

AN UPDATED CHECKLIST OF PARASITIC HELMINTHS OF MARINE FISH FROM TURKEY

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ABSTRACT

An updated checklist carried out indicated the occurrence of 161 helminth species from wild marine fish species in Turkey, which includes 49 monogeneans, 63 digeneans, 18 cestodes, 17 nematodes, 11 acanthocephalans and three annelids, from 88 different fish (86 native, two migratory) species. Since the publication of the checklist of helminth parasites of marine fishes in Turkey over nine years ago (Öktener, 2005), there have been a number of new records. This update includes these additional records and has allowed the correction of those errors and omissions that were present in the previous version. The parasite species list is arranged by phylum and class, providing parasite species name, host fish, location of host fish capture and author, and date of published record. The host list consists of all parasite species listed by host species. All parasites and their hosts are confirmed with the recent systematic accounts and full taxonomic account.

RESUMEN: Elenco actualizado de parásitos helmintos de peces marinos de Turquía.

Un elenco actualizado indica la existencia de 161 especies de helmintos de peces marinos silvestres de Turquía, los cuales incluyen 49 monogéneos, 63 digéneos, 18 cestodos, 17 nematodos, 11 acantocéfalos y tres anélidos que parasitan 88 especies distintas de peces marinos de Turquía (86 de ellos nativos y dos migratorios). Desde la publicación de un elenco de parásitos helmintos de peces marinos en Turquía, hace 9 años (Öktener, 2005) nuevas especies han sido registradas. Esta actualización contempla dichos registros y ha permitido la corrección de aquellos errores y omisiones que estaban presentes en las versiones anteriores. La lista de parásitos está organizada según filum y clase, mostrando el nombre de la especie del parásito, del pez hospedero, la localización de donde éste fue capturado, así como también del autor y la fecha de publicación del registro. Asimismo, la lista contiene las especies de parásitos ordenadas según la especie hospedera. Los nombres de todos los parásitos y de sus hospederos están en conformidad con los protocolos de sistemática más recientes.

REZUMAT: Conspectul speciilor de helminți paraziți la ihtiofauna marină din Turcia.

Conspectul la zi indică prezența a 161 specii de helminți din care 49 specii sunt trematode din clasa Monogenea, 63 din clasa Digenea, 18 cestode, 17 nematode, 11 acantocefali, trei anelide găsite la 88 specii diferite de pești (86 autohtone și două în pasaj) din fauna sălbatică marină a Turciei. De la ultima ediție a conspectului speciilor de helminți paraziți la ihtiofauna marină a Turciei acum nouă ani (Öktener, 2005), au fost semnalate specii noi. Această versiune include ultimele descoperiri și corectează erorile și omisiunile versiunii precedente. Conspectul este prezentat după încregătură și clasă, cu numele speciei parazite, gazda, locul capturării peștelui gazdă, autorul și data publicării. Lista de specii gazdă conține speciile parazite găsite la acestea. Paraziții și gazdele lor fac obiectul confirmării prin note sistematice recente sau chei de identificare complete.

INTRODUCTION

In Turkey, the total length of the sea coast is 8,333 km, including the Black Sea, the Mediterranean Sea, the Aegean Sea and the Marmara Sea.

The Black and Mediterranean shores do not have inlets or promontories, in comparison to the Aegean Sea, which has an indented coastline, including bays, gulfs, deltas and also islands.

Marmara Sea connects the Mediterranean Sea to the Black Sea (Kılıç, 1999). The examination of literature on Turkish seas by Frick et al. (2007) revealed reports of 434 native species (plus 46 immigrated or introduced ones), with the Gobiidae and Sparidae being the largest families.

Articles in various publications have mentioned parasites of wild, farmed and imported fish by Turkish researchers between 1931 and 2014.

All information about parasites of marine fish has been compiled by Öktener (2005), based on parasite-host list and host-parasite list.

The author compiled a significant checklist of the metazoan parasites (114 helminths, 95 named and 19 unnamed) of marine fish from Turkey area.

After this significant checklist, several publications have been made by Turkish and foreign scientists. These specific studies yielded some new distributional records and added new species.

This checklist is done to update previously published lists of helminths of marine fishes from Turkey. Finally, this paper is also intended to show and update the parasite richness of fishes of Turkey.

MATERIAL AND METHODS

Information from all the available references on helminths of marine fishes in Turkey (journal publications, reports of research projects, theses, proceedings of congresses, symposium proceedings) from 1931 to 2014 were gathered to provide host-parasite and parasite-host lists.

In the literature dealing with the parasites of marine fishes in Turkey, there appear incorrect spellings of parasite names, host names and species author's names, and incorrect attributions of dates of species authorship.

The scientific names of all parasites and their synonyms were checked with the main electronic sites concerned with classification (ITIS, 2014; WoRMS Editorial Board, 2014; Gibson et al., 2003). Where wrong spellings of parasite genus or species names have been consistently applied, these are noted in the table (Tab. 1).

The scientific names of fishes were checked according to Frick et al. (2007) and electronic sites; Froese and Pauly (2014a), WoRMS Editorial Board (2014), Eschmeyer (2014).

Similarly, misspellings of host species names, with the few exceptions where these have been widely applied, have been corrected without comment using information obtained from FishBase (Froese and Pauly, 2014b) (Tab. 2).

Table 1: Changes of current valid names and synonymies.

Synonyms and incorrect spellings	Valid names
<i>Microcotyle mugilis</i> Vogt, 1879	<i>Solostamenides mugilis</i> (Vogt, 1879)
<i>Microcotyle erytrini</i> Van Beneden, 1880	<i>Microcotyle erythrini</i> Van Beneden and Hesse, 1880
<i>Microcotyle chrysophrui</i> Van Beneden, 1880	<i>Sparicotyle chrysophrui</i> (Van Beneden and Hesse, 1863)
<i>Cyclocotyla bellones</i> (Otto, 1821)	<i>Diclidophora bellones</i> (Otto, 1823)
<i>Octostoma scombri</i> Kuhn, 1829	<i>Kuhnia scombri</i> (Kuhn, 1829)
<i>Furnestina echeneis</i> (Wagener, 1857)	<i>Lamellodiscus echeneis</i> (Wagener, 1857)
<i>Bucephalus varicus</i> Monter, 1940	<i>Bucephalus margaritae</i> Ozaki and Ishibashi, 1934
<i>Paracryptogonimus aloysiae</i> (Stossich, 1885)	<i>Siphoderina aloysiae</i> (Stossich, 1885); Miller and Cribb, 2008
<i>Lepidapedon şengünii</i> Akandere, 1972	<i>Prodistomum polonii</i> (Molin, 1859); Bray and Gibson, 1990
<i>Lepidapedon riccii</i> Akandere, 1972	<i>Prodistomum polonii</i> (Molin, 1859); Bray and Gibson, 1990
<i>Lecithochirium gravidium</i> Loss, 1907	<i>Lecithochirium rufoviride</i> (Rudolphi, 1818)
<i>Lecithostaphylus retroflexum</i> (Molin, 1859)	<i>Lecithostaphylus retroflexus</i> Molin, 1859; Odhner, 1911
<i>Haplocladus typicus</i> Odhner, 1911	<i>Monascus filiformis</i> (Rudolphi, 1819)
<i>Opescoelides furcatus</i> (Odhner, 1928)	<i>Opescoeloides furcatus</i> (Bremser in Rudolphi, 1819)
<i>Allopodocotyle pedicellatum</i> (Stossich, 1887)	<i>Allopodocotyle pedicellata</i> (Stossich, 1887); Pritchard, 1966
<i>Bucephalopsis haemaena</i> Lacaze-Duthier, 1854	<i>Bucephalus marinus</i> Vlasenko, 1931
<i>Spinectus oviflagellis</i> (Fourment, 1883)	<i>Spinitectus oviflagellis</i> Fourment, 1883
<i>Echinocephalus spinosissimus</i> Hornell, 1905	<i>Echinocephalus spinosissimus</i> von Linstow, 1905
<i>Anguillicola crassus</i> Kuwahara, Niimi and Itagaki, 1974	<i>Anguillicoloides crassus</i> (Kuwahara, Niimi and Itagaki, 1974)
<i>Solearhynchus soleae</i> (Porta, 1905)	<i>Solearhynchus rhytidotes</i> (Meyer, 1933)
<i>Stibarobdella loricata</i> (Harding, 1924)	<i>Stibarobdella macrothela</i> (Schmarda, 1861)

Table 1 (continuing): Changes of current valid names and synonymies.

Synonyms and incorrect spellings	Valid names
<i>Lecithochirium musculus</i> (Looss, 1907)	<i>Lecithochirium musculus</i> (Looss, 1907) Nasir and Diaz, 1971
<i>Lepidapedon elongatum</i> (Lebow, 1908)	<i>Lepidapedon elongatum</i> (Lebour, 1908) Nicoll, 1910
<i>Mesometra orbicularis</i> (Rudolphi, 1819) Lühe 1901	<i>Mesometra orbicularis</i> (Rudolphi, 1819)
<i>Opechona bacillaris</i> (Molin, 1859)	<i>Opechona bacillaris</i> (Molin, 1859); Dollfus, 1927
<i>Pachycreadium carnosum</i> (Rudolphi, 1819)	<i>Pachycreadium carnosum</i> (Rudolphi, 1819); Cortini and Ferretti, 1959
<i>Pronoprymna ventricosum</i> (Rudolphi, 1819)	<i>Pronoprymna ventricosa</i> (Rudolphi, 1819)
<i>Robphildollfusium fractum</i> (Rudolphi, 1819); Paggi and Orecchia, 1963	<i>Robphildollfusium fractum</i> (Rudolphi, 1819)
<i>Stephanostomum bicoronatum</i> (Stossich, 1883)	<i>Stephanostomum bicoronatum</i> (Stossich, 1883); Fuhrmann, 1928
<i>Stephanostomum minutum</i> (Loss, 1899)	<i>Stephanostomum minutum</i> (Looss, 1901); Manter, 1940
<i>Steringotrema pagelli</i> van Beneden, 1871	<i>Steringotrema pagelli</i> (Van Beneden, 1871); Odhner, 1911
<i>Didymobothrium rudolphi</i> (Monticelli, 1890)	<i>Didymobothrium rudolphii</i> Nybelin, 1922
<i>Paradilepis scolecina</i> Rudolphi, 1935	<i>Paradilepis scolecina</i> (Rudolphi, 1819)
<i>Neoechinorhynchus agilis</i> Rudolphi, 1819	<i>Neoechinorhynchus (Hebesoma) agilis</i> (Rudolphi, 1819)
<i>Pseudoechinorhynchus clavula</i> Dujardin, 1845	<i>Acanthocephalus clavula</i> Dujardin, 1845
<i>Bothriocephalus scorpii</i> (Mueller, 1776)	<i>Bothriocephalus scorpii</i> (Müller, 1776)
<i>Proteocephalus macrocephalus</i> Creplin, 1825	<i>Proteocephalus macrocephalus</i> (Creplin, 1825)
<i>Acanthocephalus anguillae</i> Müller, 1780	<i>Acanthocephalus anguillae</i> (Müller, 1780)
<i>Acanthocephaloides propinquus</i> Dujardin, 1845	<i>Acanthocephaloides propinquus</i> (Dujardin, 1845)
<i>Longicollum pagrosomi</i> (Yamaguti, 1935)	<i>Longicollum pagrosomi</i> Yamaguti, 1935
<i>Pontobdella muricata</i> Linnaeus, 1758	<i>Pontobdella muricata</i> (Linnaeus, 1758)

Table 2: Changes of current valid names, synonymies and incorrect spellings of fish species.

Synonyms and incorrect spellings	Valid names
<i>Pomatomus saltator</i>	<i>Pomatomus saltatrix</i>
<i>Sparus auratus</i>	<i>Sparus aurata</i>
<i>Merlangius merlangus euxinus</i>	<i>Merlangius merlangus</i>
<i>Trachynotus ovatus</i>	<i>Trachinotus ovatus</i>
<i>Puntazzo puntazzo</i>	<i>Diplodus puntazzo</i>
<i>Spicara flexuosa</i>	<i>Spicara maena</i>
<i>Spondyliosoma cantharus</i>	<i>Spondyliosoma cantharus</i>
<i>Sparus pagrus</i>	<i>Pagrus pagrus</i>
<i>Pagellus acerna</i>	<i>Pagellus acarne</i>
<i>Trigla lucerna</i>	<i>Chelidonichthys lucerna</i>
<i>Pagrus coeruleostictus</i>	<i>Pagrus caeruleostictus</i>
<i>Sprattus sprattus phalericus</i>	<i>Sprattus sprattus</i>
<i>Solea vulgaris</i>	<i>Solea solea</i>
<i>Alosa pontica</i>	<i>Alosa immaculata</i>
<i>Epinephelus gigas</i>	<i>Epinephelus marginatus</i>
<i>Ophidium barbatum</i>	<i>Ophidion barbatum</i>
<i>Eutynnus alleteratus</i>	<i>Euthynnus alletteratus</i>
<i>Gobius copitis</i>	<i>Gobius cobitis</i>
<i>Solea nasuta</i>	<i>Pegusa nasuta</i>
<i>Platichthys flesus</i>	<i>Platichthys flesus</i>
<i>Pleuronectes flesus luscus</i>	<i>Platichthys flesus</i>
<i>Squalus blainville</i>	<i>Squalus blainvillei</i>
<i>Psetta maxima</i>	<i>Scophthalmus maximus</i>
<i>Monorchis hispidus</i>	<i>Monochirus hispidus</i>

RESULTS AND DISCUSSION

This helminth checklist of marine fish from Turkey includes only Monogenea, Digenea, Cestoda, Nematoda, Acanthocephala, Annelida and it was compiled with the parasite species arranged by phylum, class and alphabetical order, as appropriate.

The host-parasite list/parasite-host list are arranged as follows.

The parasite species list is arranged by phylum and class, providing parasite species name, host fish, location of host fish capture and author, date of published record (Tab. 3).

The host list consists of all the parasite species listed by host species (Tab. 3).

Table 3: Helminth - host list.

Phylum Platyhelminthes		
Class Monogenea		
<i>Atrispinum acarne</i> Maillard and Noisy, 1979		
<i>Pagellus acarne</i>	Aegean Sea	Akmirza (2013c)
<i>Atrispinum salpae</i> Parona and Perugia, 1889		
<i>Salpa salpa</i>	Aegean Sea	Akmirza (2013c)
<i>Atrispinum seminalis</i> Euzet and Maillard, 1973		
<i>Diplodus annularis</i>	Aegean Sea	Akmirza (2013c)
<i>Diplodus vulgaris</i>	Aegean Sea	Akmirza (2013c)
<i>Amphibdella torpedinis</i> Chatin, 1874		
<i>Torpedo marmorata</i>	Aegean Sea	Akmirza (2013c)
<i>Anthocotyle merlucci</i> (Van Beneden, 1863)		
<i>Merluccius merluccius</i>	Marmara Sea	Oğuz (1995)
<i>Sphyræna sphyræna</i>	Aegean Sea	Akmirza (2013c)
<i>Merluccius merluccius</i>	Aegean Sea	Akmirza (2013c)
<i>Aspinatrium trachini</i> (Parona and Perugia, 1889)		
<i>Trachinus draco</i>	Aegean Sea	Akmirza (2004)
<i>Trachinus araneus</i>	Aegean Sea	Akmirza (2013c)
<i>Axine belones</i> Abildgaard, 1794		
<i>Belone belone</i>	Marmara Sea	Öktener (2005)
<i>Benedenia sciaenae</i> Van Beneden, 1856		
<i>Argyrosomus regius</i>	Aegean Sea	Tokşen et al. (2007)
<i>Bivagina alcedinis</i> (Parona and Perugia, 1889)		
<i>Spicara maena</i>	Aegean Sea	Akmirza (2013c)
<i>Spondyliosoma cantharus</i>	Aegean Sea	Akmirza (2013c)
<i>Choricotyle chrysophri</i> (Van Beneden, 1863)		
<i>Pagellus erythrinus</i>	Aegean Sea	Akmirza (2000b)
<i>Pagellus erythrinus</i>	Aegean Sea	Akmirza (2001)
<i>Spondyliosoma cantharus</i>	Aegean Sea	Akmirza (2013c)
<i>Boops boops</i>	Aegean Sea	Akmirza (2013c)
<i>Diplectenum aequans</i> (Wagener, 1857)		
<i>Dicentrarchus labrax</i>	Aegean Sea	Tareen (1982)
<i>Dicentrarchus labrax</i>	Aegean Sea farm	Tokşen (1999)
<i>Dicentrarchus labrax</i>	Black Sea farm	Öktener et al. (2009)
<i>Dicentrarchus labrax</i>	Beymelek Lagoon	Emre (2010)
<i>Diclidophora bellones</i> (Otto, 1823)		
<i>Boops boops</i>	Aegean Sea	Akmirza (1998b)

Table 3 (continuing): Helminth - host list.

<i>Ergenstrema mugilis</i> Paperna, 1965		
<i>Liza ramada</i>	Aegean Sea	Altunel (1981)
<i>Chelon labrosus</i>	Aegean Sea	Altunel (1981)
<i>Gyrodactylus anguillae</i> Ergens, 1960		
<i>Anguilla anguilla</i>	Aegean Sea	Altunel (1980)
<i>Grubea cochlear</i> Diesing, 1858		
<i>Scomber scombrus</i>	Aegean Sea	Tareen (1982)
<i>Gyrodactylus alviga</i> Gaevskaya and Dmitrieva, 1967		
<i>Merlangius merlangus</i>	Black Sea	Çavuş (2011)
<i>Gyrodactylus flesi</i> Malmberg, 1957		
<i>Platichthys flesus</i>	Sarıcum Lagoon	Öztürk (2005)
<i>Kuhnia scombr</i> (Kuhn, 1829) Sproston, 1945		
<i>Scomber scombrus</i>	Aegean Sea	Tareen (1982)
<i>Scomber japonicus</i>	Aegean Sea	Akmirza (1997)
<i>Scomber japonicus</i>	Mediterranean Sea	Akmirza (2003)
<i>Lamellodiscus echeneis</i> (Wagener, 1857)		
<i>Sparus aurata</i>	Aegean Sea farm	Tokşen (1999)
<i>Lamellodiscus ignoratus</i> Palombi, 1943		
<i>Diplodus puntazzo</i>	Aegean Sea	Tokşen et al. (2003)
<i>Lamellodiscus elegans</i> Bychowsky, 1957		
<i>Sparus aurata</i>	Aegean Sea	Tareen (1982)
<i>Ligophorus acuminatus</i> Euzet and Suriano, 1977		
<i>Liza saliens</i>	Aegean Sea	Altunel (1981)
<i>Ligophorus angustus</i> Euzet and Suriano, 1977		
<i>Chelon labrosus</i>	Aegean Sea	Altunel (1982)
<i>Ligophorus chabaudi</i> Euzet and Suriano, 1977		
<i>Mugil cephalus</i>	Aegean Sea	Altunel (1981)
<i>Ligophorus confusus</i> Euzet and Suriano, 1977		
<i>Liza ramada</i>	Aegean Sea	Altunel (1981)
<i>Ligophorus heteronchus</i> Euzet and Suriano, 1977		
<i>Liza saliens</i>	Aegean Sea	Altunel (1981)
<i>Ligophorus imitans</i> Euzet and Suriano, 1977		
<i>Liza ramada</i>	Aegean Sea	Altunel (1981)

Table 3 (continuing): Helminth - host list.

<i>Ligophorus macrocolpus</i> Euzet and Suriano, 1977		
<i>Liza saliens</i>	Aegean Sea	Altunel (1981)
<i>Ligophorus minimus</i> Euzet and Suriano, 1977		
<i>Liza saliens</i>	Aegean Sea	Altunel (1981)
<i>Ligophorus mugilinus</i> (Hargis, 1955)		
<i>Mugil cephalus</i>	Aegean Sea	Altunel (1981)
<i>Ligophorus szidati</i> Euzet and Suriano, 1977		
<i>Liza aurata</i>	Aegean Sea	Altunel (1981)
<i>Mazocraes alosae</i> Herman, 1782		
<i>Alosa immaculata</i>	Aegean Sea	Akmirza (2013c)
<i>Microcotyle erythrini</i> Van Beneden and Hesse, 1863		
<i>Boops boops</i>	Aegean Sea	Akmirza (1998b)
<i>Diplodus sargus</i>	Aegean Sea	Akmirza (2000b)
<i>Pagellus erythrinus</i>	Aegean Sea	Akmirza (2000b)
<i>Oblada melanura</i>	Aegean Sea	Akmirza (2000b)
<i>Sarpa salpa</i>	Aegean Sea	Akmirza (2000b)
<i>Trachinus araneus</i>	Aegean Sea	Akmirza (2001)
<i>Trachurus mediterraneus</i>	Aegean Sea	Akmirza (2001)
<i>Microcotyle pomatomi</i> Goto, 1899		
<i>Pomatomus saltatrix</i>	Marmara Sea	Sezen, Price (1967)
<i>Metamicrocotyla cephalus</i> (Azim, 1939)		
<i>Mugil cephalus</i>	Aegean Sea	Altunel (1981)
<i>Plectanocotyle gurnardi</i> (Beneden and Hesse, 1863)		
<i>Chelidonichthys lucerna</i>	Aegean Sea	Akmirza (2013c)
<i>Pseudaxine trachuri</i> Parona and Perugia, 1890		
<i>Trachurus mediterraneus</i>	Aegean Sea	Akmirza (1998a)
<i>Pseudodactylogyrus anguillae</i> (Yin and Sproston, 1948)		
<i>Anguilla anguilla</i>	Köyceğiz Lake	Soylu et al. (2013)
<i>Pseudodactylogyrus bini</i> Kikuchi, 1929		
<i>Anguilla anguilla</i>	Sığircı Lake	Çolak (2013)
<i>Pyragraphorus pyragraphorus</i> (Callum and Callum, 1913)		
<i>Trachinotus ovatus</i>	Mediterranean	Öktener (2005)
<i>Solostamenides mugilis</i> (Vogt, 1879)		
<i>Liza aurata</i>	Aegean Sea	Altunel (1981)
<i>Liza saliens</i>	Aegean Sea	Altunel (1981)
<i>Liza ramada</i>	Aegean Sea	Altunel (1981)
<i>Chelon labrosus</i>	Aegean Sea	Altunel (1982)

Table 3 (continuing): Helminth - host list.

<i>Mugil cephalus</i>	Marmara Sea	Sezen, Price (1967)
<i>Liza ramada</i>	Marmara Sea	Oğuz (1995)
<i>Mugil cephalus</i>	Bayramdere Lagoon	Öztürk et al. (2003)
<i>Sparicotyle chrysophrii</i> (Beneden and Hesse, 1863)		
<i>Sparus aurata</i>	Aegean Sea	Tareen (1982)
<i>Sparus aurata</i>	Aegean Sea (farm)	Tokşen (1999)
<i>Trochopus gaillimhe</i> Little, 1829		
<i>Eutrigla gurnardus</i>	Marmara Sea	Oğuz (1995)
<i>Trochopus pini</i> (Van Beneden and Hesse, 1863)		
<i>Eutrigla gurnardus</i>	Marmara Sea	Oğuz, Bray (2008)
<i>Tetraonchoides paradoxus</i> Bychowsky, 1951		
<i>Uranoscopus scaber</i>	Marmara Sea	Oğuz (1995)
<i>Tristoma coccineum</i> Cuvier, 1817		
<i>Xiphias gladius</i>	Aegean Sea	Öktener et al. (2010)
<i>Tristoma integrum</i> (Diesing, 1850)		
<i>Xiphias gladius</i>	Aegean Sea	Öktener et al. (2010)
<i>Tristomella laevis</i> (Verrill, 1875) Guiart, 1938		
<i>Xiphias gladius</i>	Aegean Sea	Kayış et al. (2010)
<i>Zeuxapta seriolae</i> (Meserve, 1938)		
<i>Seriola dumerili</i>	Mediterranean Sea	Genç et al. (2007)
<i>Lichia amia</i>	Aegean Sea	Akmirza (2013c)
Class Digenea		
<i>Acanthostomum absconditum</i> (Loos, 1901)		
<i>Dicentrarchus labrax</i>	Beymelek Lagoon	Emre (2010)
<i>Allopodocotyle pedicellata</i> (Stossich, 1887)		
<i>Pagrus pagrus</i>	Aegean Sea	Akmirza (2000b)
<i>Anisocladium fallax</i> (Rudolphi, 1819)		
<i>Uranoscopus scaber</i>	Marmara Sea	Oğuz (1995)
<i>Uranoscopus scaber</i>	Aegean Sea	Akmirza (2001)
<i>Uranoscopus scaber</i>	Black Sea	Tepe et al. (2014)
<i>Anisocladium gracile</i> (Loos, 1901)		
<i>Uranoscopus scaber</i>	Black Sea	Tepe et al. (2014)
<i>Anisocoelium capitellatum</i> (Rudolphi, 1819)		
<i>Uranoscopus scaber</i>	Marmara Sea	Oğuz (1995)

Table 3 (continuing): Helminth - host list.

<i>Scorpaena scrofa</i>	Aegean Sea	Şenol (2004)
<i>Scorpaena porcus</i>	Aegean Sea	Şenol (2004)
<i>Uranoscopus scaber</i>	Black Sea	Tepe et al. (2014)
<i>Anoiktostoma coronatum</i> (Wagener, 1852)		
<i>Sciaena umbra</i>	Aegean Sea	Akmirza (2013a)
<i>Aphanurus stossichi</i> (Looss, 1907)		
<i>Boops boops</i>	Aegean Sea	Akmirza (1998b)
<i>Boops boops</i>	Mediterranean Sea	Kostadinova (2004)
<i>Bacciger bacciger</i> (Rudolphi, 1819)		
<i>Scomber japonicus</i>	Aegean Sea	Akmirza (1997)
<i>Boops boops</i>	Aegean Sea	Akmirza (1998b)
<i>Bacciger israelensis</i> Fischthal, 1980		
<i>Boops boops</i>	Aegean Sea	Akmirza (2013a)
<i>Spicara maena</i>	Aegean Sea	Akmirza (2013a)
<i>Bucephalus marinus</i> Vlasenko, 1931		
<i>Zosterisessor ophiocephalus</i>	Marmara Sea	Oğuz (1995)
<i>Gaidropsarus mediterraneus</i>	Marmara Sea	Oğuz, Bray (2006)
<i>Bucephalus margaritae</i> Ozaki and Ishibashi, 1934		
<i>Lichia amia</i>	Aegean Sea	Akmirza (2013a)
<i>Bucephalus polymorphus</i> Baer, 1827		
<i>Anguilla anguilla</i>	Bafa Lake	Altunel (1979)
<i>Anguilla anguilla</i>	Aegean Sea	Altunel (1980)
<i>Deropristis inflata</i> (Molin, 1819)		
<i>Anguilla anguilla</i>	Aegean Sea	Altunel (1980)
<i>Anguilla anguilla</i>	Karacabey Lagoon	Altunel (1990)
<i>Dicrogaster perpusilla</i> Looss, 1902		
<i>Mugil cephalus</i>	Aegean Sea	Altunel (1981)
<i>Liza saliens</i>	Aegean Sea	Altunel (1981)
<i>Liza ramada</i>	Aegean Sea	Altunel (1981)
<i>Chelon labrosus</i>	Aegean Sea	Altunel (1981)
<i>Oedalechilus labeo</i>	Aegean Sea	Altunel (1981)
<i>Mugil cephalus</i>	Küçükçekmec Lake	Akmirza (1993)
<i>Liza ramada</i>	Marmara Sea	Oğuz (1995)
<i>Liza saliens</i>	Marmara Sea	Oğuz, Bray (1995)
<i>Diphtherostomum brusinae</i> (Stossich, 1899)		
<i>Zosterisessor ophiocephalus</i>	Marmara Sea	Oğuz (1995)

Table 3 (continuing): Helminth - host list.

<i>Ectenurus lepidus</i> Looss, 1907		
<i>Scomber japonicus</i>	Aegean Sea	Akmirza (1997)
<i>Trachurus mediterraneus</i>	Aegean Sea	Akmirza (1998a)
<i>Diplodus sargus</i>	Aegean Sea	Akmirza (2000b)
<i>Scomber japonicus</i>	Mediterranean Sea	Akmirza (2003)
<i>Trachurus trachurus</i>	Marmara Sea	Keser et al. (2007)
<i>Elstia stossichianum</i> (Monticelli, 1892)		
<i>Sarpa salpa</i>	Aegean Sea	Akmirza (2013a)
<i>Gaevskajatrema perezi</i> Gibson and Bray, 1982		
<i>Symphodus tinca</i>	Marmara Sea	Oğuz (1995)
<i>Gaevskajatrema pontica</i> (Koval, 1966)		
<i>Symphodus tinca</i>	Marmara Sea	Oğuz (1995)
<i>Haploporus benedeni</i> Stossich, 1887		
<i>Mugil cephalus</i>	Aegean Sea	Altunel (1981)
<i>Liza saliens</i>	Aegean Sea	Altunel (1981)
<i>Liza ramada</i>	Aegean Sea	Altunel (1981)
<i>Chelon labrosus</i>	Aegean Sea	Altunel (1981)
<i>Oedalechilus labeo</i>	Aegean Sea	Altunel (1981)
<i>Mugil cephalus</i>	Karacabey Lagoon	Öztürk et al. (2003)
<i>Haploplanchnus pachysomus</i> Eysenhard, 1829		
<i>Mugil cephalus</i>	Aegean Sea	Altunel (1981)
<i>Liza aurata</i>	Aegean Sea	Altunel (1981)
<i>Liza saliens</i>	Aegean Sea	Altunel (1981)
<i>Liza ramada</i>	Aegean Sea	Altunel (1981)
<i>Chelon labrosus</i>	Aegean Sea	Altunel (1981)
<i>Mugil cephalus</i>	Küçükçekmec Lake	Akmirza (1993)
<i>Mugil cephalus</i>	Karacabey Lake	Öztürk et al. (2003)
<i>Helicometra fasciata</i> (Rudolphi, 1819) Odhner, 1902		
<i>Gaidropsarus mediterraneus</i>	Marmara Sea	Oğuz (1995)
<i>Gobius cobitis</i>	Marmara Sea	Oğuz (1995)
<i>Symphodus tinca</i>	Marmara Sea	Oğuz (1995)
<i>Zosterisessor ophiocephalus</i>	Marmara Sea	Oğuz (1995)
<i>Pagellus erythrinus</i>	Aegean Sea	Akmirza (2000b)
<i>Scorpaena porcus</i>	Aegean Sea	Akmirza (2001)
<i>Scorpena scrofa</i>	Aegean Sea	Akmirza (2001)
<i>Pagellus erythrinus</i>	Aegean Sea	Akmirza (2000b)
<i>Scorpaena porcus</i>	Aegean Sea	Akmirza (2001)
<i>Scorpena scrofa</i>	Aegean Sea	Akmirza (2001)
<i>Symphodus tinca</i>	Aegean Sea	Akmirza (2001)
<i>Gaidropsarus mediterraneus</i>	Aegean Sea	Akmirza (2001)
<i>Conger conger</i>	Aegean Sea	Akmirza (2001)

Table 3 (continuing): Helminth - host list.

<i>Chelidonichthys lucerna</i>	Aegean Sea	Akmirza (2001)
<i>Scorpaena notata</i>	Aegean Sea	Şenol (2004)
<i>Trachinus draco</i>	Aegean Sea	Akmirza (2004)
<i>Scorpaena porcus</i>	Black Sea	Tepe et al. (2014)
<i>Hemiurus communis</i> (Odhner, 1905)		
<i>Boops boops</i>	Aegean Sea	Akmirza (1998b)
<i>Heterophyes heterophyes</i> (Siebold, 1853)		
<i>Mugil cephalus</i>	Aegean Sea	Tareen (1981)
<i>Holorchis pycnoporos</i> Stossich, 1901		
<i>Lithognathus mormyrus</i>	Aegean Sea	Akmirza (2000b)
<i>Lecithaster helodes</i> Overstreet, 1873		
<i>Liza ramada</i>	Aegean Sea	Altunel (1981)
<i>Lecithochirium grandiporum</i> (Rudolphi, 1819)		
<i>Conger conger</i>	Aegean Sea	Akmirza (2012)
<i>Muraena helena</i>	Aegean Sea	Akmirza (2013a)
<i>Lecithochirium musculus</i> Nasir and Diaz, 1971		
<i>Ophidion rochei</i>	Black Sea	Tepe et al. (2014)
<i>Lecithochirium rufoviride</i> (Rudolphi, 1819) Lühe, 1901		
<i>Anguilla anguilla</i>	Aegean Sea	Altunel (1980)
<i>Lecithocladium excisum</i> (Rudolphi, 1819) Lühe, 1901		
<i>Scomber scombrus</i>	Marmara Sea	Keser et al. (2007)
<i>Lecithostaphylus retroflexus</i> Molin, 1859		
<i>Belone belone</i>	Marmara Sea	Keser (2002)
<i>Lepidapedon elongatum</i> (Lebour, 1908) Nicoll, 1910		
<i>Scomber japonicus</i>	Aegean Sea	Akmirza (1997)
<i>Lepidauchen stenostoma</i> Nicoll, 1913		
<i>Dentex dentex</i>	Aegean Sea	Akmirza (2001)
<i>Lepocreadium album</i> (Stossich, 1890)		
<i>Boops boops</i>	Aegean Sea	Akmirza (1998b)
<i>Diplodus annularis</i>	Aegean Sea	Akmirza (2000b)
<i>Diplodus vulgaris</i>	Aegean Sea	Akmirza (2000b)
<i>Diplodus sargus</i>	Aegean Sea	Akmirza (2000b)
<i>Spoondylisoma cantharus</i>	Aegean Sea	Akmirza (2000b)
<i>Oblada melanura</i>	Aegean Sea	Akmirza (2000b)
<i>Spicara smaris</i>	Aegean Sea	Akmirza (2001)
<i>Lepocreadium pyriforme</i> Linton, 1900		
<i>Trachurus mediterraneus</i>	Aegean Sea	Akmirza (1998a)

Table 3 (continuing): Helminth - host list.

<i>Monascus filiformis</i> (Rudolphi 1819)		
<i>Trachurus trachurus</i>	Marmara Sea	Oğuz (1995)
<i>Trachurus mediterraneus</i>	Aegean Sea	Akmirza (1998a)
<i>Mesometra brachycoelia</i> Lühe 1901		
<i>Sarpa salpa</i>	Mediterranean Sea	Tepe, Oğuz (2013)
<i>Mesometra orbicularis</i> (Rudolphi 1819)		
<i>Sarpa salpa</i>	Mediterranean Sea	Tepe, Oğuz (2013)
<i>Sarpa salpa</i>	Aegean Sea	Akmirza (2013a)
<i>Macvicaria alacris</i> (Looss 1901) Gibson and Bray, 1982		
<i>Symphodus tinca</i>	Marmara Sea	Oğuz (1995)
<i>Nicolla gallica</i> (Dollfus, 1941)		
<i>Anguilla anguilla</i>	Aegean Sea	Altunel (1980)
<i>Opechona bacillaris</i> (Molin 1859) Dollfus, 1927		
<i>Trachurus mediterraneus</i>	Aegean Sea	Akmirza (1998a)
<i>Pomatomus saltatrix</i>	Marmara Sea	Keser (2002)
<i>Scomber scombrus</i>	Marmara Sea	Keser et al. (2007)
<i>Opechona olssoni</i> (Yamaguti, 1934)		
<i>Scomber japonicus</i>	Aegean Sea	Akmirza (1997)
<i>Opecoeloides furcatus</i> (Bremser in Rudolphi, 1819)		
<i>Mullus surmuletus</i>	Aegean Sea	Akmirza (2000a)
<i>Pachycreadium carnosum</i> (Rudolphi, 1819)		
<i>Pagellus acarne</i>	Aegean Sea	Akmirza (2013a)
<i>Plagioporus dogieli</i> (Pogorelzeva, 1975)		
<i>Symphodus tinca</i>	Marmara Sea	Oguz (1995)
<i>Proctotrema bacilliovatum</i> (Odhner, 1911)		
<i>Mullus surmuletus</i>	Aegean Sea	Akmirza (2000a)
<i>Prodistomum polonii</i> Bray and Gibson, 1990		
<i>Trachurus trachurus</i>	Marmara Sea	Akandere (1972)
<i>Pronoprymna ventricosa</i> (Rudolphi, 1819)		
<i>Alosa immaculata</i>	Black Sea	Çetindağ (1993)
<i>Prosorhynchus aculeatus</i> Odhner, 1905		
<i>Anguilla anguilla</i>	Aegean Sea	Altunel (1980)
<i>Prosorhynchus crucibulum</i> (Rudolphi, 1819)		
<i>Conger conger</i>	Aegean Sea	Akmirza (2012)
<i>Muraena helena</i>	Aegean Sea	Akmirza (2013a)

Table 3 (continuing): Helminth - host list.

<i>Prosorhynchoides haimeana</i> (Lacaze-Duthiers, 1854)		
<i>Zosterisessor ophiocephalus</i>	Marmara Sea	Oğuz (1995)
<i>Robphildollfusium fractum</i> Rudolphi, 1819		
<i>Sarpa salpa</i>	Mediterranean Sea	Tepe, Oğuz (2013)
<i>Saccocoelium obesum</i> Looss, 1902		
<i>Mugil cephalus</i>	Aegean Sea	Altunel (1981)
<i>Liza aurata</i>	Aegean Sea	Altunel (1981)
<i>Liza saliens</i>	Aegean Sea	Altunel (1981)
<i>Liza ramada</i>	Aegean Sea	Altunel (1981)
<i>Chelon labrosus</i>	Aegean Sea	Altunel (1981)
<i>Liza ramada</i>	Marmara Sea	Oğuz (1995)
<i>Liza saliens</i>	Marmara Sea	Oğuz, Bray (2006)
<i>Saccocoelium tensum</i> Looss, 1902		
<i>Mugil cephalus</i>	Aegean Sea	Altunel (1981)
<i>Liza aurata</i>	Aegean Sea	Altunel (1981)
<i>Liza saliens</i>	Aegean Sea	Altunel (1981)
<i>Liza ramada</i>	Aegean Sea	Altunel (1981)
<i>Chelon labrosus</i>	Aegean Sea	Altunel (1981)
<i>Mugil cephalus</i>	Küçükçekmece Lake	Akmirza (1993)
<i>Schikhobalotrema sparisomae</i> Manter, 1937		
<i>Mugil cephalus</i>	Aegean Sea	Altunel (1981)
<i>Liza saliens</i>	Aegean Sea	Altunel (1981)
<i>Chelon labrosus</i>	Aegean Sea	Altunel (1981)
<i>Liza ramada</i>	Marmara Sea	Oğuz (1995)
<i>Liza saliens</i>	Marmara Sea	Keser (2002)
<i>Liza saliens</i>	Marmara Sea	Oğuz, Bray (2006)
<i>Liza aurata</i>	Aegean Sea	Akmirza (2013a)
<i>Siphoderina aloysiae</i> Miller and Cribb, 2008		
<i>Sciaena umbra</i>	Aegean Sea	Akmirza (2013a)
<i>Stephanostomum baccatum</i> (Nicoll, 1907)		
<i>Gaidropsarus mediterraneus</i>	Marmara Sea	Oğuz (1995)
<i>Stephanostomum bicoronatum</i> Fuhrmann, 1928		
<i>Umbrina cirrosa</i>	Aegean Sea	Akmirza (2001)
<i>Stephanostomum caducum</i> (Looss, 1901) Manter, 1934		
<i>Merluccius merluccius</i>	Marmara Sea	Oğuz, Bray (2006)
<i>Stephanostomum gaidropsari</i> Bartoli and Bray, 2001		
<i>Gaidropsarus mediterraneus</i>	Marmara Sea	Oğuz (1995)
<i>Stephanostomum minutum</i> Manter, 1940		
<i>Uranoscopus scaber</i>	Black Sea	Tepe et al. (2014)

Table 3 (continuing): Helminth - host list.

<i>Steringotrema pagelli</i> van Beneden, 1871		
<i>Spicara maena</i>	Aegean Sea	Akmirza (2013a)
<i>Tergestia laticollis</i> (Rudolphi, 1819)		
<i>Trachurus mediterraneus</i>	Aegean Sea	Akmirza (1998a)
Class Cestoda		
<i>Acanthobothrium coronatum</i> (Rudolphi, 1819)		
<i>Torpedo marmorata</i>	Aegean Sea	Akmirza (2013d)
<i>Dasyatis</i> sp.	Aegean Sea	Akmirza (2013d)
<i>Acanthobothrium dujardini</i> Van Beneden, 1849		
<i>Raja clavata</i>	Aegean Sea	Akmirza (2001)
<i>Bothriocephalus claviceps</i> (Goeze, 1782)		
<i>Anguilla anguilla</i>	Bafa Lake	Altunel (1979)
<i>Bothriocephalus scorpii</i> (Müller, 1776)		
<i>Solea solea</i>	Marmara Sea	Keser (2002)
<i>Pegusa nasuta</i>	Aegean Sea	Akmirza (2001)
<i>Scorpaena porcus</i>	Aegean Sea	Akmirza (2001)
<i>Scorpaena scrofa</i>	Aegean Sea	Akmirza (2001)
<i>Scorpaena notata</i>	Aegean Sea	Şenol (2004)
<i>Trachinus draco</i>	Aegean Sea	Akmirza (2004)
<i>Solea solea</i>	Marmara Sea	Keser (2007)
<i>Scophthalmus maximus</i>	Black Sea	Olguner (2008)
<i>Trachinus araneus</i>	Aegean Sea	Akmirza (2013d)
<i>Callitetrarhynchus gracilis</i> (Rudolphi, 1819)		
<i>Eutynnus alleteratus</i>	Aegean Sea	Akmirza (2006)
<i>Clestobothrium crassiceps</i> (Rudolphi, 1819)		
<i>Merluccius merluccius</i>	Marmara Sea	Oğuz (1995)
<i>Didymobothrium rudolphii</i> Nybelin, 1922		
<i>Solea solea</i>	Marmara Sea	Oğuz (1995)
<i>Echeneibothrium variabile</i> Van Beneden 1850		
<i>Scyliorhis canicula</i>	Aegean Sea	Akmirza (2013d)
<i>Raja miraletus</i>	Aegean Sea	Akmirza (2013d)
<i>Echinobothrium typus</i> Van Beneden, 1849		
<i>Raja clavata</i>	Aegean Sea	Akmirza (2001)
<i>Squalus acanthias</i>	Aegean Sea	Akmirza (2013d)
<i>Grillotia erinaceus</i> (Van Beneden, 1858)		
<i>Merlangius merlangus</i>	Black Sea	Tepe et al. (2014)

Table 3 (continuing): Helminth - host list.

<i>Grillotia heptanchi</i> (Vaullegeard, 1899)		
<i>Solea solea</i>	Marmara Sea	Keser (2002)
<i>Paradilepis scolecina</i> Rudolphi, 1935		
<i>Platichthys flesus</i>	Sarıcum Lagoon	Öztürk (2005)
<i>Phyllobothrium lactuca</i> (Van Beneden, 1850)		
<i>Trachinus araneus</i>	Aegean Sea	Akmirza (2001)
<i>Raja clavata</i>	Aegean Sea	Akmirza (2001)
<i>Pegusa nasuta</i>	Aegean Sea	Akmirza (2001)
<i>Phyllobothrium gracile</i> Wedl, 1855		
<i>Raja clavata</i>	Aegean Sea	Akmirza (2001)
<i>Torpedo marmorata</i>	Aegean Sea	Akmirza (2013d)
<i>Progrillotia dasyatidis</i> Beveridge, Neifar, Euzet, 2004		
<i>Gobius niger</i>	Marmara Sea	Oğuz, Bray (2008)
<i>Ophidion rochei</i>	Black Sea	Tepe et al. (2014)
<i>Mullus barbatus</i>	Black Sea	Tepe et al. (2014)
<i>Gaidropsarus mediterraneus</i>	Black Sea	Tepe et al. (2014)
<i>Uranoscopus scaber</i>	Black Sea	Tepe et al. (2014)
<i>Gobius niger</i>	Black Sea	Tepe et al. (2014)
<i>Proteocephalus macrocephalus</i> (Creplin, 1825)		
<i>Anguilla anguilla</i>	Aegean Sea	Altunel (1980)
<i>Anguilla anguilla</i>	Karacabey Lagoon	Altunel (1990)
<i>Tetrarhynchobothrium tenuicolle</i> Diesing, 1854		
<i>Squalus acanthias</i>	Aegean Sea	Akmirza (2013d)
Phylum Nematelminthes		
<i>Anguillicoloides crassus</i> (Kuwahara et al. 1974)		
<i>Anguilla anguilla</i>	Ceyhan River	Genç et al. (2005)
<i>Anguilla anguilla</i>	Sığırcı Lake	Çolak (2013)
<i>Anisakis simplex</i> (Rudolphi, 1809)		
<i>Scomber japonicus</i>	Aegean Sea	Akmirza (1997)
<i>Trachurus mediterraneus</i>	Aegean Sea	Akmirza (1998a)
<i>Sardina pilchardus</i>	Aegean Sea	Oğuz et al. (2000)
<i>Merlangius merlangus</i>	Aegean Sea	Oğuz et al. (2000)
<i>Trachurus trachurus</i>	Aegean Sea	Oğuz et al. (2000)
<i>Mullus surmuletus</i>	Aegean Sea	Akmirza (2000a)
<i>Diplodus annularis</i>	Aegean Sea	Akmirza (2000b)
<i>Pagellus erythrinus</i>	Aegean Sea	Akmirza (2000b)
<i>Oblada melanura</i>	Aegean Sea	Akmirza (2000b)
<i>Boops boops</i>	Aegean Sea	Akmirza (2000b)
<i>Engraulis encrasicolus</i>	Marmara Sea	Tuncel (2003)
<i>Scomber japonicus</i>	Mediterranean Sea	Akmirza (2003)

Table 3 (continuing): Helminth - host list.

<i>Scomber scombrus</i>	Marmara Sea	Keser et al. (2007)
<i>Mullus barbatus</i>		Özkan (2008)
<i>Engraulis encrasicolus</i>		Özkan (2008)
<i>Trachurus trachurus</i>		Özkan (2008)
<i>Trachurus trachurus</i>		Ütük et al. (2012)
<i>Trachurus trachurus</i>		Özkan (2008)
<i>Conger conger</i>	Aegean Sea	Akmirza (2012)
<i>Merluccius merluccius</i>	Aegean Sea	Akmirza (2013b)
<i>Alosa immaculata</i>	Aegean Sea	Akmirza (2013b)
<i>Serranus hepatus</i>	Aegean Sea	Akmirza (2013b)
<i>Zeus faber</i>	Aegean Sea	Akmirza (2013b)
<i>Uranoscopus scaber</i>	Aegean Sea	Akmirza (2013b)
<i>Sphyraena sphyraena</i>	Aegean Sea	Akmirza (2013b)
<i>Pomatomus saltatrix</i>	Aegean Sea	Akmirza (2013b)
<i>Anisakis pegreffii</i> Campana-Rouget and Biocca, 1955		
<i>Trachurus trachurus</i>		Ütük et al. (2012)
<i>Trachurus mediterraneus</i>	Black Sea	Tepe, Oğuz (2013)
<i>Cucullanus hians</i> (Dujardin, 1845)		
<i>Conger conger</i>	Aegean Sea	Akmirza (2012)
<i>Cucullanus longicollis</i> (Stossich, 1899)		
<i>Mullus surmuletus</i>	Aegean Sea	Akmirza (2000a)
<i>Cucullanus micropapillatus</i> Tornquist, 1931		
<i>Symphodus</i> sp.	Aegean Sea	Akmirza (2013b)
<i>Dichelyne tripapillatus</i> (Gendre, 1927)		
<i>Diplodus vulgaris</i>	Aegean Sea	Akmirza (2000b)
<i>Diplodus sargus</i>	Aegean Sea	Akmirza (2000b)
<i>Oblada melanura</i>	Aegean Sea	Akmirza (2000b)
<i>Symphodus tinca</i>	Aegean Sea	Akmirza (2001)
<i>Gaidropsarus mediterraneus</i>	Aegean Sea	Akmirza (2001)
<i>Dichelyne minutus</i> Rudolphi, 1819		
<i>Platichthys flesus</i>	Ekinli Lagoon Lake	Oğuz (1989)
<i>Platichthys flesus</i>	Marmara Sea	Oğuz 1996b
<i>Sprattus sprattus</i>	Black Sea	Avsar (1997)
<i>Platichthys flesus</i>	Karacabey Lagoon	Aydoğdu (2003)
<i>Platichthys flesus</i>	Sarıkum Lagoon	Öztürk (2005)
<i>Merlangius merlangus</i>		Özkan (2008)
<i>Echinocephalus spinosissimus</i> von Linstow, 1905		
<i>Raja clavata</i>	Aegean Sea	Akmirza (2001)
<i>Hysterothylacium aduncum</i> (Rudolphi, 1802)		
<i>Trachurus mediterraneus</i>		Merdivenci (1983)

Table 3 (continuing): Helminth - host list.

<i>Engraulis encrasicolus</i>		Merdivenci (1983)
<i>Merlangius merlangus</i>	Black Sea	Doğanay (1994)
<i>Merluccius merluccius</i>	Marmara Sea	Oğuz (1995)
<i>Gobius niger</i>	Marmara Sea	Oğuz (1995)
<i>Trachurus trachurus</i>	Marmara Sea	Oğuz (1995)
<i>Scomber japonicus</i>	Aegean Sea	Akmirza (1997)
<i>Sprattus sprattus</i>	Black Sea	Telli, Doran (1997)
<i>Trachurus mediterraneus</i>	Aegean Sea	Akmirza (1998a)
<i>Engraulis encrasicolus</i>	Marmara Sea	Tuncel (2003)
<i>Liza saliens</i>	Marmara Sea	Keser (2002)
<i>Sparus aurata</i>	Marmara Sea	Keser (2002)
<i>Pomatomus saltatrix</i>	Marmara Sea	Keser (2002)
<i>Solea solea</i>	Marmara Sea	Keser (2002)
<i>Rhinobatos rhinobatos</i>	Mediterranean Sea	Genç et al. (2005)
<i>Platichthys flesus</i>	Sarikum Lagoon	Öztürk (2005)
<i>Alosa immaculata</i>	Black Sea	Özer et al. (2007)
<i>Trachurus trachurus</i>	Black Sea	Özkan (2008)
<i>Alosa immaculata</i>	Black Sea	Olguner (2008)
<i>Scophthalmus maximus</i>	Black Sea	Olguner (2008)
<i>Spicara smaris</i>	Black Sea	Olguner (2008)
<i>Pagellus erythrinus</i>	Aegean Sea	Akmirza (2013b)
<i>Lophius piscatorius</i>	Aegean Sea	Akmirza (2013b)
<i>Trachurus mediterraneus</i>	Black Sea	Tepe, Oğuz (2013)
<i>Belone belone</i>	Black Sea	Tepe, Oğuz (2013)
<i>Caspialosa</i> sp.	Black Sea	Tepe, Oğuz (2013)
<i>Sciaena umbra</i>	Black Sea	Tepe, Oğuz (2013)
<i>Scorpaena porcus</i>	Black Sea	Tepe, Oğuz (2013)
<i>Liza aurata</i>	Black Sea	Tepe, Oğuz (2013)
<i>Gobius niger</i>	Black Sea	Tepe, Oğuz (2013)
<i>Sarda sarda</i>	Black Sea	Tepe, Oğuz (2013)
<i>Uranoscopus scaber</i>	Black Sea	Tepe, Oğuz (2013)
<i>Mullus barbatus</i>	Black Sea	Tepe, Oğuz (2013)
<i>Gaidropsarus mediterraneus</i>	Black Sea	Tepe, Oğuz (2013)
<i>Syngnathus acus</i>	Black Sea	Tepe, Oğuz (2013)
<i>Trachinus draco</i>	Black Sea	Tepe, Oğuz (2013)
<i>Uranoscopus scaber</i>	Black Sea	Tepe, Oğuz (2013)
<i>Ophidion rochei</i>	Black Sea	Tepe, Oğuz (2013)
<i>Solea solea</i>	Black Sea	Tepe, Oğuz (2013)
<i>Hysterothylacium fabri</i> (Rudolpi, 1819)		
<i>Boops boops</i>	Aegean Sea	Akmirza (1998b)
<i>Mullus surmuletus</i>	Aegean Sea	Akmirza (2000a)
<i>Diplodus annularis</i>	Aegean Sea	Akmirza (2000b)
<i>Spoondylisoma cantharus</i>	Aegean Sea	Akmirza (2000b)
<i>Pagellus erythrinus</i>	Aegean Sea	Akmirza (2000b)
<i>Oblada melanura</i>	Aegean Sea	Akmirza (2000b)
<i>Trachinus draco</i>	Aegean Sea	Akmirza (2004)

Table 3 (continuing): Helminth - host list.

<i>Alosa immaculata</i>	Aegean Sea	Akmirza (2013b)
<i>Phycis phycis</i>	Aegean Sea	Akmirza (2013b)
<i>Coris julis</i>	Aegean Sea	Akmirza (2013b)
<i>Trachurus mediterraneus</i>	Aegean Sea	Akmirza (2013b)
<i>Pagellus acarne</i>	Aegean Sea	Akmirza (2013b)
<i>Squalus blainvillei</i>	Aegean Sea	Akmirza (2013b)
<i>Symphodus</i> sp.	Aegean Sea	Akmirza (2013b)
<i>Philometra filiformis</i> (Stossich, 1898)		
<i>Pagellus erythrinus</i>	Mediterranean Sea	Moravec (2004)
<i>Philometra globiceps</i> Rudolphi, 1819		
<i>Uranoscopus scaber</i>	Black Sea	Tepe, Oğuz (2013)
<i>Trachurus mediterraneus</i>	Black Sea	Tepe, Oğuz (2013)
<i>Philometra lateolabracis</i> (Yamaguti, 1935)		
<i>Epinephelus marginatus</i>	Mediterranean Sea	Moravec (2004)
<i>Mycteroperca rubra</i>	Mediterranean Sea	Moravec (2004)
<i>Epinephelus aeneus</i>	Mediterranean Sea	Genç et al. (2005)
<i>Philometra saltatrix</i> Ramachandran, 1973		
<i>Pomatomus saltatrix</i>	Mediterranean Sea	Moravec (2004)
<i>Spinitectus oviflagellis</i> Fourment, 1883		
<i>Gaidropsarus mediterraneus</i>	Marmara Sea	Oğuz (1995)
<i>Spiroxys contortus</i> Rudolphi, 1819		
<i>Platichthys flesus</i>	Sarıkum Lagoon	Öztürk (2005)
Phylum Acanthocephala		
<i>Acanthocephalus anguillae</i> (Müller, 1780)		
<i>Anguilla anguilla</i>	Sığircı Lake	Çolak (2013)
<i>Acanthocephalus lucii</i> (Mueller, 1777)		
<i>Pegusa nasuta</i>	Aegean Sea	Akmirza (2001)
<i>Diplodus vulgaris</i>	Aegean Sea	Akmirza (2001)
<i>Scorpaena porcus</i>	Aegean Sea	Akmirza (2001)
<i>Anguilla anguilla</i>	Sığircı Lake	Çolak (2013)
<i>Acanthocephaloides propinquus</i> (Dujardin, 1845)		
<i>Gobius niger</i>	Marmara Sea	Oğuz (1995)
<i>Gobius cobitis</i>	Marmara Sea	Oğuz (1995)
<i>Merluccius merluccius</i>	Marmara Sea	Oğuz (1995)
<i>Solea solea</i>	Marmara Sea	Oğuz (1995)
<i>Scorpaena scrofa</i>	Marmara Sea	Oğuz (1995)
<i>Uranoscopus scaber</i>	Marmara Sea	Oğuz (1995)
<i>Eutrigla gurnardus</i>	Marmara Sea	Oğuz (1995)

Table 3 (continuing): Helminth - host list.

<i>Acanthocephaloides irregularis</i> Amin, Oğuz, Heckmann, Tepe and Kvach, 2011		
<i>Scorpaena porcus</i>	Black Sea	Tepe, Oğuz (2013)
<i>Longicollum pagrosomi</i> Yamaguti, 1935		
<i>Trachurus trachurus</i>	Marmara Sea	Oğuz (1995)
<i>Neoechinorhynchus (Hebesoma) agilis</i> (Rudolphi, 1819)		
<i>Mugil cephalus</i>	Aegean Sea	Altunel (1983)
<i>Liza aurata</i>	Aegean Sea	Altunel (1983)
<i>Liza saliens</i>	Aegean Sea	Altunel (1983)
<i>Liza ramada</i>	Aegean Sea	Altunel (1983)
<i>Chelon labrosus</i>	Aegean Sea	Altunel (1983)
<i>Mugil cephalus</i>	Küçükçekmece Lake	Akmirza (1993)
<i>Liza saliens</i>	Marmara Sea	Keser (2002)
<i>Liza aurata</i>	Black Sea	Tepe, Oğuz (2013)
<i>Neoechinorhynchus rutili</i> (Müller, 1780)		
<i>Platichthys flesus</i>	Sarı Kum Lagoon	Öztürk (2005)
<i>Pomphorhynchus laevis</i> (Müller, 1776)		
<i>Symphodus tinca</i>	Aegean Sea	Akmirza (2001)
<i>Pseudoechinorhynchus clavula</i> Dujardin, 1845		
<i>Anguilla anguilla</i>	Aegean Sea	Altunel (1980)
<i>Solea solea</i>	Marmara Sea	Oğuz (1995)
<i>Telosentis exiguus</i> (von Linstow, 1901)		
<i>Platichthys flesus</i>	Ekinli Lagoon Lake	Oğuz (1989)
Phylum Annelida		
<i>Pontobdella muricata</i> (Linnaeus, 1758)		
<i>Raja</i> sp.	Marmara Sea	Ergüven (1992)
<i>Torpedo marmorata</i>	Aegean Sea	Sağlam et al. (2003)
<i>Raja clavata</i>	Aegean Sea	Sağlam et al. (2003)
<i>Raja clavata</i>	Black Sea	Öktener (2010)
<i>Stibarobdella macrothela</i> (Schmarda, 1861)		
<i>Trachinus draco</i>	Aegean Sea	Akmirza (2004)
<i>Trachelobdella lubrica</i> (Grube, 1840)		
<i>Scorpaena porcus</i>	Aegean Sea	Sağlam et al. (2003)
<i>Scorpaena scrofa</i>	Aegean Sea	Sağlam et al. (2003)
<i>Labrus bergylta</i>	Marmara Sea	Öktener (2010)

RESULTS AND DISCUSSION (Host - Helminth List).***Pagellus acarne* (Risso, 1827)**

Atrispinum acarne Maillard and Noisy, 1979

Pachycreadium carnosum (Rudolphi, 1819) Cortini and Ferretti, 1959

Hysterothylacium fabri (Rudolphi, 1819)

***Sarpa salpa* (Linnaeus, 1758)**

Atrispinum salpae Parona and Perugia, 1889

Microcotyle erythrini Van Beneden and Hesse, 1863

Elstia stossichianum (Monticelli, 1892)

Mesometra brachycoelia Lühe 1901

Mesometra orbicularis (Rudolphi, 1819)

Robphildollfusium fractum (Rudolphi, 1819)

***Diplodus annularis* (Linnaeus, 1758)**

Atrispinum seminalis Euzet and Maillard, 1973

Lepocreadium album (Stossich, 1890)

Anisakis simplex (Rudolphi, 1809)

Hysterothylacium fabri (Rudolphi, 1819)

***Diplodus vulgaris* (Geoffroy Saint-Hilaire, 1817)**

Atrispinum seminalis Euzet and Maillard, 1973

Lepocreadium album (Stossich, 1890)

Cucullanus tripapillatus (Gendre, 1927)

Acanthocephalus lucii (Mueller, 1777)

***Torpedo marmorata* Risso, 1810**

Amphibdella torpedinis Chatin, 1874

Acanthobothrium coronatum (Rudolphi, 1819)

Phyllobothrium gracile Wedl, 1855

Pontobdella muricata (Linnaeus, 1758)

***Merluccius merluccius* (Linnaeus, 1758)**

Anthocotyle merlucci (Van Beneden, 1863)

Stephanostomum caducum (Looss, 1901) Manter, 1934

Clestobothrium crassiceps (Rudolphi, 1819)

Anisakis simplex (Rudolphi, 1809)

Hysterothylacium aduncum (Rudolphi, 1802)

Acanthocephaloides propinquus (Dujardin, 1845)

***Sphyaena sphyraena* (Linnaeus, 1758)**

Anthocotyle merlucci (Van Beneden, 1863)

Anisakis simplex (Rudolphi, 1809)

***Trachinus draco* Linnaeus, 1758**

Aspinatrium trachini (Parona and Perugia, 1889)

Helicometra fasciata (Rudolphi, 1819) Odhner, 1902

Bothriocephalus scorpii (Müller, 1776)

Hysterothylacium aduncum (Rudolphi, 1802)

Hysterothylacium fabri (Rudolphi, 1819)

Stibarobdella macrothela (Schmarda, 1861)

***Trachinus araneus* Cuvier, 1829**

- Aspinatrium trachini* (Parona and Perugia, 1889)
Microcotyle erythrini Van Beneden and Hesse, 1863
Bothriocephalus scorpii (Müller, 1776)
Phyllobothrium lactuca (Van Beneden, 1850)

***Belone belone* (Linnaeus, 1761)**

- Axine belones* Abildgaard, 1794
Lecithostaphylus retroflexus Molin, 1859
Hysterothylacium aduncum (Rudolphi, 1802)

***Argyrosomus regius* (Asso, 1801)**

- Benedenia sciaenae* Van Beneden, 1856

***Spicara maena* (Linnaeus, 1758)**

- Bivagina alcedinis* (Parona and Perugia, 1889)
Bacciger israelensis Fischthal, 1980
Steringotrema pagelli (Van Beneden, 1871) Odhner, 1911

***Pagellus erythrinus* (Linnaeus, 1758)**

- Choricotyle chrysophri* (Van Beneden, 1863)
Microcotyle erythrini Van Beneden and Hesse, 1863
Helicometra fasciata (Rudolphi, 1819) Odhner, 1902
Anisakis simplex (Rudolphi, 1809)
Hysterothylacium aduncum
Hysterothylacium fabri (Rudolphi, 1802)
Philometra filiformis (Stossich, 1898)

***Spondyliosoma cantharus* (Linnaeus, 1758)**

- Bivagina alcedinis* (Parona and Perugia, 1889)
Choricotyle chrysophri (Van Beneden, 1863)
Lepocreadium album (Stossich, 1890)
Hysterothylacium fabri (Rudolphi, 1819)

***Boops boops* (Linnaeus, 1758)**

- Choricotyle chrysophri* (Van Beneden, 1863)
Diclidophora bellones (Otto, 1823)
Microcotyle erythrini Van Beneden and Hesse, 1863
Aphanurus stossichi (Looss, 1907)
Bacciger bacciger (Rudolphi, 1819)
Bacciger israelensis Fischthal, 1980
Hemiurus communis (Odhner, 1905)
Lepocreadium album (Stossich, 1890)
Anisakis simplex (Rudolphi, 1809)
Hysterothylacium fabri (Rudolphi, 1819)

***Dicentrarchus labrax* (Linnaeus, 1758)**

- Diplectenum aequans* (Wagener, 1857)
Acanthostomum absconditum (Loos, 1901)

***Liza ramada* (Risso, 1827)**

- Ergenstrema mugilis* Paperna, 1965
Ligophorus confusus Euzet and Suriano, 1977
Ligophorus imitans Euzet and Suriano, 1977

Solostamenides mugilis (Vogt, 1879)
Dicrogaster perpusilla Looss, 1902
Haploporus benedeni Stossich, 1887
Haploplanchnus pachysomus (Eysenhardt, 1829) Looss, 1902
Lecithaster helodes Overstreet, 1873
Saccocoelium obesum Looss, 1902
Saccocoelium tensum Looss, 1902
Schikhobalotrema sparisomae Manter, 1937
Neoechinorhynchus agilis Rudolphi, 1819

***Chelon labrosus* (Risso, 1827)**

Ergenstrema mugilis Paperna, 1965
Ligophorus angustus Euzet and Suriano, 1977
Solostamenides mugilis (Vogt, 1879)
Dicrogaster perpusilla Looss, 1902
Haploporus benedeni Stossich, 1887
Haploplanchnus pachysomus (Eysenhardt, 1829) Looss, 1902
Saccocoelium obesum Looss, 1902
Saccocoelium tensum Looss, 1902
Schikhobalotrema sparisomae Manter, 1937
Neoechinorhynchus (Hebesoma) agilis (Rudolphi, 1819)

***Scomber scombrus* Linnaeus, 1758**

Grubea cochlear Diesing, 1858
Kuhnia scombri (Kuhn, 1829) Sproston, 1945
Lecithocladium excisum (Rudolphi, 1819) Lühe, 1901
Opechona bacillaris (Molin, 1859) Dollfus, 1927
Anisakis simplex (Rudolphi, 1809)

***Merlangius merlangus* (Linnaeus, 1758)**

Gyrodactylus alviga Gaevskaya and Dmitrieva, 1967
Grillotia erinaceus (Van Beneden, 1858)
Anisakis simplex (Rudolphi, 1809)
Dichelyne minutus Rudolphi, 1819
Hysterothyliacium aduncum (Rudolphi, 1802)

***Anguilla anguilla* (Linnaeus, 1758)**

Gyrodactylus anguillae Ergens, 1960
Pseudodactylogyrus bini Kikuchi, 1929
Pseudodactylogyrus anguillae (Yin and Sproston, 1948)
Bucephalus polymorphus Baer, 1827
Deropristis inflata (Molin, 1819)
Lecithochirium rufoviride (Rudolphi, 1819) Lühe, 1901
Nicolla gallica (Dollfus, 1941)
Prosorhynchus aculeatus Odhner, 1905
Bothriocephalus claviceps (Goeze, 1782)
Proteocephalus macrocephalus (Creplin, 1825)
Anguillicoloides crassus (Kuwahara, Niimi and Itagaki, 1974)
Acanthocephalus anguillae (Müller, 1780)
Acanthocephalus lucii (Mueller, 1777)
Acanthocephalus clavula Dujardin, 1845

***Platichthys flesus* (Linnaeus, 1758)**

Gyrodactylus flesi Malmberg, 1957
Paradilepis scolecina (Rudolphi, 1819)
Dichelyne minutus Rudolphi, 1819
Hysterothylacium aduncum (Rudolphi, 1802)
Spiroxys contortus Rudolphi, 1819
Neoechinorhynchus rutili (Müller, 1780)
Telosentis exiguus (von Linstow, 1901)

***Scomber japonicus* Houttuyn, 1782**

Kuhnia scombri (Kuhn, 1829) Sproston, 1945
Bacciger bacciger (Rudolphi, 1819)
Ectenurus lepidus Looss, 1907
Lepidapedon elongatum (Lebour, 1908) Nicoll, 1910
Opechona olssoni (Yamaguti, 1934)
Anisakis simplex (Rudolphi, 1809)
Hysterothylacium aduncum (Rudolphi, 1802)

***Sparus aurata* Linnaeus, 1758**

Lamellodiscus echeneis (Wagener, 1857)
Lamellodiscus elegans Bychowsky, 1957
Sparicotyle chrysophrii (Van Beneden and Hesse, 1863)
Hysterothylacium aduncum (Rudolphi, 1802)

***Diplodus puntazzo* (Walbaum, 1792)**

Lamellodiscus ignoratus Palombi, 1943

***Liza saliens* (Risso, 1810)**

Ligophorus acuminatus Euzet and Suriano, 1977
Ligophorus heteronchus Euzet and Suriano, 1977
Ligophorus macrocolpus Euzet and Suriano, 1977
Ligophorus minimus Euzet and Suriano, 1977
Solostamenides mugilis (Vogt, 1879)
Dicrogaster perpusilla Looss, 1902
Haploporus benedeni Stossich, 1887
Haplospalanchnus pachysomus (Eysenhardt, 1829) Looss, 1902
Saccocoelium obesum Looss, 1902
Saccocoelium tensum Looss, 1902
Schikhobalotrema sparisomae Manter, 1937
Hysterothylacium aduncum (Rudolphi, 1802)
Neoechinorhynchus (Hebesoma) agilis (Rudolphi, 1819)

***Mugil cephalus* Linnaeus, 1758**

Ligophorus chabaudi Euzet and Suriano, 1977
Ligophorus mugilinus (Hargis, 1955)
Metamicrocotyla cephalus (Azim, 1939)
Solostamenides mugilis (Vogt, 1879)
Dicrogaster perpusilla Looss, 1902
Haploporus benedeni Stossich, 1887
Haplospalanchnus pachysomus (Eysenhardt, 1829) Looss, 1902
Heterophyes heterophyes (Siebold, 1853)
Saccocoelium obesum Looss, 1902

- Saccocoelium tensum* Looss, 1902
Schikhobalotrema sparisomae Manter, 1937
Neoechinorhynchus (Hebesoma) agilis (Rudolphi, 1819)
- Liza aurata* (Risso, 1810)**
Ligophorus szidati Euzet and Suriano, 1977
Solostamenides mugilis (Vogt, 1879)
Haploplanchnus pachysomus (Eysenhardt, 1829) Looss, 1902
Saccocoelium obesum Looss, 1902
Saccocoelium tensum Looss, 1902
Schikhobalotrema sparisomae Manter, 1937
Hysterothylacium aduncum (Rudolphi, 1802)
Neoechinorhynchus (Hebesoma) agilis (Rudolphi, 1819)
- Alosa immaculata* Bennett, 1835**
Mazocraes alosae Herman, 1782
Pronoprymna ventricosa (Rudolphi, 1819)
Anisakis simplex (Rudolphi, 1809)
Hysterothylacium aduncum (Rudolphi, 1802)
Hysterothylacium fabri (Rudolphi, 1819)
- Diplodus sargus* (Linnaeus, 1758)**
Microcotyle erythrini Van Beneden and Hesse, 1863
Ectenurus lepidus Looss, 1907
Lepocreadium album (Stossich, 1890)
Cucullanus tripapillatus (Gendre, 1927)
- Oblada melanura* (Linnaeus, 1758)**
Microcotyle erythrini Van Beneden and Hesse, 1863
Lepocreadium album (Stossich, 1890)
Anisakis simplex (Rudolphi, 1809)
Cucullanus tripapillatus (Gendre, 1927)
Hysterothylacium fabri (Rudolphi, 1819)
- Trachurus mediterraneus* (Steindachner, 1868)**
Microcotyle erythrini Van Beneden and Hesse, 1863
Pseudaxine trachuri Parona and Perugia, 1890
Ectenurus lepidus Looss, 1907
Lepocreadium pyriforme Linton, 1900
Monascus filiformis (Rudolphi, 1819)
Opechona bacillaris (Molin, 1859) Dollfus, 1927
Tergestia laticollis (Rudolphi, 1819)
Anisakis simplex (Rudolphi, 1809)
Hysterothylacium aduncum (Rudolphi, 1802)
Hysterothylacium fabri (Rudolphi, 1819)
Philometra globiceps Rudolphi, 1819
- Pomatomus saltatrix* (Linnaeus, 1766)**
Microcotyle pomatomi Goto, 1899
Opechona bacillaris (Molin, 1859) Dollfus, 1927
Anisakis simplex (Rudolphi, 1809)
Hysterothylacium aduncum (Rudolphi, 1802)

Philometra saltatrix Ramachandran, 1973

***Chelidonichthys lucerna* (Linnaeus, 1758)**

Plectanocotyle gurnardi (Van Beneden and Hesse, 1863)

Helicometra fasciata (Rudolphi, 1819) Odhner, 1902

***Trachinotus ovatus* (Linnaeus, 1758)**

Pyragraphorus pyragraphorus (Mac Callum and Mac Callum, 1913)

***Eutrigla gurnardus* (Linnaeus, 1758)**

Trochopus gaillimhe Little, 1829

Trochopus pini (Van Beneden and Hesse, 1863)

Acanthocephaloides propinquus (Dujardin, 1845)

***Xiphias gladius* Linnaeus, 1758**

Tristoma coccineum Cuvier, 1817

Tristoma integrum (Diesing, 1850)

Tristomella laevis (Verrill, 1875) Guiart, 1938

***Uranoscopus scaber* Linnaeus, 1758**

Tetraonchoides paradoxus Bychowsky, 1951

Anisocladium fallax (Rudolphi, 1819)

Anisocladium gracile (Looss, 1901)

Anisocoelium capitellatum (Rudolphi, 1819)

Stephanostomum minutum (Looss, 1901) Manter, 1940

Progrillotia dasyatidis Beveridge, Neifar and Euzet, 2004

Anisakis simplex (Rudolphi, 1809)

Hysterothylacium aduncum (Rudolphi, 1802)

Philometra globiceps (Rudolphi, 1819)

Acanthocephaloides propinquus (Dujardin, 1845)

***Seriola dumerili* (Risso, 1810)**

Zeuxapta seriolae (Meserve, 1938)

***Lichia amia* (Linnaeus, 1758)**

Zeuxapta seriolae (Meserve, 1938)

Bucephalus margaritae Ozaki and Ishibashi, 1934

***Pagrus pagrus* (Linnaeus, 1758)**

Allopodocotyle pedicellata (Stossich, 1887) Pritchard, 1966

***Scorpaena scrofa* Linnaeus, 1758**

Anisocoelium capitellatum (Rudolphi, 1819)

Helicometra fasciata (Rudolphi, 1819) Odhner, 1902

Bothriocephalus scorpii (Müller, 1776)

Acanthocephaloides propinquus (Dujardin, 1845)

Trachelobdella lubrica (Grube, 1840)

***Scorpaena porcus* Linnaeus, 1758**

Anisocoelium capitellatum (Rudolphi, 1819)

Helicometra fasciata (Rudolphi, 1819) Odhner, 1902

Bothriocephalus scorpii (Müller, 1776)

Hysterothylacium aduncum (Rudolphi, 1802)

Acanthocephalus lucii (Müller, 1777)

Acanthocephaloides propinquus (Dujardin, 1845)

Trachelobdella lubrica (Grube, 1840)

***Sciaena umbra* Linnaeus, 1758**

Anoiktostoma coronatum (Wagener, 1852) Stossich, 1889
Siphoderina aloysiae (Stossich, 1885) Miller and Cribb, 2008
Hysterothylacium aduncum (Rudolphi, 1802)

***Zosterisessor ophiocephalus* (Pallas, 1814)**

Bucephalus marinus Vlasenko, 1931
Diphtherostomum brusinae (Stossich, 1899)
Prosorhynchoides haimeana (Lacaze-Duthiers, 1854)
Helicometra fasciata (Rudolphi, 1819) Odhner, 1902

***Gaidropsarus mediterraneus* (Linnaeus, 1758)**

Bucephalus marinus Vlasenko, 1931
Stephanostomum baccatum (Nicoll, 1907)
Helicometra fasciata (Rudolphi, 1819) Odhner, 1902
Stephanostomum gaidropsari Bartoli and Bray, 2001
Progrillotia dasyatidis Beveridge, Neifar and Euzet, 2004
Cucullanus tripapillatus (Gendre, 1927)
Hysterothylacium aduncum (Rudolphi, 1802)
Spinitectus oviflagellis Fourment, 1883

***Oedalechilus labeo* (Cuvier, 1829)**

Dicrogaster contractus Looss, 1902
Haploporus benedenii (Stossich, 1887) Looss, 1902

***Trachurus trachurus* (Linnaeus, 1758)**

Ectenurus lepidus Looss, 1907
Monascus filiformis (Rudolphi 1819)
Prodistomum polonii (Molin, 1859) Bray and Gibson, 1990
Anisakis simplex (Rudolphi, 1809)
Anisakis pegreffii Campana-Rouget and Biocca, 1955
Hysterothylacium aduncum (Rudolphi, 1802)
Longicollum pagrosomi Yamaguti, 1935

***Symphodus tinca* (Linnaeus, 1758)**

Gaevskajatrema perezi (Mathias, 1926) Gibson and Bray, 1982
Gaevskajatrema pontica (Koval, 1966)
Helicometra fasciata (Rudolphi, 1819) Odhner, 1902
Plagioporus dogieli (Pogorelzeva, 1975)
Macvicaria alacris (Looss, 1901) Gibson and Bray, 1982
Cucullanus tripapillatus (Gendre, 1927)
Pomphorhynchus laevis (Müller, 1776)

***Gobius cobitis* Pallas, 1814**

Helicometra fasciata (Rudolphi, 1819) Odhner, 1902
Progrillotia dasyatidis Beveridge, Neifar and Euzet, 2004

***Conger conger* (Linnaeus, 1758)**

Helicometra fasciata (Rudolphi, 1819) Odhner, 1902
Lecithochirium grandiporum (Rudolphi, 1819) Lühe, 1901
Prosorhynchus crucibulum (Rudolphi, 1819)
Anisakis simplex (Rudolphi, 1809)
Cucullanus hians (Dujardin, 1845)

Scorpaena notata* Rafinesque, 1810Helicometra fasciata* (Rudolphi, 1819) Odhner, 1902*Bothriocephalus scorpii* (Müller, 1776)***Lithognathus mormyrus* (Linnaeus, 1758)***Holorchis pycnoporos* Stossich, 1901***Muraena helena* Linnaeus, 1758***Lecithochirium grandiporum* (Rudolphi, 1819) Lühe, 1901*Prosorhynchus crucibulum* (Rudolphi, 1819)***Ophidion rochei* Müller, 1845***Lecithochirium musculus* (Looss, 1907) Nasir and Diaz, 1971*Hysterothylacium aduncum* (Rudolphi, 1802)*Progrillotia dasyatidis* Beveridge, Neifar and Euzet, 2004***Dentex dentex* (Linnaeus, 1758)***Lepidauchen stenostoma* Nicoll, 1913***Spicara smaris* (Linnaeus, 1758)***Lepocreadium album* (Stossich, 1890)*Hysterothylacium aduncum* (Rudolphi, 1802)***Mullus surmuletus* Linnaeus, 1758***Opecoeloides furcatus* (Bremser in Rudolphi, 1819)*Proctotrema bacilliovatum* (Odhner, 1911)*Anisakis simplex* (Rudolphi, 1809)*Cucullanus longicollis* (Stossich, 1899)*Hysterothylacium fabri* (Rudolphi, 1819)***Umbrina cirrosa* (Linnaeus, 1758)***Stephanostomum bicoronatum* (Stossich, 1883) Fuhrmann, 1928***Sardina pilchardus* (Walbaum, 1792)***Anisakis simplex* (Rudolphi, 1809)***Engraulis encrasicolus* (Linnaeus, 1758)***Anisakis simplex* (Rudolphi, 1809)*Hysterothylacium aduncum* (Rudolphi, 1802)***Mullus barbatus* Linnaeus, 1758***Progrillotia dasyatidis* Beveridge, Neifar and Euzet, 2004*Anisakis simplex* (Rudolphi, 1809)*Hysterothylacium aduncum* (Rudolphi, 1802)***Serranus hepatus* (Linnaeus, 1758)***Anisakis simplex* (Rudolphi, 1809)***Zeus faber* Linnaeus, 1758***Anisakis simplex* (Rudolphi, 1809)***Symphodus* sp.***Cucullanus micropapillatus* Tornquist, 1931*Hysterothylacium fabri* (Rudolphi, 1819)***Sprattus sprattus* (Linnaeus, 1758)***Dichelyne minutus* Rudolphi, 1819*Hysterothylacium aduncum* (Rudolphi, 1802)

***Raja clavata* Linnaeus, 1758**

- Acanthobothrium dujardinii* Van Beneden, 1849
Acanthobothrium ponticum Borcea, 1934
Echinobothrium typus Van Beneden, 1849
Phyllobothrium lactuca (Van Beneden, 1850)
Phyllobothrium gracile Wedl, 1855
Echinocephalus spinosissimus von Linstow, 1905
Pontobdella muricata (Linnaeus, 1758)

***Gobius niger* Linnaeus, 1758**

- Progrillotia dasyatidis* Beveridge, Neifar and Euzet, 2004
Hysterothylacium aduncum (Rudolphi, 1802)
Acanthocephaloides propinquus (Dujardin, 1845)

***Solea solea* (Linnaeus, 1758)**

- Bothriocephalus scorpii* (Müller, 1776)
Didymobothrium rudolphii Nybelin, 1922
Grillotia heptanchi (Vaullegeard, 1899)
Hysterothylacium aduncum (Rudolphi, 1802)
Acanthocephaloides propinquus (Dujardin, 1845)
Solearhynchus rhytidotes (Meyer, 1933)

***Rhinobatos rhinobatos* (Linnaeus, 1758)**

- Hysterothylacium aduncum* (Rudolphi, 1802)

***Scophthalmus maximus* (Linnaeus, 1758)**

- Bothriocephalus scorpii* (Müller, 1776)
Hysterothylacium aduncum (Rudolphi, 1802)

***Caspialosa* sp.**

- Hysterothylacium aduncum* (Rudolphi, 1802)

***Sarda sarda* (Bloch, 1793)**

- Hysterothylacium aduncum* (Rudolphi, 1802)

***Lophius piscatorius* Linnaeus, 1758**

- Hysterothylacium aduncum* (Rudolphi, 1802)

***Phycis phycis* (Linnaeus, 1766)**

- Hysterothylacium fabri* (Rudolphi, 1819)

***Coris julis* (Linnaeus, 1758)**

- Hysterothylacium fabri* (Rudolphi, 1819)

***Squalus blainville* (Risso, 1827)**

- Hysterothylacium fabri* (Rudolphi, 1819)

***Epinephelus marginatus* (Lowe, 1834)**

- Philometra lateolabracis* (Yamaguti, 1935)

***Mycteroperca rubra* (Bloch, 1793)**

- Philometra lateolabracis* (Yamaguti, 1935)

***Epinephelus aeneus* (Geoffroy Saint-Hilaire, 1817)**

- Philometra lateolabracis* (Yamaguti, 1935)

***Dasyatis* sp.**

- Acanthobothrium coronatum* (Rudolphi, 1819)

Pegusa nasuta* (Pallas, 1814)Bothriocephalus scorpii* (Müller, 1776)*Phyllobothrium lactuca* (Van Beneden, 1850)*Acanthocephalus lucii* (Müller, 1777)***Eutynnus alleteratus* (Rafinesque, 1810)***Callitetrarhynchus gracilis* (Rudolphi, 1819)***Scyliorhinus canicula* (Linnaeus, 1758)***Echeneibothrium variabile* Van Beneden 1850***Raja miraletus* Linnaeus, 1758***Pontobdella muricata* (Linnaeus, 1758)***Squalus acanthias* Linnaeus, 1758***Echinobothrium typus* Van Beneden, 1849*Tetrarhynchobothrium tenuicolle* Diesing, 1854***Raja* sp.***Pontobdella muricata* Linnaeus, 1758***Labrus bergylta* Ascanius, 1767***Trachelobdella lubrica* (Grube, 1840)***Syngnathus acus* Linnaeus, 1758***Hysterothylacium aduncum* (Rudolphi, 1802)

Although parasites at species and genera level were reported from marine fish, only species level will be considered in here (Tab. 3). Other parasites at genera level (unnamed species) will be omitted in here. The reports from different host fish will be shown (Tab. 4), because they may be new species or the same species.

This checklist presents the occurrence of 63 digeneans at species level, after nine years (Tab. 3). Digenea is most largest group with 59 species from 47 host fish species. There have been 45 genera of digeneans reported with the following genera being the most prevalent: *Helicometra* (eleven hosts), *Lepocreadium* (eight hosts), *Haploporus* (five hosts), *Dicrogaster* (five hosts), *Saccocoelium* (five hosts), *Haplospalchnus* (five hosts), *Schikhobalotrema* (five hosts), *Stephanostomum* (four hosts), *Ectenurus* (four hosts), *Opechona* (four hosts), *Bacciger* (three hosts), *Bucephalus* (four hosts), *Lecithochirium* (four hosts). Adult digeneans were reported especially from intestine, stomach and rarely from gall bladder, muscle. Also, ten unnamed species (at genera level) were reported from different host fish (*Ascocotyle* sp., *Allocreadium* sp., *Bathycreadium* sp., *Centrodema* sp., *Hemiurus* sp., *Lecithaster* sp., *Paramacroderoides* sp., *Piriforma* sp., *Schikhobalotrema* sp., *Stephanostomum* sp.) (Tab. 4.).

This checklist presents the occurrence of 49 monogeneans at species level, after nine years (Tab. 3). Monogenea are next-largest group with 49 species from 40 host fish species. *Ligophorus* genus is the most abundant among the monogenea. *Ligophorus* genus with 10 species is reported from mugilids. The majority of monogeneans selected gill filaments as infection sites. A few monogenea (*gyrodactylus* and *benedenia*) selected body surface. Another seven monogenea (genera level) were reported from different hosts (*Dactylogyrus* sp., *Diplectenum* sp., *Gyrodactylus* sp., *Lamellodiscus* sp., *Ligophorus* sp. and *Microcotyle* sp.) (Tab. 4.).

Table 4: Unnamed helminth species (at genera level) reported from marine fishes of Turkey.

Phylum		
Platyhelminthes		
Class Monogenea		
<i>Microcotyle</i> sp.		
<i>Sparus aurata</i>	Sea bream farm (Aegean Sea)	Hoşsucu (1986)
<i>Dentex dentex</i>	Common dentex farm (Aegean Sea)	Çilli (2008)
<i>Oblada melanura</i>	Mediterranean Sea	Konaş (2009)
<i>Ligophorus</i> sp.		
<i>Mugil cephalus</i>	Aegean Sea	Altunel (1981)
<i>Diplectenum</i> sp.		
<i>Sargocentron rubrum</i>	Mediterranean Sea	Konaş (2009)
<i>Lamellodiscus</i> sp.		
<i>Sparus aurata</i>	Sea bream farm (Aegean Sea)	Hoşsucu (1986)
<i>Diplodus vulgaris</i>	Mediterranean Sea	Konaş (2009)
<i>Diplodus sargus</i>	Mediterranean Sea	Konaş (2009)
<i>Siganus luridus</i>	Mediterranean Sea	Konaş (2009)
<i>Dactylogyrus</i> sp.		
<i>Dicentrarchus labrax</i>	Hurmaboğazı Lagoon Lake	Canlı (2010)
<i>Gyrodactylus</i> sp.		
<i>Chelon labrosus</i>	Aegean Sea	Altunel (1982)
<i>Merlangius merlangus</i>	Black Sea	Yaman (1997)
Monogenea sp.		
<i>Platichthys flesus</i>	Ekinli Lagoon Lake	Oğuz (1989)

Table 4 (continuing): Unnamed helminth species (at genera level) reported from marine fishes of Turkey.

Phylum		
Platyhelminthes		
Class Digenea		
<i>Allocreadium</i> sp.		
<i>Sarpa salpa</i>	Aegean Sea	Akmirza (2000b)
<i>Bathycreadium</i> sp.		
<i>Phycis phycis</i>	Aegean Sea	Akmirza (2013)
<i>Centrodema</i> sp.		
<i>Sarpa salpa</i>	Mediterranean Sea	Tepe and Oğuz (2013)
<i>Hemiurus</i> sp.		
<i>Scomber japonicus</i>	Fish Market (Eskişehir)	Yetim (1985)
<i>Lecithaster</i> sp.		
<i>Pomatomus saltatrix</i>	Fish Market (Eskişehir)	Yetim (1985)
<i>Paramacroderoides</i> sp.		
<i>Pomatomus saltatrix</i>	Fish Market (Eskişehir)	Yetim (1985)
<i>Piriforma</i> sp.		
<i>Zosterisessor ophiocephalus</i>	Marmara Sea	Oğuz (1995)
<i>Schikhobalotrema</i> sp.		
<i>Chelon labrosus</i>	Aegean Sea	Altunel (1981)
<i>Stephanostomum</i> sp.		
<i>Merluccius merluccius</i>	Marmara Sea	Oğuz (1995)
<i>Ascocotyle</i> sp.		
<i>Platichthys flesus</i>	Sarıkum Lagoon Lake	Öztürk (2005)

Table 4 (continuing): Unnamed helminth species (at genera level) reported from marine fishes of Turkey.

Phylum		
Platyhelminthes		
Class Cestoda		
<i>Diphyllobothrium</i> sp.		
<i>Scophthalmus rhombus</i>		Merdivenci (1983)
<i>Grillotia</i> sp.		
<i>Epinephelus aeneus</i>	Mediterranean Sea	Genc et al. (2005)
<i>Epinephelus marginatus</i>	Mediterranean Sea	Genc et al. (2005)
<i>Solea solea</i>	Marmara Sea	Keser et al. (2007)
<i>Monobothrium</i> sp.		
<i>Mugil cephalus</i>	Black Sea	Yetim (1985)
<i>Nybelina</i> sp.		
<i>Mullus barbatus</i>		Sezen and Price (1969)
<i>Merlangius merlangius</i>	Black Sea	Yetim (1985)
<i>Platichthys flesus</i>	Ekinli Lagoon	Oğuz (1989)
<i>Rhynchobothrium</i> sp.		
<i>Gobius niger</i>	Marmara Sea	Oğuz (1995)
<i>Tetraphyllidean</i> sp.		
<i>Gobius niger</i>	Marmara Sea	Oğuz and Bray (2008)
<i>Gobius cobitis</i>	Marmara Sea	Oğuz and Bray (2008)
<i>Merluccius merluccius</i>	Marmara Sea	Oğuz and Bray (2008)
<i>Eutrigla gurnardus</i>	Marmara Sea	Oğuz and Bray (2008)
<i>Solea solea</i>	Marmara Sea	Oğuz and Bray (2008)
<i>Scorpaena scrofa</i>	Marmara Sea	Oğuz and Bray (2008)
<i>Trypanorhynch</i> sp.		
<i>Epinephelus aeneus</i>	Mediterranean Sea	Genç (2000)
<i>Epinephelus marginatus</i>	Mediterranean Sea	Genç (2000)
<i>Epinephelus costae</i>	Mediterranean Sea	Genç (2000)
<i>Mycteroperca rubra</i>	Mediterranean Sea	Genç (2000)

Table 4 (continuing): Unnamed helminth species (at genera level) reported from marine fishes of Turkey.

Phylum		
Nemathelminthes		
Ascarophis sp.		
<i>Scorpaena scrofa</i>	Aegean Sea	Şenol (2004)
<i>Scorpaena notata</i>	Aegean Sea	Şenol (2004)
<i>Scorpaena porcus</i>	Aegean Sea	Şenol (2004)
<i>Scorpaena porcus</i>	Black Sea	Tepe et al. (2014)
Capillaria sp.		
<i>Platichthys flesus</i>	Sarıkum Lagoon Lake	Öztürk (2005)
<i>Mullus surmuletus</i>	Aegean Sea	Akmirza (2000a)
Cucullanus sp.		
<i>Merlangius merlangius</i>	Fish Market (Eskişehir)	Yetim (1985)
Echinocephalus sp.		
<i>Dasyatis sp.</i>	Aegean Sea	Akmirza (2013)
Hysterothylacium sp.		
<i>Engraulis encrasicolus</i>	Black Sea	Oytun (1963)
<i>Platichthys flesus</i>	Ekinli Lagoon Lake	Oğuz (1989)
<i>Sparus aurata</i>	Mediterranean Sea	Genç (2000)
<i>Diplodus cervinus</i>	Mediterranean Sea	Genç (2000)
<i>Diplodus vulgaris</i>	Mediterranean Sea	Genç (2000)
<i>Diplodus sargus</i>	Mediterranean Sea	Genç (2000)
<i>Pagellus erythrinus</i>	Mediterranean Sea	Genç (2000)
<i>Pagrus auriga</i>	Mediterranean Sea	Genç (2000)
<i>Pagrus coeruleostictus</i>	Mediterranean Sea	Genç (2000)
<i>Dentex dentex</i>	Mediterranean Sea	Genç (2000)
<i>Trachurus mediterraneus</i>		Şahin (2006)
<i>Merlangius merlangius</i>		Şahin (2006)
<i>Dicentrarchus labrax</i>	Beymelek Lagoon Lake	Emre (2010)
Nematoda sp.		
<i>Liza aurata</i>	Aegean Sea	Altunel (1983)
<i>Liza saliens</i>	Aegean Sea	Altunel (1983)
<i>Liza ramada</i>	Aegean Sea	Altunel (1983)
Philometra sp.		
<i>Epinephelus marginatus</i>	Mediterranean Sea	Cengizler and Sarihan (1995)
<i>Epinephelus aeneus</i>	Mediterranean Sea	Genç (2000)
<i>Epinephelus costae</i>	Mediterranean Sea	Genç (2000)
<i>Mycteroperca rubra</i>	Mediterranean Sea	Genç (2000)
Rhabdochona sp.		
<i>Anguilla anguilla</i>	Karacabay Lagoon Lake	Altunel (1990)

Table 4 (continuing): Unnamed helminth species (at genera level) reported from marine fishes of Turkey.

Phylum Acanthocephala		
<i>Acanthocephalus</i> sp.		
<i>Diplodus</i> <i>sargus</i>	Aegean Sea	Akmirza (2000b)
<i>Echinorhynchus</i> sp.		
<i>Mullus</i> <i>surmuletus</i>	Aegean Sea	Akmirza (2000a)
<i>Merluccius</i> <i>merluccius</i>	Marmara Sea	Oğuz (1995)
<i>Neoechinorhynchus</i> sp.		
<i>Mugil</i> <i>cephalus</i>	Karacabey Lagoon Lake	Öztürk and Aydoğdu (2003)
Phylum Annelida		
<i>Hirudinea</i> sp.		
<i>Platichthys</i> <i>flesus</i>	Ekinli Lagoon Lake	Oğuz (1989)

The checklist contains 18 species and seven unnamed species (genera level) of Cestoda. 19 species of cestoda were reported from 36 host fish species. In terms of host distribution, some cestoda (13 genera) may be ranked as follows: *Bothriocephalus* (nine hosts), *Phyllobothrium* (four hosts), *Acanthobothrium* (three hosts). *Bothriocephalus* is the dominant cestode species in terms of host range and location. Cestodes were reported from stomach, intestine, pyloric caeca, liver, body cavity, gonad, gall bladder, external mesenteries of internal organs of hosts. Another eight unnamed cestoda (genera level) reported from different host fish (*Grillotia* sp., *Monobothrium* sp., *Nybelina* sp., *Rhynchobothrium* sp., *Tetraphyllidean* sp., and *Trypanorhynch* sp.) (Tab. 4).

The checklist contains 17 species and eight unnamed species (genera level) of Nematoda. 17 nematode species were reported from 55 host species. Some genera of nematoda (eight genera) may be ranked as follows: *Hysterothylacium* (37 hosts), *Anisakis* (21 hosts), *Cucullanus* (eight hosts), *Philometra* (seven hosts). Adult nematodes were reported from body cavity, pyloric caeca, liver, intestine, mesentery, coelom, stomach, swimbladder, surfaces of visceral organs, muscle, ovarium, testis of hosts. Other eight unnamed nematoda (genera level) were reported from different host fish (*Ascarophis* sp., *Capillaria* sp., *Cucullanus* sp., *Echinocephalus* sp., *Hysterothylacium* sp., *Nematoda* sp., *Philometra* sp., and *Rhabdochona* sp.) (Tab. 4)

The checklist contains 11 species and three unnamed species (genera level) of Acanthocephala. Some genera of Acanthocephala are distributed as follows: *Acanthocephaloides* (eight hosts), *Neoechinorhynchus* (six hosts), *Acanthocephalus* (five hosts). 11 acanthocephala species were reported from 19 host species. Other three unnamed acanthocephala (genera level) were reported from different host fish (*Acanthocephalus* sp., *Echinorhynchus* sp., and *Neoechinorhynchus* sp.). (Tab. 4)

The checklist contains three species and one unnamed species (genera) of Hirudinids. Hirudinids were reported on body surface, fins, gills, mouth. Three species were reported from eight host species.

Since the helminths checklist of marine fishes from Turkey, published by Öktener (2005), parasites species number have nowadays seriously increased. Especially, platyhelminth species number that risen from 74 to 130 (Tab. 5).

Table 5: Change of number of named and unnamed helminth species reported from fish species occurring after Öktener (2005).

	Öktener (2005)		Present Study	
	Named sp.	Unnamed sp.	Named sp.	Unnamed sp.
Monogenea	28	2	49	7
Digenea	38	7	63	10
Cestoda	8	4	18	8
Nematoda	12	4	17	8
Acanthocephala	7	2	11	3
Hirudinea	2	0	3	1
	95	19	161	37
Total	114		198	

CONCLUSIONS

This checklist is done to update the list of the helminths of marine fishes from Turkey territory.

Finally, it was also intended to reveal and update parasite richness according to actual scientific literature.

It was felt that a critical checklist of the marine fish parasites known from Turkey area to date would support to solve some disputes among scientists, and benefit parasitologists, zoologists, and ecologists.

It is hoped that this work will stimulate future parasitological investigations of fishes of Turkish territory.

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