

POPULATION DYNAMICS OF BACTERIOPLANKTON IN
VILLA ROCA POND IN CONSOLACION, CEBU

A Thesis
Presented to the
Faculty of the Graduate School
University of San Carlos
Cebu City

In Partial Fulfillment
of the Requirements for the Degree
Master of Science in Biology

by
Noel D. Roble
March 1994

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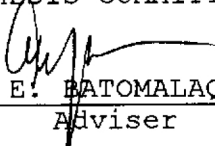
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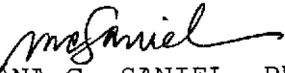

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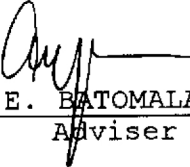

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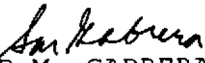
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ABSTRACT

The population dynamics of bacterioplankton in Villa Roca pond in Consolacion, Cebu, Philippines was studied from January 1992 to January 1993. The population density was determined by direct count method using fluorescence microscopy. The physico-chemical parameters of the pond were also determined using standard methods. The relation between the population dynamics of bacteria and the physico-chemical factors was established using Spearman's Rank Correlation Coefficient.

The bacterial population varied markedly throughout the study period. Coccoid bacterial forms dominated over bacilli forms. The computed t of -2.0116×10^{-6} at $\alpha=0.05$, $df = 38$; and $t_{tab} = 1.96$, showed that there was no spatial variation between bacterial forms.

The population dynamics of bacterioplankton was influenced most significantly by the particulate organic carbon. POC was a limiting factor for bacterial growth. Of the parameters, surface water temperature and pH fluctuating slightly throughout the study period were not limiting factors. Inorganic nutrients, such as ammonia (NH_3), nitrate (NO_3), nitrite (NO_2); and phosphate (PO_4) had an influence on the bacterial population dynamics in Villa Roca pond.

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CHAPTER 1
THE PROBLEM AND ITS SCOPE

Introduction

Every lake and pond probably had an indigenous bacterial flora which is maintained as a regular part of the biological complex of the fresh water body. Studies that primarily concerned with the normal bacterial populations of fresh waters, and particularly those which may be regarded as of more or less regular occurrence in the waters of different kinds of fresh water bodies are unfortunately almost an unknown field. Since bacteriologist and others employing the methods of bacteriology have been mainly concerned in the past with pathogenic bacteria. Only a very few lakes have been studied with the bacteria native to them, and even in these few instances there are many gaps in the available information.

Bacteria in any aquatic habitat can be classified into groups depending on common habits of locomotion and mode of life with special reference to the association with particulate matter in natural waters. The first group are the attached bacterium or epibacterium, they are attached to any available surface for aggregation. The attachment is