

SPECIES COMPOSITION OF FISH POPULATION AT THE EASTERN HARBOUR OF ALEXANDRIA.

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ABSTRACT

Census data for fish examined at selected sites in the Eastern Harbour are given quantitatively in a checklist. Forty one species belonging to twenty five families were recorded. This checklist could be considered as a guide for the status and structure of coastal fish populations along the Egyptian Mediterranean coast.

The study revealed that the number of fish species observed in the Eastern Harbour is high in relation to species diversity records for the Egyptian Mediterranean waters in general.

INTRODUCTION

Several surveys for fish have been carried out in the Egyptian Mediterranean waters. Although informative, all of them are concerned with the commercial fish species, while other fishes are more or less ignored. That is why, the survey technique advocated in the present work involves economic and noneconomic fish species inhabiting the Eastern Harbour of Alexandria.

Results of the present survey are given in the form of a checklist for coastal fishes that are likely to be of value for comparison between checklists concerning number of fish and their sizes with those in other areas or at other times in the same area. Such comparison may be valuable, since the Eastern Harbour has been more vulnerable to the effects of sewage pollution, especially during the last few years.

MATERIAL AND METHODS

Data presented in this paper were monthly collected from the Eastern Harbour of Alexandria during the period from April to November, 1975 (the working period of beach seine).

The beach seine used for fishing in the Eastern Harbour is composed of various parts with different mesh sizes. The mesh size of the wings was found to be 7.0 cm, while that of the following parts of the net gradually decreased to reach 0.50 cm at the cod end (for more details on the design of beach seine refer to Al-Sayes et al., 1981).

The catches of 24 hauls carried out by beach seine in three fishing localities of the harbour were examined for species identification and fish length measurement.

Area of Study

The Eastern Harbour of Alexandria is situated at the middle of the Northern part of Alexandria city. This Harbour has an area of about 3.0 Km², connected to the open sea through two openings; the widest of which is 30 meters in width. The depth in the Harbour rarely exceeds 12.0 meters. The water temperature ranges between about 15.0°C in February and 28.0°C in August. The chlorosity was found to be nearly constant throughout the year which is about 21.5 gm/l, (Al-Sayes, 1971).

The Eastern Harbour has long been used as a fishing harbour for the Alexandria fishing fleet. Also, it is worth mentioning that the Harbour has been facing sewage pollution since more than 50 years. This sewage pollution together with the exhaust of fishing ships is being drastic in the last few years, due to the relative increase in the rate of discharge of polluted waters in the Harbour.

RESULTS AND DISCUSSION

Data on fish diversity for the Eastern Harbour of Alexandria are represented in table (1).

The present survey shows a total of 41 fish species belonging to 25 families. The checklist given can be considered as a measure of the relative richness and diversity of fish fauna found in the Eastern Harbour of Alexandria. It is clear that the number of species found during this survey is high in relation to species diversity records for the Egyptian Mediterranean waters. This is due to the high productivity of the Eastern Harbour as compared with other areas, as a result of the high nutrients brought out from sewage pollution poured in it.

It can be observed from the given checklist that the fish diversity was maximum in April, then decreased gradually to reach the minimum in October. This may be related to the hydrographic conditions prevailing during different months. Also, it has to be mentioned that as a result of the relative shallowness of the Eastern Harbour there is a rise of water temperature in the Harbour during daytime, as compared with that of the open sea, specially during the summer season.

According to Furnestin (1975) and Ben-Tuvia (1958), the *Sardina pilchardus* lives at a temperature not exceeding 22°C, and that its schools are formed at a temperature not less than 20°C. This may explain the disappearance of *Sardina pilchardus* from the Eastern Harbour during the summer and Autumn months. April and June may be the most favourable months for the abundance of this fish species in the Harbour due to the hydrographic conditions prevailing during these two months.

TABLE 1
Species composition and numbers of fish caught by beach
seine from Alexandria Eastern harbour during 1975 fishing season.

Fish family and species	Number of fish caught							
	April	May	June	July	Aug.	Sep.	Oct.	Nov.
<i>F. clupeidae:</i>								
<i>Sardinella aurita</i>	477	24	20126	20763	55560	7572	84260	67
<i>Sardinella maderensis</i>	287	3	13024	99	12947	39743	9045	160
<i>Sardina pilchardus</i>	-	3130	109466	-	-	-	-	-
<i>F. Mullidae:</i>								
<i>Mullus spp.</i>	59	8	16	64	1	6	-	51
<i>F. Mugilidae:</i>								
<i>Mugil spp.</i>	7	-	1126	2	33	-	-	-
<i>F. Sparidae:</i>								
<i>Boops boops</i>	-	7	2	-	1	-	-	-
<i>Sarpa salpa</i>	2	589	-	-	-	-	-	-
<i>Diplodus sargus</i>	1	-	2	1	-	-	-	-
<i>Sargus noct.</i>	1	-	-	-	-	-	-	-
<i>Diplodus vulgaris</i>	1	-	4	1	-	-	-	-
<i>Diplodus annularis</i>	-	-	1	-	-	-	-	-
<i>Diplodus cervinus</i>	-	-	-	1	-	-	-	-
<i>Pagrus spinifer</i>	-	-	57	-	-	-	-	-
<i>Pagrus vulgaris</i>	1	-	15	-	2	-	-	2
<i>Pagellus mormyrus</i>	2155	192	683	70	29	18	-	95
<i>Chrysophrys aurata</i>	-	1	2	-	-	-	-	-
<i>F. Carangidae:</i>								
<i>Caranx rhonchus</i>	7	-	-	-	-	-	-	-
<i>Caranx fusus</i>	5	-	-	-	-	-	-	-
<i>Trachinotus glaucus</i>	422	241	7	3	21	-	-	13
<i>F. Pomatomidae</i>								
<i>Pomatomus saltator</i>	11	27	5	24	19	16	3	-
<i>F. Scaenidae:</i>								
<i>Corvina nigra</i>	1	-	-	-	-	-	-	1
<i>Umbrina cirrosa</i>	1	-	-	-	-	-	-	1
<i>F. Siganidae:</i>								
<i>Siganus spp.</i>	59	246	1037	9	-	-	13128	251
<i>F. Soleidae:</i>								
<i>Solea vulgaris</i>	70	23	-	-	-	-	-	-
<i>Solea spp.</i>	-	1	-	-	-	-	-	-
<i>F. Triglidae:</i>								
<i>Trigla spp.</i>	10	1	-	-	-	-	-	-
<i>F. Belontiidae:</i>								
<i>Belone belone</i>	3	-	-	-	-	-	-	-

TABLE 1
Continue

Fish family and species	Number of fish caught							
	April	May	June	July	Aug.	Sept.	Oct.	Nov.
F. Belonidae:								
<i>Belone helone</i>	3	-	-	-	-	-	-	-
F. Scomberomoridae:								
<i>Scomber unicolor</i>	-	-	-	-	3	-	-	4
F. Thunnidae								
<i>Euthynnus alletteratus</i>	5	-	-	-	-	-	-	-
F. Sphyraenidae:								
<i>Sphyraena</i> spp.	1	1	-	9	2	-	165	-
F. Serranidae:								
<i>Epinephelus</i> spp.	1	1	-	-	-	-	-	-
F. Echeneldidae:								
<i>Echenels</i> spp.	-	-	2	-	-	-	-	-
F. Trichluridae:								
<i>Trichurus</i> sp..	14	1	2	4	-	2	1	-
F. Engraulidae:								
<i>Engraulis</i> spp.	514	480	18428	60990	29504	64283	-	-
F. Gobiidae:								
<i>Gobius</i> spp.	24	6	-	653	-	4	-	-
F. Syngnathidae:								
<i>Syngnathus</i> spp.	6	1	-	-	-	-	-	-
F. Scombresocidae:								
<i>Exocoetus</i> .	21	-	23	1	-	-	-	129
F. Atherinidae:								
<i>Atherina</i> spp.	5	46	-	-	-	-	-	-
F. Labridae:								
<i>Labrus</i> spp.	14	3	-	5	-	-	-	-
F. Scombridae:								
<i>Scomber</i> spp.	-	-	3	28	-	-	59	-
F. Leleognathidae								
<i>Leleognathus</i> spp.	1	1	1	1	-	-	-	-

On the other hand, *Sardinella aurita* and *Sardinella maderensis* are almost present in the catch of beach seine during the whole period, which indicates that the hydrographic conditions prevailing in the Eastern Harbour during the whole period are favourable for the life of these two fish species.

Pomatomus saltator, *Pagellus mormyrus*, *Mullus* spp., *Engraulis* spp., *Siganus* spp., and *Trachinotus glaucus* were also present during most months of the fishing period.

The most rare fish in the Harbour were found to be, *Corvina nigra*, *Umbrina cirrosa*, *Echeneis* spp., and *Blennius* spp.. These fish species are considered to be rare in the Egyptian Mediterranean waters.

The data also show that, some other fish species were participated by either few numbers or during few months in the catch of beach seine. These fish species belong mainly to family Sparidae. It is well known that fish belonging to this family are highly abundant in the Egyptian Mediterranean waters, as well as in the Lagoons connected to the Sea. The very poor participation of such fish species in the catch of beach seine as indicated in table (1) may be attributed to the behaviour of such fish towards the net or its escapement from the net during fishing operations. However, it is well known that such fishes are caught in a relatively larger amounts from coastal waters by the use of longlines or even by using single baited hooks performed in sport fishing.

The nearly absence of sparid fish from the catch of beach seine at the Eastern Harbour can also be attributed to the nature of bottom. Since most of the sparid fish species prefer rocky grounds suitable for longlines or single hooks, rather than sandy bottom suitable for beach seining.

It may be valuable and more interesting from both the economic and ecological points of view to give a record on the average lengths of the various fish species comprising the fish community of the Eastern Harbour (Table 2).

It is evident that the beach seine was able to catch more than one fish species in a very wide length range. For example; the minimum fish length of *Pomatomus saltator* was 6.0 cm and the maximum fish length was 34.0 cm. This means that the beach seine is not selective for length. Another example which supports the nonselectivity of beach seine by length was its ability to catch a fish of *Engraulis* spp. with a minimum length of 3.2 cm and a fish of *Euthynnus alletteratus* with a maximum length of 39.30 cm.

It is also evident from table (2) that the percentage number of the small fish (having a length less than 10.0 cm) comprised more than 50% of the total number of fish caught during the period of investigation. This may support the idea that the Eastern Harbour of Alexandria, as well as the shallow coastal areas and the various lagoons spreading along the Egyptian

Mediterranean coast, are considered to be good sheltering places for most fish species during their young stages. Therefore fishing in such sheltering places with small meshed nets may cause drastic danger on the fish populations in the Egyptian Mediterranean fishing grounds. On the other hand, the presence of big fishes in these coastal areas or lagoons may be attributed to their seasonal feeding movements along the coast.

TABLE 2
Average length (cm) of fish caught by beach seine from
Alexandria Eastern harbour during 1975 fishing season.

Fish family and species	Number of fish caught							
	April	May	June	July	Aug.	Sep.	Oct.	Nov.
<i>F. clupeidae:</i>								
<i>Sardinella aurita</i>	11.92	5.30	9.09	8.44	9.08	11.53	9.57	10.28
<i>Sardinella maderensis</i>	12.57	12.67	11.81	11.85	6.05	6.65	7.70	10.40
<i>Sardina pilchardus</i>	-	7.91	7.28	-	-	-	-	-
<i>F. Mullidae:</i>								
<i>Mullus spp.</i>	11.32	11.18	5.83	7.89	12.40	9.33	-	9.14
<i>F. Mugilidae:</i>								
<i>Mugil spp.</i>	17.03	-	10.16	22.95	15.64	-	-	-
<i>F. Sparidae:</i>								
<i>Boops boops</i>	-	13.47	13.50	-	13.70	-	-	-
<i>Sarpa salpa</i>	6.50	6.31	-	-	-	-	-	-
<i>Diplodus sargus</i>	4.80	-	4.65	7.50	-	-	-	-
<i>Sargus noct.</i>	9.40	-	-	-	-	-	-	-
<i>Diplodus vulgaris</i>	9.00	-	4.52	7.20	-	-	-	-
<i>Diplodus annularis</i>	-	-	4.50	-	-	-	-	-
<i>Diplodus cervinus</i>	-	-	-	7.60	-	-	-	-
<i>Pagrus splinifer</i>	-	-	10.70	-	-	-	-	-
<i>Pagrus vulgaris</i>	11.10	-	11.95	-	14.75	-	-	7.00
<i>Pagellus mormyrus</i>	6.66	7.63	9.85	9.47	10.42	5.78	-	9.15
<i>Chrysophrys aurata</i>	-	15.20	15.90	-	-	-	-	-
<i>F. Carangidae:</i>								
<i>Caranx rhonchus</i>	15.21	-	-	-	-	-	-	-
<i>Caranx fuscus</i>	18.22	-	-	-	-	-	-	-
<i>Trachinotus glaucus</i>	9.17	11.03	14.14	14.17	19.38	-	-	9.11
<i>F. Pomatomidae</i>								
<i>Pomatomus saltator</i>	17.35	33.80	27.96	28.40	9.52	6.27	15.47	-
<i>f. Sciaenidae:</i>								
<i>Corvina nigra</i>	11.50	-	-	-	-	-	-	5.50
<i>Umbrina cirrosa</i>	10.70	-	-	-	-	-	-	9.50
<i>F. Siganidae:</i>								
<i>Siganus sp..</i>	9.04	10.47	7.72	13.20	-	-	4.78	5.50
<i>F. Soleidae:</i>								
<i>Solea vulgaris</i>	2.90	4.00	-	-	-	-	-	-
<i>Solea spp.</i>	-	8.20	-	-	-	-	-	-
<i>F. Triglidae:</i>								
<i>Trigla spp.</i>	6.46	8.50	-	-	-	-	-	-
<i>F. Belonidae:</i>								
<i>Belone belone</i>	9.50	-	-	-	-	-	-	-

TABLE 2
Continue

Fish family and species	Number of fish caught							
	April	May	June	July	Aug.	Sep.	Oct.	Nov.
F. Scomberomoridae:								
<i>Scomber unicolor</i>	-	-	-	-	14.13	-	-	28.98
F. Thunnidae:								
<i>Euthynnus alletteratus</i>	39.30	-	-	-	-	-	-	-
F. Sphyraenidae:								
<i>Sphyraena</i> spp.	30.50	17.30	-	11.69	11.30	-	20.53	-
F. Serranidae:								
<i>Spinephelus</i> spp.	6.00	9.40	-	-	-	-	-	-
F. Echeneldidae:								
<i>Echeneis</i> spp.	-	-	19.15	-	-	-	-	-
F. Trichluridae:								
<i>Trichlurus</i> spp.	9.97	3.40	5.50	7.55	-	8.00	20.70	11.75
F. Engraulidae:								
<i>Engraulis</i> spp.	3.23	5.46	4.86	5.32	5.25	6.80	-	-
F. Gobiidae:								
<i>Gobius</i> spp.	8.14	5.93	-	6.21	-	6.88	-	-
F. Syngnathidae:								
<i>Syngnathus</i> spp.	11.20	12.80	-	-	-	-	-	-
F. Scombresocidae:								
<i>Exocetus</i> sp.	20.97	-	20.60	20.00	-	-	-	13.56
F. Atherinidae:								
<i>Atherina</i> spp.	8.36	6.30	-	-	-	-	-	-
F. Labridae:								
<i>Labrus</i> spp.	9.10	10.83	-	10.10	-	-	-	-
F. Scombridae:								
<i>Scomber</i> spp.	-	-	10.37	9.88	-	-	23.97	-
F. Leiognathidae:								
<i>Leiognathus</i> spp.	6.72	6.70	7.0	11.0	-	-	-	-

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