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# Status of Notopteruschitala (Hamilton) Inhalali Reservoir of Madhya Radesh, India

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**Abstract**

This paper deal with the study of status of Notopterus Chital in Halali reservoir of Madhya Pradesh. Halali Reservoir is one of the most important reservoirs which is about 40 km away from the capital city of Madhya Pradesh, Bhopal. It is built on Halali river which is a tributary of Betwa river. River Betwa or Vetravati, river in northern India, rising in the Vindhya Range just north of Hoshangabad, Madhya Pradesh. The primary objective of this study is to provide a base line assessment of the present state of the Halali reservoir. The major objective of the study is to study the water quality parameters of Halali reservoir well as to document the zooplankton diversity of the reservoir. Another important objective of the study is to explore the macroinvertebrate community of the reservoir. The fourth objective of the research is to explore the fish diversity of the reservoir with special emphasis to *Notopterus chitala* with its biometric study.

*Key words:* Chitala fish, Length – weight, water analysis

## Introduction

India has 19,370 reservoirs spread over 15 states with an estimated 3.15 million ha surface area at full capacity, and this is expected to increase due to execution of various water projects in the country. Tamil Nadu state has the highest reservoir area of small reservoirs, investigated by Sreenivasan (1989), and followed by the states of Karnataka and Andhra Pradesh. The state of Madhya Pradesh has the highest total area of small reservoirs as well, whilst Andhra Pradesh, Gujarat and Rajasthan also have a higher area of medium reservoirs.

The global production of food fish from aquaculture, including finfishes, crustaceans, molluscs and other aquatic animals, reached 52.5 million tonnes in 2008. The contribution of aquaculture to the total production of capture fisheries and aquaculture continued to grow, rising from 34.5 percent in 2006 to 36.9 percent in 2008. In the period 1970–2008, the production of food fish from aquaculture increased at an average annual rate of 8.3 percent, while the world population grew at an average of 1.6 percent per year. Featherback *C. chitala*is considered as a potential freshwater food as well as ornamental fish, command high market demand and has been prioritized recently as new candidate species for fresh water aquaculture system (Ponniah and Sarkar 2000; Ayyappan *et al*., 2001). Recently there has been a steady decline in the wild stocks in India and according to Conservation Assessment and Management Plan (1998) workshop the species is categorized endangered

(EN). *C. chitala* was reported in Halali reservoir of Madhya Pradesh by Sugunan (1995). During the preliminary survey *C. chitala* was also observed in the fish catch. The present study was undertaken to study the physical chemical and biological quality of Halalireersvoir as well as the biometric parameters of the endengared*Notopteruschitala.*

**Materials and Methods**

*Study site:*

Halali Reservoir is one of the most important reservoirs which is about 40 km away from the capital city of Madhya Pradesh, Bhopal. It is built on Halali river which is a tributary of Betwariver. River Betwa or Vetravati, river in northern India, rising in the Vindhya Range just north of Hoshangabad, Madhya Pradesh. It flows generally northeast through Madhya Pradesh and Uttar Pradesh states and empties into the Yamuna River just east of Hamirpur after a 380-mile (610-km) course. The Halali Reservoir is situated between 230 30´ North latitude and 770 30´ East longitude with a catchment area of 699 sq. km, water spread of about 5259 ha with a maximum depth of about 30 m. It is perennial storage irrigation reservoir based on Halali River, which originates around Bhopal at an altitude of about 487.69 m above sea level and after travelling about 38 kms joins river Betwa, just downstream of Vidisha town. The reservoir has an earthern dam 945 m long and 39.27 m high across Halali River.

*Sampling Stations:*

As the reservoir has a vast stretched area, selection of the sites for investigations were based on the following criteria.

- Workability of the site and morphometry of research.
- Ecologically variable conditions.
- Water current and Depth.
- On the basis of above, only four sampling stations were selected for present study.

*Morphometric and meristimetic study of fishes:*

Morphometric and meristic studies of *Notopterus chitala* were performed according to Talwar and Jhingran (1991). Measurements were made using a measuring board and calipers. All morphometric measurements were determined to the nearest millimeters. Morphometric measurements of Chitala (*Notopterus chitala*) were taken include weight of fish (WF), Total Length (TL), Standard Length (SL), Head Length (HL), Snout Length (SL), Head Depth (HD), Pre Pectoral Distance (PPD), Pre Pelvic Distance (PPeD), Pre Anal Distance (PAD), Body Depth (BD), Caudal Peduncle Length (CPL), Dorsal Fin Length (DFL), Pectoral Fin Length (PFL), Pelvic Fin Length (PeFL), Anal Fin Length (AFL) and Pectoral Spine Length (PSL)

*Length weight relationship and condition factor:*

Length and weight of *Notopterus chitala* was recorded to monitor the growth of *Notopterus chitala* in the Halali reservoir. The total length of the fish was measured from the most anterior part of the head with mouth closed to the farthest tip of the caudal fin. The weight of the fish were taken using a top pan balance. The condition factor was calculated according to Le Cren, 1951 as followes-

$K = W \times 100/L3$

Where, K = Condition factor

W = Body weight

L = Total length of fish

**Results and Discussion**

*Fish community structure of Halali Reservoir:*

Halali Reservoir provides a habitat for fresh water fishes of diverse type. During the present investigation 29 fish species were recorded from the Halali Reservoir belonging to 7 orders, 10 families and 15 genera. Present investigation was carried out on Halali Reservoir with special reference to fish diversity from March 2009 to February 2011

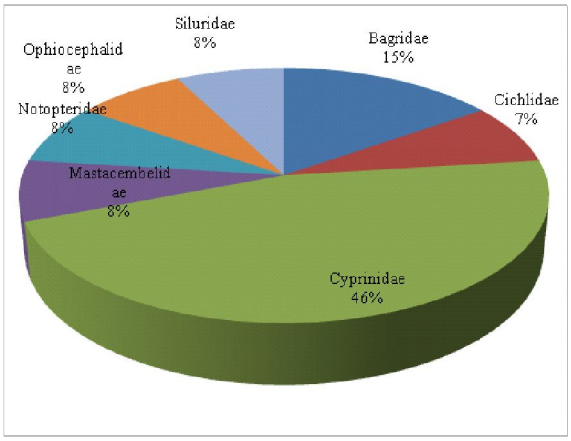


Fig. 1 Diversity of fish in Halali reservoir

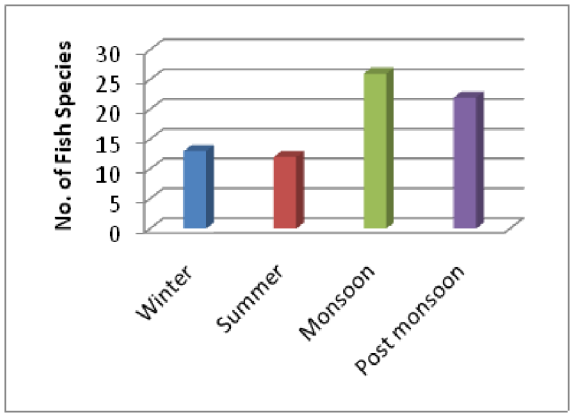


Fig. 1. Density of fishes in Halali reservoir

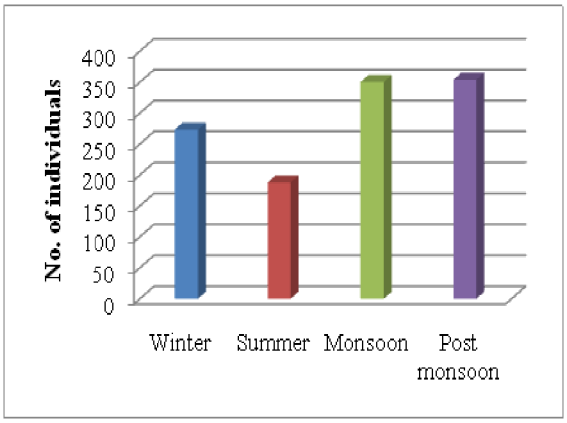


Fig. 2. Seasonaloccurrence of fishes in Halali reservoir

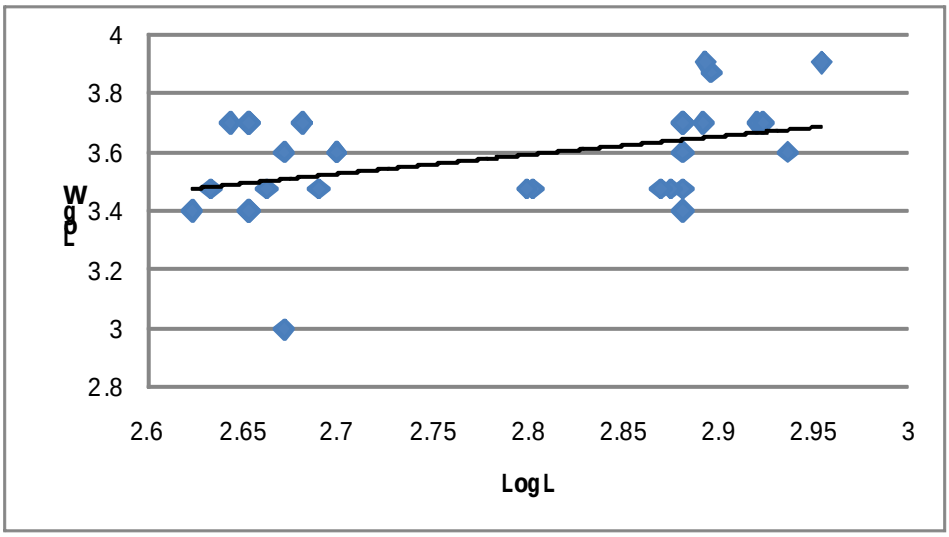


Fig. 3. Graph showing long length and long weaight Female Chitala-Chitala

## Conclusion

During the present investigation 29 fish species were recorded from the Halali Reservoir belonging to 7 orders, 10 families and 15 genera. In post monsoon season a maximum number of 22 fish species were recorded followed by 13 species in winter season, 12 species in summer and 11 species in monsoon. A total number of 60 specimens of *Notopterus chitala* were recorded comprising 30 male and 30 female as the fish comes under endangered category, very little number of fishes found in the fish catch. The results showed that length of *Notopterus chitala* varied between 42 cm to 92 cm in male and 37 cm to 100 cm in female. The weight of Chitala varied between 2-4 kg. The studies conducted on the morphometric and meristic characters of *Notopterus chitala* of Halali reservoir have shown that there are variation in the size of fishes in the reservoir. The length weight relationship of length and weight of *Notopterus chitala* male and female showed more of less isometric growth indicating the good environmental condition of the reservoir.

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