

THE GROWTH AND SURVIVAL OF PENAEUS MONODON FABRICIUS
LARVAE FED WITH DIFFERENT CONCENTRATIONS
OF THALASSIOSIRA PSEUDONANA

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Presented to
the Faculty of the Graduate School
University of San Carlos

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

by

Leticia Canieso Escudero

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This thesis entitled "THE GROWTH AND SURVIVAL OF PENAEUS MONODON FABRICIUS LARVAE FED WITH DIFFERENT CONCENTRATIONS OF THALASSIOSIRA PSEUDONANA" prepared and submitted by Leticia Canieso Escudero in partial fulfillment of the requirements for the degree of Master of Science in Biology has been examined and is recommended for acceptance and approval for ORAL EXAMINATION

THESIS COMMITTEE



HELEN J. VICENTE, M.S.
Adviser


EXUPERANCIO A. MONTECILLO, M.S.
Member


CRISTOBAL G. PLATEROS, M.S.
Member


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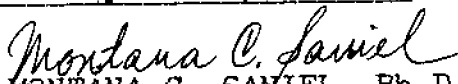

EXUPERANCIO A. MONTECILLO, M.S.
Member


CRISTOBAL G. PLATEROS, M.S.
Member

Accepted and approved in partial fulfillment of the requirements for the Degree of Master of Science in Biology.

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MONTANA C. SANIEL, Ph.D.
Dean, Graduate School

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ABSTRACT

The growth and survival rates of Penaeus monodon Fabricius larvae fed with Thalassiosira pseudonana were determined in 2-phase experimental set-up. Phase I used T. pseudonana feeding in four treatments of 25×10^3 , 50×10^3 , 100×10^3 , and 150×10^3 cells ml^{-1} with three replicates. Phase II used Tetraselmis chuii feeding simultaneously with T. pseudonana feeding using complete randomized design (CRD) in two treatments of 50 and 150×10^3 cells ml^{-1} with nine replicates.

In Phase I experimental set-up, the highest mean survival rate of 65 % was obtained in 150×10^3 cells ml^{-1} concentration. Larvae fed at this level had faster rate of development and significantly higher survival rate ($P < 0.05$).

Survival rate was significantly higher ($P < 0.05$) and larval stage development was faster in the larvae fed with T. pseudonana in Phase II. Larval response to T. chuii was relatively poor.

The results of the study implies that T. pseudonana is capable of effectively sustaining growth and gave higher survival rate to the larval stages of P. monodon Fabricius.

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CHAPTER I

INTRODUCTION

Rationale of the Study

Penaeus monodon Fabricius, locally known as "sugpo" is the most preferred species for culture in the country today. Sugpo fry from the natural environment cannot support fish farmer's need in the fishponds, so that the farmers obtain their fry from prawn hatcheries which are established throughout the country.

In prawn seed production, one of the keys to successful hatchery operation is the introduction of the types of food organisms. Other parameters, such as, temperature, salinity, pH, nitrite, ammonia, D.O., parasites and diseases are also considered.

Studies on the food and the feeding habits of sugpo were done by Villaluz, et al. (1972), Vicente (1974a), and MSU-IFRD (1975) which indicated that sugpo are filter feeders in the early stages (zoea 1 to mysis 3) and are carnivorous in the post larval and adult stages. Techniques in culture of marine phytoplankton under controlled conditions had been developed (Vicente 1974b, 1978, 1984, 1985; Epifanio 1976; de la Cruz et al. 1984. The possibility of testing the value of the various algal

species of algae as food for penaeid larvae therefore, will not be remote (Yang 1975). The importance of algal culture as natural food for larval prawns (Tabb et al. 1972) was emphasized in recent studies in hatchery operations. Various hatcheries used either prepared food (baker's yeast, finely ground chicken egg yolk, clam and seagrass juice) or cultured food organisms (oyster eggs, Artemia spp, Brachionus spp, mixed diatoms, single species of Dunaliella spp, Isochrysis spp, Chaetoceros calcitrans, Skeletonema costatum, Phaeodactylum spp and Tetraselmis spp) (Villaluz et al. 1972, Tumanda 1974, MSU-IFRD 1975, Tumanda et al 1976, Vicente 1979, Vicente et al 1981, 1984)

The dependence on single species of diatoms or phytoflagellate in the larval rearing of "sugpo" poses some advantages and disadvantages. While it is true that the tested species of diatoms are good food for "sugpo" larvae, there are still problems in the maintenance of Chaetoceros spp and Skeletonema spp. In addition, Liao and Huang (1972) found out that certain species of Chaetoceros are not good food for penaeid larvae since its bristles coil around the appendages of the larvae. To minimize the dependence on these algal species as food for "sugpo" larvae, there is a need to test the acceptability of other algal species such as Thalassiosira pseudonana. Hence, the study was conducted