

Study on fish diversity and need for their conservation of Bakara River, Morang district, eastern Nepal

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Abstract

Forty-eight fish species were collected in the present study. The population status of important fishes *Chagunius chagunio* and *Channa striatus* were found to be threatened. *Mastacembulus puncalus* was vulnerable and *Clupisoma garua* and *Puntius ticto* threatened because of pollution.

Key words: Threatened fishes, population status, *Chagunius chagunio*.

Introduction

Bakara river is a large river of Morang district. It originates from Mikjani hill of "Mahabharat Lekh" and flows towards south through the middle of Morang district. It crosses Takuwa and Rangeli Municipality making a wavy bend and enters Bihar state of India.

Bakara river had rich fish diversity and other aquatic bioresources before 20 years, which are now rapidly deteriorating. Major causes are the human population explosion, contamination with agro-chemicals, deforestation, and over-fishing and indiscriminate fishing (Bhagat, 1985; John & Dhewajoo, 1989; Pokharel, 1998, 1999; Jayaram, 1999)

Materials and Methods

Fishes were collected at monthly intervals from five sites of Bakara river during August, 2014 and August, 2015. Fish collections were made with the assistance of local fishermen using gill nets and other devices. The collected fishes were preserved in 5-8% formaldehyde solution and brought to the zoology Laboratory. The threatened species were released immediately into water after collection.

Identification of fishes were done with the help of standard literature (Shrestha, 1981, 1990, 1994). Information on fish diversity, their habit, habitat and population status were collected from local fishermen, local people and through field observation. Brief notes on the ecological features, size, colouration and local names were noted down in the field itself. The criteria laid out by International Union for Conservation of Nature and Natural resources, IUCN (1994) was followed for assessment of the status of fishes.

Results and Discussion

Fishes collected from Bakara river belonged to 7 orders, 18 families, 28 genera, and 48 species (Table 1). The abundant species were *Puntius sophore*, *P. chola*, *P. conchoniis*, *Mystusbleekeri*, *Xenentodon cancila*, *Labeo rohita*, *Mastacembelus armatus*, *Esomus danricus*, *Channa marulius*, *Wallago attu*, *Ompok bimaculatus*. Similarly, the species

which were moderately distributed in 4 and 5 sites and having less abundance were *Chagunius chagunio*, *Gudusia chapra*, *Channa stewartii*, *Labeo angra*. But the species distributed only in 1 and 2 sites and having much less abundance were *Channa punctatus*, *Clarias batrachus*, *Puntius sarana*, *Clupiso magarua*. The freshwater *Sisor rhabdophorus* and *Gagata cenia* were recorded before 25 years, but could not be found during the present study period. In general, the habitat condition for fishes in Bakra river appears favourable at present, however the river is found to be disturbed due to the lack of proper knowledge and management. It has been influenced by land-slides, soil erosion floods and siltation mostly due to deforestation. The hotels, restaurants, shop and residence buildings are situated near the bank of Bakara river which is polluting due to discharge of wastes and domestic sewage directly into it without any pre-treatment. The agriculture activities near bank of river are also affecting the fish resources.

Deforestation was recorded at many places between Takuwa and Rangeli municipality near the bank of Bakara river causing soil erosion, floods and increase in turbidity which affect the natural properties of water and also affect the components of the aquatic ecosystem. Release of toxic substances in the form of chemical fertilizers and pesticide through surface run-off from the agricultural fields near the bank of river and use of soap and detergents by human activities affect upon the physiochemical and biological properties of water and ultimately affect the biotic components of the aquatic ecosystem. Similarly, the construction of dams on Bakara river is found to prevent the free movement of fishes which move upstream for breeding purposes and indiscriminate fishing (fry to adult) including brood fishes during their breeding season and fishes having depleted population are also threatened.

Table 1. Fish diversity and distribution in Bakara River.

S.N.	Systemic position/Scientific name	Local name	Distribution Sites					Remarks
			A	B	C	D	E	
Order : Cypriniformes, Family : Cyprinidae, Subfamily : Cyprinae								
Genus : <i>Catla</i>								
1.	<i>Catla catla</i>	Bhakur	√	√	√	√	√	
Genus : <i>Chagunius</i>								
2.	<i>Chagunius chagunio</i>	Chaguni	×	√	√	×	×	
Genus : <i>Cisshinus</i>								
3.	<i>Cisshinus mrigala</i>	Mrigal(Naini)	√	√	√	√	√	
4.	<i>Cisshinus reba</i>	Rewa	√	√	√	√	√	
Genus : <i>Labeo</i>								
5.	<i>Labeo rohita</i>	Rohu	√	√	√	√	√	
6.	<i>L. angra</i>	Boga	√	√	×	√	×	
7.	<i>L. calbasu</i>	Kalbasu	×	×	√	√	√	
8.	<i>L. gonius</i>	Kursa	√	√	×	√	×	
9.	<i>L. dero</i>	Gundi	×	√	√	×	√	
Genus : <i>Puntius</i>								
10.	<i>Puntius sophore</i>	Pothi	√	√	√	×	√	
11.	<i>P. ticto</i>	Sidre	√	√	×	×	×	
12.	<i>P. chola</i>	Pothiya	√	√	√	√	×	
13.	<i>P. conchonius</i>	Pothi, sidre	√	√	√	×	√	

14. <i>P. sarana</i>	Bhitti	√	√	√	√	√
Genus : <i>Esomus</i>						
15. <i>Esomus danricus</i>	Darai	√	√	×	×	×
Family : Cobitidae, Subfamily : Nemacheilinae						
Genus : <i>Acanetrocotitis</i>						
16. <i>Acanthocobitis botia</i> (<i>Nemacheilus botia</i>)	Baghe	√	×	√	×	√
Genus: <i>Botia</i>						
17. <i>Botia lohachata</i>	Getu	√	√	×	×	×
Order : Siluriformes, Family: Bagridae						
Genus: <i>Mystus</i>						
18. <i>Mystus bleekeri</i>	Tengra	×	√	√	×	√
19. <i>M. tegra</i>	Tengri	×	×	√	√	√
20. <i>M. mehoda</i>	Belauni	√	×	√	×	×
21. <i>M. aor</i>	Kanti	×	×	√	√	√
22. <i>M. cavasius</i>	Junge	√	√	×	×	√
23. <i>M. vittatus</i>	Tengra	√	√	√	√	√
24. <i>M. seenghala</i>	Kanti	√	√	√	×	×
Family : Siluridae						
Genus: <i>Ompok</i>						
25. <i>Ompok bimaculatus</i>	Papta	√	√	√	√	×
Genus : <i>Wallago</i>						
26. <i>Wallago attu</i>	Bohari	√	√	√	√	√
Family: Schilbeidae						
Genus: <i>Clupisoma</i>						
27. <i>Clupisoma garua</i>	Jalkapoor	√	×	√	×	×
Genus: <i>Eutropiichthys</i>						
28. <i>Eutropiichthys vacha</i>	Bachawa	√	√	√	×	×
Genus: <i>Pseudotropius</i>						
29. <i>Pseudotropius atherinoides</i>	Patasi	√	√	√	√	√
Family: Clariidae						
Genus: <i>Clarias</i>						
30. <i>Clarias batrachus</i>	Mungri	√	√	√	√	×
Family: Heteropneustidae						
Genus: <i>Heteropneustes</i>						
31. <i>Heteropneustes fossilis</i>	Singhi	√	√	√	√	√
Order: Beloniformes, Family: Belonidae,						
Genus: <i>Xenentodon</i>						
32. <i>Xenentodon cancila</i>	Kauwo	√	√	√	√	√
Order: Symbranchiformes, Family: Symbranchidae						
Genus: <i>Monopterus</i> (<i>Amphipnous</i>)						
33. <i>Monopterus cuchia</i>	Bam	√	√	√	×	×
Family : Mastacembelidae						
Genus: <i>Macrognathus</i>						
34. <i>Macrognathus pancalus</i>	Kath gainchi	√	√	√	×	√
35. <i>M. aculeatus</i>	Gainchi	√	√	√	×	×
Genus: <i>Mastacembelus</i>						
36. <i>Mastacembelus sarmatus</i>	Chusi Bam	√	√	√	√	√

Order: Perciformes, Family: Ambassidae,					
Genus: <i>Chanda</i>					
37. <i>Chanda nama</i>	Nata	√	√	√	√
Family: Nandidae,					
Genus: <i>Nandus</i>					
38. <i>Nandus nandus</i>	Dhala	√	√	√	√
Family: Gobiidae,					
Genus: <i>Glossogobius</i>					
39. <i>Glossogobius giuris</i>	Bulla	×	√	√	√
Family: Anabantidae,					
Genus: <i>Anabas</i>					
40. <i>Anabas testudineus</i>	Kabai	√	√	√	√
Family: Belontiidae,					
Genus: <i>Colisa</i>					
41. <i>Colisa fasciatus</i>	Katara	√	√	√	√
Family: Channidae,					
Genus: <i>Channa</i>					
42. <i>Channa marulius</i>	Bhaura	√	√	√	×
43. <i>Channa orientalis</i> (gachua)	Chenga	√	√	√	√
44. <i>C. punctatus</i>	Garahi	√	√	√	√
45. <i>C. stewartii</i>	Hile	×	×	√	√
46. <i>C. striatus</i>	Saura	√	√	√	×
Order: Clupiformes, Family: Clupeidae					
Genus: <i>Gudusia</i>					
47. <i>Gudusia chapra</i>	Suiya	√	√	×	×
Order: Osteoglossiformes, Family: Notopteridae					
Genus: <i>Notopterus</i>					
48. <i>Notopterus notopterus</i>	Golhai	√	√	√	√

Conclusions

Bakara river has a rich fish diversity, however, the Bakra river is being disturbed due to cutting down of forests, unusual erosion, indiscriminate fishing and the harmful use of toxic substances. It requires strict rules and regulations to check such disturbances.

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