Captive maturation of striped murrel, *Channa striata* broodstock during pre-monsoon through habitat manipulation

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Abstract

Striped murrel is considered a potential species for modern aquaculture systems due to their fast growth rate, air-breathing nature, and higher market price. Difficulty in captive maturation and short spawning season are major problems in the induced breeding and seed production of striped murrel. To overcome these problems, an attempt was made to achieve early reproductive maturity of striped murrels in captive conditions by intervening in the brooder rearing habitat. In this regard, four habitats were tested in duplicates, namely T_1 - Tank with clean reservoir water without macrophytes and soil base, T_2 - Tanks provided with floating (Water hyacinth, *Eichhornia sp*) and submerged (Waterthyme, *Hydrilla sp*) aquatic macrophytes without any soil base, T3- Tanks provided with only soil base (15-20 cm) without any macrophytes and T_4 - Tanks provided with both soil base and macrophytes. At the end of the three-months rearing phase, the fishes provided with macrophytes and soil base (T4) resulted in early maturation characterized by an egg size of around 1.29±0.21 mm and the majority of late granular stage oocytes and spermatozoa in ovary and testes, respectively. The treatments T2 and T3 were found with almost similar results where egg sizes were 0.80±0.03 mm and 0.95±0.71 mm, respectively. The histological observation showed that the ovary of T2 consisted of late perinuclear oocytes whereas the ovary in T3 consisted of matured oocytes with yolk vesicles. However, the testes consisted of both spermatid and spermatozoa in T2 and T3. The T1 resulted in the poorest response among all treatment groups with an egg size of around 0.68±0.03 mm. The histological observation of T1 showed chromatin nucleolar to an early peri-nucleolar stage of oocytes in the ovary and the testes consisted majority of spermatogonia. The results concluded that providing a bottom soil base of 15-20 cm and covering the 20-30% water spread area using aquatic macrophytes in the brooder rearing tank helped in the gonadal maturation of striped murrel during pre-monsoon in captive conditions.

Key Words

Pre-spawning, Maturity, Eggs, Ovarian stage, Broodstock, *Channa striata*