



ISSN:1306-3111

e-Journal of New World Sciences Academy
2010, Volume: 5, Number: 4, Article Number: 5A0052

ECOLOGICAL LIFE SCIENCES

Received: August 2010

Accepted: October 2010

Series : 5A

ISSN : 1308-7258

© 2010 www.newwsa.com

Ahmet Öktener¹

Hatice Torcu Koç²

Zeliha Erdoğan³

Ist. Provincial Directorate of Agriculture¹

Balikesir University²⁻³

ahmetoktener@yahoo.com

Istanbul-Turkey

**TÜRKİYE KARADENİZ SULARINDAN KÜLTÜRE EDİLMİŞ LEVREK BALIĞINDA
LERNANTHROPUS KROYERI**

ÖZET

Türkiye'de çiftlik balıklarının potansiyel tehditlerinin belirlenmesi amacıyla yapılan bu parazitolojik çalışmada Karadeniz'de kültüre edilmiş levrek balıkları, *Dicentrarchus labrax*'da parazitik kopepod *Lernanthropus kroyeri* van Beneden, 1851 (Copepoda, Lernanthropidae) ilk kez sunulmuştur. Bu çalışma, Ege denizinde varlığı bilinen ancak Karadeniz'den rapor edilmemiş *Lernanthropus kroyeri*'nin coğrafik dağılımı için yeni bir lokalite sunmaktadır.

Anahtar Kelimeler: *Lernanthropus Kroyeri*, *Dicentrarchus Labrax*,
Kültür Levrek Balığı, Karadeniz, Türkiye

**LERNANTHROPUS KROYERI ON THE CULTURED SEA BASS FROM THE
BLACK SEA OF TURKEY**

ABSTRACT

In the parasitic study which was done for the aim of determination of potential threats to farmed fish in Turkey, parasitic copepod, *Lernanthropus kroyeri* van Beneden, 1851 (Copepoda, Lernanthropidae) was presented for the first time from cultured sea bass, *Dicentrarchus labrax* in the Black Sea. This study presents a new locality for geographical distribution of *Lernanthropus kroyeri* which was known its occurrence in the Aegean Sea but no reported in the Black Sea before.

Keywords: *Lernanthropus Kroyeri*, *Dicentrarchus Labrax*,
Cultured Sea Bass the Black Sea, Turkey

1. INTRODUCTION (GİRİŞ)

Lernanthropus is among the most common genera of parasitic copepods, and all species are parasitic on the gills of marine teleosts, most of them inhabiting warmer waters. *Lernanthropus kroyeri* has been recorded from many localities along the coast of Europe, from the Adriatic Sea to the southern North Sea [4]. It was reported from Aegean Sea, but not from the Black Sea [9]. Morphology, histopathology, treatment of *Lernanthropus kroyeri* in cultured Sea Bass have been studied by Korun and Tepecik [5], Özel et al. [11], Tokşen et al. [13]. Studies on geographical and seasonality distribution of the parasitic copepods are scanty in Turkey.

The only *Lernanthropus* previously reported from Turkish waters are *Lernanthropus mugilis* on *Liza aurata* from the Aegean Sea [1], *Lernanthropus kroyeri* on *Dicentrarchus labrax* from the Aegean Sea [11, 13], *Lernanthropus trachuri* on *Trachurus mediterraneus* from the Sea of Marmara [8], *Mitrapus oblongus* on *Sardinella aurita* from the Mediterranean Sea [12].

2. RESEARCH SIGNIFICANCE (ÇALIŞMANIN AMACI)

Although fish culture is increasing day by day in Turkey, some fish diseases and parasitological problems related to cases of fish mortality were observed in several years. For this reasons, big losses of fish production occurred in some fish farms. Consequently, there is a need to understand the parasite fauna of this fish in Turkey, so as to develop prevention and control measures in advance of any possible outbreaks of infection.

3. EXPERIMENTAL METHOD (MATERİYAL VE METOD)

Fish were previously bought from two farming systems the Black Sea (Vona Bay, Ordu, 41° 05' 02'' N; 37 ° 47' 04'' E). A total of fifty and three sea basses, were examined for ectoparasites in August 2009. The gill arches were examined with the aid of a dissecting microscope (Wild M5). Copepods were preserved in 70% ethanol. The collected parasite samples have been deposited in the personal collection of A. Öktener (Provincial Directorate of Agriculture). Identifications of parasites were made using the specific key [4, 11, 13].

4. FINDINGS AND DISCUSSIONS (BULGULAR VE TARTIŞMA)

Lernanthropus kroyeri van Beneden, 1851 (Copepoda: Lernanthropidae)

Material examined: 29 parasite removed on the gill filaments of host. Infection values: *Lernanthropus kroyeri* was recorded with a prevalence of 41 % and a mean intensity of 1.32 whereas Manera and Dezfuli [6], Özel et al. [11], and Bahri et al [2] recorded several prevalences ranging between 35%, 75% and 12.9-63.04 % respectively.

The only host in all these waters appears to be *Dicentrarchus labrax* [4]. Öktener et al. [10] reported *Diplectanum aequans* (Wagener, 1857) (Monogenea, Diplectanidae) from the gills of *Dicentrarchus labrax* cultured in the Black Sea of Turkey in winter months, but they didn't find parasitic crustaceans or other internal parasites.

The absence of *Lernanthropus kroyeri* in Öktener et al. [10]'s study may be coincidental or the occurrence of this species may be restricted to warmer regions and seasonality infestations. Because Manera and Dezfuli [6] recorded parasite on host, an increase in the intensity of infection in 2 yr old fish from February to July. Davey [3] determined that the intensity of infection increases from February to July. As alternatively, absence of parasite can explain

uncontrolled transfer of larva, obtaining the larva from natural sources. There are no record of *Lernanthropus kroyeri* in the Black Sea of Turkey [7]. It has been suggested that parasitic copepod may be transferred from Aegean Sea or Mediterranean Sea to Black Sea.

Lernanthropus is known to cause some pathological effects on its host. Manera and Dezfuli [6]'s histopathology study of *Lernanthropus kroyeri* determined erosion, desquamation and necrosis of the secondary lamellae near the site of copepod attachment and the terminal claw of the second antennae lacerated tissue and vessels of infected gill. In the present study, enhanced mucus production, congestion, haemorrhages and lamellae erosions on gills determined from parasitic infection.

Bahri et al. [2] searched to use of *Lernanthropus kroyeri* as a bioindicator of *Dicentrarchus labrax* and *Dicentrarchus punctatus* in Tunisian Inshore Areas.

This study presents new locality for geographical distribution of *Lernanthropus kroyeri*. Based on the finding of *Lernanthropus kroyeri* of Black Sea, it is predicted that fish farmers in this region will encounter the similar fish diseases as fish farmers in Aegean Sea. The main aim of this investigation was to study parasites of European sea bass produced in the Black Sea of Turkey, so as to develop prevention and control measures in advance of any possible outbreaks of infection.

This copepod might be considered as an indicator species, therefore they should be examined for indicator species or seasonal and geographical distribution in Turkey.

5. CONCLUSIONS AND COMMENDATIONS (SONUÇ VE ÖNERİLER)

As this is a preliminary study, it is necessary to determine parasitic fauna of cultured fishes in Black Sea, making parasitic investigations in detail. Thus, it will be easier to take precautions against possible parasitic originated infections to be emerged in the future. The reason why that there are no more details about this parasite species is to be defined and reported from the Aegean Sea, before. Here, the aim of this study is to give an ecological approach.

REFERENCES (KAYNAKLAR)

1. Altunel, F.N., (1983). Parasitism in Mulletts (*Mugil* spp). I. National Congress of The Marine and Freshwater Researchs. Journal of Ege University Science Faculty Seri (B): pp: 364-378.
2. Bahri, L., Hamida, J., and Ben Hassine, O. K., (2002). Use of the parasitic copepod, *Lernanthropus kroyeri* (Van Beneden, 1851) (*Lernanthropidae*) as a bio-indicator of two fish populations, *Dicentrarchus labrax* (Linnaeus, 1758) and *Dicentrarchus punctatus* (Bloch, 1792) (*Moronidae*) in Tunisian inshore areas. *Crustaceana*, 75(3-4,pp: 253-267.
3. Davey, J., (1980). Spatial distribution of the copepod parasite *Lernanthropus kroyeri* on the gills of bass, *Dicentrarchus labrax*, (L.). *Journal of the Marine Biological Association of the United Kingdom*, 60: pp: 1061-1067.
4. Kabata, Z., (1979). Parasitic Copepoda of British fishes: i-xii, 1-468. The Ray Society, London (Benham & Company Limited, England).
5. Korun, J., and Tepecik, R.E., (2005). Gill Lesions Caused by Infection of *Lernanthropus* spp. Blainville, 1822 on Cultured Sea Bass, *Dicentrarchus labrax* (L.). *Journal of Veterinary Faculty, Istanbul University*, 31: pp: 1-8.
6. Manera, M., and Dezfuli, B.S., (2003). *Lernanthropus kroyeri* infections in farmed sea bass *Dicentrarchus labrax*: pathological features. *Diseases of Aquatic Organisms*, 57: pp: 177-180.

7. Oğuz, M.C., and Öktener, A., (2007). Four Parasitic Crustacean Species from marine fishes of Turkey. *Türkiye Parazitoloji Dergisi*, 31 (1): pp: 79-83.
8. Öktener, A., and Trilles, J.P., (2004). Three New Parasitic Copepod Species for the Parasite Fauna of Marine Fishes of Turkey. *Journal of Black Sea/Mediterranean Environment*, 10: pp: 71-80.
9. Öktener, A., (2009). *Caligus mauritanicus* Brian, 1924 a Parasite of Common Cultured Dentex, *Dentex dentex* L. from Aegean Sea and Parasites of Cultured Fishes of Turkey. *Pakistan Journal of Zoology*, 41 (5): pp: 417-420.
10. Öktener, A., Alaş, A., and Solak, K., (2009). Occurrence of *Diplectanum aequans* (Wagener, 1857) on the cultured sea bass, *Dicentrarchus labrax* (Linnaeus, 1758) from the Black Sea of Turkey. *Bulletin of the European Association Fish Pathologists*, 29(3): pp: 102-103.
11. Özel. İ., Öktener, A., and Aker, V., (2004). A Morphological Study (SEM) on a Parasitic Copepod: *Lernanthropus kroyeri* van Beneden, 1851. *Journal of Fisheries and Aquatic Sciences*, Ege University, 21: pp: 335-337.
12. Romero, R.C. and Öktener, A., (2010). *Mitrapus oblongus* (Pillai, 1964) (Copepoda: Siphonostomatoida: Lernanthropidae) female and male redescription from specimens collected on *Sardinella aurita* from Turkey. *Bulletin of the European Association Fish Pathologists*, 30(4): pp: in press
13. Tokşen, E., Nemli, E., and Değirmenci, U., (2008). The Morphology of *Lernanthropus kroyeri* van Beneden, 1851 (Copepoda: Lernanthropidae) Parasitic on Sea Bass, *Dicentrarchus labrax* (L., 1758), from the Aegean Sea, Turkey. *Türkiye Parazitoloji Dergisi*, 32 (4): pp: 386-389.