

***Mothocya epimerica* Costa,1851 (Flabellifera:  
Cymothoidae), an isopod parasite in the branchial  
cavities of the Black Sea Silverfish *Atherina boyeri*  
Risso,1810 (Perciformes, Atherinidae)**

**Karadeniz Gümüşbalığı *Atherina boyeri*  
Risso,1810 (Perciformes, Atherinidae)'nin  
solungaç boşluklarında rastlanan parazit bir  
isopod, *Mothocya epimerica* Costa,1851  
(Flabellifera: Cymothoidae)**

**Ahmet Öktener and Murat Sezgin\***

University of Ondokuz Mayıs, Fisheries Faculty, Division of Basic Sciences  
57000 Sinop-Turkey

---

**Abstract**

A new record of parasitic isopod for the Turkish Fauna, *Mothocya epimerica* Costa, 1851 (Flabellifera: Cymothoidae) is reported from silverfish *Atherina boyeri* in the Black Sea. The female isopod settles on the fish's branchial cavities. The characteristic features of *Mothocya epimerica* Costa, 1851 are given for the first time based on the drawings made from collected specimens.

**Keywords:** Cymothoid, Parasitic Isopod, *Mothocya epimerica*, *Atherina boyeri*,  
Black Sea

---

\* Corresponding author

## Introduction

Parasitic isopods are like the common group of crustacean ectoparasites of fish in marine ecosystem. Cymothoid flabelliferans are hermaphroditic isopods with a shortphase as free-living, planctonic organisms (Colomi *et al.*, 1997). Upon finding a suitable host, they initiate their parasitic life feeding on blood and tissues. The host, *Atherina boyeri* has little or no commercial value, but is an important food for larger predators.

## Material and Methods

The fish were captured at the breakwater site of Sinop Peninsula coasts (42° 01' N and 35° 09' E) used by fishing line and scoop net. In this region, there are cages where rainbow trout *Oncorhynchus mykiss* Walbourn, 1792 are commercially reared. Perhaps, silverfish *Atherina boyeri* was one of many species of feral fish attracted to the raft by the abundance of waste feed that disperse outside the cages of the cultured fish. Water temperature in this region fluctuates between 6-11.9 C° in winter and 17-24.6 C° in summer and salinity 16-18 ppt all year round (Türkoğlu, 1998). A total of 50 *Atherina boyeri* were examined. Isopods are collected from branchial cavities of fish by pens. It was observed that they were active after having been separated from their hosts. The specimens were preserved in 70 % alcohol were transported back to the laboratory at Sinop. Identification was made under the light of binocular microscope. In addition the detailed morphological features of species were given with drawing. The terminology and identification of specimens are those used by Trilles (1968).

## Results and Discussion

It's observed parasites are only located in branchial cavities in examining on total 50 silverfish *Atherina boyeri*. The obtained total 10 parasites are consist of female specimens. Knowledge and figures about this parasite are as follows:

There are three different stages in their life cycle. These are pullus primus, pullus secundus and adult stage (Trilles, 1968). In the stage of pullus primus body is symmetric and transparent. In the stage of pullus secundus transparent feature has slightly disappeared. In this stage pereopods are six pairs. There is no seventh pair pereopod. The dactylus of all pereopods are crenulate. The anterior of head are rectangular. Propodites are slender ( Figure 1).

There are three different stages in their life cycle. These are pullus primus, pullus secundus and adult stage (Trilles, 1968). In the stage of pullus primus body is symmetric and transparent. In the stage of pullus secundus transparent feature has slightly disappeared. In this stage preipods are six pairs. There is no seventh pair pereipod. The dactylus of all pereipods are crenulate. The anterior of head are rectangular. Propodits are slender ( Figure 1).

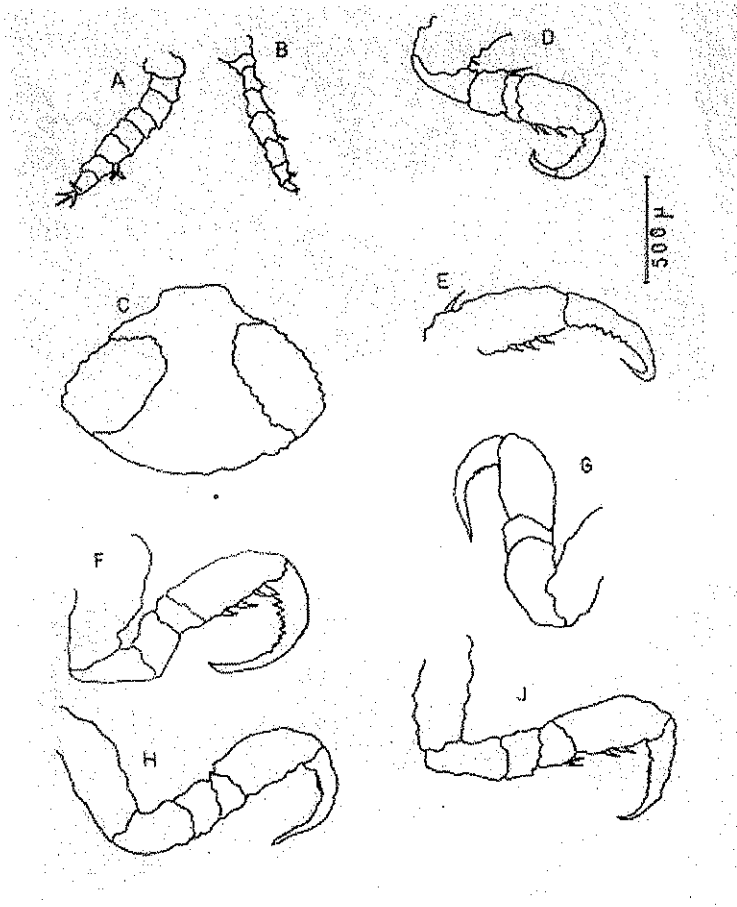


Figure 1. *Mothocya epimerica* Costa,1851 Pullus secundus stage. A, antenna I; B, antenna II; C, head; D, pereopod I; E, pereopod II; F, pereopod III; G, pereopod IV; H, pereopod V; J, pereopod VI.

The maximum lengths of adult females are 13 mm. The body form is very characteristic. The posterior body is convex towards right or left. The eyes are large. Propodits are expanded. The gills are well grown (Figure 2,3). Entire body surface covered with small punctate dots of brown pigment readily visible under lens, lying particularly densely on head and abdomen.

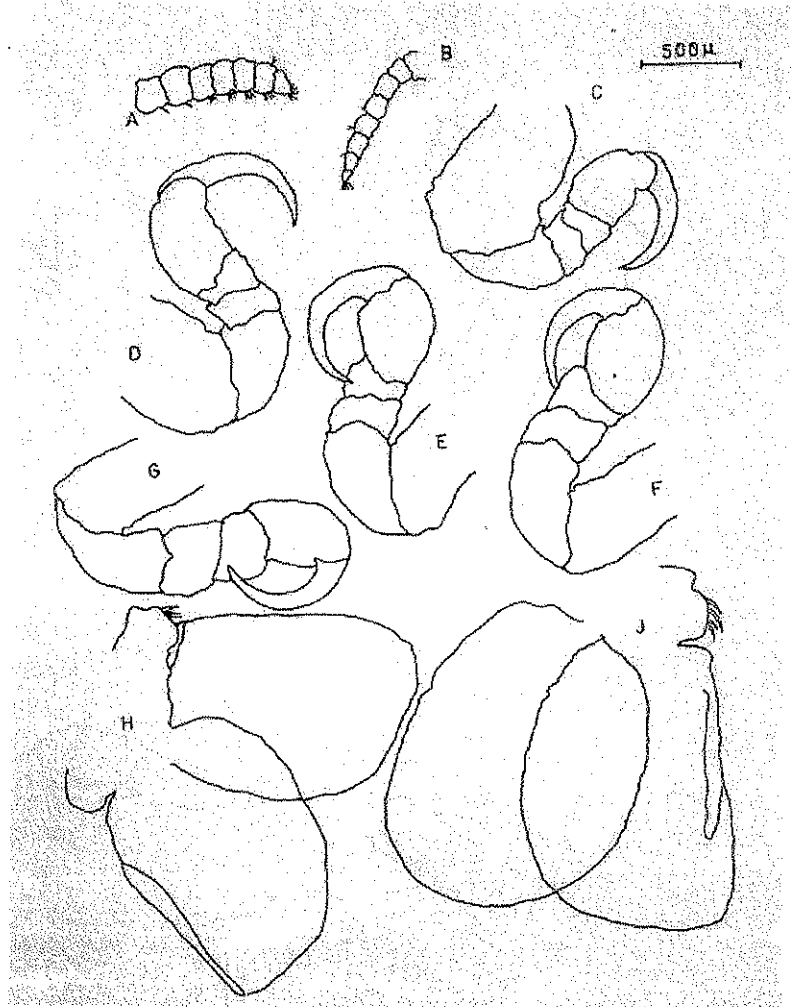


Figure 2. *Mothocya epimerica* Costa, 1851 adult female. A, antenna I; B, antenna II; C, pereopod I; D, pereopod II; E, pereopod V; F, pereopod VI; G, pereopod VII; H, pleopod I; J, pleopod II.

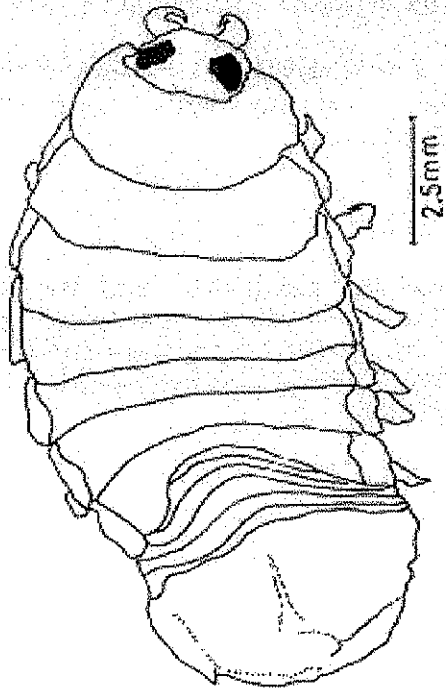


Figure 3. Adult *Mothocya epimerica* Costa, 1851 female dorsal view.

In generally, they distribute in Mediterranean, Black Sea, Adriatic and Atlantic. They especially common on silverfish (Trilles *et al.*, 1989 and Trilles, 1991). It was reported from Romanian Black Sea coasts by Vasiliu (1932) and Chiriac (1977). Kononenko (1988) discussed that seven parasitic isopods including *Mothocya epimerica* from Black Sea originated Atlantic ocean. Investigations concerned with parasitic isopod species in Turkish sea are quite less. *Anilocra physodes* and *Nerocila bivittata* are reported in marmara Sea by Demir (1952). *Anilocra physodes*, *Nerocila bivittata*, *Ceratothoa paralella*, *Bopyrus squillarum*, *Pleurocrypta microbranchiata*, *P. longibranchiata*, *P. porcellanae* and *P.*

*galathea* are reported in Aegean Sea by Geldiay and Kocatat (1972). *Ceratothoa osteroides* are also reported in Antalya coasts of Mediterranean by Trilles (1977) and around Gökçeada by Akmirza (1998). *Anilocra physodes*, *Nerocila bivittata*, *Emetha audouinii*, *Meinertia paralella*, *M. oestroides*, *M. capri*, *Pleurocrypta microbranchiata*, *P. longibranchiata*, *P. porcellanae* and *Bopyrus squillarum* are reported in Aegean Sea by Kırkım (1998).

Finally, the capture of these specimens represents the first record of this species in Turkish sea. In this study, *Mothocya epimerica* is reported for the first time in the Turkish seas.

### Özet

Türkiye faunası için yeni kayıt parazitik bir isopod olan *Mothocya epimerica* Costa, 1851 (Flabellifera: Cymothoidae) Karadeniz'de gümüşbalıklarında (*Atherina boyeri* Risso, 1810) rapor edilmiştir. Dişi isopodlar balıkların solungaç boşluklarına yerleşmiştir. *Mothocya epimerica* Costa, 1851 nin karakteristik özellikleri çizimlerle verilmiştir.

### Acknowledgement

We would like to thank Prof. Dr. J.P. Trilles of Montpellier University for their professional advice.

### References

- Akmirza, A. (1998). İstavrit balığının Parazit faunası. *Doğuanadolu Bölgesi III. Su Ürünleri Sempozyumu*. 10-12 Haziran 1998, A.Ü Ziraat Fakültesi Su Ürünleri Bölümü, Erzurum, 333-343.
- Chiriac, E. (1977). Parasites et Maladies Parasitaires des Poissons de la Mer Noire. *Biologie des eaux saumâtres de la Mer Noire, Premiere partie*, No: 18, 165-172.
- Colorni, A; Trilles, J.P; Golani, D. (1997). *Livoneca* sp. (Flabellifera: Cymothoidae), an isopod parasite in the oral and branchial cavities of the Red Sea Silverside *Atherinomus lacunosus* (Perciformes, Atherinidae), *Diseases of Aquatic organisms* 31: 65-71.
- Demir, M. (1952). Boğaz ve Adalar sahillerinin omurgasız dip hayvanları. *İ.Ü Fen Fak. Hidrobioloji Araştırma Enstitüsü Yayınlarından*, 3; 361-365.

Geldiay, R and A. Kocataş, A. (1972). Isopods collected in İzmir Bay, Aegean sea. *Crustaceana*, Suppl. 3, Studies on Peracarida, 19-30.

Kırkım, F. (1998). Ege Denizi Isopoda (Crustacea) Faunasının sistematığı ve ekolojisi üzerine arařtırmalar. Doktora tezi. *E.Ü Fen Bil. Enst.* İzmir,

Kononenko, A. F.(1998). Parasitic Isopoda of the Black sea fishes. V. *Symposium on Medical and Veterinary Acaroenomology*, Gdansk, 19-21 september 1985, 34: 1, 77-88.

Trilles, J.P. (1968). Recharches sur les Isopodes Cymothoidae des côtes françaises. Systématique et Faunistique. Universite de Montpellier Faculte des Sciences, Thèse le Doktorat, Montpellier, 69-84.

Trilles, J.P. (1977). Les Cymothoidae (Isopoda, Flabellifera) parasites de poissons) du Rijksmuseum Van Natuurlijke Historie de Leiden, Méditerranée et Atlantique. *Zoologische Mededelingen*, Nederland, 52 (2): 7-17.

Trilles, J.P.,Radujkovic, B.M et Romestand, B. (1989). Parasites des poissons marins du Monténégro: Isopodes, *Acta Adriat.* 30 (1-2): 279-306.

Trilles, J.P. (1991). Les Cymothoidae (Crustacea, Isopoda) du Monde, *Stud. Mar.* 21/22 (1-2):198-202.

Türkođlu, M. (1998). Orta Karadeniz Bölgesinin (Sinop Yarımadası kıyıları) Fitoplankton kompozisyonunu etkileyen faktörler. Doktora tezi, *E.Ü Fen Bil. Enst.* İzmir, 255-280.

Vasiliu, G.D. (1932). *Livoneca sinuata* Koleb. Ein Kienen parasit des fisches *Atherina hepsetus* L. *Puclicatiunile Societatii Naturalistilor din Romania*, 11: 177-180.

*Received: 16.4.1999*

*Accepted: 20.8.1999*