

Biodiversity of Freshwater Fishes and Phytoplankton of Athani, Dist Belagavi

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ABSTRACT: The fresh water bodies having variety of biodiversity, including the fish fauna and its feeding autotrophs. The present investigation of the diversity of fish fauna and plankton were collected from three different tanks, in and around Athani taluk of Belgaum District in Karnataka state. The document will help in generating baseline data on the fish fauna & Phytoplankton diversity of the study area, which will help to the next generation.

KEYWORDS: Biodiversity, Fish fauna, Phytoplankton, Fresh water forms.

I. INTRODUCTION

India is one of the 18-mega biodiversity countries having two biodiversity hotspots namely the Western Ghats and Eastern Himalayas that are included amongst the top eight most important hotspots in the world. It also has rich freshwater (rivers, irrigation canals, tanks, lakes, reservoirs) fish & plankton diversity. This diversity is being eroded each day mainly because of unending anthropogenic stress. Fish has fascinated and attracted the attention of the humanity since times, as an item of food and scientific studies, though occurrence and knowledge of fish in our country could be traced as far back as three million B.C. (Hora-1956) modern scientific and systemic studies on fish are from the beginning of 18th century. The exhaustive work in this regard could be traced to the contributions by Day (1878 – 1889) and the recent works mentioned by Jayaram K.C (1999), Anuradha Bhat (2003) and Ajitkumar et al (2000).

The fluctuations of physico-chemical parameters in relationship with plankton are studied by Prescott G. W. (1982), Prasad N.R and J M Patil (2008), Sedamkar E. B. (2016). The analysis of water presented in Graph 1-3. Belgaum District has 374 tanks (major and minor) with a total of 3851.8 ha water covering area. Though many of these water bodies are used for fish culture, the documentation of fish & plankton diversity in these water bodies is not available, hence the present work is undertaken.

II. MATERIALS AND METHODS

The investigation carried on the Fish and Plankton diversity in these tanks was conducted from the months of September 2006 to August 2007.

Athani Taluk falls in Maidan region where the river Krishna and its tributaries flow and it shows the irrigational potentiality by stored water tanks, these tanks are built rubble and forming bundh. The present investigation of the fishes fauna and Phytoplankton were collected from 3 Tanks, in and around Athani taluk of Belgaum District. The fish specimens were collected from fishermen catches who are employed in the regular fishing. The fish fauna and Phytoplankton found in these tanks are given in Table 1-3.

1. KOHALLI TANK:

The eastern part of Belgaum district receives scanty rain fall. This area is subjected to acute scarcity condition. So small schemes have come up to meet the irrigational facilities. This tank project is one such on Hirehalla. Hirehalla is a fairly large nalla originating in the hilly tract in the northern parts of Athani & meets Krishna river. The catchment is consisting of hilly tract. The catchment area of this site is 32 sq miles. Water spread area is 96 hectares & depth 14.40metrs. This tank irrigates kharif crop.

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2. YELLAMMAWADI TANK:

It lies about a km from Yellammawadi village. This project lies in the northern part of Karnataka in Belgaum district & It is situated at latitude 16° -42'-0" N & longitude 74° -14'-0" E. The water spread area of the tank is 71.0 hectares & depth of 10.30mtrs. The water is used for irrigational purpose. The temp ranges for a min of 15.2 C in Dec to max 40.1 C in May.

3. MADABHAVI TANK:

It lies in the northern part of Karnataka state in Belgaum district. It is situated at 16°-45'-10" latitude & longitude 74° -57'-10". This dam site is about 1km from MADABHAVI village & is approachable from Athani-Miraj road at distance of 18km. The catchment area is 15.54 sq kms. The water spread area of the tank is about 36.90 hectares & the depth of water is 9.78mtrs. This tank is proposed across confluence of 2 nallas in the Krishna bases near Madabhavi village. The water of this tank is used for agricultural purpose. No studies have been carried so far on the fish fauna & plankton of this tank. The temp ranges from a min of 15.8°C in Dec. to a maximum of 40.1°C in May the topography of project area is plain.

III. RESULTS AND DISCUSSIONS

PHYSICO-CHEMICAL CHARACTERISTICS OF ABOVE MENTIONED TANKS:

A great many of physical and chemical factors influence directly or indirectly the productivity of pond. These factors are beyond control an appraisal of their condition in pond. Water is always useful in determining the suitability of the pond for fish culture. The physico-chemical nature of pond has much to do with productivity of pond. The parameters here are considered to show the availability of fish fauna and Phytoplankton in these tanks. The physico chemical properties help in defining an ecosystem that leads to a sustainable fishery in the country.

KOHALLI TANK: Analysis Physico-chemical parameter shows, the tank is having moderate amount of Do, Co₂, Calcium and pH. However the Total Hardness level is > 250 mg/l indicating that, the water is very hard. In the present investigation 12 species were recorded from the tank. The tank is being utilized for fisheries activity it shows the availability of cultivable fishes like *Catla catla*, *Labeo rohita* and *Cirrhinus mrigala*. In addition to these, other fishes belonging to five families are recorded. Family Cyprinidae dominates with 50% followed by Siluridae and Channidae with 17% each (Fig-1). Family Cichlidae and family Anguillidae had one representatives from each group (8%).

YELLAMMAWADI TANK: The analysis of water indicates that the pH is 7.5, Calcium 53.6 mg/l, Do 5.5 mg/l and Co₂ 8.8 mg/l which are the normal levels for cultivation of fishes and domestic use as per as ISI. The amount of total hardness is 274 mg/l which categorizes the water as very hard. The diversity of fishes shows that the tank harbors 11 species of fishes belonging to five families. Family Cyprinidae is represented with six species occupying 55% of the total fishes (Fig-2) that are recorded from the tank. *Wallago attu*, and *Ompok bimaculatus* are the two fishes from family Siluridae. *Oriochromous mossambicus* represents Cichilidae, *Channa marulius* from Channidae and *Eel* from Anguillidae are the other members in the tank.

MADABHAVI TANK: Physico-chemical parameters analysis of water shows pH 7.3, calcium 54 mg/l, Do 4.9 mg/l, Co₂ 8.8 mg/l and hardness 270 mg/l. Like other ponds of Athani taluk the water can be classified as is very hard as it exceeds 250 mg/l. In the present survey 10 species belonging to five families were recorded. Family Cyprinidae was represented with five species occupies 50% of the total fishes. *Wallago attu* and *Ompak bimaculatus* were the representatives of family Siluridae. *Oriochromous mossambicus* representing Cichilidae, *Channa marulius* from Channidae and *Eel* from Anguillidae are the other members in the tank (Fig-3).

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Table-1: List of Fish fauna and phytoplankton found in the Kohalli tank

Fish fauna	Phytoplankton
Family – Cyprinidae <i>Catla catla</i> <i>Labeo rohita</i> <i>Labeo fambriatus</i> <i>Barbus pulchellus</i> <i>Puntius kolus</i> <i>Cirrhinus mrigal</i> Family – Siluridae <i>Wallago attu</i> <i>Ompak bimaculatus</i> Family – Cichlidae <i>Tilapia</i> Family – Channidae <i>Channa marulius</i> <i>Channa punctatus</i> Family – Anguillidae <i>Eel</i>	Class-Chlorophyceae <i>Chlorella vulgaris</i> <i>Euastrum Spinulosum</i> <i>Pediastrum bonyanum</i> <i>Cosmarium subtumidium</i> <i>Spirogyra Sabsalsa</i> <i>Chlosterium acerosum</i> <i>Scenedesmus sps</i> Class-Bacillariophyceae <i>Navicula rhomboidis</i> <i>Synedra ulna</i> <i>Meridion Sps.</i> <i>Pinnularia viridis</i> <i>Fragilaria sp</i> Class-Cyanophyceae <i>Gloeocapsa granosa</i> <i>Lyngbya semiplena</i> <i>Arthrospira sps</i> <i>Ocillatoria sps</i> Class-Euglenophyceae <i>Euglena polymorpha</i> <i>Euglena acus</i> <i>Phacus caudate</i>

Table-2: List of Fish fauna and phytoplankton found in the Yellamawadi tank

Fish fauna	Phytoplankton
Family – Cyprinidae <i>Catla catla</i> <i>Labeo rohita</i> <i>Labeo fambriatus</i> <i>Barbus pulchellus</i> <i>Puntius kolus</i> <i>Cirrhinus mrigal</i> Family – Siluridae <i>Wallago attu</i> <i>Ompak bimaculatus</i> Family – Cichlidae <i>Oriochromous</i> <i>mossambicus</i> Family – Channidae <i>Channa marulius</i> Family – Anguillidae <i>Eel</i>	Class-Chlorophyceae <i>Euastrum Spinulosum</i> <i>Pediastrum bonyanum</i> <i>Cosmarium subtumidium</i> <i>Spirogyra Sabsalsa</i> <i>Chlosterium acerosum</i> <i>Haematococcus lacusta</i> Class-Bacillariophyceae <i>Navicula rhomboidis</i> <i>Synedra ulna</i> <i>Pinnularia viridis</i> <i>Surirella robusta</i> Class-Cyanophyceae <i>Gloeocapsa granosa</i> <i>Lyngbya semiplena</i> <i>Chrococcus varius</i> Class-Euglenophyceae <i>Euglena acus</i> <i>Phacus caudate</i> <i>Lepocinchis fusiform</i>

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Table-3: List of Fish fauna and phytoplankton found in the Madabhavi tank

Fish fauna	Phytoplankton
Family – Cyprinidae <i>Catla catla</i> <i>Labeo rohita</i> <i>Labeo fambriatus</i> <i>Barbus pulchellus</i> <i>Cirrhinus mrigal</i> Family – Siluridae <i>Wallago attu</i> <i>Ompak bimaculatus</i> Family – Cichlidae <i>Oriochromous mossambicus</i> Family – Channidae <i>Channa marulius</i> Family – Anguillidae <i>Eel</i>	Class-Chlorophyceae <i>Euastrum Spinulosum</i> <i>Euastrum quadratum</i> <i>Haematococcus sps</i> <i>Chlosterium tumidum</i> <i>Spirogyra Sabsalsa</i> Class-Bacillariophyceae <i>Meridion Sps.</i> <i>Cymatopleura tumida</i> <i>Mastogloia sps</i> <i>Fragilaria sp</i> Class-Cyanophyceae <i>Lyngbya sps</i> <i>Chroococcus varius</i> <i>Gloeocapsa granosa</i> Class-Euglenophyceae <i>Euglena sps</i> <i>Phacus caudate</i>

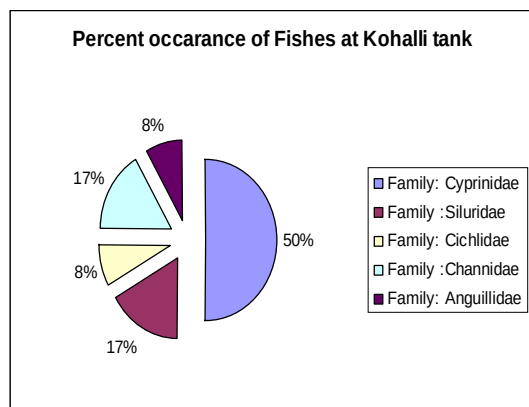
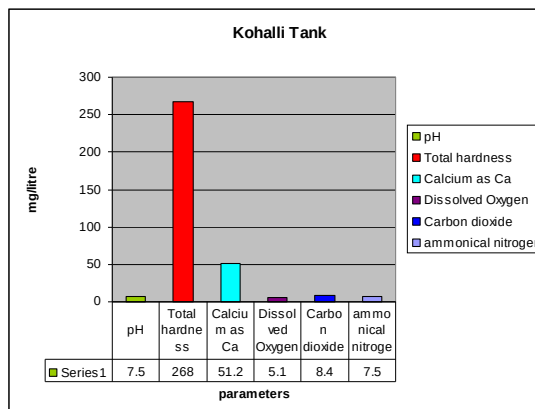


Fig-1



Graph-1

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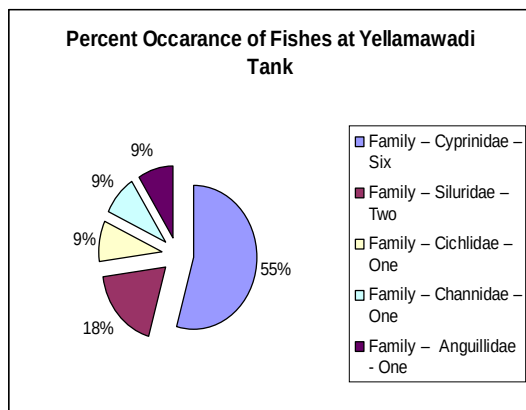
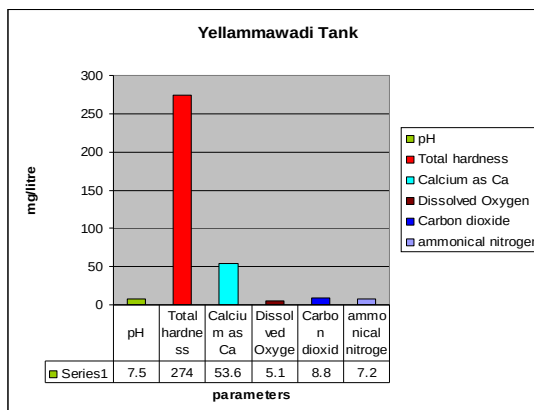


Fig-2



Graph-2

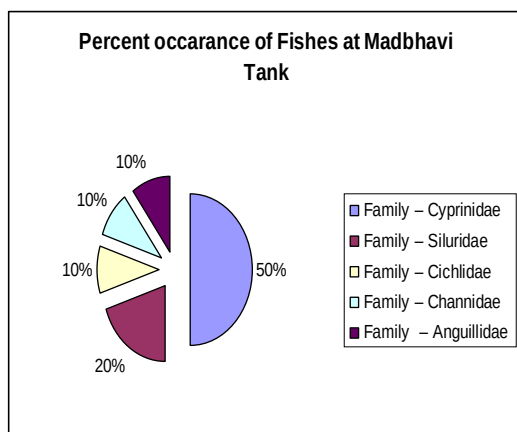
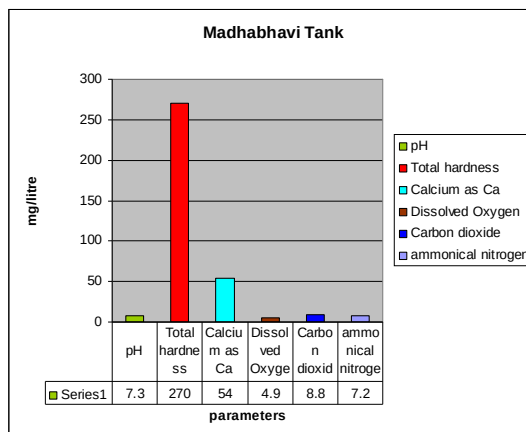


Fig-3



Graph-3

IV. CONCLUSION

Athani taluk falls in dry and more droughts proven climatic zones with scanty rain with very hard water and high temperature and conditions that may be responsible for less fish fauna and Phytoplankton diversity. It is interesting to note that the entire three tanks Phytoplanktonic groups shows decreasing in order Chlorophyceae followed by Bacillariophyceae, Cyanophyceae and Euglenophyceae. The Information may be useful as baseline data for local fisheries managers for conservation fish fauna and biodiversity documentation. However, more detailed and seasonal studies are required to understand the total biodiversity of these tanks.

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