

INTENSIVE LARVICULTURE OF SOUTH AMERICAN CATFISHES *Pseudoplatystoma fasciatum* AND *Pseudoplatystoma coruscans*

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Interest in commercial farming of the bared surubim *Pseudoplatystoma fasciatum* and the spotted surubim *P. coruscans* has increased considerably in Brazil during the past few years due to the quality of their meat and high market value. However, larviculture of both species is difficult since they exhibit cannibalistic behavior. This characteristic and the lack of an adequate feeding management during larviculture result in reduced survival rates during this phase. In 2000 we started a new line of investigation at the Aquaculture Center focusing on the development of rearing techniques of these surubins, based on the knowledge of their morpho-physiological characteristics during the ontogeny.

Histological studies on the development of the digestive system of the bared surubim have shown that the zymogene granules are visible in the larval pancreas at the 2nd day post hatching (DPH) and the differentiation of the segments of the digestive tube started at the 3rd DPH. At 10DAH the first gastric glands were observed. The mucus cells in the esophagus were of two types, one PAS positive and another AB negative. In the intestine, mucus cells were PAS positive and AB moderately positive. Parallel investigation focusing on the activity of digestive enzymes (trypsin, chymotrypsin, pepsin-like, amylase and lipase, from 1 to 53 DPH) showed that the pancreatic protease activities were already detectable at the time of endogenous feeding (1-2 DPH). The trypsin and chymotrypsin activities increased after the beginning of exogenous feeding (3rd DPH). Pepsin-like activity increased at the 10th DPH, corresponding with the appearance of the first gastric glands in the stomach. We conclude that bared surubim larvae possess well developed “digestive enzyme apparatus” and weaning them to artificial diets is an achievable goal at this stage (10 DPH).

The morphological development of the eye, chemo-, mechano- and electroreceptors was studied in the spotted surubim. The olfactory organ and the taste-buds (oral and extra-oral receptors) develop precociously and quickly during the early larval stage and indicate that chemoreception is of primary importance for the detection and capture of the food. The vision is probably of secondary importance and the elevated number of ampullary electroreceptors spread in the epidermal surface of the cephalic region points to the importance of the electroreception for the larval behavior. Additionally, the mechanoreception (lateral line and the free neuromasts) develops in surubim’s later metamorphosis. Based on combined results of feeding and larval growth under light and dark condition, we recommend rearing of surubim larvae in darkness throughout metamorphosis.

Several experiments were carried out in Brazil and US aiming at the development of feeding techniques during larviculture and feed training of the surubins, using live and dry diets. The results suggest the need of artemia nauplii during the first 10 days; after this period, the weaning to formulated food is feasible. Cannibalistic behavior is high during the transition.