

## Abnormality in *Bagarius bagarius* (Ham.) (Cypriniformes: Sisoridae) from Nepal

B.R. Subba

Department of Zoology, Post Graduate Campus Tribhuvan University  
Biratnagar, Nepal

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### Abstract

Abnormalities in *Bagarius bagarius* (Ham.) collected from the Biratnagar fish market was studied with the help of x-ray photographs, morphological and anatomical examinations. Vertebral column behind pelvic fin region has three serpentine shaped curvatures. Tubercles irregularly arranged along the lateral lines of both sides. In the deformed vertebrae inter-vertebral space is comparatively wide. Developmental error was found responsible for deformities in the present fish specimen.

**Key words:** Abnormality, *Bagarius bagarius*, vertebral column

### Introduction

*Bagarius bagarius* is an ugly fish with lurid colours. It inhabits the freshwater large rivers of Nepal, India, Pakistan and Myanmar. This fish is locally known as Gonch. Abnormality in fishes is uncommon so reports have rather frequently been made from throughout the world. Regarding the contribution to the fish abnormalities, special mention can be made from the work of (Turner and Farley 1971; Milton 1971; Brown and Nunez 1998; Longwell *et al.*, 1992; Lien 1997; Dutta *et al.*, 1995; Subba 1989-1999; Subba and Pandey 2001; Subba 2004). However, information about the abnormalities of *B. bagarius* is scanty. It is, therefore, the present description may be an addition to the existing literature about this fish.

### Materials and Methods

An abnormal specimen of the fish *Bagarius bagarius* (Ham.) obtained in the fish market of Biratnagar was brought to the fish laboratory of Department of Zoology, Post

Graduate Campus, Biratnagar. Morphological characteristics were studied in fresh condition. The arrangement of tubercles along the lateral line was observed in the abnormal fish as well as normal fish. X-ray photographs of the abnormal fish and that of a normal fish were taken into consideration for making a comparative study of vertebral anomalies. The abnormal fish was dissected out so as to make observations of the visceral organs development and was preserved in 10% formalin, and kept in the museum of the zoology department of Post Graduate Campus, Biratnagar.

### Results

The morphological studies made on the abnormal fish (Figure 1) revealed three curvatures just after pelvic fin. The pectoral fin touches the anal fin in the abnormal fish, whereas, in the normal fish (Figure 2) it touches only pelvic fin. The ratio of pectoral fin height and anal fin height in total length

**Table 1.** Morphological characteristics of normal and abnormal fish *B. bagariu*

<b>Body parts</b>	<b>Normal fish</b>	<b>Abnormal fish</b>
Dorsal fin	2/6/0	2/5
Pectoral fin	1/12 (13)	1/13(14)
Distance from pectoral to pelvic fin in total length	6.12	7.5
Distance from pelvic to anal fin in total length	7.53	9.4
Distance from pelvic to nventral in total length	10.45	11.3
Caudal length in total length	9.21	2.94
Pectoral height in total length	4.82	8.07
Anal height in total length	13.52	8.07



**Figure 1.** Abnormal fish



**Figure 2.** Normal fish



**Figure 3.** Irregular arrangement of tubercles along the lateral line in abnormal fish



**Figure 4.** Regular arrangement of tubercles in normal fish



**Figure 5.** X-ray photograph of abnormal fish



**Figure 6.** X-ray photograph of normal fish

are 8.07 and 8.07 respectively. Similarly, the ratio of distance between pectoral to pelvic fin, pelvic to anal fin, pelvic to vent and caudal length in total length of the body are 7.5,9.4,11.3 and 2.943 respectively (Table1). The arrangement of tubercles along the lateral line shows irregularity (Figure 3) but tubercles are arranged in regular order in normal fish (Figure 4). The x-ray photograph of the abnormal fish specimen (Figure 5) depicts that vertebrae from 18 to 28 are having deformation. The inter-vertebrae space of deformed vertebrae is wide, whereas, in case of normal fish x-ray (Figure 6) the inter-vertebrae space is not wide.

### Discussion

Abnormalities in fish can have their origin from several different sources but mutation and teratogenic effects of adverse environmental factors such as mutagenic chemicals in water (Longwell *et al.*, 1992, Lien 1997) on developing and young individual (Brown and Nunez 1998). Other causes of deformities in fish might include environmental factors such as temperature (Milton 1971), dissolved oxygen (Turner and Farley 1971) or parasite infection (Brown and Nunez 1998). Abnormalities in fishes appear due to developmental error (Uma and Waghay 1989-90 and Dutta *et al.*, 1993) are of the opinion that abnormality is caused by diseases. Disease is the factor to cause anomalies in fishes (Dublin 1979). Dutta and Kaur (1994) are of the opinion that injury causes abnormality in fishes. However, nothing can be ascertained regarding abnormality in *B.*

*bagarius*. Further investigation is suggested for the confirmation.

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