

## Metazoan Parasite Fauna of Conger Eel (*Conger conger* L.) Near Gökçeada, Northeasten Aegean Sea, Turkey <sup>[1]</sup>

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### Summary

This investigation was realized to determine the metazoan parasite fauna of conger eel (*Conger conger*) in July, September, October 2011 and January 2012 near Gökçeada in northeastern Aegean Sea in Turkey. As a result of this study, 8 species of metazoan parasites were found; *Lecithochirium fusiforme*, *Prosorhynchus crucibulum*, *Helicometra fasciata*, *Scolex pleuronectis*, *Anisakis simplex*, *Cucullanus hians*, *Hatschekia sp.*, *Praniza larvae*; belonging three species to digenea, one species to cestoda, two species to nematoda, one species to crustacea, one species to isopoda respectively. *Lecithochirium fusiforme* was found to be the dominant species with a prevalence of 76.92%.

**Keywords:** *Conger eel*, *Conger conger*, *Metazoan parasite*, *Gökçeada*

## Kuzeydoğu Ege Denizinde, Gökçeada Civarındaki Mıgır Balığının (*Conger conger* L.) Metazoan Parazit Faunası

### Özet

Bu çalışma Gökçeada civarında avlanan mıgır (*Conger conger*) balığının metazoan parazit faunasını belirlemek amacıyla Temmuz, Eylül, Ekim 2011 ve Ocak 2012 tarihlerinde gerçekleştirildi. Bu çalışma sonucunda, digeneaya ait 3 tür, sestoda ait 1 tür, nematoda ait 2 tür, crustaceaya ait 1 tür, isopodaya ait 1 tür olmak üzere 8 tür (*Lecithochirium fusiforme*, *Prosorhynchus crucibulum*, *Helicometra fasciata*, *Scolex pleuronectis*, *Anisakis simplex*, *Cucullanus hians*, *Hatschekia sp.*, *Praniza larvae*) metazoan parazit bulundu. %76.92'lik enfeksiyon yüzdesi ile *Lecithochirium fusiforme* türü mıgır balığında dominant türdü.

**Anahtar sözcükler:** *Mıgır*, *Conger conger*, *Metazoan parazit*, *Gökçeada*

### INTRODUCTION

The conger eel, *Conger conger* L., with long cylindrical body, is a benthic marine species. It shows a wide geographical distribution extending through the northeastern Atlantic, Mediterranean and Black Sea <sup>1</sup>. Conger eel, living on rocky, sandy or coarse substrate bottom between 5 and 1000 m. is a carnivorous fish and feeds with various fishes, crustaceans, molluscs in relation to living depth. Various studies were performed on the parasitic fauna of conger eel in different areas of the world such as Adriatic Sea <sup>2</sup>, western Mediterranean <sup>3,4</sup>, Italy <sup>5</sup> and Argentina <sup>6</sup>, but to date, there is not a study on the parasite of conger eel in Turkish waters. The aim of this investigation was to determine the parasite fauna of conger eel near Gökçeada.

### MATERIAL and METHODS

The fish samples were caught by gill-net and long-line near Gökçeada in northeastern Aegean Sea in Turkey in July, September, October 2011 and January 2012. Fish samples were transported to the laboratory and were kept alive in aerated tanks until parasitological investigation. When examined, it was waited for the death of the fish taken out of the water and then dissected. The removed gills, intestine and stomach were placed in separate petri dishes and examined for parasites under incident light using a stereomicroscope. Live parasites were



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slightly compressed between a slide and coverslip, examined under light microscope and their photos were taken. Some parasites were immediately mounted in glycerine-jelly or placed in 70 % alcohol solution and later, permanent slides were also prepared from these samples. Measurements were carried out by using a micrometric ocular or BEL view camera programs on the fixed specimens. Identification of the parasites were made according to <sup>7-10</sup>. Parasitological terms (prevalence, intensity etc.) were calculated according to <sup>11</sup>.

## RESULT

A total of 26 conger eel were examined for parasitic infection. As a result of this, 2 ectoparasite and 6 endoparasites were dedected. These parasite species, their site of infection in the host and their infection rates were given in Table 1.

Vitellarium always anterior to ovary, in two seperated group of follicles. Cirrus sac elongated, located at the posterior of body (Fig. 2).

### - *Helicometra fasciata* (Rudolphi,1819)

Body oval (2.5-4 mm. length, 0.5-0.7 mm. breadth), oral sucker subterminal, prepharynx short, esophagus spherical, ceaca reaching the end of body, ventral sucker bigger than oral sucker. Testes two, lopped, tandem, post ovarian. Ovary lopped. Uterine coils spherical between ovary and ventral sucker. Eggs having long tails (Fig. 3).

### Cestoda

### - *Scolex pleuronectis* Muller,1788

*Scolex pleuronectis* comprised of a scolex bearing four bothridia, an apical sucker and a long, slender body (1-1.5 mm. length, 0.3-0.5 mm. breadth) (Fig. 4).

**Table 1.** Parasite species of conger eel (*Conger conger*) near Gökçeada and their infection rate

**Tablo 1.** Mıgır balığının (*Conger conger*) parazit türleri ve infeksiyon oranları.

Parasite Species	Site	N.I.P.	Prevalance	N.P.	Mean Intensity	Min-Max
<i>Lecithochirium fusiforme</i>	Stomach	20	76.92		>25	
<i>Prosorhynchus crucibulum</i>	Intestine	3	11.54		>25	
<i>Helicometra fasciata</i>	Intestine	1	3.85	7	7	7
<i>Scolex pleuronectis</i>	Intestine	2	7.69	29	14.5	12-17
<i>Anisakis simplex</i>	Intestine	4	15.38	14	3.5	1-6
<i>Cucullanus hians</i>	Intestine	2	7.69	12	6	5-7
<i>Praniza larvae</i>	Gill	3	11.54	8	2.67	1-5
<i>Hatschekia sp.</i>	Gill	12	46.15	37	3.08	1-5

N.I.P.: number of infested fish, N.P.: total parasite number

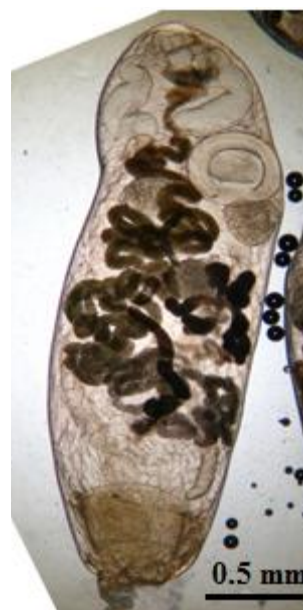
### Digenea

### - *Lecithochirium fusiforme* Lühe, 1901

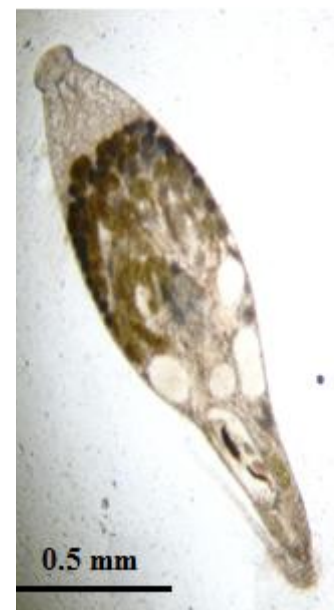
Body elongate, rounded anteriorly but truncate posteriorly, 2-4 mm. length, 0.4-1 mm. breadth at ovarian level, esoma well developed. Oral sucker subterminal, 0.15-0.25 mm. in diameter. Ventral sucker circular, large (0.3-0.5 mm. in diameter). Prepharynx absent. Pharynx large, oesophagus short, ceaca ending at base of esoma. Testes two, symmetrical, spherical, postacetabular. Ovary spherical, posttesticular. Uterine coils numerous, fell much of somatic hindbody. Vitellarium equatorial, consist of seven lobes (Fig. 1).

### - *Prosorhynchus crucibulum* (Rudolphi,1819) Odhner, 1905

Body flattened and elongate, truncated anteriorly, rounded posteriorly (1-3 mm. length, 0.4-0.8 mm. breadth). Cuticle spinous, spines more abundant anteriorly. A very large rhynchus, funnel-like mounth and pharynx near the midbody. Testes oblique, ovary spherical, pretesticular.



**Fig 1.** *Lecithochirium fusiforme*  
**Şekil 1.** *Lecithochirium fusiforme*



**Fig 2.** *Prosorhynchus crucibulum*  
**Şekil 2.** *Prosorhynchus crucibulum*

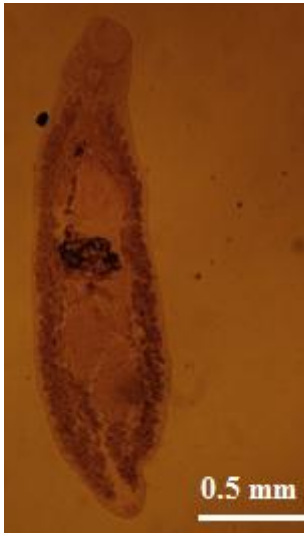
**Nematoda**

**- Anisakis simplex (Rud,1809)**

Ascarid nematods are characterized by the presence of three lips, a club-shaped esophagus. The species of this family have the various modifications of the esophagus. Anisakis found in the third-stage larvae in the various fishes are readily distinguished from the other species of the family by dentigenous ridges on their lips and a posteriorly esophageal ventricles (total length 15-30 mm., maximum breadth 0.3-0.5 mm., esophagus 1-5-2 mm. length, ventricles 1-1.2 mm. length) (Fig. 5).

**- Cucullanus hians (Dujardin,1845)**

Mouth slitlike, between two wide lateral labia. Esophagus long and narrow, widened anteriorly and posteriorly, opening



**Fig 3. Helicimetre fasciata**  
**Şekil 3. Helicimetre fasciata**



**Fig 4. Scolex pleuronectis**  
**Şekil 4. Scolex pleuronectis**



**Fig 5. Anisakis simplex, (a) anterior, (b) posterior, (c)ventricles**  
**Şekil 5. Anisakis simplex, (a) ön bölge, (b) arka bölge, (c) ventrikül**

into intestine through small valve (total length 2-2.5 mm., maximum breadth 0.25-0.3 mm., esophagus 0.4-0.45 mm. length). Male have pseudosucker and two equal spicules. Vulva near body middle (Fig. 6).

**Isopoda**

**- Praniza larvae**

While Gnathiid isopods live free in adult phase, it lives parasitic in larval period and named as the praniza larvae. Total length of praniza larvae 13-25 mm. The body of larvae is divided into three parts; the cephalon including antennae and mouthparts, the pereon with five pairs of pereopods, the pleon and telson with one pair of uropods (Fig. 7).

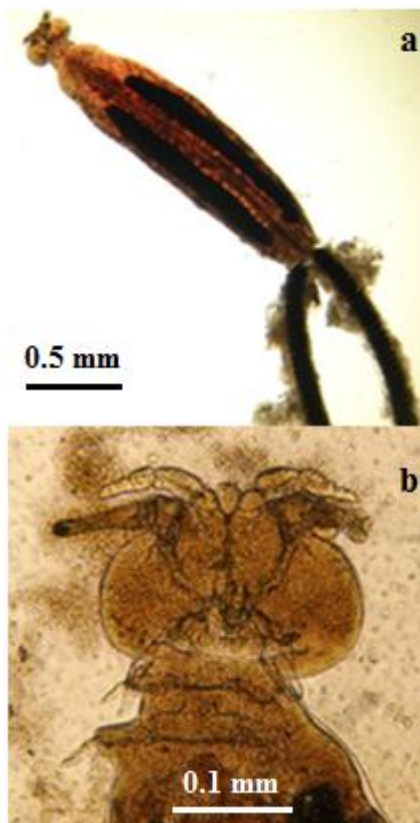


**Fig 6. Cucullanus hians, (a) anterior, (b) posterior**  
**Şekil 6. Cucullanus hians, (a) ön bölge (b) arka bölge**



**Fig 7. Praniza larvae**  
**Şekil 7. Praniza larvası**





**Fig 8.** *Hatschekia* sp. (a) total view, (b) cephalothorax

**Şekil 8.** *Hatschekia* sp. (a) genel görünüş, (b) sefalotoraks  
**Copepoda**

- *Hatschekia* sp. Brian, 1906

Body dorsoventrally flattened. Cephalothorax fused with first segment separated by neck region with one or two segment from body region. Uropod present (Fig. 8).

## DISCUSSION

*Lecithochirium fusiforme* is indicated as the most common parasite of conger eel<sup>3</sup>. While Sanmartin *et al.*<sup>12</sup> did not reported *Lecithochirium fusiforme* in their study carried out in North-west Spain. A higher prevalence of infection was found by Costa *et al.*<sup>1</sup> in Portugal coasts of Atlantic Ocean and by Culurgioni *et al.*<sup>5</sup> in Italian waters. In this study, *Lecithochirium fusiforme* was seen to be the most abundant in all species parasites of conger eel.

*Prosorhynchus crucibulum* were already detected in various infection rates in different areas of Mediterranean<sup>1,2,5</sup>. It was seen with a prevalence of 11.54% and mean intensity of >25.

*Helicometra fasciata* was detected in a many fish species such as *Serranus*, *Trigla*, *Anguilla*, *Trachinus*, *Scorpaena*, *Solea* etc. and was found a very low rate of infection such as prevalence of 3.85% and mean intensity of 7 in conger eel.

Tetraphyllidean metacestodes is difficult to identify due to their relatively featureless scolex morphology, which

lacks the diagnostic features of the adult cestodes. All the metacestodes of this order of cestodes were proposed to accommodate with *Scolex pleuronectis* (synonymised them as *Scolex polymorphus*). In previous studies, many species of Tetraphyllidean metacestodes and *Scolex pleuronectis* were found in many fish species, such as *Boops boops*, *Raja clavata*, *Scorpoena porcus*, *Trachurus mediterraneus*, *Trachinus araneus* etc. in this region<sup>13</sup> and also in conger eel in this study.

While *Anisakis simplex* infected more than 150 species of fish and cephalopod in Mediterranean areas, this species was detected in *Scomber japonicus*, *Boops boops*, *Merluccius merluccius* etc. in the previous studies carried out in the same region. And in this study, it was also detected in conger eel with a prevalence of 15.38% and mean intensity of 3.5.

The prevalence of *Cucullanus hians* in conger eel was moderately too low, 7.69, where it was reported as the 32 and 58% observed by Sanmartin *et al.*<sup>12</sup> and Munoz *et al.*<sup>14</sup>, respectively.

*Hatschekia* sp. being in the highest prevalence *Lecithochirium fusiforme* was observed in high prevalence (46.15%) but low intensity (1-5) in our study.

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