

# Breeding and seed production of butter catfish, *Ompok pabda* (Siluridae) at Kalyani Centre of CIFA, India

Chakrabarti, P.P.\*, Chakrabarty, N.M. and Mondal, S.C.

Regional Research Centre, Central Institute of Freshwater Aquaculture, Kalyani Station, A – 5 (Phase III), Santalpara, Kalyani 741 235, West Bengal, India, email dipapartha@yahoo.co.in



*Pabda (Ompok pabda) brooder.*

*Ompok pabda* (Ham.) popularly known as 'butter catfish' is a freshwater species native to India, Bangladesh, Pakistan, and Myanmar. The fish has a wide geographical distribution covering Afghanistan, the Indus plain and adjoining hill area of Pakistan, the North East States of India in Bihar and West Bengal. Open beels/mauns connected with rivers are common habitats. *O. pabda* has fine flesh with a soft meat texture, good taste and high nutritional value. It is commonly sold fresh locally or ice preserved. The species supported a strong fishery in North Bihar and West Bengal during the early 1970s, but in the early 1980s sharp falls in catches were observed, indicating swift declines in those areas. Consequently, *O. pabda* has been listed as an endangered fish species in India due to its decrease in abundance and restricted distribution. Causes of the decline are likely to be indiscriminate fishing during the breeding season, wide use of pesticide and insecticides from agricultural fields causing pollution and siltation in habitat.

Pabda is a highly priced, delicious and nutritious catfish and well preferred fish because it contains relatively few bones. It has not received much attention in aquaculture mainly due to non-availability of information regarding its breeding and culture technique. However, success have been achieved in breeding and seed rearing of pabda in India<sup>1,2,3,4,5,6</sup>. The Regional Aquaculture Research Centre of Central Institute of Freshwater Aquaculture at Kalyani, West Bengal, India has been successful in breeding and mass seed production of pabda (*O. pabda*), so that the fingerlings can be produced locally for grow out culture to overcome the constrain of procurement of seed from wild sources. The price of pabda is above Rs 300/- per kg (US\$1 = Rs 45/-) and is highly sought after in the entire North East region.

## Broodstock management

Scaling up of farming requires a consistent supply of good quality seed, necessitating captive breeding, careful broodstock management and larval rearing. Broodstock can be managed in ponds to promote gonad development. In the present study they were fed trash fish and boiled chicken viscera at about 5 – 10% of total body weight per day. A weekly water exchange of 50 – 100% was made to maintain water quality parameters within favourable ranges. Broodstock matured at PH 7.4 – 7.8.

## Spawning technique

The fish attained maturity at the end of the first year. Males matured earlier than females, which became mature at 30 – 40 g in weight. Fertilisation is external and spawning occurs



*Administering hormone to broodstock.*

once a year during the monsoon season (June – August) with a peak in July. Fully ripe females and males were segregated and used in induced breeding. Females can be distinguished by a rounder, fuller abdomen, reddish vent colour and rounded genital papilla. Males have an elongated and pointed genital papilla. We used Ovaprim to promote induction of spawning. Ovaprim was applied at 1 – 1.5 ml/kg body weight for females and 0.5-1.0ml/kg body weight for males, applied in a single injection. Females were stripped for spawning 8 – 10 hours after hormone injection and the eggs were collected in a tray. Milt was obtained from males by surgically removing the testes, which were macerated to produce a suspension to be mixed with the eggs for fertilisation. Eggs were subsequently washed thoroughly with clean water and transferred to a fibreglass/cement tank for hatching, with constant aeration.

## Embryonic development

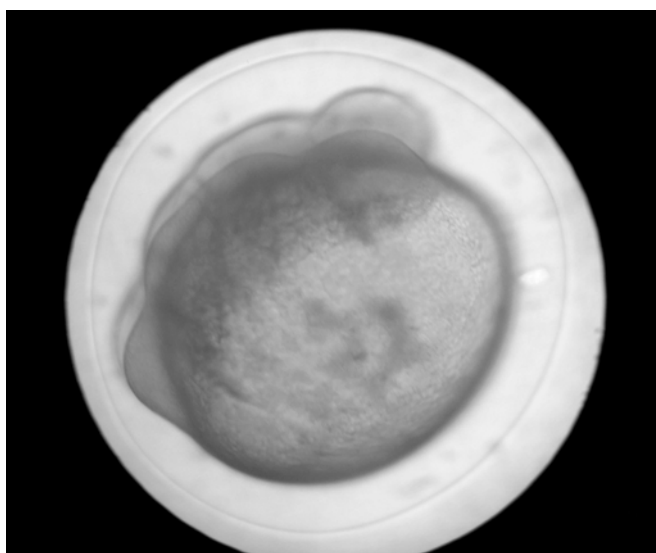
- 30 minutes after fertilisation the blastodisc begins to form over the yolk, following first, second and third cleavage.
- Sixty four cell stage was observed after 70 minutes post-fertilisation followed by morula stage in two hours.
- Yolk plug stage appeared after five hours.
- The cephalic and caudal end of the embryo had differentiated after 10 – 15 hours.
- After 16 – 21 hours the gut had faintly appeared posterior to the yolk sac, leading to the anus, and movement of the embryo could be seen within the egg.
- After 22 hours movements of the embryo were observed.
- The eggs began to hatch after 23 hours.

## Larval rearing

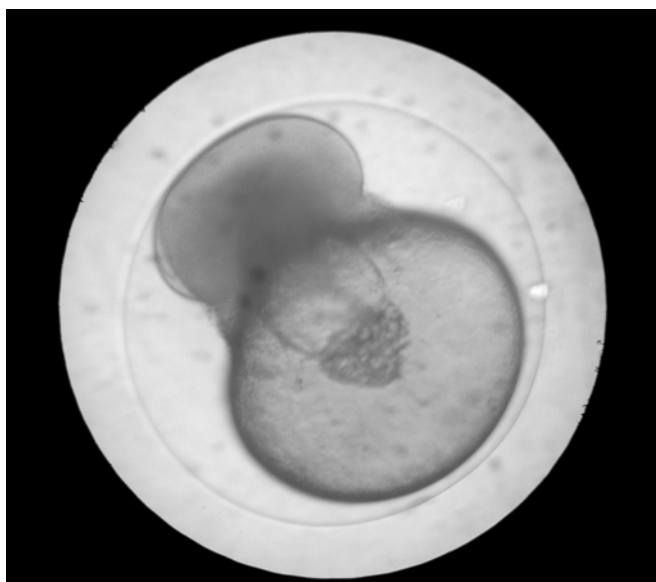
Newly hatched larva can be reared in fibre glass tanks and cement cisterns as well as in nurseries using pond water. Suitable water parameters are temperature  $25 \pm 3^\circ \text{C}$ , alkalinity  $120\text{-}150 \text{ mg l}^{-1}$  and dissolved oxygen in the range  $3\text{--}5 \text{ mg l}^{-1}$ . Initially the water level of containers was maintained at 3 – 4 cm, and gradually increased to 15 – 20 cm after one week. Water levels were adjusted at different stages of rearing to minimise the stress to larva. Aquatic weeds such as *Hydrilla* can be provided to give cover for the larvae.

## Feed

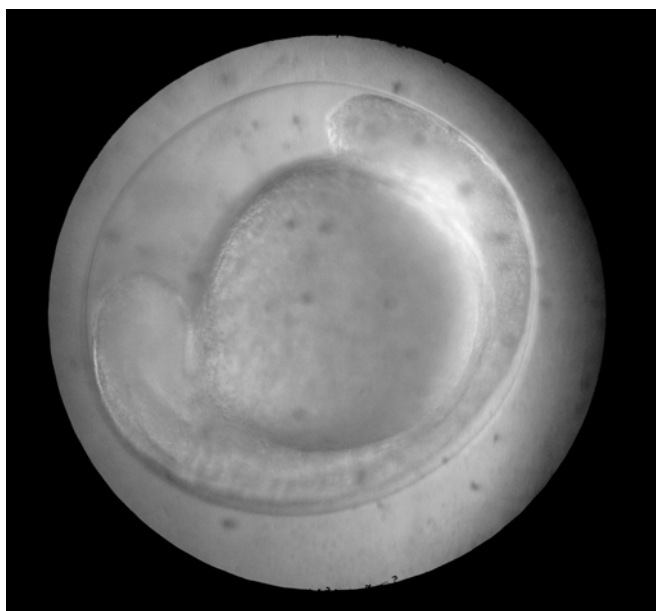
Yolk sacs were absorbed in around three days. Early spawn were cannibalistic, attacking and devour others. It was necessary to reduce the density of the stocked population to reduce cannibalism. Mixed zoo plankton, *Tubifex* worm, and egg custard were provided as larval feed. Larvae accept zooplankton up to day 15. In fry stages and onwards the fish can be fed with compound feed (rice polish, silk worm pupae and boiled egg) at 100 % of body weight of the population. The average size of fry was 1.1 – 2.0 cm in length and 0.6 – 2.0 g in weight. Fry can also be reared in fibre glass tanks and cement cisterns fed with both zooplankton 2.0 – 3.0



Embryonic development at 1 hour and 10 minutes.



Embryonic development at 1 hour and 42 minutes.



Embryonic development at 11 hours and 40 minutes.

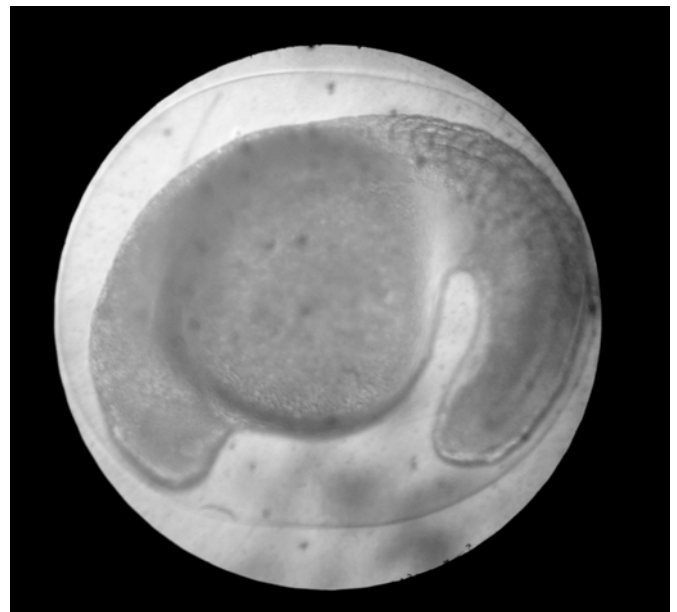
ml on alternate days and *Tubifex* worm as a live feed. Fry attained 5.0 – 6.0 cm and 3.0 -5.0 g after a rearing period of 40 days, which is a good size for stocking in grow out ponds.

### Conclusion

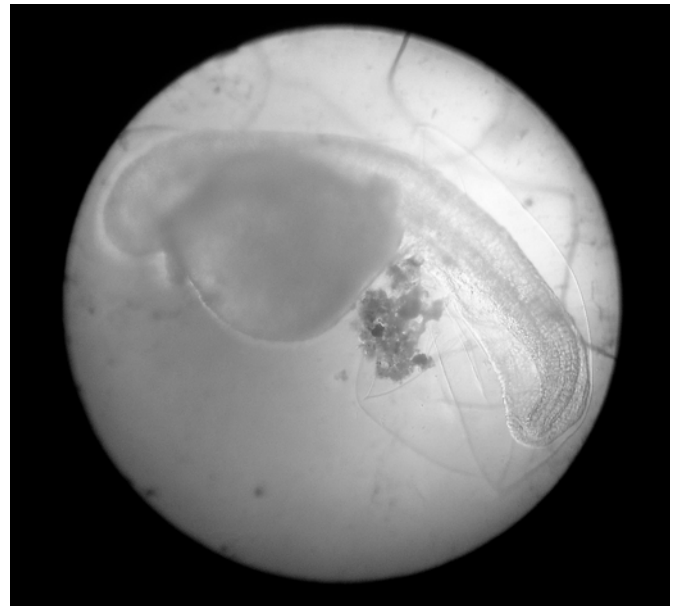
Pabda fetches a relatively high market price and are a fish popularly sought after in eastern Indian states. Spineless, except a soft vertebral column, the fish has good quality flesh and taste and is widely accepted by the consumers of East Asian countries. The technology for breeding and seed production has been developed and we anticipate that a pabda grow out industry will emerge among progressive fish farmers in due course.

### References

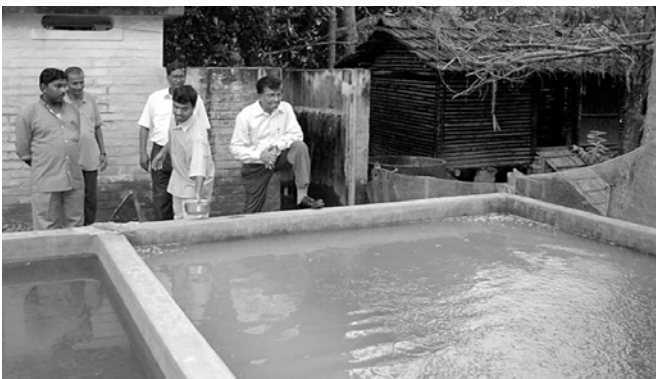
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Embryonic development at 15 hours.



Gut begins to appear posterior to the yolk sac.



Pabda culture in cement cistern.



Pabda culture in earthen pond.



Harvested pabda.