

ENDEMIC ORNAMENTAL FISHES OF ADDA HOLE, KABBINALE FOREST WITH REFERENCE TO WESTERN GHATS, KARNATAKA



Usha Anandhi, D* and Sharath, Y.G.

Department of Zoology, Bangalore University, Bangalore – 560056, Karnataka

*Email: ushaanandhi@rediffmail.com

Received on: 10 October 2013, accepted on: 12 December 2013

Abstract: Endemic fishes of Western Ghats with reference to *Adda Hole*, Kabbinala forest were studied. The stream is 12 K.M.s long, adjacent to Kabbinala forest. It is perennial and has different habitats with diverse ornamental fish population. The present study has been undertaken to understand the distribution and threat to endemic species of the area and thus would also help in conservation of natural resources at national level. Main stream was sampled at regular intervals of 600 to 800 m on both sides from start to end. Collection of fish samples was taken at different habitats along each stretch, using hand nets and drag nets.

The results revealed the presence of 7 ornamental endemic fishes, Out of the 7 species, 3 were found to be rare and their occurrence is limited to southern part of Western Ghats (*Carinotetradon imitator*, *Etroplus canarensis* and *Bhavana australis*). Among these *Etroplus canarensis* is confined to Karnataka. Habitat study disclosed that fishes were found in shallow to deep waters with sand, gravel and leaf litter at the bottom. Detailed study of these fishes will help us in understanding their biology, distribution and threats, leading to conserving them.

Key Words: Ornamental Fishes, Adda hole, Conservation, Endemic species, Western Ghats

INTRODUCTION:

The Western Ghats (WG) mountain range extends along the west coast of India and is crisscrossed with streams, which form the headwaters of several major rivers providing water to the plains of peninsular India. The Ghats represent a globally critical ecosystem and biodiversity hotspot (Myers *et al.*, 2000). Freshwater fish diversity is very high, with around 288 species and a high rate of endemism (>50%) (Dahanukar, 2004). Recent studies report that there are 318 species of freshwater fishes from WG, Of which 42.8% (136 species) are endemic. (Sreekantha, 2005)

Studies on the endemic fishes from various streams and rivers in the Western Ghats mountain ranges have been compiled (Ponnaiah and Gopalakrishnan. 2000). There are about 189 endemic species, belonging to seven orders, 23 families and 69 genera. Twelve genera, *Betadevario*, *Dayella*, *Horabagrus*, *Horabiosia*, *Hypselobarbus*, *Indoreonectes*, *Lepidopygopsis*, *Longischistura*, *Mesonoemacheilus*, *Parapsilor-hynchus*, *Rohtee* and *Travancoria* (Arunachalam 2000) Studies have

also revealed that there are 150 potential ornamental fishes in WG. A few fish species belonging to barbs, loaches, danios are exported from India are collected illegally and directly sent to aquarium trade, as a result of which, many endemic species have now become endangered (Anna *et al.*, 2009). For instance the Denison's Barb (*Puntius denisonii*) is an endemic ornamental fish of WG which has been assessed as endangered. The population has declined by more than 50% in the recent past due to indiscriminate exploitation for the international aquarium pet trade. According to IUCN (2011) the species also has a restricted range with an area of occupancy of less than 300 km² with continuing decline in quality of key habitats.

Many areas still unexplored. Only few studies of freshwater fish fauna in *Adda hole* out to date. Hence the present study has been undertaken to understand the distribution and threat to endemic species of the area and which would help us in understanding their habitats and the data would help in conservation.

MATERIALS AND METHODS

Study Area

Kabbinala forest range belongs to the Hassan District, Sakleshpur range and is part of Karnataka Forest Division. This Forest is located alongside NH48 about 2 K.M from Gundy Check post (Fig. 1). The area of the forest is 6072.9 H A. There are a number of small streams in the forest joining one main stream called “Adda hole”. The stream is about 14 kms long and is blessed with rich riparian [70%] cover on both sides. Water at most places is clear with sandy and rocky bottom. Leaf litter is found at few places. The entire stretch was analyzed for carrying out research in the forest adjacent to the stream.

Sampling

Sampling sites were randomly chosen based on accessibility and similarity in the physical

habitat. We finalized 10 sampling sites along the stream. Habitat, substrate and riparian cover were noted at each site. Substrate was noted by visual inspection. Substrates were broadly classified as Pebble, Gravel and Sand. (Pusey *et al.*, 1993) Fish Sampling was done during May 2011- Jan 2013. Various types of nets such as hand net, drag net, cast nets were used to catch the fish. 10 to 15 sweeps was done at each sampling site to record the fish diversity and abundance. Fishes abundance was classified into four categories, namely: abundant (76-100% of the total catch), common (51-75% of the total catch), moderate (26-50% of the total catch) and rare (1-25% of the total catch) (Dahanukar *et al.*, 2012). The fish caught were examined, photographed and released to the system. Fishes were identified at species level following the standard books, (Jayaram, 1999, 2010; Talwar and Jhingran 1991).

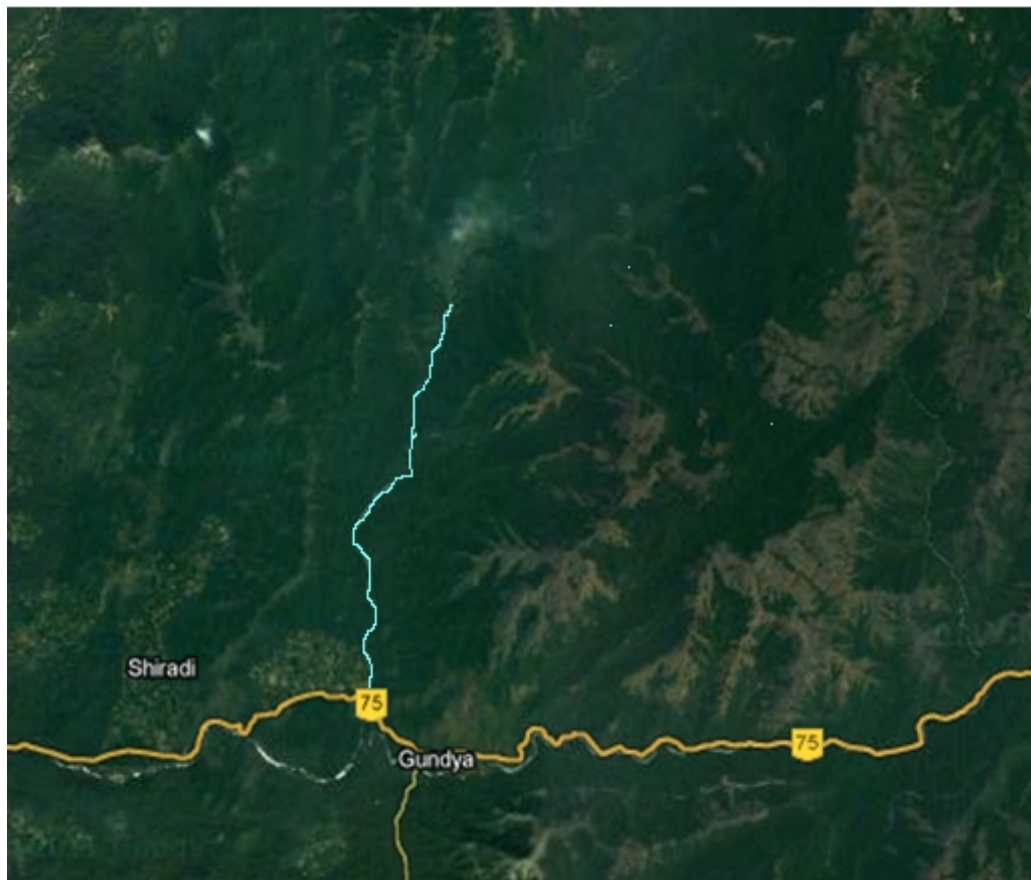


Fig. 1. Satellite view of the Adda hole adjacent to Kabbinala forest range.

Table 1. Relative abundance of Endemic fishes of *Adda Hole*

Scientific name	Common name	Abundance			
		Abundant	Common	Moderate	Rare
<i>Carinotetraodon imitator</i>	Dwarf Puffer	-	-	-	+
<i>Etroplus canarensis</i>	Pearl spot fish	-	-	-	+
<i>Bhavana australis</i>	Western ghats loach	-	-	-	+
<i>Devario malabaricus</i>	Giant Danio	-	+	-	-
<i>Barilius bakerii</i>	Malabar Baril	-	+	-	-
<i>Puntius narayani</i>	Narayan barb	+	-	-	-
<i>Schistura sps</i>	Hill stream loach	-	-	+	-

Table 2. Habitat and Substrate of each fish

Scientific name	Common name	Habitat	Substrate
<i>Carinotetraodon imitator</i>	Dwarf Puffer	Shallow water	Gravel
<i>Etroplus canarensis</i>	Pearl spot fish	Slow water	Sand
<i>Bhavana australis</i>	Western ghats loach	Fast water	Pebble
<i>Devario malabaricus</i>	Giant Danio	Fast water	Pebble
<i>Barilius bakerii</i>	Malabar Baril	Run	Pebble/ Gravel
<i>Puntius narayani</i>	Narayan barb	Shallow water	Sand
<i>Schistura sps</i>	Hill stream loach	Fast water	Pebble

RESULTS AND DISCUSSION

Our study reveals that there are 7 endemic ornamental fish in the area. (Table 1). Out of the 7 fishes 3 (42.5%) were rare, 2 (28.5%) were common, 1 (14.5%) was abundant and 1(14.5%) species was moderate. Each fish was found in a specific type of habitat. (Table 2). 3 species were found in the fast water habitat with pebble substrate, 2 in shallow water habitat with sand and gravel substrate, 1 in the slow water habitat with sand substrate and 1 species was found in run habitat with pebble and gravel substrate. IUCN (2011) study has revealed that *Carinotetraodon imitator* has been assessed as Data Deficient (DD) and *Etroplus canarensis* as Endangered (EN). The other species have been classified as Least Concerned (LC). Britz et al (2012) reported the first wild collection of *Carinotetraodon imitator* from Kumaradhara river. It justifies the report from IUCN where the fish has been classified as DD. With regards to *Etroplus canarensis* there has been unmanaged collection for aquarium hobby. There has been increase in availability of captive bred fish from Indonesia (IUCN). Even though

the other fishes are in the LC category, if their diversity and population trend is not monitored, then there is a possibility of these getting into the EN category.

Adda Hole stream is one of the many unknown streams of Western Ghats with rich fish diversity. The undisturbed habitat of the stream supports fish population. There is no major threat to the area. Creating awareness among locals will help in maintain the fish stock. Long term studies will need to be carried out to understand the fish community structure. The stream can be considered for *in-situ* breeding of these endemic fishes.

ACKNOWLEDGEMENTS

We would like to thank the Karnataka State Forest Department for granting permission to conduct the study. We are grateful to The Chairman, Department Of Zoology, Bangalore University, Bangalore for the facilities provided during the course of the study. Our sincere thanks to the locals of Gundia, especially those residing near the *Adda Hole* stream.

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