

Reproductive interventions for revitalising the sustainable production of Malabar labeo, *Labeo Dussumieri*, an indigenous candidate for aquaculture diversification

B. L. Chandana^{1,2}, C. P. Abhilash^{1,3}, K. R. Saikrishnan^{1,3}, Charan Ravi¹, Uttam Kumar Sarkar⁴ and V. S. Basheer^{1,*}

¹Centre for Peninsular Aquatic Genetic Resources, ICAR-National Bureau of Fish Genetic Resources, Kochi 682 018, India

²Faculty of Fisheries Science, Kerala University of Fisheries and Ocean Studies, Panangad, Kochi 682 506, India

³Faculty of Ocean Science and Technology, Kerala University of Fisheries and Ocean Studies, Panangad, Kochi 682 506, India

⁴ICAR-National Bureau of Fish Genetic Resources, Lucknow 226 002, India

Malabar labeo, *Labeo dussumieri* is one of the cyprinids, endemic to the Western Ghats, India. The lack of availability of proper captive production techniques and over-exploitation has led to a decline in the population of this fish in its natural habitats. In the present study Malabar labeo were acclimatised to captive conditions and selected brooders were introduced into breeding pools. They were administered with synthetic hormones for dose optimisation as well as breeding trial experiments. To determine the effective dose for induced breeding, the females were injected with WOVA-FH at 0.5 (T1), 0.75 (T2) and 1.0 (T3) ml/kg body weight. The spawning fecundity was 2.2 ± 0.2 lakhs eggs/kg during the peak spawning season. Among the three treatments, T2 (0.75 ml/kg body wt.) showed the best results in terms of egg fecundity ($89,560 \pm 592$), fertilisation rate ($94.76 \pm 0.57\%$), hatching rate ($90.31 \pm 0.68\%$) and spawn survival rate ($85.25 \pm 0.54\%$). The fertilised eggs were round, non-sticky with a diameter of 2.48 ± 0.1 mm, and hatching took place between 16 and 20 h after fertilisation. The newly hatched larvae had an average total length of 4.1 ± 0.2 mm and a weight of 2.7 ± 0.4 mg. The study revealed the potential of producing *L. dussumieri* under captivity and meeting its demand for farming and conservation.

Keywords: Indigenous fish, induced breeding, minor carp, spawning, Western Ghats.

offered by native and indigenous varieties for the diversification of aquaculture. India has more than 50 numbers of potential aquaculture species but only less than 10 species are being cultured. Concerted efforts are being taken to develop captive breeding techniques for many indigenous species with good cultural potential.

Labeo dussumieri commonly known by the name Malabar labeo (locally goes by Thooli/Pullan) is a cultivable, most preferred food fish, native to the Western Ghats²⁻⁴, which commands a high price. In Kerala, the distribution of this species is restricted to Pampa, Achenkovil, Manimala, Meenachil⁵, Periyar⁶, Muvattupuzha⁷ and Chalakudy⁸ rivers, and also the southern tip of Vembanad lake⁹. A decline in the occurrence of the species in the rivers might be due to heavy exploitation in the wild. The fish being one of the important delicacies in central Kerala, can be used as a potential species for aquaculture⁸. Depending on natural stock to support the surging market demand is causing their overexploitation. Captive propagation using feasible production know-how is required to ameliorate the supply of fish. Developing proper captive breeding techniques for the species helps to alleviate the pressure on the wild as well as to open up another latitude in the field of aquaculture.

Life history studies and culture practices of a fish are mainly influenced by the knowledge of the developmental processes. Hence, embryology as well as early larval deve-