

# The parasitic isopods, *Anilocra frontalis* and *Anilocra physodes* (Crustacea; Isopoda) on some marine fish in Antalya Gulf, Turkey

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## Abstract

Specimens of *Anilocra frontalis* Milne-Edwards, 1840 and *Anilocra physodes* (Linnaeus, 1758) (Cymothoidae - Isopoda) were observed on 7 fish species (*Oblado melanura* (Linnaeus, 1758), *Boops boops* (Linnaeus, 1758), *Pagellus erythrinus* (Linnaeus, 1758), *Lithognathus mormyrus* (Linnaeus, 1758), *Diplodus annularis* (Linnaeus, 1758), *Sphyaena chrysotaenia* Klunzinger, 1884, *Liza aurata* (Risso, 1810)) belonging to Sparidae, Sphyaenidae and Mugulidae families on the coast of Antalya, Eastern Mediterranean Sea. Prevalence (percent of hosts infected) and intensity (mean number of parasites per infected host) were calculated for all species. This is the first record of the *Anilocra frontalis* and *Anilocra physodes* for the Mediterranean coast of Turkey.

## Introduction

Cymothoid isopods belong to a group of parasites known to infect numerous fish families, largely in tropical and subtropical habitats. These parasites can be found on external surfaces, in the buccal cavity/gill chamber or in the cavity of fish (Horton & Okamura, 2002).

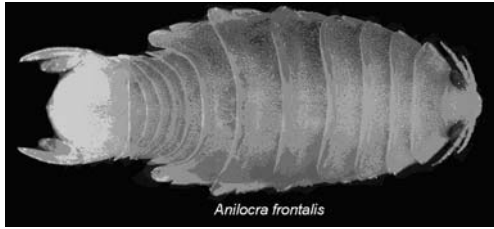
Marine isopods are poorly studied animals in Turkey and some groups remain completely undescribed. With the exception of some studies, (e.g. Demir, (1952); Geldiay & Kocatas, (1972); Akmirza, (1997; 2000a, b); Kirkim, (1998); Oktener & Trilles, (2004); Trilles & Oktener (2004); Kirkim et al, (2006)) the cymothoid fauna of Turkey is poorly known. *Anilocra physodes* has recently been reported from 12 fish species [*Spicara smaris* Linnaeus, 1758, *S. maena* (Linnaeus, 1758), *Scomber japonicus* Houttuyn, 1782, *Sparus*

*auratus* Linnaeus, 1758, *Dicentrarchus labrax* Linnaeus, 1758, *Boops boops* (Linnaeus, 1758), *Diplodus annularis* (Linnaeus, 1758), *D. vulgaris* (E. Geoffroy St.-Hilaire, 1817), *D. sargus* (Linnaeus, 1758), *Pagellus erythrinus* (Linnaeus, 1758), *Spondyliosoma cantharus* (Linnaeus, 1758), *Oblado melanura* (Linnaeus, 1758)] and *A. frontalis* was observed on *Symphodus tinca* (Linnaeus, 1758) (Oktener & Trilles, 2004). All of the observations were conducted at Marmara, Aegean and Black Sea. The cymothoid fauna of Turkish coast of the Mediterranean Sea are still unknown.

## Materials and methods

This study was conducted to determine Cymothoidae species distributed along the Antalya gulf coasts between May 2004 - May 2005. Four stations (Name of stations: 1) Lara; 2) Kundu; 3) Belek and 4) Kizilot-Manavgat)

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**Figure 1.** Dorsal view of *Anilocra frontalis*

were selected and samplings were carried out by using gill nets of mesh size of 20-24 mm. The four stations surveyed were located 0,2 to 2 km off the coast, at depths ranging from 5 to 20 m. All the cymothoid specimens were collected from fishes. After removal from the hosts, they were immediately fixed in 70% ethanol and placed in a labelled tube for later study. Species of isopod was determined in the laboratory using a dissecting microscope (Olympus S 240) according to studies (Trilles, 1965; Williams & Williams 1981; Kirkim, 1998). All specimens were photographed with an Olympus C 5050 and identified with Olympus S 240. Prevalence (percent of hosts infected) and intensity (number of parasites per infected host) were calculated for all species collected in the field. They are now deposited at the Ege University Fisheries Laboratory. Fish names and their authorities were updated according to Ekingen, 2004.

## Results and discussion

This is the first record of the *Anilocra frontalis* and *Anilocra physodes* from Turkish coast of the Mediterranean Sea. The two *Anilocra* were distinguished using two criteria: 1) The anterior end of the head is truncated in *A. physodes* and rounded in *A. frontalis*, 2) Endopodites of uropods slightly surpass the distal part of the pleotelson in *A. physodes* but



**Figure 2.** Dorsal view of *Anilocra physodes*

distinctly surpass in *A. frontalis*. Dorsal view of *A. frontalis* and *A. physodes* are given in Figure 1 and 2.

Seven fish species belonging to 3 families (Sparidae, Sphyrænaidae and Mugilidae) presents in this study, including *Lithognathus mormyrus*, *Sphyræna chrysotaenia* and *Liza aurata* that were not previously known to be hosts, were identified as hosts. Prevalence and intensity of parasite species from host fish species are given in Table 1.

*A. physodes* was a more prevalent parasite than *A. frontalis*. Out of 658 potential hosts, 23 (3.50 %) were infected with *A. physodes* but only 8 (1.22%) were infected with *A. frontalis*. *Anilocra physodes* was observed from 5 fish species belonging to 3 families but *A. frontalis* was observed from 3 fish species belonging to Sparidae.

Prevalence of *Anilocra* species on host fish species recorded from 0.85 % to 7.14 %. Both parasite species were observed from only one fish species, *Lithognathus mormyrus*. Number of parasites per infected *L. mormyrus* was recorded from 1.21 to 1.25. The high prevalence of *A. physodes* (6.80 %) on *L. mormyrus* may be related to behaviours and life histories of both animals.

Parasite species	Host	N	N'	% Pr.	Total parasites (Int.)
	<i>Oblada melanura</i>	44	3	6,81	3 (1)
<i>Anilocra frontalis</i>	<i>Lithognathus mormyrus</i>	206	4	1,94	5 (1,25)
	<i>Boops boops</i>	14	1	7,14	1 (1)
	<i>Pagellus erythrinus</i>	82	4	4,88	4 (1)
	<i>Lithognathus mormyrus</i>	206	14	6,80	17 (1,21)
<i>Anilocra physodes</i>	<i>Diplodus annularis</i>	42	2	4,76	2 (1)
	<i>Sphyraena chrysotaenia</i>	35	1	2,86	1 (1)
	<i>Liza aurata</i>	235	2	0,85	2 (1)

N: Total individuals, N': Infected individuals, Pr: Prevalence (percent of hosts infested), Int: Intensity (number of parasites per infested host).

**Table 1.** Prevalence and intensity of parasite species from host fish species.

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