

## ABSTRACT

Blue perch or Blue badis, *Badis badis* under Badidae family, is one of the most highly demanding fish for both local and export market due to their chameleonic habit. This species is sometimes sold under the trade name of 'chameleon fish' due to its ability to rapidly change of colour, especially when breeding or stressed. But the exporting trade is not sustainable because the trade is based on capture from nature. In order to sustain the growth it is absolutely necessary at this point to shift the focus from capture based fishery to culture based development with emphasis on scientific intervention. There is some degree of uncertainty in the catch of a particular variety of ornamental fish form natural water bodies. Thus, the present practice of exporting native ornamental fishes based on natural collection alone is not a sustainable practice. In the present study, eco-biology of the target species was studied for domestication under captive condition. For captive maturation semi-natural habitat for fish were made with the help of sandy bottom, gravels, stones along with plantation of some of the ornamental plants. Morphological study revealed that the body of *B. badis* slightly compressed and moderately elongated. Fin formula was recorded as D. XIV-XVI/ 7-8; A. III/ 6-7; V. 6-8; P. 8-10; C. 13-14. The length weight relationship of the fish is  $\text{Log } W = -5.043 + 3.133L$  and the  $r^2$  value is 0.957. Present studies indicated the 'b' value is more than '3' which shows the positive allometric growth. The condition factor of the fish is 1.61 which indicates the good wellbeing of the fish in the studied environment. The RLG value was found increased with the increase of total body length. The average GaSI was found to be  $4.76 \pm 1.27$ . The important groups of phytoplankton during the study period in their diet included *Navicula*, *Cosmarium*, *Closterium* and *Fragillaria*. Occasionally, zooplankton like *Cyclops* and Nematodes

Tubifex were also provided. Sexual dimorphism is well marked by their colour pattern, adult males display bright colour with 5 pairs (10 nos.) of black stripes visible on the body. Female chameleon fish (*B. badis*) rate somewhere between drab and plain most of the time. Mature males also develop extended dorsal, anal and caudal fins. The gonad of the fish is small in length and slight yellowish in colour. 50% of all female specimen attaining a length of 75-85 mm and weight of 6.50-7.75g was matured. The breeding season of the fish extend from late July to December. The Gonado-Somatic Index (G.S.I.) for the gravid females ranged from 0.037 to 0.15 with an average of 0.077. Pre-spawning absolute fecundity of blue perch, *Badis badis* was found out to 305.3 as mean and the range was 372 – 502. The minimum number of ova produced was 116 in a female having a length of 27 mm and weight of 0.28 g. A maximum of 518 numbers of ova was produced by a female having a length of 29 mm and weight of 0.47 g. The male display a more intense colouration to display to the female and they will pair off. The blue perch, *B. badis* are cave-spawners that form temporary pair bonds. For this breeding tank is set using river sand and gravel for the substrate and provided couple of upturned plant pots and broken earthen pot as spawning sites. The water maintained soft and slightly acidic, the temperature set at 24 °C. A single pair or a group of adults can be used for breeding set up but for multiple males several number of cave have to provide for each pair. To ensure a higher rate of success 2-3 females to each male. During spawning male drag females into the cave. A receptive female will enter and spawning takes place with 30-100 eggs. During this time female deposit eggs and male fertilize the egg by swimming over them. After spawning takes place remove the female from the breeding tank as the male may turn aggressive towards the female. The male shows parental care

towards the eggs and fry, and defending the territory and fanning with the fins. The eggs hatched after 2-3 days but the fry do not become free swimming until they are 6-8 days old, and not leave the vicinity of the cave for another week or so after that. The young fish are quite sedentary for the first few days. Microworm is an ideal initial food, but once they are visibly swimming in the water column *Artemia nauplii* is used to the diet thrice daily. The growth rate quite quick and once the larvae reach a size of 0.75 - 1 inch (2 - 2.5 cm) they moved into a larger aquarium for rearing. Water quality parameters for rearing and spawning were analysed throughout the study periods. There was no significant difference observed in all the water quality parameters analysed, except the temperature which remained within a range of 20- 28°C, having seasonal fluctuations. Hardness was in the range of 224.00 - 231.50 ppm, Total alkalinity 177.75 -185.25 and pH in the range 7.13 -7.25. Dissolved oxygen range was in range of 5.13 - 5.38 ppm.