# How many meals a day to minimize cannibalism when rearing larvae of the Amazonian catfish

Meal frequency is a key parameter in fish larviculture, especially in highly cannibalistic species. Knowledge of the biological bases of cannibalism (growth capacity of cannibals, morphological constraints on cannibalism, prey size preference) can help predicting the risks of cannibalism for different feeding schedules under culture conditions. This study relied on the day-by-day analysis of prey size preference and bioenergetics of individual cannibals of the catfish Pseudoplatystoma punctifer (8–65 mm standard length, SL, 0.5–400 mg dry mass, DM) at 28.5 °C under 12L:12D. The results were equated with the ontogenetic variations of morphological factors (head and mouth width) and feed efficiency of larvae feeding on Artemia nauplii, in order to calculate the risks of cannibalism among fish fed 2–7 daily meals. The predation capacities of P. punctifer were highest at 8 mm SL and decreased in larger fish (largest prey = 86% and 70% SL in fish of 8 and >30 mm SL, respectively). Cannibals of increasing size preferred increasingly smaller prey relative to their own size, but also to their predation capacities. These morphological and behavioural constraints were largely compensated for by bioenergetics performance. Cannibals consumed high daily food rations (as high as 171 and 29% DM in fish <1 and >300 mg DM, respectively), exhibited high gross conversion efficiencies (0.50–0.55 and about 0.70, in fish <1 and >30 mg DM, respectively), and grew rapidly (90 and 18% DM day-1 in fish <1 and >300 mg DM, respectively). The growth advantage of cannibals over siblings fed Artemia nauplii was decisive, except for high meal frequencies (6–7 daily meals). This study supports the view that the risk of cannibalism and adequate feeding strategies can be largely predicted in a particular fish species if the morphological, behavioural and bioenergetics bases of cannibalism are examined altogether in an ontogenetic perspective.

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