Marine Fish Parasitology of Iraq: A Review and Checklists

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Abstract: Literature reviews of available reports concerning the parasitic fauna of marine fishes of Iraq till the end of 2017 showed that a total of 253 parasite species are so far known from 86 fish species (13 elasmobranchians and 73 actinopterygians) investigated for parasitic infections. The parasitic fauna included one myzozoan, three ciliophorans, three myxozoans, 50 trematodes, 4 monogeneans, 21 cestodes, 47 nematodes, 11 acanthocephalans, one mollusc larva and 75 crustaceans. Among the inspected fishes, the mugilid fish Planiliza subviridis was infected with the highest number of parasite species (47 parasite species), followed by the sparid fish Acanthopagrus arabicus (28 species) and the clupeid fish Tenualosa ilisha (17 species), while 23 fish species were infected with only one parasite species each. The praniza larval stage of the isopode Gnathia was the commonest parasite species as it was recorded on 18 fish species, followed by the cestode Callitetrarhynchus gracilis which was reported from seven fish host species, while the majority of the remaining parasite species infected only one host species each.

Keywords: Checklists, Parasites, Marine fishes, Basrah, Iraq.

Introduction

Basrah province is situated in the extreme southern part of Iraq. It is the only Iraqi province which has an overlooking on the Arab Gulf (also known as the Arabian Gulf and as the Persian Gulf). Major impacts on marine habitats and resources of the Arab Gulf come from numerous industrial, infrastructure-based, and residential and tourism development activities, which together combine, synergistically in some cases, to cause the observed deterioration in most benthic habitats (Sheppard et al., 2010). Iraqi marine waters are represented with three main fishery areas namely, Khor Al-Zubair, Khor Abdullah and Khor Al-Ummaia. Khor Al-Zubair in an extension of the Arab Gulf waters in the lower part of Mesopotamia. It starts with a narrow mouth and extends northward until it ends in a number of blind creeks (Al-Ramadhan, 1988). The depth of the navigational channel ranges between 10-20 m with a main tidal range of 3.2 m. The area of this Khor is approximately 60 Km². Khor Abdullah is a drainage of the waters of Khor Al-Zubair to the Gulf. Its depth ranges between 7-14 m and continues to the Gulf about 60 km with 1-4 km width (Darmoian & Lindqvist, 1988). Khor Al-Ummaia occupies the upper northwestern corner of the Gulf. Its depth ranges from 10-26 m (Hussain & Mohammed, 1997).


Marine fishes of Iraq inhabit the north and northwest parts of the Arab Gulf. Some marine fishes are found in the freshwaters of Shatt Al-Arab river and its tributaries as well as Shatt
Al-Basrah canal. Both Shatt Al-Arab river and Shatt Al-Basrah canal facilitate the anadromous migration of some marine fishes to the marshy area or even to some other inland waters of south Iraq (Mhaisen et al., 2013a). Carpenter et al. (1997) gave a list of 512 marine fish species of Kuwait, Eastern Saudi Arabia, Bahrain, Qatar and the United Arab Emirates. According to Fishbase.org (2010), a total of 882 species are found in the Arab Gulf as a whole. Krupp et al. (2015) indicated that about 50 species of elasmobranchs and 460 species of bony fishes are currently known from this Gulf. However, a recent account by Ali et al. (2018) indicated the presence of 322 marine fish species within the Iraqi territorial waters of the Arab Gulf.

Studies on the parasites of marine fishes of Iraq can be divided into two sections; those which were performed on marine fishes within the Iraqi territorial marine waters of the Arab Gulf and those on some marine fishes entering brackish waters (Shatt Al-Arab river estuary near Al-Fao city and Shatt Al-Basrah canal) as well as some fresh waters of Iraq (Shatt Al-Arab river, Garmat Ali river, fish ponds and the marshy area of southern Iraq) as indicated in Figure 1. Enumeration of references concerning parasites of marine fishes of Iraq will be given in the subsection Parasitological Investigations on Marine Fishes of Iraq.

As no previous lists concerning parasites of marine fishes of Iraq alone are available, the present article is done to gather and review all concerned literature on parasites of marine fishes of Iraq in order to introduce parasite-host list and host-parasite list. The aims of this article also include updating knowledge on taxonomical validity and synonymy of all concerned parasites and updating the scientific names of all concerned infected fishes.

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Sources and Methods

A total of 99 references (81 research papers, 10 unpublished M. Sc. theses, five unpublished Ph. D. theses and three conference abstracts) dealing, totally or partially, with the parasites of marine fishes of Iraq were used to prepare the present article. Data from such references were gathered to provide parasite-fish list and fish-parasite list based on some electronic sites concerned with parasite classification (EOL, 2018; GBIF, 2018; Global Cestode Database, 2018; ITIS, 2018; WoRMS, 2018) as well as some relevant taxonomic references (Lom & Dyková, 1992; Gibson et al., 2002; Eiras et al., 2005; Jones et al., 2005; Molnár, 2006; Moravec, 2006; Bray et al., 2008; Anderson et al., 2009; Gibbons, 2010; Amin, 2013; Fiala et al., 2015).

The layout and names of the major taxonomic groups (phyla, classes, orders and families) of the concerned parasites followed two checklists of FAO Fisheries Technical Papers (Arthur & Te, 2006; Kirjušina & Vismanis, 2007) except for some cases which were given in their relevant parasitic groups. For fishes, the scientific names were reported as they appeared in their original references but then their valid names and their authorities were checked according to well known specialized electronic sites (Eschmeyer, 2018; Froese & Pauly, 2018). However, Durand (2016) was followed for the recent valid names of members of fish family Mugilidae and Last et al. (2016) for fish family Dasyatidae. Species of the parasitic fauna of marine fishes of Iraq are grouped here into nine major groups.

For each major parasitic group, a list of species will be given according with their systematic account which will be in an accordance with two major electronic sites (GBIF, 2018; WoRMS, 2018). This will be followed by an alphabetically listing of parasite species in each major group. Parasite listing will include alphabetically arranged fish host species involved for each parasite species together with their references. For the infection of some marine fishes in both brackish and fresh waters with some parasite species, the total number of host species of such parasites so far recorded from fishes of Iraq will be declared depending on the index-catalogue of parasites and disease agents of fishes of Iraq (Mhaisen, 2018) without mentioning this reference each time in order to economise space. A demonstration of absence of any parasite species in both GBIF (2018) and WoRMS (2018) or its consideration as invalid, nomen dubium, nomen nudum or taxon inquirendum will be demonstrated when applicable.

Parasitological Investigations on Marine Fishes of Iraq

Studies of parasites of marine fishes of Iraq included those on marine fishes from their marine habitats as well as those on some marine fishes entering brackish and freshwater habitats. These habitats are indicated in 16 stations in Figure 1. The concerned literature for these regions (with their coordinates) are chronologically arranged in the following account.

Iraqi coral reef, Khor Al-Ummaia (Station 1: 29°25′N, 48°48′E): Li et al. (2016).


Khor Abdullah near the mud flats (Station 5: 29°49′N, 48°36′ E): Zhao et al. (2017).
Shatt Al-Basrah canal (Station 8: 30°20′N, 47°48′44″E): Adday & Ali (2011).
Shatt Al-Basrah canal near the dam (Station 9: 30°24′15″N, 47°46′46″E): Kritsky et al. (2013a, b).
Al-Hammar marsh near Hareer village (Station 10: 30°35′50″N, 47°41′30″E): Jori (2007).
Confluence of Tigris and Euphrates rivers at Qurna city (Station 11: 31°0′12″N, 47°26′37″E): Ahmed (2015).
Shatt Al-Arab river near Al-Seebah town (Station 15: 30°20′22″N, 48°15′38″E): Kritsky et al. (2013b).
Shatt Al-Arab river estuary near Al-Fao city (Station 16: 29°59′15″N, 48°28′10″E): Ali (2001), Al-Janabi (2010), Kritsky et al. (2013a, b), Amin et al. (2015) and Bannai & Muhammad (2016a, b).
In addition, some few samples were collected from Al-Fao city fish market (Mhaisen, 1986; Mohammad, 2016), some fish ponds in Basrah province (Al-Daraji et al., 1999), Al-Ashtar canal (Ahmed, 2015), Al-Salihiya river (Al-Janae'e, 2010) and the marshy area of southern Iraq (Jori, 2007; Ali, 2008).

Results and Discussion
Surveying literature concerning the parasites which are so far recorded from marine fishes of Iraq showed the infection of 86 valid fish species with parasites. The full authority of each valid fish host is shown in Table 1. The parasitic fauna of these fishes included one myxozoan, three ciliophorans, three myxozoans, 50 trematodes, 40 monogeneans, 21 cestodes, 47 nematodes, 11 acanthocephalans, one mollusc larva and 75 crustaceans. GBIF (2018) and WoRMS (2018) were mainly followed for the systematics of these groups and their authorities.
Names of fish hosts are quoted as they appeared in the reviewed literature but the valid names were updated in accordance with two well-known electronic sites (Eschmeyer, 2018; Froese & Pauly, 2018). The following is a brief account on the major groups of the parasitic fauna of marine fishes of Iraq.
Table 1: List of valid marine fish species of Iraq which showed parasitic infections.

<table>
<thead>
<tr>
<th>Class Elasmobranchii</th>
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<tbody>
<tr>
<td>Order Orectolobiformes</td>
<td></td>
</tr>
<tr>
<td>Family Hemiscylliidae</td>
<td></td>
</tr>
<tr>
<td><em>Chiloscyllium arabicum</em></td>
<td>Gubanov, 1980</td>
</tr>
<tr>
<td>Order Carcharhiniformes</td>
<td></td>
</tr>
<tr>
<td>Family Triakidae</td>
<td></td>
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<tr>
<td><em>Mustelus mosis</em></td>
<td>Hemprich &amp; Ehrenberg, 1899</td>
</tr>
<tr>
<td>Family Hemigaleidae</td>
<td></td>
</tr>
<tr>
<td><em>Chaenogaleus macrostoma</em></td>
<td>Bleeker, 1852</td>
</tr>
<tr>
<td>Family Carcharhinidae</td>
<td></td>
</tr>
<tr>
<td><em>Carcharhinus dussumieri</em></td>
<td>Müller &amp; Henle, 1839</td>
</tr>
<tr>
<td><em>Carcharhinus sorrah</em></td>
<td>Müller &amp; Henle, 1839</td>
</tr>
<tr>
<td><em>Rhizoprionodon acutus</em></td>
<td>Rüppell, 1837</td>
</tr>
<tr>
<td>Family Sphyrnidae</td>
<td></td>
</tr>
<tr>
<td><em>Sphyra mokarran</em></td>
<td>Rüppell, 1837</td>
</tr>
<tr>
<td>Order Rajiformes</td>
<td></td>
</tr>
<tr>
<td>Family Rhinobatidae</td>
<td></td>
</tr>
<tr>
<td><em>Glaucostegus granulatus</em></td>
<td>Cuvier, 1829</td>
</tr>
<tr>
<td>Order Myliobatiformes</td>
<td></td>
</tr>
<tr>
<td>Family Dasyatidae</td>
<td></td>
</tr>
<tr>
<td><em>Brevitrygon imbricata</em></td>
<td>Bloch &amp; Schneider, 1801</td>
</tr>
<tr>
<td><em>Maculabatis randalli</em></td>
<td>Last, Manjaji-Matsumoto &amp; Moore, 2012</td>
</tr>
<tr>
<td><em>Pastinachus sephen</em></td>
<td>Forsskål, 1775</td>
</tr>
<tr>
<td><em>Pateobatis bleekeri</em></td>
<td>Blyth, 1860</td>
</tr>
<tr>
<td>Family Gymnuridae</td>
<td></td>
</tr>
<tr>
<td><em>Gymnura poecilura</em></td>
<td>Shaw, 1804</td>
</tr>
<tr>
<td>Class Actinopterygii</td>
<td></td>
</tr>
<tr>
<td>Order Clupeiformes</td>
<td></td>
</tr>
<tr>
<td>Family Clupeidae</td>
<td></td>
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<tr>
<td><em>Nematalosa arabica</em></td>
<td>Regan, 1917</td>
</tr>
<tr>
<td><em>Nematalosa nasus</em></td>
<td>Bloch, 1795</td>
</tr>
<tr>
<td><em>Sardinella albella</em></td>
<td>Valenciennes, 1847</td>
</tr>
<tr>
<td><em>Tenualosa ilisha</em></td>
<td>Hamilton, 1822</td>
</tr>
<tr>
<td>Family Engraulidae</td>
<td></td>
</tr>
<tr>
<td><em>Thryssa hamiltonii</em></td>
<td>Gray, 1835</td>
</tr>
<tr>
<td><em>Thryssa whiteheadi</em></td>
<td>Wongratana, 1983</td>
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<tr>
<td>Family Chirocentridae</td>
<td></td>
</tr>
<tr>
<td><em>Chirocentrus dorab</em></td>
<td>Forsskål, 1775</td>
</tr>
<tr>
<td><em>Chirocentrus nudus</em></td>
<td>Swainson, 1839</td>
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<tr>
<td>Family Pristigasteridae</td>
<td></td>
</tr>
<tr>
<td><em>Ilisha compressa</em></td>
<td>Randall, 1994</td>
</tr>
<tr>
<td>Order Siluriformes</td>
<td></td>
</tr>
<tr>
<td>Family Ariidae</td>
<td></td>
</tr>
<tr>
<td><em>Netuma bilineata</em></td>
<td>Valenciennes, 1840</td>
</tr>
<tr>
<td><em>Netuma thalassina</em></td>
<td>Rüppell, 1837</td>
</tr>
<tr>
<td>Order Aulopiformes</td>
<td></td>
</tr>
<tr>
<td>Family Synodontidae</td>
<td></td>
</tr>
<tr>
<td><em>Saurida tumbil</em></td>
<td>Bloch, 1795</td>
</tr>
<tr>
<td><em>Saurida undosquamis</em></td>
<td>Richardson, 1848</td>
</tr>
<tr>
<td>Order Beloniformes</td>
<td></td>
</tr>
<tr>
<td>Family Belonidae</td>
<td></td>
</tr>
<tr>
<td><em>Ablennes hians</em></td>
<td>Valenciennes, 1846</td>
</tr>
</tbody>
</table>
Strongylura leiura (Bleeker, 1850)
** Strongylura strongylura (van Hasselt, 1823)
Tylosurus crocodilus (Péron & Lesueur, 1821)
Family Hemiramphidae
* Hemiramphus marginatus (Forsskål, 1775)
Order Scorpaeniformes
Family Synanceiidae
* Pseudosynanceia melanostigma Day, 1875
Family Platyccephalidae
* Platyccephalus indicus (Linnaeus, 1758)
Order Perciformes
Family Serranidae
* Epinephelus areolatus (Forsskål, 1775)
* Epinephelus coioides (Hamilton, 1822)
Family Sillaginidae
* Sillago arabica McKay & McCarthy, 1989
* Sillago sihama (Forsskål, 1775)
Family Carangidae
* Alepes djedaba (Forsskål, 1775)
* Carangoides armatus (Rüppell, 1830)
* Carangoides malabaricus (Bloch & Schneider, 1801)
* Megalaspis cordyla (Linnaeus, 1758)
* Parastromateus niger (Bloch, 1795)
* Scomberoides commersonnianus Lacepède, 1801
Family Leiognathiidae
* Photopectoralis bindus (Valenciennes, 1835)
Family Lutjanidae
* Lutjanus johnii (Bloch, 1792)
* Pristipomoides filamentosus (Valenciennes, 1830)
Family Haemulidae
* Diagramma pictum (Thunberg, 1792)
* Plectorhinchus sordidus (Klunzinger, 1870)
Family Sparidae
* Acanthopagrus arabricus Iwatsuki, 2013
* Acanthopagrus bifasciatus (Forsskål, 1775)
* Argyrops spinifer (Forsskål, 1775)
* Diplodus sargus (Linnaeus, 1758)
* Rhabdosargus haffa (Forsskål, 1775)
* Sparidentex hasta (Valenciennes, 1830)
Family Lethrinidae
* Lethrinus nebulosus (Forsskål, 1775)
Family Nemipteridae
* Nemipterus japonicus (Bloch, 1791)
Family Sciaenidae
* Johnius belangerii (Cuvier, 1830)
* Johnius dussumieri (Cuvier, 1830)
† Johnius elongatus Lal Mohan, 1976
* Otolithes ruber (Bloch & Schneider, 1801)
Family Polynemidae
* Eleutheronema tetrACTylum (Shaw, 1804)
Family Drepaneidae
* Drepane longimana (Bloch & Schneider, 1801)
Family Pomacanthidae
* Pomacanthus maculosus (Forsskål, 1775)
Family Gobiidae
Marine fish parasitology of Iraq: A review and checklists

* Bathygobius fuscus (Rüppell, 1830)
* Boleophthalmus dussumieri Valenciennes, 1837
Periophthalmus waltoni Koumans, 1941
Trypauchen vagina (Bloch & Schneider, 1801)

Family Ephippidae
Ephippus orbis (Bloch, 1787)
Platax orbicularis (Forsskål, 1775)
Platax teira (Forsskål, 1775)

Family Siganidae
Siganus canaliculatus (Park, 1797)

Family Sphyraenidae
Sphyraena jello Cuvier, 1829
Sphyraena obtusata Cuvier, 1829

Family Trichiuridae
Trichiurus lepturus Linnaeus, 1758

Family Scombridae
Scomberomorus guttatus (Bloch & Schneider, 1801)

Family Stromateidae
Pampus argenteus (Euphrasen, 1788)

Order Mugiliformes
Family Mugilidae
* Osteomugil speigleri (Bleeker, 1858)
* Planiliza carinata (Valenciennes, 1836)
** Planiliza klunzingeri (Day, 1888)
Planiliza macrolepis (Smith, 1846)
* Planiliza subviridis (Valenciennes, 1836)

Order Pleuronectiformes
Family Psettodidae
Psettodes erumei (Bloch & Schneider, 1801)

Family Paralichthiidae
Pseudorhombus arsius (Hamilton, 1822)

Family Soleidae
Brachirus orientalis (Bloch & Schneider, 1801)

Family Cynoglossidae
Cynoglossus arel (Bloch & Schneider, 1801)

Order Tetraodontiformes
Family Triacanthidae
Triacanthus biaculeatus (Bloch, 1786)

* Marine fishes entering fresh waters, ** marine fishes in both marine and fresh waters. The remaining are fishes in marine waters only.
† Occurrence of this fish species in Iraq or Arab Gulf is doubtful and its occurrence may represent a misidentification according to Carpenter et al. (1997).

Parasite-Host List
Species of the parasitic fauna of marine fishes of Iraq are grouped here into ten major groups. These are arranged according to their phylogenetic order as in the following account.

Phylum Myzozoa
This phylum is known as Myzozoa by GBIF (2018) and WoRMS (2018), but as phylum Apicomplexa according to Molnár (2006), EOL (2018) and ITIS (2018). This phylum is represented in marine fishes of Iraq with one unidentified species of the genus Haemogregarina as demonstrated in the following systematic account according to WoRMS (2018).
Phylum Myzozoa
Subphylum Apicomplexa
Class Conoidasida
Order Eucoccidiorida
Family Haemogregarinidae
Haemogregarina sp.

Unidentified Haemogregarina species was mentioned, in an abstract, from the blood of marine fish entering fresh water, namely Planiliza subviridis (reported as Liza subviridis) from Shatt Al-Arab river by Al-Salim (1992). This is the only report of a haemogregarine in particular and myzozoans in general from marine fishes of Iraq. The genus Haemogregarina Danilewsky, 1885 includes 46 valid species and 13 unaccepted species (WoRMS, 2018). However, according to GBIF (2018), this genus includes 64 species.

Phylum Cilio phora

This phylum is known as Ciliophora (GBIF, 2018; ITIS, 2018; WoRMS, 2018). It is represented in marine fishes of Iraq with one species each of the genera Trichodina and Nyctotheroides in addition to unidentified species of the genus Balantidium as indicated in the following systematic account according to WoRMS (2018).

Phylum Ciliophora
Class Litostomatea
Order Vestibuliferida
Family Balantidiidae
Balantidium sp.
Class Oligohymenophorea
Order Mobilida
Family Trichodinidae
Trichodina domerguei (Wallengren, 1897) Haider, 1964
Class Polymenophora
Order Heterotrichida
Family Sicuophoridae
Nyctotheroides cordiformis (Ehrenberg, 1838) Grassé, 1928

Balantidium coli (Malmsten, 1857) Stein, 1863 was reported as trophozoite from the intestine of Planiliza carinata (reported as Liza carinata) which was stocked in fish ponds and fiberglass tanks at the campus of Marine Science Centre, University of Basrah (Al-Daraji et al., 1999). As some Balantidium species infect fishes (Arthur & Te, 2006; Basson & Van As, 2006; Al-Salmany, 2015) and as B. coli infects the mammals (Roberts & Janovy, 1996), we consider B. coli reported by Al-Daraji et al. (1999) as representing Balantidium sp. It is possible that P. carinata might gain this infection from both Cyprinus carpio and Planiliza abu (reported as Liza abu) which were stocked at the same fish ponds and tanks reported by Al-Daraji et al. (1999). According to WoRMS (2018), the genus Balantidium Claparède & Lachmann, 1858 includes one valid marine species which is B. sigani Diamant & Wilbert, 1985, while this genus includes 75 species according to GBIF (2018) among which B. coli is a valid species.

Nyctotheroides cordiformis (Ehrenberg, 1838) Grassé, 1928 was reported as Nyctotherus cordiformis Ehrenberg, 1838 as trophozoite from the intestine of P. carinata (reported as L. carinata) as well as from the intestine of two freshwater fishes namely C. carpio and P. abu (reported as Liza. abu) stocked in fish ponds and fiberglass tanks at the campus of Marine
Marine fish parasitology of Iraq: A review and checklists


*Trichodina domerguei* (Wallengren, 1897) Haider, 1964 was reported from three marine fish species entering fresh waters in Basrah province. These included *Acanthopagrus arabicus* (reported as *A. latus*), *P. subviridis* (reported as *L. subviridis*) and *Sparidentex hasta* which were all from Garmat Ali river (Al-Jana'e, 2010) in addition to *P. subviridis* (reported as *L. subviridis*) from Shatt Al-Arab river by Al-Salim (1992) who claimed that *T. domerguei* was detected from the blood of *P. subviridis* (reported as *L. subviridis*). According to Hoffman (1999), trichodinids usually live on fish gills but in weakened fishes they possibly cover the entire surface of the fish. So, occurrence of this parasite in the blood (as reported by Al-Salim, 1992) is doubtful. *T. domerguei* was also reported from skin and gills of 16 freshwater fishes in Basrah province (Mhaisen et al., 2016). *T. domerguei* is a common ciliophoran among fishes of Iraq being so far recorded from 39 fish species. The genus *Trichodina* Ehrenberg, 1830 includes 88 valid species (WoRMS, 2018), while this genus includes 155 species according to GBIF (2018).

**Phylum Cnidaria- Class Myxozoa**

The myxozoans are recognized as phylum Myxozoa by EOL (2018) and GBIF (2018) and as subphylum Myxozoa within the phylum Cnidaria by ITIS (2018), but they are considered as class Myxozoa within the phylum Cnidaria by WoRMS (2018). Fiala et al. (2015) considered the Myxozoa as an unranked subphylum of the phylum Cnidaria. A phylogenomic analysis demonstrated by Chang et al. (2015) confirmed that myxozoans are cnidarians. The myxozoans are represented in marine fishes of Iraq with three species of the genus *Myxobolus* as indicated in the following systematic account according to WoRMS (2018). Names of *Myxobolus* species and their authorities were checked with Eiras et al. (2005).

**Phylum Cnidaria**

**Class Myxozoa**

**Order Bivalvulida**

**Family Myxobolidae**

*Myxobolus diversus* Nie & Li, 1973

*Myxobolus oviformis* Thélohan, 1892

*Myxobolus pfeifferi* Thélohan, 1895

*Myxobolus diversus* Nie & Li, 1973 was reported from fins of *P. subviridis* (reported as *L. subviridis*) from Al-Hammar marsh (Jori, 2007). No more records are available for this parasite in marine as well as freshwater fishes of Iraq (Mhaisen, 2018).

*Myxobolus oviformis* Thélohan, 1892 was reported from gills and intestinal wall of *P. subviridis* (reported as *L. subviridis*) from Garmat Ali river (Abdul-Rahman, 1999) in addition to six freshwater fish species in Basrah province (Mhaisen et al., 2016). It is appropriate to mention here that the year of authority of *M. oviformis* was given as 1882 instead of 1892 in most Iraqi literature. *M. oviformis* is a common myxozoan parasite among fishes of Iraq being so far recorded from 21 fish species.

*Myxobolus pfeifferi* Thélohan, 1895 was reported from gills of three marine fish species in Basrah. These were *A. arabis* (reported as *A. latus*) from Garmat Ali river (Al-Jana'e, 2010), *Periophthalmus waltoni* from Khor Al-Zubair lagoons (Mhaisen & Al-Maliki, 1996) and *P. subviridis* (reported as *L. subviridis*) from Garmat Ali river (Abdul-Rahman, 1999) in addition to its record from blood of *P. subviridis* (reported as *L. subviridis*) from Shatt Al-Arab river (Al-Salim, 1992). *M. pfeifferi* is the common myxozoan parasite among fishes of
Iraq being so far recorded from 35 fish species. The genus *Myxobolus* Bütschli, 1882 includes 86 valid species and four synonyms (WoRMS, 2018), while according to GBIF (2018), this genus includes 637 species. All the three above-named *Myxobolus* species are not enlisted by WoRMS (2018) but all are enlisted as accepted species by GBIF (2018).

**Phylum Platyhelminthes- Class Trematoda**

The class Trematoda of the phylum Platyhelminthes is represented in marine fishes of Iraq with 32 taxa recognized to the species rank in addition to 18 unidentified taxa of different genera and families. However, three of these species seem to be invalid, one nomen dubium and one species inquirenda, as indicated below. Gibson et al. (2002), Jones et al. (2005) and Bray et al. (2008) were followed for arrangement of the following major taxonomic groups of trematodes. However, recent updates in WoRMS (2018) were also taken in consideration.

**Phylum Platyhelminthes**
**Class Trematoda**
**Subclass Digenea**
**Superfamily Bivesiculoidea**
- *Treptodemus latus* Manter, 1961
**Superfamily Bucephaloidea**
- *Bucephalus kaku* Yamaguti, 1970
- *Prosorhynchus epinepheli* Yamaguti, 1939
- Bucephalid sp.
**Superfamily Schistosomatoidea**
- *Clinostomum complanatum* (Rudolphi, 1814) Braun, 1899
**Superfamily Diplostomoidea**
- *Diplostomum spathaceum* (Rudolphi, 1819) Olsson, 1876
**Superfamily Gymnophalloidea**
- *Monascus* sp.
- *Tergestia paucia* Texeira de Freitas & Kohn, 1965
**Superfamily Hemiuroidea**
- *Ectenurus papillatus* Khan & Bilqees, 1990
- *Ectenurus piscicola* (Srivastava, 1935)
- *Ectenurus* sp.
- *Erilepturus hamati* (Yamaguti, 1934) Manter, 1947
- *Erilepturus* spp. 1-3
- *Hypohepaticola* sp.
- *Lecithochirium acutum* Chauhan, 1945
- *Lecithochirium* spp. 1-2
- *Lecithocladium angustiovum* Yamaguti, 1953
- *Saturnius hadithii* Al-Daraji, 2004
- *Saturnius segmentatus* Manter, 1969
- *Saturnius valamugilis* Rekharani & Madhavi, 1985
- *Saturnius* sp.
Marine fish parasitology of Iraq: A review and checklists

Tubulovesicula magnacetabulum Yamaguti, 1939

Superfamily Transversotrematoidea
Family Transversotrematidae
   Transversotrema haasi Witenberg, 1944

Superfamily Haploporoidea
Family Haploporidae
   Carassotrema lizae Al-Daraji, 1999
   *Lecithobotrys mhaiseni* Al-Daraji, 1998
   Saccocoelium tensum Looss, 1902

Superfamily Haploplanchnoidea
Family Haploplanchnidae
   *Haploplanchnus mugilis* Nahhas & Cable, 1964
   Schikhabalotrema indicum (Zhukov, 1972) Overstreet & Curran, 2005

Superfamily Allocreadioidea
Family Opecoelidae
   Lecithobotrys mhaiseni Al-Daraji, 1999

*Invalid species, **Nomen dubium, ***Species inquirenda.

Ascocotyle coleostoma (Looss, 1896) Looss, 1899 was reported as a metacercaria from skin of *A. arabicus* (reported as *A. latus*) from Garmat Ali river (Al-Janae'e, 2010), skin of *Ilisha compressa* (reported as *I. elongata*) from Garmat Ali river (Al-Janae'e, 2010), gills and skin of *P. subviridis* (reported as *L. subviridis*) from Garmat Ali river (Jori, 1998; Abdul-Rahman, 1999, Al-Janae'e, 2010) and from Al-Salihiya canal (Al-Janae'e, 2010), skin of *Tenualosa ilisha* (reported as *Hilsa ilisha*) from Garmat Ali river (Al-Janae'e, 2010) and skin of *Thryssa whiteheadi* (misapplied as *T. mystax*) from Garmat Ali river (Al-Janae'e, 2010) in
addition to 17 freshwater fish species in Basrah province (Mhaisen et al., 2013b). It is appropriate to mention here that *I. elongata* is not found in the Arab Gulf and it is probably misidentified with *I. compressa* (Carpenter et al., 1997). *A. coleostoma* is a common metacercaria among fishes of Iraq as it is being so far recorded from 34 fish species (Mhaisen, 2018). The genus *Ascocotyle* Looss, 1899 includes 15 accepted and two unaccepted species (WoRMS, 2018), while this genus includes 41 species according to GBIF (2018).

*Bucephalus kaku* Yamaguti, 1970 was recorded from the intestine of *Scomberomorus guttatus* from Khor Al-Zubair (Al-Daraji, 1995). The genus *Bucephalus* von Baer, 1827 includes 79 accepted species, 16 unaccepted species and one nomen dubium species (WoRMS, 2018) According to GBIF (2018), this genus includes 97 species.

Bucephalid species (undetermined taxon) was detected from *Sphyraena obtusata* from the northwest of Arab Gulf by Al-Hasson (2015) who did not mention the site of infection. However, through a personal communication with him, he declared that it was the intestine.

*Carassotrema lizae* Al-Daraji, 1999 was described as a new species from intestine of *Planiliza macrolepis* (reported as *Liza macrolepis*) from Khor Abdullah (Al-Daraji, 1999). The genus *Carassotrema* Park, 1938 includes five accepted and three unaccepted species (WoRMS, 2018), while this genus includes nine species according to GBIF (2018).

*Clinostomum complanatum* (Rudolphi, 1814) Braun, 1899 was recorded as a metacercaria from gill cavity of *P. subviridis* (reported as *L. subviridis*) from Garmat Ali river (Jori, 1998; Abdul-Rahman, 1999) as well as from 15 freshwater fish species in Basrah province (Mhaisen et al., 2013b). Metacercariae of *C. complanatum*, the causative of the yellow grub disease, are widely distributed in freshwater fishes of Iraq as they have so far 27 fish host species (Mhaisen, 2018). Adults of this worm live in the mouth and pharynx of some fish-eating birds (Duijn, 1973). These adults were detected from three aquatic birds (*Ardea cinerea*, *Ardeola ralloides* and *Egretta garzetta*) from Al-Hammar marsh in south of Iraq (Ali, 2008; Al-Salm & Ali, 2010a; Al-Tameemi, 2013). Some species of *Clinostomum* are known to have a public health importance (Hoffman, 1999). It is reliable to state here that the authority of *C. complanatum* in Iraqi literature was reported in different forms but according to Dr. David I. Gibson (pers. comm.), this authority should be Rudolphi, 1814 between parentheses. The genus *Clinostomum* Leidy, 1856 includes one accepted species (*C. complanatum*) and one taxon inquirendum (WoRMS, 2018), while this genus includes 56 accepted species (inclusive of *C. complanatum*) according to GBIF (2018).

*Diplostomum spathaceum* (Rudolphi, 1819) Olsson, 1876 was recorded as a metacercaria from eyes of both *Acanthopagrus arabicus* (reported as *Acanthopagrus latus*) and *P. subviridis* (reported as *L. subviridis*) from Garmat Ali river (Al-Janae’e, 2010) as well as from 15 freshwater fish hosts in Basrah province (Mhaisen et al., 2013b). Metacercariae of *D. spathaceum* are common in freshwater fishes of Iraq and are responsible for the worm cataract which causes fish blindness (Mhaisen, 2004). Such metacercariae have so far 35 fish host species in Iraq (Mhaisen, 2018). The adult worms of *D. spathaceum* were found in two gull species (*Larus canus* and *L. ichthyaetus*) from Shatt Al- Arab river (Mhaisen et al., 1990) as well as from four aquatic birds (*Actitis hypoleucus*, *Himantopus himantopus*, *Larus genei* and *L. ichthyaetus*) from Al-Hammar marsh (Al-Tameemi, 2013). The infection of the black-headed gull *L. ridibundus* with adults of *D. spathaceum* from Basrah was also noticed (Al-Hadithi & Mustafa, 1991). As stated by Hoffman (1999), metacercariae of *D. spathaceum* were found in lens of a 5-month-old child and a 55-year-old fisherman in England. The genus *Diplostomum* Nordmann, 1832 includes 18 accepted species (WoRMS, 2018) while this genus includes 56 species according to GBIF (2018).

*Ectenurus papillatus* Khan & Bilqees, 1990 was reported from *T. ilisha* from Shatt Al-Arab river estuary at Al-Fao city by Bannai & Muhammad (2016a) and then in a repeated
article (Bannai & Muhammad, 2016b). In both articles, no any mention to the authority of this parasite as well as its site of infection was given.

_Ectenurus piscicola_ (Srivastava, 1935) was erroneously reported as _Clupenurus piscicola_ Srivastava, 1935 from the stomach of _I. compressa_ (reported as _I. elongata_) from Khor Al-Zubair lagoons (Al-Daraji, 1995). _I. elongata_ is not found in the Arab Gulf and it is probably misidentified with _I. compressa_ (Carpenter et al., 1997). According to WoRMS (2018), both _C. piscicola_ and _Lecithocladium piscicola_ are considered as synonyms of _E. piscicola_.

_Ectenurus_ sp. was reported from intestine of _Scomberomorus commerson_ (misspelled as _S. commersons_) from Khor Abdullah (Bannai, 2002). It is important to state here that this researcher (Bannai, 2002) has applied a wrong scientific name for the infected fish (locally known as Khubbat) as _S. commerson_, while the correct scientific name for the local name of this fish is _Scomberomorus guttatus_ according to Carpenter et al. (1997). The genus _Ectenurus_ Looss, 1907 includes 29 accepted and seven unaccepted species (WoRMS, 2018). A total of 29 species are enlisted according to GBIF (2018).

_Erilepturus gazzi_ (Ahmad, 1980) Madhavi, 2011 was reported under its synonym, _Uterovesiculurus gazzi_ Ahmed, 1980, from the stomach of _Chirocentrus nudus, Thryssa hamiltonii_ and _T. whiteheadi_ (misapplied as _T. mystax_) from Khor Al-Zubair lagoons (Al-Daraji, 1995). _T. hamiltonii_ was erroneously spelled as _T. hamiltoni_ by Al-Daraji (1995) and the parasite authorship name was misspelled as Ahmed instead of Ahmad. _T. mystax_ is a misapplied name for _T. whiteheadi_ as _T. mystax_ is not found in the Arab Gulf (Carpenter et al., 1997).

_Erilepturus hamati_ (Yamaguti, 1934) Manter, 1947 was recorded from stomach of _Eleutheronema tetratactylum, Otolithes ruber_ and _Pseudorhombus arsius_ from Khor Al-Ummaia (Ali, 2008; Al-Salim & Ali, 2010c) and from stomach and intestine of _A. arubicus_ (reported as _A. latus_) from Iraqi coastal waters (Al-Salim & Jassim, 2013; Jassim, 2013). The fish generic name _Eleutheronema_ was misspelled as _Euthylonema_ and the fish generic name _Pseudorhombus_ was misspelled as _Pseudoromphus_ by Ali (2008). As the genus _Uterovesiculurus_ is a synonym of _Erilepturus_ (WoRMS, 2018), _U. hamati_ reported from _O. ruber_ from Khor Abdullah (Bannai, 2002) is considered here as a synonym of _E. hamati_. The fish generic name _Otolithes_ was misspelled as _Otolithus_ by Bannai (2002).

_Erilepturus_ species were reported as unidentified species of _Uterovesiculurus_ from the stomach of _C. nudus, T. hamiltonii_ and _T. whiteheadi_ (misapplied as _Thryssa mystax_) from Khor Al-Zubair lagoons (Al-Daraji, 1995). This species is designated here in the present article as _Erilepturus_ sp. 1. Bannai (2002) reported _Uterovesiculurus_ sp. 1 and sp. 2 from intestine of _Johnius belangerii_ from Khor Abdullah. Bannai’s (2002) two _Uterovesiculurus_ species are considered in the present article as _Erilepturus_ species 2 and 3, respectively as the genus _Uterovesiculurus_ is a synonym of _Erilepturus_ (WoRMS, 2018). The genus _Erilepturus_ Woolcock, 1935 has 24 accepted and 14 unaccepted species (WoRMS, 2018), while this genus includes 25 species according to GBIF (2018).

_Faustula rahemii_ Al-Daraji, 2004 was described as a new species from intestine of _T. ilisha_ (reported as _H. ilisha_) from Khor Al-Zubair lagoons (Al-Daraji, 2004b). This species has uncertain taxonomic status as Al-Daraji (2004b) did not compare his description with the at least 10 other species infecting the same host in the world (see Mhaisen et al., 2013b). _F. rahemii_ is neither enlisted within the known species of _Faustula_ Poche, 1926 (WoRMS, 2018) nor in the known species of the same genus (GBIF, 2018). The search in the website failed to detect any valid information about this taxon, so, it is considered here as an invalid species.

_Faustula_ species was reported from _T. ilisha_ from Shatt Al-Arab river estuary at Al-Fao city in two repeated articles (Bannai & Muhammad, 2016a, b). No site of infection was documented, but through a personal communication with Mr. E. T. Muhammad, he declared
that the site of infection was the intestine. The genus Faustula Poche, 1926 has 14 accepted and three unaccepted species (WoRMS, 2018), while this genus includes 13 species according to GBIF (2018).

Haplosplanchnus mugilis Nahhas & Cable, 1964 was reported from intestine of P. subviridis (reported as L. subviridis) from Khor Abdullah (Bannai et al., 2005c). The genus Haplosplanchnus Looss, 1902 has 13 accepted and 12 unaccepted species (WoRMS, 2018), while this genus includes 15 species according to GBIF (2018).

Helicometrina karachiensis Bilqees, 1972 was reported from intestine of both Johnius dussumieri, which was reported as J. (Johnieops) sina and from O. ruber from Khor Al-Zubair lagoons by Al-Daraji (1995). The fish generic name Otolithes was misspelled as Otolithus by Al-Daraji (1995).

Helicometrina nimia Linton, 1910 was recorded from the intestine of Epinephelus coioides (misidentified as E. tauvina) from Khor Abdullah by Bannai (2017), who erroneously put the parasite authority between parentheses.

Helicometrina otolithi Bilqees, 1972 was reported from intestine of O. ruber from Khor Al-Zubair lagoons by Al-Daraji (1995), who misspelled the fish generic name Otolithes as Otolithus.

Helicometrina species were reported from intestine of both J. belangerii, which was reported as Johnius (J.) belangerii and J. dussumieri, which was reported as J. (Johnieops) sina from Khor Al-Zubair lagoons (Al-Daraji, 1995). The genus Helicometrina Linton, 1910 includes 15 accepted and six unaccepted species (WoRMS, 2018), while this genus includes 19 species according to GBIF (2018).

Hypohepaticola species was recorded only from intestine of Saurida undosquamis from Khor Abdullah (Bannai, 2002). The genus Hypohepaticola Yamaguti, 1934 has five valid species (GBIF, 2018; WoRMS, 2018).

Lecithobotrys mhaiseni Al-Daraji, 1998 was described as a new species from intestine of P. subviridis (reported as L. subviridis) from Khor Abdullah (Al-Daraji, 1998). This species is not enlisted within the genus Lecithobotrys Looss, 1902 which included two accepted species, two species inquirendae and six unaccepted species (WoRMS, 2018) and also not included within the six species of Lecithobotrys according to GBIF (2018). So, L. mhaiseni is considered here as an invalid species.

Lecithochirium acutum Chauhan, 1945 was recorded from stomach of Trichiurus lepturus from Khor Al-Ummaia (Ali, 2008; Al-Salim & Ali, 2010c).

Lecithochirium sp. 1 was reported from stomach of both J. belangerii, which was reported as Johnius (J.) belangerii and J. dussumieri, which was reported as J. (Johnieops) sina as well as from the intestine of P subviridis (reported as L. subviridis) from Khor Al-Zubair lagoons (Al-Daraji, 1995). Also, Lecithochirium sp. 2 was reported from stomach of O. ruber from Khor Abdullah (Bannai, 2002). The fish generic name Otolithes was misspelled as Otolithus by Bannai (2002). The genus Lecithochirium Lühe, 1901 includes 130 accepted species, two nomina nuda and 42 unaccepted species (WoRMS, 2018). However, a total of 147 species are enlisted within this genus by GBIF (2018).

Lecithocladium angustiovum Yamaguti, 1953 was reported as Lecithocladium bulbolabrum Reid, Coil & Kuntz, 1966 from intestine of Parastromateus niger from Khor Abdullah by Mohammad (2010), who did not mention the authority of this species in his article. According to GBIF (2018) and WoRMS (2018), L. bulbolabrum is a synonym of L. angustiovum. The genus Lecithocladium Lühe, 1901 includes 54 accepted, one nomen nudum and 42 unaccepted species (WoRMS, 2018), while this genus includes 62 species according to GBIF (2018).

Lepidapedoides querni Yamaguti, 1970 was reported from intestine of E. coioides (misidentified as E. tauvina) from Khor Abdullah as Lepidapedon (Lepidapedoides) querni
Yamaguti, 1970 by Al-Daraji et al. (2002), who put the authority of this species between parentheses. *Lepidapedon querni* is a synonym of *Lepidapedoides querni* (GBIF, 2018; WoRMS, 2018). The genus *Lepidapedoides* Yamaguti, 1970 includes 20 accepted species, one nomen nudum and five unaccepted species (WoRMS, 2018), but a total of 16 species are enlisted within this genus by GBIF (2018).

*Lepocreadioides orientalis* Park, 1939 was reported from intestine of both *Psettodes erumei* and *Sillago sihama* from Khor Abdullah (Bannai & Muhammad, 2015b). *Lepocreadioides* species 1 & 2 were reported from intestine of *Brachirus orientalis* (reported as *Synaptura orientalis*) from Khor Abdullah (Bannai (2002). *Lepocreadioides* species was reported from the intestine of both *P. erumei* and *S. sihama* from Khor Abdullah (Bannai & Muhammad, 2015b). This latter *Lepocreadioides* species is designated here in the present article as *Lepocreadioides* sp. 3. The genus *Lepocreadioides* Yamaguti, 1936 includes nine accepted and three unaccepted species (WoRMS, 2018). Ten species of this genus are enlisted in GBIF (2018).

*Monascus* species was reported from the intestine of *Pampus argenteus* from Khor Abdulla by Bannai (2017). The genus *Monascus* Looss, 1907 includes four accepted species and eight unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted five species within this genus.

*Opistholebes* species was reported from stomach of *A. arabicus* (reported as *A. latus*) from Khor Al-Zubair lagoons (Al-Daraji, 1995). The genus *Opistholebes* Nicoll, 1915 includes 11 accepted species (WoRMS, 2018), while 12 species of this genus are enlisted in GBIF (2018).

*Opisthomonorcheides gibsoni* (Ahmad, 1991) Madhavi, 2011 was recorded as *Retractomonorchis gibsoni* Ahmed, 1991 from intestine of *E. coioides* (misidentified as *E. tauvina*) from Khor Abdullah (Al-Daraji et al., 2002). The parasite authorship name was misspelled as Ahmed instead of Ahmad by Al-Daraji et al. (2002). *R. gibsoni* is considered as a synonym of *O. gibsoni* (GBIF, 2018; WoRMS, 2018). The genus *Opisthomonorcheides* Parukhin, 1966 includes 23 accepted species, one nomen nudum and 10 unaccepted species (WoRMS, 2018). Twenty-five species of this genus are enlisted in GBIF (2018).

*Paradiscogaster farooqii* Hafezullah & Siddiqi, 1970 was recorded from intestine of *A. arabicus* (reported as *A. latus*) from Khor Abdulla by Bannai et al., 2010). The genus *Paradiscogaster* Yamaguti, 1934 includes 30 accepted and four unaccepted species (WoRMS, 2018). Twenty-nine species of this genus are enlisted in GBIF (2018).

*Pleorchis arabicus* Al-Yamani & Nahhas, 1981 was reported from intestine of *J. belangerii*, which was reported as *Johnius (J.) belangerii* and from *J. dussumieri*, which was reported as *J. (Johnieops) sina* as well as from *O. ruber* from Khor Al-Zubair lagoons (Al-Daraji, 1995). The fish generic name *Otolithes* was misspelled as *Otolithus* by Al-Daraji (1995). The genus *Pleorchis* Railliet, 1896 includes 16 accepted and six unaccepted species (WoRMS, 2018). Seventeen species of this genus are enlisted in GBIF (2018).

*Prosorhynchus epinepheli* Yamaguti, 1939 was recorded from stomach of *E. coioides* (misidentified as *E. tauvina*) from Khor Al-Zubair lagoons (Al-Daraji et al., 2002). The genus *Prosorhynchus* Odhner, 1905 includes 82 accepted and eight unaccepted species (WoRMS, 2018). However, 94 species are enlisted within this genus by GBIF (2018).

*Saccocoelium tensum* Looss, 1902 was recorded from intestine of both *P. carinata* (reported as *L. carinata*) and *P. subviridis* (reported as *L. subviridis*) from Khor Al-Zubair lagoons (Al-Daraji, 1995). The genus *Saccocoelium* Looss, 1902 includes seven accepted and seven unaccepted species (WoRMS, 2018). However, nine species are enlisted within this genus by GBIF (2018).

*Saturnius hadithii* Al-Daraji, 2004 was described as a new species from stomach of *P. macrolepis* (reported as *L. macrolepis*) from Khor Abdullah (Al-Daraji, 2004a). According to
Mhaisen et al. (2018) and GBIF (2018), this trematode is not enlisted within the valid species of the genus *Saturnius*. So, *S. hadithii* is considered here as an invalid species.

*Saturnius segmentatus* Manter, 1969 was recorded from stomach of *P. macrolepis* (reported as *L. macrolepis*) from Khor Abdullah (Al-Daraji, 2004a). As demonstrated by Mhaisen et al. (2013b), this parasite was not *S. segmentatus* as no papillae on oral ridge were described or figured and the five septa in the hindbody should be four thick in hindbody plus one in the forebody. So, *S. segmentatus* is considered here as a nomen dubium.

*Saturnius valamugilis* Rekharani & Madhavi, 1985 was recorded only from stomach of *P. macrolepis* (reported as *L. macrolepis*) from Khor Abdullah (Al-Daraji, 2004a). As this species was originally inadequately described on the basis of two specimens in poor condition, Blasco-Costa et al. (2008) considered it as a taxon inquirendum while revising all the species of the genus *Saturnius*. However, *S. valamugilis* is considered here as a valid species by GBIF (2018) but as a taxon inquirendum by WoRMS (2018). In collaboration with WoRMS (2018), *S. valamugilis* is considered here as a taxon inquirendum.

*Saturnius* species were reported from stomach of *P. subviridis* (reported as *L. subviridis*) from Khor Al-Zubair lagoons (Al-Daraji, 1995). The genus *Saturnius* Manter, 1969 includes nine valid species and one taxon inquirendum (WoRMS, 2018). Nine species are enlisted within this genus by GBIF (2018).

*Schikhobalotrema indicum* (Zhukov, 1972) Overstreet & Curran, 2005 was reported as *Chauhanotrema spiniacetabulum* Nahhas & Sey, 1998 from intestine of *Hemiramphus marginatus* from Khor Abdullah (Bannai et al., 2005b). The authority of *C. spiniacetabulum* was given as Nahas et al., 1997 by Bannai et al. (2005b). *C. spiniacetabulum* is considered as a synonym of *S. indicum* (GBIF, 2018; WoRMS, 2018). The genus *Schikhobalotrema* Skrjabin & Guschanskaja, 1955 includes 26 accepted and three unaccepted species (WoRMS, 2018). Twenty-five species are enlisted within this genus by GBIF (2018).

*Stephanostomum* species were reported from intestine of *Nematalosa nasus* from Khor Al-Zubair lagoons (Al-Daraji, 1995) and from *Scromberoides commersonnianus* from Khor Abdullah (Bannai, 2002). These species are designated here in the present article as *Stephanostomum* sp. 1 and 2, respectively. The genus *Stephanostomum* Looss, 1899 includes 109 accepted species, 10 taxa inquirenda and 16 unaccepted species (WoRMS, 2018). A total of 129 species are enlisted within this genus by GBIF (2018).

*Stephanostomum* species were reported from intestine of *Nematalosa nasus* from Khor Al-Zubair lagoons (Al-Daraji, 1995) and from *Scromberoides commersonnianus* from Khor Abdullah (Bannai, 2002). These species are designated here in the present article as *Stephanostomum* sp. 1 and 2, respectively. The genus *Stephanostomum* Looss, 1899 includes 109 accepted species, 10 taxa inquirenda and 16 unaccepted species (WoRMS, 2018). A total of 129 species are enlisted within this genus by GBIF (2018).

*Stephanostomum* species were reported from intestine of *Nematalosa nasus* from Khor Al-Zubair lagoons (Al-Daraji, 1995) and from *Scromberoides commersonnianus* from Khor Abdullah (Bannai, 2002). These species are designated here in the present article as *Stephanostomum* sp. 1 and 2, respectively. The genus *Stephanostomum* Looss, 1899 includes 109 accepted species, 10 taxa inquirenda and 16 unaccepted species (WoRMS, 2018). A total of 129 species are enlisted within this genus by GBIF (2018).

*Stephanostomum* species were reported from intestine of *Nematalosa nasus* from Khor Al-Zubair lagoons (Al-Daraji, 1995) and from *Scromberoides commersonnianus* from Khor Abdullah (Bannai, 2002). These species are designated here in the present article as *Stephanostomum* sp. 1 and 2, respectively. The genus *Stephanostomum* Looss, 1899 includes 109 accepted species, 10 taxa inquirenda and 16 unaccepted species (WoRMS, 2018). A total of 129 species are enlisted within this genus by GBIF (2018).

Transversotrema haasi Witenberg, 1944 was reported from the skin of *P. subviridis* (reported as *L. subviridis*) from Khor Al-Zubair lagoons (Al-Daraji, 1995). The specific name of this parasite was misspelled as *hassi* instead of *haasi* by Al-Daraji (1995). The genus *Transversotrema* Witenberg, 1944 includes 23 accepted species and five unaccepted species (WoRMS, 2018). Twenty-four species are enlisted within this genus by GBIF (2018).

*Treptodemus latus* Manter, 1961 was recorded from the intestine of *H. marginatus* from Khor Abdullah (Bannai et al., 2005b). *T. latus* is the only accepted species enlisted in the genus *Treptodemus* Manter, 1961 by both GBIF (2018) and WoRMS (2018).

Tubulovesicula magnacetabulum Yamaguti, 1939 was reported from stomach of *E. coiooides* (misidentified as *E. tauvina*) from Khor Abdullah (Al-Daraji et al., 2002). The genus *Tubulovesicula* Yamaguti, 1934 includes 26 accepted and ten unaccepted species (WoRMS, 2018). Twenty-six species are enlisted within this genus by GBIF (2018).

Tubulovesicula magnacetabulum Yamaguti, 1939 was reported from stomach of *E. coiooides* (misidentified as *E. tauvina*) from Khor Abdullah (Al-Daraji et al., 2002). The genus *Tubulovesicula* Yamaguti, 1934 includes 26 accepted and ten unaccepted species (WoRMS, 2018). Twenty-six species are enlisted within this genus by GBIF (2018).
Phylum Platyhelminthes- Class Monogenea

The class Monogenea of the phylum Platyhelminthes is represented in marine fishes of Iraq with 24 taxa recognized to the species rank in addition to 17 unidentified species of different genera and families. However, three species seem to be invalid and one as a species inquirenda. WoRMS (2018) was followed for arrangement of the following major taxonomic groups of Monogenea as indicated in the following scheme. It is reliable to state here that Pugachev et al. (2009) considered the subclass Monopisthocotylea as Polyonchoinea and the subclass Polyopisthocotylea as Oligochonoidea.

Phylum Platyhelminthes
Class Monogenea
  Subclass Monopisthocotylea
    Order Capsalidea
      Family Capsalidae
      * Sprostoniella multitestis Bychowsky & Nagibina, 1967
      Sprostoniella teria Bannai & Muhammad, 2014
    Order Dactylogyridea
      Family Ancylodiscoididae
      Hamatopeduncularia sp.
      FamilyANCYRHOCEPHALIDAE
      Ancyrocephalidae
      Ancyrocephalus sp.
      Chauhannelus australis (Young, 1967) Bychowsky & Nagibina, 1969
      Halotrema mugilis (Tripathi, 1959) Yamaguti, 1963
      Ligophorus hantingensis Soo & Lim, 2012
      Ligophorus fluviatilis (Bychowsky, 1949) Dmitrieva, Gerasev, Gibson, Pronkina & Galli, 2012
      Ligophorus lebedevi Dmitrieva, Gerasev, Gibson, Pronkina & Galli, 2012
      Ligophorus mugilinus (Hargis, 1955) Euzet & Suriano, 1977
      Ligophorus sp.
    Family Dactylogyridae
      Dactylogyrus vastator Nybelin, 1924
      Dactylogyrid sp.
    Family Diplectanidae
      Diplectanum spp. 1-2
      * Lamellodiscus iraqensis Jassim, 2013
      Lamellodiscus spp. 1-2
    Order Gyrodactylidea
      Family Gyrodactylidae
      Gyrodactylus aff. mugili Zhukov, 1970
      Gyrodactylus spp. 1-2
  Subclass Polyopisthocotylea
    Order Mazocraeidea
      Family Axinidae
      Axine hemirhamphae Tripathi, 1959
      Axine sp.
      Axinoides sp.
    Family Chauhaneidae
      Pseudomazocraes sp.
Family Diplozoidae
**Paradiplozoon kasimii** (Rahemo, 1980) Khotenovsky, 1982
Diplozoon sp.

Family Allodiscocotyldae
Allodiscocotyla chorinemi Yamaguti, 1953
Metacamopia chorinemi (Yamaguti, 1953) Lebedev, 1984

Family Heteraxinidae
Crotalaxine serpentina Unnithan, 1957

Family Mazocraeidae
*Leptomazocraes indica* Agrawal & Sharma, 1988
Neomazocraes dorosomatis (Yamaguti, 1938) Price, 1943
Paramazocraes thrissocles Mamaev, 1975
Mazocraeid sp.

Family Microcotylidae
Metamicrocotyla mugilis Yamaguti, 1968
Microcotyle donavini van Beneden & Hesse, 1863
Microcotyle spp.
Polylabris mamaevi Ogawa & Egusa, 1980

*Invalid species, **Species inquirenda.*

**Allodiscocotyla chorinemi** Yamaguti, 1953, misspelled the generic name as *Allodiscocotyle*, was recorded from gills of *S. sihama* from Khor Abdullah by Bannai (2002) who considered this species as belonging to the family Discocotylidae (misspelled as Discocotylinae) instead of Allodiscocotylidae. The genus *Allodiscocotyla* Yamaguti, 1953 includes five accepted and two unaccepted species (WoRMS, 2018). Six species are enlisted within this genus by GBIF (2018).

*Ancyrocephalus* species was recorded from gills of *P. subviridis* (reported as *L. subviridis*) from Khor Al-Zubair lagoons (Al-Daraji, 1995). The genus *Allodiscocotyla* Creplin, 1839 includes 20 accepted and 19 unaccepted species (WoRMS, 2018). Thirty-four species are enlisted within this genus by GBIF (2018).

*Axine hemirhamphae* Tripathi, 1959 was recorded only from gills of *H. marginatus* from Khor Abdullah (Bannai, 2002; Bannai et al., 2005a). The specific name of this parasite was misspelled as *hemiramphae* instead of *hemirhamphae* and the authority was given as Unnithan, 1957 instead of Tripathi, 1959 by both above-named references.

*Axine* species was recorded from gills of *Ablennes hians* from Khor Abdullah (Bannai, 2002; Bannai et al., 2005a). The genus *Axine* Abildgaard, 1794 includes 16 accepted and five unaccepted species (WoRMS, 2018). Nineteen species are enlisted within this genus by GBIF (2018).

*Axinoides* species was recorded from gills of *A. hians* from Khor Al-Zubair lagoons (Al-Daraji, 1995). The genus *Axinoides* Yamaguti, 1938 includes 15 accepted species (WoRMS, 2018). Seventeen species are enlisted within this genus by GBIF (2018).

*Chauhanellus australis* (Young, 1967) Bychowsky & Nagibina, 1969 was reported as *Hamatopeduncularia australis* Young, 1967 from gills of *Netuma bilineata* (reported as *Arius bilineata*) from Khor Al-Zubair lagoons (Al-Daraji, 1995). *H. australis* is considered as a synonym of *C. australis* (GBIF, 2018; WoRMS, 2018). The genus *Chauhanellus* Bychowsky & Nagibina, 1969 includes 30 accepted species (GBIF, 2018; WoRMS, 2018). It is appropriate to mention here that *C. australis* belongs to the family Ancyrocephalidae according to WoRMS (2018) and to the family Dactylogyridae according to both EOL (2018) and GBIF (2018). *C. australis* is enlisted as an accepted species by both GBIF (2018) and WoRMS (2018).
Crotalaxine serpentina Unnithan, 1957 was recorded from gills of *A. hians* from Khor Abdullah (Bannai, 2002). Both generic and specific names of this parasite were misspelled as *Crotalaxina sepentina* by the same researcher (Bannai, 2002). The genus *Crotalaxine* Unnithan, 1957 includes *C. serpentina* as the only accepted species (GBIF, 2018; WoRMS, 2018).

*Dactylogyrus vastator* Nybelin, 1924 was recorded from gills of two marine fish species in Basrah waters. These are *A. arabicus* (reported as *A. latus*) from Garmat Ali river (Al-Jana'e, 2010) and *P. subviridis* (reported as *L. subviridis*) from Garmat Ali river (Jori, 1998; Abdul-Rahman, 1999; Al-Salim & Jori, 2000). *D. vastator* is a common monogenean in fishes of Iraq, being reported from 33 fish species. According to GBIF (2018), the genus *Dactylogyrus* Diesing, 1850 includes 265 species, but WoRMS (2018) enlisted only 17 accepted and two unaccepted species. *D. vastator* is enlisted as an accepted species by both GBIF (2018) and WoRMS (2018).

Dactylogyrid species (undetermined) were reported from *A. canthopagrus bifasciatus*, *Ephippus orbis* and *S. obtusata* from the northwest of Arab Gulf by Al-Hasson (2015) who did not mention the site of infection. However, through a personal communication with him, he declared that it was the gills.

*Diplectanum* species were recorded from gills of *J. dussumieri*, which was reported as *J. (Johnieops) sina* from Khor Al-Zubair lagoons (Al-Daraji, 1995) and gills of *Triacanthus biaculeatus* from Khor Abdullah (Mohamad & Razak, 2011). These species are designated here in the present article as *Diplectanum* sp. 1 and 2, respectively. The genus *Diplectanum* Diesing, 1858 includes 28 accepted species, one nomen nudum and 36 unaccepted species (WoRMS, 2018). However, 89 species were enlisted within this genus by GBIF (2018).

*Diplozoon* species was recorded from gills of *P. waltoni* from Khor Al-Zubair lagoons (Mhaisen & Al-Maliki, 1996). *Diplozoon* lives on cyprinid fishes but also on some non cyprinid fishes such as *Lota lota* and *Perca fluviatilis* which are considered as secondary hosts (Aioanei, 1996). The genus *Diplozoon* von Nordmann, 1832 includes one marine species which is *D. paradoxum* (WoRMS, 2018), but according to GBIF (2018), this genus includes seven species.

*Gyrodactylus* aff. *mugili* Zhukov, 1970 was recorded from gills of *Osteomugil speigleri* (reported as *Valamugil speigleri*) and *P. subviridis* (reported a *L. subviridis*) from Shatt Al-Arab river estuary near Al-Fao town and from Shatt Al-Basrah canal (Kritsky et al., 2013a).

*Gyrodactylus* species were reported from skin of *A. arabicus* (reported as *A. latus*) from Al-Salihiya canal (Al-Jana'e, 2010), gills of *P. subviridis* (reported a *L. subviridis*) from Garmat Ali river (Jori, 1998; Al-Salim & Jori, 2000) and skin of *T. ilisha* from Garmat Ali river (Al-Jana'e, 2010). In the present article, the specimen of *Gyrodactylus* species from *P. subviridis* is considered as *Gyrodactylus* sp. 1, while specimens from both *A. arabicus* and *T. ilisha* are considered as *Gyrodactylus* sp. 2. The genus *Gyrodactylus* von Nordmann, 1832 includes 90 species (WoRMS, 2018), but according to GBIF (2018), this genus includes 343 species.

*Haliotrema mugilis* (Tripathi, 1959) Yamaguti, 1963 was recorded from gills of *L. subviridis* (= *P. subviridis*) from Khor Al-Zubair lagoons (Al-Daraji, 1995) and from the same fish species from Khor Abdullah (Bannai, 2002; Bannai et al., 2005c).

*Hamatopeduncularia* species was recorded from gills of *N. bilineata* (reported as *A. bilineatus*) from Khor Al-Zubair lagoons (Al-Daraji, 1995) and from the same fish from Khor Abdullah (Jori & Mohamad, 2008). The genus *Hamatopeduncularia* Yamaguti, 1953 includes 26 accepted species, one taxon inquirendum and one unaccepted species (WoRMS, 2018), but according to GBIF (2018), this genus includes 29 species.

*Lamellodiscus iraqensis* Jassim, 2013 was reported as a new species from gills of *A. arabicus* which was reported as *A. latus* from coastal waters of the Arab Gulf (Jassim, 2013).
L. iraqensis is not listed within all species of the genus Lamellodiscus Johnston & Tieg, 1922 (GBIF, 2018; WoRMS, 2018). So, L. iraqensis is considered here as an invalid species.

Lamellodiscus species was recorded from gills of A. arboicus, which was reported as A. latus from coastal waters of the Arab Gulf (Jassim, 2013) and from A. bifasciatus from the northwest of Arab Gulf (Al-Hasson, 2015; Al-Azizz et al., 2017). In the present article, the specimen of Lamellodiscus species from A. arboicus is considered here as Lamellodiscus sp. 1, while specimen from A. bifasciatus is considered as Lamellodiscus sp. 2. The genus Lamellodiscus Johnston & Tieg, 1922 includes 57 accepted species, eight unaccepted species and one taxon inquirendum (WoRMS, 2018). GBIF (2018) enlisted 63 species of this genus.

Leptomazocraes indica Agrawal & Sharma, 1988 was recorded from gills of T. ilisha (reported as H. ilisha) from Khor Al-Zubair lagoons (Al-Daraji, 1995). The authority of this fish was stated as Hamilton-Buchanan, 1822 instead of Hamilton, 1822 by the same researcher (Al-Daraji, 1995). The genus Leptomazocraes Mamaev, 1975 includes four accepted species (GBIF, 2018; WoRMS, 2018) which does not include L. indica. So, L. indica is considered here as an invalid species.

Ligophorus bantingensis Soo & Lim, 2012 was recorded from gills of two fish species: Planiliza klunzingeri (reported as Liza klunzingeri) from Shatt Al-Arab river near Al-Asihar, Nahr Khooz and Shatt Al-Arab river estuary near Al-Fao city (Kritsky et al., 2013b) and P. subviridis (reported as Chelon subviridis) from Shatt Al-Arab river near Al-Asihar, Al-Seebah town and Nahr Khooz as well as from Shatt Al-Arab river estuary near Al-Fao city (Kritsky et al., 2013b).

Ligophorus fluviatilis (Bychowsky, 1949) Dmitrieva, Gerasev, Gibson, Pronkina & Galli, 2012 was recorded from gills of two marine fish species: P. klunzingeri (reported as L. klunzingeri) from Shatt Al-Arab river estuary near Al-Fao city and P. subviridis (reported as C. subviridis) from Shatt Al-Arab river estuary near Al-Fao city by Kritsky et al. (2013b).

Ligophorus lebedevi Dmitrieva, Gerasev, Gibson, Pronkina, & Galli, 2012 was recorded from gills of P. subviridis (reported as C. subviridis) from Shatt Al-Arab river near Al-Asihar and near Nahr Khooz as well as from Shatt Al-Arab river estuary near Al-Fao city (Kritsky et al., 2013b).

Ligophorus mugilinus (Hargis, 1955) Euzet & Suriano, 1977 was reported as Haliotrema mugilinus (Hargis, 1955) from gills of P. macrolepis (reported as L. macrolepis) from Khor Al-Zubair lagoons (Al-Daraji, 1995) and from gills of P. subviridis (reported as L. subviridis) from three localities: Khor Al-Zubair lagoons (Al-Daraji, 1995), Garmat Ali river (Jori, 1998; Al-Salim & Jori, 2000) and Khor Abdullah (Bannai et al., 2005c). All H. mugilinus reported above (Al-Daraji, 1995; Jori, 1998; Al-Salim & Jori, 2000; Bannai, 2002; Bannai et al., 2005c) may represent L. fluviatilis according to Kritsky et al. (2013b). H. mugilinus is a synonym of L. mugilinus (EOL, 2018; GBIF, 2018; WoRMS, 2018).

Ligophorus sagmarius Kritsky, Khamene & Ali, 2013 was described as a new species from gills of P. subviridis (reported as C. subviridis) from Shatt Al-Arab river estuary near Al-Fao city (Kritsky et al., 2013b).

Ligophorus sp. was reported only from gills of P. klunzingeri (reported as L. klunzingeri) from Shatt Al-Arab river estuary near Al-Fao city (Kritsky et al., 2013b). It is appropriate to mention here that Kritsky et al. (2013b) considered all Ligophorus species are belonging to the family Dactylogyridae. The genus Ligophorus Euzet & Suriano, 1977 includes 59 accepted species, one nomen nudum, two taxa inquirenda and three unaccepted species, (WoRMS, 2018), while 74 species are enlisted by GBIF (2018). All the five above-named Ligophorus species are enlisted as accepted species by GBIF (2018) and WoRMS (2018), except L. mugilinus which is considered by GBIF (2018) as a synonym of Haliotrema mugilinus (Hargis, 1955).
Loxuroides sasikala (Unnithan, 1957) Price, 1962 was recorded from gills of A. hians from Khor Abdullah (Bannai, 2002; Bannai et al., 2005a) under its synonym Axine sasikala Unnithan, 1957. The specific name of this parasite was misspelled as saskala and the authority was given as Unnithan, 1957 by both above references. A. sasikala is considered as a synonym of L. sasikala (GBIF, 2018; WoRMS, 2018). The genus Loxuroides Price, 1962 includes only three species (GBIF, 2018; WoRMS, 2018) among which L. sasikala is an accepted species.

Mazocraeid species (undetermined) were reported from three fish species (A. bifasciatus, Argyrops spinifer and S. obtusata) from the northwest of Arab Gulf by Al-Hasson (2015), who did not mention the site of infection. However, through a personal communication with him, he declared that it was the gills.

Metacamopia chorinemi (Yamaguti, 1953) Lebedev, 1984, reported as Vallisia chorinemi Yamaguti, 1953 was recorded from gills of S. sihama from Khor Abdullah by Bannai (2002), who considered this species as belonging to the family Axinidae instead of Allodiscocotylidae. V. chorinemi is considered as a synonym of M. chorinemi (WoRMS, 2018) but GBIF (2018) considered it as an accepted species and M. chorinemi as a synonym of Allodiscocotyla chorinemi. The genus Metacamopia Lebedev, 1972 includes three accepted species (WoRMS, 2018), while GBIF (2018) includes only two accepted species within this genus.

Metamicrocotyla mugilis Yamaguti, 1968 was recorded from gills of P. subviridis (reported as L. subviridis) from Khor Abdullah by Bannai et al. (2005c), who put this parasite within the family Metamicrotocytidae (misspelled as Metamicrocotylidae) instead of the family Microcotylidae. The genus Metamicrocotyla Yamaguti, 1952 includes ten accepted species (GBIF, 2018; WoRMS, 2018).

Microcotyle donavini van Beneden & Hesse, 1863 was recorded from gills of P. subviridis (reported as L. subviridis) from Garmat Ali river (Jori, 1998; Abdul-Rahman, 1999; Al-Salim & Jori, 2000) as well as from eight freshwater fish host species from Basrah province (Mhaisen et al., 2013a). This monogenean is so far known from 10 fish species of Iraq.

Microcotyle species were also recorded from gills of C. nudus from Khor Al-Zubair lagoons (Al-Daraji, 1995) and from gills of A. arabicus which was reported as A. latus from coastal waters of the Arab Gulf (Jassim, 2013). In the present article, the specimen of Microcotyle species from C. nudus is considered here as Microcotyle sp. 1, while specimen from A. arabicus is considered as Microcotyle sp. 2. The genus Microcotyle Van Beneden & Hesse, 1863 includes 61 accepted and 26 unaccepted species (WoRMS, 2018). GBIF (2018) enlisted 88 species within this genus.

Neomazocraes dorosomatis (Yamaguti, 1938) Price, 1943 was recorded from gills of N. nasus from Khor Al-Zubair lagoons (Al-Daraji, 1995). The genus Neomazocraes Price, 1934 includes six accepted species (GBIF, 2018; WoRMS, 2018).

Paradiplozoon kasimii (Rahemo, 1980) Khotenovsky, 1982 was recorded as Diplozoon kasimii Rahemo, 1980 from gills of P. subviridis (reported as L. subviridis) from Garmat Ali river (Abdul-Rahman, 1999) as well as from three freshwater fish species from Basrah province (Mhaisen et al., 2013a). Thirteen host species are so far known for this monogenean in Iraq. Khotenovsky (1985) transferred D. kasimii to the genus Paradiplozoon and considered it as a species inquirenda (See Mhaisen & Abdul-Ameer, 2014). P. kasimii is so far reported from 13 fish species in Iraq, inclusive of P. subviridis according to Mhaisen (2018). The genus Paradiplozoon Akhermov, 1974 includes eight accepted species (WoRMS, 2018), while GBIF (2018) included 19 species of this genus. P. kasimii is not included in both GBIF (2018) and WoRMS (2018) and hence it is considered as a species inquirenda.

Paramazocraes thrissocles Mamaev, 1975 was recorded from gills of T. whiteheadi (misapplied as Thryssa mystax) from Khor Al-Zubair lagoons (Al-Daraji, 1995). The
authority of this parasite was erroneously given as Tripathi, 1959 by Al-Daraji (1995). The genus *Paramazocraes* Tripathi, 1959 includes seven accepted and three unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted eight species within this genus. 

*Polylabris mamaevi* Ogawa & Egusa, 1980 was recorded from gills of *A. arabicus* (reported as *A. latus*) from Khor Al-Zubair lagoons (Al-Daraji, 1995) and from the same fish from Khor Abdullah (Al-Daraji et al., 2010). The genus *Polylabris* Euzet & Cauwet, 1967 includes 21 accepted species, one taxon inquirendum and four unaccepted species (WoRMS, 2018), but GBIF (2018) enlisted 23 species within this genus. 

*Pseudomazocraes* species was recorded from gills of *S. sihama* from Khor Abdullah (Bannai, 2002). The genus *Pseudomazocraes* was enlisted with different families such as Chauhaneidae and Discocotylidae (See Mhaisen et al., 2013a). The genus *Pseudomazocraes* Caballero & Bravo Hollis, 1955 includes four accepted and one unaccepted species (WoRMS, 2018). However, GBIF (2018) enlisted six species within this genus. 

*Sprostoniella multietestis* Bychowsky & Nagibina, 1967 was recorded from gills of both *Platax orbicularis* and *P. teira* from the northwest of the Arab Gulf (Al-Hasson, 2015; Al-Azizz et al., 2017). *Sprostoniella teria* was described as a new species from gills of *P. teira* from the northwest of the Arab Gulf (Bannai & Muhammad, 2014). According to WoRMS (2018), publication of this species was not compliant with Article 8.5 (2012) of the ICZN re. e-publications. Regrettably, the same text was published in another journal by the same authors (Bannai & Muhammad, 2015a). The genus *Sprostoniella* Bychowsky & Nagibina, 1967 includes three accepted and one unaccepted species, which is *S. teria* (WoRMS, 2018). However, GBIF (2018) enlisted three species within this genus exclusive of *S. teria*. So, this parasite is considered here as an invalid species.

**Phylum Platyhelminthes- Class Cestoda**

The class Cestoda of the phylum Platyhelminthes is represented in marine fishes of Iraq with 12 taxa recognized to the species rank in addition to nine unidentified species of different genera, as indicated below. Names of all cestodes followed Global Cestode Database (2018).

Class Cestoda

Subclass Eucestoda

Order Bothriocephalidea

Family Bothriocephalidae

*Oncodiscus sauridae* Yamaguti, 1934

Order Diphylidea

Family Echinobothriidae

*Echinobothrium rhynchobati* (Khalil & Abdul-Salam, 1989) Tyler, 2006

Order Trypanorhyncha

Family Eutetrarhynchidae

*Trigonolobium spinuliferum* (Southwell, 1911) Dollfus, 1929

Family Lacistorhynchidae

*Callitetrarhynchus gracilis* (Rudolphi, 1819) Pintner, 1931

*Callitetrarhynchus* sp.

*Dasyrhyynchus pacificus* Robinson, 1965

*Floriceps minacanthus* Campbell & Beveridge, 1987

*Pseudogrillotia spratti* Campbell & Beveridge, 1993

Family Otobothriidae

*Otobothrium alexanderi* Palm, 2004
**Otobothrium penetrans** Linton, 1907

**Poecilancistrium** sp.

Family Progrillotiidae

**Progrillotia** sp.

Family Pterobothriidae

**Pterobothrium hira** Yamaguti, 1952

**Pterobothrium** sp.

Family Pseudotobothriidae

**Parotobothrium balli** (Southwell, 1929) Palm, 2004

Family Tentaculariidae

**Nybelinia** spp. 1-3

**Tentacularia coryphaenae** Bosc, 1802

Order Lecanicephalidea

Family Lecanicephalidae

**Stoibocephalum** sp.

**Callitetrarhynchus gracilis** (Rudolphi, 1819) Pintner, 1931 was reported from the intestine of seven marine fish species. These are: *A. hians*, *Mustelus mosis*, *N. bilineata* and *Tylosurus crocodilus* from Khor Al-Ummaia (Ali, 2008), *S. commersonnianus* (misspelled as *S. commersonnianus*) from Khor Abdullah (Bannai, 2008) and both *Carangoides malabaricus* and *Megalaspis cordyla* from the northwest of the Arab Gulf (Al-Ataby, 2012; Al-Azizz et al., 2014a; Al-Niaeem et al., 2014a, b). According to personal communication with Dr. H. W. Palm (see Mhaisen et al., 2013c), *C. gracilis* reported from the four above-named fish species by Ali (2008) as well as the larval specimens of *Mixodigma* sp. from *T. crocodilus* from Shatt Al-Arab river estuary near Al-Fao city (Ali, 2001) belong to *Callitetrarhynchus cf. gracilis*. All the specimens of *C. gracilis* reported in this paragraph were larvae, except those from *M. mosis* which were adults.

*Callitetrarhynchus* species (unidentified larvae) were reported from the body cavity of both *C. malabaricus* and *M. cordyla* from the northwest of the Arab Gulf (Al-Ataby, 2012; Al-Azizz et al., 2014a; Al-Niaeem et al., 2014a, b). The genus *Callitetrarhynchus* Pintner, 1931 includes two accepted species (inclusive of *C. gracilis*) and two unaccepted species (WoRMS, 2018). GBIF (2018) enlisted four species (inclusive of *C. gracilis*) within this genus.

*Echinobothrium rhynchobati* (Khalil & Abdul-Salam, 1989) Tyler, 2006 was reported as *Macrobothridium rhynchobati* from the intestine of *Glaucostegus granulatus* (reported as *Rhynchobatus granulatus*) from Khor Al-Ummaia, northwest of the Arab Gulf (Ali, 2008). *M. rhynchobati* is a synonym of *E. rhynchobati* (GBIF, 2018; WoRMS, 2018). The genus *Echinobothrium* Van Beneden, 1849 includes 34 accepted species (inclusive of *E. rhynchobati*), three taxon inquirenda, two nomina nuda and 20 unaccepted species (WoRMS, 2018). GBIF (2018) enlisted 66 species (inclusive of *E. rhynchobati*) within this genus.
*Floriceps minacanthus* Campbell & Beveridge, 1987 was reported from the body cavity and viscera (intestine, stomach wall, liver and gonad tissue) of both *Carangoides armatus* and *C. malabaricus* from the northwest of the Arab Gulf (Al-Ataby, 2012; Al-Azizz et al., 2014b; Al-Niaeem et al., 2014b). The year of authority of this parasite was erroneously reported as 2006 by Al-Ataby (2012). The genus *Floriceps* Cuvier, 1817 includes two accepted species (inclusive of *F. minacanthus*) and one taxon inquirendum (WoRMS, 2018). GBIF (2018) enlisted five species (inclusive of *F. minacanthus*) within this genus.

*Nybelinia* species 1 was reported as post larva (plerocercus without blastocyst) from the anterior part of the pharynx and on gill arch of *I. compressa* (misidentified as *I. elongata*) from Khor Al-Zubair (Al-Daraji, 1995). *Nybelinia* species 2 and 3 were reported as adults from the stomach and the intestine of *Chaenogaleus macrostoma* from Khor Al-Ummia (Ali, 2008). As indicated by Mhaisen et al. (2013c), *Nybelinia karachii* reported by Al-Daraji (1995) is considered as a synonym of *Parotobothrium balli*. *Nybelinia lemonteae* reported by Bannai (2008) will be discussed in the paragraph concerning the genus *Tentacularia* as *T. coryphaenae*. The genus *Nybelinia* Poche, 1926 includes 30 accepted species, four taxa inquirenda and 21 unaccepted species (WoRMS, 2018). GBIF (2018) enlisted 45 species within this genus.

*Oncodiscus sauridae* Yamaguti, 1934 was recorded as larva from the intestine of *S. undosquamis* from Khor Al-Zubair (Al-Daraji, 1995) and as an adult from the same fish from Khor Abdullah (Bannai, 2002). The genus *Oncodiscus* Yamaguti, 1934 includes one accepted species (which is *O. sauridae*) and three unaccepted species (WoRMS, 2018). GBIF (2018) enlisted only *O. sauridae* within this genus.

*Otobothrium alexanderi* Palm, 2004 was reported from muscles of *T. crocodilus* from Khor Al-Ummia (Ali, 2008).

*Otobothrium penetrans* Linton, 1907 was reported from air bladder, body cavity, kidneys, liver and intestine of *A. hians*, *Strongylura leiura*, *S. strongylura* and *T. crocodilus* from Shatt Al-Arab river estuary near Al-Fao city (Ali, 2001; Al-Salim & Ali, 2007) as well as from *S. strongylura* from Shatt Al-Arab river near Nahr Khooz village (Ali, 2001; Al-Salim & Ali, 2007). Al-Salim & Ali (2007) erroneously stated Khor Al-Ummia instead of Shatt Al-Arab river estuary near Al-Fao city. Later on, *O. penetrans* was reported from both *S. leiura* and *T. crocodilus* from Khor Al-Ummia (Ali, 2008) and from *B. orientalis* (reported as *S. orientalis*) from Khor Abdullah (Bannai, 2008). The latter researcher (Bannai, 2008) erroneously reported the specific name of this parasite as *penetratus* and the authority as Linton, 1905. The genus *Otobothrium* Linton, 1891 includes 13 accepted species (which included *O. alexanderi* and *O. penetrans*), two taxa inquirenda and nine unaccepted species (WoRMS, 2018). GBIF (2018) enlisted 21 species within this genus.

*Parotobothrium balli* (Southwell, 1929) Palm, 2004 was reported as *Nybelinia karachii* Khurshid & Bilqees, 1988 as plerocercoid on stomach surface of *J. dussumieri* (reported as *J. (Johnieops) sina*) from Khor Al-Zubair (Al-Daraji, 1995). *N. karachii* is considered as a synonym of *P. balli* (GBIF, 2018; WoRMS, 2018). The genus *Parotobothrium* Palm, 2004 includes only two accepted species (inclusive of *P. balli*) according to both GBIF (2018) and WoRMS (2018).

*Poecilancistrium* species larva was reported as *Paramecistobothrium* sp. from the alimentary canal of *B. orientalis* (reported as *S. orientalis*) from Khor Abdullah (Bannai, 2002). The genus *Paramecistobothrium* is considered as a synonym of *Poecilancistrium* (GBIF, 2018; WoRMS, 2018). The genus *Poecilancistrium* Dollfus, 1942 includes one accepted species and two unaccepted species (WoRMS, 2018). GBIF (2018) enlisted only one species within this genus.

*Progrillotia* sp. was reported as free plerocerci in the body cavity of both *Alepes djedaba* (Al-Ataby, 2012) and *M. cordyla* from the northwest of the Arab Gulf (Al-Ataby, 2012; Al-
The genus *Progrillotia* Dollfus, 1946 includes three accepted species and one unaccepted species (WoRMS, 2018). GBIF (2018) enlisted four species within this genus.

*Pseudogrillotia spratti* Campbell & Beveridge, 1993 was found encapsulated in the body cavity of *C. armatus* (Al-Ataby, 2012; Al-Niaeem et al., 2016a), *C. malabaricus* (Al-Ataby, 2012; Al-Niaeem et al., 2014b, 2016a) and *M. cordyla* (Al-Ataby, 2012; Al-Niaeem et al., 2014b, 2016a) from the northwest of the Arab Gulf. The genus *Pseudogrillotia* Dollfus, 1969 includes eight accepted species (inclusive of *P. spratti*) and one unaccepted species (WoRMS, 2018). GBIF (2018) enlisted seven species within this genus inclusive of *P. spratti*.

*Pterobothrium hira* Yamaguti, 1952 was recorded as cysts from the wall of intestine and stomach of *I. compressa* (misidentified as *I. elongata*) from Khor Abdullah (Bannai, 2008).

*Pterobothrium* species (unidentified larva) was found encysted on the gut wall of *I. compressa* (misidentified as *I. elongata*) from Khor Abdullah (Bannai, 2002). The generic name was erroneously spelled as *Petrobothrium* by the above researcher. The genus *Pterobothrium* Diesing, 1850 includes 15 accepted species, six taxa inquirenda and two unaccepted species (WoRMS, 2018). GBIF (2018) enlisted 25 species within this genus.

*Stoibocephalum* species 1 and species 2 pleroceroids were recorded from the intestine of *S. commersonnianus* from Khor Abdullah (Bannai et al., 2014). The genus *Stoibocephalum* Cielocha & Jensen, 2013 includes three accepted species (GBIF, 2018; WoRMS, 2018).

*Tentacularia coryphaenae* Bosc, 1802 was reported as *Nybelinia lemonteae* Williams & Williams, 1996 from the wall of stomach and intestine of *S. undosquamis* from Khor Abdullah (Bannai, 2008). In addition to the mistake in spelling the specific name *lamontae* as *lemonteae* by Bannai (2008), the authority Williams & Williams, 1996 was incorrect and it should be Nigrelli, 1938 according to WoRMS (2018). *N. lamontae* is a synonym of *T. coryphaenae* (WoRMS, 2018), but it is considered as an accepted species by GBIF (2018). The genus *Tentacularia* Bosc, 1797 includes one accepted species which is *T. coryphaenae* and seven unaccepted species (WoRMS, 2018), but GBIF (2018) enlisted only two species (inclusive of *T. coryphaenae*) in this genus.

*Trigonolobium spinuliferum* (Southwell, 1911) Dollfus, 1929 was reported from the intestine of *C. macrostoma* from Khor Al-Ummaia, northwest of the Arab Gulf (Ali, 2008). The genus *Trigonolobium* Dollfus, 1929 includes two accepted species (GBIF, 2018; WoRMS, 2018).

**Phylum Nematoda**

The phylum Nematoda is represented in marine fishes of Iraq with 19 taxa recognized to the species rank in addition to 28 unidentified species belonging to nine different genera as well as one species which was recognized to a family rank and one to a subfamily rank, as indicated below. Among these species, one seems to be a taxon inquirendum. Moravec (2006), Anderson et al. (2009) and Gibbons (2010) were followed for arrangement of the following major taxonomic groups of these nematodes. However, recent updates in WoRMS (2018) were also taken in consideration. Abbreviations of some types of nematode larvae were used in accordance with that of Ali et al. (2014) as the first letter B refers to Basrah and the remaining letters refer to sequent larval types from Basrah, while the Roman numbers were in accordance with that of Ghadam et al. (2017).

**Phylum Nematoda**

**Class Enoplea**

**Superfamily Trichinelloidea**

**Family: Trichosomoididae**

*Huffmanelaa* sp.
Class Chromadorea
Superfamily Ascaridoidea
Family Acanthocheilidae
  *Acanthocheilus rotundatus* (Rudolphi, 1819)
  *Mawsonascaris parva* Ali, Zhang, Al-Salim & Li, 2012
Family Anisakidae
  *Anisakis* sp. larva
  Anisakidae gen. sp. larva
  *Contracaecum* sp. larva
  *Terranova* sp. type BA larva
  *Terranova* sp. type BB larva
Family Raphidascarididae
  *Hysterothylacium* sp. 1
  *Hysterothylacium* sp. 2
  *Hysterothylacium* sp. type BA larva
  *Hysterothylacium* sp. type BB larva
  *Hysterothylacium* sp. type BC larva
  *Hysterothylacium* sp. type BD larva
  *Hysterothylacium* sp. type BE larva
  *Hysterothylacium* sp. type BF larva
  *Hysterothylacium* sp. type BG larva
Family Heterocheilidae
  *Dujardinascaris sphyraenaii* Akhtar, Bilqees, Khatoon & Perven, 2011
Superfamily Seuratoidea
Family Cucullanidae
  *Cucullanus armatus* Yamaguti, 1954
  *Cucullanus extraneus* Li, Ali, Zhao, Lü & Xu, 2016
  *Cucullanus* spp. 1-2
Superfamily Camallanoidea
Family Camallanidae
  *Camallanus* sp. larva
Superfamily Dracunculoidea
Family Philometridae
  *Philometra brachiri* Moravec & Ali, 2014
  *Philometra otilithi* Moravec & Manoharan, 2013
  *Philometra piscaria* Moravec & Justine, 2014
  *Philometra strongylurae* Moravec & Ali, 2005
  *Philometra tricornuta* Moravec & Ali, 2014
  *Philometra tylosuri* Moravec & Ali, 2005
  *Philometra* spp. 1-6
  *Philometroides acanthopagri* Moravec, Jassim & Al-Salim, 2012
  *Philometroides eleutheronemae* Moravec & Manoharan, 2013
Superfamily Gnathostomatoidea
Family Gnathostomatidae
  *Echinocephalus* spp. 1-2 larvae
Marine fish parasitology of Iraq: A review and checklists

*Echinocephalus* sp.  
Superfamily Physalopteroidea  
Family Physalopteridae  
*Paraleptus chiloscyllii* Yin & Zhang, 1983  
Proleptinae gen. sp. type BA larva

* Taxon inquirendum.

*Acanthocheilus rotundatus* (Rudolphi, 1819) as third larval stage was isolated from the intestine of *Lethrinus nebulosus* from Khor Al-Ummaia (Ali, 2008), while adults and fourth larval stages were recorded from the stomach and fore intestine of *M. mosis* of the same locality by the same author. The occurrence of the third larval stage of *A. rotundatus* from *L. nebulosus* is considered as accidental due to the fact that the bony fishes have no role in the life cycle of this parasite as this larva normally occurs in invertebrates and reaches maturity in elasmobranchs (Ali, 2008). The genus *Acanthocheilus* Molin, 1858 includes one accepted species which is *A. rotundatus*, one taxon inquirendum and four unaccepted species (WoRMS, 2018), but GBIF (2018) enlisted four accepted species in this genus, inclusive of *A. rotundatus*.

*Anisakis* species larva was reported from the body cavity of *A. hians* from Shatt Al-Arab river estuary near Al-Fao city (Ali, 2001). *Anisakis* larvae in humans cause intestinal inflammation "anisakiasis" which shows something like intestine cancer symptoms (Möller, 1989; Berland, 1996). The genus *Anisakis* Dujardin, 1845 includes 11 accepted species, three taxa inquirenda, one nomen dubium and 17 unaccepted species (WoRMS, 2018), but GBIF (2018) enlisted 24 accepted species in this genus.

Anisakid larval specimen was reported from the intestine of *C. malabricus* from Iraqi marine waters (Al-Ataby, 2012; Al-Niaeem et al., 2014a) as *Skjrabillanus* sp. of the family *Skjribannidae*. Ali et al. (2014) discussed in details the fact that the so called *Skjrabillanus* sp. mentioned above was erroneously identified and in fact it belongs to the family *Anisakidae*.

*Camallanus* sp. fourth larval stage was recorded from the mesenteries of *Cynoglossus arel* from Khor Al-Ummiah (Ali, 2008; Al-Salim & Ali, 2011). The genus *Camallanus* Railliet & Henry, 1915 includes 30 accepted species and five unaccepted species (WoRMS, 2018), but GBIF (2018) enlisted 126 species in this genus.

*Contracaecum* sp. larvae were recorded from the body cavity, mesenteries, liver, heart, gonads and kidneys of five marine fish species namely, *B. orientalis* (reported as *S. orientalis*) from Khor Abdullah (Bannai, 2002), *J. belangerii* which was reported as *J. (Johnius) belangerii* from Khor Abdullah (Bannai, 2002), *O. ruber* (erroneously spelled as *Otolithus ruber*) from Khor Abdullah (Bannai, 2002), *P. subviridis* (which was reported as *Mugil dussumieri* and *L. subviridis*) from Shatt Al-Arab river (Al-Hadithi & Habish, 1977; Habish, 1977) and from Garmat Ali river (Abdul-Rahman, 1999) and *T. ilisha* from Garmat Ali river and Al-Salihiya canal (Al-Janae’e, 2010), as well as from 15 freshwater fish species in Basrah province (Ali et al., 2014). So far, 40 fish species are known for *Contracaecum* sp. 1 in Iraq. Some adult *Contracaecum* species (such as *C. microcephalum*, *C. micropapillatum*, *C. multipapillatum* and *C. rudolphi*) were recorded from some piscivorous birds in Basrah province (Al-Hadithi & Habish, 1977; Habish, 1977; Awad et al., 1994; Ali, 2008). The genus *Contracaecum* Railliet & Henry, 1912 includes 66 accepted species, five taxa inquirenda, 11 nomina dubia, one nomen nudum and 61 unaccepted species (WoRMS, 2018), but GBIF (2018) enlisted 146 accepted species in this genus.

*Cucullanus armatus* Yamaguti, 1954 was reported from the intestine of *Netuma thalassina* from Khor Al-Ummaia (Ali, 2008; Al-Salim & Ali, 2011).
Cucullanus extraneus Li, Ali, Zhao, Lü & Xu, 2016 was described as a new species from the intestine of Pomacanthus maculosus from Iraqi coral reef, Arab Gulf (Li et al., 2016).

Cucullanus otolithi (Ashraf, Khanum & Farooq, 1977) Al-Salim & Ali, 2011 was reported from the intestine of O. ruber from Khor Al-Zubair lagoons (Al-Daraji, 1995) as Indocucullanus otolithi. The fish generic name Otolithes was misspelled as Otolithus by Al-Daraji (1995). According to Anderson et al. (2009) and GBIF (2018), the genus Indocucullanus Ali, 1956 is considered as a synonym of Cucullanus.

Cucullanus species females were recorded as Cucullanus species 1 from the intestine of L. nebulosus from Khor Al-Ummaia (Ali, 2008; Al-Salim & Ali, 2011) and as Cucullanus species 2 from the intestine of both A. arabicus and A. spinifer from the northwest of Arab Gulf (Al-Hasson, 2015). The genus Cucullanus Müller, 1777 includes 145 accepted species, one nomen dubium and 11 unaccepted species (WoRMS, 2018), but GBIF (2018) enlisted 212 accepted species in this genus.

Dujardinascaris sphyraenaii Akhtar, Bilqees, Khatoon & Perven, 2011 was reported from intestine and liver of P. erumei from Khor Abdullah by Bannai et al. (2016), who erroneously reported the authority of this nematode as Bilqees et al., 1977 between parentheses. In the list of references of that paper, Bilqees et al. (1977) referred to Bilqees, Fatima & Rehana (1977). According to the checklist of Pakistani marine worms (Kazmi & Naushaba, 2013), this authority (Bilqees et al., 1977) belongs to D. sciaenae while the authority of D. sphyraenaii according to WoRMS (2018) is Akhtar, Bilqees, Khatoon & Perven, 2011. So, a mess was created by Bannai et al. (2016), either in the scientific name of this parasite species or in its authority. According to WoRMS (2018), D. sciaenae is accepted as a synonym of D. quadrii Zubari & Farooq, 1976, while D. sphyraenaii is considered as a taxon inquirendum. WoRMS (2018) enlisted four accepted species, 13 taxa inquirenda (inclusive of D. sphyraenaii) and two unaccepted species within the genus Dujardinascaris Baylis, 1947, while GBIF (2018) enlisted 31 species in this genus among which D. sphyraenaii was not included but this list included both D. sciaenae Bilqees & Rehana, 1977 and D. sciaena Bilqees, Shabbir & Haseeb, 2004. Bruce et al. (1994) considered four species of Dujardinascaris as species inquirenda. These included D. cybii from Scomberomorus guttatus from Jodhpur fish market of India, D. magna from Sciaena sp. from Karachi coast, D. quadrii (and its synonym D. sciaenae) from both Protonibea sp. and Johnius diacanthus from Karachi coast and D. rumei from Rita rita from Lahore of Pakistan. Sprent et al. (1998) described five new species of Dujardinascaris from Old World crocodilians. Moravec (2001) recorded Dujardinascaris helicina (Molin, 1860) as well as seven helminth parasites from the Morelet’s crocodile Crocodylus moreletii from Mexico). Anderson et al. (2009) stated that Dujardinascaris species are known as parasites of crocodiles. So, D. sphyraenaii reported by Bannai et al. (2016) is considered here as a taxon inquirendum.

Echinocephalus species larvae were reported from the intestinal wall of both J. belangerii and S. sihama from Khor Abdullah (Bannai, 2002; Awad et al., 2003), as well as from the mesenteries of both Chiloscyllium arabicum and C. arel from Khor Al-Ummaia (Ali, 2008; Ali & Al-Salim, 2013). The generic name Sillago was misspelled as Silago by Awad et al. (2003). In the present article, the specimen of Echinocephalus species from both J. belangerii and S. sihama are considered here as Echinocephalus sp. 1, while specimen from both C. arabicum and C. arel are considered as Echinocephalus sp. 2. Ali et al. (2014) gave a comparison between larvae of Echinocephalus sp. 1 and Echinocephalus sp. 2. In addition to the record of such larvae, adults of Echinocephalus species were recorded from the intestine of both Maculabatis randalli (reported as Himantura gerrardi) and Pastinachus sephens from Khor Al-Ummaia (Ali, 2008). There is a concern that at least some species of Echinocephalus may have public health significance as potential invaders of the human digestive tract (Bower, 2006). The genus Echinocephalus Molin, 1858 includes 13 accepted species, one nomen
nudum and five unaccepted species (WoRMS, 2018), but GBIF (2018) enlisted 17 species in this genus.

Huffmanela species was recorded from mesenteries of A. bifasciatus from the northwest of Arab Gulf (Al-Hasson, 2015). The genus Huffmanela Moravec, 1987 includes 18 accepted species (WoRMS, 2018), but GBIF (2018) enlisted 21 species within this genus.

Huffmanela species was recorded from mesenteries of A. bifasciatus from the northwest of Arab Gulf (Al-Hasson, 2015). The genus Huffmanela Moravec, 1987 includes 18 accepted species (WoRMS, 2018), but GBIF (2018) enlisted 21 species within this genus.

Hysterothylacium reliquens (Norris & Overstreet, 1975) Deardorff & Overstreet, 1981 as fourth larval stage were described from the intestine of C. arel and L. nebulosus, while the adults were reported from T. lepturus from Khor Al-Ummaia (Ali, 2008; Al-Salim & Ali, 2010b), liver of B. orientalis from Khor Abdullah (Ghadam et al., 2017) and intestine of the same fish from Khor Abdullah mud flats (Zhao et al., 2017) as well as from intestine of O. ruber from Khor Abdullah (Ghadam et al., 2017).

Hysterothylacium sp. 1 females were reported by Al-Daraji (1995) as Contracaecum sp. from J. belangerii which was reported as Johnius (J.) belangerii from Khor Al-Zubair lagoons. Also, Bannai (2002) recorded such females (as belonging to Contracaecum sp.) from three species of fishes (A. hians, S. undosquamis and S. sihama) from Khor Abdullah. It is well known that adult Contracaecum species are parasites of birds and mammals, so they cannot mature in fishes. Therefore, Ali (2008) and Al-Salim & Ali (2010b) transferred the above female Contracaecum records of both Al-Daraji (1995) and Bannai (2002) to the genus Hysterothylacium Ward & Magath, 1917 and hence these females were designated as Hysterothylacium sp. 1.

Hysterothylacium sp. 2 juvenile male was isolated from the intestine of Drepane longimana from Khor Al-Ummaia (Ali, 2008; Al-Salim & Ali, 2010b). For distinction between Hysterothylacium sp. 1 and Hysterothylacium sp. 2, see Ali et al. (2014). Humans can be accidentally infected upon eating raw infected fishes (Shamsi et al., 2013).

Hysterothylacium type species were reported as third larval stages from some marine fishes from Khor Al-Ummaia. These type species were:

Hysterothylacium sp. type BA larva from the body cavity of two teleosts: A. arabicus (reported as A. latus) by Ali (2008) and Al-Salim & Ali (2010b) and C. arel (Ali, 2008; Al-Salim & Ali, 2010b; Ali & Al-Salim, 2012), as well as from the intestine of two shark species: C. arabicum and Sphyrna mokarran (Ali, 2008; Al-Salim & Ali, 2010b). Also, it was reported from the intestine of both A. spinifer (Al-Hasson, 2015; Al-Niaeem et al., 2016b) and A. arabicus from the northwest of Arab Gulf (Al-Hasson, 2015).


Hysterothylacium sp. type BC larvae from the stomach serosa of C. arabicum (Ali, 2008; Al-Salim & Ali, 2010b), body cavity of C. arel (Ali, 2008; Al-Salim & Ali, 2010b; Ali & Al-Salim, 2012) and the intestine of three fish species from the northwest of Arab Gulf, viz. A. spinifer (Al-Hasson, 2015), E. orbis (Al-Hasson, 2015) and S. obtusata (Al-Hasson, 2015; Al-Niaeem et al., 2016b). In addition, Hysterothylacium larval type XV which was reported from the liver of B. orientalis and intestine of O. ruber, P. arsius and S. undosquamis from Khor Abdullah by Ghadam et al. (2017) are similar to Hysterothylacium sp. type BC and hence its hosts are added to Hysterothylacium sp. type BC. This similarity is based on the ratio of esophagus length, caecum length and appendage length to body length as well as the ratio of caecum to esophagus, appendage to esophagus and caecum to appendage.

Hysterothylacium sp. type BD larvae from the body cavity of C. arel (Ali, 2008; Al-Salim & Ali, 2010b).

Hysterothylacium sp. type BE larvae from gills of Rhizoprionodon acutus (Ali, 2008; Al-Salim & Ali, 2010b). The generic name of the fish host Rhizoprionodon was erroneously spelled as Rhizoprionodon by Ali (2008).
**Hysterothylacium** sp. type BF larvae from the body cavity of *T. crocodilus* (Ali, 2008; Al-Salim & Ali, 2010b).

**Hysterothylacium** larval type XVI as fourth larval stage which was detected from the stomach of *Epinephelus areolatus* and intestine of both *P. arsius* and *S. undosquamis* from Khor Abdullah by Ghadam et al. (2017) is considered here as **Hysterothylacium** larval type BG as a continuation of the serial numbers of such larvae from fishes of Basrah province (Al-Salim & Ali, 2010b; Ali et al., 2014). The genus **Hysterothylacium** Ward & Magath, 1917 includes 96 accepted species, one taxon inquirendum, two nomina dubia and 10 unaccepted species (WoRMS, 2018), but GBIF (2018) enlisted 122 species in this genus.

**Mawsonascaris parva** Ali, Zhang, Al-Salim & Li, 2012 was described as a new species from the stomach of *M. randalli* (reported as *H. gerrardi*) from Khor Al-Ummaia (Ali et al., 2012). Originally, unidentified adult and fourth larval stages of **Mawsonascaris** sp. were firstly described from the same fish by Ali (2008). Then the same specimens were identified as *M. parva* by Ali et al. (2012). The genus **Mawsonascaris** Sprent, 1990 includes five accepted species (WoRMS, 2018), but GBIF (2018) enlisted three species in this genus. However, *M. parva* is not enlisted in both sites (GBIF, 2018; WoRMS, 2018).

**Paraleptus chiloscyllii** Yin & Zhang, 1983 was reported from the stomach of *C. arabicum* from the Arab Gulf off Khor Al-Ummaia (González-Solís & Ali, 2015). Materials of this *P. chiloscyllii* were originally those of **Paraleptus** sp. from the same fish and locality by Ali (2008). The genus **Paraleptus** Wu, 1927 includes five accepted species and two unaccepted species (WoRMS, 2018), but GBIF (2018) enlisted six species in this genus.

**Philometra brachiri** Moravec & Ali, 2014 was described as a new species from the ovaries of *B. orientalis* from Khor Al-Ummaia (Moravec & Ali, 2014).

**Philometra iraquiensis** Moravec, Ali, Abed & Shaker, 2016 was described as a new species from the abdominal cavity and ovaries of *P. klunzingeri* (reported as *L. klunzingeri*) from off Basrah, Arab Gulf (Moravec et al., 2016).

**Philometra johnii** Moravec & Ali, 2013 was described as a new species from the ovaries of *J. dussumieri* from Khor Al-Ummaia (Moravec & Ali, 2013). *P. johnii* is not enlisted in both GBIF (2018) and WoRMS (2018).

**Philometra megalaspidis** Moravec, Ali, Abed & Shaker, 2016 was described as a new species from the ovary of *M. cordyla* from off Basrah (Moravec et al., 2016).

**Philometra piscaria** Moravec & Justine, 2014 was recorded from the ovaries of *E. coioides* from Khor Al-Ummaia (Moravec & Ali, 2014).

**Philometra tricornuta** Moravec & Ali, 2014 was described as a new species from the musculature of the caudal peduncle of *Saurida tumbil* from Khor Al-Ummaia (Moravec & Ali, 2014).

**Philometra tylosuri** Moravec & Ali, 2005 was described as a new species from the musculature and subcutaneous tissues of *T. crocodilus* from Al-Fao coast (Moravec & Ali, 2005).

**Philometra** species were reported from the ovaries of *S. leiura* and *T. crocodilus* from Shatt Al-Arab river estuary at Al-Fao city (Ali, 2001), the body cavity of both *N. thalassina* and *Sphyraena jello* from Khor Al-Ummaia (Ali, 2008) and ovaries of both *Platyccephalus indicus* and *S. tumbil* from off Basrah, Arab Gulf (Moravec et al., 2016). In the present article, specimens of **Philometra** species from *S. leiura* are considered here as **Philometra** sp. 1, those from *T. crocodilus* are considered as **Philometra** sp. 2, those from *N. thalassina* are
considered as *Philometra* sp. 3, those from *S. jello* are considered as *Philometra* sp. 4, those from *P. indicus* are considered as *Philometra* sp. 5, while those from *S. tumbil* are considered as *Philometra* sp. 6. The genus *Philometra* Costa, 1845 includes 89 accepted species, three taxa inquirenda, one nomen nudum and seven unaccepted species (WoRMS, 2018), but GBIF (2018) enlisted 137 species in this genus.

*Philometroides acanthopagri* Moravec, Jassim & Al-Salim, 2012 was described as a new species from the musculature near the pectoral fin and nasal cavity of *A. arabicus*, which was reported as *A. latus* from the coastal marine waters of the Arab Gulf (Moravec et al., 2012; Jassim, 2013). Neither GBIF (2018) nor WoRMS (2018) enlisted *P. acanthopagri*.

*Philometroides eleutheronemae* Moravec & Manoharan, 2013 was described from the ovaries of *E. tetradactylum* from Khor Al-Ummaia, Arab Gulf (Moravec et al., 2016). The genus *Philometroides* Yamaguti, 1835 includes 19 accepted species and two unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 36 species in this genus.

Proleptinae type larval species BA were isolated from the mesenteries of *C. arel* from Khor Al-Ummaia (Ali, 2008; Ali & Al-Salim, 2013) and from the intestine of *A. arabicus* from the northwest of Arab Gulf by Al-Hasson (2015).

*Terranova* sp. type BA larvae were reported from the stomach and intestine of *Carcharhinus dussumieri* from Khor Al-Ummaia (Ali, 2008; Ali & Al-Salim, 2013), gills, liver, stomach and intestine of *C. sorrah* (Ali, 2008; Ali & Al-Salim, 2013) and from stomach and intestine of *R. acutus* (Ali, 2008; Ali & Al-Salim, 2013). It is appropriate to mention here that *C. sorrah* was reported as *C. macloti* by Ali (2008).


**Phylum Acanthocephala**

The phylum Acanthocephala is represented in marine fishes of Iraq with six taxa recognized to the species rank in addition to five unidentified species belonging to three different genera, as indicated below. Amin (2013) was followed for arrangement of the following major taxonomic groups of these acanthocephalans.

Phylum Acanthocephala

Class Eoacanthocephala

Order Neoechinorhynchida

Family Neoechinorhynchidae

*Neoechinorhynchus (N.) dimorphospinus* Amin & Sey, 1996
*Neoechinorhynchus (N.) iraqensis* Amin, Al-Sady, Mhaisen & Bassat, 2001
*Neoechinorhynchus* sp.

Class Palaeacanthocephala

Order Echinorhynchida

Family Cavisomidae

*Neorhadinorhynchus basrahiensis* Smales, Al-Hasoon, Al-Niaeem et Al-Azizz, 2015

Family Echinorhynchidae

*Echinorhynchus* sp.

Family Rhadinorhynchidae

*Micracanthorhynchina kuwaitensis* Amin & Sey, 1996
*Serrasentis sagittifer* (Linton, 1889) Van Cleave, 1923
Serrasentis spp. 1-3
Slendrorhynchus breviclaviproboscis Amin & Sey, 1996

Echinorhynchus species was reported from intestine of Pseudosynanceia melanostigma from Khor Al-Zubair (Al-Daraji, 1995). The genus Echinorhynchus Zoega in Müller, 1776 includes 32 accepted species and 19 unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 101 species in this genus.

Micracanthorhynchina kuwaitensis Amin & Sey, 1996 was reported from the intestine of H. marginatus from Khor Abdullah by Bannai (2005), who misspelled the generic name as Micracanthorhynchus instead of Micracanthorhynchina. The genus Micracanthorhynchina Strand, 1936 includes eight accepted species (WoRMS, 2018), while GBIF (2018) enlisted 12 species in this genus.

Neoechinorhynchus dimorphospinus Amin & Sey, 1996 was reported from the intestine of both P. subviridis (reported as L. subviridis) from Khor Abdullah (Bannai, 2002) and P. klenzingeri (reported as L. klenzingeri) from Shatt Al-Arab river estuary near Al-Fao city (Amin et al., 2015), as well as from one freshwater fish species from Basrah province (Mhaisen et al., 2014). So far, only three host species are known for this acanthocephalan in Iraq.

Neoechinorhynchus iraqensis Amin, Al-Sady, Mhaisen & Bassat, 2001 was reported from intestine of A. arabicus (reported as A. latus) from Garmat Ali river (Al-Janae'e, 2010), B. orientalis (reported as E. orientalis) from Al-Salihiya canal (Al-Janae'e, 2010) and P. subviridis (reported as L. subviridis) from Garmat Ali river (Abdul-Rahman, 1999) and from Al-Salihiya canal (Al-Janae'e, 2010), as well as from 18 freshwater fish species from Basrah province (Mhaisen et al., 2014). So far, 24 fish host species are known for this acanthocephalan in Iraq. This acanthocephalan is a common parasite in fishes of Iraq, being reported from 21 freshwater fish species (Mhaisen, 2018).

Neoechinorhynchus species was reported from P. waltoni from Khor Al-Zubair (Mhaisen & Al-Maliki, 1996). The genus Neoechinorhynchus Stiles & Hassall, 1905 includes 38 accepted species and one unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 127 species in this genus.

Neorhadinorhynchus basrahiensis Smales, Al-Hasson, Al-Niaeem & Al-Azizz, 2015 was described as a new species from the intestine of P. teira from northwest the Arab Gulf (Al-Hasson, 2015; Smales et al., 2016). It is adequate to mention here that in page 40 of Al-Hasson's (2015) thesis, the authority of this parasite was given as Lesley, Al-Hasson, Al-Niaeem & Al-Azizz, 2015 instead of Smales, Al-Hasson, Al-Niaeem & Al-Azizz, 2015. The genus Neorhadinorhynchus Yamaguti, 1939 includes nine accepted species (WoRMS, 2018), while GBIF (2018) enlisted eight species in this genus.

Serrasentis sagittifer (Linton, 1889) Van Cleave 1923 was reported from intestine of A. arabicus (misidentified as A. latus) from the Iraqi territorial waters of the Arab Gulf (Jassim, 2013), as well as from the intestine of P. teira from northwest the Arab Gulf (Al-Hasson, 2015).

Serrasentis species 1, 2 and 3 were reported from the intestine of B. orientalis (reported as S. orientalis), J. belangerii and O. ruber, respectively, from Khor Abdullah (Bannai, 2002). The fish generic name Otolithes was misspelled as Otolithus by the above researcher. The genus Serrasentis Van Cleave, 1923 includes 12 accepted species and five unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 14 species in this genus.

Slendrorhynchus breviclaviproboscis Amin & Sey, 1996 was reported from H. marginatus from Khor Abdullah (Bannai, 2005). The genus Slendrorhynchus Amin & Sey, 1996 includes S. breviclaviproboscis as the only accepted species (GBIF, 2018; WoRMS, 2018).
Phylum Mollusca - Class Bivalvia

The phylum Mollusca is represented in marine fishes of Iraq with the glochidial larval stage of unspecified species of clams of the phylum Mollusca as indicated below.

Phylum Mollusca
Class Bivalvia
Order Unionida
Family Unionidae
Glochidium larva

Glochidium larva was reported from gills of *P. subviridis* (reported as *L. subviridis*) from Gatmat Ali river (Jori, 1998; Al-Salim & Jori, 2002b) in addition to three freshwater fish species in Basrah (Khamees et al., 2015). According to Mhaisen (2018), glochidial larvae reported from 31 fish species in Iraq belong to *Unio pictorum* (Linnaeus, 1758). It is appropriate to mention here that the authority of *U. pictorum* was erroneously stated as Zhadin, 1938 in most Iraqi literature. *U. pictorum* has so far 31 fish host species in Iraq.

Phylum Arthropoda - Subphylum Crustacea

The subphylum Crustacea of the phylum Arthropoda is represented in marine fishes of Iraq with 61 taxa recognized to the species rank in addition to 14 unidentified species. As explained in details by Mhaisen et al. (2017), the overall classification of the Crustacea has been changing quite fast as a result of molecular sequence data. Due to recent changes in some crustacean ranks, WoRMS (2018) was followed here to arrange the concerned taxonomic groups of Crustacea down to the scientific names.

Phylum Arthropoda - Subphylum Crustacea
Class Ichthyostraca
Subclass Branchiura
Order Arguloida
Family Argulidae
*Argulus foliaceus* (L., 1758) Jurine, 1806

Class Hexanauplia
Subclass Copepoda
Order Cyclopoida
Family Bomolochidae
*Acanthocolax* spp.
*Bomolochus megaceros* Heller, 1865
*Nothobomolochus denticulatus* (Bassett-Smith, 1898)
*Nothobomolochus gazzae* (Shen, 1957)
*Nothobomolochus ilhoikimi* Venmathi Maran, Moon, Adday, Khamees & Myoung, 2014
*Nothobomolochus lizae* Ho & Lin, 2005
*Nothobomolochus quadrireros* Pillai, 1973
*Orbitacolax hapologenyos* (Yamaguti & Yamasu, 1959)

Family Chondracanthidae
*Bactrochondria formosana* Ho, Lin & Liu, 2011
*Protochondracanthus alatus* (Heller, 1865)

Family Ergasilidae
*Dermoergasilus varicoleus* Ho, Jayarajan & Radhakrishnan, 1992
*Ergasilus boleophthalmi* Adday & Ali, 2011
Ergasilus iraquensis Amado, in Amado, da Rocha, Piasecki, Al-Daraji & Mhaisen, 2001
Ergasilus lizae Krøyer, 1863
Ergasilus mosulensis Rahemo, 1982
Ergasilus ogawai Kabata, 1992
Ergasilus pararostralis Amado, in Amado, da Rocha, Piasecki, Al-Daraji & Mhaisen, 2001
Ergasilus rostralis Ho, Jayarajan & Radhakrishnan, 1992
Ergasilus sieboldi sieboldi Nordmann, 1832
Ergasilus synanceiensis Amado, in Amado, da Rocha, Piasecki, Al-Daraji & Mhaisen, 2001
Ergasilus spp. 1-2
Mugilicola sp.
Paraergasilus inflatus Ho, Khamees & Mhaisen, 1996

Family Lernaeidae
Lernaea cyprinacea L., 1758

Family Taeniacanthidae
Anchistrotos tangi Venmathi Maran, Moon & Adday, 2014
Cepolacanthus kimi Venmathi Maran, Moon, Adday & Tang, 2016

Order Siphonostomatoida
Family Caligidae
Anuretes anomalous Pillai, 1967
Anuretes branchialis Rangnekar, 1953
Anuretes similis Ho & Lin, 2000
Caligus cordyla Pillai, 1963
Caligus cossackii Bassett-Smith, 1898
Caligus epinepheli Yamaguti, 1936
Caligus longicaudus Bassett-Smith, 1898
Caligus orientalis Gusev, 1951
Caligus sp.
Hermilius ariodi Prabha & Pillai, 1986
Hermilius longicaudus Ho & Kim I.H., 2000
Hermilius longicornis Bassett-Smith, 1898
Mappates plataxus Rangnekar, 1958

Family Eudactyliniidae
Eudactylina rhinobati Raibaut & Essafi, 1979
Eudactylina turgipes Bere, 1936

Family Hatschekiidae
Hatschekia conifera Yamaguti, 1939
Hatschekia insolita Wilson C.B., 1913
Hatschekia shari Uyeno & Ali, 2013
Hatschekia sp.

Family Lernaeopodidae
Alella sp.
Clavella adunca (Strøm, 1762)
Clavella sp.
Clavellopsis appendiculata Kirtisinghe, 1950
Clavellotis bilobata (Pillai, 1962)
Clavellotis sp.
Pseudocharopinus sp.
Family Lernanthropidae
- *Lernanthropinus temminckii* (von Nordmann, 1864) Ho & Do, 1985
- *Lernanthropus corniger* Yamaguti, 1954
- *Lernanthropus cornutus* Kirtisinghe, 1937
- *Lernanthropus ilishae* Chin, 1948
- *Lernanthropus indicus* Pillai, 1967
- *Lernanthropus nemipteri* Jayasree & Pillai, 1976
- *Lernanthropus polynemi* Richiardi, 1881
- *Lernanthropus sarbae* Kensley & Grindley, 1973
- *Lernanthropus sillaginis* Pillai, 1963
- *Lernanthropus* spp.

Class Malacostraca
Subclass Eumalacostraca
Order Isopoda
Family Cymothoidae
- *Anilocra monoma* Bowman & Tareen, 1983
- *Catoessa gruneri* Bowman & Tareen, 1983
- *Ichthyoxenus asymmetrica* Ahmed, 1970
- *Joryma sawayah* Bowman & Tareen, 1983
- *Nerocila arres* Bowman & Tareen, 1983
- *Nerocila heterozota* Ahmed, 1970
- *Nerocila kisra* Bowman & Tareen, 1983
- *Nerocila phaiopleura* Bleeker, 1857

Family Gnathiidae
- *Gnathia* sp. larvae (Praniza)

*Acanthocolax* species were reported as *Bomolochus* species from gills of three fish species: *P. subviridis* (reported as *L. subviridis*) from Khor Al-Zubair lagoons (Piasecki et al., 1993), *Sardinella albella* (reported as *S. perforata*) from Khor Al-Zubair estuary (Al-Daraji, 1995) and *T. ilisha* (reported as *H. ilisha*) from Khor Al-Zubair lagoons (Piasecki et al., 1993). Adday (2013) showed that description and illustration of *Bomolochus* sp. of Al-Daraji’s (1995) and hence of Piasecki et al. (1993) are identical with members of the genus *Acanthocolax* (for more details see Khamees et al., 2015). The genus *Acanthocolax* Vervoort, 1969 includes four valid species (WoRMS, 2018), while GBIF (2018) enlisted only three species within this genus.

*Aellea* sp. was reported from gills of *A. arabicus* from the coastal marine waters of Iraq (Adday, 2013). The genus *Aellea* Leigh-Sharpe, 1925 includes one accepted species and seven unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted three species in this genus.

*Anchistrotos tangi* Venmathi Maran, Moon & Adday, 2014 was described as a new species from gills of *T. ilisha* from the coastal marine waters of Iraq (Venmathi Maran et al., 2014a). The genus *Anchistrotos* Brian, 1906 includes ten accepted species, one nomen nudum and 13 unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted nine species in this genus.

*Anilocra monoma* Bowman & Tareen, 1983 was reported from Khor Al-Zubair lagoons by Al-Daraji & Naama (1989) from over the head of *J. dussumieri* (reported as *J. sina*), behind the operculum of *Johnius elongatus* (misspelled as *Johnius elongata*), on the head and above the pectoral fin of *Nematalosa arabica* and from under the base of the dorsal fin of *P. subviridis* (reported as *L. subviridis*). Hussain et al. (1988) reported both *J. elongatus* and *N. arabica* from Khor Al-Zubair lagoons, but according to Carpenter et al. (1997), both species are not are distributed in the Arab Gulf. According to Froese & Pauly (2018), *J. elongatus* is native in India, Iraq and Sri Lanka and *N. arabica* is native in Djibouti, Somalia, Iran, Iraq.
and Oman and Yemen. The genus *Anilocra* Leach, 1818 includes 50 accepted species, one nomen dubium and one unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 63 species in this genus.

*Anuretes anomalus* Pillai, 1967 was reported from gills of *Diagramma pictum* from the coastal marine waters of Iraq (Adday, 2013; Khamees & Adday, 2017). Adday (2013) misspelled the fish generic name as *Digramma*.

*Anuretes branchialis* Rangnekar, 1953 was reported from gills of *P. teira* from the coastal marine waters of Iraq (Adday, 2013; Khamees & Adday, 2017). *A. branchialis* is enlisted in WoRMS (2018) as valid species, while it is considered as a homotypic synonym of *Heniochophilus branchialis* (Rangnekar, 1953) according to GBIF (2018).

*Anuretes similis* Ho & Lin, 2000 was reported from gills of *Plectorhinchus sordidus* from the northwest of the Arab Gulf (Al-Hasson et al., 2014; Al-Hasson, 2015). The genus *Anuretes* Heller, 1865 includes 19 accepted species and eight unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 21 species in this genus.

*Argulus foliaceus* (Linnaeus, 1758) Jurine, 1806 was reported from skin and gills of two marine fish species in Iraq. These included *Boleophthalmus dussumieri* (misidentified as *Pseudopocrypte dentatus*) from Shatt Al-Arab river estuary at Al-Fao area (Al-Janabi, 2010) and *P. subviridis* (reported as *Liza dussumieri*) from Shatt Al-Arab river (Mhaisen, 1986), as well as from two freshwater fish species from Basrah province (Khamees et al., 2015). So far, 16 fish host species are known for this crustacean in Iraq. *A. foliaceus* is a common crustacean in some fish farms, as well as some inland waters in Iraq and it has so far 16 fish hosts in Iraq (Mhaisen, 2018). The genus *Argulus* O.F. Müller, 1785 includes 127 valid species and 18 unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 141 species in this genus.

*Bactrochondria formosana* Ho, Lin & Liu, 2011 was reported from gills of *C. arel* from Khor Al-Ummaia (Uyeno & Ali, 2013). The genus *Bactrochondria* Ho, Kim I.H. & Kumar, 2000 includes five accepted marine species (GBIF, 2018; WoRMS, 2018)

*Bomolochus megaceros* Heller, 1865 was reported only from the gill filaments of *E. orbis* from the coastal marine waters of Iraq (Adday, 2013). The genus *Bomolochus* von Nordmann, 1832 includes 20 accepted species, five taxa inquirenda, one nomen dubium, six nomina nuda and 52 unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 39 species in this genus.

*Caligus cordyla* Pillai, 1963 was reported from gills of *M. cordyla* from the coastal marine waters of Iraq (Al-Ataby, 2012; Al-Azizz et al., 2014c).

*Caligus cossackii* Bassett-Smith, 1898 was reported from gills of *A. bifasciatus* from the northwest Arab Gulf by Al-Hasson (2015), who misspelled the parasite specific name as *cossacki* instead of *cossackii*. The correct specific name is *cossackii* according to WoRMS (2018).

*Caligus epinepheli* Yamaguti, 1936 adults and larvae were reported for the first time in Iraq by Al-Daraji (1995) from the buccal cavity of both *I. compressa*...
(misidentified as *I. elongata*) and *Photopectoralis bindus* (reported as *Leiognathus bindus*) from Khor Al-Zubair lagoons and both adults and manca larvae were then reported from the gill cavity of *P. bindus* by Adday (2013) from the coastal marine waters of Iraq. The genus *Catoessa* Schioedte & Meinert, 1884 includes four accepted species (GBIF, 2018; WoRMS, 2018).

*Cepolacanthus kimi* Venmathi Maran, Moon, Adday & Tang, 2016 was described as a new genus and species from gills of *Acanthocepola abbreviata* caught off the coast of Iraq (Venmathi Maran et al., 2016). It is reliable to state here that Ali et al. (2018) demonstrated that the host *A. abbreviata* was a misidentification of the gobiid fish *Trypauchen vagina* by Venmathi Maran et al. (2016). The genus *Cepolacanthus* Venmathi Maran, Moon, Adday & Tang, 2016 includes only the type species (GBIF, 2018; WoRMS, 2018).

*Clavellopsis appendiculata* Kirtisinghe, 1950 was reported from gill rackers of *C. nudus* from the coastal marine waters of Iraq (Adday, 2013). According to GBIF (2018) and WoRMS (2018), *I. appendiculata* is accepted as *C. appendiculata*. The genus *Clavellopsis* Wilson C.B., 1915 includes 11 accepted species and 15 unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 11 accepted species in this genus.

*Clavellotis bilobata* (Pillai, 1962) was reported from gills of *N. japonicus* from the coastal marine waters of Iraq (Adday, 2013). The genus *Clavellotis* Castro-Romero & Baeza-Kuroki, 1984 includes 11 accepted species (WoRMS, 2018), while GBIF (2018) enlisted 10 accepted species in this genus.

*Clavellotis* sp. was reported from gills of *A. arabicus* from the coastal marine waters of Iraq (Adday, 2013). The genus *Clavellotis* Castro-Romero & Baeza-Kuroki, 1984 includes 11 accepted species (WoRMS, 2018), while GBIF (2018) enlisted 10 accepted species in this genus.

*Clavellotis* bilobata (Pillai, 1962) was reported from gills of *N. japonicus* from the coastal marine waters of Iraq (Adday, 2013).
as well as from 11 freshwater fish species in Basrah province (Khamees et al., 2015). This crustacean has so far 24 fish host species in Iraq. *E. mosulensis* has so far 22 freshwater fish species in Iraq.

*Ergasilus ogawai* Kabata, 1992 was reported from gills of *A. arabicus* (reported as *A. latus*) from Garmat Ali river (Adday, 2001; Adday et al., 2006), from Garmat Ali river and Al-Salihiya canal (Al-Janae'e, 2010) and from Shatt Al-Arab river (Ahmed, 2015), *P. subviridis* (reported as *L. subviridis*) from Garmat Ali river and Al-Salihiya canal (Al-Janae'e, 2010) and from junction of Tigris and Euphrates rivers at Qurna city (Ahmed, 2015) and *T. ilisha* from Garmat Ali river (Al-Janae'e, 2010), as well as from 14 freshwater fish species in Basrah province (Khamees et al., 2015). According to Khamees et al. (2015), specimens of *Ergasilus ovatus* Shen, 1957 reported by Abdul-Rahman (1999) from *H. fossilis*, *M. mastacembelus* and *S. triostegus* from Garmat Ali river were re-examined by Adday (2001) and sent to Dr. Ju-shey Ho, who confirmed that such specimens were erroneously identified as *E. ovatus* and in fact they belong to *E. ogawai*. So far, *E. ogawai* infects 17 fish species in Iraq.

*Ergasilus pararostralis* Amado, in Amado, da Rocha, Piasecki, Al-Daraji & Mhaisen, 2001 was described as a new species from gills of *P. subviridis* (reported as *L. subviridis*) from Khor Al-Zubair lagoons (Amado et al., 2001) as well as from one freshwater fish species in Basrah province (Khamees et al., 2015). As discussed in Khamees et al. (2015), it is reliable to state here that *E. pararostralis* reported by Al-Daraji (2002b) and Bannai (2002) from *P. subviridis* (reported as *L. subviridis*) from Khor Al-Zubair lagoons and Khor Abdullah, respectively is considered as a synonym and homonym with *E. pararostralis* of Amado, in Amado, da Rocha, Piasecki, Al-Daraji & Mhaisen, 2001. No more hosts are so far known for this crustacean from fishes of Iraq.

*Ergasilus rostralis* Ho, Jayarajan & Radhakrishnan, 1992 was reported from *A. arabicus* (reported as *A. latus*) from Garmat Ali river and Al-Salihiya canal (Al-Janae'e, 2010) and from *A. arabicus* from both Al-Ashar canal and Shatt Al-Arab river (Ahmed, 2015), *P. subviridis* (reported as *L. subviridis*) from Khor Al-Zubair lagoons (Al-Daraji, 1995), from Garmat Ali river (Jori, 1998; Al-Salim & Jori, 2002; Al-Janae'e, 2010), from Al-Salihiya canal (Al-Janae'e, 2010), from *P. subviridis* (reported as *C. subviridis*) from junction of Tigris and Euphrates rivers at Qurna city (Ahmed, 2015) and *T. ilisha* from Garmat Ali river (Al-Janae'e, 2010), as well as from 14 freshwater fish species in Basrah province (Khamees et al., 2015). This crustacean infects, so far, 17 fish species in Iraq.

*Ergasilus sieboldi sieboldi* Nordmann, 1832 was reported as *Ergasilus sieboldi* from *A. arabicus* (reported as *A. latus*) from Garmat Ali river and Al-Salihiya canal (Al-Janae'e, 2010), *B. dussumieri* (reported as *P. dentatus*) from Shatt Al-Arab river estuary at Al-Fao area (Al-Janabi, 2010), *P. subviridis* (reported as *L. subviridis*) from Garmat Ali river and Al-Salihiya canal (Al-Janae'e, 2010) and *T. ilisha* from Garmat Ali river (Al-Janae'e, 2010), as well as from 11 freshwater fish species in Basrah province (Khamees et al., 2015). WoRMS (2018) quoted *E. sieboldi sieboldi* as an alternate representation for *E. sieboldi* in all Iraqi concerned literature. *E. sieboldi* infects, so far, 26 fish species in Iraq.

*Ergasilus synanceiensis* Amado, in Amado, da Rocha, Piasecki, Al-Daraji & Mhaisen, 2001 was described as a new species from gills of *P. melanostigma* from Khor Al-Zubair lagoons (Amado et al., 2001). As discussed in Khamees et al. (2015), it is reliable to state here that *E. synanceiensis* reported by Al-Daraji (2002a) from the same fish and locality is considered as a synonym and homonym with *E. synanceiensis* of Amado, in Amado, da Rocha, Piasecki, Al-Daraji & Mhaisen, 2001. No more hosts are so far known for *E. synanceiensis* from fishes of Iraq.

*Ergasilus* species were reported from *P. subviridis* (reported as *L. subviridis*) from Khor Al-Zubair lagoons (Piasecki et al., 1993) and *T. ilisha* from Garmat Ali river (Adday, 2013).
In the present article, the specimens of *Ergasilus* species from *P. subviridis* are considered here as *Ergasilus* sp. 1, while specimens from *T. ilisha* are considered as *Ergasilus* sp. 2. The genus *Ergasilus* von Nordmann, 1832 includes 159 accepted species and 27 unaccepted species (WoRMS, 2017), while GBIF (2018) enlisted 181 species in this genus.

*Eudactyлина rhinobati* Raibaut & Essafi, 1979 was reported from gills of *G. granulatus* from the coastal marine waters of Iraq (Adday, 2013).

*Eudactyлина turgipes* Bere, 1936 was reported from gills of *Gymnura poecilura* from the coastal marine waters of the Arab Gulf (Adday, 2013). The genus *Eudactyлина* Van Beneden, 1853 includes 35 accepted species, three taxa inquirenda, five nomina nuda and five unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 45 species in this genus.

*Gnathia* sp. praniza larvae were detected from gills of *A. arabicus* (misidentified as *A. latus*) from the coastal marine waters of the Arab Gulf (Jassim, 2013). Later on, such larvae were also detected from gills of 18 fish species (including *A. arabicus*) from the coastal marine waters of Iraq by Adday (2013). These fishes included eight cartilaginous fishes and 10 bony fishes. The cartilaginous fishes included *Brevitrygon imbricata* (reported as *H. imbricata*), *C. dussumieri*, *C. arabicum*, *G. granulatus*, *G. poecilura*, *M. randalli* (reported as *H. randalli*), *P. sephen* and *Pateobatis bleekeri* (reported as *Himantura bleekeri*), while the bony fishes included *A. arabicus*, *D. pictum*, *Diplodus sargus* (=*Diplodus kotschyi*), *E. orbis*, *J. dussumieri*, *N. nasus*, *N. japonicus*, *N. thalassina*, *Rhabdosargus haffara* and *T. ilisha*. The genus *Gnathia* Leach, 1814 includes 127 accepted species, five nomina nuda and 44 unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 147 species in this genus.

*Hatschekia conifera* Yamaguti, 1939 was reported from gills of *P. argenteus* from Khor Al-Zubair lagoons (Al-Daraji, 1995) and from the same fish from Khor Abdullah (Bannai et al., 2008).

*Hatschekia insolita* Wilson C.B., 1913 was reported from gills of both *Lutjanus johnii* and *P. argenteus* from Khor Abdullah (Bannai et al., 2008).

*Hatschekia shari* Uyeno & Ali, 2013 was described as a new species from gill filaments of *L. nebulosus* from Khor Al-Ummaia (Uyeno & Ali, 2013).

*Hatschekia* species was reported from gills of *Pristipomoides filamentosus* from northwest Arab Gulf (Al-Hasson, 2015). The genus *Hatschekia* Poche, 1902 includes 146 accepted species, seven taxa inquirenda and 15 unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 155 species in this genus.

*Hermilius ariodi* Prabha & Pillai, 1986 was reported from gills of *N. bilineata* from the coastal marine waters of Iraq (Adday, 2013).

*Hermilius longicaudus* Ho & Kim I.H., 2000 was reported from gills of *N. thalassina* from the coastal marine waters of the Arab Gulf (Adday, 2013).

*Hermilius longicornis* Bassett-Smith, 1898 was reported from gills of *N. thalassina* from the coastal marine waters of Iraq (Adday, 2013; Venmathi Maran et al., 2014b). The genus *Hermilius* Heller, 1865 includes eight accepted species and two unaccepted species (WoRMS, 2017), while GBIF (2018) enlisted nine species in this genus.

*Ichthyoxenus asymmetrica* Ahmed, 1970 was described as a new species from gills of *C. arel* (erroneously reported as *Cynoglossus lingua*) from Khor Abdullah (Ahmed, 1970a). Then, it was reported from *Chirocentrus dorab* from Al-Fao city fish market (Mhaisen, 1986). Khamees et al. (2015) demonstrated that *C. lingua* is not distributed in Iraqi marine waters and the possible species reported by Ahmed (1970a) was *C. arel*.

*Joryma sawayah* Bowman & Tareen, 1983 was reported from the buccal cavity of *C. nudus* and *I. compressa* (misidentified as *I. elongata*) from Khor Al-Zubair lagoons (Al-Daraji, 1995). The genus *Joryma* Bowman & Tareen, 1983 includes four accepted species (WoRMS, 2018), while GBIF (2018) enlisted five accepted species in this genus.
Lernaea cyprinacea Linnaeus, 1758 was reported in Basrah from skin, fins and gills of B. dussumieri estuary at Al-Fao area by Al-Janabi (2010), who misidentified this fish as Pseudopocryptes dentatus instead of B. dussumieri. Ahmed (2015) reported this crustacean from P. subviridis (reported as C. subviridis) from junction of Tigris and Euphrates rivers at Qurna city. This crustacean was also reported from seven freshwater fish species from Basrah province (Khamees et al., 2015). L. cyprinacea is the commonest crustacean among fishes of Iraq as it has so far 31 fish species in fish farms and hatcheries as well as in various inland waters of Iraq. The genus Lernaea Linnaeus, 1758 is not enlisted in WoRMS (2018), while GBIF (2018) enlisted 67 species within this genus.

Lernanthropinus temminckii (von Nordmann, 1864) was reported from gills of S. tumbil from the coastal marine waters of Iraq (Adday, 2013; Venmathi Maran et al., 2014b). The genus Lernanthropinus Ho & Do, 1985 includes eight accepted and two unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted nine species within this genus.

Lernanthropus corniger Yamaguti, 1954 was reported from gills of both C. malabricus and M. cordyla from northwest Arab Gulf (Al-Ataby, 2012; Al-Niaeem et al., 2013).

Lernanthropus cornutus Kirtisinghe, 1937 was reported from gills of T. crocodilus from the coastal marine waters of Iraq (Adday, 2013).

Lernanthropus ilishae Chin, 1948 was reported from gills of I. compressa from the coastal marine waters of Iraq (Adday, 2013).

Lernanthropus indicus Pillai, 1967 was reported from gills of both C. malabricus and M. cordyla from northwest Arab Gulf (Al-Ataby, 2012; Al-Niaeem et al., 2012).

Lernanthropus nemipteri Jayasree & Pillai, 1976 was reported from gills of N. japonicus from the coastal marine waters of Iraq (Adday, 2013).

Lernanthropus polynemi Richiardi, 1881 was misidentified as Lernanthropus trifoliatus Bassett-Smith, 1898 from gills of O. ruber from Khor Abdullah (Bannai, 2002). L. trifoliatus is considered as a synonym of L. polynemi (GBIF, 2018; WoRMS, 2018). The generic name of the fish host O. ruber was misspelled as Otolithus instead of Otolithes by Bannai (2002).

Lernanthropus sarbae Kensley & Grindley, 1973 was reported from gills of A. arabicus from the coastal marine waters of Iraq (Adday, 2013) and from gills of A. bifasciatus from the northwest Arab Gulf (Al-Hasson, 2015).

Lernanthropus siliaginis Pillai, 1963 was reported from gills of both Sillago arabica and S. sihama from the coastal marine waters of Iraq (Adday, 2013).

Lernanthropus species were reported from gill filaments of both C. nudus from Khor Al-Zubair (Piascecki et al., 1993) and S. guttatus from the same locality (Al-Daraji, 1995), as well as from A. arabicus (misidentified as A. latus) from the coastal marine waters of the Arab Gulf (Jassim, 2013). In the present article, the specimens of Lernanthropus species from C. nudus are considered here as Lernanthropus sp. 1, those from S. guttatus are considered here as Lernanthropus sp. 2, while specimens from A. arabicus are considered as Lernanthropus sp. 3. The genus Lernanthropus de Blainville, 1822 includes 104 accepted species, two nomina nuda and 31 unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 113 species within this genus.

Mappates plataxus Rangnekar, 1958 was reported from gills of P. teira from northwest Arab Gulf (Al-Hasson, 2015; Al-Niaeem et al., 2017). The genus Mappates Rangnekar, 1958 includes two accepted species (GBIF, 2018; WoRMS, 2018).

Mugilicola species was reported from gills of P. subviridis (reported as L. subviridis) from Khor Al-Zubair lagoons (Piascecki et al., 1993). It is appropriate to mention here that Al-Daraji (1995) claimed the occurrence of Mugilicola kabatai Piascecki, Khamees & Mhaisen, 1991 from gill arches and upper roof of buccal cavity of P. abu (reported as L. abu) from Khor Al-Zubair lagoons. However, P. abu is a freshwater fish and it is doubtful that it can
tolerate a salinity of 9.7-40 psu in that estuary during the period from June 1992 till November 1993 according to Al-Daraji (1995). It is appropriate to mention here that *M. kabatai* was described as a new species from gill arches and the upper roof of the buccal and pharyngeal cavities of *P. abu* (reported as *L. abu*) from Abu Al-Khaseeb creek, south of Basrah city (Piasecki et al., 1991). The genus *Mugilicola* Tripathi, 1960 includes four valid species (WoRMS, 2018), while GBIF (2018) enlisted five species within this genus.

*Nerocila arres* Bowman & Tareen, 1983 was reported by Al-Daraji (1995) from the lower jaw of *T. whiteheadi* (misidentified as *T. mystax*) from Khor Al-Zubair lagoons and then from gills of *B. imbricata* (reported as *H. imbricata*) from the coastal marine waters of Iraq (Adday, 2013).

*Nerocila heterozota* Ahmed, 1970 was described as a new species from gills of *C. arel* (erroneously reported as *C. lingua*) from Khor Al-Zubair lagoons (Al-Daraji & Naama, 1989) and then from different fins of *C. nudus*, *I. compressa* (misidentified as *I. elongata*), *S. albella* (reported as *S. perforata*) and *T. ilisha* (reported as *Hilsa ilisha*) from Khor Al-Zubair lagoons (Al-Daraji, 1995). The genus *Nerocila* Leach, 1818 includes 42 accepted species, one nomen dubium and six unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 54 species within this genus.

*Nothobomolochus denticulatus* (Bassett-Smith, 1898) was reported from gills of *S. obtusata* from the coastal marine waters of Iraq (Adday, 2013).

*Nothobomolochus gazze* (Shen, 1957) was reported from gills of *Siganus canaliculatus* from the coastal marine waters of the Arab Gulf (Adday, 2013).

*Nothobomolochus ilhoikimi* Venmathi Maran, Moon, Adday, Khamees & Myoung, 2014 was described as a new species from gills of *T. ilisha* from coastal marine waters of Iraq (Venmathi Maran et al., 2014c). It is appropriate to mention here that *Nothobomolochus* sp., reported from the same fish and locality by Adday (2013), in fact represents *N. ilhoikimi*.

*Nothobomolochus lizae* Ho & Lin, 2005 was reported from gills of *P. klunzingeri* and *P. subviridis* (reported as *C. subviridis*) from the coastal marine waters of Iraq (Adday, 2013).

*Nothobomolochus quadrireros* Pillai, 1973 was reported from gills of *P. bindus* from the coastal marine waters of Iraq (Adday, 2013).

*Nothobomolochus* sp. was reported from *T. ilisha* from Shatt Al-Arab river estuary at Al-Fao city (Bannai & Muhammad, 2016a, b). As indicated above, *Nothobomolochus* sp., reported from the same fish and locality by Adday (2013), was later identified as *N. ilhoikimi* by Venmathi Maran et al. (2014c). The genus *Nothobomolochus* Vervoort, 1962 includes 38 accepted species and two unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 38 species within this genus.

*Orbitacolax hapologenyos* (Yamaguti & Yamasu, 1959) was reported from gills of *N. japonicus* from coastal marine waters of Iraq (Venmathi Maran et al., 2014c). The genus
Orbitacolax Shen, 1957 includes 10 accepted species, one nomen nudum and two unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 11 species within this genus.

Paraergasilus inflatus Ho, Khamees & Mhaisen, 1996 was reported from gills of P. subviridis (reported as L. subviridis) from Garmat Ali river (Jori, 1998; Abdul-Rahman, 1999), as well as from five freshwater fish species in Basrah province (Khamees et al., 2015). P. inflatus infects, so far, seven fish species in Iraq. The genus Paraergasilus Markevich, 1937 includes 16 accepted species and one unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 17 accepted species within this genus.

Protochondracanthus alatus (Heller, 1865) was reported from gills of P. erumei from Al-Fao fish market by Mohammad (2016). The genus Protochondracanthus Kirtisinghe, 1950 includes two accepted species and one unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted two accepted species within this genus.

Pseudocharopinus species was reported from gills of C. arabicum from the coastal marine waters of Iraq (Adday, 2013). The genus Pseudocharopinus Kabata, 1964 includes 11 accepted species and three unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 11 accepted species within this genus.

Table 2 gives a parasite-host list of all concerned parasite major groups so far recorded from marine fishes of Iraq. To economise space, only the valid names of concerned fishes are indicated in this table.

Table 2: List of parasite species so far recorded from marine fishes of Iraq.

<table>
<thead>
<tr>
<th>Parasite major groups</th>
<th>Fish host species</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phylum Myzozoa</strong></td>
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</tr>
<tr>
<td><em>Haemogregarina</em> sp.</td>
<td><em>Planiliza subviridis</em></td>
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<tr>
<td><em>Balanitidium</em> sp.</td>
<td><em>Planiliza carinata</em></td>
</tr>
<tr>
<td><em>Nycototheroides cordiformis</em></td>
<td><em>Planiliza carinata</em></td>
</tr>
<tr>
<td><em>Trichodina domerguei</em></td>
<td><em>Acanthopagrus arabicus, Planiliza subviridis, Sparidentex hasta</em></td>
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<tr>
<td><strong>Phylum Ciliophora- classes Litostomatea, Oligohymenophorea and Polymenophora</strong></td>
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<tr>
<td><em>Balantidium</em> sp.</td>
<td><em>Planiliza carinata</em></td>
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<tr>
<td><em>Nycototheroides cordiformis</em></td>
<td><em>Planiliza carinata</em></td>
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<tr>
<td><em>Trichodina domerguei</em></td>
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<tr>
<td><strong>Phylum Cnidaria- Class Myxozoa</strong></td>
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<tr>
<td><em>Myxobolus diversus</em></td>
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<tr>
<td><em>Myxobolus oviformis</em></td>
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<td><em>Myxobolus pfeifferi</em></td>
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<tr>
<td><strong>Phylum Platyhelminthes- Class Trematoda</strong></td>
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<tr>
<td><em>Ascocotyle coleostoma</em></td>
<td><em>Acanthopagrus arabicus, Ilisha compressa, Planiliza subviridis, Tenualosa ilisha, Thryssa whiteheadi</em></td>
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<tr>
<td><em>Bucephalus kaku</em></td>
<td><em>Scomberomorus guttatus</em></td>
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<td><em>Bucephalid sp.</em></td>
<td><em>Sphyraena obtusata</em></td>
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<td><em>Diplostomum spathaceum</em></td>
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<td><em>Ectenurus papillatus</em></td>
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<td><em>Ectenurus piscicola</em></td>
<td><em>Ilisha compressa</em></td>
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<td><em>Erilepturus gazzi</em></td>
<td><em>Chirocentrus nudus, Thryssa hamiltonii, T. whiteheadi</em></td>
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<td><em>Erilepturus hamate</em></td>
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<td>Erilepturus sp. 3</td>
<td>Johnius belangerii</td>
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<tr>
<td>Faustula rahemii†</td>
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<td>Faustula sp.</td>
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<td>Psettodes erumei, Sillago sihama</td>
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<td>Lepocreadioides sp. 1</td>
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Phylum Platyhelminthes - Class Monogenea

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<tr>
<th>Allodiscocotyla chorinemi</th>
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<td>Ancyrocephalus sp.</td>
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<td>Ablenees hians</td>
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<td>Axinoides sp.</td>
<td>Ablenees hians</td>
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<td>Neomazocraes dorosomatis</td>
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<td>Paradiplozoon kasimii†††</td>
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<td>Paramazocraes thrissocles</td>
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<td>Sprostoniella teria†</td>
<td>Platax teira</td>
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</table>

Phylum Platyhelminthes- Class Cestoda

<p>| Callitetrarhynchus cf. gracilis** | Ablennes hians, Carangoides malabaricus, Megalaspis cordyla, Mustelus mosis, Netuma bilineata, Scomberoides commersonianus, Tylosurus crocodilus |
| Callitetrarhynchus sp.* | Carangoides malabaricus, Megalaspis cordyla |
| Dasyrhynchus pacificus* | Scomberoides commersonianus |
| Echinobothrium rhynchobatis | Glaucostegus granulatus |
| Floriceps minacanthus* | Carangoides armatus, C. malabaricus |
| Nybelinia sp. 1* | Ilisha compressa |
| Nybelinia sp. 2 | Chaenogaleus macrostoma |
| Nybelinia sp. 3 | Chaenogaleus macrostoma |
| Oncodiscus sauridae** | Saurida unosquamis |
| Otobothrium alexanderi* | Tylosurus crocodilus |
| Otobothrium penetrans* | Ablennes hians, Brachirus orientalis, Strongylura leuiri, S. strongylura, Tylosurus crocodilus |
| Parotothrium balli* | Johnius dussumierii |
| Poecilocystis sp.* | Brachirus orientalis |
| Progrillotia sp.* | Alepes dzedaba, Megalaspis cordyla |
| Pseudogrillotia spratti* | Carangoides armatus, C. malabaricus, Megalaspis cordyla |
| Pterobothrium hira* | Ilisha compressa |
| Pterobothrium sp.* | Ilisha compressa |
| Stoibocephalum sp. 1* | Scomberoides commersonianus |
| Stoibocephalum sp. 2* | Scomberoides commersonianus |
| Tentacularia coryphaenae* | Saurida unosquamis |</p>
<table>
<thead>
<tr>
<th>Species Name</th>
<th>Common Name</th>
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<td>Trigonolobium spinuliferum</td>
<td>Chaenogaleus macrostoma</td>
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<td>Acanthocheilus rotundatus</td>
<td>Lethrinus nebulosus, Mustelus mosis</td>
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<td>Anisakis sp.*</td>
<td>Ableppes hians</td>
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<td>Anisakid sp.*</td>
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<td>Dujardinascaris sphyraenaii††</td>
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<td>Chiloscyllium arabicum, Cynoglossus arel</td>
</tr>
<tr>
<td>Hysterothylacium sp. type BC*</td>
<td>Argyrops spinifer, Brachirus orientalis, Chiloscyllium arabicum, Cynoglossus arel, Ephippus orbis, Otolithes ruber, Pseudorhombus arsius, Saurida undosquamis, Sphyraena obtusa</td>
</tr>
<tr>
<td>Hysterothylacium sp. type BD*</td>
<td>Cynoglossus arel</td>
</tr>
<tr>
<td>Hysterothylacium sp. type BE*</td>
<td>Rhizophryonodon acutus</td>
</tr>
<tr>
<td>Hysterothylacium sp. type BF*</td>
<td>Tylosurus crocodilus</td>
</tr>
<tr>
<td>Hysterothylacium sp. type BG*</td>
<td>Epinephelus areolatus, Pseudorhombus arsius, Saurida undosquamis</td>
</tr>
<tr>
<td>Mawsonascaris parva** (also reported as Mawsonascaris sp.)</td>
<td>Maculabatis randalli</td>
</tr>
<tr>
<td>Paraleptus chiloscylilii</td>
<td>Chiloscyllium arabicum</td>
</tr>
<tr>
<td>Philometra brachiri</td>
<td>Brachirus orientalis</td>
</tr>
<tr>
<td>Philometra iraqiensis</td>
<td>Planiliza kluinziingeri</td>
</tr>
<tr>
<td>Philometra johnii</td>
<td>Johnius dussumieri</td>
</tr>
<tr>
<td>Philometra megalaspis</td>
<td>Megalaspis cordyla</td>
</tr>
<tr>
<td>Philometra otothi</td>
<td>Otolithes ruber</td>
</tr>
<tr>
<td>Philometra piscaria</td>
<td>Epinephelus coioides</td>
</tr>
<tr>
<td>Philometra strongylurae</td>
<td>Strongylura leiura, S. strongylura</td>
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<tr>
<td>Philometra tricornuta</td>
<td>Saurida tumbil</td>
</tr>
<tr>
<td>Philometra tylosuri</td>
<td>Tylosurus crocodilus</td>
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<tr>
<td>Philometra sp. 1</td>
<td>Strongylura leiura</td>
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<tr>
<td>Philometra sp. 2</td>
<td>Tylosurus crocodilus</td>
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<td>Philometra sp. 3</td>
<td>Netuna thalassina</td>
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<tr>
<td>Philometra sp. 4</td>
<td>Sphyreana jello</td>
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<tr>
<td>Philometra sp. 5</td>
<td>Platycephalus indicus</td>
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<tr>
<td>Philometra sp. 6</td>
<td>Saurida tumbil</td>
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<tr>
<td>Taxon</td>
<td>Host(s)</td>
</tr>
<tr>
<td>-------------------------------------------</td>
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<tr>
<td><em>Philometroides acanthopagri</em></td>
<td>Acanthopagrus arabicus</td>
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<tr>
<td><em>Philometroides eleutheronemae</em></td>
<td>Eleutheronema tetradaactylum</td>
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<tr>
<td><em>Proleuminae species type BA</em></td>
<td>Acanthopagrus arabicus, Cynoglossus arel</td>
</tr>
<tr>
<td><em>Terranova sp. type BA</em></td>
<td>Carcharhinus dussumieri, C. sorrah, Rhizoprionodon acutus</td>
</tr>
<tr>
<td><em>Terranova sp. type BB</em></td>
<td>Carcharhinus dussumieri, C. sorrah, Rhizoprionodon acutus</td>
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**Phylum Acanthocephala**

<table>
<thead>
<tr>
<th>Taxon</th>
<th>Host(s)</th>
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<tbody>
<tr>
<td><em>Echinorhynchus sp.</em></td>
<td>Pseudosynanceia melanostigma</td>
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<tr>
<td><em>Micracanthorhynchina kuwaitensis</em></td>
<td>Hemiramphus marginatus</td>
</tr>
<tr>
<td><em>Neoechinorhynchus dimorphospinus</em></td>
<td>Planiliza klinzingeri, P. subviridis</td>
</tr>
<tr>
<td><em>Neoechinorhynchus iraqensis</em></td>
<td>Acanthopagrus arabicus, Brachirus orientalis, Planiliza subviridis</td>
</tr>
<tr>
<td><em>Neoechinorhynchus sp.</em></td>
<td>Periophthalmus waltoni</td>
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<tr>
<td><em>Norhadiorhynchus basrahiensis</em></td>
<td>Platax teira</td>
</tr>
<tr>
<td><em>Serrasentis sagittifer</em></td>
<td>Acanthopagrus arabicus, Platax teira</td>
</tr>
<tr>
<td><em>Serrasentis sp. 1</em></td>
<td>Brachirus orientalis</td>
</tr>
<tr>
<td><em>Serrasentis sp. 2</em></td>
<td>Johnius belangerii</td>
</tr>
<tr>
<td><em>Serrasentis sp. 3</em></td>
<td>Otolithes ruber</td>
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<tr>
<td><em>Slendrorhynchus breviclaviproboscis</em></td>
<td>Hemiramphus marginatus</td>
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**Phylum Mollusca- Class Bivalvia**

<table>
<thead>
<tr>
<th>Taxon</th>
<th>Host(s)</th>
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<tbody>
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<td><em>Glochidial larva</em></td>
<td>Planiliza subviridis</td>
</tr>
<tr>
<td><em>Phylum Arthropoda- Subphylum Crustacea- classes Ichthyostraca, Hexanauplia and Malacostraca</em></td>
<td>Planiliza subviridis, Sardinella albella, Tenualosa ilisha</td>
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<td><em>Acanthocolax sp.</em></td>
<td>Planiliza subviridis, Sardinella albella, Tenualosa ilisha</td>
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<td><em>Alella sp.</em></td>
<td>Acanthopagrus arabicus</td>
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<td><em>Anchistrotos tangi</em></td>
<td>Tenualosa ilisha</td>
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<tr>
<td><em>Anilocra monoma</em></td>
<td>Johnius dussumieri, J. elongatus, Nematalosa arabica, Planiliza subviridis</td>
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<tr>
<td><em>Anuretes anomalus</em></td>
<td>Diagramma pictum</td>
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<tr>
<td><em>Anuretes branchialis</em></td>
<td>Platax teira</td>
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<td><em>Anuretes similis</em></td>
<td>Plectorhinhus sordidus</td>
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<tr>
<td><em>Argulus foliaceus</em></td>
<td>Boleophthalmus dussumieri, Planiliza subviridis</td>
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<td><em>Bactrochondria formosana</em></td>
<td>Cynoglossus arel</td>
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<td><em>Bomolochus megaceros</em></td>
<td>Ehippus orbis</td>
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<td><em>Caligus cordyla</em></td>
<td>Megalaspis cordyla</td>
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<td><em>Caligus cossackii</em></td>
<td>Acanthopagrus bifasciatus</td>
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<td><em>Caligus epinepheli</em>*</td>
<td>Nemipterus japonicus</td>
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<td><em>Caligus longicaudus</em></td>
<td>Chirocentrus nudus</td>
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<td><em>Caligus orientalis</em></td>
<td>Planiliza macrolepis</td>
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<td><em>Caligus sp.</em></td>
<td>Netuma bilineata</td>
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<td><em>Catoessa gruneri</em>*</td>
<td>Ilisha compressa, Photopectoralis bindus</td>
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<td><em>Cepolacanthus kimi</em></td>
<td>Trypauchen vagina</td>
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<tr>
<td><em>Clavela adunca</em></td>
<td>Tenualosa ilisha</td>
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<tr>
<td><em>Clavela sp.</em></td>
<td>Ilisha compressa</td>
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<td><em>Clavellops appendiculata</em></td>
<td>Chirocentrus nudus</td>
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<td><em>Clavelloites bilobata</em></td>
<td>Nemipterus japonicus</td>
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<td><em>Clavellotis sp.</em></td>
<td>Acanthopagrus arabicus</td>
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<td><em>Dermoergasilus varicoleus</em></td>
<td>Planiliza subviridis</td>
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<td><em>Ergasilus boleophthalmi</em></td>
<td>Bathygobius fuscus, Boleophthalmus dussumieri</td>
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<td><em>Ergasilus iraquensis</em></td>
<td>Planiliza subviridis</td>
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<td><em>Ergasilus lizae</em></td>
<td>Planiliza subviridis</td>
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<td><em>Ergasilus mosulensis</em></td>
<td>Acanthopagrus arabicus, Planiliza subviridis, Tenualosa</td>
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<td><em>Ergasilus ogawai</em></td>
<td>Acanthopagrus arabicus, Planiliza subviridis, Tenualosa</td>
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<tr>
<td>Species</td>
<td>Notes</td>
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<td><em>Ergasilus pararostralis</em></td>
<td>Planiliza subviridis</td>
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<td><em>Ergasilus rostralis</em></td>
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<td><em>Ergasilus sieboldi sieboldi</em></td>
<td>Acanthopagrus arabicus, Boleopthalmus dussumieri, Planiliza subviridis, Tenualosa ilisha</td>
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<td><em>Ergasilus synanceeiensis</em></td>
<td>Pseudosynanceia melanostigma</td>
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<td><em>Ergasilus sp. 2</em></td>
<td>Tenualosa ilisha</td>
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<td><em>Eudactyliina rhinobati</em></td>
<td>Glaucostegus granulatus</td>
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<td><em>Eudactyliina turgipes</em></td>
<td>Gymnura poecilura</td>
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<tr>
<td><em>Gnathia sp.</em></td>
<td>Acanthopagrus arabicus, Brevitrygon imbricata, Cararcharhinus dussumieri, Chiloscyllium arabicum, Diagramma pictum, Diplodus sargus, Ephippus orbis, Glaucostegus granulatus, Gymnura poecilura, Johnius dussumieri, Maculabatis randalli, Nematalosa nasus, Nemerperus japonicus, Netuma thalassina, Pastinachus sephens, Pateobatis bleekeri, Rhabdosargus haffara, Tenualosa ilisha</td>
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<td><em>Hatschekia conifer</em></td>
<td>Pampus argenteus</td>
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<td><em>Hatschekia insolita</em></td>
<td>Lutjanus johnii, Pampus argenteus</td>
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<td><em>Hatschekia shari</em></td>
<td>Lethrinus nebulosus</td>
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<td><em>Hatschekia sp.</em></td>
<td>Pristipomoides filamentosus</td>
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<td><em>Hermilus ariodi</em></td>
<td>Netuma bilineata</td>
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<td><em>Hermilus longicaudus</em></td>
<td>Netuma thalassina</td>
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<td><em>Hermilus longicornis</em></td>
<td>Netuma thalassina</td>
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<td><em>Ichthyoxenus asymmetrica</em></td>
<td>Chirocentrus dorab, Cynoglossus arel</td>
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<td><em>Joryma sawayah</em></td>
<td>Chirocentrus nudus, Ilisha compressa</td>
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<td><em>Lernaea cyprinacea</em></td>
<td>Boleopthalmus dussumieri, Planiliza subviridis</td>
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<td><em>Lernanthropinus temminckii</em></td>
<td>Saurida tumbil</td>
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<tr>
<td><em>Lernanthropus corniger</em></td>
<td>Carangoides malabaricus, Megalaspis cordyla</td>
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<td><em>Lernanthropus cornutus</em></td>
<td>Tylosurus crocodilus</td>
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<td><em>Lernanthropus ilishae</em></td>
<td>Ilisha compressa</td>
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<td><em>Lernanthropus indicus</em></td>
<td>Carangoides malabaricus, Megalaspis cordyla</td>
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<td><em>Lernanthropus nemipteri</em></td>
<td>Nemerperus japonicus</td>
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<td><em>Lernanthropus polynemi</em></td>
<td>Otolithes ruber</td>
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<td><em>Lernanthropus sarbae</em></td>
<td>Acanthopagrus arabicus, A. bifasciatus</td>
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<td><em>Lernanthropus sillaginis</em></td>
<td>Sillago arabica, S. sihama</td>
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<td>Chirocentrus nudus</td>
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<td><em>Lernanthropus sp. 2</em></td>
<td>Scomberomorus guttatus</td>
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<td><em>Lernanthropus sp. 3</em></td>
<td>Acanthopagrus arabicus</td>
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<td><em>Mugilicola sp.</em></td>
<td>Planiliza subviridis</td>
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<td><em>Nerocila arres</em></td>
<td>Brevitrygon imbricata, Thryssa whiteheadi</td>
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<td><em>Nerocila heterozota</em></td>
<td>Cynoglossus arel, Ilisha compressa, Sphyreana jello</td>
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<td><em>Nerocila kisra</em></td>
<td>Johnius dussumieri, Otolithes ruber, Sardinella albella</td>
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<td><em>Nerocila phaiopleura</em></td>
<td>Chirocentrus dorab, C. nudus, Ilisha compressa, Sardinella albella, Tenualosa ilisha</td>
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<td><em>Nothobomolochus gazzae</em></td>
<td>Siganus canaliculatus</td>
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<td><em>Nothobomolochus ilhoikimi</em> (also reported as <em>Nothobomolochus sp.</em>)</td>
<td>Tenualosa ilisha</td>
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<tr>
<td><em>Nothobomolochus lizae</em></td>
<td>Planiliza klunzingeri, P. subviridis</td>
</tr>
</tbody>
</table>
Mhaisen et al.

Host-Parasite List

The names of all marine fish host species infected with parasites in Iraq (86 valid fish names and 33 synonyms and misidentifications) are alphabetically arranged in the following list. The full authorities of the valid fish species and their orders and families are shown in Table (1). For each valid host species, parasite species are alphabetically. The present host list includes the valid as well as the synonymous fish names and some misidentified species. For fishes, the scientific names were reported as they appeared in their original references, but as indicated earlier in the section of Sources and Methods, fish valid scientific names and their authorities (Table 1) were corrected mainly according to Froese & Pauly (2018) and Eschmeyer (2018), but Durand (2016) was followed for the recent valid names of members of fish family Mugilidae and Last et al. (2016) for the family Dasyatidae.

*Ablennes hians*
Monogenea: Axine sp., Axinoides sp., Crotalaxine serpentina, Loxuroides sasikala.
Cestoda: Callitetrarhynchus cf. gracilis, Otobothrium penetrans.
Nematoda: Anisakis sp., Hysterothylacium sp. 1.

*Acanthocephala abbreviata*: See *Trypauchen vagina*

*Acanthopagrus arabicus* (also reported as *Acanthopagrus latus*)
Ciliophora: Trichodina domerguei.
Myxozoa: Myxobolus pfefferi.
Trematoda: Ascocotyle coleostoma, Diplostomum spathaceum, Erilepturus hamati, Opistholebes sp., Paradiscogaster farooqi.
Monogenea: Dactylogyrus vastator, Gyrodactylus sp. 2, Lamellodiscus iraqensis, Lamellodiscus sp. 1, Microcotyle sp. 2, Polylabris mamaevi.
Nematoda: Cucullanus sp. 2, Hysterothylacium sp. type BA, Philometroides acanthopagri, Proleptinae sp. type BA.
Acanthocephala: Neoechinorhynchus iraqensis, Serrasentis sagittifer.
Crustacea: Alella sp., Clavellotis sp., Ergasilus mosulensis, E. ogawai, E. rostralis, E. sieboldi, Gnathia sp., Lernanthropus sarbae, Lernanthropus sp. 3.

*Acanthopagrus bifasciatus*
Monogenea: Dactylogyrid sp., Lamellodiscus sp. 2, Mazocraeid sp.
Nematoda: Huffmanela sp.
Crustacea: Caligus cossackii, Lernanthropus sarbae.

*Acanthopagrus latus*: See *Acanthopagrus arabicus*

*Alep es djedaba*
Cestoda: Progrillotia sp.

*Argyrops spinifer*
Monogenea: Mazocraeid sp.
Nematoda: *Cucullanus* sp. 2, *Hysterothylacium* sp. type BA, *Hysterothylacium* sp. type BC.

*Arius bilineatus*: See *Netuma bilineata*

*Bathygobius fuscus*
Crustacea: *Ergasilus boleophthalmi*.

**Boleophthalmus dussumieri** (also misidentified as *Pseudopocrypte dentatus*)
Crustacea: *Argulus foliaceus*, *Ergasilus boleophthalmi*, *E. sieboldi*, *Lernaea cyprinacea*.

**Brachirus orientalis** (reported as *Euryglossa orientalis* and *Synaptura orientalis*)
Trematoda: *Lepocreadioides* sp. 1, *Lepocreadioides* sp. 2.
Cestoda: *Otobothrium penetrans*, *Poecilancistrium* sp.
Nematoda: *Contracaecum* sp., *Hysterothylacium reliquens*, *Hysterothylacium* sp. type BC, *Philometra brachiri*.
Acanthocephala: *Neoechinorhynchus iraqensis*, *Serrasentis* sp. 1.

*Brevitrygon imbricata* (reported as *Himantura imbricata*)
Crustacea: *Gnathia* sp., *Nerocila arres*.

**Carangoides armatus**
Cestoda: *Floriceps minacanthus*, *Pseudogrillotia spratti*.

**Carangoides malabaricus**
Cestoda: *Callitetrarhynchus gracilis*, *Callitetrarhynchus* sp., *Floriceps minacanthus*, *Pseudogrillotia spratti*.
Nematoda: *Anisakid* sp.
Crustacea: *Lernanthropus corniger*, *L. indicus*.

**Carcharhinus dussumieri**
Nematoda: *Terranova* sp. type BA, *Terranova* sp. type BB.
Crustacea: *Gnathia* sp.

**Carcharhinus macloti**: See *Carcharhinus sorrah*

**Carcharhinus sorrah** (reported as *Carcharhinus macloti*)
Nematoda: *Terranova* sp. type BA, *Terranova* sp. type BB.

**Chaenogaleus macrostoma**
Cestoda: *Nybelinia* sp. 2, *Nybelinia* sp. 3, *Trigonolobium spinuliferum*.

**Chelon subviridis**: See *Planiliza subviridis*

**Chiloscyllium arabicum**
Crustacea: *Gnathia* sp., *Pseudocharopinus* sp.

**Chirocentrus dorab**
Crustacea: *Ichthyoxenus asymmetrica*, *Nerocila phaiopleura*.

**Chirocentrus nudus**
Trematoda: *Erilepturus gazzi*, *Erilepturus* sp. 1.
Monogenea: *Microcotyle* sp. 1.
Crustacea: *Caligus longicaudus*, *Clavellopsis appendiculata*, *Joryma sawayah*, *Lernanthropus* sp. 1, *Nerocila phaiopleura*.

**Cynoglossus arel (also misidentified as C. lingua)**
Crustacea: *Bactrochondria formosana*, *Ichthyoxenus asymmetrica*, *Nerocila heterozota*.

**Cynoglossus lingua: Misidentification of Cynoglossus arel**

**Diagramma pictum**
Crustacea: *Anuretes anomalus*, *Gnathia* sp.

**Diplodus sargus**
Crustacea: *Gnathia* sp.

**Drepane longimana**
Nematoda: *Hysterothylacium* sp. 2.

**Eleutheronema tetractylum**
Trematoda: *Erilepturus hamati*.
Nematoda: *Philometroides eleutheronemae*.

**Ephippus orbis**
Monogenea: *Dactylogyrid* sp.
Nematoda: *Hysterothylacium* sp. type BC.
Crustacea: *Bomolochus megaceros*, *Gnathia* sp.

**Epinephelus areolatus**
Nematoda: *Hysterothylacium* type BG.

**Epinephelus coioides (misidentified as E. tauvina)**
Trematoda: *Helicometrina nimia*, *Lepidapedoides querni*, *Opisthomonorchides gibsoni*, *Prosorhynchus epinepheli*, *Tubolovesicula magnacetabulum*.
Nematoda: *Philometra piscaria*.

**Epinephelus tauvina: See Epinephelus coioides**

**Euryglossa orientalis: See Brachirus orientalis**

**Glaucostegus granulatus (also reported as Rhynchobatus granulatus)**
Cestoda: *Echinobothrium rhynchobati*.
Crustacea: *Eudactylina rhinobati*, *Gnathia* sp.

**Gymnura poecilura**
Crustacea: *Eudactylina turgipes*, *Gnathia* sp.

**Hemiramphus marginatus**
Trematoda: *Schikhobalotrema indicum*, *Treptodema latus*.
Monogenea: *Axine hemirhamphae*.
Acanthocephala: *Micracanthorhynchina kuwaitensis*, *Slendrorhynchus breviclaviproboscis*.

**Hilsa ilisha: See Tenualosa ilisha**
Himantura bleekeri: See Pateobatis bleekeri

Himantura gerrardi: See Maculabatis randalli

Himantura imbricata: See Brevitrygon imbricata

Himantura randalli: See Maculabatis randalli

Ilisha compressa (also misidentified as I. elongata and I. megaloptera)
- Trematoda: Ascocotyle coleostoma, Ectenurus piscicola.
- Cestoda: Nybelinia sp. 1, Pterobothrium hira, Pterobothrium sp.

Ilisha elongata: See Ilisha compressa

Ilisha megaloptera: Misidentification of I. compressa

Johnieopse sina: See Johnius dussumieri

Johnius belangerii [also reported as Johnius (Johnius) belangerii]
- Trematoda: Erilepturus sp. 2, Erilepturus sp. 3, Helicometrina sp., Lecithochirium sp. 1, Pleorchis arabicus.
- Nematoda: Contraacacem sp., Echinococephalus sp. 1, Hysterothylacium sp. 1.
- Acanthocephala: Serrasentis sp. 2.

Johnius dussumieri [also reported as Johnius (Johnieops) sina]
- Trematoda: Helicometrina karachiensis, Helicometrina sp., Lecithochirium sp. 1, Pleorchis arabicus.
- Monogenea: Diplectanum sp. 1.
- Cestoda: Parotobothrium balli.
- Nematoda: Philometra johnii.

Johnius (Johnieops) sina: See Johnius dussumieri

Johnius (Johnius) belangerii: See Johnius belangerii

Johnius elongatus (misspelled as Johnius elongata)
- Crustacea: Anilocra monoma.

Leiognathus bindus: See Photopectoralis bindus

Lethrinus nebulosus
- Nematoda: Acanthocheilus rotundatus, Cucullanus sp. 1, Hysterothylacium reliquens.
- Crustacea: Hatschekia shari.

Liza carinata: See Planiliza carinata

Liza dussumieri: See Planiliza subviridis

Liza kluzingeri: See Planiliza klunzingeri

Liza macrolepis: See Planiliza macrolepis
Liza subviridis: See Planiliza subviridis

Lutjanus johnii
Crustacea: Hatschekia insolita.

Maculabatis randalli (reported as Himantura gerrardi and as H. randalli)
Nematoda: Echinocephalus sp. 1, Mawsonascaris parva (also reported as Mawsonascaris sp.).
Crustacea: Gnathia sp.

Megalaspis cordyla
Cestoda: Callitetrarhynchus gracilis, Callitetrarhynchus sp., Progrillotia sp., Pseudogrillotia spratti.
Nematoda: Philometra megalaspidis.
Crustacea: Caligus cordyla, Lernanthropus corniger, L. indicus.

Mugil dussumieri: See Planiliza subviridis

Mugil subviridis: See Planiliza subviridis

Mustelus mosis
Cestoda: Callitetrarhynchus cf. gracilis.
Nematoda: Acanthocheilus rotundatus.

Nematalosa arabica
Crustacea: Anilocra monoma.

Nematalosa nasus
Trematoda: Stephanostomum sp. 1.
Monogenea: Neomazocraes dorosomatis.
Crustacea: Gnathia sp.

Nemipterus japonicus
Crustacea: Caligus epinepheli, Clavellotis bilobata, Gnathia sp., Lernanthropus nemipteri, Orbitacolax hapologenyos.

Netuma bilineata (also reported as Arius bilineatus)
Monogenea: Chauhanellus australis, Hamatopeduncularia sp.
Cestoda: Callitetrarhynchus cf. gracilis.
Crustacea: Caligus sp., Hermilius ariodi.

Netuma thalassina
Nematoda: Cucullanus armatus, Philometra sp. 3.
Crustacea: Gnathia sp., Hermilius longicaudus, H. longicornis.

Osteomugil speigleri (reported as Valamugil speigleri)
Monogenea: Gyrodactylus aff. mugili.

Otolithes ruber
Trematoda: Erilepturus hamati, Helicometrina karachiensis, H. otolithi, Lecithochirium sp. 2, Pleorchis arabicus.
Nematoda: Contraecaecum sp., Cucullanus otolithi, Hysterothylacium reliquens, Hysterothylacium sp. type BC, Philometra otolithi.
Acanthocephala: Serrasentis sp. 3.
Crustacea: Lernanthropus polynemi, Nerocila kisra.
**Pampus argenteus**
Trematoda: *Monascus* sp.
Crustacea: *Hatschekia conifera, H. insolita*.

**Parastromateus niger**
Trematoda: *Lecithocladium angustiovum*.

**Pastinachus sephen**
Nematoda: *Echinocephalus* sp. 1.
Crustacea: *Gnathia* sp.

**Pateobatis bleekeri (reported as Himantura bleekeri)**
Crustacea: *Gnathia* sp.

**Periophthalmus waltoni**
Myxozoa: *Myxobolus pfeifferi*.
Monogenea: *Diplozoon* sp.
Acanthocephala: *Neoechinorhynchus* sp.

**Photopectoralis bindus (also reported as Leiognathus bindus)**
Crustacea: *Catoessa gruneri, Nothobomolochus quadriceros*.

**Planiliza carinata (reported as Liza carinata)**
Ciliophora: *Balantidium* sp., *Nyctotheroides cordiformis*.
Trematoda: *Saccocoelium tensum*.

**Planiliza klunzingeri (reported as Liza klunzingeri)**
Monogenea: *Ligophorus bantingensis, L. fluviatilis, Ligophorus* sp.
Nematoda: *Philometra iraqiensis*.
Acanthocephala: *Neoechinorhynchus dimorphospinus*.
Crustacea: *Nothobomolochus lizae*.

**Planiliza macrolepis (reported as Liza macrolepis)**
Trematoda: *Carassotrema lizae, Saturnius hadithi, S. segmentatus, S. valamugilis*.
Monogenea: *Ligophorus mugilinus*.
Crustacea: *Caligus orientalis*.

**Planiliza subviridis (reported as Chelon subviridis, Liza dussumieri, L. subviridis, Mugil dussumieri and M. subviridis)**
Myzozoa: *Haemoproteus* sp.
Ciliophora: *Trichodina domerguei*.
Myxozoa: *Myxobolus diversus, M. oviformis, M. pfeifferi*.
Trematoda: *Asccotyle coleostoma, Clinostomum complanatum, Diplostomum spathaceum, Haplosplanchnus mugilis, Lecithobotrys mhaiseni, Lecithochirium* sp. 1, *Saccocoelium tensum, Saturnius* sp., *Transversotrema haasi*.
Nematoda: *Contracaecum* sp.
Acanthocephala: *Neoechinorhynchus dimorphospinus, N. iraqensis*.
Mollusca: Glochidial larva.

**Platx orbicularis**  
Monogenea: *Sprostoniella multitestis*.

**Platx teira**  
Monogenea: *Sprostoniella multitestis*, *S. teria*.  
Acanthocephala: *Neoradinorhynchus basrahiensis*, *Serrasentis sagittifer*.  
Crustacea: *Anuretes branchialis*, *Mappates plataxus*.

**Platycephalus indicus**  
Nematoda: *Philometra* sp. 5.

**Plectorhinchus sordidus**  
Crustacea: *Anuretes similis*.

**Pomacanthus maculosus**  
Nematoda: *Cucullanus extraneus*.

**Pristipomoides filamentosus**  
Crustacea: *Hatschekia* sp.

**Psettodes erumei**  
Trematoda: *Lepocreadioides orientalis*, *Lepocreadioides* sp. 3.  
Nematoda: *Dujardinascaris sphyraenaii*.  
Crustacea: *Protochondracanthus alatus*.

**Pseudopocrypte dentatus**: See *Boleophthalmus dussumieri*

**Pseudorhombus arasius**  
Trematoda: *Erilepturus hamati*.  
Nematoda: *Hysterothylacium* sp. type BC, *Hysterothylacium* sp. type BG.

**Pseudosynanceia melanostigma**  
Acanthocephala: *Echinorhynchus* sp.  
Crustacea: *Ergasilus synanceiensis*.

**Rhabdosargus haffara**  
Crustacea: *Gnathia* sp.

**Rhizoprionodon acutus**  
Nematoda: *Hysterothylacium* sp. type BE, *Terranova* sp. type BA, *Terranova* sp. type BB.

**Rhynchobatus granulatus**: See *Glaucostegus granulatus*

**Sardinella albella** *(also reported as S. perforata)*  
Crustacea: *Acanthocolax* sp., *Nerocila kisra*, *N. phaiopleura*.

**Sardinella perforata**: See *Sardinella albella*

**Saurida tumbil**  
Nematoda: *Philometra tricornuta*, *Philometra* sp. 6.
Crustacea: *Lernanthropinus temminckii*.

**Saurida undosquamis**
Trematoda: *Hypohepaticola* sp.
Cestoda: *Oncodiscus sauridae, Tentacularia coryphaenae*.
Nematoda: *Hysterothylacium* sp. 1, *Hysterothylacium* sp. type BC, *Hysterothylacium* sp. type BG.

**Scomberomorus commerson**: See *Scomberomorus guttatus*

**Scomberoides commersonianus**
Trematoda: *Stephanostomum* sp. 2, *Tergestia paucia*.
Cestoda: *Callitetrarhynchus gracilis, Dasyrhyynchus pacificus, Stoibocephalum* sp. 1, *Stoibocephalum* sp. 2.

**Scomberomorus guttatus (also reported as S. commerson)**
Trematoda: *Bucephalus kaku, Ectenurus* sp.
Crustacea: *Lernanthropus* sp. 2.

**Siganus canaliculatus**
Crustacea: *Nothobomolochus gazzae*.

**Sillago arabica**
Crustacea: *Lernanthropus sillaiginis*.

**Sillago sihama**
Trematoda: *Lepocreadioides orientalis, Lepocreadioides* sp. 3.
Monogenea: *Allodiscocotyla chorinemi, Metacamopia chorinemi, Pseudomazocraes* sp.
Nematoda: *Echinocephalus* sp. 1, *Hysterothylacium* sp. 1.
Crustacea: *Lernanthropus sillaiginis*.

**Sparidentex hasta**
Ciliophora: *Trichodina domerguei*.

**Sphyraena jello**
Nematoda: *Philometra* sp. 4.
Crustacea: *Nerocila heterozota*.

**Sphyraena obtusata**
Trematoda: *Bucephalid* sp.
Monogenea: *Dactylogyrid* sp., *Mazocraeid* sp.
Nematoda: *Hysterothylacium* sp. type BC.
Crustacea: *Nothobomolochus denticulatus*.

**Sphyryna mokarran**
Nematoda: *Hysterothylacium* sp. type BA.

**Strongylura leiura**
Cestoda: *Otobothrium penetrans*.
Nematoda: *Philometra strongylurae, Philometra* sp. 1.

**Strongylura strongylura**
Cestoda: *Otobothrium penetrans*. 
Nematoda: *Philometra strongylurae*.

**Synaptura orientalis: See Brachirus orientalis**

*Tenualosa ilisha* (also reported as *Hilsa ilisha*)

Trematoda: *Ascocotyle coleostoma*, *Ectenurus papillatus*, *Faustula rahemii*, *Faustula* sp.

Monogenea: *Gyrodictyus* sp. 2, *Leptomazocraes indica*.

Nematoda: *Contracaecum* sp.

Crustacea: *Acanthocolax* sp., *Anchistrotos tangi*, *Clavella adunca*, *Ergasius ogawai*, *E. rostralis*, *E. sieboldi*, *Ergasius* sp. 2, *Gnathia* sp., *Nerocila phaiopleura*, *Nothobomolochus ilhoikimi* (also reported as *Nothobomolochus* sp.).

**Thryssa hamiltonii**

Trematoda: *Erilepturus gazzi*, *Erilepturus* sp. 1

**Thryssa mystax** (misidentified as *T. mystax*)

Trematoda: *Ascocotyle coleostoma*, *Erilepturus gazzi*, *Erilepturus* sp. 1

Monogenea: *Paramazocraes thrissocles*.

Crustacea: *Nerocila arres*.

**Triacanthus biaculeatus**

Monogenea: *Diplectanum* sp. 2.

**Trichiurus lepturus**

Trematoda: *Lecithochirium acutum*.

Nematoda: *Hysterothylacium relictumens*.

**Trypauchen vagina** (misidentified as *Acanthocephala abbreviata*)

Crustacea: *Cepolacanthus kimi*.

**Tylosurus crocodilus**

Cestoda: *Callitetrarhynchus cf. gracilis*, *Otothrium alexanderi*, *O. penetrans*.

Nematoda: *Hysterothylacium* sp. type BF, *Philometra tylosuri*, *Philometra* sp. 2.

Crustacea: *Lernanthropus cornutus*.

**Valamugil speigleri**: See *Osteomugil speigleri*

To sum up, it is clear that marine fishes of Iraq entering inland freshwaters acquire their infection from the freshwater habitats as freshwater fishes are known to be infected with some of these parasites in such habitats. Among the acquired infections are those with three ciliophorans (*Balantidium* sp., *Nyctotheroides cordiformis* and *Trichodina domerguei*), two myxozoans (*Myxobolus oviformis* and *M. pfeifferi*), three trematodes (*Ascocotyle coleostoma*, *Clinostomum complanatum* and *Diplostomum spathaceum*), three monogeneans (*Dactylogyrus vastator*, *Microcotyle donavini* and *Paradiplozoon kasimii*), one nematode (*Contraecaecum* sp.), one acanthocephalan (*Neoechinorhynchus iraqensis*), one mollusc (glochidium larva) and nine crustaceans (*Argulus foliaceus*, *Dermoergasilus varicoleus*, *Ergasius mosulensis*, *E. ogawai*, *E. pararostralis*, *E. rostralis*, *E. sieboldi sieboldi*, *Lernaea cyprinacea* and *Paraergasilus inflatus*). On the other hand, Jori (2006) had reported the marine copepod *Abasia* sp. (erroneously reported as *Alicaligus* sp.) from gills of *S. triostegus* from Al-Hammar marsh. According to GBIF (2018) and WoRMS (2018), the genus *Alicaligus* Shiino, 1955 is accepted as *Abasia*. The genus *Abasia* Wilson C.B., 1908 includes
six valid species (GBIF, 2018; WoRMS, 2018). As demonstrated by Khamees et al. (2015), Prof. Dr. Geoff Boxshall showed that Jori’s specimens (as indicated by her description and drawings) have slight similarity with *Abasia tripartita* (Shiino, 1955) and hence it was considered as *Abasia* sp. Dr. Boxshall believes that Jori’s (2006) record of such crustacean in Al-Hammar marsh could be resulted from the contact between some marine fishes migrating from the Arab Gulf to rivers and marshes of Iraq with freshwater fishes in the marshes.

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**References**


