

Spawning biology and captive breeding of vulnerable loach *Botia histrionica* (Blyth) in Cooch Behar, West Bengal, India

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ABSTRACT

This study describes the dosage of WOVA-FH for induced breeding of Botia histrionica. Synthetic hormone, WOVA-FH, was used to induce the species at different doses namely 0.5 ml/kg of body weight as 1st dose, 0.25 ml/kg of body weight as 2nd dose, 0.025ml/Fish as 3rd dose and 0.0125 ml/Fish as 4th dose) in each breeding trial. The higher fertilization, hatching and survival rates were found with fish injected with 0.025 ml/fish. Botia histrionica require very little amount of synthetic hormone for breeding in captivity. The present study confirmed that 0.025 ml/fish of WOVA-FH was optimum for induced breeding of Botia histrionica.

Keywords: *Botia histrionica*, Induced breeding and Dose of hormone.

INTRODUCTION

Botia histrionica[1] is a very attractive indigenous ornamental fish. It is now listed as an vulnerable species [2]. The fish is very colourful having bright bands, peaceful nature, lesser scales and barbels. The distribution of this tropical loach is native to North- East India and Burma. They lead a nocturnal life but adapt quickly captive condition. They feed during the day time in captive condition, and prefer animal feeds like *Daphnia*, worms and Brine shrimp. They are benthic feeder but are also capable of feeding in mid and surface water. Development of indigenous ornamental fish culture technique can bring both improvements in the socioeconomic status as well as financial security to the poor livelihood with limited resources. There is no literature available as such either on behaviour, breeding or conservation aspects of loaches. These lacunae inspired us to investigate on the behaviour, standardize artificial breeding and conservation of the *Botia histrionica* which may contribute to some extent to the information database and conservation approach of the natural resource.



Fig 1: Matured male fish



Fig 2: Matured female fish



Fig 3: Two months old fish

Collection and Experimental site

The sampling sites were located at Bhelakopa, Dwitia Khanda of Cooch Behar lying at 26°18' North latitude and 89°34' East longitude. After collection the fishes were oxygen packed in sterile polythene bags and kept in cartons

for transport to the Wet Lab of Aquaculture and Limnology Research Unit, Department of Zoology, University of North Bengal. In the laboratory the fishes were transferred to suitable aquariums for regular monitoring of their maturation.

Induced Breeding

Eight pairs of each group of matured fish were injected with different doses of the synthetic hormone WOVA-FH (Biostadt India Limited, Mumbai). The fish were injected at the base of the pelvic fin. Breeding tanks of 100 litres capacity having air-stone were used. After injection the fish were transferred to tanks. Different Set-up protocol details were followed as given in Table 1.

Table 1: Experimental design showing the type of set-up with the sex ratio, number of pairs of fish taken with the dose administered

Type of Set-up	Sex ratio	Number of Fish	Dose of hormone(WOVA-FH)
Set-up-1	1:1	2 pairs	0.5ml/Kg
Set-up-2	1:1	2 pairs	0.25ml /Kg
Set-up-3	1:1	2 pairs	0.025ml /fish
Set-up-4	1:1	2 pairs	0.0125 ml/fish

Results and Discussion

4 different doses of WOVA-FH hormone 0.5 ml/kg of body weight as 1st dose, 0.25 ml/kg of body weight as 2nd dose, 0.025ml/Fish as 3th dose and 0.0125 ml/fish as 4th dose) were used. The best response to reproduction was obtained from the dosage of WOVA-FH of 0.025 ml/ fish. The higher fertilization, hatching and survival rates were found in fish injected with 0.025 ml/fish in Set-up-3. Same dose of WOVA-FH hormone was injected to both male and female. Injected fishes were released in tanks and it was observed that after 4.30-5.00 hours of injection they started spawning simultaneously. Spawning was observed in Set-up-3 but there was no spawning in others Set-ups. All fishes died in Set-up-1 within 2days. In Set-up-2 the fishes died within 4 days but in Set-up-4 all the fishes were most active and took feed properly but spawning was not observed.

Table: 2 Summary of the different stages of breeding of Genus *Botia* in the different Set-ups.

Time	Set-up -1 (No 5 and 9) (0.5ml/Kg)	Set-up -2 (No 6 and10) (0.25ml /Kg)	Set-up -3 (No 7 and 11) (0.025ml /fish)	Set-up -4 (No 8 and 12) (0.0125 ml/fish)
07p.m.	Transferred to tank	Transferred to tank	Transferred to tank	Transferred to tank
08p.m.	Black patch appeared at the injection site	All fish cuddled in a corner	All fish cuddled in a corner	All fish cuddled in a corner
09p.m.	All fish cuddled in a corner	Some males active	All fishes were active	All fishes were active
10p.m.	Some males died	Some males active	Fishes were swimming against flow of water	Males were active
11p.m.	Females swelled up	Females swelled up	Females were being chased by the males at the same time the males were fighting with each other	Females swelled up and males started chasing.
12a.m.	All fish cuddled in a corner	Some males were chasing the females; no spawning.	Spawning had started; the paired fishes were swimming with the current	Males started chasing the females; no spawning.
01a.m.	All fish cuddled in a corner	No spawning	Spawning continued	No spawning
02a.m.	All fish cuddled in a corner	No spawning	Spawning continued	No spawning
03a.m.	All fish cuddled in a corner	No spawning	Spawning continued	No spawning
04a.m.	All fish cuddled in a corner	No spawning	Spawning continued	No spawning
05a.m.	All fish cuddled in a corner	No spawning	Spawning ceased	No spawning
06a.m.	Not spawning	No spawning	Fishes moved actively	No spawning
After 1 day	Eggs came out on press the abdomen	Eggs came out on press the abdomen	Eggs no came out on press the abdomen	Eggs came out on press the abdomen
After 2 days	All fishes almost died	Feeding ceased	All fishes took feed and moved actively	All fishes took feed and moved actively
After 4 days	All fishes died	Almost all fishes died	All fishes took feed and moved actively	All fishes took feed and moved actively

The present study demonstrated the successful breeding of *Botia histrionica* in captive condition with little dose 0.025ml/fish WOVA-FH. In the same way, Ovatide induced breeding in *Ompok pabo* with a single dose of 0.5 mlKg⁻¹ and 0.6ml Kg⁻¹ to the male and female fish, respectively[3]. Similar type of study was reported in *Puntius sarana* by Udit *et al.*, [4]. For induced breeding *Puntius sarana* Ovatide at 0.2 ml per male fish and 0.3 ml per female fish was used.

CONCLUSION

Botia histrionica, therefore, was easily matured and bred successfully under captive conditions without flowing water system. This study documented the breeding of ornamental fish *Botia histrionica* in captivity with use of synthetic hormones at 0.025ml/ fish. For induced breeding of *Botia histrionica* very minute amount of WOVA-FH is needed. This paper is therefore useful for loach breeders and aquarium keepers.

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