# Threatened Freshwater Fishes of India



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ICAR

National Bureau of Fish Genetic Resources, Lucknow
(Indian Council of Agricultural Research)

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**(Indian Council of Agricultural Research)**

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**This publication is based on the outcome of several workshops on conservation categorization and management of freshwater fishes of India and inputs from fisheries experts of the country.**

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# Contents


| | | |
|---|---|---|
| | Preface | i |
| 1. | Introduction | 1 |
| 2. | IUCN Red List System | 1 |
| 3. | Status of Fish Genetic Resources- Global Scenario | 2 |
| 4. | Conservation Assessment Efforts at NBFGR, Lucknow | 3 |
| 5. | Methodology of Assessing Conservation Status | 4 |
| 6. | Conclusion | 5 |
| 7. | References | 6 |
| 8. | Conservation Assessment Criteria's | 8 |
| 9. | List of Freshwater Fish Species of India under Threatened Category | 11 |
| 10. | List of Fish Species under Indian Wildlife (Protection) Act, 1972 | 19 |
| 11. | List of Fish Species from India in the Red List of IUCN | 19 |

# Preface

India is one of the mega biodiversity hot spots contributing to the World's biological resources from the long stretches of Eastern Ghats on the East, the greater Himalaya range on the Northern Plains and Western Ghats on the west and has been bestowed with vast and varied fish germplasm resources. The country has rich freshwater fish genetic resources constituting 756 species which have been recorded in the NBFGR database (INDFISH, 2009).

Over the years and more particularly during the recent past, due to natural and anthropogenic stresses, including habitat alterations, overexploitation of resource, reduction of natural habitat area, construction of dams, diversion or reclamation of river beds for urbanization, that reduce water discharge in rivers, unsustainable fishing, introduction of non native species and global climatic variations etc., India's germplasm is getting depleted and many freshwater species have become threatened. In view of the significance and to achieve sustainable utilization of these resources, appropriate planning for biodiversity conservation and management strategies are of utmost importance and the greatest challenge is to secure the IPRs related to fisheries so that the country is able to maintain its stake on its biological resource and their potential benefits.

Knowledge of species and communities reveal crucial facts necessary to the management of eco-system and habitats. Identification, listing and prioritization of species and their conservation status are one of the important tasks in conservation and sustainable utilization of natural resources receiving global attention. The conservation of the fishes has never been adequately addressed in India which has been mainly due to lack of scientific data and perception about the criteria to be used for the characterization and designating conservation status of threatened fishes.

The authors in the present communications have compiled a list of 120 freshwater threatened fish species following standard criterion towards conservation assessment and management plans. This document also contain the globally threatened list of Indian freshwater fish fauna with categories as per IUCN (2009) Red List and species listed under Indian Wildlife (Protection) Act (1972).

The document is expected to be useful for the scientific research, Govt. organization's, NGOs, the private sector, multilateral agencies in understanding the threat level, conservation categorization and formulating species specific conservation plan for saving invaluable freshwater fishes of the country. Suggestions to improve this document are welcome and requested.

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## Introduction

Biodiversity loss is one of the world's most pressing crisis and there is global concern about the status of the biological resources on which so much of human life depends. The estimated current species extinction rate is between 1,000 and 10,000 times higher than it would naturally be (Kumar and Khanna, 2006).

Fish forms highest species diversity among all vertebral groups apart from its economic importance. India is one of the mega biodiversity hot spots (North East Region and Western Ghat) contributing about 11.72% of global fish diversity mainly from the greater Himalayan range on the northern plains, long stretches Eastern and Western ghats. Throughout the world, aquatic environments are experiencing serious threats to both diversity and ecosystem stability and therefore, research is being persued globally to develop systematic conservation planning to protect freshwater biodiversity (Margules and Pressey, 2000; Saunders et al., 2002, Nel et al., 2008), and various methods, strategies and priorities have been proposed (Cowx, 1998; Lakra et al., 2006; Sarkar et al., 2008). Kottelat and Whitten (1996) considered the biological change that environmental degradation brings about, and enumerated pollution, increased sedimentation, flow alteration, water diversion and introduced species as the main causes for decreased ichthyofaunal diversity in Asian countries.

In view of the significance and to achieve sustainable utilization of these resources, appropriate planning for biodiversity conservation and management strategies are of utmost importance and the greatest challenge is to secure the IPRs related to fish biodiversity so that the country is able to maintain its stake on its biological resource and their potential benefits. There is also growing awareness of how biodiversity supports livelihood and sustainable development. Therefore, scientific information about species, conservation status and ecosystems is essential for moving towards more sustainable use and scientific conservation efforts of our invaluable biological resources.

## IUCN Red List System

International Union for Conservation of Nature and Natural Resources (IUCN), established in 1963, set a standard for global species listing and conservation assessment efforts. Over the time, the IUCN recognized a more objective and scientific system for determining threat status. The most precise and quantitative Red list categories and criteria were adopted by IUCN in 1994. The overall aim of the Red List is to convey the urgency and scale of conservation problems to the public and policy makers, and to motivate the global community to try to reduce species extinctions.

## Status of Fish Genetic Resources –Global Scenario

In recent years, the international community has also become sensitive to conservation of natural resources, rights of native inhabitants etc. as it is evident from the Convention on Biodiversity (CBD). To respond to new challenges and developments, Govt. of India has legislated the Biological Diversity Act 2002 (BDA, 2002) and Biological Diversity Rules (2004), which aims at conservation of our natural biological heritage and ensures the sharing of benefits of the utilization of biological resources in an equitable manner. The recently published National Biodiversity Action Plan (NBAP, 2008) includes several plans, programmes and policies towards biodiversity conservation.

According to the IUCN (2008) Red List of all life forms, 16,928 species are threatened globally, and of these 1275 species are fishes. In Asia, 6106 organisms are threatened of which 688 are fin fishes. Overall, the conservation status of the endemic fish species in the Asia can be considered to be relatively satisfactory (De Silva et al., 2007) as shown in Fig 1 in which only 16.3% of the endemics are in under status of vulnerability. India contains 659 species of animals listed as globally threatened by IUCN (2008) which is approximately 3% of the worlds total number of threatened faunal species (16928 species). The 659 Globally Threatened Indian Species includes 42 species of fishes as per IUCN classification (www.iucnredlist.org) under different categories (Table 3).

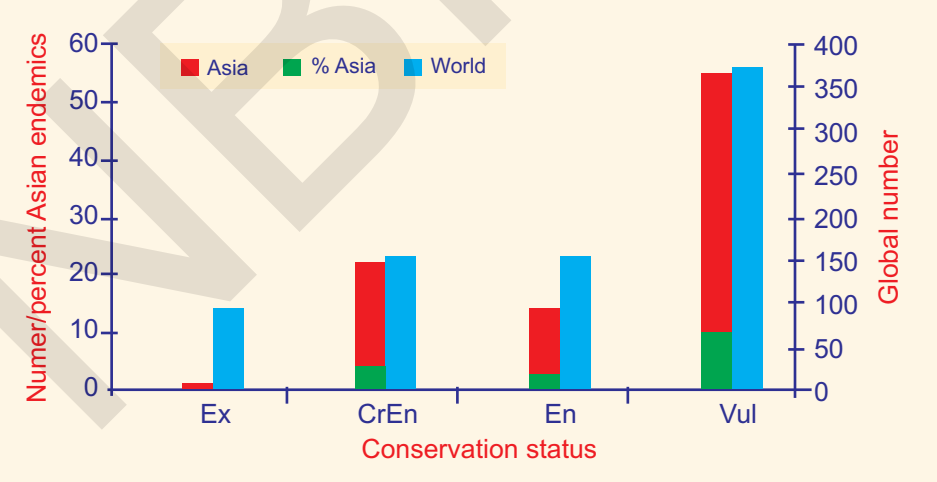


**Figure 1. The number of endemic finfish species in Asia, their status, and the number in each group expressed as a percentage of the total number of endemic species, together with the numbers of freshwater finfish species in the world in each category. (Ex, extinct, CrEn, critically endangered; En, endangered; Vu, vulnerable). Source: De Silva et al., 2007**

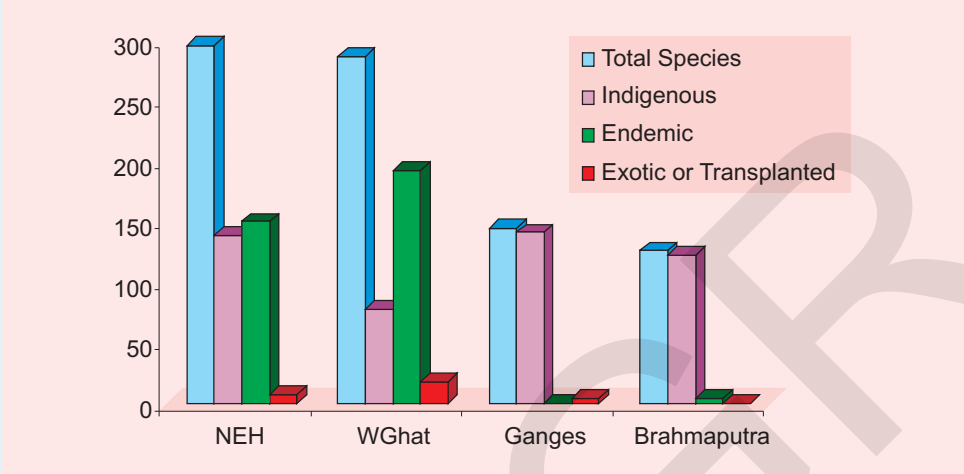


**Figure 2. The number of indigenous, endemic and exotic species reported from Biodiversity hotspot areas and river basins. (Data source: Vishwanath et al 2007, Ponniah and Gopalakrishnan 2000, Watersheds of Asia and Oceania- http://www.waterandnature.org/ atlas/htm, Fish base).**

Among Asian countries, India possess the maximum number of endemic freshwater fin fish species (27.8%) followed by China, Indonesia and Myanmar. The number of indigenous and endemic freshwater fin fishes recorded from the biodiversity hotspot and major rivers like Ganges and Brahmaputra is shown in Fig 2.

## Conservation Assessment Efforts at NBFGR, Lucknow

A knowledge of species and communities reveals crucial facts necessary for the arrangement of ecosystem and habitats as well as to the identification of important genomes and genes. Identification, listing and prioritization of species and their conservation status are important tasks in conservation. The National Bureau of Fish Genetic Resources (NBFGR) has developed a database on Indian fish diversity (INDFISH, 2009) comprising information on 2246 indigenous and 291 exotic finfishes. This includes information on the taxonomy, biology, stock structure and their distribution and status in the area concerned etc. Considerable efforts have been made under various research programmes at NBFGR, Lucknow to generate information that can provide scientific backstopping to such holistic approach towards sustainable conservation and management of the biodiversity of fish. Research has been pursued to develop various research tools to generate information, relevant to conservation strategies of prioritized and endangered fish species (Lakra et al., 2006). Adequate focus and priority is maintained to keep pace with developing innovative approaches and new technological advancements.

The conservation of aquatic biodiversity has been inadequately addressed in India which has been mainly due to lack of scientific data and understanding of the criterion to be followed for designating conservation plans. However, NBFGR, Lucknow began conservation categorization of fishes based on group exercises and collective inputs from the stakeholders. The preliminary assessment of NBFGR (1992-93) categorized 4 species as endangered, 21 as vulnerable, 2 rare and 52 indeterminate fishes covering different ecosystem of the country. In the second phase out of about 700 freshwater fishes reported in Indian water, 320 were assessed in CAMP Workshop jointly organized by NBFGR and Zoo Outreach organization. Of the 320 species assessed in CAMP (1998) several fish species were categorized as threatened fish. In the recent Conservation Assessment Workshop (CAFF 2006), the base list prepared by NBFGR for Central India was assessed and the species was categorized based on the group exercise in the pattern of IUCN. Based on these exercises, a list of 120 threatened freshwater fish species has been finalized.

Though Indian Fisheries Act of 1879 is a landmark in the conservation of fishes of India remarkable impact in this regard has yet to be established. The Wildlife Protection Act of India (1972) provides legal protection to terrestrial and some of the aquatic animals but less importance is given on freshwater fish genetic resources. Recently, (Gazette notification no. 1-4/95 WL-1 dated 5.12.2001) Ministry of Environment and Forests, Government of India enlisted some species (Table 2) of marine sharks and rays, giant grouper, sea horse and 15 molluscan species in schedule I and IV of the Wildlife Protection Act, 1972.

## Methodology for Assessing Conservation Status

Globally, many systems of categorization and criteria's have been developed like World Conservation Union (IUCN), American Fisheries Society (AFS) and Australian Society for Fishery Biology (ASFB). According to the World Conservation Union (IUCN, 2001), any of the five criteria's within the categories has to be satisfied for a taxon to be included as "threatened". These are; (A) Population reduction, (B) Restricted distribution, (C) Population estimates, (D) Restricted population and (E) Probability of Extinction. In ASFB (Pollard et al., 1990) more importance has been given to population size, habitat and distribution range. The AFS system (Williams and Miller, 1990; Miller et al., 1989) is the simplest system without any supporting conditions by which the categories can be assessed. Other systems like categorizing based on the probability of extinction within a set time period (Mace and Lande, 1991) and occurrence ranking (Master, 1991).

Though IUCN categories did well globally but guidelines for regional or national assessments have not yet developed fully. In IUCN categorization, emphasis has been on causative factors. But for many species causative factor cannot be directly linked to population decline. Based on

the population biology, three categories Critical, Endangered and Vulnerable were proposed by Mace and Lande (1991) with decreasing probability of extinction over increased time scales. For assessing this, data on effective population size (*Ne*) and number of sub population, with migration rates and percentage population decline are required. The model proposed by Mace and Lande (1991) are more exact and less subjective than that of IUCN, ASFB, AFS. But such quantitative data is not available at present and it may not be available in near future also.

For this current conservation assessment, a criterion of IUCN (IUCN Red List Categories and Criteria version 3.1) was followed with necessary modifications in consultation with the experts of different regions of the country including revised criteria developed by Wildlife Institute of India (WII, 2007). The conservation status of this report is based on the compilation of scientific documents and reports developed from the research programmes in the area of conservation of freshwater fish resources of India (Dehadrai et al., 1994; Ponniah et al., 1998; Das et al., 2004; WII, 2007; Anon, 1992-93; CAMP, 1998; Lakra and Sarkar, 2007).

CAFF, 2006 workshop was organized at Bhopal for conservation assessment of fish species of Central India region. The fishes from the states of Madhya Pradesh, Rajasthan and Chattisgarh were analyzed and categorized by the expert group of the locality. Conservation assessment of freshwater fish diversity of NEH region was organized in the year 2007 to assess and categorize the fish species for conservation. Scientists and researchers in the states of NE region interacted and categorized the fish species of NE region for conservation based on the available data on fish diversity.

The assessment of the fishes was done with much attention to the species under threatened categories like endangered (EN) and vulnerable (VU). The details of the criteria consulted in the process of conservation assessment of the fishes are given in Annexure 1. The summarized list of the 120 species under above categories is presented in table 1 which includes 71 species under endangered and 49 species under vulnerable status.

## Conclusion

The conservation of aquatic germplasm resources is to be taken on priority basis in the present global scenario, where more fish species are being reported to be endangered and threatened. The information provided in this publication will serve as base line information on current status of freshwater fishes of India. The information provided will help in understanding the threat level and conservation categorization of freshwater fishes of the country and formulating species specific conservation plan for saving invaluable freshwater fish resources of the country. It is suggested to conduct periodical studies for enlisting or delisting of the species based on the criteria discussed. The respective conservation authorities may initiate developing species and region specific strategies for conservation and sustainable utilization of fish genetic resources.

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## Annexure 1

# Conservation Assessment Criteria followed at NBFGR, Lucknow

The following five criteria were considered in categorizing the status which is in conformity with Wildlife Institute of India categorization (2007) and IUCN (version 3.1).

A. Declining population (past, present and/or projected)

B. Geographic range size, and fragmentation, decline or fluctuations

C. Small population size and fragmentation, decline, or fluctuations

D. Very small population or very restricted distribution

E. Quantitative analysis of extinction risk (e.g., Population Viability Analysis)

### ENDANGERED (EN)

A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered, and it is therefore considered to be facing a very high risk of extinction in the wild.

### VULNERABLE (VU)

A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild.

### NEAR THREATENED (NT)

A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

### LEAST CONCERN (LC)

A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

### DATA DEFICIENT (DD)

A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges

the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and a threatened status. If the range of a taxon is suspected to be relatively circumscribed, if a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified.

**NOT EVALUATED (NE)**

A taxon is Not Evaluated when it is has not yet been evaluated against the criteria.

***Details of the Criteria***

| Use of the criteria A-E | Endangered | Vulnerable |
|---|---|---|
| **A. Population reduction** | Declines measured over the longer of 10 years or 3 generations | |
| **A1** | >70% | >50% |
| **A2, A3 & A4** | >50% | >30 |

**A1.** Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible AND understood AND ceased based on and specifying any of the following:

(a) direct observation

(b) an index of appropriate to the taxon

(c) a decline in area of occupancy (AOO), extent of occurrence (EOO) and /or habitat quality

(d) actual or potential levels of exploitation

(e) effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.

**A2.** Population reduction observed, estimated, inferred or suspected in the past where the causes of reduction may not have ceased OR may not be understood OR may not be reversible, based on any of (a) to (e) under A1.

**A3.** Population reduction projected or suspected to be met in the future (up to maximum of 100 years) based on any of (b) to (e) under A1.

**A4.** An observed , estimated, inferred , projected population reduction (up to maximum of 100 years) where the time period must include both the past and the future, and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible , based on any of (a) to (e) under A1.

**B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy)**

| | | | |
|---|---|---|---|
| **B1.** | Either extent of occurrence | <5,000 $km^2$ | <20,000 $km^2$ |
| **B2.** | or area of occupancy | <500 $km^2$ | <2,000 $km^2$ |
| | and 2 of the following 3: | | |
| | (a) severely fragmented or # locations | $\leq$5 | $\leq$10 |
| | (b) continuing decline in (i) extent of occurrence, (ii) area of occupancy, (iii) area, extent and/or quality of habitat,(iv) number of locations or subpopulations and (iv) number of mature individuals. | | |
| | (c) extreme fluctuations in any of (i) extent of occurrence, (ii) area of occupancy, (iii) number of locations or subpopulations and (iv) number of mature individuals. | | |

**C. Small population size and decline**

| | | | |
|---|---|---|---|
| | Number of mature individuals and either **C1** or **C2:** | <2,500 | <10,000 |
| **C1.** | An estimated counting decline of at least up to a maximum of 100 years | 20% in 5 years or 1 generation | 10% in 10 years or 3 generation |
| **C2.** | A counting decline and (a) and/or (b) | | |
| | (a i) # mature individuals in largest subpopulation | <250 | <1,000 |
| | (a ii) or % mature individuals in one subpopulation | 95-100% | 100% |
| | (b) extreme fluctuations in the number of mature individuals | | |

**D. Very small or restricted population**

| | | |
|---|---|---|
| Either (1) number of mature individuals | <250 | <1,000 |
| or (2) restricted area of occupancy | na | typically: AOO<20 $km^2$ or # locations$\leq$5 |

**E. Quantitative Analysis**

| | |
|---|---|
| Indicating the probability of extinction or 5 generations | 20% in 20 years 10% in 100 years (100 years max) |

**Table 1. List of freshwater fish species of India under threatened category (EN, VU) as per NBFGR, Lucknow**

| Sl No. | Species | Family | Distribution | Category |
|---|---|---|---|---|
| 1. | *Amblyceps mangois* (Hamilton) | Amblycipitidae | Foot-hills of the Himalaya from Kangra valley in Himachal Pradesh, Punjab to Assam, Manipur and Krishna system | EN |
| 2. | *Bagarius yarrellii* (Sykes) | Sisoridae | Indus and Ganges drainages, most of southern India, East of the Western Ghats | EN |
| 3. | *Barbodes bovanicus* (Day) | Cyprinidae | Western Ghats (Karnataka, Tamil Nadu) | EN |
| 4. | *Barbodes wynaadensis* (Day) | Cyprinidae | Wayanad & headwaters of Cauvery | EN |
| 5. | *Batasio travancoria* Hora & Law | Bagridae | Kerala (Pamba, Kallada, Neyyar, Chalakkudy, Achankoil rivers) | EN |
| 6. | *Carinotetraodon travancoricus* Hora & Nair | Tetraodontidae | Kerala (Vembanad lake, Chaliyar & Kole wetlands of Trichur) | EN |
| 7. | *Chaca chaca* (Hamilton) | Chacidae | Occurs in Ganges-Brahmaputra drainages, Bihar, West Bengal and Assam | EN |
| 8. | *Chagunius chagunio* (Hamilton) | Cyprinidae | Found in North India along base of Himalaya, Assam, West Bengal, Punjab, Uttar Pradesh, Bihar and Orissa. Known from Brahmaputra and Ganges drainages along the Himalaya foothills and Chota-Nagpur Damodar drainage | EN |
| 9. | *Channa amphibius* (McClelland) | Channidae | Found in North Bengal, India | EN |
| 10. | *Channa aurantimaculata* Musikasinthorn | Channidae | Dibrugarh, Assam, India | EN |
| 11. | *Channa barca* (Hamilton) | Channidae | Found in Assam and West Bengal. Fairly common in the Brahmaputra river in Assam | EN |
| 12. | *Channa bleheri* Vierke | Channidae | Upper reaches of Dibru river, Assam; also from the streams in Medela Reserve Forest, Dibrugarh | EN |
| 13. | *Channa diplogramma* (Day) | Channidae | Western Ghats (Kerala) | EN |
| 14. | *Chitala chitala* (Hamilton) | Notopteridae | Ganges-Brahmaputra and Mahanadi river basins. | EN |

| Sl No. | Species | Family | Distribution | Category |
|---|---|---|---|---|
| 15. | *Clarias dayi* Hora | Clariidae | Wayanad hills of Kerala | EN |
| 16. | *Clarias dussumieri* (Valenciennes) | Clariidae | Peninsular India (Goa, Karnataka, Kerala & Puducherry) | EN |
| 17. | *Devario acuticephala* (Hora) | Cyprinidae | Assam, Meghalaya, Arunachal Pradesh, Manipur, West Bengal, Bihar, Madhya Pradesh and Uttar Pradesh | EN |
| 18. | *Etroplus canarensis* Day | Cichlidae | Western Ghats of South Canara – Karnataka | EN |
| 19. | *Garra surendranathanii* Shaji, Arun & Easa | Cyprinidae | Kerala | EN |
| 20. | *Glyptothorax cavia* (Hamilton) | Sisoridae | Known from North Bengal, Yamuna river and Suddya in Northern Assam. Also found in Kedar valley | EN |
| 21. | *Hemibagrus menoda* (Hamilton) | Bagridae | Known from Assam, West Bengal, Bihar, Orissa Maharashtra and Ganga River in Uttar Pradesh. Fairly common in the Gangetic provinces in rivers and their tributaries. | EN |
| 22. | *Himantura fluviatilis* (Hamilton-Buchanan) | Dasyatidae | Gangetic river system | EN |
| 23. | *Horabagrus brachysoma* (Gunther) | Horabagridae | Kerala, South & North Canara | EN |
| 24. | *Horabagrus nigricollaris* Pethiyagoda & Kottelat | Horabagridae | Chalakkudy river (Kerala) | EN |
| 25. | *Horaglanis alikunhii* Subhash Babu and Nayar | Clariidae | Chalakkudy River basin (Kerala) | EN |
| 26. | *Horaglanis krishnai* Menon | Clariidae | Kottayam, Kerala (Indian blind catfish, found in wells). | EN |
| 27. | *Hypselobarbus kolus* (Sykes) | Cyprinidae | Western Ghats (Kerala, Tamil Nadu, Karnataka & Maharashtra) | EN |
| 28. | *Hypselobarbus curmuca* (Hamilton-Buchanan) | Cyprinidae | Western Ghats of South Canara & Kerala. | EN |
| 29. | *Hypselobarbus thomassi* (Day) | Cyprinidae | Western Ghats (Kerala and Karnataka). | EN |
| 30. | *Hypselobarbus dobsoni* (Day) | Cyprinidae | Western Ghats (Kerala & Karnataka) | EN |
| 31. | *Hypselobarbus jerdoni* (Day) | Cyprinidae | Western Ghats (Kerala & Karnataka) | EN |

| Sl No. | Species | Family | Distribution | Category |
|---|---|---|---|---|
| 32. | *Hypselobarbus periyarensis* Raj | Cyprinidae | Periyar lake and streams, Kerala | EN |
| 33. | *Ilisha megaloptera* (Swainson) | Pristigasteridae | Found mainly along east coast of India. Common in the Ganges at Allahabad and in other rivers of eastern Uttar Pradesh | EN |
| 34. | *Labeo dussumieri* (Valenciennes) | Cyprinidae | Western Ghats of Kerala | EN |
| 35. | *Labeo kontius* (Jerdon) | Cyprinidae | Cauvery river system | EN |
| 36. | *Labeo nigrescens* Day | Cyprinidae | Western Ghats of Kerala and Southern Karnataka | EN |
| 37. | *Lepidopygopsis typus* Raj | Cyprinidae | Periyar lake in Kerala | EN |
| 38. | *Nangra nangra* (Hamilton) | Sisoridae | Known from Ganges, Yamuna, Kosi and Hooghly river systems | EN |
| 39. | *Nemacheilus nilgiriensis* (Menon) | Balitoridae | Pykara dam, Nilgiris (Tamil Nadu) | EN |
| 40. | *Nemacheilus sikmaiensis* (Hora) | Balitoridae | Known from Meghalaya, Tripura, Nagaland, Manipur and Assam | EN |
| 41. | *Nemacheilus keralensis* Rita, Banarescu & Nalbant | Balitoridae | Travancore (Kerala) | EN |
| 42. | *Ompok malabaricus* (Valenciennes) | Siluridae | Goa & Kerala | EN |
| 43. | *Ompok pabo* (Hamilton) | Siluridae | Known from Northeast India, West Bengal, Darjeeling District, Assam. Reported from Maharashtra | EN |
| 44. | *Osteobrama bakeri* (Day) | Cyprinidae | Kerala: Kottayam, Chaliyar, Periyar | EN |
| 45. | *Osteobrama belangeri* (Valencienes) | Cyprinidae | Recorded in Manipur and Godavari River | EN |
| 46. | *Osteochilus longidorsalis* Pethiyagoda & Kottelat | Cyprinidae | Chalakkudy River (Kerala) | EN |
| 47. | *Physoschistura elongata* Sen and Nalbant | Balitoridae | Known from Meghalaya near Shillong (Brahmaputra basin) | EN |
| 48. | *Pterocryptis wynaadensis* (Day) | Siluridae | Cauvery drainage in Kerala and Thungabadhra drainage in Karnataka | EN |

| Sl No. | Species | Family | Distribution | Category |
|---|---|---|---|---|
| 49. | *Puntius arulius* (Jerdon) | Cyprinidae | Cauvery river system, Tamil Nadu, Karnataka, Kerala (Wayanad) | EN |
| 50. | *Puntius chalakkudiensis* (Menon, Rema Devi & Thobias) | Cyprinidae | Chalakkudy River, Kerala | EN |
| 51. | *Puntius denisonii* Day | Cyprinidae | Kerala | EN |
| 52. | *Puntius fasciatus* (Jerdon) | Cyprinidae | Peninsular India & Western Ghats | EN |
| 53. | *Puntius jayarami* Vishwanath & Tombi | Cyprinidae | Known from Manipur River, Manipur | EN |
| 54. | *Puntius mahecola*(Valenciene s) | Cyprinidae | Wayanad hills, Cauvery & Periyar Rivers | EN |
| 55. | *Puntius manipurensis* Menon, Rema Devi & Vishwanath | Cyprinidae | Chindwin basin, Manipur valley | EN |
| 56. | *Puntius narayani* (Hora) | Cyprinidae | Western Ghats (Karnataka) | EN |
| 57. | *Puntius ophicephalus* (Raj) | Cyprinidae | Periyar lake & upstreams (Kerala) | EN |
| 58. | *Puntius tambraparniei* Silas | Cyprinidae | Tambraparnei River, Tamil Nadu | EN |
| 59. | *Rita chrysea* (Day) | Bagridae | Known from Mahanadi river and its tributaries in Orissa and Madhya Pradesh | EN |
| 60. | *Rita gogra* (Sykes) | Bagridae | Known from rivers of Deccan up to the Krishna river system. Also found in Mutha-Mula, Bhima and Godavary river; Maharashtra | EN |
| 61. | *Silonia childreni* (Sykes) | Schilbeidae | Known from Krishna, Godavary and Cauvery river systems in Western Ghats, Peninsular India | EN |
| 62. | *Sisor rhabdophorus* Hamilton | Sisoridae | Known from northern rivers of Bengal and Bihar (Ganga system) and Delhi (Jamuna system). Found in Ganges, Yamuna and Brahmaputra river systems | EN |
| 63. | *Syncrossus berdmorei* (Blyth) | Cobitidae | North East India (Manipur) | EN |
| 64. | *Tor malabaricus* (Jerdon) | Cyprinidae | Southern tip of the Western Ghats | EN |

| Sl No. | Species | Family | Distribution | Category |
|---|---|---|---|---|
| 65. | *Tor mosal* (Hamilton) | Cyprinidae | Occurs all along the base of the Himalayas including Kashmir, Darjeeling, Jammu, Himachal Pradesh and Uttar Pradesh. Also found in Kedar valley, Lesser Himalayan and Siwalik; Maharashtra. Fairly common in Ramganga, Uttar Pradesh | EN |
| 66. | *Tor mussullah* (Sykes) | Cyprinidae | Cauvery, Chaliyar & Krishna Rivers | EN |
| 67. | *Tor progeneius* (McClelland) | Cyprinidae | Known from Nagaland and Meghalaya in Brahmaputra river system | EN |
| 68. | *Tor putitora* (Hamilton-Buchanan) | Cyprinidae | Occurs all along the base of the Himalayas including Kashmir, Darjeeling, Jammu, Himachal Pradesh and Uttar Pradesh. Also found in Kedar valley, Lesser Himalayan and Siwalik; Maharashtra | EN |
| 69. | *Tor tor* (Hamilton) | Cyprinidae | Known from Sub-Himalayan range, Ganges and Narmada river systems; Assam and all along the foot hills of the Eastern and Central Himalayas as far as Jamuna system, higher reaches of the Mahanadi in Orissa and the Vindhyas and Satpura ranges of Madhya Pradesh; and Kedar valley | EN |
| 70. | *Travancoria elongata* Pethiyagoda & Kottelat | Balitoridae | Chalakkudy River, Kerala | EN |
| 71. | *Travancoria jonesi* Hora | Balitoridae | Western Ghats of Kerala (Travancore hills) | EN |
| 72. | *Badis badis*(Hamilton) | Badidae | Ganges River drainage, Himachal Pradesh, Mahanadi River drainage; Assam lowlands close to Brahmaputra | VU |
| 73. | *Bagarius bagarius*(Hamilton) | Sisoridae | Ganga and Brahmaputra basin in India | VU |
| 74. | *Barilius bakeri* Day | Cyprinidae | Western Ghats in Kerala | VU |
| 75. | *Barilius canarensis*(Jerdon) | Cyprinidae | Kerala and Karnataka – Western Ghats | VU |
| 76. | *Botia dario*(Hamilton) | Cobitidae | Known from Ganges and Brahmaputra drainages | VU |
| 77. | *Carinotetraodon imitator* Britz & Kottelat | Tetraodontidae | Ernakulam, Kerala | VU |
| 78. | *Cirrhinus cirrhosus* (Bloch) | Cyprinidae | Rivers of Peninsular India | VU |

| Sl No. | Species | Family | Distribution | Category |
|---|---|---|---|---|
| 79. | *Crossocheilus latius* (Hamilton) | Cyprinidae | Drainages of the Ganges and Brahmaputra in northern India, Mahanadi river drainage in Orissa, south to the headwaters of Krishna river and Western Ghats | VU |
| 80. | *Ctenops nobilis* McClelland | Osphronemidae | Found in North-eastern Bengal, Bihar, Assam and Sikkim | VU |
| 81. | *Cyprinion semiplotum* (McClelland) | Cyprinidae | Brahmaputra basin in North East India | VU |
| 82. | *Danio dangila* (Hamilton) | Cyprinidae | Assam, Meghalaya, Arunachal Pradesh, Manipur, West Bengal, Bihar, Madhya Pradesh and Uttar Pradesh | VU |
| 83. | *Eutropiichthys vacha* (Hamilton) | Siluridae | Occurs in Northern and North eastern India up to Orissa and Chilka lake | VU |
| 84. | *Garra gotyla gotyla* (Gray) | Cyprinidae | Known from Assam, all along the Himalayas, Chota-Nagpur plateau and the Vindhya-Satpura Mountains of the Indian peninsula. Also found in Kedar valley and Maharashtra | VU |
| 85. | *Garra kempi* Hora | Cyprinidae | Known from Abor and Naga Hills in Arunachal Pradesh | VU |
| 86. | *Garra lamta*(Hamilton) | Cyprinidae | Known from Darjeeling and Kumaon Himalaya, Assam and Sikkim and Western Ghats | VU |
| 87. | *Glyptothorax striatus* (McClelland) | Sisoridae | Known from Khasi and Garo hills in Meghalaya and Sikkim below Gangtok | VU |
| 88. | *Glyptothorax telchitta* (Hamilton) | Sisoridae | Known from vindhya range of mountains, Uttar Pradesh, Madhya Pradesh, Bihar and North Bengal. Fairly common in North Bengal | VU |
| 89. | *Gonialosa manminna* (Hamilton) | Clupeidae | Known from Ganges, Jamuna, Brahmaputra, Mahanadi, and other rivers of Orissa and Chilka lake | VU |
| 90. | *Heteropneustes fossilis* (Bloch) | Heteropneustidae | Occurs throughout Indian plains and the Andamans. Known from Maharashtra; Ombatta stream, Mudumalai, Tamil Nadu; Tranquebar; common in Western Ghats Rivers, Kerala and Karnataka and Chilka lake | VU |
| 91. | *Labeo nandina* (Hamilton) | Cyprinidae | Known from West Bengal and Assam | VU |
| 92. | *Labeo pangusia* (Hamilton) | Cyprinidae | Known from all along the Himalayas including Kashmir Ganga and Brahmaputra drainage systems of the Himalayas. Chota-Nagpur, Vindhya-Satpura ranges Deccan and South as far as the Cauvery. Occurs in West Bengal, Assam, contributes a minor fishery in North Bengal and Assam | VU |

| Sl No. | Species | Family | Distribution | Category |
|---|---|---|---|---|
| 93. | *Lepidocephalichthys irrorata* Hora | Cobitidae | Known from Kaziranga, Mikir hills, Meghalaya and Manipur and Assam and also in the Manipur river drainage system | VU |
| 94. | *Mystus montanus* (Jerdon) | Bagridae | Known from Kerala, Karnataka, Darjeeling District in West Bengal, Assam, Orissa, Madhya Pradesh, Maharashtra, Tamil Nadu and Chilka lake | VU |
| 95. | *Nemacheilus multifasciatus* (Day) | Balitoridae | Known from Darjeeling, Eastern Himalaya, Tista through the base of Nepal Himalayas as far as the Ghaghra and Kali drainages, Assam | VU |
| 96. | *Olyra kempi* Chaudhuri | Olyridae | Known from Meghalaya and Assam | VU |
| 97. | *Olyra longicaudata* McClelland | Olyridae | Known from the Eastern Himalayas: Darjeeling, Western Bengal; Mangaldai, Assam; Garo and Khasi hills in Meghalaya | VU |
| 98. | *Ompok pabda* (Hamilton) | Siluridae | Known throughout Northern India. Found in Brahmaputra river system in North-Eastern States and Ganga | VU |
| 99. | *Osteobrama cunma* (Day) | Cyprinidae | Known from Manipur valley, Western Ghats | VU |
| 100. | *Pangasius pangasius* (Hamilton) | Pangasidae | Throughout India | VU |
| 101. | *Pangio pangia* (Hamilton) | Cobitidae | Known from North Bengal, Assam, Manipur. Found in River Ganga in northeastern Bengal and Manipur | VU |
| 102. | *Poropuntius burtoni* (Mukherji) | Cyprinidae | North East Region (Manipur) | VU |
| 103. | *Pristolepis marginata* (Jerdon) | Nandidae | Western Ghats of Kerala | VU |
| 104. | *Pseudocheneis sulcata* (McClelland) | Sisoridae | Known from Doon valley in Uttar Pradesh, North Bengal and the Khasi hills in Meghalaya. Also found in Kedar valley | VU |
| 105. | *Puntius ater* Linthoingambi & Vishwanath | Cyprinidae | Known from Iril and Imphal rivers, ponds and lakes in Imphal valley, Manipur | VU |
| 106. | *Puntius chola* (Hamilton) | Cyprinidae | Known throughout India | VU |
| 107. | *Puntius sarana* (Hamilton) | Cyprinidae | Occurs throughout India | VU |
| 108. | *Puntius shalynius* Yazdani & Talukdar | Cyprinidae | Known from Barapani lake, Manipur, Assam and Meghalaya in Khasi and Jaintia hills | VU |

| Sl No. | Species | Family | Distribution | Category |
|---|---|---|---|---|
| 109. | *Puntius stoliczkanus* (Day) | Cyprinidae | Chindwin basin in Manipur | VU |
| 110. | *Puntius vittatus* (Day) | Cyprinidae | Throughout India | VU |
| 111. | *Raiamas guttatus* (Day) | Cyprinidae | Inhabits deep hillstream of Manipur | VU |
| 112. | *Rhinomugil corsula* (Hamilton) | Mugilidae | Known from Uttar Pradesh, Bihar, West Bengal, Orissa and Tamil Nadu. Found in Ganga and Cauvery river systems and Chilka lake. Also in Cauvery & Vaigai rivers | VU |
| 113. | *Schistura sijunensis* (Menon) | Balitoridae | Known from Siju cave and Garo hills in Meghalaya | VU |
| 114. | *Schizothorax richardsonii (*Gray) | Cyprinidae | Occurs along the Himalaya, from Jammu and Kashmir to Assam through Sikkim. Also found in Kedar valley and Siwalik | VU |
| 115. | *Sicamugil cascasia* (Hamilton) | Mugilidae | Known from the upper reaches of Ganga, Yamuna and Brahmaputra river systems. Very common in the upper waters of Ganges and Jamuna. Has been introduced into the Cauvery river system | VU |
| 116. | *Silonia silondia* (Hamilton) | Siluridae | Occurs in eastern Punjab and Haryana, Gangetic estuaries, Bihar, West Bengal, Darjeeling, Indo-Gangetic basin and Mahanadi. Also found in Chilka lake | VU |
| 117. | *Sperata acicularis* (Ferraris & Runge) | Bagridae | Manipur: water bodies at Moreh (Chindwin basin) | VU |
| 118. | *Sperata aor* (Hamilton) | Bagridae | Known from Northern India up to the Krishna river system in the south. Found in Ganga, Yamuna, Brahmaputra, Mahanadi, Narmada, Tapti and Cauvery river systems, Godavari river system; Kabini River in Wynaad | VU |
| 119. | *Tenualosa ilisha* (Hamilton) | Clupeidae | Found in Chilka Lake, Ganga, Yamuna, Narmada, Tapti, Krishna, Godavary, Cauvery, and Pennar rivers. Occurs in coastal waters, rivers, Bay of Bengal and river mouths | VU |
| 120. | *Tor khudree* (Sykes) | Cyprinidae | Kerala, Karnataka, Maharashtra | VU |

**Table 2. Fish species under Indian Wildlife (Protection) Act, 1972. Schedule - I. Part 2 (A) – FISHES**

| Sl. No. | Species | Notification No. and date |
|---|---|---|
| 1 | *Anoxypristis cuspidate* | 1-4/95 WL 1 dt. 05.12.2001 |
| 2 | *Carcharhinus hemiodon* | ,, |
| 3 | *Glyphius gangeticus* | ,, |
| 4 | *Glyphius glyphius* | ,, |
| 5 | *Himantura fluviatilis* | ,, |
| 6 | *Pristis microdon* | ,, |
| 7 | *Pristis zijsron* | ,, |
| 8 | *Rhynchobatus djiddensis* | ,, |
| 9 | *Urogymnus asperrimus* | ,, |
| 10 | *Rhincodon typus* (Whale shark) | 1-2/2001 WL 1 dt 28.05.2001 |
| 11 | Sea horse - all species (All Syngnathidians) | 1-4/95 WL 1 dt 11.07.2001 |
| 12 | Giant Grouper (*Epinephelus lanceolatus*) | ,, |

**Table 3: Fish species from India listed in the Red list of IUCN (2009.1)**
**Freshwater fishes:**

| Sl no | Fish species |
|---|---|
| 1 | *Glyphis gangeticus* (Müller & Henle) |
| 2 | *Heteropneustes microps* (Günther) |
| 3 | *Himantura chaophraya* Monkolprasit & Roberts |
| 4 | *Himantura fluviatilis* (Hamilton) |
| 5 | *Horaglanis krishnai* Menon |
| 6 | *Schistura sijuensis* (Menon) |

## Marine fishes:

| Sl No | Fish species |
|---|---|
| 1. | *Aetobatus flagellum* (Bloch & Schneider) |
| 2. | *Aetomylaeus maculatus* (Gray) |
| 3. | *Aetomylaeus nichofii* (Bloch & Schneider) |
| 4. | *Anoxypristis cuspidata* (Latham) |
| 5. | *Argyrosomus hololepidotus* (Lacepède) |
| 6. | *Balistes vetula* Linneaus |
| 7. | *Carcharhinus hemiodon* (Valenciennes) |
| 8. | *Carcharhinus longimanus* (Poey) |
| 9. | *Carcharias taurus* Rafinesque |
| 10. | *Cheilinus undulatus* Rüppell |
| 11. | *Cromileptes altivelis* (Valenciennes) |
| 12. | *Epinephelus lanceolatus* (Bloch) |
| 13. | *Epinephelus marginatus* (Lowe) |
| 14. | *Gymnura zonura* (Bleeker) |
| 15. | *Hippocampus kuda* (Bleeker) |
| 16. | *Hippocampus trimaculatus* (Leach) |
| 17. | *Mobula mobular* (Bonnaterre ) |
| 18. | *Nebrius ferrugineus* (Lesson) |
| 19. | *Negaprion acutidens* (Rüppell) |
| 20. | *Pegasus laternarius* Cuvier |
| 21. | *Plectropomus areolatus* (Rűppell) |
| 22. | *Pristis microdon* Latham |
| 23. | *Pristis pectinata* Latham |
| 24. | *Pristis pristis* (Linnaeus) |
| 25. | *Pristis zijsron* Bleeker |
| 26. | *Rhina ancylostoma* Bloch & Schneider |
| 27. | *Rhincodon typus* Smith |
| 28. | *Rhinobatos obtusus* Müller & Henle |
| 29. | *Rhinoptera javanica* Müller & Henle |
| 30. | *Rhynchobatus djiddensis* (Forsskål) |
| 31. | *Sphyrna mokarran* (Rüppell) |
| 32. | *Sphyrna tudes* (Valenciennes) |
| 33. | *Stegostoma fasciatum* (Hermann) |
| 34. | *Taeniura meyeni* Müller & Henle, |
| 35. | *Thunnus obesus* (Lowe) |
| 36. | *Urogymnus asperrimus* (Bloch & Schneider) |