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Spinal deformities in wild population of *Mystus montanus*

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Abstract

Information is presented on the occurrence of spinal deformities in wild population of *Mystus montanus* collected from Tamirabarani river, during June 2010. The spines showed deformities in one or few places from the vertical to horizontal angles and the vertebrae were significantly thicker in the deformed fish than in the normal fishes.

Keywords: Fish, deformity, *Mystus montanus*, and populations

Introduction

Skeletal deformities are major problem in fish culture, as they affect survival and also the quality of the fish by changing their external morphology and growth. The deformities mainly occur at the early stages as a result of unfavorable conditions. Spinal deformities in wild and cultured populations are well described in different fish species with wide range of causes including hereditary factors (Gill & Fisk, 1996), nutritional deficiencies (Roberts and Shepherd, 1974), adverse environmental conditions (e.g. water temperatures; Gabriel, 1994: pollutants; Weis and Weis 1989) and parasitism (Bucke and Andrews, 1985).

Tamirabarani, a medium river basin in India is one of the major river systems in Southern Tamil Nadu. About 36 species of fish were recorded in this river and the catfish, *M. montanus* an important food fish in the southern Tamil Nadu is one among them. The fish *M. montanus* is listed as low risk nearly threatened (LRnt) fish species according to IUCN status (CAMP, 1997). The occurrence of deformed fish species in the Tamirabarani river is not rare, but limited (Marimuthu *et al*., 2000). This paper describes the spinal deformities in the wild population of *M. montanus* observed from the Tamirabarani river.

Materials and Methods

The *M. montanus* fishes were collected from Tamirabarani river at Melapalayam during June 2010 by cast net. The total number of fises were counted and the percentage of deformation was also calculated. The deformed fish were preserved in 4% formalin. The preserved specimens were radiographed using a medical X-ray system and the pictures examined for skeletal deformities.

Results and Discussion

A total of 171 *M. montanus* were caught and among them six were deformed, representing 3.51%. Spinal abnormalities were visible on the fish body. In the deformed fish, the caudal peduncle region was bent and the organism's movement clumsy. The skeletal preparations as well as X ray photographs revealed a deep curvature in the vertebral column in the immediate post thoracic region and the internal body spaces. The deformities were noticed, especially at curvature points. The vertebral colum was considerably thicker particularly at the ends and between the cartilage rings in the deforemed fish . In the normal fish there were 35 vertebrae wheras in the deformed fishes this was ranged between 35-37. There were no other visible deformities in the remaining skeletal parts such as skull, fin and tailbones.

The spinal deformities in *M. montanus* were not reported by any of the previous researchers those worked on pollution (Martin *et al.,* 2000; Marimuthu *et al.,* 2000) and biodiversity (Antony Jhonson, 1998) studies in Tamirabarani river. The appearance of spinal deformities indicates the existence of significant disturbances in the ecosystem. The absence of older deformed *M. montanus* also suggests that the disturbances may be recent events and the question for the causes

remains open. The fish collection site, Melapalayam, is an important agricultural region and farmers use high quantity of pesticides and herbicides during spring season *i.e*., the spawning and early developmental periods for *M. montanus*. Moreover industrial pollution by neighboring industries. The present study concluded that the sewage, industrial pollution and genetic factors could be the reasons for deformity.

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