شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

HOSSAM MAGHRABY

شبكة المعلومات الجامعية

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

HOSSAM MAGHRABY

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

HOSSAM MAGHRABY

بعض الوثائق الأصلية تالفة

HOSSAM MAGHRABY

شبكة المعلومات الجامعية

بالرسالة صفحات

لم ترد بالأصل

HOSSAM MAGHRABY

Ecological Studies on Macrobenthic Invertebrates, in the Intertidal zone of the Suez Region

By

Aisha Ahmed Mohamed Belal
B. Sc. (Zoology)

Demonstrator in

The National Institute of Oceanography and Fisheries,
Aqaba and Suez Gulfs Branch

Thesis

Submitted in Partial Fulfilment for the Award of the
Degree of Master of Science
(Marine Invertebrates)

Faculty of Science,
Suez Canal University
1995

Suez Canal University
Faculty of Science
Zoology Department

Title : "Ecological Studies on Macrobenthic Invertebrates in the Intertidal Zone of the Suez Region".

Name : ***Aisha Ahmed Mohamed Belal***

Supervisors :

Name	**Position**	**Signature**
Prof. Dr. H.K. Badawi	President of National Institute of Oceanography and Fisheries, Egypt.	
Dr. Sh. E. Ramadan	Associate Proferssor of Marine Invertebrates, National Institute of Oceanography and Fisheries, Alexandria.	
Dr. H. A. El-Serehy	Associate Professor of Marine Invertebrates, Faculty of Science, Suez Canal University.	

Zoology Department head
Professor

Referees Decision

Title : "Ecological Studies on Macrobenthic Invertebrates in the Intertidal Zone of the Suez Region".

Name : ***Aisha Ahmed Mohamed Belal***

Referees :

Name
1- Prof. Dr. H.K. Badawi.
2- Prof. Dr. A.N. Kayed.
3- Prof. Dr. R. Boulos.
4- Assitant Profssor Sh. E. Ramadan.

Date of Discussion:

Degree of Dissertation:

Referees Signature:

Name	**Signature**
1- Prof. Dr. H.K. Badawi.	
2- Prof. Dr. A.N. Kayed.	
3- Prof. Dr. R. Boulos.	
4- Assitant Profssor Sh. E. Ramadan.	

Zoology Department head

Professor M.E. Mohallal

بسم الله الرحمن الرحيم

قالوا

سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا

إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ

صدق الله العظيم

سورة البقرة آية ٣٢

Acknowledgment

I wish to express my deep gratitude to Prof. **Dr. H. K. Badawi,** president of the National Institute of Oceanography and Fisheries for his kind supervision throughout the course of the study.

The author wishes to express her deepest appreciation and sincere gratitude to **Dr. Sh. E. Ramadan,** Associate Professor of Marine Invertebrates, National Institute of Oceanography and Fisheries, for suggesting and planning the scheme of this thesis, his tutorial guidance, active supervision and constructive criticism in reading and preparing the present manuscript..

Special appreciation is given to **Dr. H. A. El-Serehy,** Associate Professor of Marine Invertebrates, Faculty of Science, Suez Canal University, for the facilities offered by him, for his continuous encouragement throughout the whole work, beside reading and criticizing the manuscript.

I am also indebted to Prof. **Dr. Mohamed I. El-Samra,** Director of the National Institute of Oceanography and fisheries, Suez, for providing facilities during the preparation of this work.

Thanks are also due to **Dr. M. Sh. Barabry,** lecturer of zoology, Faculty of Science, Zagazig University, for his valuable help, in polychaetes identification and for providing some literature.

Finally I extend may acknowledgment to **my husband** for his patient, continuous encouragement and support, and to my colleagues in the Institute of Oceanography and Fisheries, who directly and indirectly, helped me during the course of this work.

To my parents , husband & my children
Hebat El-Rahman and Moustafa

CONTENTS

CHAPTER I

INTRODUCTION

Introduction

Large areas of the sea floor are covered by uncompacted deposits of mud, sand or gravel. Nearly every type of marine deposit, except for a few exposed to excessive disturbance by waves or currents, is inhabited by an assemblage of animals, these are called benthic animals, which spend all or most of their life in or on the bottom of different aquatic habitats. Their role from an economic stand point is to convert detritus and small planktonic and bottom-living organisms into fish food (Holme, 1964). The larval stages of most benthic fauna occurring in the plankton serve as a good source of food for many pelagic fishes (Farag, 1981). Molluscs furnish the food requirements for some bottom invertebrates (Petersen and Jensen 1911; Broekhuysen, 1936; Nimoto, 1972 and Tyler, 1972). Crustaceans are also important food for many fishes. Steven (1930) found *Portunus depurator* in stomach of many fishes. Polychaetes act as good source of organic matter after their death and decay. *Ampelisca* spp. have also been identified as important dietary items in the food of valuable ground fish (Lee, 1944; Smith, 1950; Pratt, 1973; Edwards and Bowman, 1979).

The first basic studies on the littoral benthic fauna of the Red Sea were performed by Ruppell (1828/1830); Ehrenberg (1834); Klunzinger (1877, 1879) and Heller (1861 a,b).

In the Red Sea the polychaetes were estimated by Gravier (1906 and 1908). Also, the polychaete fauna of the Red sea is relatively well known, important recent works including Hartmann-schroder (1960), Day (1965) published on the polychaete fauna collected from south Red Sea in 1962, while Monro (1937), Fauvel (1955) and Laubier (1966 and 1970) reported on the Red Sea polychaetes which migrated to the eastern Mediterranean. Ben-Eliahu (1977) estimated the polychaete cryptofauna from rims of similar vermetid reefs