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Research Article

Fish Diversity and Structural Modifications of Reddinagar Hill Stream of Eastern Ghats Region of Andhra Pradesh

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Abstract: Different fish groups exhibit specific modifications in their structures, in relation to the habit, habitation, food and feeding preference and the mode of life exhibited by the fishes. Survival rate of fish populations in hostile situations requires responsive adjustments in there, physical and composition and these have been replicated by modifications at the level of their tissues. A list of hill stream fishes of Reddinagar was studied from July 2018 to2019. Fishes were collected with the help of local fishermen. Total 7 species of hill stream fishes attain from the Reddinagar sampling station of Eastern Ghats.
Keywords: Fish groups, Hill stream, Eastern Ghats, Modifications, Environments.

Introduction

Some hill stream fishes migrate to reservoirs and rivers. Hence, they develop some distinct adjustments to live in water. They may be either permanent or temporary are permit to help in attaching the substratum. The structural modifications of hill stream fishes studied by Hora (1922, 1930). Adequate literature exists on the adaptive modification of hill stream fishes of India reported by Singh *et at.,* (1983). The present study is based on the hill stream fishes of Reddinagar stream about 5 km from Donkarai village of East Godavari district. This station situated near by Donkarai Reservoir as well as Sileru River. It originates from hill tops of Eastern Ghats range in between boundary line of Andhra Pradesh, Odisha, Telangana and Chhattisgarh. It is the one of the major stream, main stream flowing through year with modified rate of flowing. The Reddinagar is a well-known for natural picnic spot. Occurrence of big and small pebbles and boulders in entire stream zone. One can hear gaudy sound due to hasty flow of water.

Material and Methods

Figure 1. Map Showing Study Area

The study cum survey of hill stream fishes was made in Reddinagar during a period of one year from July 2018 to Sep 2019. The explicit adapted hill stream fishes collected with the help of local fisherman from the sampling station and were fixed in 7% formalin and identified according to Day (1978), Shrivastva (1980).

Results and Discussion

Collected fishes in the period of one year were identified. Those are mentioned in tabular form.

Table 1. Fish species collected from Reddinagar Hill Stream

Fish Species	Seasonal collection		
	Monsoon	Winter	Summer
1. *Lepidocephalichthys guntea*	√	√	√
2. *Nemacheilus rupicola*	√		√
3. *Nemacheilus notostigma*		√	√
4. *Puntius sophore*	√		√
5. *Puntius stigma*	√	√	
6. *Labeo bata*	√	√	
7. *Garra kempi*	√	√	√

Structural adaptive modification is seen basically in integument and their structural description as mentioned below.

1. *Lepidocephalichthys guntea*

Body is extended, streamlined and slightly flattened, barbles are 6 in number and colour is as its natural habitat. Their dorsal fins are short and originated opposite to the pelvic fin. Caudal fin is truncated.

2. Nemacheilus species (*Rupicola, Notostigma*)

Body is extended and streamlined. The Lower lip is separated in the middle, while both the lips are distended and dragged superficial forming a ring like sucker pelvic and pectoral fins are fewer parallel and they can easily adhere to bottom but the base of pectoral fin is originated to be thickened and cushion like. These species form valuable food for local people. These species are also found in pools local people commonly known as “Kurradu”.

3. *Garra kempi*

Commonly called local people as “Gara”. Garra have many specific adaptive modifications. There are mainly Integument and structural. The lower lip is fringed and projections of the mouth. Behind the mouth a disc is present which acts as adhesive organ located behind the posterior region of mouth. It consists of a central colored plate the posterior and lateral border of lip is thick and tuberculated. The pectoral and pelvic fins are large, muscular and horizontally placed. Their ventral base provides as cushion like pad.

4. *Puntius sophore* and *Puntius ticto*

Body short to moderately elongate, often deep, and slightly compressed. Head short, snout often overhanging mouth. Mouth terminal to inferior, not protrusible; lips thin, devoid of a horny covering. Barbels one or two pairs, or entirely absent. Pharyngeal teeth in three rows. Dorsal fin short, inserted nearly opposite to pelvic fins, with 9 to 13 (seven to nine branched) rays. Its last unbranched ray often osseous. Anal fin with seven to nine (five to six branched)

rays. Caudal fin forked. Scales small to large, with few and strongly radiating striae; lateral line complete or in complete, with 20 to 47 scales in longitudinal series.

5. *Labeo bata*

It has streamlined, cylindrical body and its pectoral fin is much powerful then pelvic fin. Its muscular tail and pectoral fins are modified for rapid water flow habitat. In India many types of fishes are identified by Singh *et al.,* (1983). Most of the hill stream fishes possess structural integumental modification. Day (1978) also perceived adaptive modification in their fishes. Hora (1922, 1930) defined a huge number of hill stream fishes with reverence to their adaptive modification and evolutionary point of view. In various hill stream fish genus like *Garra*, *Glyptothorax* and *Pseudecheneis* adapted adhesive apparatus has been studied by Saxena (1959) and Khanna *et al.,* (2009). Solanki *et al.,* (2010) also made an effort on diversity of hill stream fishes of Madhya Pradesh. Teronpi *et al.,* (2015) documented on physico-chemical parameters and fish diversity of hill streams. Plamoottil and Nath (2016) work on Hill Stream Cyprinid Fishes of Manimala River of Kerala and observed 12 species. To increase the population of these hill stream fishes, it is very significant that the stream should be made and their habitat community and food chain should be protected. More studies required to explore the hill stream fishes in Reddinagar in Eastern Ghats.

Conflicts of interest

The authors declare no conflicts of interest.

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