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New record of *Protochondracanthus alatus* (Heller, 1865) (Copepod: Cyclopoida) infesting gill filaments of *Psettodes erumei* fishes North West Arabian gulf

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Abstract

In the present study ten specimens of flat fish *Psettodes erumei* were collected from Al-Fao market South of Iraq, eight of them were infected with the parasitic copepod *Protochondracanthus alatus*, which characterized by the body of the adult female is elongated and depressed, head oval, longer than wide. The parasite of current study show similarity with *Protochondracanthus alatus* were described by (Heller, 1865) and therefore is now considered as new record in Iraqi marine water.

Keywords: Copepoda, *Protochondracanthus alatus*, *Psettodes erumei*, fish parasite Arabian Gulf

Introduction

The modern classification of the family Chondracanthidae was established by Oakley (1927, 1930). He transferred the family from the order Lernaepodoida to the order Cyclopoida, divided the family into two subfamilies, rejected some apparently non-chondracanthid and poorly defined old genera, and subdivided the Chondracanthus-complex into six genera. The family was then composed of 13 genera and 38 species. Since that time, the Chondracanthidae has grown rapidly in number with 25 new genera and 131 new species having been added.

Copepods play a dual role in the life of fish. Some of them free-living, symbiotic internal or external parasites on almost every phylum of animals in water, special organs of attachment are developed in the parasitic forms. Some of the copepods that affect wild fish are of commercial significance as they affect host survival or cause unsightly changes in the flesh, (Fajer *et al.*, 2011, Andrews *et al.*, 2010)^[2, 1].

The gills are favorite site for the attachment of several parasitic copepods, they damage the gills by feeding on the delicate tissue of the gill lamellae or on the blood circulating within the lamellae, leading to loss of respiratory surface area (Pillai, 1985)^[3]. Flat fishes are the most preferred hosts of chondracanthids (Ho, 1994)^[4]. *Protochondracanthus alatus* was recorded from the Indian Ocean regions, Singapore, India, Kerala and Bombay, Sri Lanka, Pakistan, Taiwan and Arabian Gulf (Pillai, 1964, Ho *et al.*, 2011, Mohamed *et al.*, 2013)^[5, 6, 7], the bigmouth flounder (*Psettodes erumei*) is specific host to *Protochondracanthus alatus*

In Iraq, *protochondracanthus alatus*, is the first registration of Iraqi marine fishes.



Fig 1: *Protochondracanthus alatus*, adult female, *Psettodes erumei* fish

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Materials and Methods

Ten fish samples of *Psettodes erumei* were collected from Al-Fao market northwest Arabian Gulf, during the year 2013. The fish samples were thereafter transported to the laboratory of Marine Science Center. And were examined for infestation with parasitic copepods.

Copepods parasites were removed from the gills of infected fishes and preserved immediately in 4% formalin, for the microscopically examination of the parasites, the preserved specimens were rinsed in water, transferred and kept in 70% alcohol for 24 hours before clearing in 85% lactic acid (Lucky, 1977) [8], the sample of parasite was sent to Dr. Maknases for identification and fish identified according to (Kuronuma & Abe, 1986) [9].

Results and Discussion

Kingdom: Animalia

Phylum: Arthropoda

Class: Maxillopoda

Order: Poecilostomatoida

Family: Chondracanthidae

Genus: *Protochondracanthus*

Species: *Protochondracanthus alatus* (Heller, 1865)

The description based on 2 specimens, Total length, and female 4.3 mm. body is elongated and depressed, head oval, longer than wide composed of cephalosome only and poster laterally into a small process. (. Neck region is a little narrower than the head, bearing a pair of tripartite, lateral processes on both sides. Trunk segments completely fused. Anterior part of trunk is bearing a pair of long, lateral processes in front and another pair of short posterior processes at end and a vermiform process at mid posterior end. The parasite of current study shows similarity with *Protochondracanthus alatus* Neck region is a little narrower than the head, bearing a pair of tripartite, lateral processes on both sides. Trunk segments completely fused. Anterior part of trunk is bearing a pair of long, lateral processes in front and another pair of short posterior processes at end and a vermiform process at mid posterior end. Genito-abdominal somites are short, wider than long, carrying a pair of conical caudal rami. Egg sac is longer than the body.

According to Ju-Shey HO (1970) [10] Two subfamilies and 30 genera are recognized. And according to the Heller (1865) Four species of the genus of *Protochondracanthus* are register: *Protochondracanthus alatus* (Heller, 1865), *Protochondracanthus trilobatus* (Pillai, 1964) *Protochondracanthus psettodis* Kirtisinghe, 1950 and *Protochondracanthus alatus*.

Flat fishes are the most preferred hosts of chondracanthids. *Protochondracanthus alatus* was recorded from the Indian Ocean regions, Singapore, India, Kerala, Bombay, Sri Lanka, Pakistan and Taiwan, the results show that the bigmouth flounder *Psettodes erumei* is host specific of the *Protochondracanthus alatus*. Eight species of chondracanthid copepods (Poecilostomatoida) were recovered from nine species of flatfishes collected in Kerala, India. They are: *Acanthochondria zebriae* sp. nov. from *Zebrias synaturoides*; *Bactrochondria papilla* gen. et sp. nov. from *Cynoglossus dubius*; *B. hoi* (Pillai, 1985) from *C. lida*; *Heterochondria pillai* Ho, 1970 from *C. lida*, *Pseudorhombus arsius*, *P. elevatus*, *P. javanicus* and *P. triocellatus*; *H. petila* sp. nov. from *P. arsius*, *P. javanicus* and *P. triocellatus*; *H. similis* (Yu and Wu, 1932) from *C. azureus*; and both *Protochondracanthus alatus* (Heller, 1868) and *P. trilobatus*

(Pillai, 1964) from *Psettodes erumi*. (Ju-Shey Ho, Il-Hoi Kim & A. Biju Kumar 2010).

Investigations of parasitic copepods from the North-West Indian Ocean along the Arabian Gulf coast are scarce. From the coastal of Kuwait, Ho and Kim (1999) [11] have reported *Irodes kuwaitensis* (Copepoda, Taeniacanthidae) from the goatfish, *Upeneus sulphureus*.

The parasite of current study was agrees in all major details with the previous descriptions of the with *Protochondracanthus alatus* described by (Heller, 1865), and the parasite is considered as newly record in Iraqi marine waters.

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