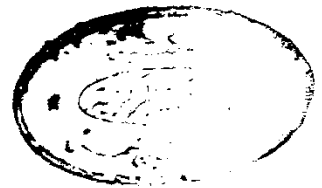


**STUDIES ON SOME ELASMOBRANCHS
OF
THE MEDITERRANEAN**



M. Sc. THESIS

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By

CHADIA MOHAMED KADRY

Demonstrator in Zoology, University College
For Women, Ain Shams University

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3

BOARD OF SCIENTIFIC SUPERVISION

- Professor Dr. Fatma M. Mazhar. Professor of Comparative Anatomy and Embryology, zoology Department, University College for Women, Ain Shams University.
- Professor Dr. Hussein K. Badawi Director of the National Marine Reference and Head of Department of Ichthyology, Institute of Oceanography and Fisheries, Alexandria.



4

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C O N T E N T S

	Page
I- INTRODUCTION.....	1
II- MATERIAL AND METHODS.....	3
PART I	
III- HISTORY OF CLASSIFICATION.....	5
IV- ELASMOBRANCHES OF THE SOUTH-EASTERN MEDITERRANEAN SEA.....	9
ORDER SELACHII.....	12
Suborder GALEOIDEA.....	12
Family SCYLIORHINIDAE.....	13
<u>Scyliorhinus caniculus</u>	16
<u>Scyliorhinus stellaris</u>	19
Suborder SQUALOIDEA.....	21
Family OXYNOTIDAE.....	22
<u>Oxynotus centrina</u>	24
Suborder SQUATINOIDEA.....	27
Family SQUATINIDAE.....	29
<u>Squatina squatina</u>	32
<u>Squatina oculata</u>	36
ORDER BATOIDEI.....	39
Suborder TORPEDINOIDEA.....	41
Family TORPEDINIDAE.....	43
<u>Torpedo marmorata</u>	45
<u>Torpedo fuscomaculata</u>	48
<u>Torpedo alexandrinensis</u>	51

PART II

	Page
V- INTERNAL ANATOMY IN FIVE REPRESENTATIVE SPECIES..	
1. Digestive system.....	54
Mouth and Bucco-pharyngeal cavity.....	55
Oesophagus.....	58
Stomach.....	59
Intestine.....	60
A- Duodenum.....	61
B- Valvular intestine.....	64
C- Colon and rectum.....	66
D- Cloaca.....	66
Glands of the digestive tract.....	66
The liver.....	66
The pancreas.....	68
2. Circulatory System.....	70
A. Heart.....	70
B. Ventral aorta and afferent branchial arteries.....	77
3. Urino-genital System.....	79
Female urinary System.....	79
Male urinary System.....	82
Female Genital System.....	83
Male Genital System.....	86
4. Nervous System.....	90
Brain.....	92
Cranial Nerves.....	99
VI- DISCUSSION.....	105
VII- SUMMARY.....	128
VIII- LIST OF ABBREVIATIONS AND MAP.....	130
IX- BIBLIOGRAPHY.....	135
X- ARABIC SUMMARY	

I

INTRODUCTION

I- INTRODUCTION

The Oceans of the world cover approximately about 71 % of the earth's surface. The seas are the cradle of life. They are so vast and complex and the assemblages of living organisms in them are so varied.

The Mediterranean consists of a deep gash in the crust of the earth, no less than 2,250 miles reckoned from Gibraltar to the syrian coast. The Mediterranean is related to the Atlantic through the great Gateway of the Western world. Another Gateway, that of Suez Canal makes a natural communication between the Mediterranean Sea and the Red Sea. So we can say that the Mediterranean derives some of its biota from the Atlantic and the Red Sea. Fishes have been able to pass from the Red Sea to the Mediterranean Sea, where they established themselves and flourished to the point of becoming economically important than in the reverse direction.

Thorough and systematic study of the elasmobranchs of the North- Western Red Sea have been carried out by Gohar & Mazhar (1964).

Until now little work has been conducted on the elasmobranchs of the Egyptian Mediterranean shores. A series of studies on the elasmobranchs of the South-Eastern Mediterranean Egyptian shores have been carried out by Mazhar (1967 & - 74).

The present work is a continuation of Mazhar's investigations and it deals with the taxonomy as well as the anatomy of some elasmobranchs of the Egyptian South-Eastern Mediterranean shores. Eight species of elasmobranchs are described and keys for their identification are supplied. For the comparative anatomical study five main species belonging to the two orders Selachii and Batoidi are selected.

II

MATERIAL AND METHODS

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The Oceanographic Institute of Alexandria was the centre of collecting the material needed for this work. Specimens were caught by nets, bottom trawls or bottom set longlines.

The dimensions and the external features of all specimens were examined in the fresh condition. Parts of the skin and buccal lining were soaked in dilute sodium hydroxide (3 %) for about 14 hours, then washed by water and mounted in glycerine for the description of the dermal and stomodæal denticles.

The stomach and intestine of every specimen were cut open to examine the valvular intestine. Also the valves of the conus arteriosus, the number of embryos, when present, were noted.

To study the brain, the skull was injected with 40 % formaldehyde solution. The viscera were injected with 10 % formalin, studied in situ and then preserved in 5 % formalin for further study. In fresh specimens

the ventral aorta was injected with warm coloured gelatin mass for the study of the heart with its vessels.

The five main species selected for the comparative anatomical study represent three families having different habits and habitats. Among these, Scyliorhinus stellaris (Linnaeus, 1758), Family Scyliorhinidae represents the Selachii.

The Batoidae are represented by three species viz: Torpedo marmorata (Risso, 1810), Torpedo fuscomaculata (Peters, 1855) and Torpedo alexandrinensis (Sp. nov.), Family Torpedinidae.

Squatina squatina (Linnaeus, 1758) Family Squatinidae is an intermediate form and also represents the Selachii.

III

HISTORY OF CLASSIFICATION

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Reviewing the history of terminology of the cartilaginous fishes, and the characters used in their classification, one finds that Linnaeus as early as 1735 used the name *Chondropterygii* to the cartilaginous fishes. Dumeril (1806) divided the cartilaginous fishes according to the presence or absence of an opercular covering. Müller and Henle (1837) used the external characters entirely in dividing the elasmobranchs directly into families basing their distinction upon the position of the dorsal fins.

The terms *pleurotremes* and *Hypotremes* were given by Dumeril (1865) to distinguish between the lateral and ventral gill-openings.

Günther (1870) divided the subclass *Chondropterygii* into two orders, *Holocephalia* and *Plagiostomata*. Depending on the shape of the body, fins, and position of gill-slits, he divided the latter order into two suborders, *Selachoides* and *Batoidei*.

Hasse (1879) divided the Elasmobranchii according to vertebral structure, into Diplospondyli, Cyclospondyli, Tectospondyli and Asterospondyli. He was followed by Gill (1883), who subdivided them owing to the attachment of the palatoquadrate to the skull.

The rostral cartilages and pectoral fin skeletons were used as the bases of Regans (1906) classification. Goodrich (1909) based his classification on the pectoral fin skeleton as well as certain other external characters.

Garman (1913) used such external characters as teeth, naso-oral grooves, and valves, and position of gill openings for his classification.

White (1937) adopted Garman's terms to a great extent, and she based her classification on external as well as internal characters.

Bigelow and Schroeder (1948) divided the subclass Elasmobranchii into the two orders Selachii (Sharks) and Batoidae (Saw-fishes, Guitar-fishes, Skates and Rays) depending on the position of gill openings, attachment of pectorals to head and presence or absence of eyelid. These authors stated that "no sharp lines can be drawn between the sharks on the one hand and the skates and