

## **Changes in the mouth morpho-histology of hybrid Malaysian mahseer (*Barbonymus gonionotus*♀ × *Tor tambroides*♂) during the larval development**

### **ABSTRACT**

*Tor tambroides* is a highly sought after food, sport and ornamental fish in Southeast Asia. However its natural population is drastically declining while its aquaculture is still considered small relying mostly of the wild fry as its hatchery bred fry supply is low due to its partial spawning behavior. To reduce the pressure on its fisheries, a new hybrid of Malaysian mahseer was produced by crossbreeding Malaysian red mahseer *Tor tambroides* male and silver barb *Barbonymus gonionotus* female through induced breeding for possible introduction into the aquaculture industry. This 23-day study was carried out to observe the morphology, functional capabilities and histological of the mouth development of hybrid Malaysian mahseer larvae. Newly hatched larvae were reared in three 75 L aquaria with the stocking density of 10 larvae per liter. Larval mouth development was observed daily using light and scanning electron microscope (SEM). Histological analysis of the mouth was also carried out. The results showed that the larval mouth was closed at hatching and started to open and move at 3 DAH with an estimated opening of  $111.01 \pm 5.91 \mu\text{m } \emptyset$  and  $173.11 \pm 10.98 \mu\text{m } \emptyset$  at  $45^\circ$  and  $90^\circ$ , respectively. The taste buds started to function as early as 3 DAH and increased its number as fish grew. The exogenous feeding began in conjunction of the mouth opening. The mouth became terminal as early as 6 DAH with the presence of numerous taste buds at the mouth cavity. The mouth gap and total length showed strong polynomial relationship throughout the 23-day larviculture. From the mouth gap size, live foods such as rotifer and microworms seemed to be suitable for the first feeding of the hybrid fish larvae while *Artemia* nauplii could be given starting from 5 DAH.

**Keyword:** Hybrid Malaysian mahseer larvae; Mouth development; Mouth gap; Exogenous feeding; Taste buds; Food organisms; *Tor tambroides*; *Barbonymus gonionotus*