



## First report of *Nerocila orbigny* (Crustacea, Isopoda, Cymothoidae) on *Solea solea* (Teleostei, Soleidae) from Turkish Sea

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### Abstract

*Nerocila orbigny* (Crustacea, Isopoda, Cymothoidae) is observed in between the operculum and pectoral fin of the sole, *Solea solea* (Teleostei, Soleidae), collected from the Pazar coast, Black Sea, Turkey. *N. orbigny* was reported to be the first isopod record of sole in the Turkish Sea.

**Keywords:** Isopoda, solea, *Nerocila*, Black Sea, Turkey.

### *Nerocila orbigny*'nin (Crustacea, Isopoda, Cymothoidae) Türkiye Denizlerinde *Solea solea*'dan (Teleostei, Soleidae) İlk Rapor

### Özet

*Nerocila orbigny* (Crustacea, Isopoda, Cymothoidae) Karadeniz'in Türkiye kıyısında Pazar sahilinde dil *Solea solea* (Teleostei, Soleidae) balığının pektoral yüzgeci ile operkulumu arasında gözlemlenmiştir. Bu çalışmada *N. orbigny* ilk kez Türkiye denizlerinde dil balığından rapor edilmiştir.

**Anahtar Kelimeler:** Isopoda, dil balığı, *Nerocila*, Karadeniz, Türkiye.

### Introduction

Fish parasites divided into two major groups which are protozoan and metazoan (Lasee, 1995; Tonguthai, 1997; Durborow, 2003) and metazoan parasites contain Platyhelminthes, Arthropoda, Annelida, Nematoda, Mollusca, Acanthocephala and Myxozoa. Crustaceans are a very large group of arthropods and crustacean ectoparasites on fishes are diverse. Many fish species are infected by isopods. Cymothoid isopods have been studied for many years. They are found in various parts of the fish body, including internal organs, gills and fins. These parasites can cause gill, eye and internal organ damages and inflammation of the swim bladder. They provide portals of entry for other pathogens in fish (Lasee, 1995; Horton and Okamura, 2003).

*Nerocila* is a large genus of Cymothoidae. *Nerocila orbigny* (Guérin-Maneville, 1832) is an ectoparasite that attaches to the skin and fins of fish and generally infects Mugilidae (*Liza aurata*, *L. ramada*, *Mugil cephalus*, and *Chelon labrosus*) and *Alosa agone*, *Dicentrarchus labrax*, *Callorhynchus*

*milii*, *Acanthopagrus australis*, *Pagrus auratus*, *Mola mola*, *Pseudocaranx dentex*, *Sillago bassensis*, *Pomatomus saltatrix*, *Trigla lyra*, *Symphodus tinca*, *Solea solea*, *Serranus scriba*, *Diplodus vulgaris*, *Scorpaena porcus* were reported as other host fish for *N. orbigny* (Bruce, 1987; Trilles, 1975; Trilles, 1994; Charfi-Cheikhrouha *et al.*, 2000; Ramdane *et al.*, 2007; Ferri *et al.*, 2008). Commonly distribution areas of *N. orbigny* are Mediterranean, Northwest Africa, Red Sea, Egypt and New Zealand (Trilles, 1994).

Many studies reported on parasites collected from marine fishes in Turkey (Öktener, 2003; Öktener *et al.*, 2004; Kayis *et al.*, 2009). *Nerocila bivittata*, and *N. orbigny* was reported for species caught in the Turkish Sea, (Horton and Okamura, 2001; Öktener and Trilles, 2004; Alas *et al.*, 2008) but there is no record of *S. solea* as a host fish of *N. orbigny*. This paper presents the first record of *N. orbigny* on *S. solea* caught in the Turkish Sea.

### Materials and Methods

Different fish species (*Trachurus mediterraneus*,

*Merlangius merlangus*, *Ophidion barbatum*) and two soles (*Solea solea*) were caught in the course of the purse seine operation in the coast of Pazar (41°10'53" N; 40°50'42" E) in October 2009 (Figure 1). Isopod was removed from the one sole. Location, body weight and length of the host fish and parasite were recorded. Identification of parasites was determined by Bruce (1987) and Trilles *et al.* (1989). The parasite is preserved in personal collection at the Rize University Faculty of Fisheries Science.

## Results and Discussion

A Female *Nerocila orbigny* was found in between the operculum and pectoral fin on one of the two collected soles (Figure 2) and weak tissue damage was noticed on the host fish. Length and weight of the infested fish were 17.8 cm and 47.0 g, respectively. Body sizes of the parasite were 28.3 mm, 14.1 mm.

This parasite has already been recorded for *Dicentrarchus labrax* (Mediterranean) and *Liza aurata* (Black Sea) from the Turkish coast by Horton and Okamura (2001) and Ökter and Trilles (2004). Although *N. orbigny* was rarely reported from *Solea solea* (from Tunisia) (Charfi-Cheikhrouha *et al.*, 2000), there haven't been any records of *N. orbigny* infestation on the sole from the Turkish Sea.

Howell (1997) stated that *S. solea* has a high susceptibility to diseases in cultural conditions. Eleven metazoan fish parasites were reported for *S. solea* in the Turkish sea, *Hemiuridae metacercaria*, *Grillotia* sp. and *Scolex pleuronectis* (Digenea) (Keser *et al.*, 2007), *Hysterothylacium aduncum* (Nematoda) (Keser *et al.*, 2007), *Bothriocephalus scorpii*, *Ligula intestinalis* and *Silurotaenia siluri* (Cestodes) (Özdemir and Sarıyüboğlu, 1993), *Solearhynchus soleae*, *Acanthocephaloides propinquus*, *Paracanthocephaloides kostylewi* and *Longicollum pagrosomi* (Acanthocephala) (Oğuz and Kvach, 2006). However, there are no records related to isopod parasites from the sole. Present study provides the first isopod record, *N. orbigny* for the sole in Turkish Sea.

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## References

- Alas, A., Ökter, A., İscimen, A. and Trilles, J.P. 2008. New host record, *Parablemmius sanguinolentus* (Teleostei, Perciformes, Blenniidae), for *Nerocila bivittata* (Crustacea, Isopoda, Cymothoidae).



Figure 1. Sample area of the fish.

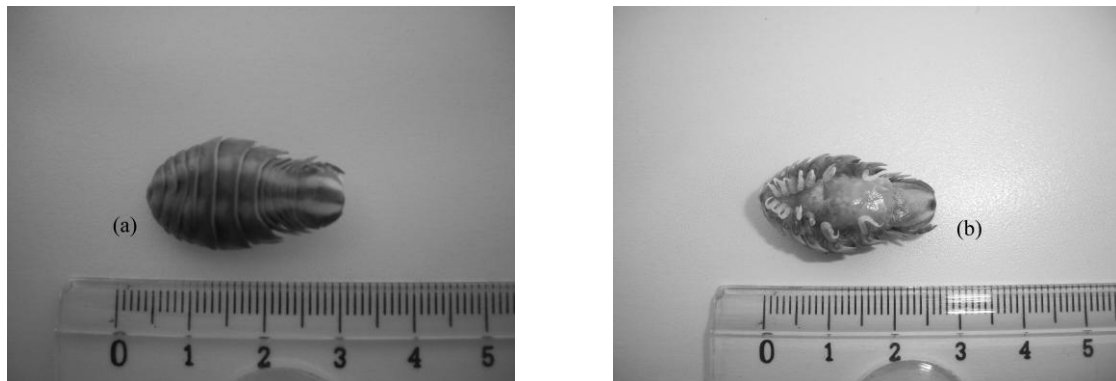


Figure 2. Dorsal (a) and ventral (b) view of *N. orbigny*.

- Parasitology Research, 102: 645-646.
- Bruce, N.L. 1987. Australian species of *Nerocila* Leach, 1818 and *Creniola* n. gen. (Isopoda: Cymothoidae), crustacean parasites of marine fishes. Records of Australian Museum, 39: 355-412.
- Charfi-Cheikhrouha, F., Zghidi, W., Ould Yarba, L. and Trilles, J.P. 2000. Les Cymothoidae (Isopodes parasites de poissons) des côtes tunisiennes: écologie et indices parasitologiques. Systematic Parasitology, 46: 146-150.
- Durborow, R.M. 2003. Protozoan Parasites. SRAC Publication, No: 4701.
- Ferri J., Petrić M., Matic-Skoko S. and Dulčić J. 2008. New host record, black scorpionfish *Scorpaena porcus* (Pisces, Scorpaenidae) for *Nerocila orbigny* and *Ceratothoa parallela* (Crustacea, Isopoda, Cymothoidae). Acta Adriatica, 49: 255-258.
- 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.
- Horton, N.T. and Okamura, B. 2003. Post-haemorrhagic anaemia in sea bass, *Dicentrarchus labrax* (L.), caused by blood feeding of *Ceratothoa oestroides* (Isopoda: Cymothoidae). Journal of Fish Diseases, 26: 401-406.
- Howell, B.R. 1997. A re-appraisal of the potential of the sole, *Solea solea* (L.), for commercial cultivation, Aquaculture, 155: 355-365.
- Kayış, S., Özcelep, T., Capkin, E. and Altınok, I. 2009. Protozoan and Metazoan Parasites of Cultured Fish in Turkey and their Applied Treatments. The Israeli Journal of Aquaculture–Bamidgeh, 61: 93-102.
- Keser, R., Bray, R.A., Oguz, M.C., Celen, S., Erdogan, S., Doguturk, S., Aklanoglu, G. and Marti, B. 2007. Helminth parasites of digestive tract of some teleost fish caught in the Dardanelles at Çanakkale, Turkey. Helminthologia, 44: 217-221.
- Lasee, B.A. 1995. Introduction to Fish Health Management. 2<sup>nd</sup> edition, U.S. Fish and Wildlife Service La Crosse Fish Health Center 555, Lester Avenue Onalaska, Wisconsin, 139 pp.
- Oğuz, M.C. and Kvac, Y. 2006. Occurrence of acanthocephalans in teleost fishes of Gemlik Bay, Sea of Marmara Turkey. Helminthologia, 43: 103-108.
- Öktener, A. 2003. A checklist of metazoan parasites recorded in freshwater fish from Turkey. Zootaxa, 394: 1-28.
- Öktener, A. and Trilles, J.P. 2004. Report on cymothoids (Crustacea, Isopoda) collected from marine fishes in Turkey. Acta Adriatica, 45: 145-154.
- Öktener, A., Yalcın, M. and Kocuyigit, E. 2004. Türkiye'deki Balıklarda Kaydedilen Protozoan Parazitler. Anadolu University Journal of Science and Technology, 5: 297-305.
- Özdemir, Y. and Sarıyyüpoğlu, M. 1993. Keban Baraj Gölü'nde yaşayan *Barbus capito pectoralis*'te gözlenen parazitler. Fırat Üniversitesi Dergisi, 5(2): 114-126.
- Ramdane, Z., Bensouilah, M.A. and Trilles J.P. 2007. The Cymothoidae (Crustacea, Isopoda), parasites on marine fishes, from Algerian fauna. Belgian Journal of Zoology, 137: 67-74.
- Tonguthai, K. 1997. Control of freshwater fish parasites, Southeast Asian Perspective. International Journal for Parasitology, 27: 1185-1191.
- Trilles, J.P. 1975. Les Cymothoidae (Isopoda, Flabellifera) des collections du Muséum national d'Histoire naturelle de Paris. II. Les Anilocridae Schioedte et Meinert, 1881. Genres *Anilocra* Leach, 1818 et *Nerocila* Leach, 1818. Bulletin du Muséum National d'Histoire Naturelle, 290: 303-346.
- Trilles, J.P. 1994. Les Cymothoidae (Crustacea, Isopoda) du Monde (Prodrome pour une Faune), Stud. Mar., 21/22: 1-288.
- Trilles, J.P., Radujkovic, B.M. and Romestand, B. 1989. Parasites des poissons marins du Monténégro: Isopodes (Fish parasites from Montenegro: Isopods). Acta Adriatica, 30: 279-306.