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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, 41 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 Km^2. 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).

The marine fishes of Iraq had received little attention in comparison with those of freshwater fishes. Among literature dealing with marine fishes of Iraq are those of Khalaf (1961), Mahdi (1962), Mahdi & Georg (1969), Mahdi (1971), Nader & Jawdat (1977), Al-Daham (1982), Hussain et al. (1988) and Mohamed et al. (2001). Jawad (2012) gave a detailed account on history of fishes of Iraq, both freshwater and marine ones.

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

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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.

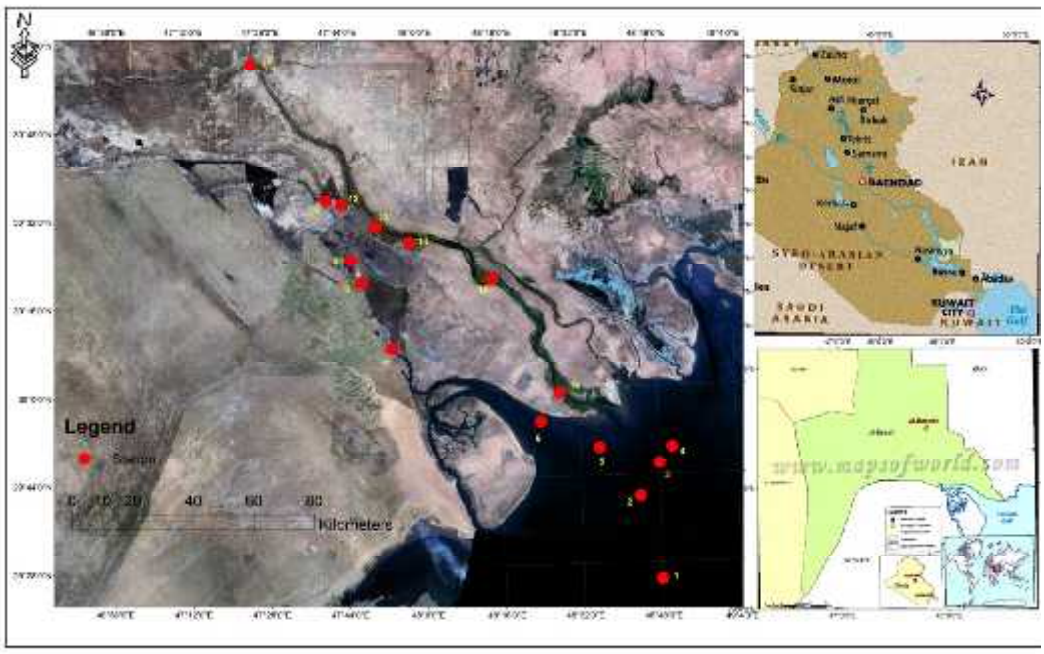

Figure 1: Maps of Iraq (upper right), Basrah province (lower right) and a large map showing the locations of water bodies mentioned in the text. 1. Iraqi coral reef, Khor Al-Ummaia, 2 and 4. Northwestern Arab Gulf, 3. Khor Al-Ummaia, 5. Khor Abdullah near the mud flats, 6. Khor Abdullah, 7. Khor Al-Zubair lagoons, 8. Shatt Al-Basrah canal, 9. Shatt Al-Basrah canal near the dam, 10. Al-Hammar marsh near Hareer village, 11. Confluence of Tigris and Euphrates rivers at Qurna city, 12. Garmat Ali river, 13 Shatt Al-Arab river near Al-Ashar district, 14. Shatt Al-Arab river near Nahr Khooz village, 15. Shatt Al-Arab river near Al-Seebah town, 16. Shatt Al-Arab river estuary near Al-Fao city.

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).

Northwestern Arab Gulf (Station 2: 29°40’809’’N, 48°44’236’’E; 29°46’782’’N, 48° 45’658’’E; 29°44’445’’N and Station 4: 29°44’-29°49’N, 48°35’-48°51’E): Mhaisen (1986), Al-Ataby (2012), Al-Ataby et al. (2012), Moravec et al. (2012), Adday (2013), Al-Niaeem et al. (2013), Al-Salim & Jassim (2013), Jassim (2013), Khamees & Adday (2013), Al-Azizz et al. (2014a, b, c), Al-Hasson et al. (2014), Al-Niaeem et al. (2014a, b), Venmathi Maran et al. (2014a, b, c), Al-Hasson (2015), Al-Niaeem et al. (2016a, b), Smales et al. (2016), Venmathi Maran et al. (2016), Al-Azizz et al. (2017), Al-Niaeem et al. (2017) and Khamees & Adday (2017).

Khor Al-Ummaia (Station 3: 29°46’N, 48°48’E): Moravec & Ali (2005), Al-Salim & Ali (2007), Ali (2008), Al-Salim & Ali (2010b, c, 2011), Ali & Al-Salim (2012), Ali et al. (2012), Ali & Al-Salim (2013), Moravec & Ali (2013), Uyeno & Ali (2013), Moravec & Ali (2014), González-Solís & Ali (2015) and Moravec et al. (2016).

Khor Abdullah near the mud flats (Station 5: 29°49’N, 48°36’ E): Zhao et al. (2017).

Khor Abdullah (Station 6: 29°54’N, 48°24’ E): Ahmed (1970a, b), Al-Daraji (1998, 1999), Al-Daraji et al. (2002), Bannai (2002), Awad et al. (2003), Al-Daraji (2004a), Bannai (2005), Bannai et al. (2005a, b, c), Bannai (2008), Bannai et al. (2008), Jori & Mohamad (2008), Al-Daraji et al. (2010), Mohammad (2010), Mohamad & Razak (2011), Bannai & Muhammad (2014), Bannai et al. (2014), Bannai & Muhammad (2015a, b), Bannai et al. (2016), Bannai (2017) and Ghadam et al. (2017).

Khor Al-Zubair lagoons (Station 7: 30°08’16’’N, 47°54’31’’E): Al-Daraji & Naama (1989), Piasecki et al. (1993), Al-Daraji (1995), Mhaisen & Al-Maliki (1996), Amado et al. (2001) and Al-Daraji (2002a, b, c, 2004b).

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).

Garmat Ali river (Station 12: 30°34’43’’N, 47°44’19’’E): Jori (1998), Abdul-Rahman (1999), Al-Salim & Jori (2000), Adday (2001), Al-Salim & Jori (2002), Adday et al. (2006), Al-Janae'e (2010), Adday (2013) and Bannai & Muhammad (2016a, b).

Shatt Al-Arab river near Al-Ashar district (Station 13: 30°30’43’’N, 47°51’05’’E): Al-Hadithi & Habish (1977), Habish (1977), Mhaisen (1986), Al-Salim (1992), Khamees (1997), Kritsky et al. (2013a, b), Ahmed (2015) and Bannai & Muhammad (2016a, b).

Shatt Al-Arab river near Nahr Khooz village (Station 14: 30°27’59’’N, 47°58’25’’E): Ali (2001), Al-Salim & Ali (2007) and Kritsky et al. (2013b).

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-Ashar 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 myzozoan, 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.

Class Elasmobranchii
- Order Orectolobiformes
  - Family Hemiscylliidae
    - *Chiloscyllium arabicum* Gubanov, 1980
- Order Carcharhiniformes
  - Family Triakidae
    - *Mustelus mosis* Hemprich & Ehrenberg, 1899
  - Family Hemigaleidae
    - *Chaenogaleus macrostoma* (Bleeker, 1852)
  - Family Carcharhinidae
    - *Carcharhinus dussumieri* (Müller & Henle, 1839)
    - *Carcharhinus sorrah* (Müller & Henle, 1839)
    - *Rhizoprionodon acutus* (Rüppell, 1837)
  - Family Sphyrnidae
    - *Sphyrna mokarran* (Rüppell, 1837)
- Order Rajiformes
  - Family Rhinobatidae
    - *Glaucostegus granulatus* (Cuvier, 1829)
- Order Myliobatiformes
  - Family Dasyatidae
    - *Brevitrygon imbricata* (Bloch & Schneider, 1801)
    - *Maculabatis randalli* (Last, Manjaji-Matsumoto & Moore, 2012)
    - *Pastinachus sephen* (Forsskål, 1775)
    - *Pateobatis bleekeri* (Blyth, 1860)
  - Family Gymnuridae
    - *Gymnura poecilura* (Shaw, 1804)

Class Actinopterygii
- Order Clupeiformes
  - Family Clupeidae
    - *Nematalosa arabica* Regan, 1917
    - *Nematalosa nasus* (Bloch, 1795)
    - *Sardinella albella* (Valenciennes, 1847)
    - * *Tenualosa ilisha* (Hamilton, 1822)
  - Family Engraulidae
    - *Thryssa hamiltonii* Gray, 1835
    - *Thryssa whiteheadi* Wongratana, 1983
  - Family Chirocentridae
    - *Chirocentrus dorab* (Forsskål, 1775)
    - *Chirocentrus nudus* Swainson, 1839
  - Family Pristigasteridae
    - * *Ilisha compressa* Randall, 1994
- Order Siluriformes
  - Family Ariidae
    - *Netuma bilineata* (Valenciennes, 1840)
    - *Netuma thalassina* (Rüppell, 1837)
- Order Aulopiformes
  - Family Synodontidae
    - *Saurida tumbil* (Bloch, 1795)
    - *Saurida undosquamis* (Richardson, 1848)
- Order Beloniformes
  - Family Belonidae
    - *Ablennes hians* (Valenciennes, 1846)

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 Platycephalidae
Platycephalus 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 Leiognathidae
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 arabicus* Iwatsuki, 2013
Acanthopagrus bifasciatus (Forsskål, 1775)
Argyrops spinifer (Forsskål, 1775)
Diplodus sargus (Linnaeus, 1758)
Rhabdosargus haffara (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 tetradactylum (Shaw, 1804)
Family Drepaneidae
Drepane longimana (Bloch & Schneider, 1801)
Family Pomacanthidae
Pomacanthus maculosus (Forsskål, 1775)
Family Gobiidae

* *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 Paralichthyidae
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)

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* 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 Ciliophora

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

Science Centre (Al-Daraji et al., 1999). According to GBIF (2018), *Nyctotherus cordiformis* is a synonym of *Nyctotheroides cordiformis*. The genus *Nyctotheroides* Grassé, 1928 includes 59 species (GBIF, 2018). WoRMS (2018) enlisted neither *Nyctotheroides* nor *Nyctotherus*.

Trichodina domerguei (Wallengren, 1897) Haider, 1964 was reported from three marine fish species entering fresh waters in Basrah province. These incuded *Acanthopagrus arabicus* (reported as *A. latus*), *P. subviridis* (reported as *L. subviridis*) and *Sparidentex hasta* which were all from Garmat Ali river (Al-Janae'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. arabicus* (reported as *A. latus*) from Garmat Ali river (Al-Janae'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
Family Bivesiculidae
Treptodemus latus Manter, 1961
Superfamily Bucephaloidea
Family Bucephalidae
Bucephalus kaku Yamaguti, 1970
Prosorhynchus epinepheli Yamaguti, 1939
Bucephalid sp.
Superfamily Schistosomatoidea
Family Clinostomidae
Clinostomum complanatum (Rudolphi, 1814) Braun, 1899
Superfamily Diplostomoidea
Family Diplostomidae
Diplostomum spathaceum (Rudolphi, 1819) Olsson, 1876
Superfamily Gymnophalloidea
Family Fellodistomidae
Monascus sp.
Tergestia pauca Texeira de Freitas & Kohn, 1965
Superfamily Hemiuroidea
Family Hemiuridae
Ectenurus papillatus Khan & Bilqees, 1990
Ectenurus piscicola (Srivastava, 1935)
Ectenurus sp.
Erilepturus gazzi (Ahmad, 1980) Madhavi, 2011
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.

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 Haplosplanchnoidea
Family Haplosplanchnidae
Haplosplanchnus mugilis Nahhas & Cable, 1964
Schikhobalotrema indicum (Zhukov, 1972) Overstreet & Curran, 2005
Superfamily Allocreadioidea
Family Opecoelidae
Helicometrina karachiensis Bilqees, 1972
Helicometrina nimia Linton, 1910
Helicometrina otolithi Bilqees, 1972
Helicometrina sp.
Superfamily Allocreadioidea
Family Opistholebetidae
Opistholebes sp.
Family Acanthocolpidae
Pleorchis arabicus Al-Yamani & Nahhas, 1981
Stephanostomum spp. 1-2
Superfamily Lepocreadioidea
Family Lepocreadiidae
Lepidapedoides querni Yamaguti, 1970
Lepocreadioides orientalis Park, 1939
Lepocreadioides spp. 1-3
Superfamily Opisthorchioidea
Family Heterophyidae
Ascocotyle coleostoma (Looss, 1896) Looss, 1899
Superfamily Monorchioidea
Family Monorchiidae
Opisthomonorcheides gibsoni (Ahmad, 1991) Madhavi, 2011
Superfamily Microphaloidea
Family Faustulidae
* *Faustula rahemii* Al-Daraji, 2004
Faustula sp.
Paradiscogaster farooqii Hafezullah & Siddiqi, 1970

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* 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 (unidetermined 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-Salim & 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 hypoleucos*, *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 tetradactylum*, *Otolithes ruber* and *Pseudorhombus arsius* from Khor Al-Ummaia (Ali, 2008; Al-Salim & Ali, 2010c) and from stomach and intestine of *A. arabicus* (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 15 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 nodum 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 presnt 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 Abdullah (Al-Daraji 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 reported 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

WoRMS (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 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 was 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 *Scomberoides 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).

Tergestia pauca Texeira de Freitas & Kohn, 1965 was recorded from intestine of *S. commersonnianus* from Khor Abdullah (Bannai, 2002). The authority of this parasite was given as Fretas & Kohn, 1965 by Bannai (2002) and it is given here in accordance with three electronic sites (EOL, 2018; GBIF, 2018; WoRMS, 2018). The genus *Tergestia* Stossich, 1899 includes 15 accepted, one taxon inquirendum and nine unaccepted species (WoRMS, 2018). Twenty 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. coioides* (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. Is 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.
Family Ancyrocephalidae
Ancyrocephalus sp.
Chauhanellus australis (Young, 1967) Bychowsky & Nagibina, 1969
Haliotrema mugilis (Tripathi, 1959) Yamaguti, 1963
Ligophorus bantingensis 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 sagmarius Kritsky, Khamees & Ali, 2013
Ligophorus sp.
Family Dactylogyridae
Dactylogyrus vastator Nybelin, 1924
Dactylogyrid sp.
Family Diplectanipdae
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.
Loxuroides sasikala (Unnithan, 1957) Price, 1962
Family Chauhaneidae
Pseudomazocraes sp.

Family Diplozoidae
** *Paradiplozoon kasimii* (Rahemo, 1980) Khotenovsky, 1982
Diplozoon sp.
Family Allodiscocotylidae
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. 1-2
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). Ninteen 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 bilineatus*) 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 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-Janae'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 *Acanthopagrus 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-Janae'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-Janae'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 & Tiegs, 1922 (GBIF, 2018; WoRMS, 2018). So, *L. iraqensis* is considered here as an invalid species.

Lamellodiscus species was recorded from gills of *A. arabicus*, 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. arabicus* is considered here as *Lamellodiscus* sp. 1, while specimen from *A. bifasciatus* is considered as *Lamellodiscus* sp. 2. The genus *Lamellodiscus* Johnston & Tiegs, 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-Ashar, 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-Ashar, 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 reported from gills of *P. subviridis* (reported as *C. subviridis*) from Shatt Al-Arab river near Al-Ashar 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, Khamees & 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 Metamicrocotylidae (misspelled as Metamicrocotyladae) 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 a *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* Akhmerov, 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 multitestis Bychowsky & Nagibina, 1967 was recoded 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 Diphyllidea
    - 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.
      - *Dasyrhynchus 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 spp. 1-2

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. commersonniaus*) 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.

Dasyrhynchus pacificus Robinson, 1965 was reported, as plerocercoid, from the intestine and musculature of *S. commersonnianus* from Khor Abdullah (Bannai, 2008). This cestode was considered within the family Dasyrhynchidae instead of Lacistorhynchidae by Bannai (2008). Also, the specific name of the infected fish was misspelled as *commersoniaus* by the same researcher. It is reliable to state here that the year of authority of this worm was given as 1959 by both GBIF (2018) and WoRMS (2018) instead of 1965 as by Global Cestode Database (2018). The genus *Dasyrhynchus* Pintner, 1928 includes eight accepted species (inclusive of *D. pacificus*) and one unaccepted species (WoRMS, 2018). GBIF (2018) enlisted seven species (inclusive of *D. pacificus*) 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-Ummaia (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-Ummaia (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-Ummaia 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-Ummaia (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 inquienda 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-

Niaeem et al., 2014b). 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 inquienda 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 speciec 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 referes 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
Huffmanela 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 reliquens (Norris & Overstreet, 1975) Deardorff & Overstreet, 1981
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 otolithi (Ashraf, Khanum & Farooq, 1977) Al-Salim & Ali, 2011
Cucullanus spp. 1-2
Superfamily Camallanoidea
Family Camallanidae
Camallanus sp. larva
Superfamily Dracunculoidea
Family Philometridae
Philometra brachiri Moravec & Ali, 2014
Philometra iraqiensis Moravec, Ali, Abed & Shaker, 2016
Philometra johnii Moravec & Ali, 2013
Philometra megalaspidis Moravec, Ali, Abed & Shaker, 2016
Philometra otolithi 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

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

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* 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 reachs 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 *Skrjabillanus* sp. of the family Skrjabinallidae. Ali et al. (2014) discussed in details the fact that the so called *Skrjabillanus* 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, mesentries, 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 taxon inquirendum, 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 accetped 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 inquirendae. These included *D. cybii* from *Scomberomorus guttatus* from Jodhpur fish market of India, *D. magna* from *Sciaena* sp. from Karachi coast, *D. qadrii* (and its synonym *D. sciaenae*) from both *Protonibea* sp. and *Johnius diacanthus* from Karachi coast and *D. ritai* 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 Mexixo). 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 sephen* 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.

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 distingusion 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 BB larvae from the body cavity of both *C. arabicum* (Ali, 2008; Al-Salim & Ali, 2010b) and *C. arel* (Ali, 2008; Al-Salim & Ali, 2010b; Ali & Al-Salim, 2012).

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 *Rhizopriodon* 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 iraqiensis 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, Arab Gulf (Moravec et al., 2016).

Philometra otolithi Moravec & Manoharan, 2013 was recorded from the ovaries of *O. ruber* from Khor Al-Ummaia (Moravec & Ali, 2014).

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

Philometra strongylurae Moravec & Ali, 2005 was described as a new species from the subcutaneous tissue, muscles of beak and gills of both *S. leiura* (Moravec & Ali, 2005; Ali, 2008) and *S. strongylura* from Al-Fao coast (Moravec & Ali, 2005).

Philometra tricornuta Moravec & Ali, 2014 was described as a new species from 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 *Platycephalus 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 reported 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).

Terranova sp. type BB larvae were reported from Khor Al-Ummaia from the stomach of *C. dussumieri* (Ali, 2008; Ali & Al-Salim, 2013), intestine of *C. sorrah* (reported as *C. macloti*) by Ali (2008) and Ali & Al-Salim (2013) and from stomach of *R. acutus* by Ali (2008) and Ali & Al-Salim (2013). The genus *Terranova* Leiper & Atkinson, 1914 includes eight accepted species, four taxa inquirenda and seven unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 25 species in this genus.

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. klunzingeri* (reported as *L. klunzingeri*) 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 quadriceros 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 anomalus 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 Eudactylinidae
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. 1-3
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.

Alella sp. was reported from gills of *A. arabicus* from the coastal marine waters of Iraq (Adday, 2013). The genus *Alella* 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 from gills of *Nemipterus japonicus* from the coastal marine waters of Iraq (Adday, 2013; Khamees & Adday, 2013; Venmathi Maran et al., 2014b).

Caligus longicaudus Bassett-Smith, 1898 was reported from gills of *C. nudus* from the coastal marine waters of Iraq (Adday, 2013).

Caligus orientalis Gusev, 1951 was reported from gills of *P. macrolepis* (reported as *L. macrolepis*) from Khor Al-Zubair lagoons (Al-Daraji, 1995).

Caligus species was reported from gills of *N. bilineata* (reported as *A. bilineatus*) from Khor Abdullah (Jori & Mohamad, 2008). The genus *Caligus* O.F. Müller, 1785 includes 255 accepted species, four taxa inquirenda, nine nomina nuda and 138 unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 290 acceped species in this genus.

Catoessa gruneri Bowman & Tareen, 1983 adults and manca 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).

Clavella adunca (Strøm, 1762) was reported from gill filaments of *T. ilisha* (reported as *H. ilisha*) from Khor Al-Zubair lagoons (Al-Daraji, 1995).

Clavella species was reported from gill filaments of *I. compressa* (misidentified as *I. elongata*) from Khor Al-Zubair lagoons (Piasecki et al., 1993). The genus *Clavella* includes 48 accepted species, five taxa inquirenda, ten nomina nuda and 52 unaccepted species (WoRMS, 2018), while GBIF (2018) enlisted 77 acceped species in this genus.

Clavellopsis appendiculata Kirtisinghe, 1950 was reported as *Isobranchia appendiculata* Heegaard, 1947 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 acceped species in this genus.

Clavellotis bilobata (Pillai, 1962) was reported from gills of *N. japonicus* from the coastal marine waters of Iraq (Adday, 2013).

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 acceped species in this genus.

Dermoergasilus varicoleus Ho, Jayarajan & Radhakrishnan, 1992 was reported from *P. subviridis* (reported as *L. subviridis*) from Garmat Ali river by Jori (1998) and Abdul-Rahman (1999), as well as from six freshwater fish species in Basrah province (Khamees et al., 2015). This crustacean has so far nine fish host species in Iraq. The genus *Dermoergasilus* Ho & Do, 1982 includes 11 accepted species (GBIF, 2018; WoRMS, 2018).

Ergasilus boleophthalmi Adday & Ali, 2011 was described as a new species from gills of *Bathygobius fuscus* and *Boleophthalmus dussumieri* from Shatt Al-Basrah canal (Adday & Ali, 2011).

Ergasilus iraquensis 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 discussed in Khamees et al. (2015), it is reliable to state here that *E. irakiensis* reported by both Al-Daraji (2002c) and Bannai (2002) from the same fish from Khor Al-Zubair lagoons and Khor Abdullah, respectively is considered as a synonym with *E. iraquensis* Amado, in Amado, da Rocha, Piasecki, Al-Daraji & Mhaisen, 2001.

Ergasilus lizae Krøyer, 1863 was reported from gill filaments of *P. subviridis* (reported as *C. subviridis*) from Garmat Ali river (Adday, 2013).

Ergasilus mosulensis Rahemo, 1982 was reported from gills of *A. arabicus* from Al-Ashar canal, Shatt Al-Arab river and junction of Tigris and Euphrates rivers at Qurna city (Ahmed, 2015) and from *P. subviridis* (reported as *L. subviridis*) from Garmat Ali river (Abdul-Rahman, 1999) and from junction of Tigris and Euphrates rivers at Qurna city (Ahmed,

2015), 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.

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

Eudactylina turgipes Bere, 1936 was reported from gills of *Gymnura poecilura* from the coastal marine waters of the Arab Gulf (Adday, 2013). The genus *Eudactylina* 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 acceped species in this genus.

Lernaea cyprinacea Linnaeus, 1758 was reported in Basrah from skin, fins and gills of *B. dussumieri* from Garmat Ali river (Khamees, 1997) and from the same fish from Shatt Al-Arab river 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-Ataby 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 sillaginis 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 (Piasecki 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 (Piasecki et al., 1993). It is appropriate to mention here that Al-Daraji (1995) claimed the occurrence of *Mugilicola kabatai* Piasecki, 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 Abdullah (Ahmed, 1970b) and then from gills of both *I. compressa* (misidentified as *I. megaloptera*) and *S. jello* from Al-Fao city fish market (Mhaisen, 1986). Khamees et al. (2015) contributed on the misidentification of these fish species. They demonstrated that *C. lingua* is not distributed in Iraqi marine waters and the possible species reported by Ahmed (1970b) was *C. arel*. Also, *I. megaloptera* reported by Mhaisen (1986) was a misidentification of *I. compressa*.

Nerocila kisra Bowman & Tareen, 1983 was reported from the lower jaw of *J. dussumieri* (reported as *J. sina*) from Khor Al-Zubair lagoons (Al-Daraji & Naama, 1989) and then from base of fins of the same fish as well as *O. ruber* and *S. albella* (reported as *S. perforata*) from Khor Al-Zubair lagoons (Al-Daraji, 1995).

Nerocila phaiopleura Bleeker, 1857 was reported from above the base of pectoral fin of *C. dorab* 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 gazzae (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* (reported as *L. klunzingeri*) and *P. subviridis* (reported as *C. subviridis*) from the coastal marine waters of Iraq (Adday, 2013).

Nothobomolochus quadriceros 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 acceped 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 acceped 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 acceped 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.

Parasite major groups	Fish host species
Phylum Myzozoa	
Haemogregarina sp.	*Planiliza subviridis*
Phylum Ciliophora- classes Litostomatea, Oligohymenophorea and Polymenophora	
Balantidium sp.	*Planiliza carinata*
Nyctotheroides cordiformis	*Planiliza carinata*
Trichodina domerguei	*Acanthopagrus arabicus*, *Planiliza subviridis*, *Sparidentex hasta*
Phylum Cnidaria- Class Myxozoa	
Myxobolus diversus	*Planiliza subviridis*
Myxobolus oviformis	*Planiliza subviridis*
Myxobolus pfeifferi	*Acanthopagrus arabicus*, *Periophthalmus waltoni*, *Planiliza subviridis*
Phylum Platyhelminthes- Class Trematoda	
*Ascocotyle coleostoma**	*Acanthopagrus arabicus*, *Ilisha compressa*, *Planiliza subviridis*, *Tenualosa ilisha*, *Thryssa whiteheadi*
Bucephalus kaku	*Scomberomorus guttatus*
Bucephalid sp.	*Sphyraena obtusata*
Carassotrema lizae	*Planiliza macrolepis*
*Clinostomum complanatum**	*Planiliza subviridis*
*Diplostomum spathaceum**	*Acanthopagrus arabicus*, *Planiliza subviridis*
Ectenurus papillatus	*Tenualosa ilisha*
Ectenurus piscicola	*Ilisha compressa*
Ectenurus sp.	*Scomberomorus guttatus*
Erilepturus gazzi	*Chirocentrus nudus*, *Thryssa hamiltonii*, *T. whiteheadi*
Erilepturus hamate	*Acanthopagrus arabicus*, *Eleutheronema tetradactylum*, *Otolithes ruber*, *Pseudorhombus arsius*
Erilepturus sp. 1	*Chirocentrus nudus*, *Thryssa hamiltonii*, *T. whiteheadi*
Erilepturus sp. 2	*Johnius belangerii*

Erilepturus sp. 3	*Johnius belangerii*
Faustula rahemii†	*Tenualosa ilisha*
Faustula sp.	*Tenualosa ilisha*
Haplosplanchnus mugilis	*Planiliza subviridis*
Helicometrina karachiensis	*Johnius dussumieri*, *Otolithes ruber*
Helicometrina nimia	*Epinephelus coioides*
Helicometrina otolithi	*Otolithes ruber*
Helicometrina sp.	*Johnius belangerii*, *Johnius dussumieri*
Hypohepaticola sp.	*Saurida undosquamis*
Lecithobotrys mhaiseni†	*Planiliza subviridis*
Lecithochirium acutum	*Trichiurus lepturus*
Lecithochirium sp. 1	*Johnius belangerii*, *Johnius dussumieri*, *Planiliza subviridis*
Lecithochirium sp. 2	*Otolithes ruber*
Lecithocladium angustiovum	*Parastromateus niger*
Lepidapedoides querni	*Epinephelus coioides*
Lepocreadioides orientalis	*Psettodes erumei*, *Sillago sihama*
Lepocreadioides sp. 1	*Brachirus orientalis*
Lepocreadioides sp. 2	*Brachirus orientalis*
Lepocreadioides sp. 3	*Psettodes erumei*, *Sillago sihama*
Monascus sp.	*Pampus argenteus*
Opistholebes sp.	*Acanthopagrus arabicus*
Opisthomonorcheides gibsoni	*Epinephelus coioides*
Paradiscogaster farooqii	*Acanthopagrus arabicus*
Pleorchis arabicus	*Johnius belangerii*, *J. dussumieri*, *Otolithes ruber*
Prosorhynchus epinepheli	*Epinephelus coioides*
Saccocoelium tensum	*Planiliza carinata*, *Planiliza subviridis*
Saturnius hadithii†	*Planiliza macrolepis*
Saturnius segmentatus††	*Planiliza macrolepis*
Saturnius valamugilis†††	*Planiliza macrolepis*
Saturnius sp.	*Planiliza subviridis*
Schikhobalotrema indicum	*Hemiramphus marginatus*
Stephanostomum sp. 1	*Nematalosa nasus*
Stephanostomum sp. 2	*Scomberoides commersonnianus*
Tergestia pauca	*Scomberoides commersonnianus*
Transversotrema haasi	*Planiliza subviridis*
Treptodemus latus	*Hemiramphus marginatus*
Tubulovesicula magnacetabulum	*Epinephelus coioides*
Phylum Platyhelminthes- Class Monogenea	
Allodiscocotyla chorinemi	*Sillago sihama*
Ancyrocephalus sp.	*Planiliza subviridis*
Axine hemirhamphae	*Hemiramphus marginatus*
Axine sp.	*Ablennes hians*
Axinoides sp.	*Ablennes hians*
Chauhanellus australis	*Netuma bilineata*
Crotalaxine serpentina	*Ablennes hians*
Dactylogyrus vastator	*Acanthopagrus arabicus*, *Planiliza subviridis*
Dactylogyrid sp.	*Acanthopagrus bifasciatus*, *Ephippus orbis*, *Sphyraena obtusata*
Diplectanum sp. 1	*Johnius dussumieri*
Diplectanum sp. 2	*Triacanthus biaculeatus*
Diplozoon sp.	*Periophthalmus waltoni*
Gyrodactylus aff. *mugili*	*Osteomugil speigleri*, *Planiliza subviridis*

Gyrodactylus sp. 1	*Planiliza subviridis*
Gyrodactylus sp. 2	*Acanthopagrus arabicus*, *Tenualosa ilisha*
Haliotrema mugilis	*Planiliza subviridis*
Hamatopeduncularia sp.	*Netuma bilineata*
Lamellodiscus iraqensis†	*Acanthopagrus arabicus*
Lamellodiscus sp. 1	*Acanthopagrus arabicus*
Lamellodiscus sp. 2	*Acanthopagrus bifasciatus*
Leptomazocraes indica†	*Tenualosa ilisha*
Ligophorus bantingensis	*Planiliza klunzingeri*, *P. subviridis*
Ligophorus fluviatilis	*Planiliza klunzingeri*, *P. subviridis*
Ligophorus lebedevi	*Planiliza subviridis*
Ligophorus mugilinus	*Planiliza macrolepis*, *P. subviridis*
Ligophorus sagmarius	*Planiliza subviridis*
Ligophorus sp.	*Planiliza klunzingeri*
Loxuroides sasikala	*Ablennes hians*
Mazocraed sp.	*Acanthopagrus bifasciatus*, *Argyrops spinifer*, *Sphyraena obtusata*
Metacamopia chorinemi	*Sillago sihama*
Metamicrocotyla mugilis	*Planiliza subviridis*
Microcotyle donavini	*Planiliza subviridis*
Microcotyle sp. 1	*Chirocentrus nudus*
Microcotyle sp. 2	*Acanthopagrus arabicus*
Neomazocraes dorosomatis	*Nematalosa nasus*
Paradiplozoon kasimii†††	*Planiliza subviridis*
Paramazocraes thrissocles	*Thryssa whiteheadi*
Polylabris mamaevi	*Acanthopagrus arabicus*
Pseudomazocraes sp.	*Sillago sihama*
Sprostoniella multitestis	*Platax orbicularis*, *P. teira*
Sprostoniella teria†	*Platax teira*
Phylum Platyhelminthes- Class Cestoda	
*Callitetrarhynchus cf. gracilis***	*Ablennes hians*, *Carangoides malabaricus*, *Megalaspis cordyla*, *Mustelus mosis*, *Netuma bilineata*, *Scomberoides commersonnianus*, *Tylosurus crocodilus*
Callitetrarhynchus sp.*	*Carangoides malabaricus*, *Megalaspis cordyla*
*Dasyrhynchus pacificus**	*Scomberoides commersonnianus*
Echinobothrium rhynchobati	*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 undosquamis*
*Otobothrium alexanderi**	*Tylosurus crocodilus*
*Otobothrium penetrans**	*Ablennes hians*, *Brachirus orientalis*, *Strongylura leiura*, *S. strongylura*, *Tylosurus crocodilus*
*Parotobothrium balli**	*Johnius dussumieri*
Poecilancistrium sp.*	*Brachirus orientalis*
Progrillotia sp.*	*Alepes djedaba*, *Megalaspis cordyla*
*Pseudogrillotia spratti**	*Carangoides armatus*, *C. malabaricus*, *Megalaspis cordyla*
*Pterobothrium hira**	*Ilisha compressa*
Pterobothrium sp.*	*Ilisha compressa*
Stoibocephalum sp. 1*	*Scomberoides commersonnianus*
Stoibocephalum sp. 2*	*Scomberoides commersonnianus*
*Tentacularia coryphaenae**	*Saurida undosquamis*

Trigonolobium spinuliferum	*Chaenogaleus macrostoma*
Phylum Nematoda	
*Acanthocheilus rotundatus***	*Lethrinus nebulosus*, *Mustelus mosis*
Anisakis sp.*	*Ablennes hians*
Anisakid sp.*	*Carangoides malabaricus*
Camallanus sp.*	*Cynoglossus arel*
Contracaecum sp. *	*Brachirus orientalis*, *Johnius belangerii*, *Otolithes ruber*, *Planiliza subviridis*, *Tenualosa ilisha*
Cucullanus armatus	*Netuma thalassina*
Cucullanus extraneus	*Pomacanthus maculosus*
Cucullanus otolithi	*Otolithes ruber*
Cucullanus sp. 1	*Lethrinus nebulosus*
Cucullanus sp. 2	*Acanthopagrus arabicus*, *Argyrops spinifer*
Dujardinascaris sphyraenaii†††	*Psettodes erumei*
Echinocephalus sp. 1*	*Johnius belangerii*, *Sillago sihama*
Echinocephalus sp. 2*	*Chiloscyllium arabicum*, *Cynoglossus arel*
Echinocephalus sp.	*Maculabatis randalli*, *Pastinachus sephen*
Huffmanela sp.	*Acanthopagrus bifasciatus*
*Hysterothylacium reliquens***	*Brachirus orientalis*, *Cynoglossus arel*, *Lethrinus nebulosus*, *Otolithes ruber*, *Trichiurus lepturus*
Hysterothylacium sp. 1	*Ablennes hians*, *Johnius belangerii*, *Saurida undosquamis*, *Sillago sihama*
Hysterothylacium sp. 2	*Drepane longimana*
Hysterothylacium sp. type BA*	*Acanthopagrus arabicus*, *Argyrops spinifer*, *Chiloscyllium arabicum*, *Cynoglossus arel*, *Sphyrna mokarran*
Hysterothylacium sp. type BB*	*Chiloscyllium arabicum*, *Cynoglossus arel*
Hysterothylacium sp. type BC*	*Argyrops spinifer*, *Brachirus orientalis*, *Chiloscyllium arabicum*, *Cynoglossus arel*, *Ephippus orbis*, *Otolithes ruber*, *Pseudorhombus arsius*, *Saurida undosquamis*, *Sphyraena obtusata*
Hysterothylacium sp. type BD*	*Cynoglossus arel*
Hysterothylacium sp. type BE*	*Rhizoprionodon acutus*
Hysterothylacium sp. type BF*	*Tylosurus crocodilus*
Hysterothylacium sp. type BG*	*Epinephelus areolatus*, *Pseudorhombus arsius*, *Saurida undosquamis*
*Mawsonascaris parva*** (also reported as *Mawsonascaris* sp.)	*Maculabatis randalli*
Paraleptus chiloscyllii	*Chiloscyllium arabicum*
Philometra brachiri	*Brachirus orientalis*
Philometra iraqiensis	*Planiliza klunzingeri*
Philometra johnii	*Johnius dussumieri*
Philometra megalaspidis	*Megalaspis cordyla*
Philometra otolithi	*Otolithes ruber*
Philometra piscaria	*Epinephelus coioides*
Philometra strongylurae	*Strongylura leiura*, *S. strongylura*
Philometra tricornuta	*Saurida tumbil*
Philometra tylosuri	*Tylosurus crocodilus*
Philometra sp. 1	*Strongylura leiura*
Philometra sp. 2	*Tylosurus crocodilus*
Philometra sp. 3	*Netuma thalassina*
Philometra sp. 4	*Sphyreana jello*
Philometra sp. 5	*Platycephalus indicus*
Philometra sp. 6	*Saurida tumbil*

Philometroides acanthopagri	*Acanthopagrus arabicus*
Philometroides eleutheronemae	*Eleutheronema tetradactylum*
Proleptinae species type BA*	*Acanthopagrus arabicus*, *Cynoglossus arel*
Terranova sp. type BA*	*Carcharhinus dussumieri*, *C. sorrah*, *Rhizoprionodon acutus*
Terranova sp. type BB*	*Carcharhinus dussumieri*, *C. sorrah*, *Rhizoprionodon acutus*
Phylum Acanthocephala	
Echinorhynchus sp.	*Pseudosynanceia melanostigma*
Micracanthorhynchina kuwaitensis	*Hemiramphus marginatus*
Neoechinorhynchus dimorphospinus	*Planiliza klunzingeri*, *P. subviridis*
Neoechinorhynchus iraqensis	*Acanthopagrus arabicus*, *Brachirus orientalis*, *Planiliza subviridis*
Neoechinorhynchus sp.	*Periophthalmus waltoni*
Neorhadinorhynchus basrahiensis	*Platax teira*
Serrasentis sagittifer	*Acanthopagrus arabicus*, *Platax teira*
Serrasentis sp. 1	*Brachirus orientalis*
Serrasentis sp. 2	*Johnius belangerii*
Serrasentis sp. 3	*Otolithes ruber*
Slendrorhynchus breviclaviproboscis	*Hemiramphus marginatus*
Phylum Mollusca- Class Bivalvia	
Glochidial larva*	*Planiliza subviridis*
Phylum Arthropoda- Subphylum Crustacea- classes Ichthyostraca, Hexanauplia and Malacostraca	
Acanthocolax sp.	*Planiliza subviridis*, *Sardinella albella*, *Tenualosa ilisha*
Alella sp.	*Acanthopagrus arabicus*
Anchistrotos tangi	*Tenualosa ilisha*
Anilocra monoma	*Johnius dussumieri*, *J. elongatus*, *Nematalosa arabica*, *Planiliza subviridis*
Anuretes anomalus	*Diagramma pictum*
Anuretes branchialis	*Platax teira*
Anuretes similis	*Plectorhinchus sordidus*
Argulus foliaceus	*Boleophthalmus dussumieri*, *Planiliza subviridis*
Bactrochondria formosana	*Cynoglossus arel*
Bomolochus megaceros	*Ephippus orbis*
Caligus cordyla	*Megalaspis cordyla*
Caligus cossackii	*Acanthopagrus bifasciatus*
*Caligus epinepheli***	*Nemipterus japonicus*
Caligus longicaudus	*Chirocentrus nudus*
Caligus orientalis	*Planiliza macrolepis*
Caligus sp.	*Netuma bilineata*
*Catoessa gruneri***	*Ilisha compressa*, *Photopectoralis bindus*
Cepolacanthus kimi	*Trypauchen vagina*
Clavella adunca	*Tenualosa ilisha*
Clavella sp.	*Ilisha compressa*
Clavellopsis appendiculata	*Chirocentrus nudus*
Clavellotis bilobata	*Nemipterus japonicus*
Clavellotis sp.	*Acanthopagrus arabicus*
Dermoergasilus varicoleus	*Planiliza subviridis*
Ergasilus boleophthalmi	*Bathygobius fuscus*, *Boleophthalmus dussumieri*
Ergasilus iraquensis	*Planiliza subviridis*
Ergasilus lizae	*Planiliza subviridis*
Ergasilus mosulensis	*Acanthopagrus arabicus*, *Planiliza subviridis*
Ergasilus ogawai	*Acanthopagrus arabicus*, *Planiliza subviridis*, *Tenualosa*

	ilisha
Ergasilus pararostralis	*Planiliza subviridis*
Ergasilus rostralis	*Acanthopagrus arabicus*, *Planiliza subviridis*, *Tenualosa ilisha*
Ergasilus sieboldi sieboldi	*Acanthopagrus arabicus*, *Boleophthalmus dussumieri*, *Planiliza subviridis*, *Tenualosa ilisha*
Ergasilus synanceiensis	*Pseudosynanceia melanostigma*
Ergasilus sp. 1	*Planiliza subviridis*
Ergasilus sp. 2	*Tenualosa ilisha*
Eudactylina rhinobati	*Glaucostegus granulatus*
Eudactylina turgipes	*Gymnura poecilura*
Gnathia sp.*	*Acanthopagrus arabicus*, *Brevitrygon imbricata*, *Carcharhinus dussumieri*, *Chiloscyllium arabicum*, *Diagramma pictum*, *Diplodus sargus*, *Ephippus orbis*, *Glaucostegus granulatus*, *Gymnura poecilura*, *Johnius dussumieri*, *Maculabatis randalli*, *Nematalosa nasus*, *Nemipterus japonicus*, *Netuma thalassina*, *Pastinachus sephen*, *Pateobatis bleekeri*, *Rhabdosargus haffara*, *Tenualosa ilisha*
Hatschekia conifer	*Pampus argenteus*
Hatschekia insolita	*Lutjanus johnii*, *Pampus argenteus*
Hatschekia shari	*Lethrinus nebulosus*
Hatschekia sp.	*Pristipomoides filamentosus*
Hermilius ariodi	*Netuma bilineata*
Hermilius longicaudus	*Netuma thalassina*
Hermilius longicornis	*Netuma thalassina*
Ichthyoxenus asymmetrica	*Chirocentrus dorab*, *Cynoglossus arel*
Joryma sawayah	*Chirocentrus nudus*, *Ilisha compressa*
Lernaea cyprinacea	*Boleophthalmus dussumieri*, *Planiliza subviridis*
Lernanthropinus temminckii	*Saurida tumbil*
Lernanthropus corniger	*Carangoides malabaricus*, *Megalaspis cordyla*
Lernanthropus cornutus	*Tylosurus crocodilus*
Lernanthropus ilishae	*Ilisha compressa*
Lernanthropus indicus	*Carangoides malabaricus*, *Megalaspis cordyla*
Lernanthropus nemipteri	*Nemipterus japonicus*
Lernanthropus polynemi	*Otolithes ruber*
Lernanthropus sarbae	*Acanthopagrus arabicus*, *A. bifasciatus*
Lernanthropus sillaginis	*Sillago arabica*, *S. sihama*
Lernanthropus sp. 1	*Chirocentrus nudus*
Lernanthropus sp. 2	*Scomberomorus guttatus*
Lernanthropus sp. 3	*Acanthopagrus arabicus*
Mappates plataxus	*Platax teira*
Mugilicola sp.	*Planiliza subviridis*
Nerocila arres	*Brevitrygon imbricata*, *Thryssa whiteheadi*
Nerocila heterozota	*Cynoglossus arel*, *Ilisha compressa*, *Sphyreana jello*
Nerocila kisra	*Johnius dussumieri*, *Otolithes ruber*, *Sardinella albella*
Nerocila phaiopleura	*Chirocentrus dorab*, *C. nudus*, *Ilisha compressa*, *Sardinella albella*, *Tenualosa ilisha*
Nothobomolochus denticulatus	*Sphyraena obtusata*
Nothobomolochus gazzae	*Siganus canaliculatus*
Nothobomolochus ilhoikimi (also reported as *Notobomolochus* sp.)	*Tenualosa ilisha*
Nothobomolochus lizae	*Planiliza klunzingeri*, *P. subviridis*

Nothobomolochus quadriceros	*Photopectoralis bindus*
Orbitacolax hapologenyos	*Nemipterus japonicus*
Paraergasilus inflatus	*Planiliza subviridis*
Protochondracanthus alatus	*Psettodes erumei*
Pseudocharopinus sp.	*Chiloscyllium arabicum*

* Larva, ** Adult and larva.
† Invalid species, †† Species dubium, ††† Species inquirenda.

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.

Acanthocepola abbreviata*: See *Trypauchen vagina

***Acanthopagrus arabicus* (also reported as *Acanthopagrus latus*)**
Ciliophora: *Trichodina domerguei*.
Myxozoa: *Myxobolus pfeifferi*.
Trematoda: *Ascocotyle coleostoma*, *Diplostomum spathaceum*, *Erilepturus hamati*, *Opistholebes* sp., *Paradiscogaster farooqii*.
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

Alepes 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
Nematoda: *Echinocephalus* sp. 2, *Hysterothylacium* sp. type BA, *Hysterothylacium* sp. type BB, *Hysterothylacium* sp. type BC, *Paraleptus chiloscyllii*.
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*)**
Nematoda: *Camallanus* sp., *Echinocephalus* sp. 2, *Hysterothylacium reliquens*, *Hysterothylacium* sp. type BA, *Hysterothylacium* sp. type BB, *Hysterothylacium* sp. type BC, *Hysterothylacium* sp. type BD, Proleptinae sp. type BA.
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 tetradactylum
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*, *Opisthomonorcheides 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*, *Treptodemus 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.
Crustacea: *Catoessa gruneri*, *Clavella* sp., *Joryma sawayah*, *Lernanthropus ilishae*, *Nerocila heterozota*, *N. phaiopleura*.

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: *Contracaecum* sp., *Echinocephalus* sp. 1, *Hysterothylacium* sp. 1.
Acanthocephala: *Serrasentis* sp. 2.

***Johnius dussumieri* [also reported as *Johnius* (*Johnieops*) *sina*]**
Trematoda: *Helicomertina karachiensis*, *Helicometrina* sp., *Lecithochirium* sp. 1, *Pleorchis arabicus*.
Monogenea: *Diplectanum* sp. 1.
Cestoda: *Parotobothrium balli*.
Nematoda: *Philometra johnii*.
Crustacea: *Anilocra monoma*, *Gnathia* sp., *Nerocila kisra*.

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: *Contracaecum* 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: *Neoechinorhynchu*s 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: *Haemogregarina* sp.
Ciliophora: *Trichodina domerguei*.
Myxozoa: *Myxobolus diversus*, *M. oviformis*, *M. pfeifferi*.
Trematoda: *Ascocotyle coleostoma*, *Clinostomum complanatum*, *Diplostomum spathaceum*, *Haplosplanchnus mugilis*, *Lecithobotrys mhaiseni*, *Lecithochirium* sp. 1, *Saccocoelium tensum*, *Saturinus* sp., *Transversotrema haasi*.
Monogenea: *Ancyrocephalus* sp., *Dactylogyrus vastator*, *Gyrodactylus* aff. *mugili*, *Gyrodactylus* sp. 1, *Haliotrema mugilis*, *Ligophorus bantingensis*, *L. fluviatilis*, *L. lebedevi*, *L. mugilinus*, *L. sagmarius*, *Metamicrocotyla mugilis*, *Microcotyle donavini*, *Paradiplozoon kasimii*.
Nematoda: *Contracaecum* sp.
Acanthocephala: *Neoechinorhynchus dimorphospinus*, *N. iraqensis*.
Mollusca: Glochidial larva.

Crustacea: *Acanthocolax* sp., *Anilocra monoma*, *Argulus foliaceus*, *Dermoergasilus varicoleus*, *Ergasilus iraquensis*, *E. lizae*, *E. mosulensis*, *E. ogawai*, *E. pararostralis*, *E. rostralis*, *E. sieboldi*, *Ergasilus* sp. 1, *Lernaea cyprinacea*, *Mugilicola* sp., *Nothobomolochus lizae*, *Paraergasilus inflatus*.

Platax orbicularis
Monogenea: *Sprostoniella multitestis*.

Platax teira
Monogenea: *Sprostoniella multitestis*, *S. teria*.
Acanthocephala: *Neorhadinorhynchus 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 arsius
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 commersonnianus
Trematoda: *Stephanostomum* sp. 2, *Tergestia pauca*.
Cestoda: *Callitetrarhynchus gracilis*, *Dasyrhynchus 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 sillaginis*.

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

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*.

Sphyrna 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: *Gyrodactylus* sp. 2, *Leptomazocraes indica*.
Nematoda: *Contracaecum* sp.
Crustacea: *Acanthocolax* sp., *Anchistrotos tangi*, *Clavella adunca*, *Ergasilus ogawai*, *E. rostralis*, *E. sieboldi*, *Ergasilus* sp. 2, *Gnathia* sp., *Nerocila phaiopleura*, *Nothobomolochus ilhoikimi* (also reported as *Nothobomolochus* sp.).

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

Thryssa mystax*: See *Thryssa whiteheadi

***Thryssa whiteheadi* (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 reliquens*.

***Trypauchen vagina* (misidentified as *Acanthocepola abbreviata*)**
Crustacea: *Cepolacanthus kimi*.

Tylosurus crocodilus
Cestoda: *Callitetrarhynchus cf. gracilis*, *Otobothrium 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 (*Contracaecum* sp.), one acanthocephalan (*Neoechinorhynchus iraqensis*), one mollusc (glochidium larva) and nine crustaceans (*Argulus foliaceus*, *Dermoergasilus varicoleus*, *Ergasilus 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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