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## 7. Structure of Gills of *Xenentodon cancila* ( Ham.)

Fishes bear excellent structures, the gills for the extraction of oxygen from water. Modifications of the architectural plan of the gill structure have been studied by several workers from different habitats (Goodrich 1930, Benelander 1930, Hughes and Munshi 1968, Hughes and Morgan 1973, Subba 1999). For the same study, an attempt has made done in *Xenentodon cancila* (Ham.) from Koshi River of eastern Nepal. It is a small fish belongs to family Belontiidae and commonly called as 'Chuchhe Bam'. Its most distinguishable feature is, the presence of elongated beak- like jaws and a deep longitudinal groove along the upper surface of the head.

The specimens were collected. After taking the fresh weight of the body, the opercula were removed; gills were separated carefully and then immediately fixed in Bouin's fluid. All the measurements were made under dissecting binocular microscope with ocular micrometers.

It has four pairs of holobranchs. Each gill arch oriented in such a fashion that its ventral part lied more anterior than the dorsal one. In the entire gill, filaments were borne by epi and

ceratobranchials only. The first gill arch bears a greater number of filaments than the others. The total number of gill filaments on the first, second, third and fourth gill arch were 122,109,79, and 58 respectively. Distance between primary lamellae was 19.3  $\mu$  and inter lamellar space were 2.3  $\mu$  (average). The gill filament were swollen at their tips and narrow towards their bases. An interesting feature in the anatomy of the gills of *X. cancila* was the absence of gill racker. The inter branchial septum extended almost to the middle of the holobranch.

Anterior and posterior hemibranchs of each gill showed variation in the length of filaments at different regions of the gill arch. In the first pair of gill arches the filament length of the posterior hemibranch were greater than their counterparts of the anterior hemibranch. In second pairs of gills, the filament lengths of both the hemibranchs were more or less equal. However, in the third and the fourth pairs of gill arches, the length of filaments of the anterior hemibranchs were comparatively greater than the corresponding filaments of the posterior hemibranchs.

Distance between the two adjacent filaments showed variation at different regions of the anterior and posterior hemibranchs. The distance between adjacent filaments was minimal at the point where the hemibranchs made a right angle turn to their dorsal regions.

In *X. cancila* (Ham.) each secondary lamella was wider at the efferent side than that of its afferent side. The secondary lamellae of the base and middle parts were almost identical as far as their profile and area were concerned. Difference was found in the diameters of afferent and efferent filament arteries. Diameters of these arteries were comparatively greater towards the base of the filaments. The secondary lamellae of the tip regions were

comparatively smaller in size and the sections lacked the interbranchial septum. It was also arranged alternately on the sides of the primary lamellae and their number per unit area was found to be higher.

It is evident that the general pattern of gill structure of *X. cancila* (Ham.) does not deviate from the principal plan. However the morphology of the four-gill arches show dissimilarity in their length and possession of number of primary gill lamellae in the first, second, third, fourth gill arches. It may be due to elongated snout like jaws and the reduction in the length of gill arches from the first to fourth.

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## 8. Molluscan Diversity of Koshi Tappu Wildlife Reserve and its Surrounding Area

Koshi Tappu Wildlife Reserve (KTWR) was established and gazetted in 1976, primarily for the protection of last remnant population of wild water buffaloes (*Bubalus bubalis arnee*). It is extended between 86°55'-87°05'E longitude and 26°34'-26°45'N latitude. It lies in the floodplain of Saptakoshi River which stretches up to Indian border in the southern part. It covers total area of 175 sq. km. which includes some parts of Sunsari, Saptari and Udayapur districts, the

Eastern Development Region of Nepal. It covers large volume of wetlands, so it is designated as a wetland of international importance and added to Ramsar list in 17<sup>th</sup> Dec, 1987 (IUCN 1990).

A review of literature regarding the molluscan diversity of Nepal reveals that there is scanty information. However, recently Subba and Ghosh (2000, 2001) has made reports on molluscs of Nepal. Majupuria (1981-1982) has reported a few species of land and freshwater