	7%

In the present study, out of total collected fishes – 4 species are Near threatened (NT) as per IUCN which are *Chitala chitala*, *Wallago attu*, *Ailia coila*, *Parambassis lala*; status of 4 species not evaluated (NE) which are *Cyprinus carpio*, *Ctenopharyngodon idella*, *Catla catla*, *Channa orientalis*; 1 species remain data deficient (DD) which is *Anabas testudineus* and the rest 45 species are in the status of least concern as per IUCN. However, as per CAMP (1998), 4 species are in low risk least concern (LRlc) and they are *Gudusia chapra*, *Amblypharyngodon mola*, *Salmophasia bacaila*, *Channa striata*; 10 species are Vulnerable (VU). Species *Ailia coila* which has been given the status of NT (as per IUCN) is also VU as per CAMP. The other VU species are - *Cirrhinus reba*, *Puntius chola*, *Pethia conchoniis*, *Mystus vittatus*, *Heteropneustes fossilis*, *Clarias batrachus*, *Anabas testudineus*, *Ailia coila*, *Channa orientalis*, *Catla catla*. *Anabas testudineus* has been given status of data deficient as per IUCN; 15 species are not evaluated (NE). *Cyprinus carpio*, *Ctenopharyngodon idella* remains NE in both CAMP and IUCN status. *Parambassis lala* was NE according to CAMP but in IUCN (2013) it has been regarded as Near threatened. 2 species are EN (CAMP) and they are *Chitala chitala*, *Neotropius atherinoides*. The *Neotropius atherinoides* has been regarded as of least concern according to IUCN. Only 1 species

*Aplocheilus panchax* remains DD (data deficient).



**Figure 4.** Conservation status of fishes fauna of Rowmari beel as per IUCN (2013)



**Figure 5.** CAMP status for fishes recorded in Rowmari beel

CAMP Abbreviation: LRlc-Lower risk least concern; LRnt-Lower risk near threatened; EN-Endangered; NE-Near threatened; VU-Vulnerable; DD-Data deficient



**Plate 1.** A panoramic view of Rowmari Beel in different seasons

## CONCLUSION

The present study is an effort to document ichthyofaunal of Rowmari beel with conservation status of fishes found there. But there are many factors affecting the beel like excessive fishing, uneconomic use of fishing gears and cultivation of crops in

peripheral region during winter season. The natural stock is losing ground due to paddy and jute cultivation along the catchment area of the beel. Thus the study of Rowmari beel provides crucial information about the status of the fish diversity in the beel and thus gets the emphasis for conservation and awareness.



Plate 2a & b. Khaloi, Jakoi , Polo & Thela jhaal



Plate 3. Fish catch at landing site

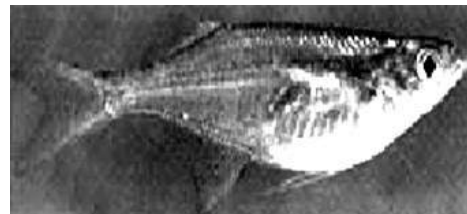
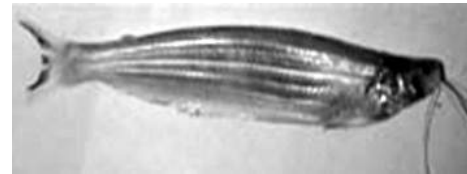


Plate 4a. *Chela cachius*



Place 4c. *Ailia coila*



Plate 4b. *Xenentodon cancila*



Plate 4d. *Pethia conchonius*



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