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PRELIMINARY STUDIES ON LARVAL SURVIVAL OF AN ENDANGERED FISH OF NORTHEAST INDIA, *OMPOK BIMACULATUS* (BLOCH)

Ompok bimaculatus, a non-air breathing silurid fish, possesses higher growth potential compared to other species (*Ompok pabda* and *O. pabo*) under the same genus, *Ompok*. The wild population of *O. bimaculatus* has undergone a steady decline (>50%) over last few years and the species is facing high risk of extinction in the wild (CAMP, 1997; Sarkar and Ponniah, 2000; Ponniah and Sarkar, 2000). The depletion of natural resources at an alarming rate warrants immediate action to arrest and reverse the trend at the earliest. Captive production through aquaculture of the species has been envisaged to be an important approach for its conservation. Development of reliable breeding and larval rearing technique, therefore, forms an important aspect for its successful farming. While, some attempts have been done on breeding and rearing these fishes under controlled conditions, high mortality of larvae during early rearing phase posed serious bottleneck for its large-scale seed production (Shreedhar *et al.*, 1998; Bhowmik and Ayyappan, 2000; Bhowmik *et al.*, 2000; Chakraborty *et al.*, 2006; Hussain, 2006; Chakroborty *et al.*, 2007).

Success of larval rearing depends mainly on the availability of suitable diets that are readily consumed, efficiently digested and that provide the required nutrients to support good growth and health (Giri *et al.*, 2002). Larvae, especially first feeding larvae, generally depend on the live food. While brine shrimp nauplii (*Artemia* sp.) has been widely recognized as an excellent starter food for freshwater and marine fish species (Leger *et al.*, 1986), its high cost largely prohibits its extensive use, especially in developing countries (Evangelista *et al.*, 2005). Successful rearing of fish larvae using live zooplankton has been reported for several species (Watanabe *et al.*, 1983; Wang *et al.*, 2005 and Evangelista *et al.*, 2005). In the present study, an attempt was made to observe the impact of two live food (*Artemia* and mixed zooplankton) on growth and survival of *O. biimaculatus* during its captive larval rearing.

The *Ompok bimaculatus* larvae were obtained from the captive adults by induced spawning technique as described by Chakraborty *et al.* (2007). Two days old hatchlings were collected randomly. Six glass aquaria containing 50 l clean pond water were stocked with 50 numbers of larvae in each aquarium. The larvae were fed from the third day after hatching (i.e. on the second day of stocking in the aquaria). The larvae stocked in three aquaria were fed with freshly hatched *Artemia* nauplii and the larvae stocked in rest three aquaria were fed with filtered zooplankton collected from ponds. The larvae were fed twice daily (7 am and 4 pm). Every day, 30-40% of the water was exchanged with fresh clean pond water (stored in a FRP tank). The larval rearing was carried out for a period of 12 days and at the end of 12 days, all the surviving larvae were counted and survival percentage was calculated. Ten numbers of larvae from each of the aquarium were

collected and their total weight and individual length were taken. The survival percentage and growth data (length and weight) were subjected to t-test for finding out if there were any significant differences between two different groups i.e. fed with zooplankton and *Artemia* nauplii.

Mean growth in terms of increase in length and weight, and survival percentage of larvae during the 12 days experimental period is presented in Table 1. Average growth in terms of length (25.3±0.33 mm) and weight (112±8.08 mg) for the treatment with *Artemia* nauplii were significantly higher ($p<0.05$) than those fed with zooplankton (24.3±0.33 mm and 94± 6.51 mg). Similarly, the survival of larvae fed with *Artemia* was also significantly higher ($p<0.05$) compared to that of larvae fed with zooplankton. Close visual observation of the larvae in both the groups indicated that the alimentary canal of the larvae of both the groups were almost full, indicating acceptance of both the live foods. The differential performance of the larval groups therefore was attributed to superior or more consistent nutritional quality of the *Artemia* nauplii compared to zooplanktons.

The growth performance of larvae (24-25 mm) during the present study at the end of 12 days post-hatch irrespective of food supplement were much superior to the observation of 8-12 mm in similar 12 days post-hatching period by Sridher *et al.* (1998). Further, Sridhar *et al.* (1998) and Chakraborty *et al.* (2006 and 2007) have reported high mortality rate of larvae during initial stages while reared in earthen nursery. Hussain (2006) also reported a very low survival of 7.89% in pabda larvae during 9-19 days rearing period. The significantly higher survival levels recorded in the present study compared to earlier trials was largely due to abundant availability of live food present in the water column. The results although indicated superiority of *Artemia* naupli as food for larvae of *O. bimaculatus* against mixed zooplankton, feasibility of achieving impressive growth and survival levels in the latter shows the merit of use of mixed zooplankton, due to its easy availability and low cost. The study further showed possibility of achieving higher growth and larval survival even in indoor rearing condition.

Table 1. Growth and survival attributes of *O. bimaculatus* feed with two different live food

Treatment	Length (mm)		Final weight	Survival
	Initial	Final	(mg)	(%)
Fed on Zooplankton	2.33±0.07	24.33±0.33[a]	94±6.51 [a]	47.3±5.92 [a]
Fed on *Artemia* nauplii	2.33±0.07	25.33±0.33[b]	112±8.08 [b]	62.7±5.21 [b]

Values expressed as (mean±SE, n=3) & different alphabets in a column are significantly different ($P< 0.05$)

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College of Fisheries, Central Agricultural University
Lembucherra, Tripura-799210, India

P. K. Pradhan
M. C. Nandeesha
A. B. Patel and
D. Barman