

# ROLE OF JAW IN FEEDING IN SNAKE-HEADED FISH, *Channa Punctatus* (Bloch.)

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## INTRODUCTION

*Channa punctatus* is a very common live fish suitable for consumption. The present investigation was carried out in this fish to establish the role of the movement of jaw at the time of feeding. Such work has been performed by Dutta (1979), Liem (1967), Singh (1967), Wanwright (2005) and Yazdani (1969). At the time of feeding, upper jaw undergoes protrusion and it is followed by the lower jaw. *Channa* has suction mechanism of prey capture which is followed by maximum attainment of mouth gape and mastication.

## MATERIAL AND METHOD

Adult and juvenile *Channa punctatus* were taken up to study the structure of the jaws. Movements of the anterior and pharyngeal jaws have been recorded in aquarium. Internal paraffin molds of the pharyngeal basket were cast for the observation of displacement of the pharyngeal elements.

## RESULTS AND DISCUSSION

As observed in an aquarium the upper jaw of this fish undergoes two protrusions during one feeding phase. The maximum dorsal movement of the upper jaw takes place prior to the maximum lower jaw depression. *Channa* possesses prominent supraoccipital crest and powerful epaxial muscle attached to it. Suction force is created by the expansion of the buccal cavity. The position and the impression of the lower pharyngeal jaw (LPE) is observed in the buccal cavity paraffin mold. Once the prey is captured it is pushed towards the upper and lower pharyngeal jaws (Fig. 1). The upper pharyngeal jaw articulates with the saddle-shaped pharyngobranchial joint by means of convex articulate processes. The muscles around pharyngeal jaw have been represented in Fig. 2. Levator externus 4 (LE<sub>4</sub>) attaches to the muscular process of the lower pharyngeal jaw which elevates it. Pharyngocleithralis internus (PCI) and Pharyngocleithralis externus (PCE) are at 90° angle to each other and insert on the ventral surface of lower pharyngeal jaw. Musculature is more indicative of a piscivore, showing no pinnation and moderately enlarged levator externus 4. Such observations have also been reported by Dutta (1979). The masticatory cycle can be divided into three phases.

1. Initial phase, in which the jaw gap increases by the contraction of pharyngocleithralis.

2. Secondary phase where acting surfaces approach each other resulting in contact between upper as lower jaw and

prey being trapped. During crushing the upper pharyngeal jaw locks itself firmly to the saddle-shaped pharyngobranchial joints. Shearing is done by sharp and pointed teeth of upper and lower jaw. During this action muscle levator externus 4, levator posterior, pharyngocleithralis internus, pharyngocleithralis externus, steanohydes, pharyngocleithralis interus, pharyngocleithralis externus and steanohydes pharyngohyoideus are very active.

3. The final phase includes swallowing of the prepared food and resumption of the upper as well as lower jaw muscles.

Thus it was observed that *Channa* jaws are so much well developed that it can eat hard molluscs or fish.

## ABBREVIATION

APR-Articular process, AD5-Adductor branchialis, AO-Adductor operaculi, CB-Ceratobranchialis, CL-Cleithrum, LE1-4 Levator externus 1-4, LT-Levator internus, LJ-Lower Jaw, LPE-Lower Pharyngeal Jaw, PCE-Pharyngocleithralis externus, PCI-Pharyngocleithralis internus, PH-Pharyngohoidous, SBJ-Saddle shaped pharyngobranchial joint, SH-Steanothyoides, UJ-Upper Jaw.

## ACKNOWLEDGEMENT

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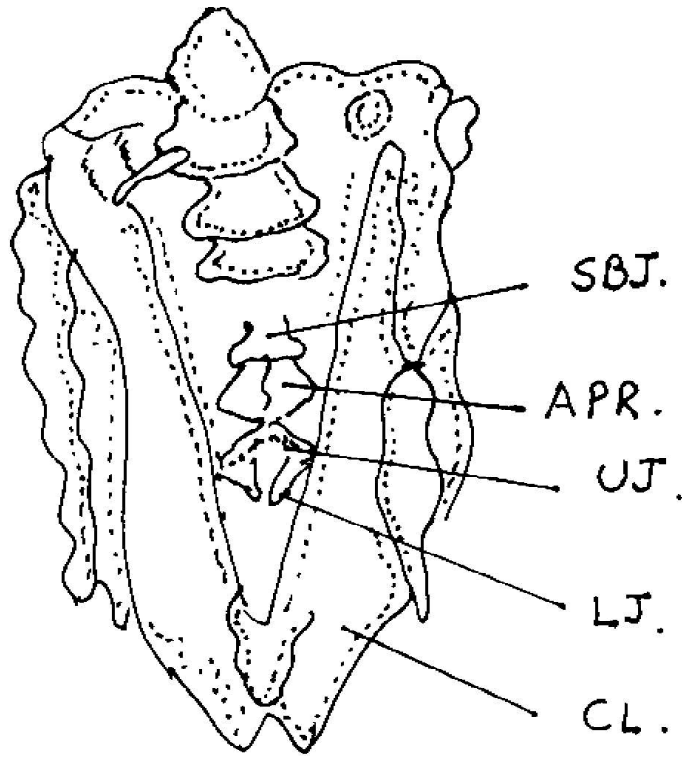


Fig.-1

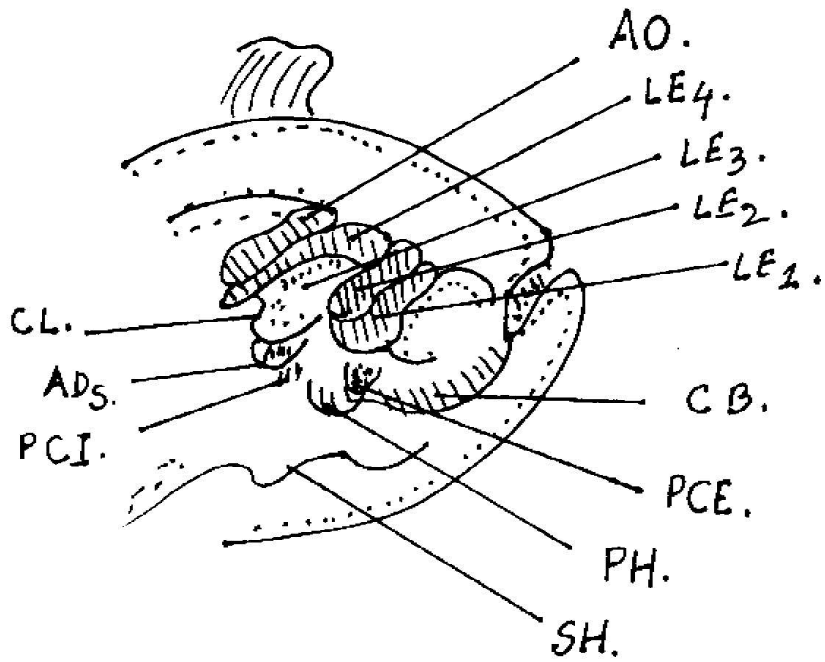


Fig.-2