CONSERVE FISH FAUNA OF THE NORTHEAST

No. 5 2008

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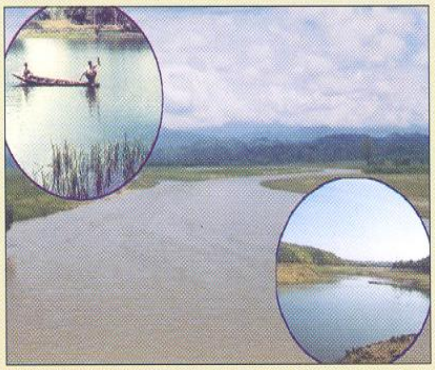
Introduction

The northeastern region of India-comprising the states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura - encompasses a geographical area of 2,55,083 km^2. The region presents diverse topographical conditions ranging from the plains of the Brahmaputra and Barrak valleys in Assam, upland flat lands of the Imphal valley in Manipur to predominantly hilly/mountainous regions of Meghalaya, Mizoram and Sikkim. As a result, it has vast and varied fishery resources in the form of rivers, floodplain wetlands/beels, reservoirs, ponds and mini barrages, lakes, as well as low-lying paddy fields. The eastern Himalayan region - encompassing the Northeast - has been recognized as one of the global hot spots of fresh water fish biodiversity. So far 267 fish species belonging to 114 genera under 38 families and 10 orders have been reported from the region. This is approximately 33% of the total Indian fresh water fishes. Among the states, Assam has the largest number of fish species (217) followed by Arunachal Pradesh (167), Meghalaya (165), Tripura (134), Manipur (121), Nagaland (68), Mizoram (48) and Sikkim (29 species).



Fish species endemic to the region

What makes the fish fauna of the Northeast more important from the economic point of view is that as many as 31 species occurring in the region are reported to be endemic to this region. A species is said to be endemic to "a country or a drainage system where it is native and described". The issue of endemism has great relevance considering the current legislation regarding patenting of species. Since the region can claim exclusive patenting rights over its endemic fish species, top priority should be given to conserve them in conservation programmes. Some of the important endemic species possessed by the northeastern states are **Aborichthys tikaderi** (Barman), **Kryptopterus indicus** (Datta, Barman and Jayaram); **Amblyceps arunachalensis** (Nath and Dey), **Acanthocobotis pavonaceous** (McClelland), **Neoeucirrhichthys maydelli** (Banarescu and Nalbant), **Nangra assamensis** (Sen and Biswas), Garra manipurensis (Vishwanath and Sarojnalini), **G. litanensis** (Vishwanath), **A. garoensis** (Hora), **Schistura**

elongatus (Sen and Nalbant), **Mesonemachielus sijuensis** (Menon) and **Schistura singhi** (Menon).

Are the fishes of the region threatened ?

There is a general perception that the rich fish fauna of the Northeast have been considerably depleted over the years. Some of the indications strengthening this belief are:

1. Fish catches from the rivers and other natural open water bodies are reported to be declining in most cases.
2. Most of the major fishes caught from the open water bodies are juveniles indicating that they are caught before attaining adult size. The large-scale landing of juveniles of major carps (catla, rohu, mrigal and kalbasu) in river Brahmaputra at Uzan Bazarghat (Guwahati) during the post-monsoon months (October–November) is a case in point.
3. Certain fish species like **Osteobrama belangeri**, pithia (**Tor** spp.), butter catfish (Ompok spp.), clown knife fish (**Chitala chitala**), eleng (**Bengala elenga**), punga (**Pangasius pangasius**), etc. are increasingly becoming rare.
4. Commercial fish catches from most open water fisheries are now dominated by small-sized miscellaneous fishes like Puntius spp., Colisa spp., etc. in place of major carps and large catfishes.

Categories of threatened species

The International Union for Conservation of Nature and Natural Resources (IUCN) uses certain categories of threatened species (both plant and animal) in its publications. Such categorization is useful in focusing attention on conservation measures designed to protect them. These categories used by the Union in their publications (e.g., Red data books) and listings (e.g., Red lists) are now widely used all over the world. These categories provide on easily and widely understood method for highlighting those species under higher extinction risk. The revised categories are as follows.

Extinct (EX) : A genus/species/variety (as the case may be) is extinct when there is no reasonable doubt that its last individual has died.

Extinct in the Wild (EW) : A species is extinct in the wild when it is known to survive only in cultivation, in captivity or as a naturalized population well outside its past range.

Critically Endangered (CR) : a species is critically endangered when it is facing extremely high risk of extinction in the wild in the immediate future.

Endangered (EN) : A species is endangered when it is not critically endangered but is facing a very high risk of extinction in the wild in the near future.

Vulnerable (Vu) : a species is vulnerable when it is not critically endangered or endangered but is facing high risk of extinction in the wild in the medium-term future.

Lower Risk (Lr) : A species is a lower risk one when it does not satisfy the criteria for any of the previous categories (EW, CR, EN and Vu). A species included in this category can be further divided in to three sub-categories.

i) **Conservation dependent (cd) :** These include species which are the focus of a continuing species or habitat-specific conservation programme, the cessation of which would result in the species qualifying for one of the previous threatened categories within a period of 5 years.

ii) **Near threatened (nt):** Species that do not qualify for conservation dependent but which are about to qualify for vulnerable category.

iii) **Least concern (lc) :** Species that do not qualify for conservation dependent or near threatened.

Data Deficient (DD) : A species is data deficient when there is inadequate information to make direct or indirect assessment of its risk of extinction based on its distribution and/or population status.

Not Evaluated (NE) : A species is not evaluated when it has not yet been assessed against the above-mentioned criteria.

CAMP Report, 1998 : Need for concern

The conservation status of 320 species of Indian fresh water fishes were assessed in a Conservation Assessment and Management Plan (CAMP) workshop jointly organized by the National Bureau of Fish Genetic Resources (ICAR) and Zoo-outreach Organization in 1997. About 105 of these species also occur in the Northeast. Based on the revised IUCN Red list criteria and available information, 6 species occurring in the region were found to be Critically Endangered (**Garra litanensis, G. manipurensis, Aborichthys garoensis, Lepidocephalus goalparensis, Pangasius pangasius** and **Osteobrama belangeri**), 31 species Endangered (e.g., Tor putitora, T. tor. Ompok bimaculatus, A. elongates, Noemacheilus multifasciatus, O. pabda, A. tikaderi, etc.).

In addition, 46 species were assessed to be Vulnerable (e.g., **Cyprinion semiplotum, Barilius barila, B. vagra, Raiamas bola, Catla catla, G. lamta, Labeo dyocheilus, Osteobrama cotio cunma, Garra gotyla gotyla, Clupisoma garua, Amblyceps arunachalensis, L. Bagarius bagarius, Cirrhinus reba, Channa orientalis, Puntius sarana sarana, Anabas testudineus, Clarias batrachus, Ailia coila, Heteropneustes fossilis**, etc.) indicating that they were also facing a high risk in the medium future. The fact that as many as 83 species out of the 105-odd species evaluated were found to be threatened indicates that many fish species of this region face a serious threat of extinction. Arguably, the total number of threatened fish species of the region will be much higher once the conservation status of all the species is evaluated.

How to conserve the region's fish fauna

I. **Conservation of habitat :** The following steps are suggested for conservation of the habitat in which the fishes live.

i) Prevention and control of aquatic pollution.

ii) Conversion of lakes and wetlands for other uses like agriculture and housing should be restricted through appropriate legislation and mass awareness programmes.

iii) Prevention and control of siltation of rivers, floodplain wetlands, lakes and reservoirs through appropriate soil conservation techniques including aforestation.

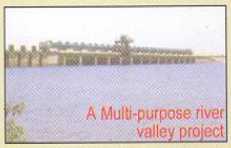

River siltation

iv) Construction of multipurpose river valley projects should be done with abundant caution. Even if such a project become unavoidable, adequate safeguards including fish passes should be provided so as to minimize the possible adverse effects of such projects on the migratory fish species.

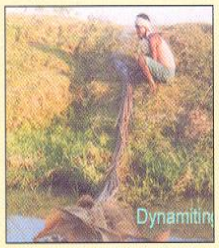

Macrophyte-choked bee

v) Retention of sufficient water levels in the floodplain lakes and reservoirs during the dry season by regulating water outflow and abstraction.

vi) Controlling infestation of aquatic macrophytes especially water hyacinth in standing open water bodies like floodplain wetlands and lakes.


A Multi-purpose river valley project

II. **Conservation of fish stocks :**


Dynamiting

1. Identification and protection of breeding grounds of commercially important fishes (e.g., closed regions).
2. Allowing free migration of fishes up and down the river and also from the river to its associated wetlands and vice versa for spawning/feeding migration.
3. Conservation measures suggested for the protection of brood stock and juveniles are:
   i) Strict adherence to restrictions on minimum landing size for different commercial fish species.
   ii) Increasing or decreasing the fishing effort for optimizing fish production or to prevent over-fishing.
   iii) Observing fishing holidays during the monsoon season to ensure spawning success.
   iv) Banning or phasing out destructive fishing methods like mosquito nets, dewatering, fishing with explosives, piscicides, community fishing, etc.
   v) Diversification of fishing methods to avoid selective over-fishing.
4. Creation of selected protected habitats for threatened fishes in the line of bird/wildlife sanctuaries.
5. Creation of mass awareness about the need to conserve the fish fauna.

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Published by : The Director, CIFRI, Barrackpore, Kolkata – 700120.

Printed by : Graphique International – 3058 9245/48-52

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