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Fishery Leaflet 310

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PRODUCTION OF EDIBLE FISH IN THE RED SEA

By Enoch S. Duncan 1/

Before World War II, fishing areas in the Red Sea along the Egyptian coast were exploited by Italian commercial fishermen operating between fifty and sixty motor-powered boats in addition to an indeterminate number of Egyptian sailing boats employing comparatively primitive methods. Until 1938, the control of these fisheries, as well as those of the Mediterranean coast, was in the hands of the Egyptian Coastguard division; at that time the Fisheries Department was separated and annexed to the Ministry of Commerce and Industry in an effort to improve the technique of exploitation of fisheries. All commercial fishing is now restricted by a system of licensing of individual boats for the announced dual purpose of the protection of Egyptian nationals in the enterprise and of conservation necessitated by what Fisheries Department officials consider a natural paucity of fish in Egyptian waters. The validity of the latter principle is subject to question, however, since it is generally admitted that insufficient statistical data exist for an accurate assessment of the fish resources, particularly of the Red Sea.

(a) Kinds of fish available, and production figures.

It is roughly estimated by Egyptian Fisheries Department officials that 40,000 tons of domestic fish production are consumed annually in Egypt. Of this total, 25% represents marine catch, 60% lake production, while 15% is taken from the river waters, i.e., the Nile and its tributaries. Red Sea fishing grounds furnish about 4,000 tons of the marine total with a value at landing points of L.E. 200,000 (L.E. 1 equals \$4.11). This figure is necessarily an estimate since very little statistical information of an accurate nature now exists in the files of the Fisheries Department; however, officials hope to remedy this deficiency by requiring the maintenance of fishing charts and systematic reporting of catches by masters of licensed boats.

Import and export statistics on movement of fish produce in 1946 as issued by the Egyptian Government are given below. It may be noted that Egypt imports over 10,000 tons from all sources while exporting, principally in the form of supply to ships' stores, between 500 and 600 tons. The total fish production and net import figure thus gives Egypt a per capita consumption of fish and other sea food calculated at less than 3 kilograms per person, a very low figure compared with United States consumption of about 12 kilograms and the United Kingdom figure of 28 kilograms. Expansion of present production from both inland and marine operation is, therefore, considered extremely important by Egyptian officials.

1/ Third Secretary, American Embassy, Cairo, Egypt. Report No. 42, February 12, 1948.

<u>Imports</u>	<u>Quantity</u>	<u>Value</u>
Fish Fresh:	K.G.	
Cold, Salted, Dried or Smoked	432,274	44,800
Herring, Salted, Dried or Smoked		
United Kingdom	941,951	101,651
Other Countries	1,643,929	132,887
Sardines Salted, Dried or Smoked	656	58
Fish, Salted, Dried or Smoked		
Turkey	75,612	8,527
Other Countries	6,035	683
Turtle, Fresh, Salted or Cooked	4,610	402
Total Imports	<u>3,096,067</u>	<u>289,108</u>
Exports of Imported Merchandise		
Fish, Crustaceans & Molluscs	4,894	804

Export of Produce of Egypt

Fresh Fish

Palestine	735	24
Foreign Ships Stores	505,741	99,745
Other Countries	64	15
Sardines Salted, Dried & Smoked	1,544	271
Fish Salted, Dried & Smoked		
Palestine	not specified	
Other Countries	2,318	469
Other Articles	<u>15,249</u>	<u>1,838</u>
	525,651	102,362

## Trade Movement Between Egypt and Sudan 1946

### Fish Salted, Dried or Smoked

(not specified)	7,072,528	150,156
Other Articles	3,911	275
Total	<u>7,076,349</u>	<u>150,431</u>

### Exports

Fish, Crustaceans and Molluses	14,776	1,200
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The principal kinds of fish caught in commercial quantities in the Red Sea are sole, sardines (unusually large), large and small gray mullet, mackerel, herring, trout, loup de mer, rock cod and Red Sea salmon (Arabic: Dirak), tunny, sea bass, snappers. Large shrimp, crabs and crayfish are taken in sizable quantities, but no lobsters are reported. Sharks are frequently taken.

To give a more complete picture, the principal families and outstanding species of fish found in the Red Sea, of both commercial and scientific interest are as follows:

### PRINCIPAL FAMILIES AND FISH FORMS FOUND IN THE RED SEA 1/

Nurse Sharks (Orectolobidae) - Live in shallow water, often near shore, and reach as much as 15 feet in length.

"Man-eater" - Eulamiské - 13 species are reported from the Red Sea

Hammer-head Sharks (Sphyrnidae)

Rays: Represented by large gintar ray (Rhynchobaters djaddensis), electric rays (Torpedinidae), sting rays (Dasyatidae), eagle rays (Myliobatidae), devil rays (Mobulidae).

Herrings: Plentifully represented by tarpon (Elopidae), bone fish (Albulidae), milkfishes (Chanidae), true herring (Clupeidae), found in immense schools with Sardinella tunny being a typical example.

Anchovies (Engraulidae with anchoriella heterololes and Thriassocles boelama being characteristic).

The Wolf herring (Chirocentrus dorale) reaches a large size.

Eels - Represented by pike eels.

(Murcoenesocidae), snake eels.

(Ophichthyidae) and morays.

(Echidnidae)

Eel pont cats (Plotosidae) and lizard fishes (Synedontidae) are found.

Green gars (Belonidae) are reported in 7 species and balaos

(Hemiramphidae) in form.

2 species of flying fishes (Exocostidae) are reported.

1/ This brief listing has been compiled from the article by Mr. Henry W. Fowler (Academy of Natural Sciences of Philadelphia), "The Fishes of the Red Sea," Sudan Angling, Vol. 1, No. 1, January 1946, Khartoum, Sudan, pp. 41-64. Also of considerable interest in this same edition of Sudan Angling is an article by Mr. G. M. Hancock, "Some Red Sea Experiences," pp. 9-17, in which specific descriptions of some of the Red Sea fishing areas are given together with comments regarding food and game fish.

Flounders (Pleuronectidae) are comparatively poorly represented  
 by 3 species.  
 Soles (Soleidae) represented by 3 species.  
 Soldier fishes (Holocentridae) by 10 species.  
 Barracudas (Sphyrnaenidae) by 5 species.  
 Silneisides (Atherinidae) by 5 species; although small in size  
 as food fish, are very abundant.  
 Grey Mulletts (Mugilidae) by 12 species; are of moderate size.  
 Mackerels (Scombridae) by 10 species.  
 Dolphins (Coryphaenidae) represented only by great Dolphin (Cory-  
 phaena hippinus).  
 Rudder fishes (Centrolophidae) - mostly small.  
 Crevalles (Carangidae) are widely distributed and about 38 species.  
 Ponters (Leiognathidae), 10 species.  
 Cardinal fishes (Amiidae) are all small.  
 Mirrow perches (Ambassidae), 4 species.  
 Aholes (Kuhliidae), 2 species.  
 Sea basses (Serronidae), 30 species.  
 Snappers (Lutjanidae), 20 species; some quite large.  
 Grunts (Pomadasyidae), 30 species.  
 Emperors (Lethrizidae), 8 species.  
 Porgies (Sparidae), 16 species.  
 Sea Clubs (Khyphosidae), 4 species.  
 Mojavios (Gerridae), 5 species.  
 Goat fishes (Mullidae), 12 species.  
 Drums (Sciaenidae), only a few species reported.  
 Whiting perches (Sillaginidae)  
 Cirrhitoid fishes (Cirrhitidae), 4 species.  
 Half Moon fishes (Monodactylidae).  
 Flat Moon fishes (Platacidae).  
 Ehippids (Ehippidae).  
 Butterfly fishes (Chaetodontidae).  
 Tangs (Hepatidae).  
 Siganids (Siganidae).  
 Rock fishes (Scorpaenidae), 20 species.  
 Flat heads (Platycephalidae).  
 Gurnards (Triglidas).  
 Demoisellas (Pomacentridae), 20 species.  
 Wrass fishes (Labridae), 44 species  
 Parrot fishes (Callyodontidas), 16 species.  
 Guarinas (Electridae), 5 species.  
 Gobies (Gobiidae), 20 species  
 Remoras (Echeneidae), 4 species  
 Blennies (Blenniidae), 30 species  
 Dragonets (Callionymidae).  
 Trigger fishes (Balistidae), 8 rather large shore species reported.  
 File fishes (Monocanthidae).  
 Trunks fishes (Ostraciidae).  
 Puffers (Tetroclontidae).  
 Head fishes (Molidae).  
 Frog fishes (Antennariidae).

(b) Methods of Fishing and Types of Gear Used.

Under a strict licensing system, eighteen motor trawlers of between 100 and 160 horsepower are presently operating in the Red Sea and Gulf of Suez from Egyptian ports. These boats operate with large nets for the catch of ground fish, but this particular operation is restricted to the Gulf of Suez because of rough coral formations in the main Red Sea area. Fishing further afield by these boats is confined to the use of drift nets and trawl lines of about 2000 meters length with spaced hooks.

There are 500 sailing boats of the comparatively primitive Red Sea or dhow type licensed to operate. These boats fish with a variety of equipment consisting of seines, drift nets and trawl hook lines of varying length. Gear for both the trawlers and sailing boats is made locally,

The operation of both trawlers and sailing boats must be considered as primitive and inefficient. Refrigeration facilities at sea are limited to a few of the trawlers with a resultant limitation in time spent at good fishing grounds. Furthermore, no refrigeration units are in operation in Suez, the main landing point for catches. One plant was, however, built by the former Societe Misr pour les Pecheries, S.A.E., and could be repaired for use for fish storage to level the supply. At present, lack of such adequate marketing aids cause fluctuations in fish prices in Cairo, for example, from L.E. 50 per oke to L.E. 100 even from day to day.

In 1936, an experimental fishing voyage was made by a Greek vessel, the S.S. Miranda, and was rewarded with unusually large catches from the use of drag nets and long trawl lines. At that time a Greek ichthyologist, supervising the Miranda's operation, expressed the opinion that a very satisfactory business organization would consist of three to four fishing motor boats having refrigerator capacity of 15 to 20 cubic meters and being equipped with 6 to 8 fishing barks for two men each. The motor boats would service the barks for food and supplies and receive catch for storage. It was estimated that such an organization could land between 140,000 and 168,000 pounds of fish per month exclusive of probable large shark catches.

(c) Commercial Fishery Enterprises.

The operation of the Red Sea fishing fleet is presently confined to individual entrepreneurs and small partnership ownership of individual boats. The largest individually owned group consists of 4 boats, and there are a few groups of 2 or 3 boats. As before mentioned, there are 18 motor trawlers which carry crews up to 14 and 500 sailing boats averaging 5 per crew operating in the Red Sea. These numbers may be compared with 67 motor trawlers, 65 small motor boats, and 2,000 sailing boats licensed to operate from Alexandria in the Mediterranean delta shelf area. The motor trawlers used represent an average investment of L.E. 8,000 to L.E. 10,000 each, against which monthly catches are sold for an average of L.E.800.

An attempt to organize a large operating company was made several years ago in the form of the Societe Misr pour les Pecheries, S.A.E., but the venture failed through lack of effective and interested management. The Fisheries Department has expressed hope that sufficient capital to promote the organization of a well managed and scientifically operated commercial venture may be interested in Red Sea fishery development, but reports that

local capital is generally apathetic in this field. That department is particularly concerned at the present stage of development with promoting interest in the exploitation of shark fishing resources.

The marketing system is not well organized. There are only 3 fish merchants in Suez who buy on a comparatively large scale for distribution to retail markets. One of these owns transport and sends a supply to Cairo daily. These shipments average 2 tons of fish per day but amount to as much as 5 to 6 tons on days in which good catches are landed. Lack of refrigeration facilities and well organized distribution methods as well as irregular volume in catch cause the considerable price fluctuation mentioned above.

Processing fish at the Suez landing point is limited to tinning of sardines on a very small scale during the sardine season and to salting, particularly of mullet, at times when larger than usual volume is landed. An American canning expert, retained early in 1948 to advise the Egyptian Government concerning possibilities of expansion of Egypt's canning industry, is presently studying the practicability of utilizing Red Sea fish for a plant at Suez.

(d) Conditions of Work Among the Fishermen.

The larger boats have regular crews, but some of the small sailing boats have pick-up crews in which personnel changes frequently. The crews of sailing boats normally receive pay based on a percentage of the sale of the catch while fishermen of the larger boats receive a minimum wage regulated by the Administration of Ports and Lights plus, in most instances, additional pay based on the catch.

Crews are also furnished with food supplies such as flour, sugar, oil, bread, and tobacco by the boat owners. Generally the standard of living is low, being only slightly above that of the average agricultural worker of Egypt.