



## Comparative Ecological Accounts of Two Ponds in Ambikapur (C.G.)

*Meena Singh<sup>1</sup>, Jharna Nag<sup>2</sup>*

<sup>1</sup>Ph.D. Zoology Researcher, Govt J.Y. Chhattisgarh College Raipur 492001(C.G.) ,India

<sup>2</sup>Jharna Nag Assistant Proff. Zoology, Govt J.Y. Chhattisgarh College Raipur 492001(C.G.),India

### ABSTRACT

Present study were carried out for physic-chemical parameters of water two ponds one of Munda pond hill station in 5km distance between Capital city Ambikapur and 2<sup>nd</sup> of zoda pond Capital city Ambikapur Surguja Chhattisgarh. The main aim of the study was to understand the water quality and fishes from survival good live pond. Two pond Comparative study different physic-chemical parameters such as pH, dissolved oxygen(DO),Total Alkalinity(TA), Turbidity and Total Dissolved Solids (TDS) of pond water were investigated during period July 2020 to Jun 2021.

Keywords: Water quality, physic-chemical parameter , Zooplanktons, phytoplanktons.

### Introduction

Ecology is the study of relation of organism and its environment and the fresh water ecology is terms as limnology. The water is one of the most important compounds of the ecosystem. The living things exist on the earth because of the present of water on this planet. Water is necessary for the survival of all living things. Although earth is a blue planet and 80% of earth's surface(the total 50,000 million hectares in area) is covered by water, the hard fact of life is that about 97% of it's locked in oceans, which is saline and cannot be used directly for agricultural or industrial purposes.24%is trapped in polar icecaps and glaciers, from which icebergs break off and slowly melt into sea.<1%(i.e.33,000m<sup>3</sup>)water is present in ponds, lakes, rivers, dams etc., which is used by man for industrial, domestic and agricultural purposes. India receives about 1400-1800mm of rainfall annually. About 96% of this water is used for agriculture,3% for domestic use and 1% for industrial activity. An analysis revealed that about 70% of all the available water in our country is polluted due to the discharge of effluents from the industries, domestic waste, land and agricultural drainage. The increasing population, deforestation, casting of untreated effluents and city sewage into the aquatic system and using pesticides, chemical fertilizers in agriculture are the main causes of the water pollution. Fishes constitute a very digestible proteins and a number of mineral salts. The nutritional and medicinal value of fishes has already been recognized (Hora and pillay 1962), Mishra 1956,Jhingran 1882).Approximately 22,000 species of fishes have been recorded out of which 11% are found in India i.e. about 2500 species of fishes of which,930 live in freshwater and 1,570 are marine (kar,2003,Ubharane et al.,2011) from 18 century till to date various pioneers have studied about taxonomy ( Ichthyofaunal diversity) Hamilton 1822,Day1878,Menon 1992)from different rivers. However, scanty information is available on fishes hence an attempt has been made here to present piscine inventory from the Buldhana District (M.S.).

The fishes are not only useful for food and other medicinal value but also as a tool for biological control by feeding upon the planktonic population and aquatic vegetation in the water bodies. They are useful indicators of environmental quality and ecological integrity.

Biodiversity is the most valuable but least appreciated resource ,and it can be a key to the maintenance of the world (Wilson 1992).In India, biodiversity outside protected areas is rich because of close relationships between religious, socio-culture beliefs and conservation, Rapid decline in biological diversity-species, ecosystems, and genetic diversity is one of the critical challenges of the 21<sup>st</sup> century. There are many practical reasons for conserving biodiversity, and other materials as well as, the environmental services supplied by natural ecosystems.

Pond digging is very old tradition in India. Ponds are very economical and eco-friendly management for harvesting the rain water to check the ground water depletion. Ponds are used for fish culture but due to increasing water pollution it has adverse effect on fish culture as a result the fish diversity is at stake. The water quality is degraded day by day. Hence, monitoring of water quality by physico-chemical analysis is the need of the day.

### Materials and methods

#### *Water analysis*

#### **Study area:**

The present work was calculated analyze physic-chemical parameter two ponds Munda and zoda ponds water and soil in relation to production Zooplankton and phytoplankton. Ambikapur is district headquarter of Surguja district which is one of the districts of Chhattisgarh. It lies in the

northern part of Chhattisgarh state having very rich biodiversity dominating by tribal communities. The district is surrounded by Uttar Pradesh, Jharkhand and Madhya Pradesh. It lies between 23°37'25" to 24°6'17" north latitude and 81°34'40" to 84°4'40" east longitude. For the sake of present study the two ponds of Ambikapur city will be selected. The first pond named Munda is three kilometers away from the city and the main source of pond water is mainly rain water. The pond is very old and full of vegetations aquatic weeds and used for fish culture, bathing, irrigation and other domestic uses. But the second pond named Zora pond is aimed the city and one kilometer away from the collectorate. The main source of pond water is rain water and the pond also receives the contaminated water of city sewage and other drainage.

#### **Sampling collection:**

Pond water will be collected once in every month for one year regularly by using a glass bottle of one liter capacity in between 10:00 am to 02:00pm. The sample so collected will be transported to laboratory for physico-chemical analysis.

#### **Physico-chemical analysis :**

The collected samples will be analysed for different physico-chemical parameters such as Odour, colour, temperature, Ph, TDS, Alkalinity, DO, BOD, COD and total hardness as per the standard methods of APHA(1980) and NEERI (1979 &1983).

#### **Methods –**

Munda and zoda pond water quantity parameter methods analysis.

pH meter, Conductivity meter, Water & soil analysis Kit, Refractometer, Thermometer, Wrinkler's Method (DO).

Ambikapur is a urban city and many other people are depending here on pond for different culture activities. zoda pond is present in capital city this pond is very contaminated because domestic sewage drainage, animal bathing, Tej hospital waste products drainage, Holi pooja material drainage and other than drainage materials. So zoda pond Zooplanktons and Phytoplanktons serve very difficulties life different disease attack.

Munda pond present in capital city Ambikapur distance 5km hill station. Environmental factors very suitable serve for pond diversity Zooplankton and Phytoplanktons and pond water very much more non-contaminated water. This pond water is used for many purposes including fishing activity agriculture and domestic uses.

The following physico-chemical parameters of zoda and Munda water were analyzed July 2020 to Jun 2021 Ambikapur

place	weather	Tem. °c	pH	EC us/cm	T. Alk.mg/l	TDS mg/l	BOD mg/l	DO mg/l	COD mg/l	Turbidity NTU	T.S.
Munda pond	Rainy	27.0	8.03	128	150	668	6.3	8.24	32.2	28.89	209
	Winter	22.2	7.82	105	129	608	5.16	7.09	24.0	16.62	151
	Summer	29.6	6.43	155	155	632	6.68	7.0	23.6	21.31	195
zoda pond	Rainy	26.0	7.32	130	163	696	7.1	8.16	40	42.21	226
	Winter	22.2	6.02	116	137	590	6.8	8.03	32.3	20.7	199
	Summer	29.8	8.33	103	161	602	7.6	8.0	26.7	33.81	156

## **Result and Discussion**

Result of analysis pond water from these ponds are recorded in table 1 comparative physico-chemical parameters in Munda & zoda pond water heavily polluted particularly with organic pollutants and the water from these ponds is very unsafe bacteriological pollution in drinking water causes different types of health problems like diarrhea, skin disease and etc. Domestic wastes, fertilizers and man-made pollutants of water in zoda pond washing clothes, drinking of cattle bathing in each other and must be used only after suitable cleaning treatment process.

Munda pond the production is good and several species (Zooplanktonic and phytoplanktons) inhabit this region. The results also revealed that most of the physico-chemical parameters were physico-chemical parameters indicated that this water is not use for drinking purpose zoda pond water are very polluted but more than the munda pond.

## **Conclusion**

The study conclusion that comparative physico-chemical parameters of munda pond water such as pH, Temp., Turbidity, BOD, DO, Total (TA), Total (TDS) were suitable for Zooplanktons and phytoplanktons. It was concluded that present pond was high productive soil analysis indicated and organic matter is much more productivity but than the zoda pond just opposite results.

#### **Aim and Object –**

The main object of the present work is to study the water quality and comparison of different physico-chemical parameters of contaminated and non-contaminated ponds.

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