Development of sensory organs and changes of behavior in larvae of the sutchi catfish, Pangasianodon hypophthalmus

Abstract

Larvae of the sutchi catfish Pangasianodon hypophthalmus hatch with morphologically immature features, but sensory organs develop rapidly as the fish grow. By 1 day old, yolk-sac larvae showed notochord flexion, and by 2 days old larvae were observed to have consumed a large part of the yolk sac. At this stage, larvae had well-developed eyes, olfactory organs with ciliated receptor cells, inner ears with semicircular canals, and numerous taste buds, and they commenced ingestion of rotifers, Artemia nauplii, and artificial compound feed. Two-day-old larvae had many free neuromasts on the surface of the head and flanks and clearly showed rheotaxis. By 20 days old, free neuromasts in postflexion larvae had sunk under the skin. At this later stage, larvae swam against a water current and schooled along the side of the fish tank. Rapid development of sensory organs and notochord flexion would be an adaptation for survival in conditions of flowing water, as in the Mekong River. In this study, we show that development of the lateral line in the postflexion stage seems to be closely related to larval behavior, suggesting that these developments could be essential for sutchi catfish larvae survival.