

## Development of artificial breeding techniques for long-whiskered catfish, *Sperata aor* and giant river catfish, *Sperata seenghala* of Bangladesh

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### Abstract

*Sperata aor* and *S. seenghala* are the two important native catfishes of Bangladesh but commercial farming of these species is not possible due to lack of naturally collected or artificially produced seeds for stocking. Attempts were made to develop techniques for seed production by artificial breeding and nursery-rearing of fries of these catfishes. A total of 60 *S. seenghala* (750-1,500 g) and 10 *S. aor* (600-1,000 g) broods were collected from the Brahmaputra river-basin and floodplains in Mymensingh region four months prior to their breeding season. The collected brood fishes were reared in separate earthen ponds with supplementary feeds comprising of rice bran (40%), mustard oil cake (29%), fish meal (30%) and vitamin-premix (1%). Three experiments were conducted to optimize the hormone dose. A total of nine *S. seenghala* females weighing from 750 to 1,500 g were given an initial and resolving dose of 12-20 and 16-24 mg PG/kg body weight, respectively. The males weighing from 650-950 g were administered a single dose of 18-26 mg PG/kg body weight at the time of the time of administering the resolving dose to the females. The females ovulated partially and the eggs were examined under a compound microscope, but most of them were found to be less ripe or damaged. Collection of milt by stripping the males was not successful. The testes were taken out and sperm were observed to be non-motile and less developed. In view of stimulating natural propagation of *S. seenghala*, artificial holes (nests) were constructed in the pond bottom. Each hole was 0.7 m in diameter and 0.3 m in depth. A total of 10 holes were made and then 10 pairs of *S. seenghala* breeders (800-1,200 g) were stocked in the pond. In mid February, 3,000 fry of *S. seenghala* with a mean length of 4.60 cm and weight of 0.36 g were collected by repeated netting followed by drying of the pond. The fry were then stocked in a nursery pond and fed with commercial feed (SABINCO starter-1). The average length and weight of the fingerlings were 9.01 cm and 3.95 g, respectively and the estimated survival was 60% after two months of rearing. *S. aor* did not respond to natural spawning. Further study is essential to develop techniques for their successful artificial and natural breeding.

Key words: Artificial and natural breeding, Catfish, *Sperata aor*, *Sperata seenghala*

### Research findings

- Induced breeding of *S. seenghala* was not successful due to lack of knowledge and skill to identify the brood fishes with proper gonadal maturity.
- Natural breeding appeared to be successful in case of *S. seenghala* but not in case of *S. aor*.
- *S. seenghala* fry were produced through natural breeding. Fingerlings attained an average mean length of 9.01 cm and weight of 3.95 g after two months of rearing.
- Survival rate of *S. seenghala* was 60%.

### Policy implications

- Steps should be taken to develop induced and controlled natural breeding technique for small and medium scale seed production of *S. seenghala* and *S. aor*.
- Biology of *S. aor* and *S. seenghala* should be investigated thoroughly to understand their gonadal development and natural breeding phenomena.
- Government should take initiative for conservation of gene pools of *S. aor* and *S. seenghala* and their natural habitats e.g. floodplains, rivers, reservoirs, lakes etc.
- Induced breeding and mass seed production techniques of *S. aor* and *S. seenghala* should be developed to supply the seeds for commercial farming as well as to save the gene pools of these valuable species.

### Livelihood implications

Until now *S. seenghala* and *S. aor* are produced in the natural water bodies by natural recruitment. As the fishes are tasty and have high market value, development of artificial propagation and mass seed production techniques might create excellent livelihood opportunities for hatchery/nursery operators, fish farmers and traders.