

Three New Parasitic Copepod Species for the Parasite Fauna of Marine Fish of Turkey

Türkiye Deniz Balıklarının Parazit Faunası İçin Üç Yeni Parazitik Copepod

Ahmet Öktener^{1,*} and Jean-Paul Trilles²

^{1,*} Cihannüma mahallesi Hüsnü Savman sok. No:22/5 80690 Beşiktaş, İstanbul, Turkey (corresponding author)

²UMR 5171(Génom, Populations, Interactions, Adaptation), Équipe Adaptation Ecophysiologique et Ontogenèse, Université de Montpellier 2, CC. 092, Place E. Bataillon, 34095 Montpellier Cedex 05, France

Abstract

In this study, three parasitic copepods from three different fish species, were reported for the first time in Turkish Coasts: *Lernanthropus trachuri* Brian, 1903 on gills of the horse mackerel (*Trachurus mediterraneus* Steindachner, 1868), *Neobrachiella impudica* (Nordmann, 1832) on gills of the gurnard (*Trigla lucerna* Linné, 1758), *Chondracanthus lophii* Johnston, 1836 on gill cavity of the angler fish (*Lophius piscatorius* Linné, 1758). Besides, *Mugil soiyu* is identified as a new host for *Ergasilus nanus* van Beneden, 1871 in Turkish Coasts.

Key words: Copepod, parasites, horse mackerel, angler fish, gurnard.

Introduction

Most of the parasitic crustaceans belong to the Copepoda. In general, they are ectoparasites on the skin and gills of fish, but a number of species can be found on and in various invertebrates (Möller, 1986; Raibaut, 1996). Among the approx. 11.500 copepod species known today (Humes, 1994; Razouls and Raibaut, 1996), about 1.700 are parasitizing fish. 75% of the parasitic species

belong to the order Siphonostomatoida Thorell, 1859, 20% to the Poecilostomatoida Thorell, 1859 and 5% to the Cyclopoida Burmeister, 1834. The last group is restricted to freshwater. The biology and the detrimental effects of parasitic copepoda were recently reviewed by Kabata (1970; 1984), Raibaut and Trilles (1993) and Raibaut (1996).

Material and Method

The horse mackerel specimens (*Trachurus mediterraneus* Steindachner, 1868) were caught by fishing line from the Bosphorus, the Russian mullet specimens (*Mugil soiyu* Basilevsky, 1855) by gill net from the Sirakaagaçlar Stream (Akliman, Sinop), the angler fish specimens (*Lophius piscatorius* L., 1758) and the gurnard specimens (*Trigla lucerna* L., 1758) were obtained from Kumkapı Fish Shop (Istanbul).

The collected parasites were fixed in 70% alcohol for light microscopic observation. For scanning electron microscope observation, *Lernanthropus* and *Ergasilus* specimens were removed from the fish, fixed in 3% glutaraldehyde in 0.1 M phosphate buffer (pH 7.2) at 4°C for 1 h. They were washed in the buffer before the post-fixation in 1% osmium tetroxide in the same buffer at 4°C for 1 h. Then, the specimens were dehydrated through alcohol series and critical-point dried. After wards, they were sputter-coated with gold (Topçu, 1977). SEM photographs were taken with a Jeol electron microscope. The identification and morphometric characteristics were performed according particularly to Kabata (1979) and Yamaguti (1963).

Results and Discussion

In this study, two siphonostomatoid and two poecilostomatoid copepods were found on gill filaments of four different fish species.
Siphonostomatoida Thorell, 1859
Lernanthropidae Kabata, 1979

Lernanthropus trachuri Brian, 1903 (Figs. 1, 2)

Syn (after Diebakate and Raibaut, 1996): *Lernanthropus lichiae*
Goggio, 1906

Host: *Trachurus mediterraneus* Steindachner, 1868.

Locality: The Bosphorus.

Prevalence: %40

Abundance min-max: 1-5

Total number of parasites: 47

The *Lernanthropus* genus is the most abundant representative of its family and belongs to the most common genera of parasitic copepods. More than 100 species are described so far and it appears certain that the list is not complete. All the species are parasitic on the gills of marine teleosts, most of them inhabiting in warmer waters (Kabata, 1979; Ho and Do, 1985). *Lernanthropus trachuri* was originally described in the Mediterranean from Portoferraio (Italy), on *Trachurus trachurus* and from Nice, on *Lichia vadigo*, by Brian (1903); Nunes-Ruivo (1954) found it on *Trachurus trachurus* in Algeria, - Delamare Deboutteville and Nunes-Ruivo (1954), on *Caranx ronchus* and *Paracubiceps ledanoisi* in Senegal, - Capart (1959), on *Paracubiceps ledanoisi* along the Atlantic coasts of Africa, - Piasecki (1982), on *Trachurus trachurus capensis* in Namibie, - Castro Romero and Baeza Kuroki (1985), on *Trachurus murphy* and *Seriorella violacea* from Antofagasta, Chile, - Gaevskaya & Kovaleva (1985), on *Trachurus picturatus* along the coasts of the Sahara, - Luque *et al.*, (1989), on *Seriorella violacea* in Chorrillos, Peru, - Timi and Etchegoin (1996), on *Cynoscion striatus* in the Buenos Aires, - Diebakate and Raibaut (1996), on *Chloroscombrus chrysurus* and *Erythrocles monodi* along the Senegal coasts.

There are two reports concerning species belonging to the *Lernanthropus* genus, from the Turkish Coasts. Altunel (1983) reported *Lernanthropus mugilis* Brian, 1898 from *Mugil auratus* and Toksen (1999), *Lernanthropus kroyeri* van Beneden, 1851 from *Dicentrarchus labrax*, in the Aegean Sea.

Lernaeopodidae Olsson, 1869

Neobrachiella impudica (Nordmann, 1832) (Fig. 3)

Syn (after Kabata, 1979) : *Brachiella impudica* von Nordmann, 1832.

Thysanote impudica (Nordmann) Bassett-Smith, 1896.

Epibrachiella impudica (Nordmann) Wilson, 1915.

nec *Brachiella impudica* (Nordmann) Belloc, 1929.

Brachiella parva Nunes-Ruivo, 1957.

Host: *Trigla lucerna*, L., 1758.

Locality: the Sea of Marmara.

Prevalence: %6

Abundance min-max.: 1

Total number of parasites: 2

Neobrachiella impudica parasitizes exclusively teleosts belonging to Triglidae and has been found on the gills of several triglid species. Its distribution area covers the North Sea, Atlantic coast of Europe and western part of the Mediterranean, its southernmost record being from Rio de Oro in West Africa (Capart, 1941). It is absent from the American coasts of the Atlantic and does not extend north of the North Sea. *Neobrachiella impudica* is common in British waters, where it occurs on most of the local species of Triglidae, the gurnards. (Kabata, 1979, Yamaguti, 1963).

Poecilostomatoida Thorell, 1859

Chondracanthidae Milne Edwards, 1840

Chondracanthus lophii Johnston, 1836 (Fig. 4)

Syn (after Kabata, 1979): *Lernentoma dufresnii* de Blainville, 1822.

Chondracanthus lophius Risso, 1826.

Chondracanthus delarochiana Cuvier, 1829.

Chondracanthus gibbosus Kroyer, 1837.

Chondracanthus delarochiana (pars) Milne Edwards, 1840.

Lernentoma lophii Baird 1850; Hansen, 1923.

Lernentoma lophii Thompson, 1893.

Chondracanthus gibbus Schimkewitsch, 1896.

Chondracanthus abdominalis Heegaard, 1943

Chondracanthus lophii Barnard, 1955.

Host: *Lophius piscatorius* L., 1758.

Locality: the Sea of Marmara

Prevalence: % 4

Abundance min.-max: 1

Total number of parasites: 1

The Chondracanthidae Milne Edwards, 1840 is a family of highly transformed parasitic copepods with a worldwide distribution. Both adults and larvae are typically found in the oral-branchial cavity of the fish host, attaching by means of powerful, hook-like antennae (Ostergaard, 2003). *Chondracanthus lophii* is a common parasite of *Lophius piscatorius*, the bottom living angler fish. Its distribution extends over the North Sea, British waters and along the South-western European seaboard. The species has been reported also from the Faroes to the North of this area and from the Mediterranean and Adriatic from the South and South-East (Kabata, 1979).

Ergasilidae Nordmann, 1832

Ergasilus nanus van Beneden, 1871 (Fig. 5)

Host: *Mugil soiu* Basilewsky, 1855.

Locality: Sirakaraagaçlar Stream (Aklıman, Sinop)

Prevalence: %100

Abundance min-max.: 15-48

Total number of parasites: 112

Ergasilus nanus, first collected by van Beneden (1871) on *Mugil chelo* off the coasts of Belgium, is a parasite with a fairly wide range of hosts. Its best known host species are the mugilids and it has been recorded from five species of Mugilidae. The other large group of its hosts are the gobiids. It has been found on the gills of five species of *Neogobius*, one of *Gobius* and one of *Pomatoschistus* (Sea of Azov). *E. nanus* is one of the few parasitic copepods able to tolerate the transition from a seawater to a freshwater environment. Most records of *E. nanus* concern the

European Atlantic, the Mediterranean, the Black sea and the Azov Sea (Kabata, 1979).

In the Aegean Sea, *Ergasilus nanus* was reported by Altunel (1983) on *Mugil cephalus*, *Liza saliens*, *L. ramada*, *Chelon labrosus*, *Oedalechilus labeo*. *Mugil soiyu* is now identified as a new host for *E. nanus* along the Turkish coasts.



Figure 1. *Lernanthropus trachuri*

Brian,1903 (SEM) Scale = 0.5mm

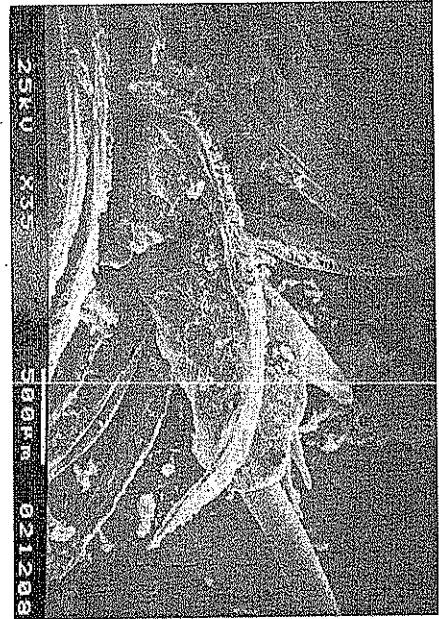


Figure 2. *Lernanthropus. trachuri*

attached to the gills of *Trachurus mediterraneus* (SEM). Scale =0.5mm

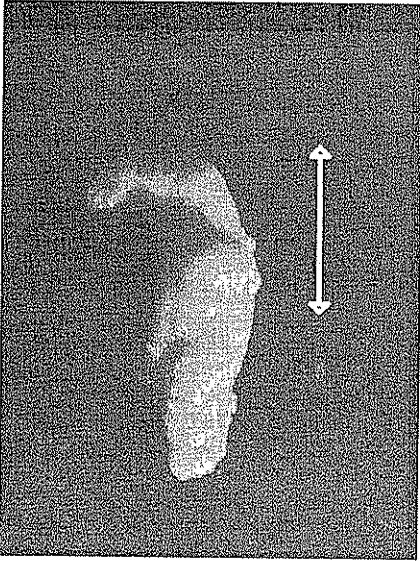


Figure 3. *Neobrachiella impudica*
 (Nordmann, 1832) (LM) Scale = 1.5mm

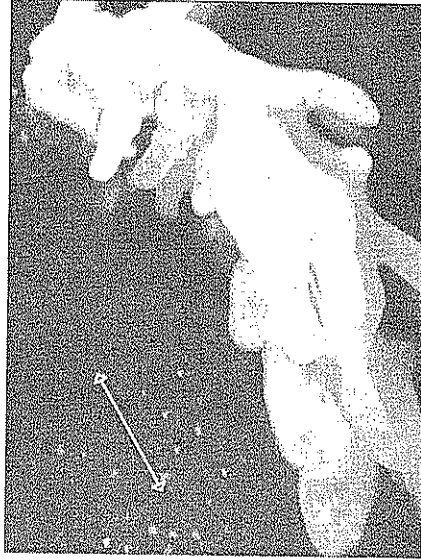


Figure 4. *Chondracanthus lophii*
 Johnson, 1836 (LM) Scale=2mm

(Nordmann, 1832) (LM) Scale = 1.5mm Johnson, 1836
 (LM) Scale=2mm

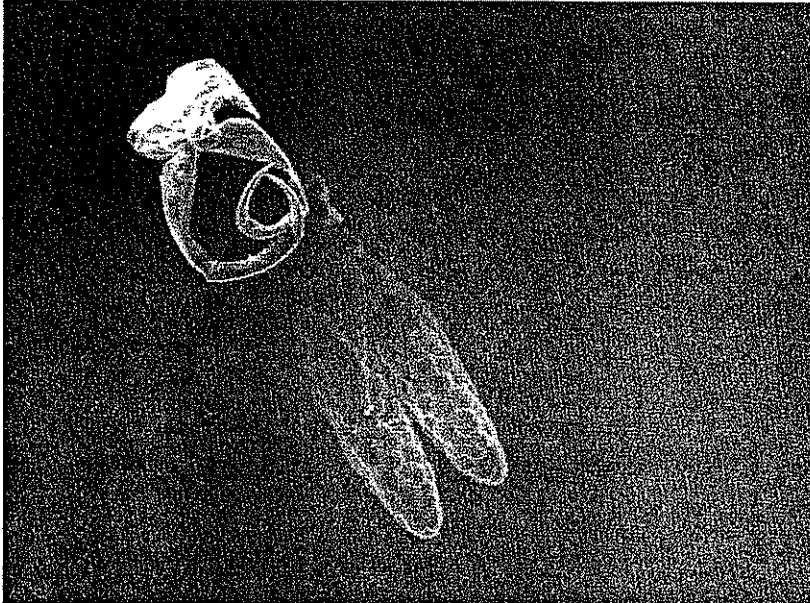


Figure 5. *Ergasilus nanus* van Beneden, 1871 (SEM)

Özet

Bu çalışmada Türkiye kıyılarında üç farklı balık türünden ilk kez üç parazitik copepod türü rapor edilmiştir: İstavrit balığının (*Trachurus mediterraneus* Steindachner, 1868) solungaçlarından *Lernanthropus trachuri* Brian, 1903, kırlangıç balığının (*Trigla lucerna* Linné, 1758) solungaçlarından *Neobrachiella impudica* (Nordmann, 1832), fener balığının (*Lophius piscatorius* Linné, 1758) solungaçlarından *Chondracanthus lophii* Johnston, 1836 toplanmıştır. Bunun yanında Türkiye Kıyılarında *Ergasilus nanus* van Beneden, 1871 için yeni bir konak olarak *Mugil soiyu* teşhis edilmiştir.

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