MOLECULAR CHARACTERIZATION OF MORPHOLOGICALLY IDENTIFIED ORNAMENTAL FISH SPECIES: *BOTIA STRIATA* USING COI MARKER

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**ABSTRACT**: Zebra loach is one of the popular and desirable species in the ornamental sector that contributes to a major share for the world market of indigenous ornamental fish. Being categorized as Endangered under IUCN RedList, its identification has proved to be tricky owing to close variations in morphology and colour. The present study describes the application of morpho-taxonomy and genetic marker Cytochrome c Oxidase subunit I (COI) to understand the variations in *Botia striata*. COI gene (655 bp) was amplified using the universal primers and sequenced. A total of 10 samples were measured for standard length and the value ranged from 47.40 to 48.20 mm. Meristic characters i.e., fin rays of dorsal, pectoral, pelvic, anal and caudal fins; and lateral transverse scales on the body were measured. For all the samples, the percentage of Thymine was significantly higher compared to the other nucleotides i.e., 31.5%. The mean interspecific genetic distance among the species under study was found to be 0.037. The K2P based neighbor-joining (NJ) tree generated clustered the species according to their taxonomic position and showed that *B. striata* formed a separate clade (supported by 100% bootstrap value). The present study will be helpful in the identification of the Endangered and Vulnerable *Botia* species of Karnataka that will be beneficial for population studies, management and conservation programs. The present study also aids in developing a conservation-scheme approach for managing the fish diversity in their natural habitats.

**Key words**: *Botia striata*, ornamental fish, morpho-taxonomy, DNA barcoding.

**INTRODUCTION**

Under 13 genera and 4 families (Botiidae, Cobitidae, Balitoridae and Nemacheilidae), 43 species of loaches have been recognized from the Western Ghats region (Raghavan *et al.*, 2013; Randall and Page, 2015; Kumkar *et al.*, 2016; Anoop *et al.*, 2017). They comprise a major group of the riverine ichthyofauna, especially in the middle and upper reaches, and are highly demanded-species having both ornamental and economic (food) values (Dey *et al.*, 2015). *Botia striata*, commonly referred to as zebra loach with regard to the banding pattern on the body, is a threatened freshwater fish endemic to the Western Ghats of India (Dahanukar *et al.*, 2004 and Raghavan *et al.*, 2013). The fishes comprise of vibrant colour with bright bands, lesser scales and are generally of peaceful nature. Because of their distinctive stripes pattern, they are heavily exported and the group ranks second in the volume of trade of aquarium pets from India. However, managing a sustainable aquarium trade is a complex task that depends on the availability of authentic data on the volume of trade, trade routes, and the supply chain of the species involved. It has a distribution restricted to only four rivers with a limited area of occupancy of 300–400 sq. km (Dahanukar, 2011). As a result of the current decline in habitat area, size, and/or quality, indirect impact of destructive fishing practices, and dubious information on population trends, the zebra loach has been listed as endangered in the IUCN Red List of Threatened Species.
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delimitation, but can’t be utilized as an exclusive tool to replace the traditional morpho-taxonomy. The present study is helpful in the identification of the endangered *B. striata* and other vulnerable Botiids. This data with other studies on their population structure can aid in the formulation of strategies for sustainable management and conservation programs to save the threatened species.

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**REFERENCES**


