REPRODUCTIVE BIOLOGY OF SNOUT OTTER CLAM, *Lutraria philippinarum* (Deshayes, 1854) (Bivalvia: Mactridae) WITH NOTES ON ITS FISHERY IN THE PHILIPPINES

A Thesis Presented
to the Faculty of the Biology Department
College of Arts and Sciences
University of San Carlos, Cebu City, Philippines

In Partial Fulfillment of the Requirements
For the Degree of
Masters of Science in Biology

---

by

Venus Bantoto

April 2011

APPROVAL SHEET

This Thesis entitled " **REPRODUCTIVE BIOLOGY OF SNOUT OTTER CLAM, *Lutraria philippinarum* (Deshayes, 1854) (Bivalvia: Mactridae) WITH NOTES ON ITS FISHERY IN THE PHILIPPINES**", prepared and submitted by **VENUS BANTOTO**, 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

ANTHONY S. ILANO, PH.D
Adviser

NOEL D. ROBLE, PH.D
Member

ANNIE G. DIOLA, M.SC.
Member

FILIPINA B. SOTTO, PH.D.
Member

PANEL OF EXAMINERS

Approved by the Committee on Oral Examination with a grade of PASSED

THESIS COMMITTEE

FILIPINA B. SOTTO, PH.D.
Chair

ANTHONY S. ILANO, PH.D
Adviser

ANNIE G. DIOLA, M.SC.
Member

NOEL D. ROBLE, PH.D
Member

Accepted and approved in partial fulfillment of the requirements for the degree of **MASTER OF SCIENCE IN BIOLOGY.**

Comprehensive Examination PASSED: May 27-28, 2010
Date of Oral Examination February 15, 2011

RAMON S. DEL FIERRO, PH.D.
Dean, College of Arts and Science

ACKNOWLEDGEMENT

I would like to express my heartfelt gratitude and sincere appreciation to the following who extended their support for the success of this study.

To the Department of Science and Technology-Philippine Council for Aquatic and Marine Research and Development (**DOST-PCAMRD**) for the scholarship grant.

To my adviser, **Dr. Anthony S. Ilano** for sharing his expertise in reproductive biology of mollusk, unending support, patience, consideration and invaluable advices

To the chair, **Dr. Filipina Sotto** and panel members of the thesis committee, **Dr. Noel Roble** and **Annie Diola, M.Sc.,** for their valuable time in reviewing my thesis and their constructive comments improved my manuscript

To all the **faculty members of the Biology Department,** for the knowledge that I have learned from them

To **Mr. Rolly Viesca** and **Mr. Antonio Tambuli,** for sharing their expertise in microtechnique.

To the staff of Marine Biology Section, **Mr. Reynaldo Tobias, Mr. Benjamin Pangatungan** and **Mrs. Emilia Labador**, for their support and assistance in processing the samples

To **Mr. Jimmy dela Victoria,** for the safe trip to the Marine Biology Research Station in Maribago, Lapu-Lapu City

To **my fellow DOST scholars, masteral classmates and friends especially to Mr. Menelo Hongayo** and **Mr. Raama Rosales** for the prayers, support and encouragements.

To my previous boss, **Mr. Silvestre Salazar Jr** , for his constant moral support and advices.

To the people of Manjuyod, Negros Oriental, especially to **Junjie Vidal and his family** for diligently providing me the specimens every month amidst bad weather conditions.

To **Justin Paul Arsenio Kinamot** and his family, for the continual love, help, consideration, support and warm accommodation.

Special acknowledgement to **my family,** for their encompassing love, prayers and sacrifices

Above all, to the **ALMIGHTY FATHER**, for all the graces, strength, guidance and protection.

V Bantoto

ABSTRACT

The morphometry, size at sexual maturity, sex ratio, recovery stage of gonad development and spawning of snout otter clam, *Lutraria philippinarum* were studied for one year based on 1,377 clam samples collected from North Bais Bay, Manjuyod, Negros Oriental, Philippines Water temperature, salinity, pH and dissolved oxygen were measured monthly The notes on the fishery of *L philippinarum* were based on interviews conducted in Manjuyod, Negros Oriental, Dauis, Bohol, Cordova, Cebu and Glan, Saranganı Shell length showed moderate correlation to width (r=0 56), thickness (r= 0 66), dry weight (r=0 60) and wet weight (r= 0 58) Histological examination on gonad development indicated that gametogenesis, maturation and spawning season of *L philippinarum* occurred throughout the year with two spawning peaks, January and June Changes in water temperature in North Bais Bay influenced the spawning peaks of *L philippinarum* but no effect with salinity, pH and dissolved oxygen The Gonad Index ranged from 2.2 to 2.6 which suggested that most of the clams were mature throughout the year A positive correlation between Gonad Index and Condition Index was observed (r=0 77) Males were observed to mature earlier at 4.3cm shell length than females at 4 6cm shell length The sex ratio was 1 1 15 and showed no significant difference from 1:1 ratio The calculated Catch Per Unit Effort of *L philippinarum* from Manjuyod, Cordova, Dauis and Glan ranged from 0 2 kg/hr-man to 1 25kg/hr-man suggesting low shell catch Thus, to have a sustainable supply of *L philippinarum*, effective management strategies are needed

TABLE OF CONTENTS

LIST OF TABLES

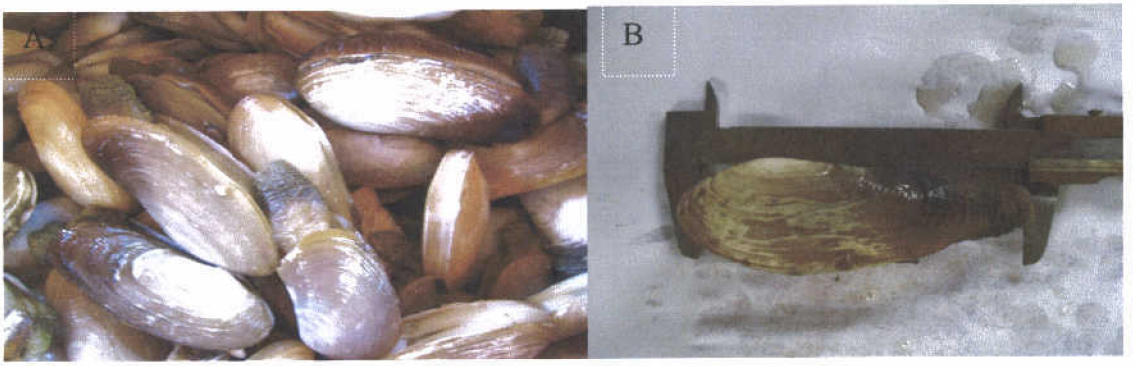
LIST OF FIGURES

CHAPTER I

INTRODUCTION

Shellfish is used as a substitute for fish and represents an important dietary component in many coastal populations of tropical areas (Boer et al., 2000). It is a good source of animal protein and other nutrients, including essential micronutrients such as calcium, Vitamin A and iodine (Williams, 1999). It is also a source of income to many fishermen and gleaners. The shells are used as raw materials in making jewelry and shell-based furniture (Ciasico et al., 2006) and the meat is sold for food. One of the bivalve species harvested for food and as a source of income in the Philippines is the snout otter clam, *Lutraria philippinarum* (Deshayes, 1854).

L. philippinarum locally known as "bilaog" in Manjuyod, Negros Oriental, Philippines, (Figs. 1A and 1B) is a bivalve that occurs in the warm waters of Philippines, Thailand, China, Australia and Vietnam. They inhabit in the shallow sandy sublittoral areas at 3-6m water depth. The shell is thin and elongated oval in shape. The periostracum is brown yellow in color and easily peeled off while the nacreous layer is white. When the two valves are closed, the anterior and the posterior are not tight (Ha Duc Dang et al., 2006).



Figures 1A and 1B. Snout otter clam, *Lutraria philippinarum* from North Bais Bay, Manjuyod, Negros Oriental, Philippines.