



## *Eutropiichthys vacha* (Hamilton, 1822), a threatened fish of Indian subcontinent

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### Abstract

*Eutropiichthys vacha* (Batchwa vacha) is a freshwater catfish species having high economic value. It is a very popular table fish among the consumers due to high nutritional value and taste. Just recently small specimens of this species have also made their entry in ornamental fish markets. Recently due to number of reasons, populations of this fish species are facing the threat of extinction. It has already been documented as Endangered in India and Critically Endangered in Bangladesh. The present report has been prepared to summarize the information available on different aspects of this threatened fish species as well as to point out the possible measures that should be considered for its conservation.

**Keywords:** *Eutropiichthys vacha*; Batchwa vacha; threatened fish; conservation

### INTRODUCTION

*Eutropiichthys vacha* (Figure 1) is a freshwater catfish species of the family Schilbeidae under the order Siluriformes. It is very popular as a table fish due to good taste and having high nutritional value (Hasan *et al.* 2002) with good amount of protein, carbohydrate and lipid content (Ali *et al.* 2013). Small sized specimens of this species have been reported to be used as aquarium species (Abbas 2010) and recently have also been documented to be exported from India as indigenous ornamental fish to other countries (Gupta and Banerjee 2014).

### COMMON NAME

Batchwa vacha

### VERNACULAR NAMES

*E. vacha* is vernacularly known as vacha/bacha/bachawa in India (Talwar and Jhingran 1991), bacha in Bangladesh

(Rahman 1989), cherki in Nepal (Shrestha 1994) and challi in Pakistan (Soomro *et al.* 2012).

### CONSERVATION STATUS

*E. vacha* has been reported as Endangered in India (CAMP 1998) and Critically Endangered in Bangladesh (IUCN Bangladesh 2000).

### DISTRIBUTION

This fish species is widely distributed in India, Bangladesh, Pakistan, Nepal, Bhutan, Myanmar and Thailand (Talwar and Jhingran 1991; Menon 1999; Riede 2004).

### HABITAT

It mainly inhabits standing and running waters, usually in tanks, streams, rivers, canals, reservoirs, lakes, ponds and lagoon with mostly muddy bottoms (IUCN Bangladesh 2000; Froese and Pauly 2015).

## MORPHOLOGICAL CHARACTERS

Body is elongated and laterally compressed. Mouth is sub-terminal with highly extended mouth cleft reaching behind the eye orbit. The upper jaw is slightly pointed and longer. Four pair of barbels is present; one pair of nasal, one pair of maxillary and two pair of mandibular. Nasal barbels are used to reach just behind the head

while maxillary barbels reach the base of pectoral fin; mandibular barbels are comparatively smaller and do not extend beyond the head. Dorsal spine is thin, serrated posteriorly while pectoral spine is serrated internally. Adipose fin is present. Caudal fin is deeply forked. Body color is silvery and grayish along the back. Pectoral and caudal fins are usually edged with black (Day 1878; Talwar and Jhingran 1991).



Figure 1: Fresh specimen of *Eutropiichthys vacha*

## MAXIMUM LENGTH

40.2 cm (Hora 1941), 34.0 cm (Soomro *et al.* 2012), 30.0 cm (Rahman 2005), 25.8 cm (Hossain *et al.* 2009), 20.0 cm (Bhuiyan 1964), 16.95 cm (Hossain *et al.* 2013) and 13.5 (Galib 2008) have been reported as maximum length for *E. vacha* by earlier researchers.

## FOOD AND FEEDING HABIT

Observing the body shape and position of mouth, structure of the buccopharynx, short and strong dentition in the mouth, well developed gill rakers and strongly built stomach, short intestine and dominance of animals and their body parts in the gut contents, Abbas (2010) has reported its carni-omnivorous and predatory habit. Change in feeding habit with growth has also been reported by him as juveniles of this species have been documented as herbi-omnivorous. Crustaceans and aquatic insects have been documented as the basic food for the adults while phytoplankton, crustaceans and macrophytes constitute the basic food for the juveniles of this species. Soomro *et al.* (2012) have also reported shifting of feeding habit from omnivorous to carni-omnivorous in young to adults for this fish species; plankton (cyanobacteria, diatoms and desmids), copepod and decapod crustaceans and macrophytes have been reported as preferred food items for young while small forage fish (mainly *Pethia ticto* and *Trichogaster sp.*) or juveniles of larger fish species, chironomid insect larvae, decapods crustaceans and annelids have been documented as preferred food items for the adults.

Sengupta and Homechaudhuri (2011) have documented omnivorous feeding habit for this fish species with phytoplankton, detritus material and fishes as the main food items. Khan *et al.* (2013) have reported piscivorous feeding habit for this fish species with 58% of the diet containing small fishes (*Hypophthalmichthys molitrix*, *P. ticto* and *Puntius sophore*), fish scales and fish spines while small aquatic (water beetle, diving beetle, water strider, water scavenger beetle) and terrestrial (may fly, stone fly, grasshopper, ants, honey bee, dung beetle, house fly, wasp, dragon fly, aphids, ground beetle, adult moth, rove beetle) insects have been reported to form 36.8% of the diet and remaining 5.2% of the diet is consisting of shrimps.

## REPRODUCTIVE BIOLOGY

Qasim and Qayyum (1961) have reported June-September as the breeding season for *E. vacha* at Aligarh, India while Soomro *et al.* (2012) have documented March-June for the same at the Kotri hydro-dam, Pakistan. Studying the sex ratio, Soomro *et al.* (2012) and Azadi *et al.* (1990) have reported female dominance in their studied populations of *E. vacha* while Hossain *et al.* (2013) have reported equal proportion of male and female in their study. Hossain *et al.* (2012) have documented 13.15 cm and 14 cm as length at first maturity for male and female of this species respectively in the Ganges River, northwestern Bangladesh. Azadi *et al.* (1990) have documented fecundity range of 5,040-351,000 in lake Kaptai, Bangladesh while Kar *et al.* (2006)

and Soomro *et al.* (2012) have reported fecundity range of 49,438-78,217 and 13,800-88,400 from Assam, India and Kotri hydro-dam, Pakistan respectively.

### THREATS

Construction of large dams that have put negative impact on its migration for breeding (Khan *et al.* 2013), over exploitation (Mukherjee *et al.* 2002; Hossain *et al.* 2009; Mishra *et al.* 2009), habitat loss (IUCN Bangladesh 2000), ecological changes in habitat (Mukherjee *et al.* 2002) etc have been documented as major reasons behind declination of its population.

### RECOMMENDATIONS FOR CONSERVATION

At first, a detail survey is sincerely needed to collect the information on the present conservation status of this fish species in its native ranges. Proper protection must be provided to the existing natural populations of this fish species and this can be done by the following measures: (i) spawning aggregations of this fish species are heavily exploited by local small and large-scale fishers (Hossain *et al.* 2009); so fishing practices must be completely banned during the breeding season to protect the brood fishes; (ii) over exploitation of this species can be checked by allowing only size specific capture and by demarking a specific capture period; (iii) factors which are causing ecological changes in its natural habitats and resulting population declination must be identified and necessary steps must be taken to conserve the habitat; (iv) kind of protected areas can be established where the natural populations of this species are existing to provide protection.

Aquaculture practice has not been developed so far for this fish species and thus the total supply to the domestic markets depends on capture from the wild. So, protecting only the wild populations is not enough to conserve this fish species; for this captive breeding and culture of this species must be tried. So far captive breeding of this fish species has not been tried anywhere in the world; hence this must be attempted in the near future. Success in captive breeding depends on the availability of proper knowledge on feeding and breeding biology of the particular fish species. So far, few studies have been conducted on these two aspects of *E. vacha* (Qasim and Qayyum 1961; Azadi *et al.* 1990; Kar *et al.* 2006; Abbas 2010; Sengupta and Homechaudhuri 2011; Soomro *et al.* 2012; Khan *et al.* 2013; Hossain *et al.* 2012, 2013). No such contradiction has been observed as per the information documented on its feeding habit, but information available on its breeding periodicity, sex ratio, length at first maturity and fecundity are not only scanty but also quite contradictory in nature. So, further studies are needed to explore more on these aspects to

clear out the contradiction and to get proper information on its breeding periodicity, fecundity, sex ratio and length at first maturity. Last but not the least, conservation measures can be strengthened more by organizing public awareness programs as general people act as the excellent ambassadors to promote the conservation issues of the fish species. They should be informed about the problem and then using their willingness and support, conservation campaigns can be promoted through education and extension programs.

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