

Check-list of bony fishes collected from the Mediterranean coast of Benghazi, Libya

Lista sistemática de peces óseos recolectados en la costa mediterránea de Bengazi, Libia

Laith A. J. Al - Hassan¹ and O. A. El - Sili²

¹School of Biological Sciences, The University of Auckland, Private Bag 92019, Auckland, New Zealand.

ljawad@auckland.ac.nz

²Zoology Dept., Garyounis University, Benghazi, Libya.

Abstract.- A preliminary check-list of the common bony fishes of the Bengazi coasts of the Mediterranean was prepared. It appeared that the marine fish fauna at this area is dominated by the family Sparidae (10.95%), followed by Serranidae (6.97%) and finally Carangidae (4.98%). Among the listed families, there are 39 families represented by a single species and 13 families represented by 2 species. The total number of species is 201 belonging to 71 families and 15 orders. The present work reported 42 fish species belonging to 24 families as new records for the Libyan coastal waters.

Key words: Osteichthyes, new records, fish fauna, Libya.

Resumen.- Se confeccionó una lista preliminar de los peces óseos más comunes de las costas mediterráneas de Bengazi. Al parecer, en la fauna de peces marinos de esta área la familia dominante es Sparidae (10.95%), seguida por Serranidae (6.97%) y finalmente Carangidae (4.98%). Entre las familias de la lista, hay 39 familias representadas por una única especie y 13 familias representadas por 2 especies. El número total de especies es de 201, pertenecientes a 71 familias y 15 órdenes. El presente trabajo reporta 42 especies de peces pertenecientes a 24 familias como nuevos registros para las aguas costeras de Libia.

Palabras claves: Osteichthyes, nuevos registros, fauna de peces, Libia.

Introduction

Vinciguerra (1881) was the first who reported on the ichthyofauna of Libya recording seventeen species only. Several studies were put forward during the second half of the century, being the number of species recorded rapidly increased (Ninni 1914, Vinciguerra 1922, Tortonese 1939). During the second half some other studies were made. They concentrate on a certain fish species like some flat fishes (Aldebert & Pichot 1973); certain species of the family Scorpaenidae (Ducruc 1973); some Indo-Pacific fish species found in the coasts of Tabruk (Stirn 1973). Some other works were in the form of check-list like Gorgy *et al.* (1972), where they presented a list of 62 species, Sogreh (1977) gave a total of 131 species and finally Contranisme (1977) reported 39 cartilaginous and 185 bony fish species all being obtained from the Tripollitanian coast.

The aim of the work at hand is to provide a provisional list of fish species inhabiting the

Mediterranean coast of Bengazi city, Libya in order to facilitate further studies on this fauna by interested workers. This list aims to build up faunistic information about the species available in Libyan waters off Bengazi city. It is impossible to assume that the whole body of the Mediterranean has the same species composition, regional specification is evident in the Mediterranean (Whitehead *et al.* 1984-1986).

Materials and Methods

Fishes were captured by several types of nets (fixed gillnets, drifting nets, shrimp trawl net) from the coasts of Bengazi city, Libya. They were arranged according to the system mentioned in Whitehead *et al.* (1984-1986). Species were arranged alphabetically. The list includes only the Osteichthyes, the remaining shark and ray species are left for further study. A total of 201 species belonging to 71 families and 15 orders were recorded. A check-list of the species is presented.

Results

Order: Clupeiformes

Family: Clupeidae

Sardina pilchardus (Walbaum, 1792)

Sardinella aurita Valenciennes, 1844

S. maderensis (Lowe, 1838)

Family: Engraulidae

Engraulis encrasicolus (Linnaeus, 1758)

Family: Sternopychidae

Maurolicus amethstynopunctatus, Cocco, 1844

Family: Melanostomiidae

Bathophilus nigerrimus Giglioli, 1884

Family: Argentinidae

Argentina sphyraena (Linnaeus, 1758)

Order: Scopeliformes

Family: Aulopidae

Aulopus filamentosus (Cloquet, 1816)

Family: Synodontidae

Sauria undosquamis (Richardson, 1848)

Synodus saurus (Linnaeus, 1758)

Family: Chlorophthalmidae

Chlorophthalmus agassizi Bonaparte, 1840

Order: Anguilliformes

Family: Anguillidae

Anguilla anguilla (Linnaeus, 1758)

Family: Muraenidae

Gymnothorax polygonius (Poey, 1870)

Muraena helena Linnaeus, 1758

Family: Congridae

Ariosoma baleariacum (De Caroch, 1809)

Conger conger ([Artedi, 1738]Linnaeus, 1758)

Family: Ophichthiyidae

Echelus myrus (Linnaeus, 1758)

Order: Beloniformes

Family: Belonidae

Belone belone belone (Linnaeus, 1758)

Family: Scomberesocidae

Scomberesox saurus (Walbaum, 1792)

Family: Exocoetidae

Cheilopogon heterurus (Valenciennes, 1846)

Paraexocoetus mento (Valenciennes, 1846)

Family: Hemirhamphidae

Hyporhamphus picarti (Valenciennes, 1846)

Order: Cyprinodontiformes

Family: Cyprinodontidae

Aphanius fasciatus Nardo, 1827

Order: Syngnathiformes

Family: Macroramphosidae

Macroramphosus scolopax (Linnaeus, 1758)

Family: Syngnathidae

Hippocampus hippocampus (Linnaeus, 1758)*Hippocampus ramulosus* Leach, 1814*Syngnathus abaster* Risso, 1826*Syngnathus acus* Linnaeus, 1758*Syngnathus typhle* Linnaeus, 1758

Order: Gadiformes

Family: Macrouridae

Coelorhynchus coelorhynchus (Risso, 1810)*Hymenocephalus italicus* Giglioli, 1884*Nezumia aequalis* (Gunther, 1878)

Family: Merlucciidae

Merluccius merluccius (Linnaeus, 1758)

Family: Gadidae

Antonogadus megalokynodon (Kolombatovic, 1894)*Gadidulus argentus argentus* Guichenot, 1850*Merlangius merlangus* (Linnaeus, 1758)*Molva dipterygia macrophthalmæ* (Rafinesque, 1810)*Phycis blennoides* (Brünnich, 1768)*Phycis phycis* (Linnaeus, 1758)

Family: Moridae

Gadella maraldi (Risso, 1810)

Family: Holocentridae

Sargocentron rubrum (Forsskal, 1775)

Order: Zeiformes

Family: Zeidae

Zeus faber (Linnaeus, 1758)

Family: Caproidae

Capros aper (Linnaeus, 1758)

Order: Perciformes

Family: Serranidae

Anthias anthias (Linnaeus, 1758)*Callanthias ruber* (Rafinesque, 1810)*Epinephelus aeneus* (Geoffroy Saint Hilaire, 1817)*Epinephelus alexandrinus* (Valenciennes, 1828)*Epinephelus caninus* (Valenciennes, 1828)*Epinephelus costae* (Steindachner, 1878)*Epinephelus haifensis* Ben-Tuvia, 1953*Epinephelus marginatus* (Lowe, 1834)*Polyprion americanus* (Schneider, 1810)*Serranus armatus* Osorio, 1893*Serranus cabrilla* (Linnaeus, 1758)*Serranus hepatus* (Linnaeus, 1758)*Serranus scriba* (Linnaeus, 1758)

Family: Moronidae

Dicentrarchus labrax (Linnaeus, 1758)*Dicentrarchus punctatus* (Bloch, 1792)

- Family: Apogonidae
Apogon imberbis (Linnaeus, 1758)
- Family: Cepolidae
Cepola rubescens Linnaeus, 1758
- Family: Pomatomidae
Pomatomus saltator (Linnaeus, 1758)
- Family: Carangidae
Caranx cryos (Mitchill, 1815)
Caranx hippos (Linnaeus, 1758)
Caranx rhonchus (Geoffroy Saint Hilaire, 1817)
Lichia amia (Linnaeus, 1758)
Pseudocaranx dentex (Bloch and Schneider, 1810)
Seriola dumerilii (Risso, 1810)
Trachinotus ovatus (Linnaeus, 1758)
Trachurus mediterraneus (Steindachner, 1868)
Trachurus picturatus (Bowdich, 1825)
Trachurus trachurus Linnaeus, 1758
- Family: Coryphaenidae
Coryphaena hippurus Linnaeus, 1758
- Family: Sciaenidae
Sciaena umbra Linnaeus, 1758
Umbrina canariensis Valenciennes, 1843
Umbrina cirrosa (Linnaeus, 1758)
- Family: Mullidae
Mullus surmuletus (Linnaeus, 1758)
Mullus barbatus (Linnaeus, 1758)
- Family: Sparidae
Boops boops (Linnaeus, 1758)
Crenidens crenidens (Forsskal, 1775)
Dentex(Dentex) dentex (Linnaeus, 1758)
Dentex(Cheimerius) gibbosus (Rafinesque, 1758)
Dentex (Polysteganus) macrocanthus Valenciennes, 1830
Dentex (Polysteganus) macrophtalmus (Bloch, 1791)
Diplodus annularis (Linnaeus, 1758)
Diplodus cervinus cervinus (Lowe, 1841)
Diplodus punctazzo (Cetti, 1777)
Diplodus sargus (Linnaeus, 1758)
Diplodus vulgaris (E. Geoffry Saint-Hilaire, 1817)
Lithognathus mormyrus (Linnaeus, 1758)
Oblada melanura (Linnaeus, 1758)
Pagellus acarne (Risso, 1826)
Pagellus bellottii bellottii Steindachner, 1882
Pagellus bogaraveo (Brünich, 1768)
Pagrus auriga (Valenciennes, 1830)
Pagrus coeruleostictus (Valenciennes, 1830)
Pagrus pagrus (Linnaeus, 1758)
Sarpa salpa (Linnaeus, 1758)
Sparus auratus (Linnaeus, 1758)
Spondyliosoma cantharus (Linnaeus, 1758)
- Family: Centracanthidae
Centracanthus cirrus Rafinesque, 1810
Spicara flexuosa Rafinesque, 1810

Spicara maena (Linnaeus, 1758)
Spicara smaris (Linnaeus, 1758)

Family: Cichlidae

Tilapia zilli (Gervais, 1848)

Family: Pomacentridae

Chromis chromis (Linnaeus, 1758)

Family: Labridae

Coris julis Linnaeus, 1758

Labrus bimaculatus Linnaeus, 1758

Labrus merula Linnaeus, 1758

Labrus viridis Linnaeus, 1758

Syphodus (Crenilabrus) cinereus (Bonnaterre, 1788)

Syphodus (Crenilabrus) mediterraneus (Linnaeus, 1758)

Syphodus (Crenilabrus) ocellatus Forsskal, 1775

Syphodus (Syphodus) roissali (Risso, 1810)

Syphodus (Syphodus) tinca (Linnaeus, 1758)

Thalassoma pavo (Linnaeus, 1758)

Xyrichtys novacula (Linnaeus, 1758)

Family: Scaridae

Sparusoma (Euscarus) cretense (Linnaeus, 1758)

Family: Trachinidae

Echiichthys vipera (Cuvier, 1829)

Trachinus araneus Cuvier, 1829

Trachinus draco Linnaeus, 1758

Trachinus radiatus Cuvier, 1829

Family: Uranoscopidae

Uranoscopus scaber Linnaeus, 1758

Family: Siganidae

Siganus luridus (Rüppel, 1828)

Siganus rivulatus (Forsskal, 1775)

Family: Trichiuridae

Lepidopus caudatus (Euphrasen, 1788)

Family: Scombridae

Scomber japonicus Houttuyn, 1782

Scomber scombrus (Linnaeus, 1758)

Axius rochei (Risso, 1810)

Euthynnus alletteratus (Rafinesque, 1810)

Katsuwonus pelamis (Linnaeus, 1758)

Orcynopsis unicolor (Geoffroy Saint-Hilaire, 1917)

Sarda sarda (Bloch, 1793)

Thunnus thynnus (Linnaeus, 1758)

Family: Gobiidae

Gobius buccichi Steindachner, 1870

Gobius cobitis Pallas, 1811

Gobius cruentatus Gmelin, 1789

Gobius niger Linnaeus, 1758

Pomatoschistus marmoratus (Risso, 1810)

Pomatoschistus tortonesei Miller, 1968

Family: Callionymidae

Callionymus maculatus Rafinesque - Schumaltz, 1810

Family: Blenniidae

- Blennius ocellaris* Linnaeus, 1758
Lipophrys basiliscus (Valenciennes, 1836)
Lipophrys pavo (Riso, 1810)
Lipophrys trigloides (Valenciennes, 1836)
Parablennius incognitus (Bath, 1968)

Family: Clinidae

- Clinitrachus argentatus* (Risso, 1810)

Family: Tripterygiidae

- Tripterygion tripteronotus* (Risso, 1810)

Family: Ophidiidae

- Ophidion barbatum* Linnaeus, 1758
Ophidion rochei Muller, 1845

Family: Carapidae

- Carapus acus* (Brünnich, 1768)

Family: Sphyraenidae

- Sphyraena chrysotaenia* Kluzinger, 1884
Sphyraena sphyraena Linnaeus, 1758
Sphyraena viridensis Cuvier, 1829

Family: Mugilidae

- Chelon labrosus* (Risso, 1826)
Liza aurata (Risso, 1810)
Liza ramada (Risso, 1826)
Liza saliens (Risso, 1810)

Family: Atherinopsidae

- Atherina (Hepsetia) boyeri* Risso, 1810
Atherina (Atherina) hopsetus Linnaeus, 1758
Atherinomorus lacunosus (Forster, 1801)

Order: Scorpaeniformes

Family: Scorpaenidae

- Helicolenus dactylopterus* *dactylopterus* Delaroche, 1809
Scorpaena elongata Cadenat, 1943
Scorpaena loppei Cadenat, 1943
Scorpaena notata Rafinesque, 1810
Scorpaena porcus Linnaeus, 1758
Scorpaena scrofa (Linnaeus, 1758)

Family: Triglidae

- Aspitrigla cuculus* (Linnaeus, 1758)
Aspitrigla obscura (Linnaeus, 1764)
Eutrigla gurnardus (Linnaeus, 1758)
Lepidotrigla cavillone (Lacepede, 1801)
Trigloporus lastoviza (Brünnich, 1768)
Trigla lucerna Linnaeus, 1758

Family: Peristediidae

- Peristedion cataphractum* (Linnaeus, 1758)

Family: Dactylopteridae

- Dactylopterus volitans* (Linnaeus, 1758)

Order: Pleuronectiformes

Family: Citharidae

- Citharus linguatula* (Linnaeus, 1758)

Family: Scophthalmidae

- Lepidorhombus boscii* (Risso, 1810)
Lepidorhombus whiffagonis (Walbaum, 1792)
Scophthalmus rhombus (Linnaeus, 1758)

Family: Bothidae

- Arnoglossus laterna* (Walbaum, 1792)
Arnoglossus rueppelli (Cocco, 1844)
Arnoglossus thori Kyle, 1913
Bothus podas (Delaroche, 1809)

Family: Soleidae

- Dicologlossa cuneata* ([De La Pylaie] Moreau, 1881)
Monochirius hispidus Rafinesque, 1814
Microchirius ocellatus (Linnaeus, 1758)
Solea aegyptiaca Chabanaud, 1927
Solea kleini Bonaparte, 1833
Solea lascaris (Risso, 1810)
Solea vulgaris Quenese, 1806
Synapta lusitanica (Capello, 1868)

Family: Cynoglossidae

- Syphurus ligulatus* (Cocco, 1844)
Syphurus nigrescens Rafinesque, 1810

Order: Echeneiformes

Family: Echeneidae

- Echeneis naucrates* Linnaeus, 1758
Remora remora (Linnaeus, 1758)

Order: Tetraodontiformes

Family: Balistidae

- Balistes carolinensis* Gmelin, 1789

Family: Monacanthidae

- Stephanolepis diaspros* Fraser-Brunner, 1940

Order: Gobiesociformes

Family: Gobiesocidae

- Diplecogaster bimaculata bimaculata* (Bonnaterre, 1788)

Order: Lophiiformes

Family: Lophiidae

- Lophius budegassa* Spinola, 1807
Lophius piscatorius Linnaeus, 1758

Discussion

On continuous sampling of fishes from the Libyan coasts in particular will add more species to the above list. Obviously the distribution of the recorded families showed some variation along the Libyan coasts, where some fish species are endemic to a certain areas and not found on another. There are seventy-one families of which 39 are represented by a single species, 13 by two species, and the remaining fish families recorded were represented by more than two species. The richest family regarding the number of species was Sparidae (10.95%) represented by 22 species followed by Serranidae (6.97%) represented by 14 species, while the

third place was occupied by Labridae (5.97%) which is represented by 12 species. Latter, come the families Carangidae (4.98%) represented by 10 species, Gadidae, Gobiidae, Scorpaenidae, and Triglidae (2.99%) represented by 6 species each one. The flat fishes group makes its appearance with 18 species belonging to 4 families. They conform 8.96% of the total number of fish species recorded from the area.

The high percentage of fish species revealed by the families Sparidae and Serranidae may be due to the presence of an appropriate sea bottom around the Libyan coasts that the members of these two families prefer. Among the family Sparidae and Serranidae the

genera *Diplodus* and *Epinephelus* appeared to be largest in term of species number among the other genera dealt with in the present check-list.

It is clear that the order Perciformes dominate the ichthyofauna of Libya. This is not an unexpected result, since this order is considered the largest within the teleost fishes. The same results were observed somewhere else. Hussain *et al.* (1988) reported on the domination of this order in the Iraqi territoriality of the Arabian Gulf while Hebba *et al.* (1998) showed that this order comprise over 50% of the fish species of Yemni waters.

An east-west difference in the fish fauna composition within the Mediterranean in general and the Libyan coasts in particular is evident. Several authors have given a different fish species composition for a different section of the Mediterranean (Hureau & Monod 1973, Fischer 1973, BenTuvia 1975). On the other hand, along the Libyan coasts such differences were noticed by Contranisme (1977), Sogreah (1977) and Zupanovic & El-Buni (1982), who reported on the fish species for the western and eastern coasts of Libya. Thus, within the Benghazi water of the Mediterranean a different species composition is revealed. Such differences are also reported from the Yemni waters of the Red Sea (Hebba *et al.* 1998), and from the northern part of the Red Sea (Ormond *et al.* 1984 a, b, c; 1986, a, b.).

The present work represents a significant increase in number of species over the previous works being conducted in the Libyan waters during the last few decades (Contranisme 1977, Zupanovic & El-Buni 1982). This increase in fish species could be explained on the basis that the present work used different fishing gears to collect the fish, in addition to the fish specimens obtained from the fishermen that fish within Benghazi city coastal area. On contrary, the previous works concentrated on the trawling gear, thus obtaining a limited number of fish species. The work of Whitehead *et al.* (1984-1986) is the only one that recently published on the Mediterranean fishes which includes Libyan coasts. They recorded about 238 species. The discrepancies between their results and the results at hand may be due to the fact that some of the fish species reported by Whitehead *et al.* (1984-1986) to be found in the Libyan waters, could be just an expectation from the authors since they do not have a real collection from the area. On contrary, several fish species were not reported by Whitehead *et al.* (1984-

1986), but were found to be common in Libyan waters (Table 1).

In the present work 42 fish species belonging to 23 families were recorded for the first time. Six of these species were considered as a new records for the whole Libyan waters (Table 1). The high number of new recorded fish species obtained in the present work can be explained on the basis of the following: First, there is a severe lack of faunistic study on Libyan fishes. Second, if there are informations available about the ichthyofauna they will not reaching the fish specialists.

Fishes listed in Table 1 showed a wide range of distribution within the Mediterranean sea (Whitehead *et al.* 1984-1986). They reported to inhabit the north-western coasts, south and south-western coasts, the Levantine and Turkey coasts, the south eastern coasts of the Mediterranean, and the coasts of the Iberian peninsula. In certain cases, some gobiid fish species were recorded from a number of localities along the Italian coast. Nothing was mentioned about their presence along the Libyan coasts, hence they are reported here as a new records for the Libyan waters.

The fish species and families mentioned by Zupanovic & El-Buni (1982) were all mentioned in the present work (Table 2). In Table 2, nine species belonging to nine families were listed. Whitehead *et al.* (1984-1986) and no other works have reported these fish species in the Mediterranean Sea or CLOFNAME area, except for *Sphyraena chrysotaenia* which is recorded from the eastern Mediterranean area.

Comparing the list of fish species presented in the work at hand with those of the remaining areas of the Mediterranean sea such as Hureau & Monod (1973), Fischer (1973), Ben-Tuvia (1975), and Whitehead *et al.* (1984-1986) it is possible to say that the ichthyofauna found in the Libyan waters is, to some extent, similar to that of the Mediterranean sea. Such similarities may be due to the environmental factors such as water currents, salinity, and temperature that govern the distribution of the fish species within the Mediterranean sea (Zore-Armada 1969, Zore-Armada & Pucher-Petkovic 1976). The present list is far from being a complete one, further field studies are needed where more records of fishes will be available. On the other hand, this checklist is considered as the first comprehensive study being conducted on the fish fauna of Libya.

Table 1

List of fish species recorded for the first time in Libyan waters (A) and Benghazi waters (B).
 Lista de especies de peces registradas por primera vez en aguas de Libia (A) y Bengazi (B).

| Fish species | Remarks |
|---|---------------------------------|
| Family: Clupeidae <i>Sardinops pilchardus</i> (Walbaum, 1792) | A+B |
| Family: Synodontidae <i>Saurida undosquamis</i> (Richardson, 1848) | A+B |
| Family: Gadidae <i>Merlangus merlangus</i> (Linnaeus, 1758) <i>Phycis blennioides</i> (Brünnich, 1768) <i>Phycis phycis</i> (Linnaeus, 1758) <i>Gadilicus argenteus argenteus</i> Guichenot, 1850 <i>Trisopterus minutus capelanus</i> (Lacepede, 1800) <i>Molva dipterygia macrophthalma</i> (Rafinesque, 1810) <i>Antonogadus megalokynodon</i> (Kolombatovic, 1894) | B B B B B B B |
| Family: Hocentridae <i>Sargocentron rubrum</i> (Forsskal, 1775) | B |
| Family: Moridae <i>Gadella maraldi</i> (Risso, 1810) | B |
| Family: Gobiesocidae <i>Diplecogaster bimaculata bimaculata</i> Bonnaterre, 1788 | B |
| Family: Scorpaenidae <i>Scorpaena elongata</i> Cadenat, 1943 <i>Scorpaena loppei</i> Cadenat, 1943 | B B |
| Family: Triglidae <i>Aspitrigla cuculus</i> (Linnaeus, 1758) | B |
| Family: Serranidae <i>Epinephelus costae</i> (Steindachner, 1878) <i>Epinephelus marginatus</i> (Lowe, 1834) <i>Epinephelus haifensis</i> Ben-Tuvia, 1953 | A + B A + B A + B |
| Family: Sparidae <i>Pagellus bogaraveo</i> (Brünnich, 1768) | B |
| Family: Sciaenidae <i>Umbrina canariensis</i> Valenciennes (1843) | A + B |
| Family: Labridae <i>Labrus bimaculatus tinca</i> Linnaeus, 1758 | B |
| Family: Blenniidae <i>Blennius ocellaris</i> Linnaeus, 1758 <i>Coryphoblennius galerita</i> (Linnaeus, 1758) | B B |
| Family: Clinidae <i>Clinitrichius argentatus</i> (Risso, 1810) | B |
| Family: Ophidiidae <i>Ophidion barbatum</i> Linnaeus, 1758 <i>Ophidion rochei</i> Muller, 1845 | B B |
| Family: Sphyraenidae <i>Sphyraena viridensis</i> Cuvier, 1829 | A + B |
| Family: Trichiuridae <i>Lepidotopus caudatus</i> (Euphrasen, 1788) | B |
| Family: Scombridae <i>Katsuwonus pelamis</i> (Linnaeus, 1758) | B |
| Family: Gobiidae <i>Pomatoschistus tortonesei</i> Miller, 1968 <i>Gobius cruentatus</i> Gmelin, 1784 | B B |

(continued)

Family: Bothidae

- Arnoglossus rueppelli* (Cocco, 1844) B
Arnoglossus thori (Kylie, 1913) B

Family: Scophthalmidae

- Lepidorhynchus wifflagonis* (Walbaum, 1792) B

Family: Soleidae

- Dicologoglossa cuneata* (de la Pylaire Moreau, 1881) B
Synapta lusitanica (Capello, 1868) A + B
Solea lascaris (Risso, 1810) B
Microchirus hispidus (Rafinesque, 1814) B

Family: Cynoglossidae

- Syphurus nigrescens* (Rafinesque, 1814) B
Syphurus ligulaatus (Cocco, 1844) B

Family: Echeneidae

- Echeneis naucrates* (Linnaeus, 1758) B
Remora remora (Linnaeus, 1758) B

Table 2
List of fish species not endemic to the Mediterranean Sea.
Lista de especies de peces no endémicas del Mar Mediterráneo.

| Fish species | Remarks |
|--|--|
| Family: Trachichthyidae | |
| <i>Hoplostethus mediterraneus</i> Cuvier, 1829 | |
| Family: Carangidae | |
| <i>Decapterus punctatus</i> (Cuvier, 1829) | |
| Family: Pomadasytidae | |
| <i>Pomadasys olivaceum</i> (Cuvier, 1829) | |
| Family: Labridae | |
| <i>Labrus bergylta</i> Ascanius, 1767 | |
| Family: Atherinopsidae | |
| <i>Pranesus pinguis</i> Lacepede, 1803 | |
| Family: Blenniidae | |
| <i>Blennius basiliscus</i> Valenciennes, 1836 | |
| Family: Sphyraenidae | |
| <i>Sphyraena chrysotaenia</i> Kluzinger, 1884 | Recorded in the eastern Mediterranean only |
| Family: Callionymidae | |
| <i>Callionymus plaetton</i> Gunther, 1881 | |
| Family: Citharidae | |
| <i>Citharus macrolepidotus</i> (Bloch, 1787) | |

Literature Cited

- Aldebert, Y et P Piehot. 1973. Observations sur les Heterosomes de Méditerranée orientale/ secteur Tunisio-Libyen/ C.I.E.S.M.. Journées Ichthiol. 57-60, Rome.
- Ben Tuvia A. 1975. Mugilid fishes of the Red Sea with a key to Mediterranean and Red Sea species. Bamidgeh 27(1):14-20.
- Contrasmíne C. 1977. Final report concerning the results of the fisheries oceanographic survey, carried out by the Romanian researcher teams on board "Delta Dunarii" and "Gilort" in the eastern territorial waters of the Libyan Arab Republic between Ras Azzaz and Ras Karkura, II:173-563.
- Ducleuc J. 1973. Les Scorpaénides de L'Est Tunisien et de Libye. Journées ichthiol., 73-74, Rome, C.I.E.S.M.
- Eschmeyer WN. 1998. Catalog of fishes. Species of fishes (M-Z). Volume 2. California Academy of Science, pp. 959-1819, San Francisco.
- Fischer W. 1973. FAO species identification sheets for fishery purposes. Mediterranean and Black Sea. Fishing area 37, Vol.1, FAO, Rome, 769 p.
- Gorgy SA, A Mugahid & R Ali. 1972. Survey of the Libyan territorial waters and the adjacent international waters in the central Mediterranean. Communication présentée au 23e Congrès-Assemblée Plénière C.I.E.S.M., Athènes 3-11(4), 72 J.

- Hebba, HM, LAJ Al-Hassan & KH Fareed.** 1998. Some common commercial fishes collected from the Red Sea coast of Yemen. Boletino Real Sociedad Española de Historia Natural, Section Biology 94(1-2):63-66.
- Hureau J C & T Monod (Ed.)** 1973. Check-list of the fishes of the north-eastern Atlantic and of the Mediterranean (CLOFNAM). Vol.1-2, UNESCO, 180 p.
- Hussain NA, AK Nama & LAJ Al-Hassan.** 1988. Annotated check-list of the fish fauna of Khor Al-Zubair, north west of the Arabian Gulf, Iraq. Acta Ichthyologica et Piscatoria 18:17-23.
- Ninni E.** 1914. Min. Colonie Uff. Marina Roma (in Tortonese, 1939).
- Ormond RFG, AR Shepard, A RG Price & J R Pitts.** 1984a. Report on the distribution of habitats and species in the Saudi Arabian Red Sea. I. IUCN/MEPA, Kingdom of Saudi Arabia, 123 p.
- Ormond RFG, AR Shepard, ARG Price & JR Pitts.** 1984b. Ibid.2. IUCN/MEPA, Kingdom of Saudi Arabia, 151 p.
- Ormond RFG, AR Shepard, ARG Price & JR Pitts.** 1984c. Management of Red Sea coast resources: Recommendations for protected areas. IUCN/MEPA, Kingdom of Saudi Arabia, 113 p.
- Ormond RFG, AR Shepard, ARG Price & JR Pitts.** 1986a. Saudi Arabian Marine Conservation Programme. Data from detailed study sites. IUCN/MEPA Report, No. 10. Kingdom of Saudi Arabia, 124 p.
- Ormond RFG, AR Shepard, ARG Price & JR Pitts.** 1986b. Distribution of habitats and species along the southern Red Sea coast of Saudi Arabia. IUCN/Mepa Report No. 11. Kingdom of Saudi Arabia, 61 p.
- Parin NV & SG Kobilianskyi.** 1996. Diagnoses and distribution of fifteen species recognized in genus *Maurolicus* *cocco* (Sternopychidae, Stomiiformes) with a key to their identification. Cybium 20: 185-195.
- Sogreah E.** 1977. Trawl fishing ground survey off the Tripolitanian coast. Final Report. Part V:1-44, and final report: Introduction and General Conclusions: 1-30.
- Stiassny M.** 1973. Some notes on Western trends of Lessepsian migrations. Journees Ichthiol., 187-190. Rome, C.I.E.S.M.
- Tortonese E.** 1939. Appunti di ittiologica Libica:Pescidi Tripoli. Annali Museo Libico Storia Naturale 1: 359-375.
- Vinciguerra D.** 1881. Risoltatti ittiologici delle crociere del "Violante". Annali Museo Civico Storia Naturale, Genova 18: 465-590.
- Vinciguerra D.** 1922. Ittiologici delle Libyia. Bollettino Museo Zoologia Anatomia Comparata Torino 36 (745).
- Whitehead PJP, ML Bauchot, CJ Hureau, J Nielsen & E Tortonese (Ed.)** 1984-1986. Fishes of the north-east Atlantic and the Mediterranean, Vol. 1-3. UNESCO, 1370 p.
- Zore-Armada MA.** 1969. Water exchange between the Adriatic and eastern Mediterranean. Deep Sea Research 16: 171-178.
- Zore-Armada MA & T Pucher-Petkovic.** 1976. Some dynamic and biological characters of the Adriatic and other basins of the eastern Mediterranean Sea. Acta Adriatica 18: 17-27.
- Zupanovic S & AA El-Bunni.** 1982. A contribution to demersal fish studies off the Libyan coast. Bulletin of the Marine Research Centre, Tripoli, Libya 3: 78-122.

Recibido en enero de 1999 y aceptado en julio de 1999