

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/304538678>

# Some Morphological Characters of Female of *Mothocya epimerica* Costa, 1851 (Flabellifera: Cymothoidae) from Sea of Marmara

Article in *Transylvanian Review of Systematical and Ecological Research* · December 2015

DOI: 10.1515/trser-2015-0063

CITATIONS

0

READS

125

3 authors:



**Ali Alaş**

Necmettin Erbakan University

73 PUBLICATIONS 469 CITATIONS

[SEE PROFILE](#)



**Ahmet Öktener**

independant researcher

143 PUBLICATIONS 1,116 CITATIONS

[SEE PROFILE](#)



**Dilek Türker**

Balıkesir University

65 PUBLICATIONS 391 CITATIONS

[SEE PROFILE](#)

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

Ali ALAŞ \*\*\*Ahmet ÖKTENER \* and Dilek TÜRKER \*\*

\* Department of Biology, A. K. Education Faculty, Necmettin Erbakan University, B Block, Meram, Konya, Turkey TR-42090, alasali@hotmail.com

\*\* Department of Fisheries, Sheep Research Institute, Çanakkale Street km 7, Bandırma, Balıkesir, Turkey, TR-10200, ahmetoktener@yahoo.com

\*\*\* Department of Biology, Science Faculty, Balıkesir University, Cagış Campus, Balıkesir, Turkey, TR-10300, dilekturkercakir@hotmail.com

**KEYWORDS:** *Mothocya*, mandible, maxilliped, maxilla, maxillae.

**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 Mármara.

*Mothocya epimerica* Costa, 1851 (Flabellifera: Cymothoidae) es un parasito cymothoide de peces perteneciente a Atherinidae (*Atherina hepsetus*, *Atherina boyeri*) del Mar Mediterráneo, Mar Negro y Océano Atlántico. Öktener y Sezgin (2000) presentaron este parasito 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, maxilulas, 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 menționați 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 speciemenele colectate.

## INTRODUCTION

Crustacean ectoparasites on marine fish are diverse. Many species of fish are parasitized by cymothoids (Crustacea, Isopoda, 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 (Kırkım, 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 characters of female *Mothocya 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).

## MATERIALS AND METHODS

The fish samples were collected by trawl and local gears from Bandırma Bay in 2014. The body surface, buccal 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, 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); 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 consultant for terminology. Parasites (MNHN-IU-2013-18750) were deposited in the collections of the Muséum National d'Histoire Naturelle (MNHN), Paris, France.

## RESULTS

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

### Order Isopoda

Family Cymothoidae Leach, 1814

***Mothocya epimerica* Costa, 1851**

*Syn: Mothocya epimerica* Costa, in Hope, 185

*Ceratothoa atherinae* Gourret, 1892

*Livoneca sinuata* Brian, 1912

*Mothocya epimerica* Brian, 1921

### Description of female.

Body slightly twisted to right side, elongate, about 2.8 times longer than wide; (Figs. 1 and 2). dorsum weakly vaulted; anterior margin of cephalon slightly rounded; eyes large, 0.63 times width of cephalon, distance between them about 36% of head width. Pereon about 0.65 as wide as long, pereonites 1 longest and pereonite 7 shortest, posterolateral margins of pereonite 7 slightly rounded and produced in dorsal view. Pleon about 0.4 as long as wide; all pleonites visible in dorsal view, but pleonite 1 partially concealed by pereonite 7, pleonites 2-5 entirely conspicuous in dorsal view, 2-4 subequal in length, pleonite 5 slightly longer and wider than the others. Pleotelson hemispherical, 0.66 times as long as wide, posterior margin rounded.

Maxilla medial and lateral lobes each with 2 curved spines, medial lobe covered with small spines (Figure 6, 7, 10A); maxillule with 4 terminal spines (Figure 8, 10B); maxilliped article 3 with 4 recurved spines (Figure 4, 5, 10C); mandible palp article 3 (Figure 9, 10D); Antennule with 8 articles, generally extending to the middle of eye (Figure 2, 10E), antenna with 8 articles, slender than antennule, not extending to anterior of pereonite 1 (Fig. 3, 10F).

Pereopods almost similar, pereopod 1 longest, pereopod 6 shortest, pereopod 1 much longer pereopod 7 (Figure 11A-G).

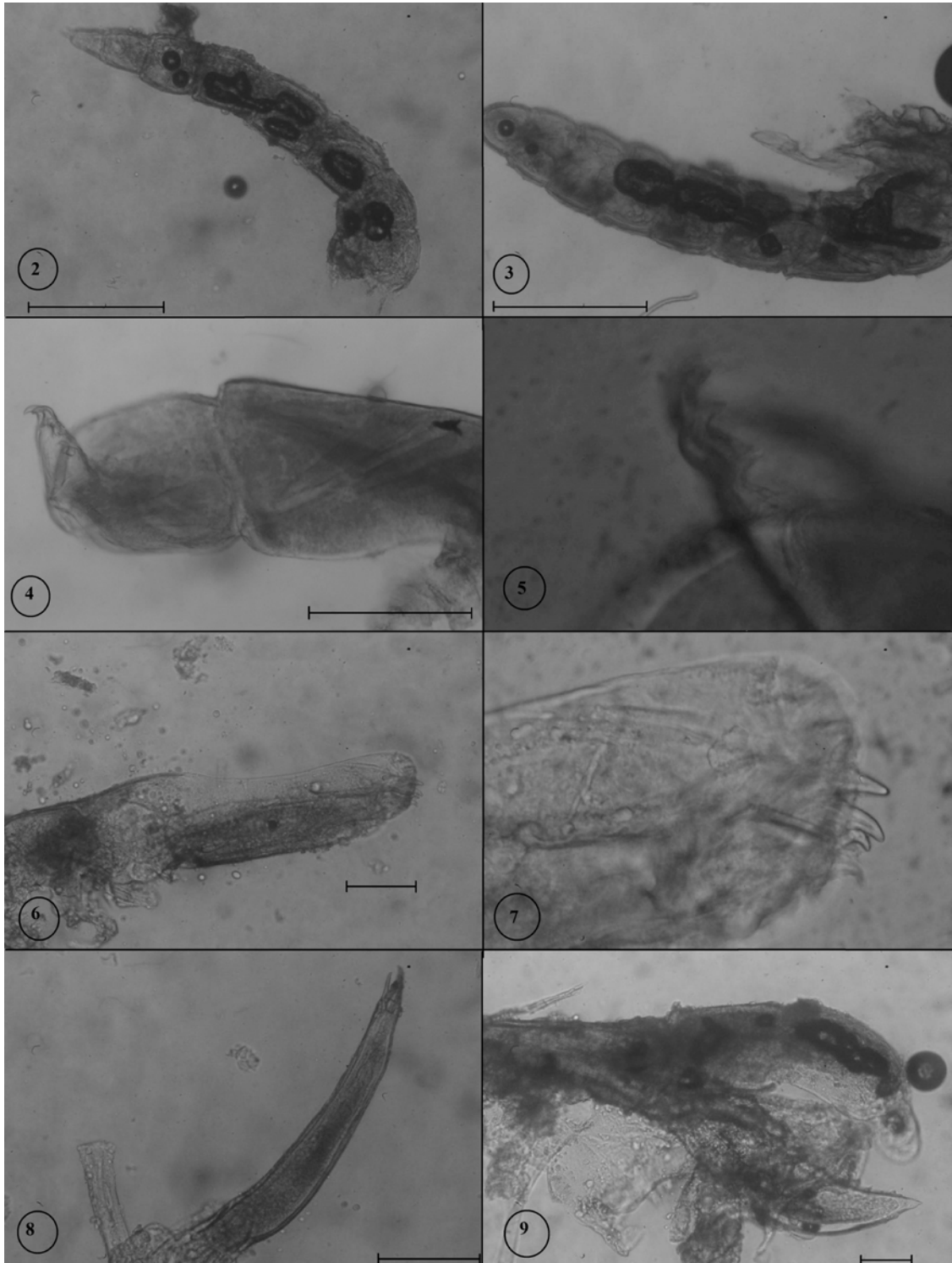
Pleopods with all rami lamellar, peduncles of pleopods with 4 hooks (Figure 12A-E); endopod 5 with proximomedial lobe moderately developed.

Coxae conspicuous in dorsal view and posterior margins rounded; coxae 2-6 not produced beyond posterior of respective segments, coxae of pereonites 7 extending slightly beyond posterior of segment (Figure 13A, 13B). Uropod short, not extending beyond posterior margin of pleotelson, exopod slightly longer than endopod (Figure 13C).

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



Figure 1: Female *Mothocya epimerica* (scale 5 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 (2 mm), 8. Maxillule (0.35 mm), 9. Mandible (0.11 mm).

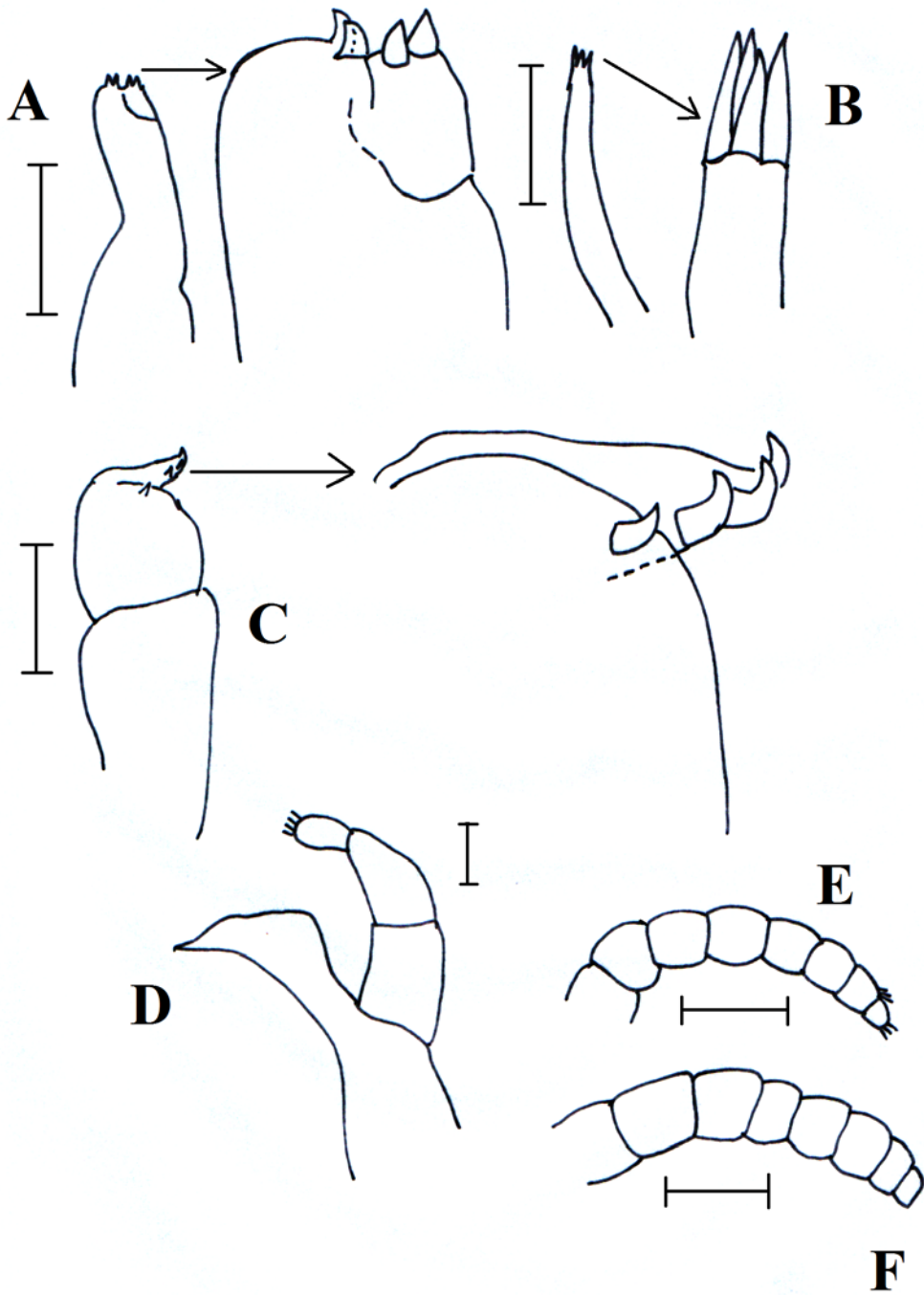


Figure 10: A: Maxilla (0.25 mm), B: Maxillule (0.35 mm), C: Maxilliped (0.40 mm), D: Mandible (0.11 mm), E: Antenna (0.26 mm), F: Antennule (0.23 mm).

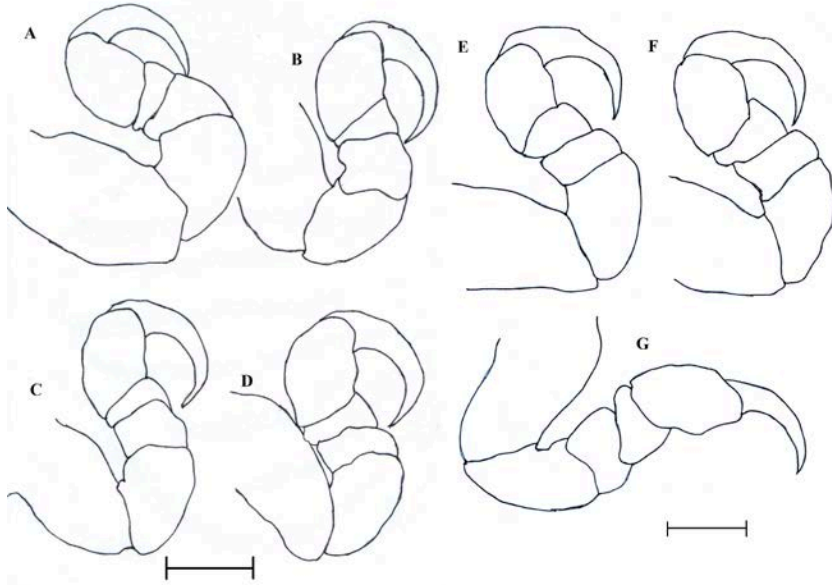


Figure 11: A. Pereopod I, B: II, C: III, D: IV, E: V, F: VI, G: VII (0.75mm).

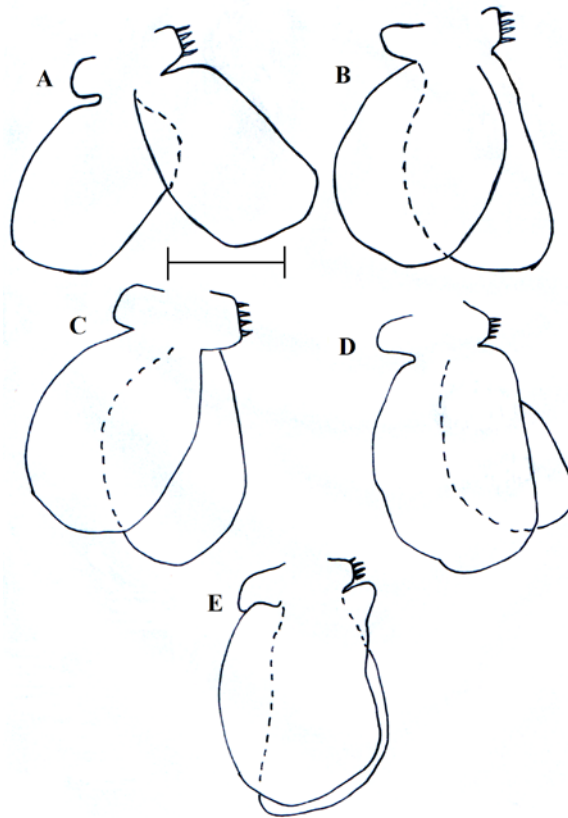


Figure 12: A: Pleopod I, B: II, C: III, D: IV, E: V. (1mm).

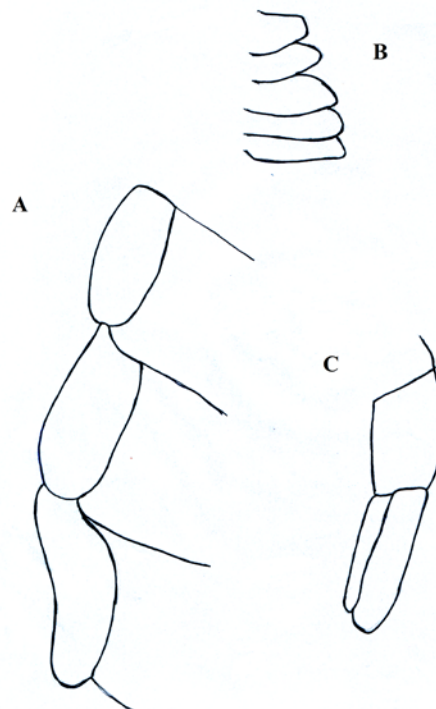


Figure 13: A: Coxae of left side, B: Pleonites, ventral view (left), C: Uropod.

### DISCUSSION

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

After Trilles (1994) gave the distribution of *Mothocya epimerica* from the Mediterranean Sea, Black Sea, Adriatic, Atlantic. Later, some records of it was 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).

*Mothocya epimerica* is only associated with fishes belonging to the family Atherinidae. It was collected from *Atherina hepsetus*, *Atherina boyeri* (synonymies; *Atherina rissoi*, *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 4 terminal spines, maxilla with two curved spines on medial and lateral lobes, mandible palp article 3 without setae, antennule and antenna with 8 articles, maxilliped article 3 with 4 recurved spines, pleopods 2 with four hooks agree with the drawings given by Bruce (1986), Trilles (1968; 1976); Montalenti (1948).

### ACKNOWLEDGEMENT

We would thank Mr. Ceregato A., Mascolo R. and Maffei G. for obtaining scanned literature.

## REFERENCES

1. Bello G., Vaglio A. and Piscitelli G. 1997 – The reproductive cycle of *Mothocya epimerica* a parasite of sand smelt *Atherina boyeri*, in the Lesina Lagoon, Italy, *Journal of Natural History*, 3, 1055-1066.
2. Bruce N. L., 1986 – Revision of the isopod crustacean genus *Mothocya* Costa, in Hope, 1851 (Cymothoidae: Flabellifera), parasitic on marine fishes, *Journal of Natural History*, 20, 1089-1192.
3. Brusca R. C., 1981 – A monograph of the Isopoda Cymothoidae (Crustacea) of the eastern Pacific. *Zoological Journal of the Linnean Society* 73, 117-199.
4. Charfi-Cheikhrouha F., Zghidi W., Ould Yarba L. and Trilles J. P., 2000 – Les Cymothoidae des côtes tunisiennes, *Systematic Parasitology*, 46, 146-150. (in French)
5. Froese R. and Pauly D., 2014 – FishBase. www.fishbase.org, version (Accessed 06.03.2014).
6. Fricke R., Bilecenoglu M. and Sari H. M., 2007 – Annotated checklist of fish and lamprey species of Turkey, including a Red List of threatened and declining species, *Stuttgarter Beitr. Naturk. Ser. A Nr. 706* 169 S., 3 Abb., 8 Tab. Stuttgart, 10. IV. 169.
7. Horton T. and Okamura B. 2001. – Cymothoid isopod parasites in aquaculture: a review and case study of a Turkish sea bass (*Dicentrarchus labrax*) and sea bream (*Sparus auratus*) farm. *Diseases of Aquatic Organisms*, 47: 181-188.
8. İnnal D., Kırkım F. and Erk'akan F., 2007 – The parasitic isopods, *Anilocra frontalis* and *Anilocra physodes* in Antalya Gulf, *Bulletin of the European Association Fish Pathologists* 27, 239-241.
9. Kayis S. and Er A., 2012 – *Nerocila bivittata* (Cymothidae, Isopoda) infestation on Syngnathid Fishes in the Eastern Black Sea. *Bulletin of the European Association Fish Pathologists*, 32, 4, 135-139.
10. Kırkım F., 1998 – Investigations on the systematics and ecology of the Aegean Sea Isopoda (Crustacea) fauna. Ege University, Institute of Science, PhD dissertation 238.
11. Leonardos I. and Trilles J., 2003 – Host – parasite relationships: occurrence and effect of the parasitic isopod *Mothocya epimerica* on sand smelt *Arterina boyeri* in the Mesolongi and Etolikon Lagoons (W. Greece). *Diseases of Aquatic Organisms*, 54, 243–251.
12. Mariniello L. and Di Cave D., 1992 – Crostacei parassiti di specie ittiche di interesse commerciale presenti nelle lagune costiere italiane. *Parassitologia*, 1, 92-93. (in Italian)
13. Monod T., 1931 – Crustaces de Syrie. In: A Gruvel, Les états de Syrie. *Bibliographie Faunae Française*, 3, 397-435. (in French)
14. Montalenti G., 1948 – Note sulla sistematica e la biologia di alcuni Cimotoidi del Golfo di Napoli (*Emetha*, *Mothocya*, *Anilocra*, *Nerocila*). *Archivio di Oceanografia e Limnologia* 5, 25-81. (in Italian)
15. Öktenler A. and Sezgin M., 2000 – *Mothocya epimerica* an isopod parasite in the branchial cavities of the Black Sea Silverfish *Atherina boyeri*, *Turkish Journal of Marine Sciences*, 6, 1, 23-29.
16. Öktenler A. and Trilles J. P., 2004 – Report on the Cymothoids (Crustacea, Isopoda) collected from marine fishes in Turkey. *Acta Adriatica* 45, 145-154.
17. Öktenler A., Trilles J. P., Alaş A. and Solak K., 2009 – New hosts for species belonging to the genera *Nerocila*, *Anilocra*, *Ceratohoa*, *Mothocya* and *Livoneca* (Crustacea, Isopoda, Cymothoidae). *Bulletin of the European Association Fish Pathologists*, 29, 2, 51-57.
18. Ramdane Z., Bensouilah M. A. and Trilles J. P., 2006 – Compariason entre les Cymothoidae (Crustacea, Isopoda) recoltés sur les poissons teleosteens des cotes Tunisiennes et Algeriennes. *Bulletin de Institut National Des Sciences et Technologies de La Mer*, 11, 8, 29-33. (in French)
19. Ramdane Z., Bensouilah M. A. and Trilles J. P., 2009 – Étude des crustacés isopodes et copépodes ectoparasites de poissons marins algériens et marocains, *Cybium*, 33, 2 123-131. (in French)
20. Tokşen E., 1999 – Metazoon Gill Parasites of Culture Gilthead Sea Bream and Sea Bass in Aegean Sea Coast and Their Treatment. Ege University, Institute of Science, PhD dissertation, 153.
21. Trilles J. P., 2008 – Marine isopods from the Senckenberg Research Institute (Crustacea, Isopoda: Cymothoidae, Aegidae, Corallanidae, Cirolanidae), *Senckenbergiana biologica*, 88, 1, 21-28.
22. Trilles J. P., 1968 – Recherches sur les Isopodes Cymothoidae des cotes françaises, These de Doctorat en Sciences, Montpellier, 1-181, pl. I XXXIV, photographies 1-56 et p. 1-307. (in French)
23. Trilles J. P., 1976 – Les Cymothoidae des côtes françaises. III. Les Lironecinae Schioedte et Meinert, 1884, *Bulletin du Muséum national d'Histoire naturelle*, Paris, 390, 272, 801–820. (in French)
24. Trilles J. P., 1994 – Les Cymothoidae (Crustacea, Isopoda) du monde (Prodrome pour une faune). *Studia Marina*, 21/22, 1-2, 1-288. (in French)
25. WoRMS Editorial Board, 2014 – World Register of Marine Species. Available from <http://www.marinespecies.org> at VLIZ. Accessed 2014-01-26.