



An Overview on Indian Glassy Fish, *Parambassis ranga* (Hamilton, 1822)

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Abstract

Parambassis ranga, commonly known as Indian glassy fish is a very popular ornamental fish which has high demand among the aquarium fish hobbyists. It is also one among those small indigenous fish (SIF) species which has high nutritional value due to presence of minerals and moderate vitamin A content. It is admired as a food fish mainly in rural parts of India and Bangladesh due to its cheap market price. So far considerable information is not available on this fish species, more precisely on its biology; and the little bit of information which is available is also in a scattered format. The present report has been prepared with the aim to document all these available information along with pointing out the information gap, further study of which will be beneficial to make its trade more vibrant and sustainable.

INTRODUCTION

Parambassis ranga is commonly known as Indian glassy fish. It is one among those small indigenous fish (SIF) species which has good popularity as a food fish mainly in rural India and Bangladesh as having low price in the market (Rahman, 2005). It has high nutritional value due to presence of good amount of minerals and moderate vitamin A content (Roos *et al.*, 2003; 2007). It is also popular as an aquarium fish and has high market demand among the ornamental fish hobbyists (Gupta and Banerjee, 2008; 2012a,b,c). Recently it has been reported to be exported from India to other countries as indigenous ornamental fish (Gupta and Banerjee, 2013; 2014). This fish species has also been documented to be marketed in ornamental fish markets as painted glass fish after

coloring it with fluorescent dye (Yoshigou and Iwasaki, 2001).

SYNONYMS

Pseudambassis ranga (Hamilton, 1822)
Chanda ranga (Hamilton, 1822)
Ambassis alta (Cuvier, 1828)
Ambassis notatus (Blyth, 1860)
Pseudambassis notatus (Blyth, 1860)

TAXONOMIC NOTES

Kingdom: Animalia
Phylum: Chordata
Class: Actinopterygii
Order: Perciformes
Family: Ambassidae

COMMON NAMES

Parambassis ranga is vernacularly known as chanda/ranga chanda in India and Bangladesh while chanari/chanerbijuwa in Nepal (Talwar and Jhingran, 1991; Froese and Pauly, 2015).

MORPHOLOGICAL CHARACTERS

Day (1878) and Talwar and Jhingran (1991) have earlier documented the morphological characters of *Parambassis ranga* which has been summarized here: Body is stout and deeply compressed. Dorsal and abdominal profiles both are very convex, but the profile over the eyes is slightly concave. Head is compressed and short; the snout is sharp. The maxilla is used to reach below the middle of the orbit. Vertical limb of pre-opercle is usually entire; more commonly it is finely serrated. The double margin of horizontal limb of the pre-opercle is serrated; sub and inter-opercles are entire. Pre-orbital is with about six denticulations on its inferior edge, and a strong one is present on its anterior superior angle directed towards the eye and about five more are present along the upper edge of that bone. Another spine is present at the middle of the posterior edge of the orbit, with five more, but decreasing in size along its upper half. Lower jaw is comparatively elongated than the upper jaw. *Teeth*-villiform in nature; are present on the jaws, vomer and palate; but none on the tongue. Lateral line is partly distinct and partly absent. *Fin*- Length of the second spine of the dorsal fin is equal to the distance from the middle of the orbit to the posterior end of the head, and is generally as long although sometimes shorter than the third. The ventral fin is almost reaching to the commencement of the anal fin. Second anal spine is of equal strength but is slightly shorter than the third which equals two-fifths of the height of the body above it. Caudal fin is deeply forked. *Color*- Body is transparent olive in color, a silvery gloss is present on dorsum; a silvery broad lateral stripe can be seen on side of body; a dark mark composed of spots is present on the shoulder; outer edges of dorsal, anal and caudal fins are tinged with black.

DISTRIBUTION

Parambassis ranga is widely distributed in India, Bangladesh, Pakistan, Nepal, Myanmar, Malaysia and Thailand (Day, 1878; Talwar and Jhingran, 1991; Shrestha, 1994). Recently it has also been reported to be introduced in Japan and Philippines (Roberts, 1994).

HABITAT

Parambassis ranga is inhabitant of sluggish and standing waters; is used to occur in rivers, streams, canals, ditches, beels, ponds and derelict waterbodies (Talwar and Jhingran, 1991; Gupta and Banerjee, 2013). It has been reported to reside in large numbers along shallow margins of waterbodies where there is thick growth of submerged and marginal emergent weeds (Gupta, 1984).

GROWTH PATTERN

Negative allometric growth pattern has been reported in *Parambassis ranga* by Mahapatra *et al.* (2014) in their studied population.

FEEDING HABIT

All the earlier researchers (Job, 1941; Bhuiyan, 1964; Natarajan *et al.*, 1975; Gupta, 1984) have reported *Parambassis ranga* as a carnivorous fish. Its larvivorous nature has been documented by Job (1941); later Bhuiyan (1964) has reported that it feeds on larvae and pupae of mosquito. Natarajan *et al.* (1975) have documented copepods as its mostly preferred food item followed by prawns and insects. Gupta (1984) has reported the presence of insect parts in its gut content.

REPRODUCTIVE BIOLOGY

Mortuza *et al.* (1996) have first reported female dominance in the population of *Parambassis ranga* in their study which later has been supported by Ishikawa and Tachihara (2012) and Mahapatra *et al.* (2014). Mortuza *et al.* (1996) have documented February to August as its breeding season in Bangladesh with two spawning peaks in March and July while Ishikawa and Tachihara (2012) have reported February to October as its breeding season with a single spawning peak in April in Japan. Not much information is available on fecundity range and length at first maturity for *Parambassis ranga*; Mortuza *et al.* (1996) have documented fecundity range of 500-6,506 for this fish species. 2.58 cm has been reported as length at first maturity for female of *Parambassis ranga* (Ishikawa and Tachihara, 2012). Ishikawa and Tachihara (2012) have reported that for *Parambassis ranga*, rising water temperature is likely more important for active spawning than high temperatures alone. Other factors such as rainfall and day length may also play important roles in *Parambassis ranga* spawning.

Fishery of *Parambassis ranga* so far is completely capture-based that means it is dependent on collection from the nature. In food fish markets, it is available in mixture along with other small

indigenous fish species. Though it is a common catch from natural water resources of its native ranges, but stable condition of its populations cannot be fully confirmed. Just like other small indigenous fish species, populations of this species may also facing the threat of extinction with deterioration of habitat and thus are requiring prime measures to protect their existing populations. On the other hand collection from the wild and supply is not sufficient enough to meet the increasing demand in ornamental fish markets. So some alternative way out is needed to reduce the pressure on natural population as well as to meet the demand and in this aspect captive culture can be the ultimate solution. So far captive culture of *Parambassis ranga* has not been tried anywhere and the main reason behind it is the lack of proper information on its feeding and breeding biology.

As per the information documented by the earlier researchers, it is very much clear that so far not much knowledge is available on different aspects of biology of *Parambassis ranga*. All the earlier documentations have confirmed its carnivorous feeding habit but no such confirm information is available regarding its mostly preferred food item. Ultimate success of captive culture depends on successful rearing of early stages to achieve maximum survivability and growth; and for this, proper knowledge on age wise and stage wise food preference is required. Earlier researchers have documented feeding habit of only adult *Parambassis ranga* analyzing the gut content, which is a noble and primary methodology for this kind of study. Histo-morphological and enzymatic analysis of alimentary canal should be done to get a proper knowledge on age-wise and stage-wise variation in food preference if any for this fish species. This will help to provide appropriate food supply to different stages and brood fishes during captive culture to get the ultimate success. On the other hand to provide protection to the natural populations of any fish species mainly by providing protection to the brooders and juveniles; particular information on its breeding periodicity is needed. This specific information is so far very scanty for *Parambassis ranga*; no information so far has been reported from India. Hence further study is needed on this aspect to fill up the information gap.

Apart from these, current conservation status of this fish species must also be assessed as in last assessment workshop (CAMP, 1998); this fish species was not included in the documented list and

thus is supposed to be not evaluated. Already many small indigenous fish species have been regarded to face the threat of extinction and concerns have been shown to take proper measures for their conservation. This particular fish species may also is experiencing the same and thus its current conservation status to be assessed as early as possible before it becomes too much delayed.

Finally it can be concluded that further research is needed to collect proper information and to fill up the information gap which has been highlighted in this report to make its trade more vibrant and sustainable.

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