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THREATENED AND ENDEMIC FISHES OF TRIPURA WITH COMMENTS ON THEIR CONSERVATION

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INTRODUCTION

Tripura is a hilly state located in the sub-Himalayan region of the North-East India. It is surrounded on the North, West, South-East by Bangladesh (Erswhile East Pakistan). In the East of this state it has a common boundary with Assam and Mizoram. Physiographically, this state represents the western fringe of the typical ridge and valley structural province of the late Tertiary fold mountain belt, generally known as the Indo-Burmese Ranges or Purbachal Ranges. A perusal of the existing literature, viz., Datta (1977), Nair (1977), Lipton (1983–84), Bhattacharya (1988) and Barman (1988, 1989, 1990, 1991, 1992, 1994 & 2002) on the fish fauna of Tripura shows that this state harbours 129 species of fishes under 78 genera, 33 families and 11 orders. The diagnostic features of all these 129 species of fishes along with a short description of the state with reference to its fisheries aspect, topography and drainage pattern of the river systems of Tripura have been provided by the present author in a separate publication (Barman, 2002). The fishes of this state have been reviewed in respect of its threatened species. The threatened species of this state has been designated as per Molur and Walker (1998) and Menon (1999). Out of these 129 species this state contains 28 vulnerable, 10 endangered and 4 rare species of fishes of India. This state also contains 4 Endemic species of our country. The present paper deals only with the vulnerable, endangered, rare species and endemic species of India found in Tripura. Some comments for protection and conservation of the fish fauna of Tripura are furnished in this communication.

1. NAMES OF THE THREATENED SPECIES

A. Names of the vulnerable species

Order CLUPEIFORMES

Family CLUPEIDAE

1. *Tenualosa ilisha* (Hamilton)

Order CYPRINIFORMES

Family CYPRINIDAE

2. *Aspidoparia jaya* (Hamilton)
3. *Barilus barila* (Hamilton)
4. *Puntius chola* (Hamilton)
5. *P. conchoni* (Hamilton)
6. *Barbodes sarana sarana* (Hamilton) (= *Puntius sarana sarana*)
7. *Cirrhinus reba* (Hamilton)
8. *Cyprinion semiplotus* (= *Semiplotus semiplotus*) (McClelland)
9. *Labeo pangusia* (Hamilton)
10. *Chagunius chagunio* (Hamilton)
11. *Garra gotyla gotyla* (Gray)

Family COBITIDAE

12. *Botia almorae* Gray (= *Botia rostrata*)

Family BALITORIDAE

13. *Noemacheilus scaturigina* (McClelland)

Order SILURIFORMES

Family BAGRIDAE

14. *Rita rita* (Hamilton)
15. *Mystus bleekeri* (Day)
16. *M. vittatus* (Bloch)
17. *Aorichthys aor* (Hamilton)
18. *Aorichthys seenghala* (Sykes)

Family SCHILBEIDAE

19. *Ailia coila* (Hamilton)
20. *Clupisoma garua* (Hamilton)

Family PANGASIIDAE

21. *Pangasius pangasius* (Hamilton)

Family SISORIDAE

22. *Bagarius bagarius* (Hamilton)

Family CLARIIDAE

23. *Clarias batrachus* (Linnaeus)

Family HETEROPNEUSTIDAE

24. *Heteropneustes fossilis* (Bloch)

Order CHANNIFORMES

Family CHANNIDAE

25. *Channa orientalis* Bloch & Schneider

Order PERCIFORMES

Family MUGILIDAE

26. *Sicamugil cascasia* (Hamilton)

27. *Rhinomugil corsula* (Hamilton)

Family ANABANTIDAE

28. *Anabas testudineus* (Bloch)

B. Names of the Endangered species

Order ANGUILLIFORMES

Family ANGUILLIDAE

1. *Anguilla bengalensis* (Gray)

Order OSTEOGLOSSIFORMES

Family NOTOPTERIDAE

2. *Chitala chitala* (Hamilton) (= *Notopterus chitala*)

Order CYPRINIFORMES

Family CYPRINIDAE

3. *Raiamas bola* (Hamilton)

4. *Tor putitora* (Hamilton)

5. *Tor tor* (Hamilton)

Order SILURIFORMES

Family SILURIDAE

6. *Ompok bimaculatus* (Bloch)

7. *O. pabda* (Hamilton)

Family SCHILBEIDAE

8. *Pseudeutropius atherinoides* (Bloch)
9. *Eutropiichthys vacha* (Hamilton)

Family SISORIDAE

10. *Glyptothorax cavia* (Hamilton)

C. Names of the Rare species

Order CYPRINIFORMES

Family CYPRINIDAE

1. *Barilius nelsoni* Barman
2. *Poropuntius clavatus* McClelland (= *Puntius clavatus clavatus*)
3. *Puntius gelius* (Hamilton)
4. *Schismatorhynchus nukta* (Sykes)

2. NAMES OF THE ENDEMIC SPECIES

Order CYPRINIFORMES

Family CYPRINIDAE

1. *Barilus gatensis* (Valenciennes)* (Found in the Peninsular India and Tripura)
2. *Barilus nelsoni* Barman (Found in Tripura only)
3. *Schismatorhynchus nukta* (Sykes)* (Found in the Peninsular India and Tripura only)

Family COBITIDAE

4. *Botia dario* (Hamilton) (Found in Assam, Tripura, North Bengal, Rajmahal Hills in South Bihar)

*The presence of these two species in Tripura needs more confirmation. These two species were recorded from Tripura by earlier workers.

CONSERVATION

The problems of protection and conservation of the fishes of Tripura are almost common with the rest of our country particularly the North Eastern states. Tripura is small state with only 10,491 sq. km. area accounting 0.32% of the total land area of our country and occupies the 22nd position in terms of the area among the States and Union Territories of India. The maximum length and breadth of this state is 183.5 km. and 112.7 km. respectively. Hilly ranges cover almost

70% of the land area of this state. The altitude of this state varies from 780 m in the North-Eastern part to 15 m or even less in the Western part above the mean sea level. The state with 31,91,186 population (according to the census of 2001) is facing an unprecedented increase in human population since the independence of our country for various reasons. This has resulted a great pressure on the economy of this state. The increase in human population is causing extensive habitat alteration due to vast tracts of forests are cleared for agricultural, industrial and urbanization purposes consequently affecting the aquatic bodies which in turn affecting the fish population in particular. Deforestation, urbanization, water diversion, overexploitation and introduction of the exotic fishes are some of the problems threatening the fish population particularly their endangered, vulnerable and rare species of Tripura. Considering these factors some suggestions for protection and conservation of these fishes of Tripura are furnished in this paper.

Following measures can be adopted to protect and conserve the threatened fishes of Tripura :

- (i) Deforestation is one of the important problems affecting the fish population. Deforestation along the course of the river should be avoided because it causes soil instability that increases the turbidity of the water bodies. It also increases the temperature of the breeding ground of the fishes. Where the vegetation has been destroyed, replantation is desirable to stabilize the soil erosion, to maintain the clear water and to maintain the required temperature of the spawning grounds of the fishes.
- (ii) Pesticides and agricultural fertilizers along the watercourses should be used very carefully. The fishermen or the local people employed in fishing should be told to use only rapidly degradable types of pesticides.
- (iii) Increasing urbanization has led to pollution both by human activities and industrial discharges. Effluents from industrial areas should be released into the river systems after proper treatment to remove toxic materials. If this is not done it will reduce the growth of plankton and will decrease oxygen content of the water body, ultimately affect it will the aquatic animals especially the fish population as a whole.
- (iv) The threatened fish species of the degraded habitats if possible should be transferred to appropriate water bodies keeping in mind that the resident fish of those water bodies would not be adversely affected.
- (v) Water diversion is another factor affecting the fish population adversely. It is well known that if the course of a river system is diverted due to obstruction by damming, the resident fishes will be definitely affected. The Gumti Hydel Project across the river Gumti, therefore is sure to affect the fish population of that locality. Where dams are to be constructed for immediate benefits, the long-term effects have to be kept in consideration. The dams totally change the river ecosystems and causes irreversible damage to the aquatic organisms, primarily due to siltation and aquatic weed growth. It obstructs the migration of the fishes

consequently affecting their growth and reproduction. Since several fish species migrate or move upstream to spawn during the breeding period (early monsoon flood) their reproductive cycle is affected due to the construction of dams resulting the depletion of their multiplication.

- (vi) Overexploitation or indiscriminate harvesting of fishes is another menace to the whole fish population irrespective of the matured or the juvenile fishes. This should be controlled or monitored by imposing closed seasons especially during the spawning period. At the same time the immature specimens should be protected by banning the use of very small mesh sized nets so that juveniles are escaped. The fish resources also to be sustainably utilized otherwise commonly found fishes will also soon disappear from our fish menu meal.
- (vii) Introduction of the exotic fishes has been found in some cases adversely affecting the native fishes due to competition for food, breeding grounds and predation. In view of these types of potential hazards, introduction of exotic fishes should not be done without careful consideration of the ecological and biological impact over the resident fishes.
- (viii) Lastly it may be mentioned since out of the 4 endemic fish species 2 species are already threatened species in Tripura, therefore, all the endemic species should be considered at par the threatened species. Proper care should be taken for their sustainable utilization otherwise in course of time the remaining 2 species will sure to face the problem of their existence like those of the threatened fish species of Tripura.

SUMMARY

Tripura, one of the states of the North-East India contains several species, which are common to both the Indo-Gangetic and South-East Asian river systems. The presence of these fishes in the sub-Himalayan region of Tripura is of special importance in the Fish Geography of the North Eastern region and that of the Indo-Malayan Archipelago. Generally the North Eastern Region of India is considered as of the Hot Spots of Biodiversity including that of the freshwater fishes of India. Therefore, an attempt was undertaken to estimate Fish Fauna of Tripura. The present author has identified the Fish fauna of this state. It shows that the fish fauna of Tripura contains 129 species belonging to 78 genera, 33 families and 11 orders. Out of these 129 species, 28 species are Vulnerable, 10 species are Endangered and 4 species are Rare species. This state also contains 4 endemic species. As the population in Tripura has been increasing, vast tracts of forests are cleared for agricultural, industrial and urbanization purposes. Several freshwater fish species of India have been described as the threatened species. To conserve and sustainably exploit the fish fauna particularly its threatened species of Tripura, measures should be adopted to protect and conserve this natural resources. Suggestions for conservation of these fishes are discussed in this paper.

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