

## ***Ceratothoa italica* (Schioedte & Meinert, 1883) on *Oblada melanura* (Linnaeus, 1758) from Tripoli, Libya**

Sumaya Mustafa Allamoushi

Department of Biology, Faculty of Education Qaser Bin Ghashir, University of Tripoli, Libya

E-mail: [S.alrazaky@uot.edu.ly](mailto:S.alrazaky@uot.edu.ly)

### **Abstract**

*Ceratothoa* is one of the widespread genera that parasitizes a wide world of fish, including *Oblada melanura* (Saddled of seabream). A total of 56 *O. melanura* fish were collected during the months of February and March of 2018; The results of this study showed the presence of the male parasite *Ceratothoa italica* in the buccal cavity of the male *O. melanura*, and the infection rate was 1.8%; The relationship between the total length and weight of the fish was negative allometric.

### **المخلص**

تعتبر *Ceratothoa* أحد الأجناس المنتشرة بشكل واسع والتي تتطفل على مجموعة كبيرة من الأسماك منها سمكة الكحلة *Oblada melanura* تم تجميع 56 سمكة كحلة خلال شهري فبراير ومارس لسنة 2018؛ أوضحت نتائج هذه الدراسة وجود ذكر الطفيلي *Ceratothoa italica* داخل التجويف الفمي لذكر سمكة الكحلة، وكانت نسبة الإصابة 1.8%، كما اتضح أن العلاقة بين الطول الكلي و الوزن للأسماك الومتری سالب.

**Key words:** *Oblada melanura*, *Ceratothoa italica*

### **Introduction**

Sea isopods play an important role in the food web, especially in eliminating the putrefied substances from natural or altered environments and they also represent a significant part of economic non-equilibrium [1]and [2]. Most of the parasitic species on the fish from Isopod belong to the family Cymothoidae , *Ceratothoa* is belong to the family Cymothoidae [3], which are ectoparasites on marine fish and fresh-water fish that parasitizes in the buccal cavity or in surface of the body of fish or the gills chamber[4] and [5].

*Ceratothoa italica* [6] is one of the species of the genus *Ceratothoa* they feed by sucking the host's blood [5]. The reported geographic distribution *Ceratothoa italica* was found in the Atlantic Sea, the Mediterranean and north-western Africa [7]; [8]; [9]; [5] and [10].

infesting several species of marine fish, including: *Diplodus annularis*, *Sargus sp.* *Pagellus mormyrus*, *Pagellus erythrinus*, *Cantharus lineatus*, *Dicentrarchus labrax*, *Spicara maena* and *Oblada melanura* [8]; [5].

The Saddled seabream fish, *Oblada melanura* (Linnaeus, 1758) belongs to the Sparidae family of the order perciformes, it is an important part of the food web and is distinguished by the presence of the black

spot at the neck of the tail, it feeds on algae, small crustaceans and fish larvae; *O. melanura* (L, 1758) is a common coastal marine fish, it is found in several regions of the world, including: Mediterranean Bay of Biscay, Libya, Madeira, Cape Verde, and Canary Island [11]; [12] and [13]. There are many scientific studies on the biological manifestation of *O. melanura* and the parasitic diseases that infect them. [8]; [14]; [9]; [5] and [13]; are infected with several ectoparasites such as: *Anilocra frontalis* and *Ceratothoa spp* [9]; [15] and [16].

Due to the lack of parasitic studies on *O. melanura* fish on the Libyan coast, the aim of this study was to identify the macroscopic external ectoparasitic species that belong to the Cymothoidae.

### Material and methods

The study was conducted on the coast of Tripoli- Libya during the months of February and March of 2018, where 56 *O. melanura* fish were collected from the local fish market. The external examination of the fish (buccal cavity, gills and body surface) was carried out, and ectoparasites were collected, washed with saline solution several times, and kept in tubes containing 70% alcohol, the parasites were examined using light microscopy, and they were identified using international taxonomic keys [8] and [17].

Measurements of the total length and total weight of the fish were taken to find out the growth factor by finding the length-weight relationship according to the equation  $W = a L^b$ , [18] and [19], where:

W= total weight (g).

L= total length (cm).

a, b Constants; a: describe the rate of change of weight at unit length (slope). Also fish were dissected to know the sex.

### Result and Discussion

The parasitism relationship is important in knowing biodiversity and ecological balance. Crustacean ectoparasites are associated with a several of fish species in fresh or marine water. From studies conducted in the southern Mediterranean, [20], recorded the infection of rabbitfishes with the parasite of the Cymothoida; [21], showed an infection of *Boops boops* with *Ceratothoa parallela*, [22], showed infection with the parasite *Ceratothoa capri* of *Pomatomus saltatrix*; [23] recorded an infection with *Trachurus trachurus* of the *Lernaeolophus Sultanus*.

*Oblada melanura* are Osteichthyes these belong to the Sparidae which are omnivorous fish [12] are infected with several species of Crustacean ectoparasites of the genus *Ceratothoa*, such as, *Anilocra*

*physodes* and *Ceratothoa sp* [9]. In this study, the male parasite *Ceratothoa italica* was isolated from the buccal cavity of a male *O. melanura* fish with a total length of 21 cm and a weight of 42g (Fig. 1).



**Fig. 1. Morphology of *Oblada melanura***

**Taxonomy of parasites**

Order: Isopoda

Sub order: Cymothoidea Wägele, 1989

Super Family: Cymothoidea Leach, 1814

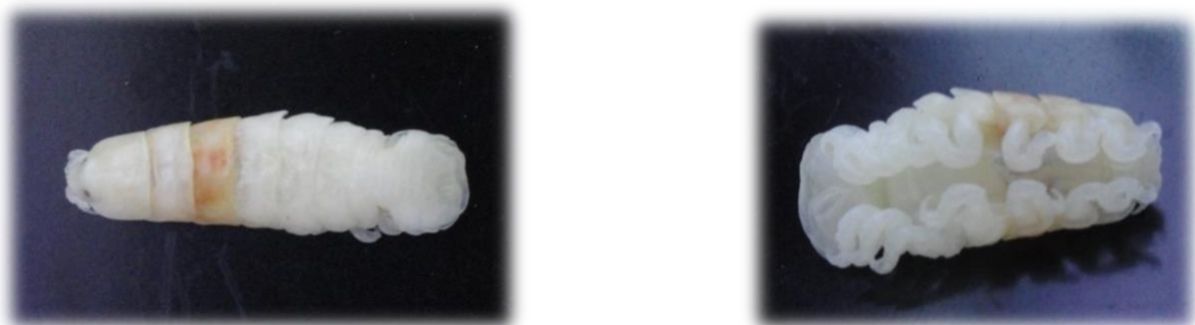
Family: Cymothoidea

Sub Family: Ceratothoa Dana, 1852

*Ceratothoa italica*

**Description of *Ceratothoa italica*:**

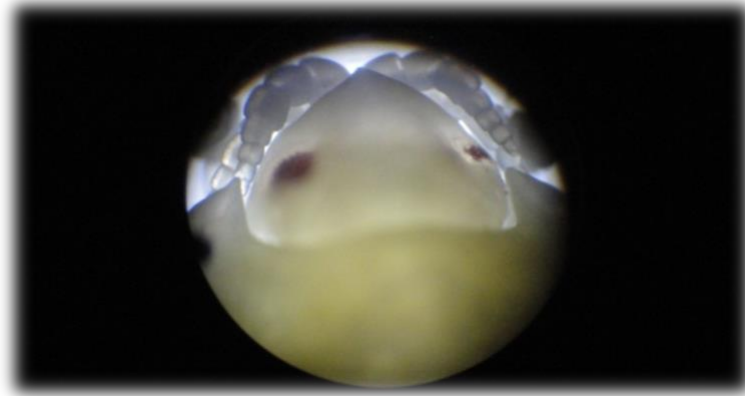
*Ceratothoa italica* is distinguished by a elongated and rectangular body shape; the dorsal part appears smooth (Fig. 2 a,b). The Cephalon is prominent from the dorsal side of the first thoracic segment. Its



**Fig.2 *Ceratothoa italica* (a) dorsal view (b) ventral view**

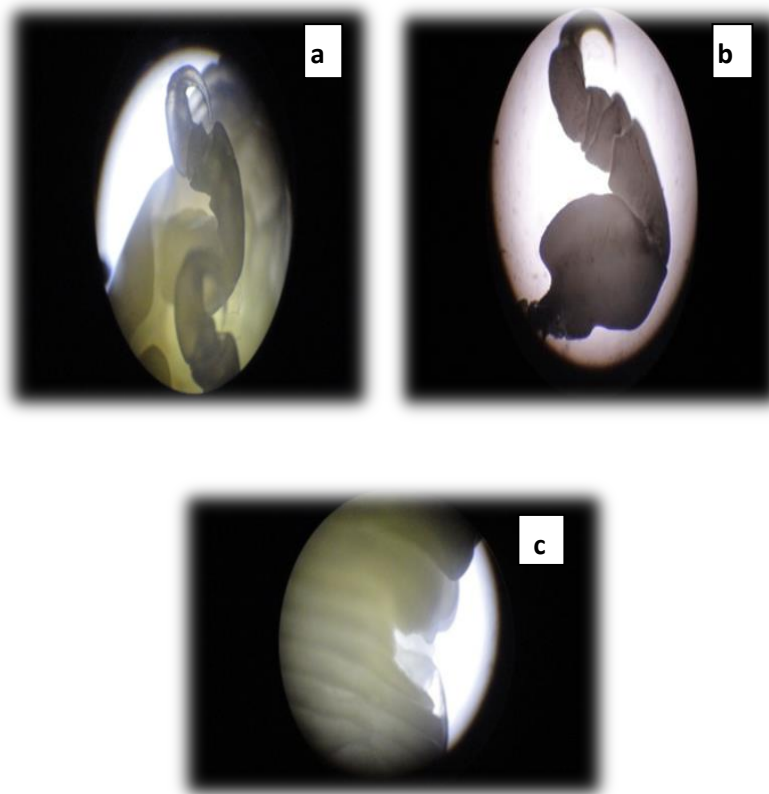
length is about half times the width, and it bears two pairs of antennae, and it has clear and distinct lateral eyes as shown in Figure 3

□



**Fig. 3. Cephalon of *Ceratothoa italica***

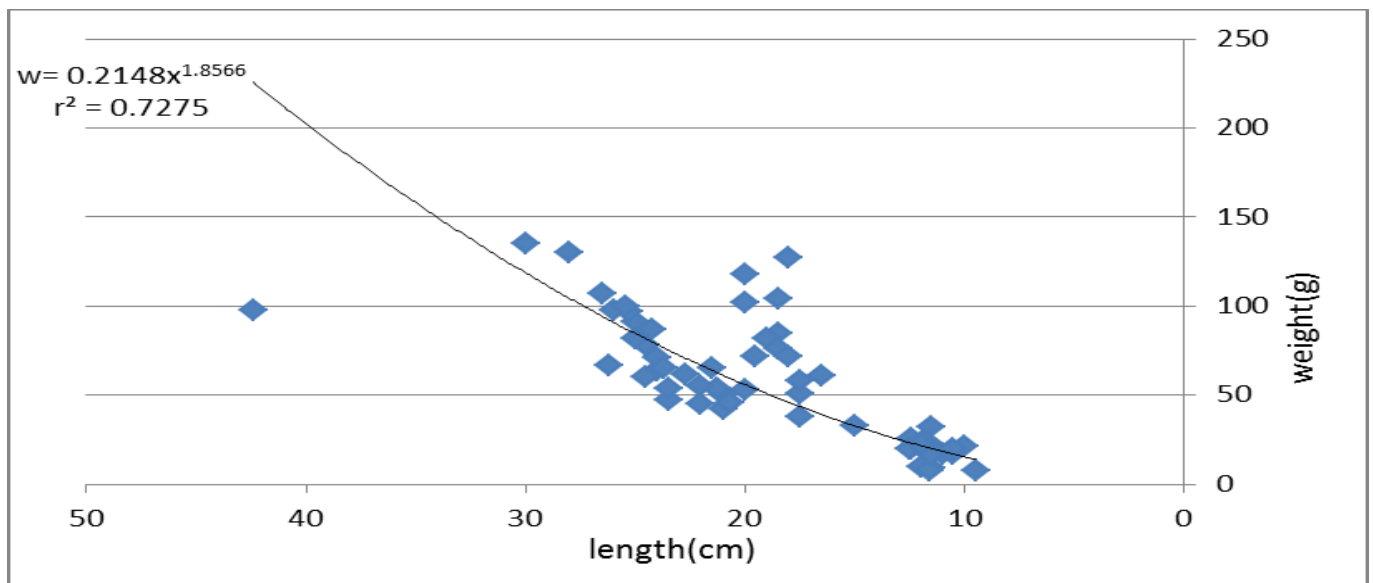
The parasite's body contains seven dorsal segments carrying seven pairs of peripods "lateral legs" (Fig. 4a); prominent expansions of the merus of the peripods (Fig. 4b); there is an expansions of pereonite 5 and pereonite 6, pleotson wider than pereonite (Fig. 5); Uropods do not extend past the pleotelson.



**Fig. 4. *Ceratothoa italica* (a) first peripoda (b) seventh peripoda (c) pleotson**

### Length-weight Relationship:

It appeared from finding the relationship between length and weight that the growth rate of the host was negative allometric (Fig. 5), where the value of  $b = 1.8566$  and this is consistent with a study carried out by each of [24]; [27]; [29]; [25]; [28] and [26]. While it differs with other studies in which the relationship of length - weight was positive allometric [30]; [31].



**Fig. 5. Length- weight relationship of *Oblada melanura***

### The rate of infection of the fish with the parasite:

In this study, it was found that the percentage of infection *O. melanura* fish with the *C. italica* parasite was (1.8%), this differs from the study of [9], where the percentage of infection with this parasite in *Dicentrarchus labrax* and *Spicara maena* was (20.6%), (11.4%), respectively, and differs from the the study of [5], where the presence of this parasite was recorded in *Diplodus annularis* (4.17%).

### Remark:

The parasite *C. italica* is found in several geographical areas Mauritania, Northwest of Africa, Adriatic Sea, and Mediterranean; *C. Italica* infects several species of fish, including: *Pagellus mormyrus*, *P. erythrinus*, *Oblada melanura*, *Cantharus lineatus*, *Sargus sp*, *Spondyliosoma cantharus*, *Lithognathus mormyrus*, *Dicentrarchus labrax*, *Diplodus annularis*, and *D. sargus* [8]; [5]; [10]; [32]. This indicates that there is a variation in species of host fish that the parasite infects.

## Conclusion

The genus *Ceratothoa* has a wide distribution, including several species parasitizing on fish, an examination of the *Oblada melanura* (buccal cavity, gills, and body surface) was conducted for 56 *O. melanura* (Saddled seabream), where it was found that a male *O. melanura* fish was infected inside the buccal cavity with a male *Ceratothoa italica* parasite, and the percentage of infection was 1.8%, and it was found that the relationship between total length and total weight of the fish was negative allometric.

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