



**Suez Canal University
Faculty of Veterinary Medicine
Department of Fish Diseases &
Management**



Studies on the Prevailing Internal Parasitic Diseases in Some Marine Fishes in Ismailia Governorate

Thesis submitted by

Radwa Ismail Ali Gaafar

(M.V.Sc, 2015)

For

The Ph. D. of Veterinary Science, Fish Diseases and Management

Thesis Submitted to

Faculty of Veterinary Medicine, Suez Canal University

Supervision committee

Prof. Dr.

Dr.

Ismail Abd El-Moneim Mohamed Eissa

Maather Mohammed Mounir Taha El- Lamie

Prof. and Head Dept. of Fish Diseases

Ass. Pro. of Fish Diseases and Management

and Management

Faculty of Vet. Medicine, Suez Canal
University

Faculty of Vet. Medicine, Suez Canal University

Prof. Dr.

Mona Mohamed Abd El-Wahab

Head Researcher of food hygiene

Animal Health Research Institute, Ismailia Provincial Lab.

(2020)

AUTHOR	Radwa Ismail Ali Gaafar
TITLE	Studies on the Prevailing Internal Parasitic Diseases in Some Marine Fishes in Ismailia Governorate
FACULTY	Faculty of Veterinary Medicine
DEPARTMENT	Fish Diseases and Management
LOCATION	Ismailia
UNIVERSITY	Suez Canal University
DEGREE	PHD
DATE	2020
LANGUAGE	English
SUPERVISION COMMITTEE	Prof. Dr. Ismail Abdel-Moneim Mohamed Eissa Prof. Maather Mohammed Mounir Taha El-l-Lamie Prof. Dr. Mona Mohamed Abdel-Wahab
English Abstract	
<p>This study has been applied on a total of (400) marine fish of five species (100 <i>Alepes djedaba</i>, 100 <i>Dicentrarchus labrax</i>, 100 <i>Argyrosomus regius</i>, 40 <i>Saurida undosquamis</i> and 60 <i>Siganus revulatus</i>) of different body weights and lengths which were collected in different seasons from Ismailia Governorate from April 2018 to December 2019. The examined fish showed no pathognomonic clinical abnormalities and were apparently normal. Some <i>Argyrosomus regius</i> infested with digenea showed abdominal distention, pale coloration and emaciation. Affected <i>Dicentrarchus labrax</i> with digeneaniasis showed hemorrhagic areas on operculum, abrasion, ulcerations of fins and abdominal distention. On the other hand, liver was hemorrhagic and fatty in some examined <i>Argyrosomus regius</i>, slight marbling of gills with excessive mucus secretion, and slight abdominal bulging were also recorded. The total prevalence of infestation was 21 %. The highest percentage was in <i>Saurida undosquamis</i> 30% followed by <i>Dicentrarchus labrax</i> 20%, <i>Alepes djedaba</i> was 19%, in <i>Argyrosomus regius</i> 17% and then <i>Siganus revulatus</i> 11.66%. The isolated parasites were digenea (<i>Erilepturus hamati</i> , <i>Erilepturus tiegsi</i> , <i>Erilepturus lemeriensis</i>, <i>Acanthostomum spinices</i> , <i>Sclerodistomum sp.</i> and <i>Lecithochirium fusiformi</i>), larval cestodes (<i>Pseudogrillotia sp.</i> and <i>Callitetrarhynchus gracilis</i>), Nematodes(<i>Hysterothylacium aduncum</i> and <i>Procamallanus inopenatus</i>)and acanthocephalan parasites (<i>Neohydinorhynchus macrospinosus</i>).The histopathological alterations were recorded and discussed.</p>	

List Of Contents

Contents	Page
Introduction	1-3
Literature Review	4-26
Material And Methods	27-37
Results	38-77
Discussion	78-88
Conclusions	89
Summary	90-92
References	93-114
Arabic Summary	1-2

List of Figures

Figures	Page
Fig (1): A- <i>Alepes djedaba</i> , B- <i>Saurida undosquamis</i> , C - <i>Siganus revulatus</i> D- <i>Dicentrarchus labrax</i> and E- <i>Argyrosomus regius</i> .	27
Figure (2) : <i>Argyrosomus regius</i> showing abdominal distention and palness.	38
Figure (3): <i>Dicentrarchus labrax</i> showing hemorrhage at the base of fins .	39
Figure (4) <i>Dicentrarchus labrax</i> showing pale liver .	40
Figure (5) <i>Argyrosomus regius</i> showing hemorrhagic and fatty liver .	40
Figure (6) <i>Argyrosomus regius</i> showing hemorrhagic liver (arrow).	41
Figure (7) <i>Saurida undosquamis</i> showing paleness of liver with petechial hemorrhage , enlargement and congestion of intestine.	41
Figure (8) <i>Saurida undosquamis</i> showing presence of encapsulated plerocercoid of <i>Trypanorhyncha sp</i> in the body cavity.	42
Fig (9): Total prevalence of parasitic infestation among the examined fishes.	43
Fig (10): Total prevalence of Digenetic Parasitic infestation among examined fishes	45
Fig(11): Total prevalence of cestodiasis among the examined fishes .	46
Fig(12): Total prevalence of nematodiasis among the examined fishes.	47
Fig(13): Total prevalence of Acanthcephalosis among the examined fishes .	48
Fig (14): Seasonal prevalence of internal parasitic infestation among the examined fishes .	49
Fig (15): Seasonal prevalence of digeneasis among the examined fishes .	51
Fig (16): Seasonal prevalence of cestodiasis parasitic infestation among the examined fishes .	52

Figures	Page
Fig (17): Seasonal prevalence of nematodiasis among the examined fishes .	54
Fig (18): Seasonal prevalence of Acanthcephalosis among the examined fishes .	55
Fig (19) : Heavy infestation of digenetic trematodes . A- Isolated from one infested <i>D. labrax</i> B- Isolated from one infested <i>Argyrosomus regius</i> .	56
Fig.(20) <i>Erilepturus hamati</i> (Yamaguti, 1934). A: stained with Semichon's acetocarmine. B: unstained fluke . OS: Oral sucker, Ph: Pharynx, Vs: Ventral sucker, V: Vitellaria, O: Ovary, T: testes IC: intestinal caeca, EC: evaginated ecsoma .	58
Fig(21) A&B- <i>Erilepturus hamati</i> isolated from stomach of one <i>D. labrax</i> fish .	58
Fig.(22) : Stained <i>Erilepturus tiegsi</i> (Woolcock, 1935) with Semichon's acetocarmine . OS: Oral sucker, Prp: prepharynx, Ph: Pharynx, Vs: Ventral sucker, U: uterus, V: Vitellaria, O: Ovary, T: testes E: eggs, Ic: Intestinal caecae, Ec: Evaginated ecsoma.	59
Fig. (23): <i>Erilepturus sp.</i> (Yamaguti, 1934) A. Unstained fluke B. Stained fluke . with Semichon's acetocarmine and C. Different <i>Erilepturus</i> sp . isolated from one infested <i>Argyrosomus regius</i> . OS: Oral sucker, Ph: Pharynx, Vs: Ventral sucker, V: Vitellaria, O: Ovary, T: testes IC: intestinal caeca, EC: evaginated ecsoma .	61
Fig (24): Stained <i>Erilepturus lemeriensis</i> (Tubangui and Masilungan, 1935) with Semichon's acetocarmine . OS: Oral sucker, Ph: Pharynx, Vs: Ventral sucker, V: Vitellaria, O: Ovary, T: testes IC: intestinal caeca, EC: evaginated ecsoma .	62
Fig.(25) : Stained <i>Acanthostomum spiniceps</i> (Loose, 1899) with Semichon's acetocarmine. OS: Oral sucker, Prp: prepharynx, Ph: Pharynx, Vs: Ventral sucker, U: uterus, V: Vitellaria, O: Ovary, T: testes E: eggs .	64
Fig.(26) : Unstained <i>Lecithochirium fusiforme</i> (Lühe, 1901) . OS: Oral	65

Figures	Page
sucker, Ph: Pharynx, Vs: Ventral sucker, U: uterus, V: Vitellaria, O: Ovary, T: testes. IC: Intestinal Cecae, EC: Evaginated ecsoma, TG: Terminal genitalia.	
Fig (27): Unstained <i>Sclerodistomum</i> sp. (<u>Looss, 1912</u>). isolated from intestine of <i>Saurida undosquamis</i> . OS: Oral sucker, Ph: Pharynx, Vs: Ventral sucker, U: uterus, V: Vitellaria, T: testes.	67
Fig (28): Unidentified digenetic fluke isolated from mucosal scraping of gastrointestinal tract of <i>Alepes djedaba</i> .	67
Fig (29): <i>Pseudogrillotia</i> sp. A. Whole stained <i>Pseudogrillotia</i> sp. (<u>Dollfus, 1969</u>) with Semichon's acetocarmine , B. Scolex of <i>Pseudogrillotia</i> sp. and C. Bulbs organ or Retractor muscles . BO: bothridia, T: tentacles, TS: tentacle sheath, B: bulbs, PB: postbulbosa.	68
Fig (30): Stained <i>Callitetrarhynchus gracilis</i> (<u>Rudolphi, 1819</u>) with Semichon's acetocarmine. A. Encapsulated plerocercoid (blastocysts). B. Scolex of <i>Callitetrarhynchus gracilis</i> . And C. whole cestode . BS: blastocysts, BO: bothridia, T: tentacles, TS: tentacle sheath, B: bulbs, PB: postbulbosa.	70
Fig(31): Adult <i>Hysterothylacium aduncum</i> (<u>Rudolphi, 1802</u>) . isolated from intestine of <i>D. labrax</i> . A. Anterior part. B. High magnifications of head region. C. female posterior end. D. male posterior part. Vl: ventrolateral lips, Il: interlabium, Ep: excretory pore, Nr: nerve ring, Ao: Anal opening, spr: spinose process, S: spicules.	71
Fig (32): <i>Procamallanus inopenatus</i> (<u>Travassos, 1928</u>) A. Female anterior part , B. High magnifications of female cephalic end and buccal capsule , C. female posterior end , D. male anterior part , E. High magnifications of male cephalic end. and F. male posterior end. M: mouth, BC: buccal capsule, BR: basal ring, Moe: muscular oesophagus, Nr: nerve ring, Goe: glandular oesophagus, Sc: Striated cuticle Ao: anal opening, S: spicule, ap: anal papillae, Spr: spinose process.	72

Figures	Page
<p>Fig (33): Stained <i>Neohydinorhynchus macrospinosus</i> <u>Amin and Nahhas (1994)</u>. with Semichon's acetocarmine . A. Whole male <i>Neohydinorhynchus macrospinosus</i> , B. Whole female , C. anterior part showed the evaginated proboscis and proboscis sheath , D. high magnification of thorny proboscis with hooks , E. male posterior end and F. female posterior end. Tp: Thorny proboscis, Ps: proboscis sheath, Bc: body cavity, T: testes, Cg: Cement gland, Sp: Saeffigen,s pouch, B: bursa Ob: Ovarian balls.</p>	73
<p>Fig (34): Histopathological alterations : A.<i>Arygroromus regius</i> , stomach showing congestion of blood vessels, leukocytic infiltrations in both mucosa and submucosa with degeneration and necrosis of gastric mucosa. (X 200). H&E. B.<i>Saurida undosquamus</i> , stomach showing mechanical destruction of the gastric mucosa along with congestion and mild submucosal leucocytic infiltrations. (X 200). H&E. C. <i>Dicentrachus labrax</i> , stomach showing destruction, necrosis and sloughing of gastric mucosa along with submucosal and serosal congestion and leucocytic infiltrations. (X 200). H&E. and D. <i>Arygroromus regius</i> , intestine showing severe mechanical destruction of intestinal mucosa and extensive leukocytes infiltration. (X 200). H&E.</p>	75
<p>Fig (35): Histopathological alterations: A. <i>Arygroromus regius</i> , spleen showing mild hyperplasia of melanomacrophage centers, and mild necrosis of lymphocytes of white pulp. (X 200). H&E. B. <i>Alepes dejaba</i> , spleen showing severe multifocal hemorrhages and congestion. (X 200). H&E. C.<i>Arygroromus regius</i> , liver showing sever congestion of blood vessels, hyperplasia of hepatopancreas and mild vacuolar degeneration of hepatocytes. (X 200). H&E. D.<i>Saurida undosquamus</i> , liver showing congestion of blood vessels and mild degeneration and focal necrosis of hepatic cells. (X 200). H&E. E. <i>Dicentrachus labrax</i> , liver showing sever congestion of hepatic blood vessels and mild focal degeneration of hepatocytes. (X 200). H&E</p>	76

List of Tables

Tables	Page
Table (1): Number of the examined fish species per season .	28
Table (2): The number , body weight and length of the examined fishes .	29
Table (3): Total prevalence of parasitic infestation among the examined fishes.	43
Table (4): Total prevalence of digeneansis among the examined fishes .	44
Table (5): Total prevalence of cestodiasis among the examined fishes .	45
Table (6): Total prevalence of nematodiasis among the examined fishes .	46
Table (7): Total prevalence of Acanthcephalosis among the examined fishes .	47
Table (8): Seasonal prevalence of internal parasitic infestation among the examined fishes .	49
Table (9): Seasonal prevalence of Digeneasis among the examined fishes .	50
Table (10): Seasonal prevalence of cestodiasis among the examined fishes.	52
Table (11): Seasonal prevalence of nematodiasis among the examined fishes.	53
Table (12): Seasonal prevalence of Acanthcephalosis among the examined fishes .	54
Table (13): Seasonal prevalence of different internal parasitic infestations among the examined fishes .	56