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## Abstract

The present study was conducted to estimate primary productivity in relation the physical and chemical properties and plankton abundance of Foy's lake. Plankton is one of the most important food items of fishes that indicates productivity of water body. Gross primary productivity, net primary productivity and critical respiration were estimated in pre-monsoon, monsoon and post-monsoon. Primary productivity was estimated  $0.39 \text{ gCm}^{-3}\text{h}^{-1}$  in pre-monsoon,  $0.31 \text{ gCm}^{-3}\text{h}^{-1}$  in monsoon and  $0.61 \text{ gCm}^{-3}\text{h}^{-1}$  in post monsoon. The lowest primary productivity was estimated  $0.30 \text{ gCm}^{-3}\text{h}^{-1}$  in April and the highest primary productivity was estimated  $0.61 \text{ gCm}^{-3}\text{h}^{-1}$  in September. Nine species of phytoplankton was estimated under five classes that includes Chlorophyceae, Bacillariophyceae, Cyanophyceae, Euglenophyceae and Dinophyceae. The highest phytoplankton abundance was estimated  $28 \text{ Cellsl}^{-1}$  in September and the lowest in July  $13 \text{ Cellsl}^{-1}$ . Five species of zooplankton namely *Cyclops*, *Daphnia sp.*, *Moina sp.*, *Brachionus sp.* and *Padina sp.* were identified under three classes viz Copepod, Cladocera and Rotifer. The highest abundance of phytoplankton was  $17 \text{ unitsl}^{-1}$  in September and the lowest abundance of phytoplankton was  $7 \text{ unitsl}^{-1}$  in July. This study shows that the primary productivity vary with monsoon to monsoon and highest primary productivity was estimated in post monsoon.

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**Key words:** Primary productivity, Phytoplankton, Zooplankton, Monsoon

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## ABBREVIATION

GPP	Gross Primary Productivity
NPP	Net Primary Productivity
CR	Community Respiration
$\text{gCm}^{-3}\text{hr.}^{-1}$	Gram Carbon per meter cube per hour
mg	Milligram
g	Gram
ft.	Feet
m	meter
$\mu\text{m}$	Micro Meter
$^{\circ}\text{C}$	Degree Celsius
DO	Dissolve oxygen
LB	Light Bottle
DB	Dark Bottle
IB	Initial Bottle
PQ	Photosynthetic Quotient