# The status of locally endangered fish faunal: a case study of Contai Sub-division, Purba Medinipur district; West Bengal

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**Abstract**- In the present study, an attempt has been made to assess the threat status of native fish fauna in the inland areas of Contai Sub-division; Purba Medinipur district, West Bengal, India. Total 45 native fish species were identified in this Sub-division during the period of July 2017 to September 2018. Out of the 45 species, eight fish species was recognised as locally endangered. Spatially distribution map was made using Geographical Information System to elucidate the distribution of fish species.

**Keywords-** Endangered fish faunal, IUCN Red List, Spatial distribution.

## 1. INTRODUCTION

Freshwater resources are essential for aquatic life. It is, therefore, imperative to protect them. Freshwater ecosystems are globally incompletely protected. Due to the human interference the fresh water eco system is continuously degraded [1]. This study is an urgent need for increased conservation measures. Inland water bodies like rivers, ponds, tanks, wetlands and lakes are the main source of sufficient amount of fish fauna [2, 3]. The diversity of fish species is influenced by the human, in both positive and negative ways. Furthermore, fish species richness depends on the taxa studied and the adequacy of survey techniques in detecting rare species. A total number of 50 species belonging to 33 genus and 14 families were recorded in Upper Ganga basin of Himalayan region [4]. Total number of 251 freshwater fish species was recorded in West Bengal that shows its richness in fish biodiversity [5]. West Bengal as well as Purba Medinipur district has potentiality of large fresh water resources. By utilising these vast water resources there is a great prospect of aquaculture. This large number of water resources can be divided into inland water resources and marine water resources. Inland resources constitute ponds, rivers, marshy lands, canals, reservoirs etc. The different researchers are studied in a different way about fish diversity in West Bengal. It's recorded a total number of 37 freshwater fish species in a market based survey in Burdwan district [6]. Bhattacharya (2018) identified 102 fresh water fish species belonging into total 10 orders and 27 families in Bankura district [7]. Mandal and Chanda (2017), mentioned a number of 14 small indigenous freshwater fish species in daily market of Midnapur town [8]. In 2008, Bhakta and Bandyopadhyay reported that 11 fish species, 8 genera, 6 families and 1 order have lost from the period of 1990 to 2006 in Purba Medinipur district West Bengal [9]. Therefore, it showed the gradually large decline of fish productivity in West Bengal [10].

The above mentioned most of research study is about related to the fresh water indigenous fish species in West Bengal. Therefore, present study is an attempt to survey and identified the locally endangered fish species in Contai sub-division (eight blocks) of Purba Medinipur District (Figure 1).
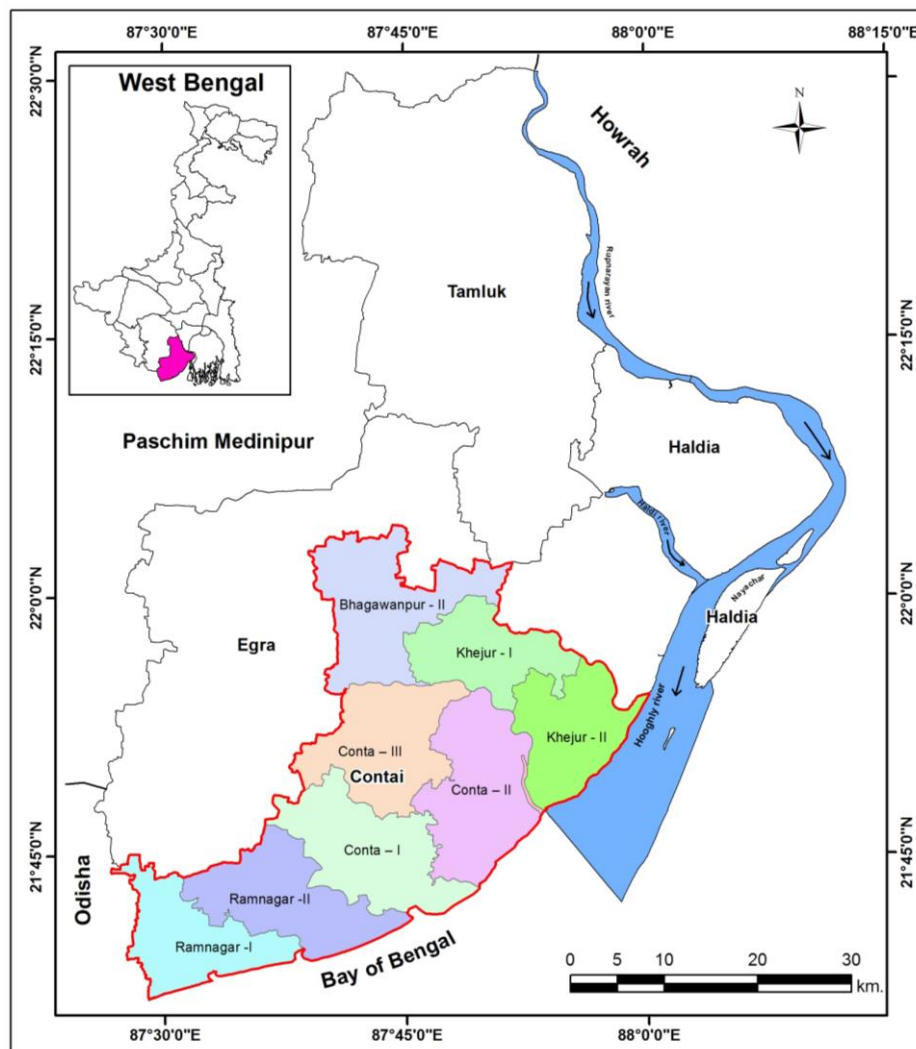
Figure 1. Location map o the study area

## 2. MATERIAL AND METHODS

The fish data was collected from different fish market of each block in Contai subdivision area. For the collection of fish data, the popular or major 3-4 fish market of each block was selected. The fish market surveys were carried out in early morning (07:00 - 10:00 AM) and late afternoon (04:00 - 06:00 PM), due to good availability of fish. Average market data were used for this study. The locally endangered fish fauna was surveyed, reviewed, taxonomically identified followed by Talwar and Jhingran and 'Fish base' [11]. Administrative boundary of the Contai sub-division was used for mapping the spatial distribution of fish status. The eight blocks of the subdivision was taken for survey. Block wise detailed market survey and questionnaire survey with local fisherman and people was carried out to know the under threat category fish species in this particular region. The average fish landing per day in per market data was taken as index of the population of single fish species. Surveying the local market as well as discussing with local fishermen to ensure the listing of low abundance or declining in productivity of those species.

## 3. RESULTS AND DISCUSSIONS

Dominance of availability the total fish specimen was recorded. During this market survey, total number of 45 native fish species and their International Union for Conservation of Nature (IUCN) Red List Status were listed in Table 1. From all these recorded fish species, 73% species was least concern, 9% species was not evaluated, 9% species was near threatened, 5% species was data deficient, 2% species was endangered and 2% species was vulnerable category. Among them eight (8) locally endangered fish species (*Notopterus notopterus, Labeocephalicthys guntia, Colisa fasciatus, Amblypharyngodon mola, Ompok bimaculatus, Puntius gonionotus, Mystus vittatus, Polynemus indicus*) were identified. The block wise

average availability of those fish species and their productivity in market data were presented in table 2.

The questionnaire survey information's are collected from the local fish seller and people of the area reveals that high declining in productivity in last 10 years. The low abundance of some species in daily market is reported. In the present the study, utility of GIS tool has supported significantly to understanding and extrapolating the spatial distribution trend of fish species. The figure 2 represents the spatial distribution of fish species.

Table1. List of total fish species reported in Contai Subdivision; Purba Medinipur district

| Order | Family | Scientific name | Common name | IUCN (Vers. 3.1) |
|---|---|---|---|---|
| Osteoglossiformes | Notopteridae | *Notopterus notopterus* (Pallas, 1769) | Falui | LC |
| Cypriniformes | Cyprinidae | *Amblypharyngodon mola* (Hamilton, 1822) | Morala | LC |
| | | *Gibelion catla* (Hamilton, 1822) | Catla | LC |
| | | *Cirrhinus mrigala* (Hamilton, 1822) | Mrigal | LC |
| | | *Ctenopharyngodon idella* (Valenciennes, 1844) | Grass Carp | NE |
| | | *Cyprinus carpio* (Linnaeus, 1758) | Common carp/Cyprinus | VU |
| | | *Esomus danrica* (Hamilton, 1822) | Danrika | LC |
| | | *Hypophthalmichthys molitrix* (Valenciennes, 1844) | Silver carp | NT |
| | | *Hypophthalmichthys nobilis* (Richardson, 1845) | Bighead carp | DD |
| | | *Labeo bata* (Hamilton, 1822) | Bata | LC |
| | | *Labeo calbasu* (Hamilton, 1822) | Calbasu | LC |
| | | *Labeo rohita* (Hamilton, 1822) | Rohu | LC |
| | | *Puntius chola* (Hamilton, 1822) | Punti | LC |
| | | *Puntius gonionotus* (Bleeker, 1849) | Raj Punti | LC |
| | | *Systomus sarana* (Hamilton, 1822) | Saral Puti | LC |
| | | *Pethia ticto* (Hamilton, 1822) | Puti | LC |
| | | *Rasbora daniconius* (Hamilton, 1822) | Danrika | LC |
| | | *Labeocephalicthys guntia* (Hamilton, 1822) | Gunte | LC |
| | | *Salmostoma sardinella* (Valenciennes, 1844) | Chela | LC |
| Siluriformes | Clariidae | *Clarias batrachus* (Linnaeus, 1758) | Mangur | LC |
| | | *Clarias gariepinus* (Burchell, 1822) | Thai mangur | LC |
| | Heteropneustidae | *Heteropneustes fossilis* (Bloch,1974) | Singhi | LC |
| | Bagridae | *Hemibagrus menoda* (Hamilton,1822) | Arr tengra | LC |
| | | *Mystus tengara* (Hamilton, 1822) | Tengra | LC |
| | | *Mystus vittatus* (Bloch, 1794) | Tengra | LC |
| | Pangasiidae | *Pangasianodon hypophthalmus* (Sauvage, 1878) | Pangus | EN |
| | Siluridae | *Wallago attu* (Bloch & Schneider, 1801) | Boal | NT |
| | | *Ompok bimaculatus* (Bloch, 1794) | Pabda | NT |
| Perciformes | Channidae | *Channa marulius* (Hamilton, 1822) | Shal | LC |
| | | *Channa orientalis* (Bloch & Schneider, 1801) | Chang | NE |
| | | *Channa punctata* (Bloch, 1793) | Lata | LC |
| | | *Channa striata* (Bloch, 1793) | Shol | LC |

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| | Anabantidae | *Anabas testudineus* (Bloch, 1792) | Koi | DD |
|---|---|---|---|---|
| | Ambassidae | *Chanda nama* (Hamilton, 1822) | Chanda | LC |
| | | *Parambassis ranga* (Hamilton, 1822) | Chanda | LC |
| | Osphronemidae | *Trichogaster fasciata* (Bloch & Schneider, 1801) | Colisa | LC |
| | Gobiidae | *Glossogobius giuris* (Hamilton, 1822) | Beley | LC |
| | Nandidae | *Nandus nandus* (Hamilton, 1822) | Bheda | LC |
| | Cichlidae | *Oreochromis mossambicus* (Peters, 1852) | Telapia | NT |
| | | *Oreochromis niloticus* (Linnaeus, 1758) | Nilotica | LC |
| | Polynemidae | *Polynemus indicus* (Shaw, 1804) | Topse | NE |
| Mugiliformes | Mugilidae | *Rhinomugil corsula* (Hamilton, 1822) | Kharsula | LC |
| Synbranchiformes | Mastacembelidae | *Macrognathus aculeatus* (Bloch, 1786) | Goichi | NE |
| | | *Mastacembelus armatus* (Lacepède, 1800) | Pankal | LC |
| Synbranchiformes | Synbranchidae | *Monopterus cuchia* (Hamilton, 1822) | Ban | LC |

LC: Least Concern, NT: Near Threatened, NE: Not Evaluated, VU: Vulnerable, EN: Endangered, NT: Near Threatened, DD: Data deficient

Table 2. Recorded market survey of endangered fish species

| Scientific Name | Common Name | Block name | | | | | | | | IUCN status |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Bhagba npur - II | Cont ai - I | Contai - II | Contai - III | Kheju ri - I | Khejuri - II | Ramnag ar - I | Ramna gar - II | |
| | | Productivity/ Day/Market (kg) | | | | | | | | |
| *Notopterus notopterus* | Falui | 2 | - | 1 | - | 0.25 | 0.5 | - | 0.5 | LC |
| *Labeocephalicth ys guntia* | Gunte | - | 0.05 | - | 0.06 | - | - | - | - | LC |
| *Colisa fasciatus* | Kholisa | 0.25 | 0.05 | - | - | - | - | 0.3 | - | LC |
| *Amblypharyngo don mola* | Mola Karplet | 5 | 2.5 | 13 | 8 | 5 | 10 | 5 | 4 | LC |
| *Ompok bimaculatus* | Pabda | 0.3 | 1.8 | 0.25 | 0.2 | 0.4 | 0.5 | 3 | - | NT |
| *Puntius gonionotus* | Raj Punti | - | - | - | - | 1.2 | - | - | - | LC |
| *Mystus vittatus* | Tangra | - | 1.2 | - | 0.6 | 0.5 | 0.4 | 2.5 | - | LC |
| *Polynemus indicus* | Topse | - | - | - | - | - | - | 4 | 1 | NE |

LC: Least Concern, NT: Near Threatened and NE: Not Evaluated

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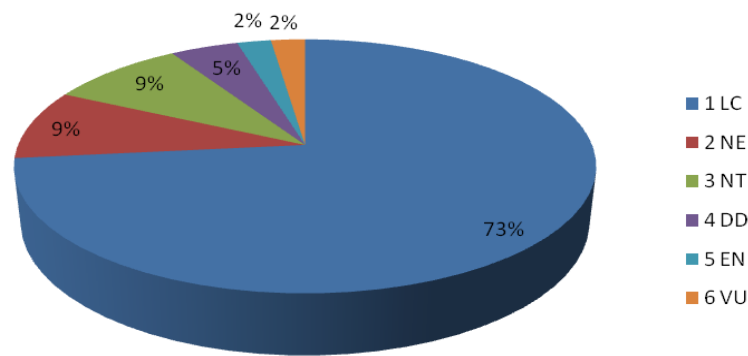*E-ISSN: 2321-9637*
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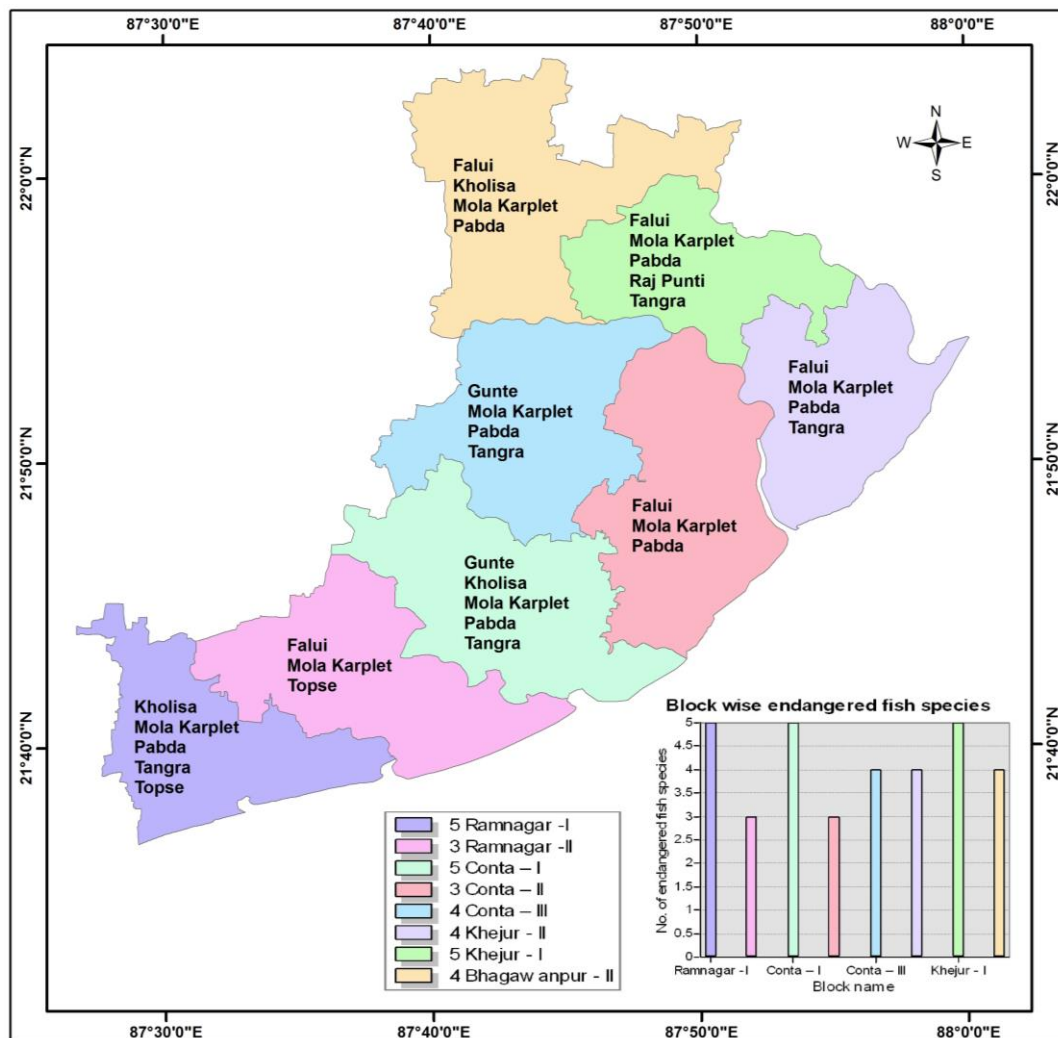Figure 2. Diversity status of species



Figure 3. Spatial distribution of locally endangered fish species

## 4. CONCLUSION

The final result confirmed that the applicable conservation strategy and proper planning is straightway needed to protect those locally endangered fish species. The market based survey of those species showed that there was a sharp drop in productivity in last few years. Over fishing, unregulated uses of pesticides in agricultural field, irrational fish harvesting along with different anthropogenic activities are the central cause for aquatic diversity loss. Proper supervision along with sustainable developmental thoughts (harvesting fish population size restriction, breeding technique developing) may protect those fish species from the door of extinction.

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