

The First Record of *Mappates plataxus* Rangnekar, 1958 (Copepoda: Siphonostomatoida: Caligidae) Parasitic on Longfin Batfish *Platax teira* (Pisces: Ephippidae) from Marine Waters of Iraq

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Abstract: A total of 267 females of the parasitic copepod *Mappates plataxus* Rangnekar, 1958 (Siphonostomatoida: Caligidae) was recorded from gill filaments of the longfin batfish *Platax teira* (Forsskal, 1775) for the first time in Iraq from the marine waters of the Arab Gulf. *P. teira* is considered as a new host for *M. plataxus* in Iraq. With this record, the total number of identified species of the family Caligidae from fishes of Iraq reached 11 identified species in addition to some unidentified species of the genera *Abasia*, *Anuretes* and *Caligus*. Also, *P. teira* is now considered as a host for six parasite species (three monogeneans, two acanthocephalans and one copepod) in Iraq.

Keywords: *Mappates plataxus*, Parasitic copepod, *Platax teira*, Iraqi marine waters.

INTRODUCTION

The family Caligidae currently comprises well over 400 described species in 32 genera. Infestations with caligid copepods and their impacts range from mild skin damage to stress-induced mortality of the fish (Costello, 2006). *Mappates plataxus* was reported by Rangnekar (1957, 1958), Yamaguti (1963), Kabata (1964), Pillai (1967), Hameed & Pillai (1973), Pillai (1977), Kabata (1979), Dojiri (1983), Prabha & Pillai (1983) and Pillai (1985). Al-Hasson (2015) gave an account on the parasites infecting *P. teira* as well as the blood picture and some of the biochemical aspects of gill tissues of the infected fishes with this parasite.

Platax teira is distributed in Indo-West Pacific, Red Sea and East Africa to Papua New Guinea, north to the Ryukyu Islands, south to Australia, Bay of Islands, New Zealand (Froese & Pauly, 2017). Also, it is known in the Arab Gulf (Carpenter et al., 1997). *P. teira* is an active carnivore, lives in sheltered bays as well as deep offshore, commonly found around shipwrecks in small groups and occasionally forms large schools (Froese & Pauly, 2017). *P. teira* is known as a host for seven parasitic copepod species (*Anuretes anomalus*, *A. branchialis*, *A. indicus*, *A. plataxi*, *Caligus rotundigenitalis*, *Mappates plataxus* and *Pseudanuretes schmitti*) worldwide (Froese & Pauly, 2017). However, only one copepod species (*A. branchialis*) is known on this fish in Iraq (Adday, 2013). Large number of *M. plataxus* were observed in gill arches of *P. teira* caught off Khor Al-Umaya, northwest Arab Gulf. The aim of the present study is to detect and identify the parasitic crustaceans from *P. teira* in marine waters of Iraq.

MATERIALS AND METHODS

A total of 14 specimens of the longfin batfish *P. teira* ranging from 39.2-52.8 cm in total length and 2222-5442 gm in total weight were examined for ectoparasites during the period from October 2013 till the end of July 2014. They were captured by trawl net from the Iraqi marine waters, northwest of the Arab Gulf (latitudes 47° 30' to 48° 15'; longitude 30° 50' to 30° 00'). The fishes were transported to the laboratory, and copepod parasites were removed from the gill filaments and kept in 70% ethanol. Before dissection, the copepods were cleared in lactophenol using the wooden slide method (Humes & Gooding, 1964). Measurements were made by using an ocular micrometer. Drawings were made by using a camera Lucida. Copepods were identified on the basis of their morphological features according to Yamaguti (1963). Some specimens were sent to Prof. Dr. Geoffrey A. Boxshall, Department of Zoology, Natural History Museum, London for confirmation of the identification.

RESULTS

During the period of this study, 14 specimens of *P. teira* were collected and a total of 267 specimens of *M. plataxus* were found in gill filaments of 10 specimens of these fishes. Here are the information about the hierarchy of this parasite according to WoRMS (2017) and other necessary information about its infection.

Phylum Arthropoda
Subphylum Crustacea
Class: Hexanauplia

Subclass Copepoda

Order: Siphonostomatoida

Family: Caligidae

Mappates plataxus Rangnekar, 1958

Host: *Platax teira* (Forsskål, 1775) (Perciformes: Ephippidae)

Site of infection: Gills.

Prevalence of infection: 71%.

Mean intensity: 27.

Locality: Northwest Arab Gulf within the Iraqi territorial waters.

Material deposition: Seven voucher specimens were deposited in the Natural History Museum, London (accessions NHMUK 2014.56-62).

Description and Measurements

The following is a brief description and measurements (in mm) based on five female specimens:

Female: Body length 2867-3134, cephalothorax (Fig. 1) large in comparison to body, 1721-2845, with no posterior sinuses, and greatly elongated thoracic zone covering anterior half of genital complex. Dorsal transvers trip rib almost at same level as posterior tip of lateral zone, antennule not extending to lateral limit of cephalothorax.

Fourth pedigerous somite wider than long, approximately 116 x 473 hidden in dorsal view by elongation of thoracic zone, and completely covered ventrally by apron of third leg. Genital complex ovoid, much wider than long, 589 x 1035. Abdomen apparently fused to genital complex, and highly reduced in size. Caudal ramus (Fig. 2C) much longer than wide, 70 x 41 and bearing five plumose setae.

Egg sacs 4442 x 268 containing 44-50 eggs. Antennule (Fig. 3G) consists of two segments, basal segment 164 long carrying 22-26 seta and hook on posterodistal corner. Distal segment 120 long. Antenna with blunt spine like process at base. Remaining segments include claw. Postantennal process absent.

Mouth tube slender, much longer than wide. Intrabuccal style on inner surface of labrum near frons labra, a lobe with styliiform process at tip. Strigil presents on distal end of labium. Mandible (Fig. 3H) with elongate third section, 96 long. Terminal section long and bearing 12 teeth. Maxillule (Fig. 3I) consisting of usual group of three setae and associated process. Process in shape of broad lobe not highly sclerotized and situated adjacent to mouth tube. Maxilla brachiform, with flabellum near base of canna. Calamus long, slender and possessing three serrated membranes. Canna short, broad and spinulated. Corpus maxillipedis with corrugated

pad on outer distal corner. Shaft and claw long usual seta at junction of shaft and claw not observed. Sternal furca absent.

Plumose seta at junction of sympod and exopod of leg 1 (Figs. 2B, D) not covered by ventral protrusion. First segment of exopod with short spiniform seta at outer distal corner and long setules on inner margin. Pinnate seta 4 much shorter than outermost spine. Spines 1 and 2 with pectinate memberane at their bases. Spines 1, 2 and 3 with spinules; spines 2 and 3 with accessory processes at distal ends. Leg 2 (Fig. 2A) of usual caligid form. Outer spine of first expodal segment very long, bilaterally spinulated and reaching to distal limit of terminal segment. Other three spines on outer margin shorter; all bilaterally spinulated. Apron of third leg carrying dorsal adhesion pads. Rami of leg 3 apparently 2-segmented. First segment of exopod indistinguishably fused to apron, but represented by exopodal spine. Basal swelling and terminally situated spine partially fused and highly sclerotized. Second segment of exopod with usual three smooth lateral seta and four inner plumose setae. First segment of endopod unarmed, but with usual outer hairs. Distal segment with three plumose setae and setules on outer margin. Leg 4 (Fig. 3F) with sympod armed with one plumose seta on outer distal corner, and large patch of spinules on dorsal surface. Exopod bearing five setiform spines, with all three segments fused. Leg 5 a lobe armed with three plumose setae, situated on posterolateral protrusion of genital complex. Additional plumose seta situated near base of protrusion (Figs. 1-3).

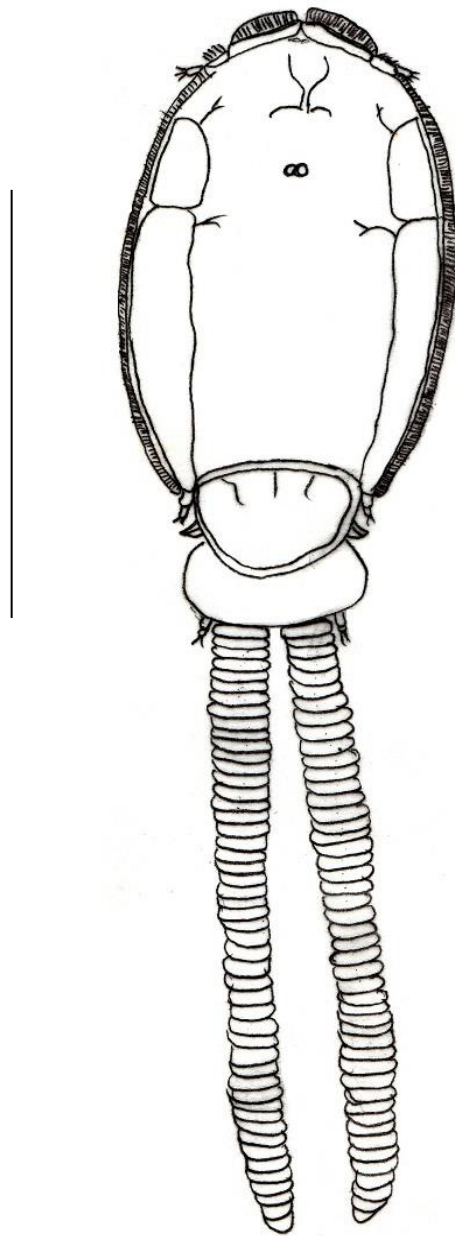


Figure 1: *Mappates plataxus*. Scale bar= 0.4 mm.

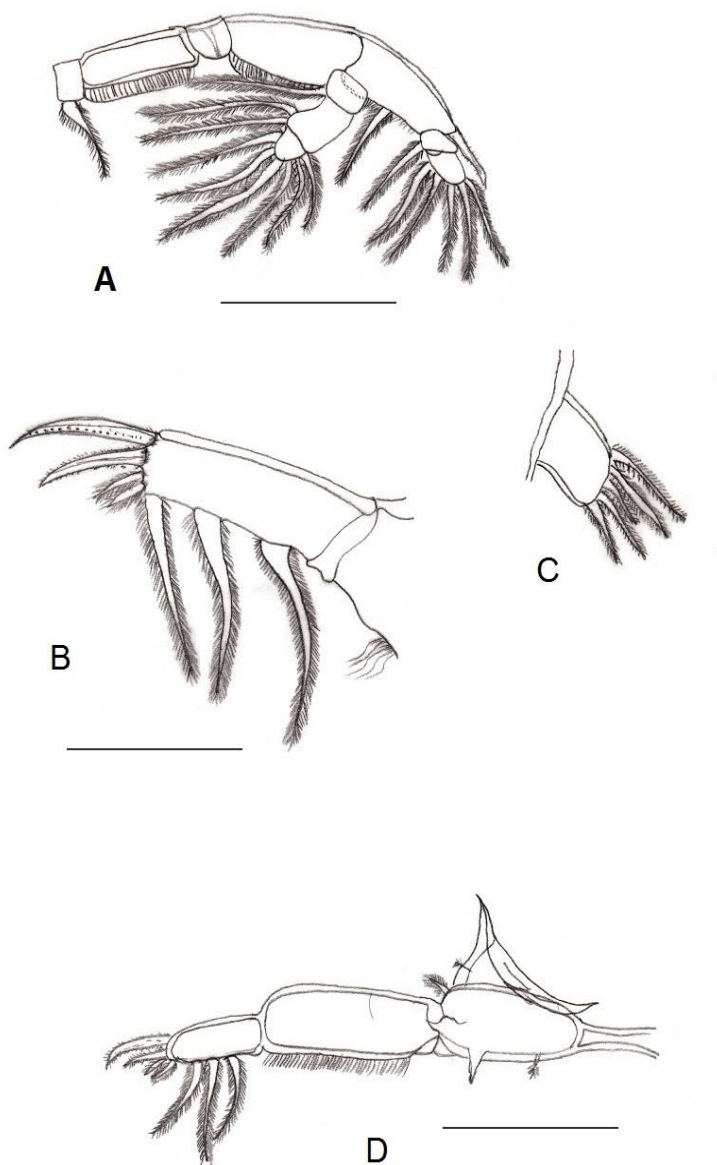


Figure 2: *Mappates plataxus*.

A: 2nd Leg and intercoxal plate; B: Distal portion of exopod of 1st leg; C: Caudal ramus; D: 1st Leg, ventral. Scale bar= 0.1 mm.

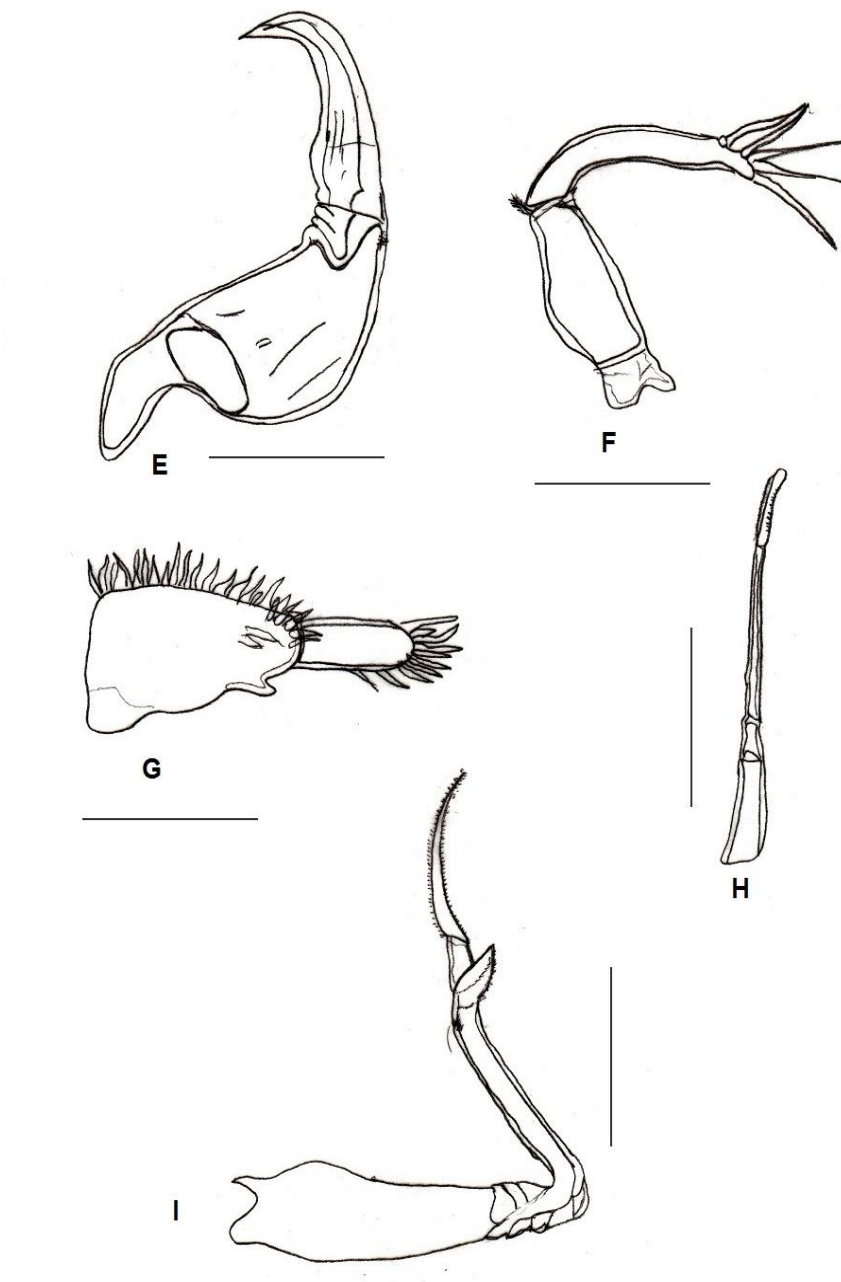


Figure 3: *Mappates plataxus*.

E: Maxilliped, dorsal; F: 4th Leg; G: Antennule; H: Mandible;
I: Maxilla, dorsal. Scale bar= 0.4 mm. for E, F, H, I and 0.1 for G.

DISCUSSION

M. plataxus was first described from the gill filaments of *P. teira* from Bombay, India by Rangnekar (1958). Also, it was reported by Hameed & Pillai (1973) from *P. teira* from Kerala coast, India. Pillai (1977) and Prabha & Pillai (1986) reported it from *Drepane punctata* off India. Pillai (1985) reported it based on specimens isolated from *P. teira*. He gave a comparison between *Anuretes*, *Mappates* and *Pseudanuretes* and concluded that the differences between these genera are based on leg 4 which has very little importance in identification of generic value. Hence, *M. plataxus* recorded here for the first time in Iraq, and *P. teira* is considered as a new host for this parasite in Iraq.

With the present record of *M. plataxus* from *P. teira*, the total number of the identified species of the family Caligidae so far reported from Iraq reached 11 identified species (three species of *Anuretes*, four species of *Caligus*, three species of *Hermilius* and the present *M. plataxus*) in addition to some unidentified species of the genera *Abasia*, *Anuretes* and *Caligus* as extracted from the index-catalogue of parasites and disease agents of fishes of Iraq (Mhaisen, 2017). Also, *P. teira* is now considered as a host for six parasites species in Iraq which included three monogeneans, one copepod and two acanthocephalans (Mhaisen, 2017).

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