

ATINER CONFERENCE PRESENTATION SERIES No: ZOO2018-0166

ATINER's Conference Paper Proceedings Series

ZOO2018-0166

Athens, 11 October 2019

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ATINER's Conference Paper Proceedings Series

ZOO2018-0166

Athens, 11 October 2019

ISSN: 2529-167X

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On *Anahemiurus microcercus* Manter, 1947 and *Podocotyloides petalophallus* Yamaguti, 1934 (Digenetic Trematodes) from *Epinephelus guaza* Marine Fish from Libya

ABSTRACT

50 specimens of *Epinephelus guaza* marine fish were collected from Missurata fish market in Libya. 2 different species of trematodes isolated from the intestine of fish were briefly redescribed. *Anahemiurus microcercus* Manter, 1947 and *Podocotyloides petalophallus* Yamaguti 1934. The parasites were identified to the species level. The highest incidence of infection (94%) was recorded by *Podocotyloides petalophallus* Yamaguti, 1934 and the lowest (20%) by *Anahemiurus microcercus* Manter, 1947. The update description agreed fully with the original description, but there are certain minor differences in the body shaped and some measurements. The present work extends our knowledge about the prevalence of trematode parasites in commercial fish *Epinephelus guaza* in the Mediterranean Sea in Libya. The present work is reported for the first time in Libya.

Keywords: parasites, marine, fishes, trematodes, Libya.

Introduction

The Mediterranean is a semi-enclosed Sea and polluted with several pollutants. In polluted Sea water, oxygen depletion, stress-induced mucus and larnellar lesions which support parasitic infestation on fishes, compounding an already stressful stat (Overstreet and Howsc, 1977).

The genus *Podocotyloides* was established by Yamaguti, 1934 with *P. petalophallus* from *Pledorhynchus pictus* in Japan. Masaaki Machida, 2014 described *Podocotyloides stenometra* Pritchard, 1966 from the intestine of *Heniochus varius* from Japan; it was added by Pritchard, 1966 Manter (1947) established the genus *Anahemiurus* recovered from *Calamus calamus*, *C. bajonado* and *Eucinostomus lefroyi* from Florida. Kurashvili (1958) described another species *A. trachuri* from the black Sea horse mackerel *Trachurus Mediterranean ponticus* from Black Sea.

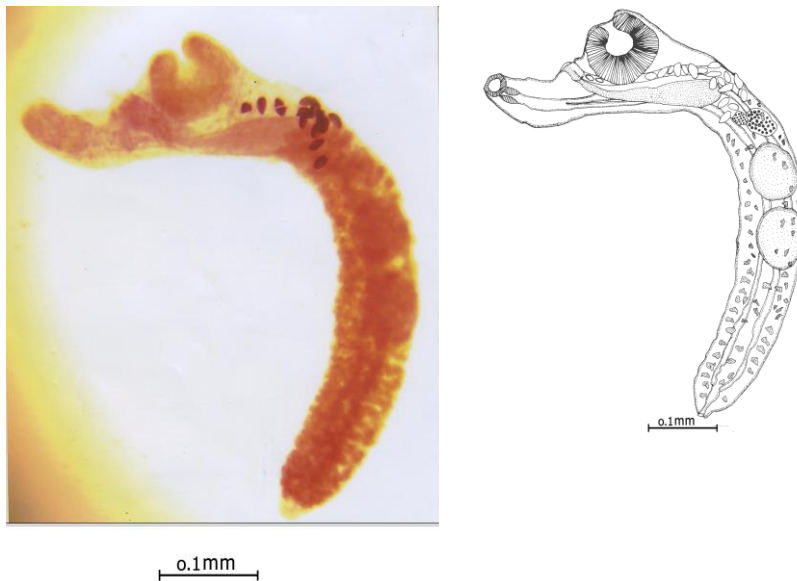
Overstreet et al. (2009) reported *Anahemiurus microcercus* Manter, 1947 from the intestine of *Calamus bajonado* marine fish in the Gulf of Mexico. In (2013) *Podocotyloides brevis* was added by Michael and Overstreet from *Grey Conger Eel* from the Caribbean Sea.

Christoph and Thomas (2013) reported *Podocotyloides parupenei* (Manter, 1963) Pritchard, 1966 was described from the intestine of *Parupeneus indicus* from northern Great Barrier Reef. Kurashvili (1958) added *Anahemiurus trachuri* from the intestine of *Trachurus mediterraneus ponticus* from Black Sea. Tripathi (2002) added *Anahemiurus manteri* n.sp. from the intestine of *Gadus sp.* fish from Chika Lagoon in Orissa, India. The aim of the present work is to extend our knowledge on the morphological, morphometrical analysis, prevalence and distribution of the above two species in marine fishes from the middle southern part of the Mediterranean Sea in Libya.

Materials and Methods

50 specimens of *Epinephelus guaza* marine fish were collected from Missurata fish market in Libya They were examined for helminth parasites inhabiting the intestine as soon as possible. Trematode parasites were first relaxed and then fixed in hot 70% alcohol or 5% formalin. The parasites were then stained using aceto-alum carmine stain (Al-Bassel, 1990). Drawings were made to the scale using a Camera Lucida. Measurements are in microns, unless otherwise stated. The identification of fishes as well as methods followed in collection fixation, staining, clearing and mounting were carried out by the usual way.

Figure 1. *I-Podocotyloides petalophallus* (Yamaguti, 1934)



The following description is based on twenty specimens: The body is elongate, slender, anterior extremity round, tapering to blunt point posteriorly, unspined, with acetabular stalk 2.35-3.85 long and 0.19-0.25 wide. Oral sucker nearly terminal 0.071-0.078 long and 0.082-0.089 wide. Acetabulum 0.12-0.13 long and 0.11-0.12 wide, usually retracted into stalk, latter 0.19-0.21 in length. Suckers ratio 0.6-0.8:1. Prepharynx, short 0.015- 0.016 in length. Pharynx relatively large, 0.049-0.052 long and 0.044-0.049 wide. Oesophagus long, 0.12-0.14 in length. Caecae bifurcate at level with acetabular stalk, narrow, terminating blindly at posterior extremity.

Testes lobed, intercecal, situated at the middle of the body. Anterior testis 0.19-0.19 long and 0.14-0.16 wide. Posterior testis 0.20-0.22 long and 0.15-0.17 wide. Cirrus sac commencing 0.19-0.21 posterior to acetabular stalk, bipartite, proximal part saccular 0.10-0.11 long and 0.060-0.070 wide, distal part narrowing to longer tubular. Seminal vesicle filling cirrus sac 0.080-0.090 in length. Genital pore situated between oral sucker and ventral sucker. Ovary deeply lobed, lying pretesticular, 0.088-0.96 long and 0.082-0.086 wide. Seminal receptacle small lying immediately anterior to ovary 0.070-0.072 long and 0.050-0.054 wide. Uterus containing 12-20 eggs in single file, coiled between ovary and cirrus sac. Metraterm long, thick walled, without muscular sphincter. Virelline follicles large, round to oval in shape, extending from seminal receptacle to posterior extremity. Eggs yellow-brown, operculated each measuring 71-75 μ m long and 27-29 μ m wide. Excretory bladder unbranched, tubular, extending anteriorly to about the level of ovary. It appears only in live specimens and opens by terminal excretory pore.

Discussion

Pritchard (1966a) emended the genus *Podocotyloides* Yamaguti, 1934 and recognized five species therein from Indo-Pacific fishes. Pritchard (1966b) described a sixth species from Hawaii (Fischthal and Thomas, 1970). *Podocotyloides chioroscombri* originally described by Fischthal and Thomas, 1970 from the small intestine of *Chioroscombrus chrysurus* in Ghana. Yamaguti (1971) considered *Podocotyloides* as a valid genus.

The present material is similar to the original description but the present description added more details about the body length, testes, ovary and eggs. It is worth to mention that *P. petalophallus* is reported for the first time in Libya. The species is also recorded from new host viz *Epinephelus guaza*.

Figure 2. *Anahemiurus Microcercus* (Manter, 1947)



The following description is based on 10 specimens isolated from *Epinephelus guaza* from fish market of Missurata, Libya: Body small elongate, entirely covered with scales, 1864-1964 long and 647-667 width. Oral sucker is small, 101-111 long and 125-130 width. Pharynx small, 70-80 long and 55-65 width. Ventral sucker larger than oral sucker, lies near anterior extremity, it measures 226-236 long and 234-244 width. Cirrus pouch spherical 140-145 in diameter and contains internal seminal vesicle and metraterm which opens together into hermaphrodite duct which opens by genital pore behind pharynx. External seminal vesicle is tubular elongate 140-150 in length. Testes equal, each 78-88 long and 148-158 width and lies behind ventral sucker in each side of the body. Ovary behind testes and lies in the left side of the body 101-111 long and 187-197 width. Vitellaria composed of two compact mass immediately behind ovary each measures 140-150 long and 101-110 width. Uterus is coiled occupied the middle third of the body, it contains a large number of eggs, each measures 39-

46 long and 20-25 width. Excretory bladder appears in live specimens and ends by excretory pore in the posterior extremity.

Manter (1947) established the genus *Anahememiurus* recovered from *Calamus calamus*, *C. bajonado* and *Eucinostomus lefroyi* from Florida, to accommodate the type species *A. microcercus*. Kurashvili (1958) described another species *A. trachuri* from the black Sea horse mackerel *Trachurus Mediterranean ponticus* from Black Sea. Overstreet et al. (2009) reported *Anahememiurus microcercus* Manter, 1947 from the intestine of *Calamus bajonado* marine fish in the Gulf of Mexico. Kurashvili (1958) added *Anahememiurus trachuri* from the intestine of *Trachurus mediterraneus ponticus* from Black Sea. Tripathi (2002) added *Anahememiurus manteri* n.sp. from the intestine of *Gadus sp.* fish from Chika Lagoon in Orissa, India. The present work agreed fully with the original description, but there are certain minor differences and added detailed measurements about cirrus pouch and seminal vesicle (Table 1). The present work represents new host and locality record.

Table 1. A Comparison between Previous Descriptions and Present Work

Characters	Manter,1947	A. Tripathi,2002	Present description
Body length	0.375- 0.926	1.07- 1.77	1.86-1.96
Body width	0.150- 0.331	0.36- 0.52	0.64- 0.66
Tegument	Scaled on fore body	Scaled on anterior half of body	Scaled on all body
Oral sucker	0.036- 0.070 in diameter	0.08-0.11 X 0.17-0.21	0.10-0. 11X 0.12-0.13
Prepharynx	-----	Absent	Absent
Pharynx	-----	0.04- 0.06 X 0.04-0.05	0.07-0.08X0.05-0.06
Ventral sucker	0.082- 0.174 in diameter	0.16- 0.21 in diameter	0.22-0.23 X0. 23-0.24
Caecae	0.085 x 0.065	Extend upto middle third of body	Extend upto middle third of body
Cirrus pouch	-----	-----	0.140- 0.145
External seminal vesicle	-----	-----	0.14-0. 15 in length
Testes	Oblique	Symmetrical 0.05-0.18X0.07-0.18	Oblique 0.07-0.08X 0.14-0.15
Ovary	Ovoid	0.06-0.12X 0.11-0.15	Ovoid 0.10-0.11X0.18-0.19
Vetellaria	Compact, unlobed masses	Two compact lobed masses	Two compact 0.14-0.15 X0.10-0.11
Egg	19-28 X10-12 μ	16-24 X12-16 μ	39-46 X 20-25 μ
Excretory vesicle	United dorsal to pharynx	United anterior to pharynx	United dorsal to pharynx
Host	<i>Calamus spp.</i> and <i>Eucinostomus lefroyi</i>	<i>Gadus sp.</i>	<i>Epinephelus guaza</i>
Locality	Tortugas, Florida	Chilka lagoon,India	Missurata , Libya

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