THE VERTICAL DISTRIBUTION AND OCCURRENCE OF SOME COMMON BURROWING PELECYPODS IN A MANGROVE SWAMP IN CARMEN, CEBU, PHILIPPINES

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

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May 1981

APPROVAL SHEET

This thesis entitled "THE VERTICAL DISTRIBUTION AND OCCURRENCE OF SOME COMMON BURROWING PELECYPODS IN A MANGROVE SWAMP IN CARMEN, CEBU, PHILIPPINES", prepared and submitted by Salud Morales Gabrera 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.

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ACKNOWLEDGMENTS

The author wishes to acknowledge the following for valuable contributions to this research work:

Prof. E. A. Montecillo, my adviser, for his supervision and guidance; Dr. A. G. Almase for initially suggesting the research problem, providing important references, and unselfish assistance and inspiration throughout the study period; Prof. A. E. Espina and Prof. C. G. Plateros for valuable criticisms and suggestions.

Dr. R. S. Houbrick for verifying the identification of the species of bivalves; Dr. G. Hendler for facilitating the transport of specimens for verification purposes and providing important literature; Prof. F. Nemenzo, Sr. for invaluable suggestions and help in the preliminary stages of the research.

Rev. Dr. E. Schoenig, for critical comments; Miss S. Chan for providing indispensable and relevant literature sources; Mrs. L. Cueva and Mrs. I. Jayme for extending efficient information retrieval services.

Office for Research and Faculty Development (University of San Carlos) for thesis assistance; Mrs. R. Ruiz and Mrs. A. Diez, for company in the field; Mr. E. Cases and Mr. N. Guinita, for the illustrations; Mr. Mansour, for the photographs; Miss I. de los Santos for fruitful discussion; and to my family for the inspiration and prayers.

ABSTRACT

The vertical distribution and occurrence of eight species of bivalves belonging to six families of burrowing pelecypods was studied over a seven-month period on a muddy substrate in Carmen, Cebu from December 1976 to June 1977. The animals are represented by Anomalocardia squamosa and Gafrarium tumidum of Family Veneridae, Tanysiphon rugosa of Family Glacuonomidae, Polymesoda sp. of Family Carbiculidae, Anodontia edentata and Phacoides philippinarum of Family Lucinidae, Soletellina sp. of Family Psammobiidae, and Pharella javanica of Family Solenidae.

Certain morphological features and stomach contents were examined to ascertain the mode of feeding of the species studied. A. edentula and P. philippinarum resembles deposit feeding bivalves by having separate siphons, absence of straining tentacles of inhalant siphon, reduced labial palps and presence of sand grains in the stomach. A. squamosa, G. tumidum, Polymesoda sp.,Soletellina sp., T. rugosa and P. javanica have the following features of a suspension feeder; presence of straining tentacles, large gills, outer demibranch not upturned and is in an upright position in the burrow. Stomach analysis showed the presence of diatoms and algae.

The shape of the shell; length of the foot; long siphons and ejection of water from the mantle cavity of some species were observed to be related to depth of burrowing of the species of bivalves.

The different species vary in the level at which they burrow and were observed to have constant ranges of distributions as follows: A. squamosa burrow at a range of 2-7 cm; G. tumidum at 3-9 cm; Polymesoda at 7-15 cm; T. rugosa at 8-21 cm; Soletellina sp. at 5-26 cm; P. javanica at 5-30 cm; A. edentula at 15-45 cm; and P. philippinarum at 11-45 cm.

Six of the species of bivalves occur in all the three stations except for the two venerids, A. squamosa and G. tumidum that do not occur in Station I but only in Stations II and III.

The Physico-chemical factors such as pH, temperatures, salinity, type and firmness of substratum and degree of exposure of the area were investigated and an attempt was made to relate these factors to the occurrence and vertical distribution of the bivalves.

Temperature of the mudsurface ranged from 27°C to 34°C; that of air is 29°C to 33°C; and the mud bottom is 27°C to 30°C. The pH of the seawater was 7 at low tide and 7+ at high tide while that of the mud surface down to the 30 cm. level was 7 and below this level the pH is 6.8 to 6.9. The salinity ranged from 2.87% to 34.51%. Substrate is of the clay; clay-loam; and clay-loam-sandy types. Percentage of exposure of the habitat ranged from 54.22% to 90.78%.

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INTRODUCTION

Pelecypods are molluscs that are easily recognized by the presence of two lateral valves or shells that are hinged together along the dorsal side, hence the name "bivalve". The word Pelecypoda was derived from Greek words, "pelekys" which means axe or hatchet and "podos" meaning foot. The group is made up of species whose habitat ranges from shallow to relatively deep burrowing and which exploit a variety of substrata.

While the systematics of the bivalve molluscs has been extensively studied (Bartsch, 1871; Rogers, 1963; Morton, 1964; Hirase, 1951; Webb, 1951; Tinker, 1958; Fretter, 1959; Tebble, 1966; Taylor, 1969; Abbot, 1974), not much is known about their burrowing characteristics, the factors affecting the nature of their burrowing, and consequently, their occurrence and vertical distribution. The literature on the burrowing of bivalves as reported by Trueman (1966) is largely limited to observations on the Solenaceae by Fraenkel in 1927 and Pohlo in 1963, on the Lucinaceae by Allen in 1958 and the Veneridae by Quayle in 1949 and by Ansell in 1962.

According to Nair and Ansell (1968) the depth at which bivalves may occur is a result of their burrowing movements, a geotactical response to exposure. Burrowing is made possible by either the movement of the foot or the shell being moved to