

SOME MORPHOLOGICAL CHARACTERS OF FEMALE OF *MOTHOCYA EPIMERICA COSTA*, 1851 (FLABELLIFERA: CYMOTHOIDAE) FROM SEA OF MARMARA

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ABSTRACT

Mothocya epimerica Costa, 1851 (Flabellifera: Cymothoidae) is a cymothoid parasite of fishes belonging to Atherinidae (*Atherina hepsetus*, *Atherina boyeri*) from Mediterranean Sea, Black Sea and Atlantic Ocean. Öktener and Sezgin (2000) recorded this parasite for the first time in Turkey. The mentioned authors presented some morphological characters, although, some characters are not explained in the publication. Some morphological characters seen on the mandible, maxilliped, maxilla, maxillae and the spines on pleopods of the female of *M. epimerica* are shown. The characters presented in our study are based on the drawings made from collected specimens.

RESUMEN: Algunas características morfológicas de hembras de *Mothocya epimerica* Costa, 1851 (Flabellifera, Cymothoidae) del Mar de Marmara.

Mothocya epimerica Costa, 1851 (Flabellifera: Cymothoidae) es un parásito de peces perteneciente a Atherinidae (*Atherina hepsetus*, *Atherina boyeri*) del Mar Mediterráneo, Mar Negro y Océano Atlántico. Öktener y Sezgin (2000) presentaron este parásito por primera vez procedente de Turquía. Ellos mostraron algunas características morfológicas, no obstante algunas características no están explicadas en la publicación. Algunas de las características vistas en la mandíbula, maxilípedos, maxilares, maxílulas, y las espinas sobre los pleópodos de hembras de *M. epimerica* son mostradas en este estudio. Dichas características están basadas en dibujos hechos a partir de especímenes recogidos.

REZUMAT: Caractere morfologice la femelele de *Mothocya epimerica* Costa, 1851 (Flabellifera: Cymothoidae) din Marea Marmara.

Mothocya epimerica Costa, 1851 (Flabellifera: Cymothoidae) este un parazit al peștilor din familia Atherinidae (*Atherina hepsetus*, *Atherina boyeri*) din Marea Mediterană, Marea Neagră și Oceanul Atlantic. Öktener și Sezgin (2000) au fost primii care au înregistrat acest parazit în Turcia. Autorii menționati au prezentat câteva caractere morfologice, dar unele caractere nu sunt explicate în articolul lor. În această lucrare, sunt prezentate câteva din caracterele morfologice pentru femela de *M. epimerica* observate pe mandibulă, maxiliped, maxilă, maxilulă și pe spinii peopodelor. Caracterele prezentate în acest studiu sunt bazate pe desenele făcute pentru specimenele colectate.

INTRODUCTION

Crustacean ectoparasites on marine fish are diverse. Many species of fish are parasitized by cymothoids (Crustacea, Isopoda, and Cymothoidae). These parasitic isopods are blood-feeding. Several species settle in the buccal cavity of fish, others live in the gill chamber or on the body surface including the fins (Brusca, 1981; Trilles, 1994).

The cymothoid fauna of Turkey has received no attention until a *Ceratothoa* sp. was reported from *Boops boops* (Linnaeus, 1758) (Perciformes: Sparidae) (Monod, 1931). Several years later, a number of studies have given some systematic records about several cymothoids parasitizing Turkish wild and cultured fishes (Kirkim, 1998; Tokşen, 1999; Öktener and Trilles, 2004; İnnal et al., 2007; Öktener et al., 2009; Kayis and Er, 2012).

The aim of the present study is to give some morphological characteristics of female *Mothocyta epimerica* from the gill chamber of *Atherina boyeri*, to add more information on the descriptions given by Montalenti (1948), Trilles (1968, 1976) and Bruce (1986).

MATERIAL AND METHODS

The fish samples were collected by trawl and local gears from Bandırma Bay in 2014. The body surface, oral cavity and branchial chamber of each fish were examined for isopod parasites. The parasites were dislodged from their host and preserved directly in labelled tubes with 70% ethanol. The identification, scientific names and synonyms of parasite and host classification, were presented in Trilles (1968, 1976, 1994), Bruce (1986), Montalenti (1948), WoRMS Editorial Board (2014), Fricke et al. (2007) and, Froese and Pauly (2014). Drawings were performed using a stereomicroscope (Wild M5) with a *camera lucida* and a compound microscope (Olympus CH20). Measurements were taken in micrometres with a micrometric programme (Pro-way). Bruce (1986) was a consultant for terminology. Parasites (MNHN-IU-2013-18750) were deposited in the collections of the Muséum National d'Histoire Naturelle (MNHN), Paris, France.

RESULTS

Mothocyta epimerica was collected from the branchial chamber region of ten *Atherina boyeri* of among one hundred fifty specimens examined (prevalence = 6.6%).

Order Isopoda

Family Cymothoidae Leach, 1814

Mothocyta epimerica Costa, 1851

Syn. *Mothocyta epimerica* Costa, in Hope, 1851

Ceratothoa atherinae Gourret, 1892

Livoneca sinuata Brian, 1912

Mothocyta epiremica Brian, 1921

Description of female.

The body is slightly twisted to the right side, elongated, and about 2.8 times longer than wide (Figs. 1 and 2). The dorsum is weakly vaulted, the anterior margin of cephalon is slightly rounded, large eyes, 0.63 times width of cephalon, and the distance between them about 36% of head width. Pereon is about 0.65 as wide as long, pereonites one is longest and pereonite seven is shortest, posterolateral margins of pereonite seven is slightly rounded and produced in dorsal view. Pleon is about 0.4 as long as wide; all pleonites visible in dorsal view, but pleonite one is partially concealed by pereonite seven, pleonites two-five are entirely conspicuous in dorsal view, two-four subequal in length, and pleonite is five slightly longer and wider than the others. Pleotelson hemispherical is 0.66 times as long as wide and posterior margin rounded.

Maxilla medial and lateral lobes each with two curved spines, medial lobe is covered with small spines (Figs. 6, 7 and 10A); maxillule with four terminal spines (Figs. 8 and 10B); maxilliped article three with four recurved spines (Figs. 4, 5 and 10C); mandible palp article three (Figs. 9 and 10D); Antennule with eight articles, generally extending to the middle of eye (Figs. 2 and 10E), antenna with eight articles, slender than antennule, not extending to anterior of pereonite one (Figs. 3 and 10F).

Pereopods almost similar, pereopod one is the longest, pereopod six is the shortest, and pereopod one is much longer than pereopod seven (Figs. 11A-G).

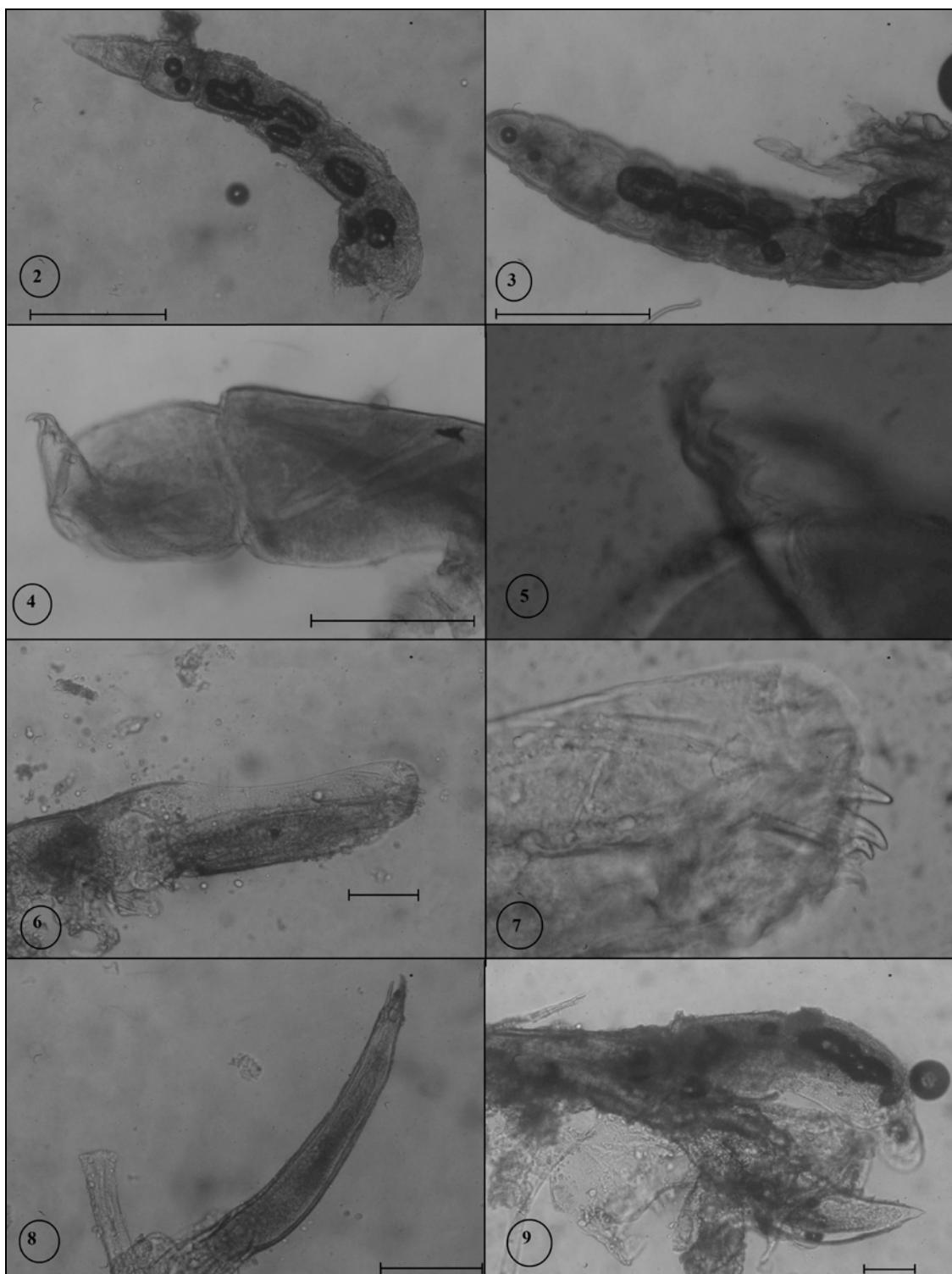
Pleopods with all rami lamellar, peduncles of pleopods with four hooks (Figs. 12A-E); endopod five with proximomedial lobe moderately developed.

Coxae conspicuous in dorsal view and posterior margins rounded; coxae two-six not produced beyond posterior of respective segments, coxae of pereonites seven extending slightly beyond posterior of segment (Figs. 13A-B). Uropod short, not extending beyond posterior margin of pleotelson, exopod slightly longer than endopod (Fig. 13C).

White or brown in alcohol, densely covered by black chromatophores over dorsal surfaces, dactylus brown.



Figure 1: Female *Mothocyia epimerica* (scale five mm).



Figures 2-9: 2. Antenna (0.23 mm); 3. Antenna (0.26 mm); 4. Maxilliped (0.32 mm);
5. Maxilliped spines; 6. Maxilla (0.15 mm); 7. Maxilla spines (two mm);
8. Maxillule (0.35 mm); 9. Mandible (0.11 mm).

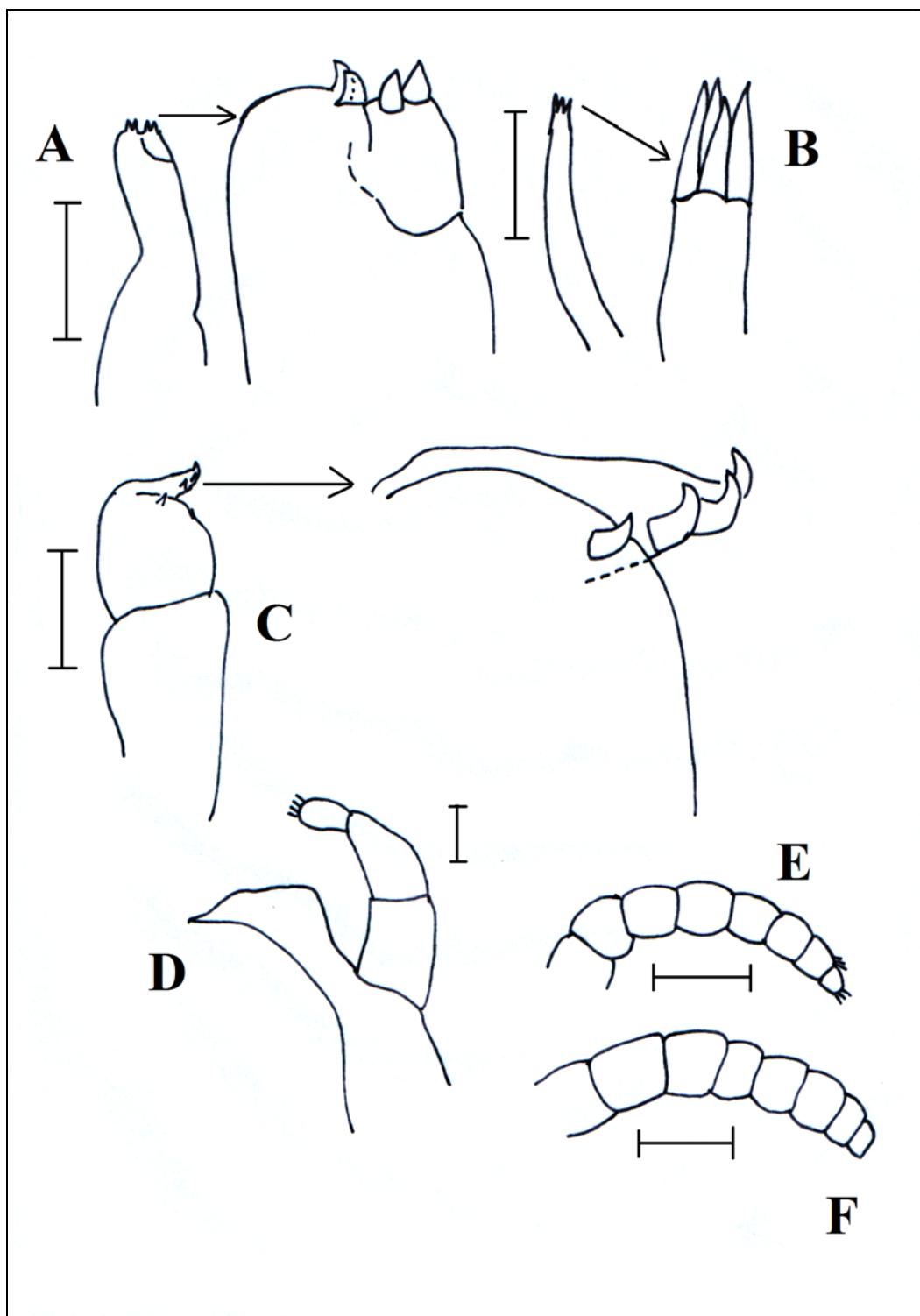


Figure 10: A: Maxilla (0.25 mm); B: Maxillule (0.35 mm); C: Maxilliped (0.40 mm);
D: Mandible (0.11 mm); E: Antenna (0.26 mm); F: Antennule (0.23 mm).

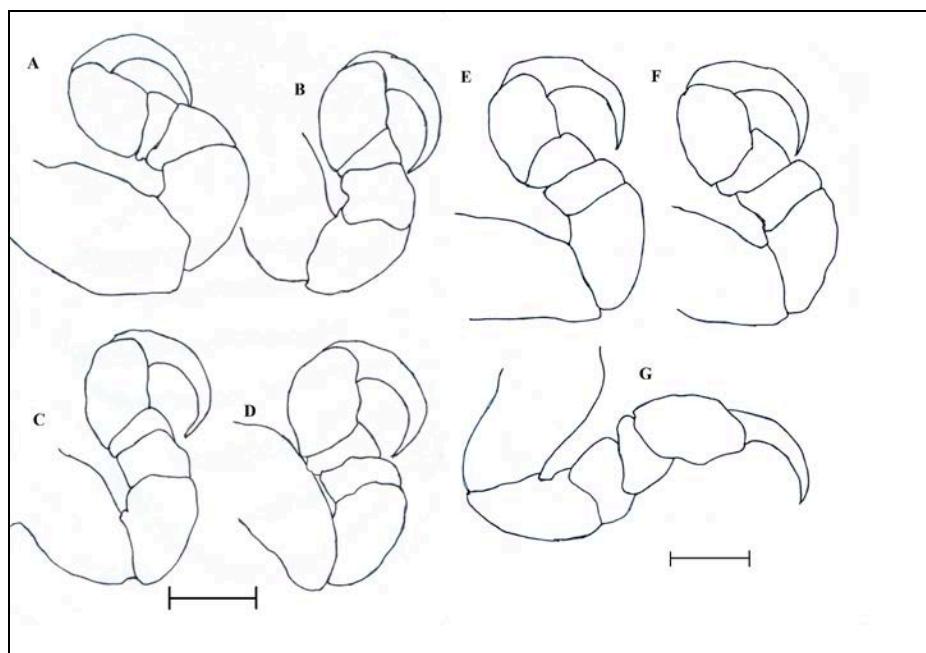


Figure 11: A. Pereopod I; B: II; C: III; D: IV; E: V; F: VI; G: VII (0.75 mm).

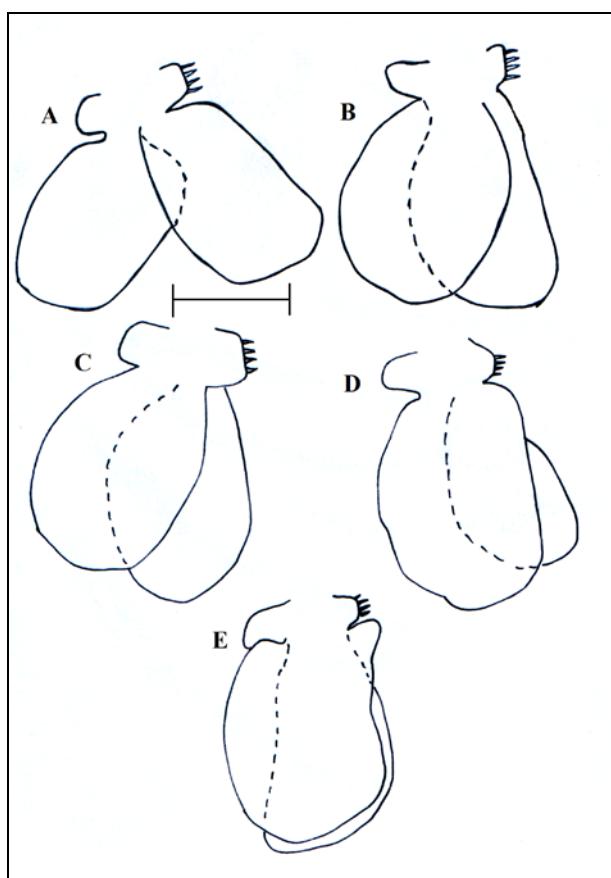


Figure 12: A: Pleopod I; B: II; C: III; D: IV; E: V. (one mm).

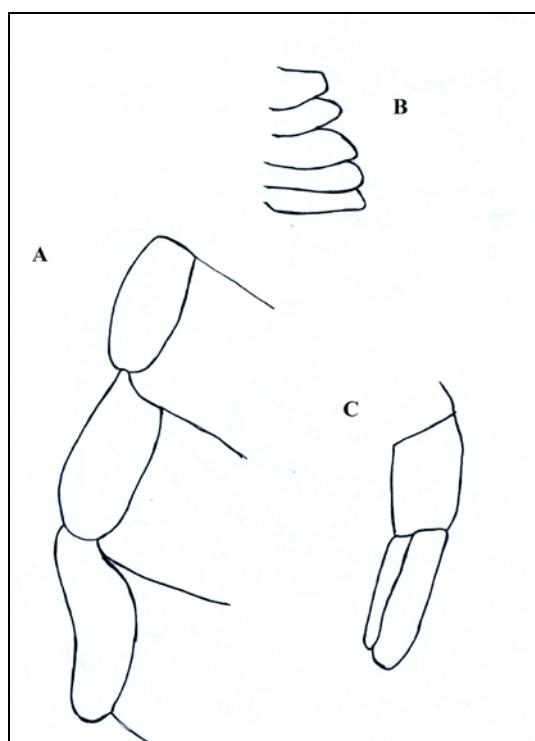


Figure 13: A: Coxae of left side; B: Pleonites, ventral view (left); C: Uropod.

DISCUSSION

Öktener and Sezgin (2000) recorded *Mothocyta epimerica* for the first time in Turkey. They gave some morphological characters: antenna, antennule, pereopod and pleopod, but some characters were not explained in their publication.

After Trilles (1994) gave the distribution of *Mothocyta epimerica* from the Mediterranean Sea, Black Sea, Adriatic, Atlantic, later, some records of it were published by Mariniello and Di Cave (1992), Bello et al. (1997), Charfi-Cheikhrouha et al. (2000), Öktener and Sezgin (2000), Leonardos and Trilles (2003), Ramdane et al. (2006), Trilles (2008), and Ramdane et al. (2009).

Mothocyta epimerica is only associated with fishes belonging to the family Atherinidae. It was collected from *Atherina hepsetus*, *Atherina boyeri* (synonyms: *Atherina rissoii*, *Atherina mochon*) (Trilles, 1994).

Examination of the parasite specimens showed that they were *M. epimerica* according to the general drawings and descriptions given by Bruce (1986), Trilles (1968, 1976), Montalenti (1948). Their general body shapes, maxillule with four terminal spines, maxilla with two curved spines on medial and lateral lobes, mandible palp article three without setae, antennule and antenna with eight articles, maxilliped article three with four recurved spines, and pleopods two with four hooks agree with the drawings given by Bruce (1986), Trilles (1968, 1976), and Montalenti (1948).

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