

## CHITOL: *Chitala chitala* Hamilton, 1822



### **Systematic position:**

Phylum: Chordata

Class: Actinopterygii (Ray-finned fishes)

Order: Osteoglossiformes

Family: Notopteridae

Genus: *Chitala*

Species: *C. chitala*

### **Synonyms:**

*Mystus chitala* Hamilton, 1822

*Notopterus chitala* Day, 1878

### **Common names:**

Chital (Bangladesh); Humped featherback (English); Clown knifefish (Fishbase).

### **Distribution:**

Bangladesh, India, Pakistan, Myanmar and Philippines (Bhuiyan, 1964; Talwar and Jhingran, 1991).

### **Conservation status:**

Endangered in Bangladesh (IUCN, 2000)

### **Morphology:**

Body elongated; head and body strongly compressed laterally. Dorsal profile is highly convex. Scales are very minute and short dorsal fin. Anal fin is long and confluent with caudal fin. Pectoral fins are reduced.

Dorsal portion is coppery green colored and silvery at sides and below. 15 silvery bars present on each side of dorsal ridge. 5-9 small black spots near the end of the caudal fin. Lateral line is complete. Maximum length reported 120 cm (Day, 1878). In Bangladesh, 103 cm (10 kg) was recorded from Gacher Dahar Beel of Sylhet district (Rahman, 1989).

**Fin formula:**

D. 9; P1. 15-16; P2. 6; A. 115-120 (Rahman, 1989)

**Habitat:**

Found in freshwater bodies such as rivers, beels, canals, reservoirs, ponds etc., particularly in large rivers (Rahman, 1989; Talwar and Jhingran, 1991). Recorded from Chalan Beel (Galib et al., 2009).

**Food and feeding:**

Carnivorous and predator fish (Rahman, 1989). Feed on aquatic insects, mollusks, shrimps and small fishes and takes insects and tender roots of aquatic plants during its earlier stage of life (Bhuiyan, 1964).

**Breeding:**

Breeds between June and July by building nest and eggs are 3-4.5 mm in diameter (Rahman, 1989). Eggs are 3-4.5 mm in diameter and young receive parental care (Bhuiyan, 1964).

**Economics importance:**

Used as food fish in Bangladesh. Always this fish is marketed in fresh and sometimes in live condition. Flesh is of good flavor but full of small bones (Talwar and Jhingran, 1991).

**References:**

Bhuiyan AL. 1964. Fishes of Dacca, Asiat. Soc. Pakistan, Pub. 1, No. 13, Dacca, pp. 15-16.

Day, F. 1878. Fishes of India, being a natural history of fishes known to inhabit the seas and freshwaters of India, Burma and Ceylon. William Dawson & Sons Ltd., London, Vol. I: 778 pp.

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**Natural Breeding in Captivity - a Possibility for Conservation of Threatened Freshwater featherback *Notopterus notopterus***

The aquatic ecosystems of India are under increasing pressure due to various human stresses such as rapid urban development, population growth, habitat destruction, over exploitation, pollution, disease and introduction of exotic species<sup>1</sup>. In this regard the Conservation Assessment and Management Plan (CAMP)<sup>2</sup> has identified 327 threatened freshwater fishes in India. These have been categorized as critically endangered (45 species), endangered (91 species), vulnerable (81 species), low risk near threatened (66 species), low risk least concern (16 species), data deficient (26 species), extinct (1

species) and extinct from the wild (1 species). The featherback, *Notopterus notopterus*, is one of the threatened species with a distributing encompassing the Cauvery, Ganga, Godaveri, Krishna and Mahanathi rivers<sup>3</sup>. It is an important food fish (Rs. 60-80/Kg) and supports commercial fisheries throughout south India. Unfortunately populations of featherback are declining year by year due to monsoon failure and human impacts as cited above. There is now a strong need to implement conservation and management measures to maintain populations in the wild. Photograph: Broodstock collection using cast net

Many approaches have been used in the conservation of threatened species including captive breeding, cryopreservation of gametes, habitat restoration and stock transfer in both captivity and in the wild. People involved in seed production generally prefer to use induced spawning techniques instead of natural breeding, and there is little doubt that the development of induced spawning techniques can contribute to the conservation of a species. However, before attempting artificial propagation it is necessary to study a species breeding and spawning behaviour in captivity. We have examined the breeding behaviour of the featherback under captive conditions as a first step in conservation of this species.

### **Broodstock collection**

Featherback were collected from Bhavanisagar dam (9.550N; 77.80E), Erode district, India between 3rd - 7th March 2001 using cast net. They were transported to CARE aquafarm and during the transport water was changed at 5h intervals. 15-20% mortality occurred during the transport. After reaching CARE aquafarm they were given a brief dip in potassium permanganate (KMnO<sub>4</sub>) and were stocked in fiberglass tanks (capacity 5000 L). Photo: Temporary stocking of featherbacks at collection site.

50 featherback brooders, half male and half female (length: 27.3cm and weight: 350.20g) were selected for stocking. The sexes can be distinguished by the shape of the genital papilla, which is cone-shaped in males and a v-shaped filamentous-like protrusion in females. The brooders were released into the breeding pond (16 x 8 x 1m) on 12 March 2001 along with some aquatic plants *Hydrilla verticillata* and *Eichornia crassipes* to provide shelter and cover<sup>4</sup>. The fish were fed at liberty with fresh chicken intestine collected from the nearby market<sup>5</sup>. Periodical assessment of water quality parameters such as temperature (28.2 C), dissolved oxygen (5.8.0.2 mg/l) and pH (6.9 - 7.2) were recorded and the fish were left undisturbed in the pond for one year.

### **Results of the breeding trials**

20% mortality occurred during the one-year period. Juvenile featherback were first noticed in the pond about one year later on 23rd March 2002. We collected 320 juveniles, which could be differentiated into three different size groups on length and weight basis viz., group 1 (3.4.0.3cm and 0.45.0.05g), group 2 (4.5.0.2 cm and 0.62.0.08g) and group 3 (5.6.0.3cm and 1.2.0.2g). We placed the juveniles into nursery tanks (3 x 1 x 1m) and fed on boiled chicken intestine-raghi flour paste. After 1 week 125 individuals (length 4.5.1.1and weight 0.75.0.39g) were selected and introduced into culture ponds (18 x 9 x 1.5m) for growth studies.

Among the different methods of conservation, seed production could be the easiest considering the cost of production and handling. While induced spawning is generally favoured our trials show that natural breeding could also be a viable, low cost alternative in a live gene bank by providing necessary facilities to maintain brood stock over a long period, ad libitum feeding, maintaining adequate water quality, providing appropriate shelter and through simulating rainy conditions.

It is clear from the survival, growth and natural spawning exhibited by the wild brooders during the study that featherback can readily adapt to captive conditions. Our findings suggest that two brooders /m<sup>3</sup> is a suitable stocking density for natural spawning to occur<sup>6</sup>. Moreover the very low mortality noticed during the rearing and culture period indicates that there is good potential for development of aquaculture of this species. Studies should now be undertaken to assess the growth, production potential and associated economics of culture of featherback. Furthermore, featherback may have a role in composite culture with major carps leading to more sustainable form of aquaculture within Tamil Nadu.

In India most fishes breed during the monsoons when seasonal temperature remains fairly uniform. Peak spawning occurs when the monsoon rains have properly set in. However, there is a general delay in fish spawning in some parts of India where the monsoon usually arrives late. The breeding cycles in most threatened freshwater fishes have yet to be studied under the prevailing natural conditions. However, mass seed production through captive natural breeding may be one solution for the conservation of threatened fish species. Photo: Different size classes of juvenile featherback, naturally spawned within the pond.