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Limnological study of Sapna reservoirs at Betul (M.P.)

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Abstract

Preliminary limnological studies were conducted to find out quality of water in a permanent reservoir of Sapna Dist. Betul. Dissolved oxygen and pH of the water was normal while the alkalinity or the form of bicarbonate were quite high. Temperature fluctuation was between 30°C to 13°C Flora and fauna of the reservoir was quite rich.

Introduction

In Indian low line areas including temporary ponds, reservoir, and pools have been ecologically investigated by few workers. Unni (1983) studies the water chemistry in Chhindwara, Rao and Gupta (1986) studied the ecology of Gandhi sagar, Singhal (1985) studied the relationship among physical & chemical factor and plankton characteristics of ponds in Haryana. Ali(1993), cultured *Cyprinus carpio* in domestic waste water ponds. The present preliminary investigation was conducted to study the physico-chemical condition of Sapna Dam of Betul District (M.P.).

Material and Methods

The present study was conducted on Sapna Dam at Betul during July 2003 through December 2003.Sapna Dam is a water reservoir which fullfills, the requirements of surrounding 400 hectare Agricultural land on the other hand from where drinking water supply is also done. The water sample were collected during July 2003 through December 2003.Some of the physico chemical parameters like temperature, CO₂, pH, alkalinity, DO etc were studied..The water sample were collected at an interal of 12 Hrs. schedule. The physico-chemical and biological parameters were determined by following Standard methods of APHA 1998 and Mathur1982.

Results and Discussion

Dissolved (DO) Oxygen

Dissloved Oxygen shows fluctuation from 7.5 to 10.1 mg/l. The minimum dissolved oxygen was of 7.5 at the high temperature of 30°C and increased according to the decreasing temperature.

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Free CO,

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Free CO_2 content of the reservoir was nil at good favorable condition of Sapna, reservoir. **pH**

The pH show very low fluctuation from 7 pH to 7.5 pH in the reservoir.

Alkalinity

The Alkalinity of the reservoir was found to be increased from 78 to 249 mg/l Decreasing temperature and the increasing density of the plants was the reason.

The Carbonate alkalinity increase from 7 to 17 mg/l and the low fluctuation is due to lack of phytoplankton population.

Temperature

The temperature show very high fluctuation from 30° C (in July) to 13° C (in December) the total fall of temperature is 17° C.

Plankton

Plankton were found rich in the study pond.

Variation in phytoplankton population was noted that the phytoplankton were maximum in the evening time. Phytoplankton is directly correlated with free CO_2 the similar result were noted in the zooplankton population it means zooplankton avoids light. The dissolved oxygen was found minimum in the month of october it was due to the activity of plankton in the water. The pH of water is found alkaline during study period a positive correlation is found between pH and total plankton.

Acknoweledgement

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Plankton	Abundant	Common	Rare	Accidental
CHLOROPHYCEAE				
Chlamydomonas sp.	x			
Pandurina morum	x			
Eudorina elegans		x		
Chlorococoum sp.	x			
Chlorococum humicola			x	
Chlorella vulgaris	x			
Characium limenticum		x		
Pediastrum tetras				x
Tetradron tirgonum				x
Actinestrum hantzschil				
Coelastrum microporum			x	
Oocystis sp.				
Scendesmus quadricauda			x	
S. abundans		x		
S. alterans				x
Ankistrodesmus falcatus			x	
Cosmarium hammeri				x
C. Scabrum			X	
C. quinarium			x	
Clostenim sp.			x	
C. littorale				x
Uronema gigas			x	
EUGLENOPHYCEAE				
Euglena acus		x		
E. oxyuris			X	
E.sp.				x
E. tripteris				x
E. gracilis				x
E. munuta				
Phacus tortus			x	

Table - 1: List of plankton available in the Reservoir of sapna Betul During July 2003 to Dec 2003

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Plankton	Abundant	Common	Rare	Accidental
P. Meson	х			
P. helikoides				X
P. longicauda			x	
P. acuminatus	х			
P. brachykentron			х	
P. orbicularis		x		
P. pyrum		x		
Trachelomonas varians			х	
T. similis		x		
T. armata			х	
T. superba			х	
T. hispida		x		
Lepocinclis acuta		х		
L. fusiformis				Х
L. ovum			Х	
L. textra				х
L. ovalis	X			
CYANOPHYCEAE				
Merismopedia glauca				X
Oscillatoria Princeps		X		
O. curviceps			х	
O. tenuis			х	
O. chalybea				X
Spirulina laxissima				X
Anabaena sp.	X			
BACILLARIPHYCEAE				
Navicula cuspidata		x		
Nitzchia palaea				X
Gomphonema sp.	X			
Frustulia sp.				X
PROTOZOA				
Amoeba proteus		X		
Arcella discoides	Х			
A. valgaris		X		
Centropyxis aculeata				X
C. hemispherica		X	_	
Diffugia lebes		x		
Euglypha brachiata				X
E. mucronata				X
Euplotes S.P.				
ROTIFERA				
Brachinus Calyciflorus	x			
B. caudatus	x			

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Plankton	Abundant	Common	Rare	Accidental			
B. budapensis				x			
B. falcatus		х					
B. forficula		х					
B. Patula				x			
Platyas quadricornis				x			
Lepadella ovalis	x						
L.rhomboides	x						
Lecana (monostyla) bulla			x				
Lecana curvicornis	x						
Filinia Longiseta		x					
F. opoliensis				x			
Trichocera Sp.	x						
Synachaeta Sp.		х					
Haxarthra mira.				x			
OSTRACODA							
Cypris sp.		x					
Stenocypris sp.	x						
CLADOCERA							
Moina brachiata	x	x					
Alona Sp.		ļ					
COPEPODA							
Mesocyclops sp.	x						

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