

## The Checklist of Marine Fish Species Deposited in the, Systematic Museum, Faculty of Fisheries, Mersin University between 2017-2018

Nuray Çiftçi<sup>1\*</sup>, Deniz Ayas<sup>1</sup>, Mısra Bakan<sup>1</sup>, Mert Ateş<sup>1</sup>

<sup>1</sup>Faculty of Fisheries, Mersin University, Mersin, Turkey

\*e-mail: [nsciftci@gmail.com](mailto:nsciftci@gmail.com)

### ABSTRACT

Eleven trawling operations were carried out in Mersin Bay (Northeastern Mediterranean Sea) between September 2017 and November 2018 as part of establishment of the museum of the Systematic and 102 species belonging to 66 families of 20 orders were identified. They were listed on the museum list (MEUFC-17-11-001-MEUFC-18-11-102). These species were preserved in 4% formalin and was deposited in the Museum of the Systematic, Faculty of Fisheries, Mersin University. The majority of species (~%54) belong to the order of the Perciformes. The other orders: Tetradontiformes (~%7) > Scorpaeniformes (~%5) > Mugiliformes = Pleuronectiformes = Carcharhiniformes = Myliobatiformes = Syngnathiformes = Anguilliformes = Squaliformes (~%3) > Clupeiformes = Rajiformes = Beloniformes (~%2) > Torpediniformes = Hexanchiformes = Rhinopristiformes = Squatiniformes = Zeiformes = Beryciformes = Aulopiformes (~%1). While 61% of the species are Atlanto-Mediterranean, 28 % of the species are Indo-Pacific. Few species were cosmopolitan (9%) and tropical originated species (2%).

**KEYWORDS:** Decapod Crustaceans, International Waters, Mersin Bay, North Levant Basin, Turkey

**How to cite this article:** Ciftci, N., Ayas, D., Bakan, M., Ates, M. (2019). The Checklist of Marine Fish Species Deposited in the, Systematic Museum, Faculty of Fisheries, Mersin University between 2017-2018 *MedFAR.*, 2(3) :65-71.

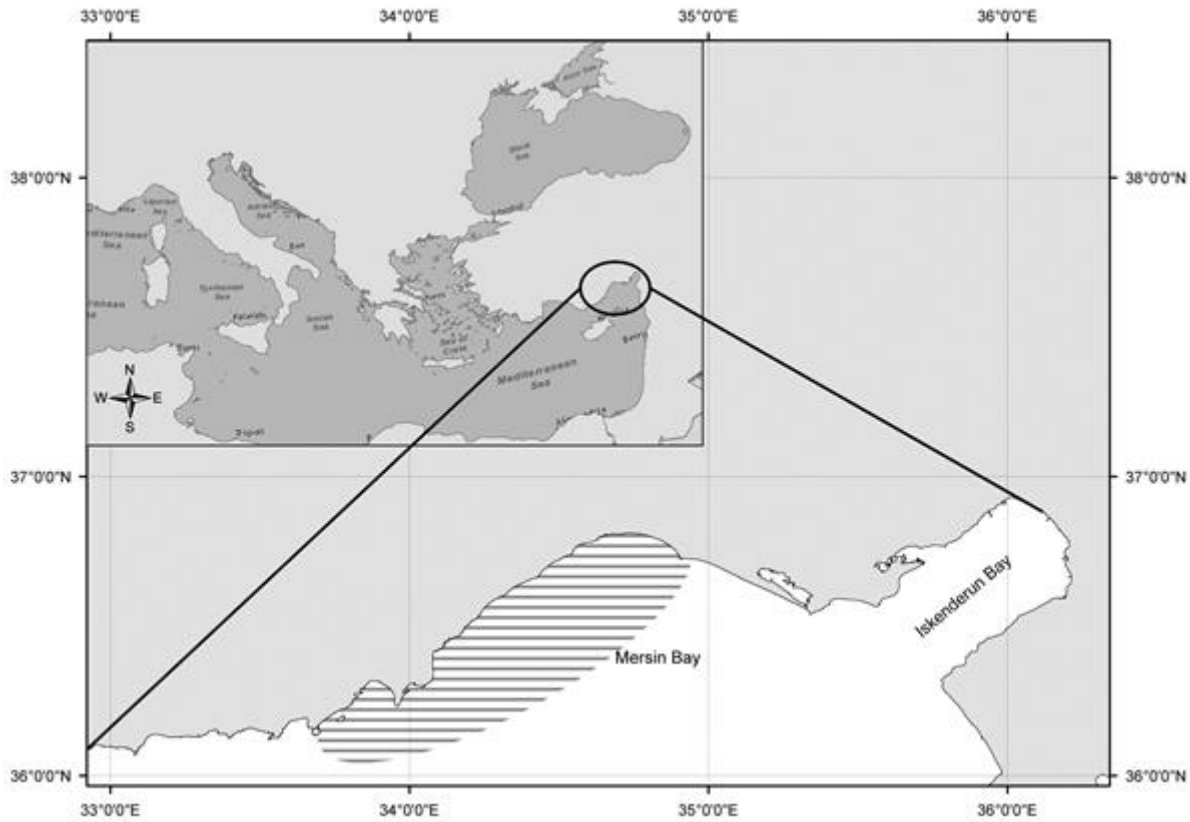
## 1.Introduction

Today, biodiversity and population density of Mediterranean marine ecosystem is open to change due to pollution, global warming effect, lessepsian pressure and fisheries pressure (Coll et al., 2010; Bilecenoğlu, 2010). The Northeastern Mediterranean Sea has become the migration area of the lessepsian fish migrating from the Indian Ocean and the Red Sea since 1869 with the opening of the Suez Canal (Bilecenoğlu, 2010). Some of the lessepsian species are predators, and they feed on the species that are of economic importance and constitute a significant part of the human protein source, thus damaging fisheries. On the other hand, Northeastern Mediterranean Sea is also rich in nutrients due to the presence of an important freshwater entrance. It is threatened by the transport of pollutants. All these reasons lead to a change in the biodiversity of the Northeastern Mediterranean. Therefore, Mediterranean

biodiversity needs to be examined continuously, regularly in order to monitor the status of economic species, and to contribute to the literature. The aim of this study is to share the fish list of Mersin University, Fisheries Faculty, Systematic Museum in which the biodiversity of Mersin Bay is followed.

## 2.Material and Methods

In the research, samples from trawl operations performed in international waters and coastal waters were obtained from Mersin Bay in September 2017-November 2018. In addition, some examples have been obtained from the trammel net and longlines. The samples were transported to the Mersin University Systematic Museum within the iceboxes. Species were stored in 4% formaldehyde solution after the catalog number was given (catalog number: MEUFC-17-11-001-MEUFC-18-11-102). The sampling area is shown in map (Figure 1).



**Figure 1.** The map of sampling area

### 3.Results

During the research period (September 2015 - 2018 November), 102 fish species belonging to 66 families were caught and deposited in the museum. 54% of these species belong to the Perciformes order. The other orders: Tetradontiformes (~%7) > Scorpaeniformes (~%5) > Mugiliformes =

Pleuronectiformes = Carcharhiniformes = Myliobatiformes = Syngnathiformes = Anguilliformes = Squaliformes (~%3) > Clupeiformes = Rajiformes = Beloniformes (~%2) > Torpediniformes = Hexanchiformes = Rhinopristiformes = Squatiniformes = Zeiformes = Beryciformes = Aulopiformes (~%1) (Figure 2).

A list of fish species is given in Table 1.

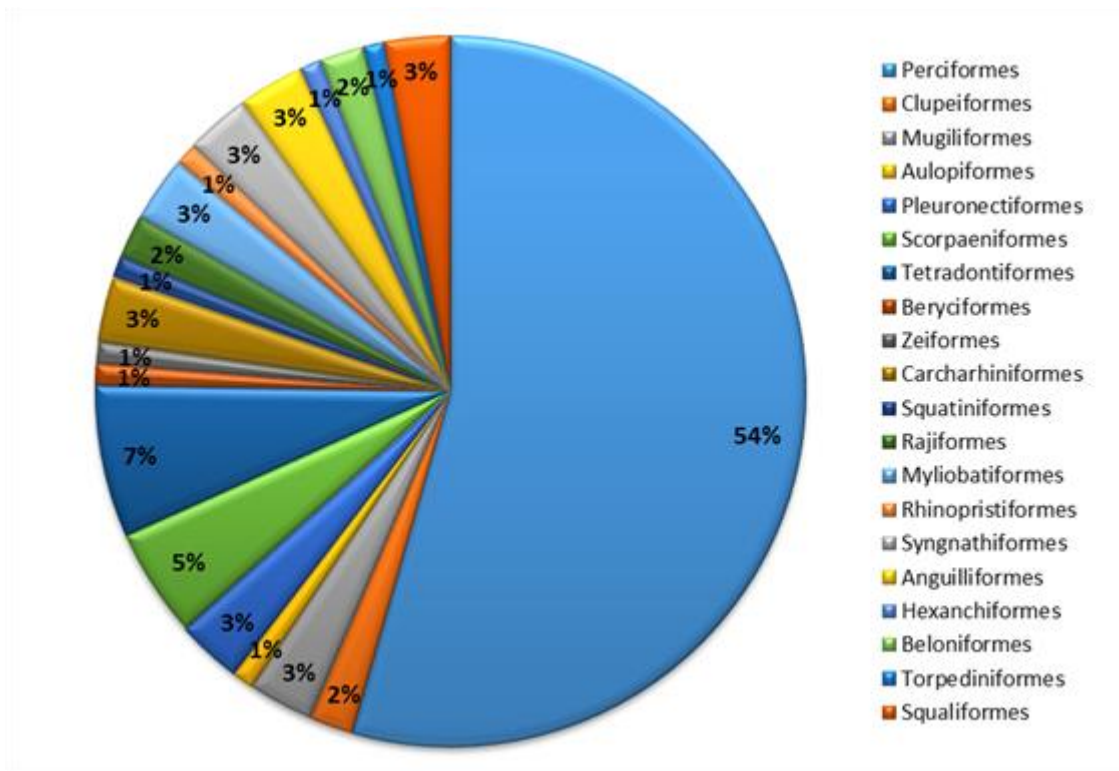


Figure 2. The orders belonging to fish species

Table 1. The list of fish species caught from Mersin Bay in 2018-2019

Catalog number	Species	Family	Order
MEUFC-17-11-001	<i>Sardinella aurita</i>	Clupeidae	Clupeiformes
MEUFC-17-11-002	<i>Mullus barbatus</i>	Mullidae	Perciformes
MEUFC-17-11-003	<i>Liza ramada</i>	Mugilidae	Mugiliformes
MEUFC-17-11-004	<i>Liza saliens</i>	Mugilidae	Mugiliformes
MEUFC-17-11-005	<i>Lithognathus mormyrus</i>	Sparidae	Perciformes
MEUFC-17-11-006	<i>Saurida lessepsianus</i>	Synodontidae	Aulopiformes
MEUFC-17-11-007	<i>Pegusa lascaris</i>	Soleidae	Pleuronectiformes
MEUFC-17-11-008	<i>Umbrina cirrosa</i>	Sciaenidae	Perciformes
MEUFC-17-11-009	<i>Sparus aurata</i>	Sparidae	Perciformes
MEUFC-17-11-010	<i>Sphyraena chrysotaenia</i>	Sphyraenidae	Perciformes

MEUFC-17-11-011	<i>Pagellus erythrinus</i>	Sparidae	Perciformes
MEUFC-17-11-012	<i>Trachinotus ovatus</i>	Carangidae	Perciformes
MEUFC-17-11-013	<i>Chelidonichthys lucernus</i>	Triglidae	Scorpaeniformes
MEUFC-17-11-014	<i>Pelates quadrilineatus</i>	Terapontidae	Perciformes
MEUFC-17-11-015	<i>Nemipterus randalli</i>	Nemipteridae	Perciformes
MEUFC-17-11-016	<i>Upeneus molluccensis</i>	Mullidae	Perciformes
MEUFC-17-11-017	<i>Stephanolepis diaspros</i>	Monacanthidae	Tetraodontiformes
MEUFC-17-11-018	<i>Diplodus vulgaris</i>	Sparidae	Perciformes
MEUFC-17-11-019	<i>Boops boops</i>	Sparidae	Perciformes
MEUFC-17-11-020	<i>Scomber japonicus</i>	Scombridae	Perciformes
MEUFC-17-11-021	<i>Trachurus mediterraneus</i>	Carangidae	Perciformes
MEUFC-17-11-022	<i>Diplodus annularis</i>	Sparidae	Perciformes
MEUFC-17-11-023	<i>Engraulis encrasicolus</i>	Engraulidae	Clupeiformes
MEUFC-17-11-024	<i>Pomatomus saltatrix</i>	Pomatomidae	Perciformes
MEUFC-17-11-025	<i>Seriola dumerili</i>	Carangidae	Perciformes
MEUFC-17-11-027	<i>Lobotes surinamensis</i>	Lobotidae	Perciformes
MEUFC-17-11-028	<i>Polyprion americanus</i>	Polyprionidae	Perciformes
MEUFC-17-11-029	<i>Sargocentron rubrum</i>	Holocentridae	Beryciformes
MEUFC-17-11-030	<i>Apogon queketti</i>	Apogonidae	Perciformes
MEUFC-17-11-031	<i>Cepola macrophthalma</i>	Cepolidae	Perciformes
MEUFC-17-11-032	<i>Champsodon nudivittis</i>	Champsodontidae	Perciformes
MEUFC-17-11-033	<i>Zeus faber</i>	Zeidae	Zeiformes
MEUFC-17-11-034	<i>Dactylopterus volitans</i>	Dactylopteridae	Scorpaeniformes
MEUFC-17-11-035	<i>Mustelus mustelus</i>	Triakidae	Carcharhiniformes
MEUFC-17-11-036	<i>Uranoscopus scaber</i>	Uranoscopidae	Perciformes
MEUFC-17-11-037	<i>Squatina oculata</i>	Squatinae	Squatinae
MEUFC-17-11-038	<i>Pterois volitans</i>	Scorpaenidae	Scorpaeniformes
MEUFC-17-11-039	<i>Dipturus oxyrinchus</i>	Rajidae	Rajiformes
MEUFC-17-11-040	<i>Aetomylaeus bovinus</i>	Myliobatidae	Myliobatiformes
MEUFC-17-11-041	<i>Raja clavata</i>	Rajidae	Rajiformes
MEUFC-18-11-042	<i>Lagocephalus sceleratus</i>	Tetraodontidae	Tetraodontiformes
MEUFC-18-11-043	<i>Lagocephalus suzensis</i>	Tetraodontidae	Tetraodontiformes
MEUFC-18-11-044	<i>Lagocephalus spadiceus</i>	Tetraodontidae	Tetraodontiformes
MEUFC-18-11-045	<i>Torquigener flavimaculatus</i>	Tetraodontidae	Tetraodontiformes
MEUFC-18-11-046	<i>Rhinobatos rhinobatos</i>	Rhinobatidae	Rhinopristiformes
MEUFC-18-11-047	<i>Dasyatis pastinaca</i>	Dasyatidae	Myliobatiformes
MEUFC-18-11-048	<i>Gymnura altavela</i>	Gymnuridae	Myliobatiformes
MEUFC-18-11-049	<i>Equulites klunzingeri</i>	Leiognathidae	Perciformes
MEUFC-18-11-051	<i>Pomadasys stridens</i>	Haemulidae	Perciformes
MEUFC-18-11-052	<i>Fistularia commersonii</i>	Fistulariidae	Syngnathiformes
MEUFC-18-11-053	<i>Oxyurichthys papuensis</i>	Gobiidae	Perciformes
MEUFC-18-11-054	<i>Echeneis naucrates</i>	Echeneidae	Perciformes
MEUFC-18-11-055	<i>Bothus podas</i>	Bothidae	Pleuronectiformes
MEUFC-18-11-056	<i>Nemichthys scolopaceus</i>	Nemichthyidae	Anguilliformes

MEUFC-18-11-057	<i>Centrolophus niger</i>	Centrolophidae	Perciformes
MEUFC-18-11-058	<i>Hexanchus griseus</i>	Hexanchidae	Hexanchiformes
MEUFC-18-11-059	<i>Pterios miles</i>	Scorpaenidae	Scorpaeniformes
MEUFC-18-11-060	<i>Balistes carolinensis</i>	Balistidae	Tetraodontiformes
MEUFC-18-11-061	<i>Siganus rivulatus</i>	Siganidae	Perciformes
MEUFC-18-11-062	<i>Fistularia petimba</i>	Fistulariidae	Syngnathiformes
MEUFC-18-11-063	<i>Sphyaena sphyaena</i>	Sphyaenidae	Perciformes
MEUFC-18-11-064	<i>Mullus surmelatus</i>	Mullidae	Perciformes
MEUFC-18-11-065	<i>Liza aurata</i>	Mugilidae	Perciformes
MEUFC-18-11-066	<i>Trichiurus lepturus</i>	Trichiuridae	Perciformes
MEUFC-18-11-067	<i>Citharus linguatula</i>	Citharidae	Pleuronectiformes
MEUFC-18-11-068	<i>Sillago sihama</i>	Sillaginidae	Perciformes
MEUFC-18-11-069	<i>Brama brama</i>	Bramidae	Perciformes
MEUFC-18-11-070	<i>Spicara maena</i>	Sparidae	Perciformes
MEUFC-18-11-071	<i>Scarus ghobban</i>	Scaridae	Perciformes
MEUFC-18-11-072	<i>Trachinus araneus</i>	Trachinidae	Perciformes
MEUFC-18-11-073	<i>Serranus cabrilla</i>	Serranidae	Perciformes
MEUFC-18-11-074	<i>Serranus scriba</i>	Serranidae	Perciformes
MEUFC-18-11-075	<i>Cheilopogon heterurus</i>	Exocoetidae	Beloniformes
MEUFC-18-11-077	<i>Pempheris rhomboidea</i>	Pempheridae	Perciformes
MEUFC-18-11-078	<i>Galeus melastomus</i>	Scyliorhinidae	Carcharhiniformes
MEUFC-18-11-079	<i>Scyliorhinus canicula</i>	Scyliorhinidae	Carcharhiniformes
MEUFC-18-11-080	<i>Trypauchen vagina</i>	Gobiidae	Perciformes
MEUFC-18-11-081	<i>Squalus acanthias</i>	Squalidae	Squaliformes
MEUFC-18-11-082	<i>Etmopterus spinax</i>	Etmopteridae	Squaliformes
MEUFC-18-11-083	<i>Thunnus thynnus</i>	Scombridae	Perciformes
MEUFC-18-11-084	<i>Macrorhamphosus scolopax</i>	Centriscidae	Syngnathiformes
MEUFC-18-11-085	<i>Epinephelus caninus</i>	Serranidae	Perciformes
MEUFC-18-11-086	<i>Epinephelus marginatus</i>	Serranidae	Perciformes
MEUFC-18-11-087	<i>Ephinephelus aeneus</i>	Serranidae	Perciformes
MEUFC-18-11-088	<i>Dicentrarchus labrax</i>	Moronidae	Perciformes
MEUFC-18-11-089	<i>Parupeneus forsskali</i>	Mullidae	Perciformes
MEUFC-18-11-090	<i>Remora remora</i>	Echeneidae	Perciformes
MEUFC-18-11-091	<i>Lichia amia</i>	Carangidae	Perciformes
MEUFC-18-11-092	<i>Sciaena umbra</i>	Sciaenidae	Perciformes
MEUFC-18-11-093	<i>Diplodus sargus</i>	Sparidae	Perciformes
MEUFC-18-11-094	<i>Oblada melanura</i>	Sparidae	Perciformes
MEUFC-18-11-095	<i>Oxynotus centrina</i>	Oxynotidae	Squaliformes
MEUFC-18-11-096	<i>Torpedo marmorata</i>	Torpedinidae	Torpediniformes
MEUFC-18-11-097	<i>Anguilla anguilla</i>	Anguillidae	Anguilliformes
MEUFC-18-11-098	<i>Muraena helena</i>	Muraenidae	Anguilliformes
MEUFC-18-11-099	<i>Belone belone</i>	Belonidae	Beloniformes
MEUFC-18-11-100	<i>Scorpaena scrofa</i>	Scorpaenidae	Scorpaeniformes
MEUFC-18-11-101	<i>Mola mola</i>	Molidae	Tetraodontiformes

MEUFC-18-11-102 *Sudis hyalina*

Paralepididae Aulopiformes

#### 4. Discussion

The fish of the Mediterranean are very rich in species diversity. The total number of fish species from the Mediterranean Sea was reported 562 species by Quignard (1978) 589 species by Whitehead et al. (1986), 612 species by Fredj and Maurin (1987), 447 species by Papaconstantinou (1988), 405 species by Golani (1996), 384 species by Mater and Meriç (1996), 664 species by Quignard and Tomasini (2000), 648 species by Hofrichter, (2002), 650 species Golani et al (2002). Bilecenoğlu et al. (2014) reported that of the 512 fish species found in the coasts of Turkey. In this study, a total of 102 fish species were recorded from the Mersin Bay in between September 2017 and November 2018. In this study, the list of fish species is compatible with the literature.

Although the changes in the number of species reported in the literature vary depending on the sampling period, the working area and the dynamic structure of the Mediterranean, which changes in the effect of natural and anthropogenic factors, it can be said that there are approximately 650 species of fish and an important part of them are formed by non-indigenous species. In this study, 61% of the species were Atlanto-Mediterranean and 28% were Indo-Pacific. 9% of the species are circumglobal and 2% are tropical and temperate water fish. The total number of non-indigenous fish in the Mediterranean is 101, of which 73 are Indo-Pacific and only 22 are of Atlantic origin (Turan et al. 2018). The most important reason for the short-term change in fish species diversity in the Mediterranean Sea should be inter-species and inter-species interaction with the participation of non-indigenous species. The presence of non-indigenous increases diversity and the participation of invasive species and the formation of populations can put pressure on the indigenous populations. Therefore, continuity of biomonitoring studies and monitoring of biodiversity is very important in terms of reflecting the state of ecosystem.

#### Acknowledgements

This study was supported by the Research Fund of Mersin University in Turkey with Project Number: 2017-2-AP2-2353.

#### Reference

- Bilecenoğlu, M. (2010) Alien marine fishes of Turkey – an updated review. In: Fish Invasions of the Mediterranean Sea: Change and Renewal (Eds. D. Golani & B. Appelbaum-Golani), Sofia-Moscow, 189-217.
- Bilecenoğlu, M., Kaya, M., Cihangir, B., Çiçek, E. (2014) An updated checklist of the marine fishes of Turkey. Turkish Journal of Zoology 38: 901-929.
- Coll, M., Piroddi, C., Steenbeek, J., Kaschner, K., Lasram, F. B. R., Aguzzi, J., Ballesteros, E., Bianchi, C.N., Corbera, J., Dailianis, T., Danovaro, R., Estrada, M., Froggia, C., Galil, B.S., Gasol, J.M., Gertwagen, R., Gil, J., Guilhaumon, F., Kesner-Reyes, K., Kitsos, M.S., Koukouras, A., Nikolaos Lampadariou, N., Laxamana, E., López-Fe de la Cuadra, C.M., Lotze, H.K., Martin, D., Mouillot, D., Oro, D., Rius-Barile, R.S.J., Saiz-Salinas, J.I., Vicente, C.S., Somot, S., Templado, J., Turon, X., Vafidis, D., Villanueva, R., Voultsiadou, E. (2010) The Biodiversity of the Mediterranean Sea: Estimates, Patterns, and Threats. PLoS ONE 5(8): e11842. doi:10.1371/journal.pone.0011842.
- Fredj, G., Maurin, C. (1987) Les poissons dans la banque de données Medifaune. Application à l'étude des caractéristiques de la faune ichthyologique Méditerranéenne. Cybium 11(3): 220-333.
- Golani, D. (1996) The Marine Ichthyofauna of the Eastern Levant - History, Inventory, and Characterization. Israel Journal of Zoology 42: 15-55.

- Golani, D., Orsi Relini, L., Massuti, E., Quignard, J. (2002) The CIESM atlas of exotic species in the Mediterranean. Volume I. Fishes, Monaco.
- Hofrichter, R. (2002) El Mar Mediterráneo. Fauna, Flora, Ecología. II/1. Guía Sistemática y de Identificación. Barcelona, Ediciones Omega. 849.
- Mater, S., Meriç, N. (1996) Deniz Balıkları. In: Türkiye Omurgalıları Tür Listesi, (Eds. Kence, A., Bilgin, C.C.), DPT/TBAG- ev.Sek.3, Nurol Matbaacılık A., Ankara, 131-172.
- Papaconstantinou, C. (1988) Fauna Graeciae, IV, Checklist of Marine Fishes of Greece, National Centre for Marine Research, Hellenic Zoological Society, Athens.
- Quignard, J.P. (1978) La Méditerranée creuset ichthyologique. Bulletin de Zoologie 45: 23-36.
- Quignard, J.P., Tomasini, J.A. (2000) Mediterranean fish biodiversity. Biologia Marina Mediterranea 7: 1-66.
- Turan, C., Gürlek, M., Başusta, N., Uyan, A., Doğdu, S.A., Karan, S. (2018) A Checklist of the Non-indigenous Fishes in Turkish Marine Waters. Natural and Engineering Sciences, 3(3): 333-358.
- Whitehead, P., Bauchot, L., Hureau, J., Nielsen, J., Tortonese, E. (1986) Fishes of the North-Eastern Atlantic and the Mediterranean. UNESCO, Paris.