

ISBN: 978-620-2-67120-0

Chapter 1

Effect of Limnological Characteristics of Ponds on Composite Fish Culture for Improvement of Livelihood of Fisherman

Annapurna Sahoo^{1,2}, Gagan Kumar Panigrahi¹, Pradip Kumar Prusty¹, Yashaswi Nayak¹, Surendra Nath Padhi³, Sasmita Panda⁴

¹School of Applied Sciences, Centurion University of Technology and Management, Odisha, India.

²Institute of Life Sciences, Odisha, India.

³Department of Zoology, Banki Autonomous College, Odisha, India.

⁴Department of Zoology, Jatni College, Odisha, India.

Abstract

This study deals with the ecology of temporary ponds in the east coast of India from November 2018 to July 2019. Three categories of ponds were recognized on the basis of physical and biotal characteristics. Each of the ponds displayed a detritus-based food web derived predominantly from leaf litter. Productivity in all the ponds was contributed due to aquatic vegetations and phytoplankton. Physico-chemical parameters including physical, chemical and biological parameters like temperature, total alkalinity, pH, dissolved oxygen, nitrate and nitrogen contents of the pond water were investigated. There was no consistent pattern across the ponds, though community metabolism reports showed that the ponds which are exposed are autotrophic whereas the shaded ponds are heterotrophic in nature. Most importantly, the ponds were stabilized empowering the people with the techniques for composite fish farming of Indian major carps (*Catla catla*, *Labeo rohita* and *Cirrhinus mrigala*) as candidates for harvesting. The present investigation was carried out on certain water quality and biotic parameters of a fish pond in different time intervals. The pH found to be between 7.4 and 8.2. The total alkalinity ranged between 130 to 218 (mg CaCO₃.l⁻¹). The water quality of the pond was moderate for aquatic organism and fishes.

Key words: Physico-chemical, limnology, water, fish, alkalinity, ponds.