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Breeding and parental care in green head spotted Murrel, *Channa punctata* (Bloch)

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Abstract
The breeding and parental care in green head spotted murrel, *Channa punctata* (Bloch) has been studied. An experiment was set up to know the duration of spawning, number of eggs, and parental care for this species. The egg mass of fertilized eggs of sized (60-120.0±15.0 mm and 61-118.0±14.0 mm) and 196 and 186 number of pinhead fries were obtained from the each pair of brooder. Both parents provided parental care to their young one, which lasted for three months and average loss of 10±2.5g bodyweight in male and 8±2.4g body weight in female was noticed in both pairs. The quality seed and fingerlings has been obtained, which will help to boost up the aquaculture practices in the state of Himachal Pradesh.

Keywords: Spawning, parental care, brooder fish and *Channa punctata*

1. Introduction
The green head spotted murrel, *Channa punctata* (Bloch) is one of the most important fresh water fish species in the inland regions of Himalayas and other parts of abroad. Unlike carp's and trout's; *C. punctata* does not require good amount of water both quantitatively and qualitatively. Complete understanding of feeding and breeding is very essential before any fish culture. Information regarding the attainment of sexual maturity, time, and duration of spawning, number of eggs and parental care in natural as well as artificial conditions helps to measure biotic and abiotic factors. The most important drawback of large-scale commercial fish culture of several species from natural water bodies is the unavailability of quality seed of uniform size, which is free of diseases, parasites and pests at the time of stocking in culture ponds [8]. Therefore, it becomes essential to study the breeding aspects of this fish. The positive impact of α-tocopherol based feed (fed at of 4 % of the fish body weight) on the fish maturity and reproduction has been observed in the previous phase of study [4]. Thus in the present investigation, next phase *i.e.* Spawning and Parental Care has been investigated under the artificial conditions being provided in the fish farm of the Department of Fisheries, COVAS, CSKHPKV, Palampur (Himachal Pradesh).

2. Material & Method
2.1 Fish Collection and Stocking
Fish were collected from the sub tributaries of river Mole located at the Palampur area of district Kangra, H.P during April and May 2011. A total of twenty five (25) fish samples *i.e.* 15 from Tanda (Latitude: 32.088083, Longitude: 76.537204) and 10 samples from Rajpur (Latitude: 32.081429, Longitude: 76.533777) were collected and kept in fibre glass trough (1 m x 1 m x 1 m) for acclimation up to 15 days, out of which 18 healthy, strong, more or less equal sized fish were sorted and accessed for primary sexual characteristics. Afterwards, two pairs of matured brood fishes (two males of 44.92 g and 38.52 g and two females of 66.06 g and 43.28 g body weight) were sorted out. The dimorphic characters as per [3] were recorded. Each pair (1:1 male: female ratio) were kept in separate fibre glass troughs to observe the initial spawning activities and in order to observe the phenomenon of parental care after spawning, fries (196 and 186 with each pair) were also stocked along with parents. An artificial nest of bricks and *hydrilla* plants were built to provide conditions like natural habitat, the level of water was maintained only 4-5 inches above the nest for easy observations of spawning activities parental care.

3. Result & Discussion

The matured brood fishes (two males of 44.92 g and 38.52 g and two females of 66.06 g and 43.28 g body weight) were stocked during the second week of May. After 15 days of experiment, it was observed that in both pairs of brooders that chasing activities were shown by male during the last week of May. The male tried to hit the snout and vent of female more frequently and became highly aggressive while female remained calm, less active, and rarely aggressive that seeks shelter under hydrophytes. An interesting behaviour of jumping over the water surface, during the mid-hours of the bright day was also observed in both pair of brooders. In the first pair of brooders (male having 44.92 g body weight and female 66.06 g) the chasing activities prolonged for 5±2 days while in second pairs (male having 38.52 g body weight and female 43.28) chasing lasts for 12±3 days, might be due to the difference in their body weight. In all the spawning attempts, the male was more actively involved in the courtship. During the culminating courtship, male bent its body close to the female and released the milt near eggs laid by female. Courtship of pairs prolonged for 24±3 hrs and lasted till the eggs were released under hydrophytes.

Photo 1: Male-Female Courtship

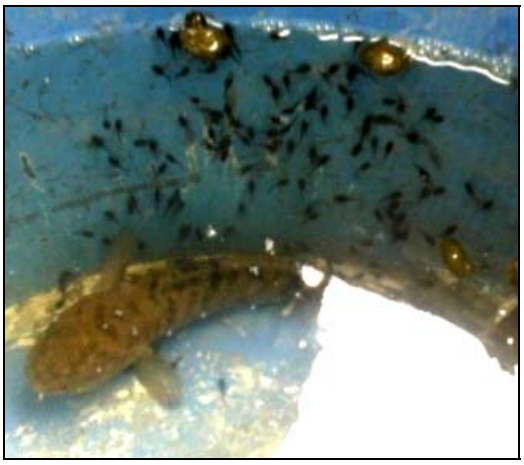

Photo 2: Female with Fry

Photo 3: Pinheads (Fries)

Photo 4: Fingerlings

The fertilized eggs obtained from both pair of fish, created a mass (approximate size of 60-120.0±15.0 mm and 61-118.0±14.0 mm) of buoyant adhesive eggs, in a clear area harboured by weeds in cistern pond, while unfertilized eggs remained scattered. About 196 and 186 numbers of pinheads (small fry) were collected from each respective pair and were kept along with their respective parents (male & female) in a partitioned fibre glass trough for further observation. Furthermore, in the previous studies the spawning activity has been observed and reported to be shorter on hormone induced brooders [5]. It was noticed that *C. punctatus* did not build the nest itself; instead they laid their eggs in marginal aquatic weeds which probably provides shelter for newborns. Though both the parents exhibited parental care, but male was more aggressive and protected the nest from intruders while female remained inside the nest along with the fry. A similar observation has been reported earlier by [2, 6] contrarily to it, female was more aggressive in *C. striatus* [1]. Hormone induced bred fish showed no parental care for the eggs and larvae of *C. striatus* and *C. Punctatus* [7]. Further it was found that male used to flip its pectoral fin continuously so that the good amount of oxygen is available to the new born babies (pin-heads) as such supporting the observation [5]. It was noticed that both pair of parents provided care up to three months and the mean loss in body weight was 10±2.5 g in male and 8±2.4 g in female. The adoption of normal feeding was noticed after three months of parental care. Meanwhile, the fries also started to accept the feed in small quantity.

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5. References
1. Das M, Chakraborty SC, Ahmed F, Basak RK. Predatory behaviour of snakehead fish, Channa striatus. Bangladesh Journal of Fisheries Research 1998; 2(1):127-137.
2. Huntingford FA. The relationship between anti-predator behaviour and aggression among co-species in the three spined sticklebacks, *Gasterosteus aculeatus*. Journal of Animal Behaviour 1976; 24(4):245-260.
3. Jhingran VG. Fish and Fisheries of India. Hindustan Publishing Corporation, India, Delhi, 1982, 666.
4. Koundal A, Dhanze R. Preliminary observation on the impact of Vitamin E based diet in the maturity of spotted head murrel Channa punctatus. Journal of Natural History, India 2012; 8(1):33-39.
5. Marimuthu K, Haniffa MA, Jesuarockiaraj A, Muruganandam M. Spawning and parental behaviour in the induced bred murrels. Indian Journal of Fisheries 2001; 48(4):409-411.
6. Mckinnon KJ. Red coloration and male parental behaviour in the three spined stickle back. Journal of Fish Biology 1996; 49(2):1030-1033.
7. Parameshwaran S, Murugesan VK. Observation on the hypophysation of murrels Ophiocephalidae). Hydrobiologia 1976; 50(1):81-87.
8. Zohar Y, Mylonas CC. Endocrine manipulations of spawning in cultured fish: from hormones to genes. Aquaculture 2001; 197:99-136.