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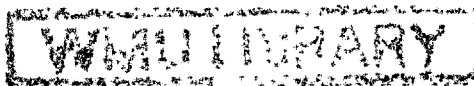
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**WORLD MARITIME UNIVERSITY
MALMOE, SWEDEN**

**FISHING INDUSTRY OF SAUDI ARABIA
TOWARDS NEW REGULATIONS**

BY

SALEH SULAIMAN AL-HAMDAN

THE KINGDOM OF SAUDI ARABIA

**A dissertation submitted to the World Maritime University
in partial fulfillment of the requirements for the award
of the:**

**Degree of Master of Science
in
General Maritime Administration**

**Year of Graduation
1992**

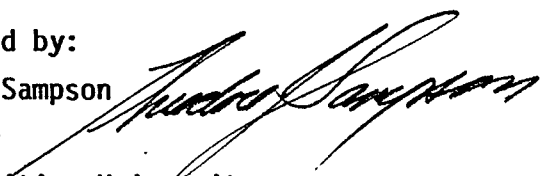
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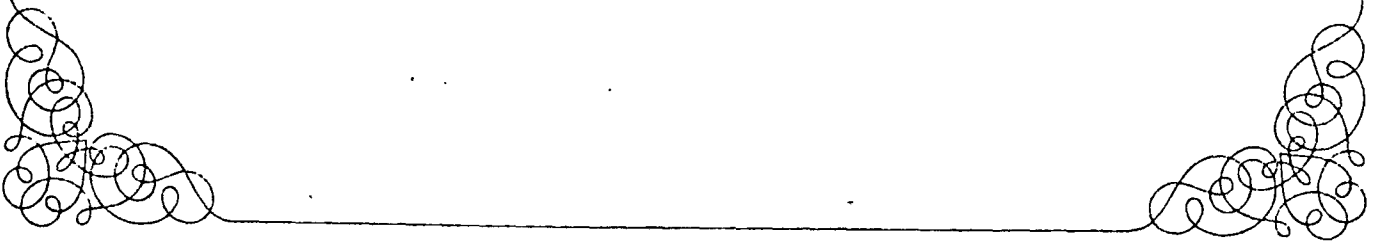
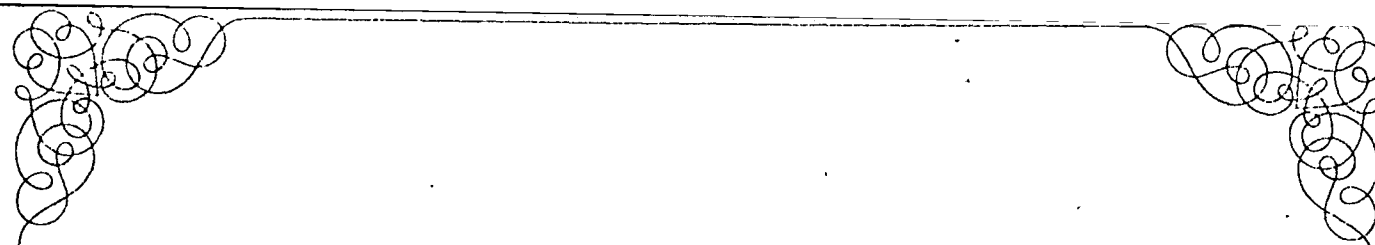
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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

In the Name of Allah, the
Beneficent, The Merciful

Praise be to Allah the almighty who said,

"And He it is Who hath constrained the sea to be of service that ye eat fresh meat from thence, and bring forth from thence ornaments which ye wear. And thou seest the ships ploughing it that ye (mankind) may seek of His bounty and that happily ye may give thanks".

The Holly Quran

LIST OF CONTENTS

INTRODUCTION	1
CHAPTER 1. THE KINGDOM OF SAUDI ARABIA	6
1.1 Geographical Location	6
1.2 Geographical Areas	6
1.3 Natural Resources	6
1.3.1 Petroleum	6
1.3.2 Other Resources	6
1.4 Coastal Resources and Economical Activities	6
1.5 Population	9
1.6 Political Structure	9
1.7 Economy and Trade	9
CHAPTER 2. CHARACTERISTICS OF THE FISHING INDUSTRY OF THE KINDOM OF SAUDI ARABIA	12
2.1 Traditional Fisheries	12
2.1.1 The Red Sea Area.....	12
2.1.1.1 Species of the Red Sea	16
2.1.1.2 Fishing Force in the Red Sea ..	16
2.1.1.3 Red Sea Coast Fishing Fleet ...	17
2.1.1.4 Volumes of Catch in the Red Sea	17

2.1.2	The Arabian Gulf Area	18
2.1.2.1	Species of the Gulf Area	19
2.1.2.2	Fishing Force in the Gulf	19
2.1.2.3	Gulf Coast Fishing Fleet	19
2.1.2.4	Volumes of Catch in the Gulf ..	20
2.2	Modern Fisheries	20
2.2.1	The Saudi Arabian Fishing Company .	20
2.2.1.1	Manpower	22
2.2.1.2	Fleet	22
2.2.1.3	Production	22
2.2.2	The Cooperative	22
2.3	Other Fisheries Developments	23
2.3.1.	Agriculture in Saudi Arabia	23
2.3.2	Acquaculture and the Environment ..	24

CHAPTER 3 ADMINISTRATION OF FISHERIES IN SAUDI ARABIA

3.1	The Saudi Arabian Fisheries Administration	27
3.2	Institutions Directly Involved in Fisheries	30
3.2.1	The Ministry of Agriculture and Water	30
3.3.2	Other Agencies Involved in the Administration of Fisheries	31

3.3 Fisheries Regulations	33
3.4 Legislation Concerning Acquaculture	35
3.5 International Organizations Involved in the Development of Saudi Arabian Fisheries ...	36
 CHAPTER 4 MANAGEMENT OF FISHERIES RESOURCES	 40
4.1 The Need for a Modern Fishing Policy	40
4.2 Basis for Fisheries Policy and the Management of Fisheries	41
4.3 Goals of Fishery Management and development	43
4.4 Strategies for Fishery Management	44
4.5 Existing Fishery Regulation in Saudi Arabia	45
 CHAPTER 5 ENFORCEMENT OF FISHERIES REGULATIONS	 49
5.1 Enforcement and the Fisheries Management Functions	49
5.2 The Present Situation of Enforcement in Saudi Arabia	49
5.3 The Frontier Forces	50
5.3.1 Organization of the Frontier Forces	51
5.3.2 Maritime Regions	52
 CHAPTER 6 MAJOR PROBLEMS FACING THE FISHERIES IN SAUDI ARABIA	 54
6.1 Problems of Supply of Fishing Products due to Increases in Demand	54
6.2 Obsolence of Regulations	55

6.3	Gulf Oil Spill and its Implications on the Fishing Industry	56
6.3.1	Impact on Seafood Resources	58
6.3.2	Efforts to Combat Pollution in the Gulf Area	60
6.4	The Lack of Reliable Fisheries Data	61
CHAPTER 7	CONCLUSIONS AND RECOMMENDATIONS	64

INTRODUCTION

Information on Saudi fisheries is vastly scattered throughout a diverse number of already published reports, files, records and raw statistical materials that are available at various sources within the Ministry of Agriculture and Water and some of its Departments.

It was rather hard for the author to find a single ready-on-hand document that would contain the various available data and references on the subject of fisheries, and thus saving the strenuous task of fishing for such information on fisheries.

Going through this paper one could realize that the existing information need developing and updating. This is precisely the point. There is the need to establish a reliable information system on fisheries, in order to formulate an adequate policy, dictate regulations and make the management of fisheries a reality and the function of enforcement of regulations meaningful.

Fishery policies and objectives depend on the physical characteristics of every country and on the priority given to this sector by governments. Because of the geographical configuration, and the nature of the fisheries resources of Saudi Arabia highly coordinated policies in fisheries management and development are needed. The Kingdom is shelf-locked with its neighboring countries. This is particularly true for the countries bordering the Red Sea and the Gulf Area. With the overlap of the fishing zone of the coastal states, there are a numbers of transboundary stocks that require proper management action. The

objectives of most government economic plans include the conservation of marine resources, as well as goals regarding the use and exploitation of such resources. Very often, these plans, goals and objectives are not backed by sound scientific studies of the living resources of the sea. Many plans fail to mention the use of appropriate technology, or the regulatory framework for fish stocks, fishing areas, etc. to secure the conservation of the marine. Many plans concentrate on the short term economic and financial results in order to satisfy short term financial needs of governments or companies at the expense of the very survival of stocks and the entire industry.

The history of many fishing grounds around the world is full of cases of depletion of stocks, closure of industrial facilities and the corresponding increase in unemployment of installed capacity and workers. Fisheries as a resource, in both coasts of Saudi Arabia, are faced with a great challenge.

This paper focuses on the fisheries on the Kingdom of Saudi Arabia's waters, the need to have a modern fishing policy, the need to regulate and properly manage the resource, specially the ways to enforce these regulations.

First, it is known that the fishery resources of the Red Sea area give no basis for the development of industrial fishing activities, due to the hydro and meteorological conditions and topography of this area which do not allow for high productivity. Nevertheless, this area produces two-thirds of the total production of the country. This phenomenon is explained through the migration of the artisanal fishermen from their fishing villages in Saudi Arabia to fish in waters of neighboring countries and

landing their catch in Saudi Arabia and other oil countries.

Second, the increase in levels of pollution in the Gulf will worsen the fisheries of the area and as a consequence of this, the livelihood of its inhabitant will be affected if regional cooperation between the governments of the countries in adjacent areas are not able to joint efforts and take positive steps to tackle this problem. Otherwise, the economic viability of fisheries in the Gulf area is in danger of disappearing.

During the Gulf War (Jan.1991) the world became aware of the short term consequences of massive oil spills. A huge marine area was cover with crude oil and thousands of marine animals and plants died as a direct result of the spills. The long term impact of the spills are continuing to build up and it is the Saudi coastline the most affected by this situation.

Before this incident, the Gulf area was already regarded as one of the most polluted marine areas in the world. However, commercial fishing in this area is more productive than in the Red Sea area. To a greater extent this is due to intertidal and shallow water habitats, including abundant seagrass and algae beds, as well as easier topography which permits the use of modern trawling techniques.

In spite of the above, the fishing intensity has increased in both areas with modern technology introduced in recent years. Productivity has risen to levels not known before.

These recent developments should have been matched with

proper management and appropriate regulations to make possible the conservation of the stocks as the main part of a sound fishing policy.

Whether asserting rights of property or settling disputes, governments have always been involved in fisheries. The management and much of the efforts in the development of fisheries have been the responsibility of government agencies. The role of this government agencies in the fisheries industries, besides the broad objectives and goals, includes: ensuring supplies of nutritious food to their populations, allocation of catches, regulations on food standards and hygiene, safety at sea, manning scales, work conditions, qualification of fishing officers and various other tasks which were not normally part of a fishery management, but have significant impact on the industry, its methods, equipment and production costs.

Governments are also responsible for the formulation and execution of technical development programs for fishery industries. Government financial assistance are in the form of incentives for the establishment or expansion of the industry. It also includes assistance for scientific research, and the establishment of infrastructures. Each of this paper 6 chapters examines one of the problems that in opinion of the author, affects the fisheries industry in Saudi Arabia.

This dissertation is divided in six chapters. Chapter One gives the general characteristics of the country, the geographical areas, coastal resources, population and the economic data.

In Chapter two the description of the fishing industry of

the country by area, species of the Red Sea and the Gulf of Arabia, landings for one year as a reference, and fishing force are discussed. A description of the Saudi Arabian Fishing Company is given as an example of modern fishing in the area.

Chapter three discusses the administration of fisheries in Saudi Arabia, the institution directly responsible for development and administration of fisheries, and other agencies involved in the activity.

In Chapter four the basis for a modern fishing policy is given. The goals of management, policy objectives, strategies and the fisheries regulations of Saudi Arabia are discussed.

Chapter five discusses the enforcement of regulations in Saudi waters, the role of the Frontier Forces, its organization and regions.

In Chapter Six the major problems affecting the management of fisheries are discussed. Obsolescence of 1960's and 1970's fisheries regulations, the impact of the 1990 oil spill in the Gulf area on the fishing industry, efforts to combat pollution and the lack of basic fishing information for better management of the resource.

Finally, the Conclusions and Recommendations of this dissertation are given in Chapter Seven.

CHAPTER 1

THE KINGDOM OF SAUDI ARABIA

1.1 Geographical Location

The Kingdom of Saudi Arabia occupies most of the Arabian peninsula. It is bounded by Jordan, Irak and Kuwait in the North, the Arabian Gulf, Bahrain, Qatar, and the United Arab Emirates in the East, Yemen, and Oman in the South and the Red Sea in the West.

1.2 Geographical Areas

The Kingdom of Saudi Arabia covers an area of 2,240,000 sq. kms. It has four major physical regions:

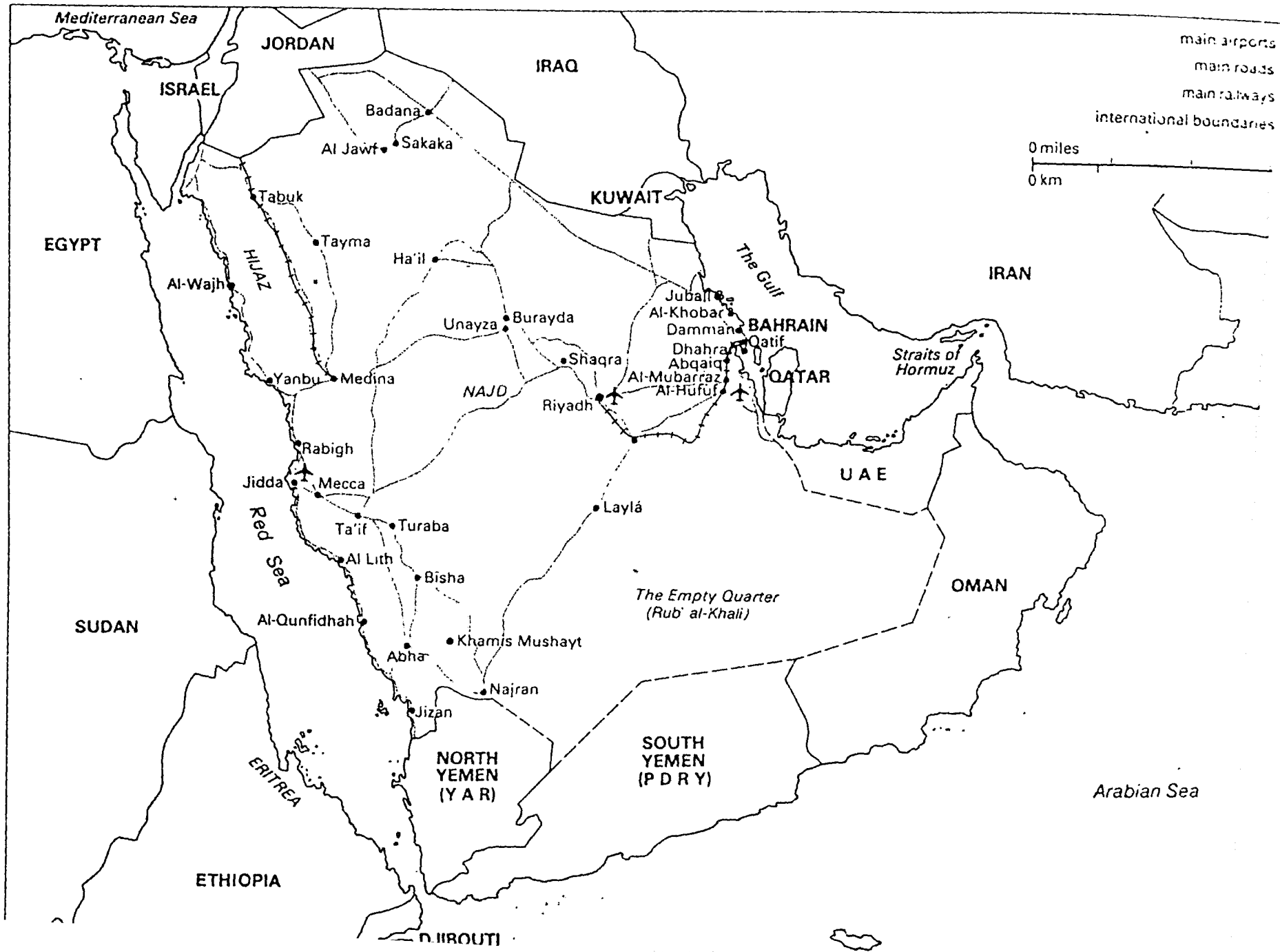
- a. The Great RUB AL KHALI, a sand desert occupying the entire south and southeast.
- b. The Nejd,, a vast barren plateau in th centre.
- c. The Hejaz and Asir, along the Red Sea, with montains rising from a narrow coastal plain.
- d. The eastern province, along the Arabic Gulf, site of the countries rich oil resources.

1.3 Natural Resources

1.3.1 Petroleum

Saudi Arabia has at least one quarter of the world's oil reserves. The petroleum sector has been the largest component of the country's gross domestic product (GDP) for a long time. The oil industry dominates the economy.

Saudi Arabia



It generates 74 percent of export earnings. Petrochemicals and non-oil secondary industries represent about one-fourth of the GDP.

The national oil industry comprises a specialized infrastructure (ports and terminals) as well as an expanding tanker fleet and it gives employment to a large number of national as well as foreign personnel.

1.3.2 Other resources

Apart from petroleum, the country has a domestically important agriculture, fisheries, chemical products, metals and mineral products.

1.4 Coastal Resources and Economical Activities

The Kingdom has 1,866 kilometers of coastline along the Red Sea and 560 kms of coast along the Arabian Gulf.

Along the Coasts there are several types of developments competing and in close interaction with each other. The oil industry competes with the incipient fishing industry, and the desalination plants.

In the coast of the Red Sea the commercial ports of Jeddah, Jizan and Yanbu, in the Gulf Coast the port of Dammam, the King Fahad Industrial Port of Jubail and the oil port of Ras Tannurah are the main components of the maritime infrastructure.

In addition to these major ports there are a number of minor ports, suitable only for small craft. All ports have special facilities to handle fisheries. There are two

especialized fishing harbours in the Gulf area and one in the Red Sea. All these ports are under the exclusive management of the Ports Authority.

1.5 Population 1/

- Total population (as 1990) ... 14,9 million
- Population density: ... 6.6 per sq. kilometer
- Annual growth rate: ... 3.6 percent
- Capital: Riyadh ... 1.5 million

The economically active population of Saudi Arabia in 1989 was distributed as follows:

Population employed in agriculture ... 48.6 percent
 Population employed in industry ... 14.4 percent
 Population employed in services ... 37.0 percent.

1.6 Political Structure

The Kingdom is divided in 14 provinces. The country has no parliament, and no political parties.

1.7 Economy and Trade 2/

The Gross Domestic Product of Saudi Arabia was US\$83.0 billion in 1989 and the GDP percapita US\$ 5,571 for the same year. Annual exports were US\$31.5 billion and the annual imports US\$31 billion. Despite this figures Saudi Arabia is a net importer of food stuff.

In terms of dry-cargo handled in the country the most important ports are Jeddah on the Red Sea followed by Damman on the Gulf. In 1989 the total cargo handled by

Saudi Arabian ports, excluding crude petroleum, was 63.8 million metric tons.

The Saudi Ports Authority (SPA) is the agency in charge of the handling of dry cargo, while the Ministry of Petroleum and Minerals through Saudi Aramco is responsible for handling oil and gas through specialized ports.

ENDNOTES

- 1/ The Middle-east and North Africa 1992 Regional Survey of the world, 38th edition, statistical tables.
- 2/ Ibid.

CHAPTER 2

CHARACTERISTICS OF THE FISHING INDUSTRY OF THE KINGDOM OF SAUDI ARABIA

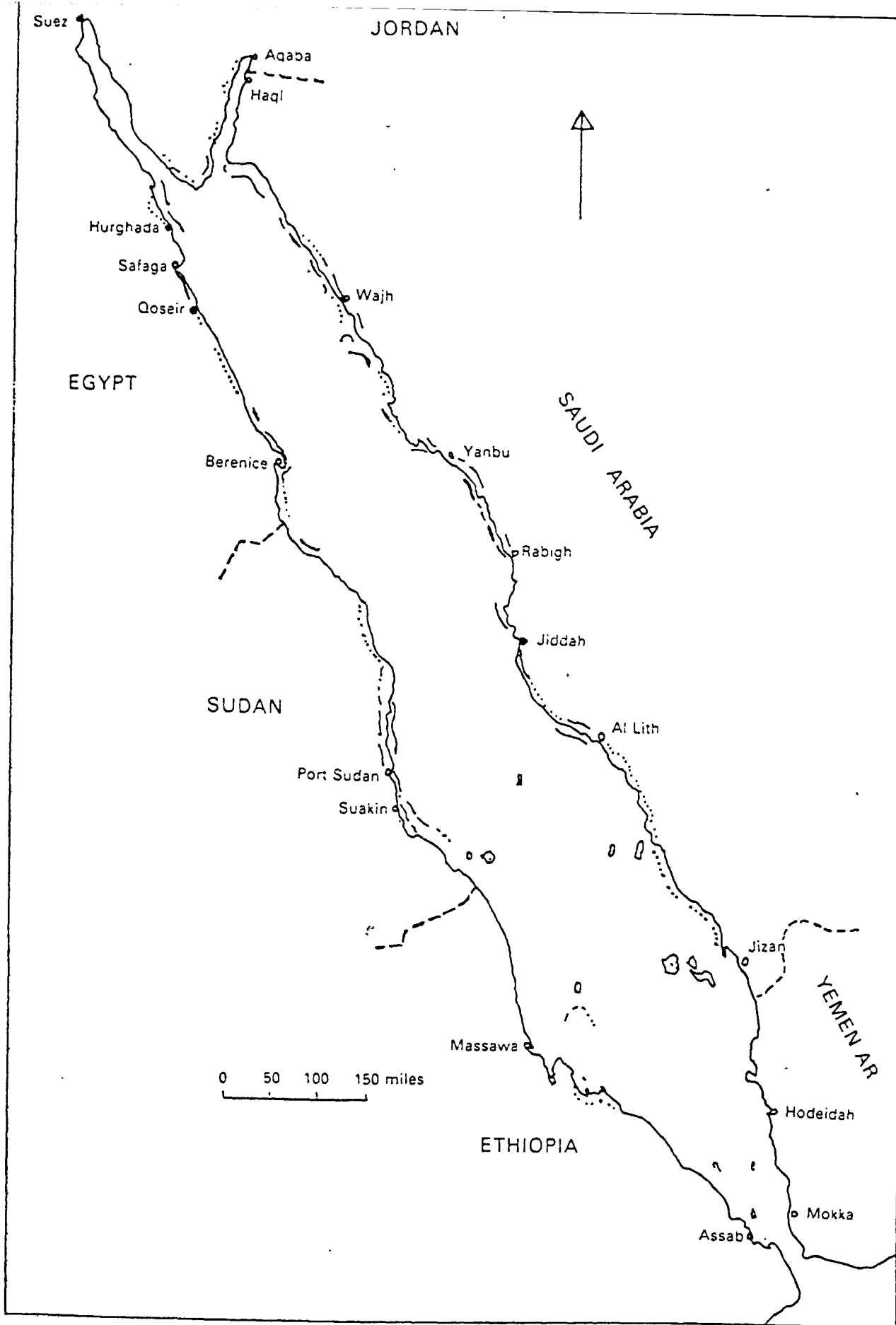
For centuries, fisheries in Saudi Arabia have been largely traditional, artisanal and small scale on the Red Sea coast and on the coast of the Gulf of Arabia. Due to demographic and economic pressures fishing has been intensify in both areas.

2.1 Traditional Fisheries

2.1.1 The Red Sea Area

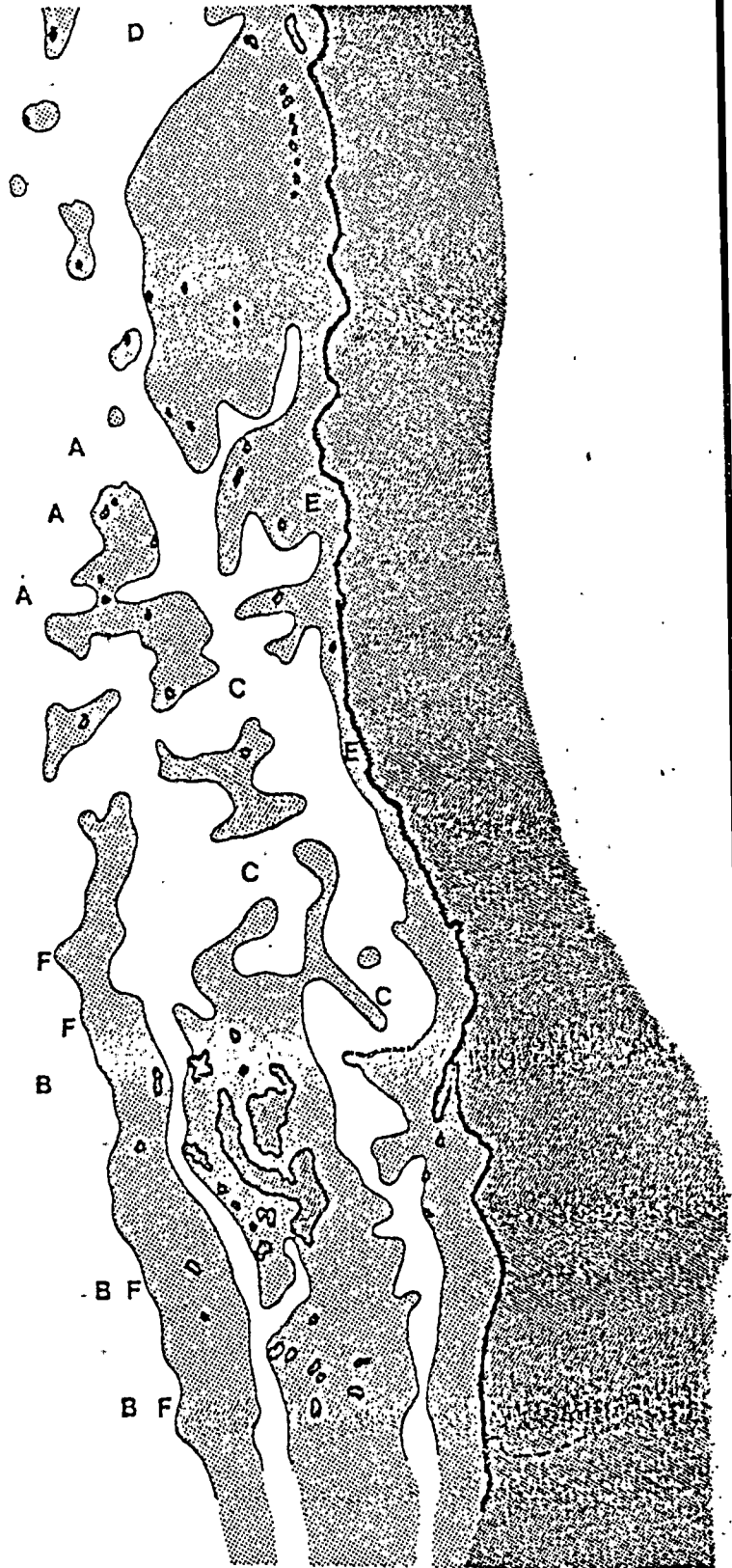
The Red Sea (Map 2) cuts in a north-northwest to south-southwest direction across a Precambrian shield bifurcating in the north into the Gulf of Suez and Aqaba. ^{1/}In the south it connects through the Bab-el-Mandab Straits with the Gulf of Aden. It is approximately 2000 km in length, with a width of 175 km in the vicinity of the Sinai Peninsula and its maximum width is 350 km between Massawa in Ethiopia and Jizan in Saudi Arabia. It has a mean width of 270 km that narrows to 30 km through the north straits. It has a total surface area of 440,000 km², covering a continental shelf, down to 200 m, of 150,000 km², but a considerable proportion of this consists of coral and small island systems. Thus it is an isolated body of water having restricted passages at the northern and southern ends.

Although exchange of surface water with the Gulf of Aden occurs, the movement of deeper water is inhibited by the shallow sill entrance. The 20°N parallel can be regarded



- A. POSSIBLE MACKEREL AND SCAD TRAWL GROUND
- B. TRAWLABLE MACKEREL AND SCAD
- C. REEF ASSOCIATED STOCK, SHARK, SNAPPER, GROUPER, JACKS, ETC.
- D. PROBABLE STOCK OF REEF ASSOCIATED SPECIES.
- E. TRAWLABLE FISHMEAL SPECIES
- F. DEEP WATER SNAPPER RESOURCE

RED SEA FISHING AREA



as a midway division of the Red Sea, as at this position the topographical features change their form. 2/

There are two significant features 3/ relating to the biology of the open Red Sea that distinguish it from the Arabian Gulf and the Indian Ocean. The first is that, the epipelagic zone from the surface of the sea to 100 meters deep is relatively poor in nutrients. The second is that, the region has a relatively low phytoplankton and zooplankton diversity.

A number of reasons probably determine this situation. Firstly, there are no significant upwellings rich in nutrients in the Red Sea. Secondly, there is little fresh water input and rivelets or run-off of nutrient rich soil material to pour into the Red Sea. Obviously, the Red Sea limits the numbers of higher sea-animals that the open sea can sustain.

In general, most of the marine life studies of the Saudi Arabian Coastal line, associated to biogeography, agree that the epipelagic species are able to pass over the dividing line at BAB-el-Mandab with the surface currents generated by the monsoon winds.

In the Sea Red Sea, the hydrometeorological conditions and topography do not allow for high productivity. 4/

The Red Sea area and its living resources are shared by the following countries: Saudi Arabia, Jordan, Egypt, Sudan, Ethiopia and Yemen. (See Map 1)

The fisheries in this area are underdeveloped and based predominantly on the work of artisanal fishermen and their

traditional wooden boats and primitive fishing gear. Since the mid 1950s, fishing along the Red Sea has been modernized with commercial oriented enterprises, modern vessels and specialized gear. The catch in this area has reached significant proportions with the establishment of the Saudi Fisheries Company in 1982.

2.1.1.1. Species of the Red Sea

Fishes in the Red Sea include several species of groupers, snappers, emperors, mackerels, barracudas, jackfishes, etc.

The amount of catch in the Red Sea Area has been steadily increasing yearly as the fleet improves. Due to the lack of recent figures, a reference of the amount of landings for the year 1987 is given in Table 1. The total tonnage landed was 29,425. 5/

A study to determine the annual sustainable yield for different species in the Red Sea, especially shrimps was carried out by Continental Sea Food USA (1977). They calculated a sustainable yield of shrimps at 850 tons in an area of 1060 km². Another study carried out by the Institute of Marine Research(Bergen) of Norway (1981), they found that the demersal predominant species recorded were ponyfish and threadfin bream along the Saudi coast.6/

2.1.1.2 Fishing Force in the Red Sea 7/

Fishermen along the Red Sea coast are nomads operating the year round in large fishing centers, Gizan in the south, close to the Yemeni border and Al Wajj and Hagel in the Gulf of Aqaba, and Rabigh, near Jeddah, Al Khoreiba, Umm Lajj, Yanbu, Rabigh, Al Lith, Al Qunfidah, Farazan Is.

The number of Saudi artisanal fishermen operating in the Red Sea area was estimated in 4,556.

2.1.1.3 Red Sea Coast Fishing Fleet 8/

In the area there are more than 3,200 register vessels of different types. They are all wooden boats with varying outboard engines, lengths and fish-hold capacities. The most common types of boats used in the area are the "hourri" (6 to 10 m long), the "sambuk" (11 to 15 m long) and the "dhow" (18 to 25 m long).

This centuries old occupation has been joined by modern commercial fishing since the mid 1950s.

2.1.1.4 Volumes of Landings in the Red Sea

Table 1. Landings of Catch in the Red Sea by species, in Tons for the year 1987.

Arabic	Species Names		Landings (Tons).	
	English	Scientific	Red Sea	%
Kushar	Grouper	Sarradinae	3368	11.5
Bohar	Snapper	Lutjanidae	1982	6.7
Shaoor	Emperors	Lethrindae	3613	12.3
Bayad	Jack	Carancidae	3461	11.8
Agam	Barracudas	Sphyraenidae	1747	5.9
Derak	Mackarel (Sp)	Scombridae	7755	26.3
Baagha	Mackarel (Ind)	Scombridae	2550	8.7
Others			4949	16.8
Total			29,425	100.0

Source: Own elaboration. Data from Marine Fisheries Research and Development Centre, Statistical Bulletin, '87

2.1.2 The Arabian Gulf Area

This Gulf extends from the Straits of Hormuz in the south, which links it with the Indian Ocean for a distance of 1000 km to the north, covering an area of 24,000 km². It has an estimated 6000 km³ of water, within some localities a 90 m depth. The depth decreases towards the north-west. The bottom is sandy and suitable for trawling. 9/

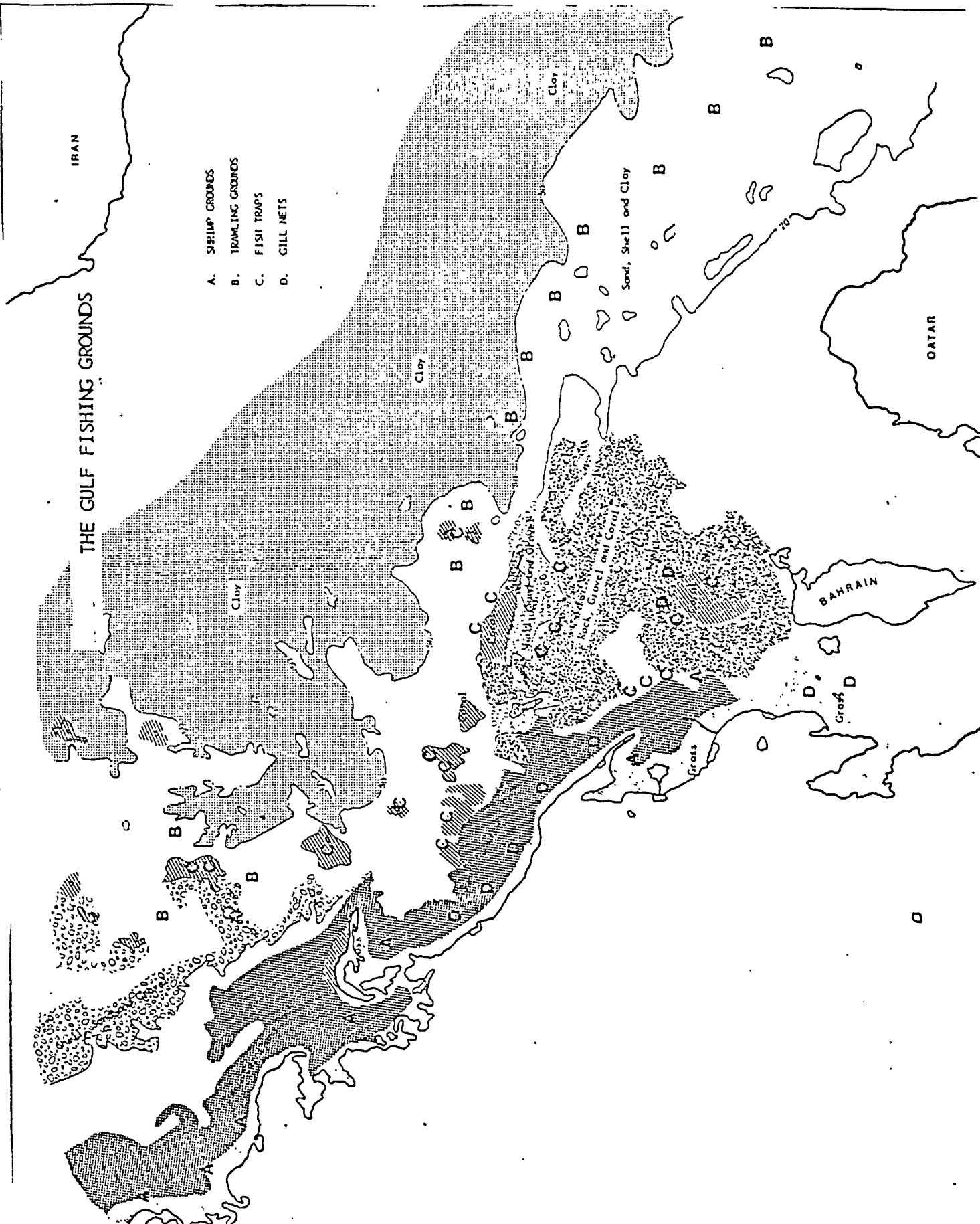
The Saudi Arabian Gulf Coastline is 560 km long and is divided into several zones. The northernmost zone curves roughly northwest to southeast from the Kuwait border through Ras Tanura, across Bahrain's islands to the northern tip of the Qatar Peninsula. The southernmost zone of coast lies between the city of Damman and the base of the Qatar Peninsula, (Map 3) and curves in a southerly direction, therefore being more nearly parallel to the prevailing winds. Much of this part of the coastline lies along the Gulf of Salwah and it is protected from high waves action. The position is being protected by a stretch of extremely shallow water between Saudi Arabia and Bahrain that forms a barrier to tidal waves movements.

Between the northernmost and southernmost coastal stretches (between Damman and Ras Tanura) lies Tarut Bay, which in many ways is unique. This area contains extensive tidal flats and grassbeds and is the major shrimp nursery of the Gulf.

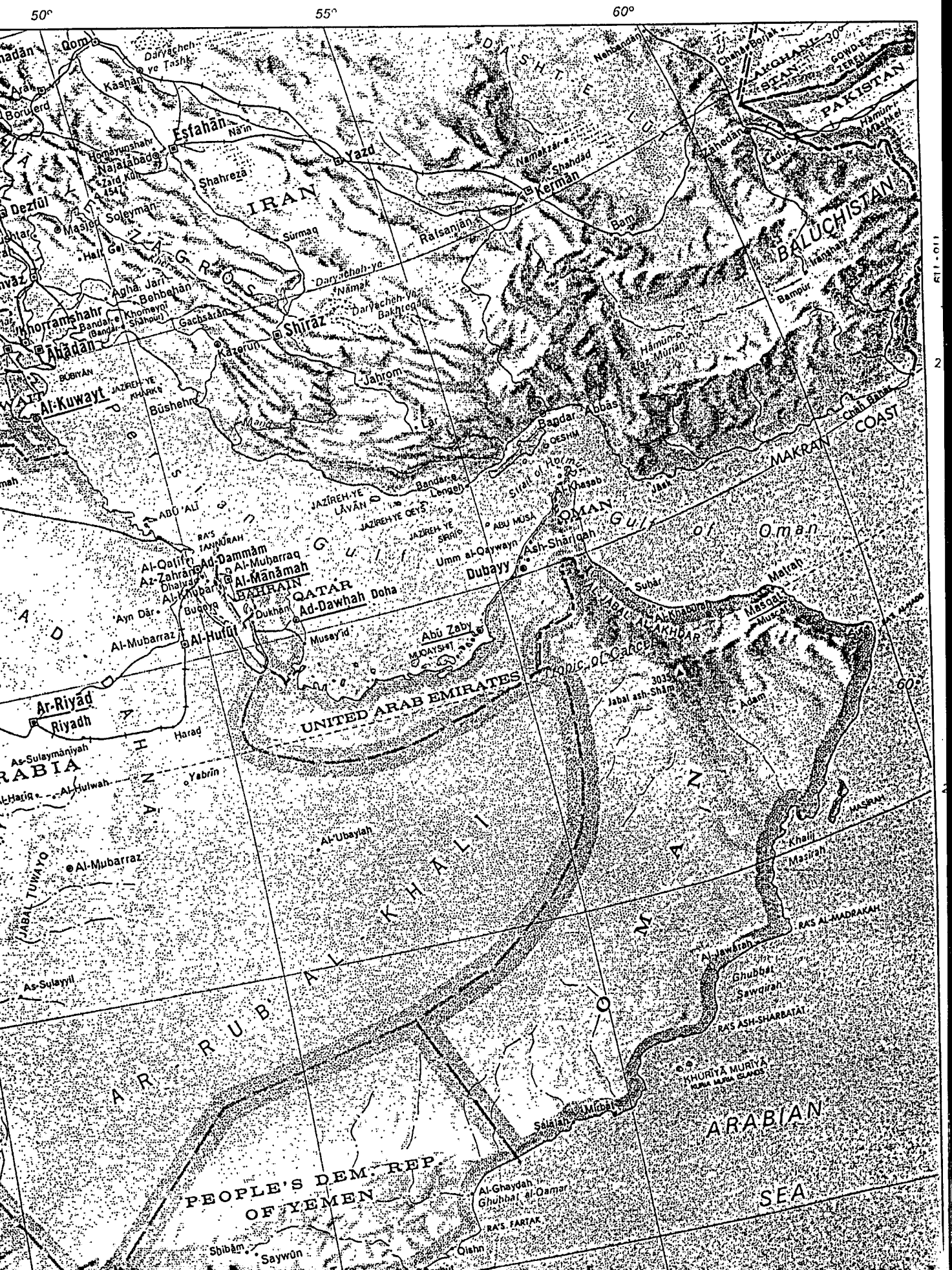
The surrounding land is a desert, therefore nutrients can enter the marine ecology system only via Shatt-al-Arab or, periodically, through the Straits of Hormuz. The plankton life has not yet been exhaustively studied, but it seems to be most diverse in the lower part of the Arabian Gulf,

THE GULF FISHING GROUNDS

- A. SHRIMP GROUNDS
- B. TRAWLING GROUNDS
- C. FISH TRAPS
- D. GILL NETS



Eastern North Africa / Ost Nordafrika / Región Oriental de Africa Septentrional
Afrique du Nord Orientale / África do Norte Oriental



which receives a small contribution from the main Indian Ocean stock.

2.1.2.1 Species of the Gulf Area

The Arabian Gulf is very rich in sea-life. Basson, Burchard, Hardy and Price(1977) 10/ demonstrated that most marine habitats do exhibit considerable diversity of marine life.

They collected more than 167 different species of polychaete, 125 species of gastropod mollusc and 73 different bivalves, over 39 different amphipod crustaceans and 66 species of decapods (shrimps, crabs, shellfish) from sublittoral soft bottoms. Numerous species of crab and smaller crustaceans are of some importance.

2.1.2.2 Fishing Force in the Gulf 11/

In 1987 the number of fishermen licensed by the Fisheries Station in the Eastern Province of Saudi Arabia along the Gulf coast was 2639 of whom 875 were foreign labours.

2.1.2.3 Gulf Coast Fishing Fleet 12/

The total fishing fleet was 998 in 1987 of which 286 were traditional wooden ones, 593 fiber glass boats and 117 aluminium/steel boats, with different outboard engines.

2.1.2.3 Volumes of Landings in the Gulf

Table 2. Landings of Catch in the Arabian Gulf by species, in Tons for the year 1987.

Arabic	Species Names		Landings (Tons)	
	English	Scientific	Gulf	%
Hamoor	Grouper	Serranidae	2168	13.5
Shoor	Emperors	Lethrindae	4091	25.5
Andag	Sea Breams	Sparidae	803	5.0
Hamam	Jacks	Carangidae	895	5.6
Canaad	King fish	Scombridae	1109	6.9
Robhyan	Shrimp	Penaeidae	4696	29.2
Others			2295	14.3
Total			12,057	100.0

Source: Own elaboration. Data from Marine Fisheries Research and Development Centre, Statistical Bulletin, 1987

2.2 Modern Fisheries

2.2.1 The Saudi Arabian Fishing Company

Royal Order (1952), gives Prince Mitaeb bin Abdul Aziz the fishing rights in the Kingdom. This right enables him to catch any kind of marine animals from the waters of the Kingdom, to process, sell/export any marine product. There is no limitation regarding the use of any kind of fishing equipment or method. This rights are for 40 years, as long as this do not adversely affect the livelihood of fishermen at any time. 13/

In 1962, Prince Mitaeb, as Director of the Saudi Company for Fisheries, gave the Director of Al-Gosaiby Fishing Company the right of fishing in the Saudi Arabian Gulf waters and for selling or exporting the catch. In early 1966 this right was extended to include the Red Sea waters of Saudi Arabia for catching all types of fish except shell fish. In 1967 the contract between Prince Mitaeb of Saudi Company for Fisheries and Al-Gosaiby Fishing Company were approved by the Council of Ministers for a period of 15 years.

In 1978, the Council of Ministers decided to establish the "Saudi Fisheries Company". In 1980 Prince Mitaeb's fishing rights were transferred to the Saudi government for the remaining period of his rights and, by a Royal decree, the Saudi Fisheries Company was formed. The company's equity is held as follows: 40% government shares, 25% shares for Prince Mitaeb to compensate for transfer of his concession to the government for the remaining period of his right, 10% shares by a company specializing in fisheries field, 25% shares by the Saudi public.

The Saudi Fisheries Company has an eight-member Board of Directors and the period of its operation is limited to 50 years. It is based at Dammam at the Gulf with development covering Gizan and Jeddah.

Although the fishing rights all over the Saudi Arabian waters remain with the Saudi government, the Saudi Fishing Company has the right to fish, process, sell/export all types of marine animals from the Saudi waters, provided that its actions do not harm the traditional fishermen.

2.2.1.1 Manpower

In the Gulf area there are 240 fishermen of different categories employed by the Saudi Fisheries Company, all are foreigners.

2.2.1.2 Fleet

According to the 1990 Annual Report, the number of vessels in the fleet of the Saudi Fisheries Company were 28 different types of fishing vessels, out of which 3 are shrimp trawlers of 850 hp and 60 mtons storage capacity.

2.2.1.3 Production

The policy of the Saudi Fisheries Company is the non-disclosure of information about actual landings and catch composition. They only report the annual financial results of the Company.

2.2.2 The Cooperatives

During the period 1980/85 modern fishing fleets were introduced through the establishment of cooperatives financed by the government. A total of four cooperatives were established at Gizan, Al Qunfidah, Darin and Jubail to manage fishing on the Gulf and the Red Sea coasts. The government provided the initial 12 boats. Ice plants and service centers were established by the government. New boats were added to the fleet as well as the incorporation of traditional boats and the access to ice and maintenance of boats was expanded. This form of administration is been phased out and their job is been transferred to the Saudi Fisheries Company.

2.3 Other Fisheries Developments

Some inland fishery of commercial value exists in Saudi Arabia. Since the 1980's private fish farms has been established at Al Kharj and Anak on the eastern coast.

2.3.1 Aquaculture in Saudi Arabia

Based on studies conducted by the Ministry of Agriculture and Water, Fisheries Department and the FAO mission, the potential for introduction of aquaculture to Saudi Arabia is excellent.

A marine fish farm requires unpolluted water at a constant temperature. Various locations along the Red Sea coast have these ideal conditions, but the Gulf coast is less promising in this respect due to the great difference between the summer and winter water temperatures.

Some types of fish, preferred by Saudis, have been farmed commercially, e.g. mullets (Mugilidae family) and rabbit fish (Siganidae family).

The conditions in Saudi Arabia are suitable for rearing Tilapia (Cichlidae family) in fresh water. This tropical species can easily be acclimatized for sea water, it is good to eat and a lot is known about its hatching and rearing.

Other potentials for fresh water fish farming are with milk fish, carp and cat fish, of which only cat fish has been reared commercially at an intensive level.

The methods for fish farming differ. The existing ponds

may be stocked with fish which will be left by themselves to grow. This is labour intensive and low in productivity. Specially constructed tanks can be used for this purpose with controlled water, food and oxygen supply. The latter is higher in productivity and, according to the White Fish Authority for Saudi Arabia, may be the only method viable in the Kingdom. 14/

The government provided financial assistance to investors in fish farms and it has established research and development facilities for sea and fresh water fish farming and training in this field.

2.3.2 Aquaculture and the Environment

Aquaculture deals with animals and involves use of land, water, chemicals, etc. Land and water are two of the basic and major natural resources of any country for which the governments try to plan economic policies on a national or local basis.

Whatever state of development a country is in, it is concerned with some level of environmental protection. One of these concerns is the pollution caused by domestic or industrial waste and pesticides. The aquaculture operations, if not handled properly, may also adversely affect the environment through ecological impacts or by adversely affecting human health.

Some of the environmental planning in aquaculture are:

- Planning and zoning of lands to prevent contamination of aquaculture products.
- Installation and operational control to prevent

pollutions.

- Limits on discharges and pre-discharge treatments to meet limits to control pollution as a result of waste discharge.
- Prohibition/limitation of specific activities, e.g. prohibition of breeding in improper areas.

In other countries there is legislation on water, prevention of pollution, conservation of natural resources, health etc. which regulates such matters. The importance of water quality and its protection for aquaculture or the damage caused to aquaculture as a result of pollution from its activities can not be overlooked.

Polluted discharges can make a body of water useless for aquacultural purposes, the same way as over-fishing can harm certain areas. Development of aquaculture should, therefore, be basically governed by available resources and limited by the environmental tolerance.

ENDNOTES

- 1/ Hariri, Khaled. Fisheries Development in the North West Indian Ocean, The impact of commercial fishing arrangements, London: Ithaca Press, 1985, p. 20
- 2/ Ibid. p. 22
- 3/ Agriculture Research Center. Fishing Force in the Red Sea Area, 1989, p. .
- 4/ Hariri, Khaled op.cit, p. 27
- 5/ Agricultural Reasearch Centre, Jeddah. Fishery Statistics Bulletin for the Kingdom of Saudi Arabia, 1985, p. 6
- 6/ Hariri, op. cit, p. 29
- 7/ Agriculture Research Center. Fishing Force in the Red Sea Area, p. 5, 1989.
- 8/ Hariri, op.cit. pp. 30-31.
- 9/ Hariri, op. cit, p. 22
- 10/ Sharabati, D. Saudi Arabian Seashells, The Netherlands VNU Books International, 1981, p. 18
- 11/ Marine Fisheries Research and Developoment Centre. Fisheries Statistics Bulletin, 1987, p. 133
- 12/ Ibid. p. 21
- 13/ Agriculture Research Centre. Ministry of Agriculture and Water. Fisheries of Saudi Arabia, Fisheries Acts and Regulations, 1982, pp. 19-20
- 14/ FAO, Fishery Country Profile, Saudi Arabia, 1987, p.4

CHAPTER 3

ADMINISTRATION OF FISHERIES IN SAUDI ARABIA

3.1 The Saudi Arabian Fisheries Administration

The role of governments in today's fishing industry is very broad. It includes:

- the formulation of policies,
- fisheries legislation,
- ensuring the supply of marine animal protein to their populations,
- allocation of quotas,
- regulations of food standards and hygiene,
- safety of vessels and fishermen at sea,
- manning scales,
- work conditions,
- qualification of personnel,
- monitoring, control, and enforcement of regulations.

The government has also been involved in various other tasks which were not normally part of fishery management, but have significant impact on the fisheries industry, its methods, equipment and production costs.

The Government bears also much of the responsibility for formulating and executing technical development programs for the fisheries industries. Part of the government involvement is through financing of research and development programs, or giving incentives for the establishment or the expansion of the industry. Each

government of the region has its own policy and own objectives regarding fisheries, depending entirely on local circumstances.

The objectives of a clear fisheries policy include the government's plans for conservation of resources, socio-economic goals regarding fishing communities, availability of food supplies for present or future generations, supply of proteins to the population, maintaining/improving national maritime capabilities, or obtaining maximum economic benefits from fishery.

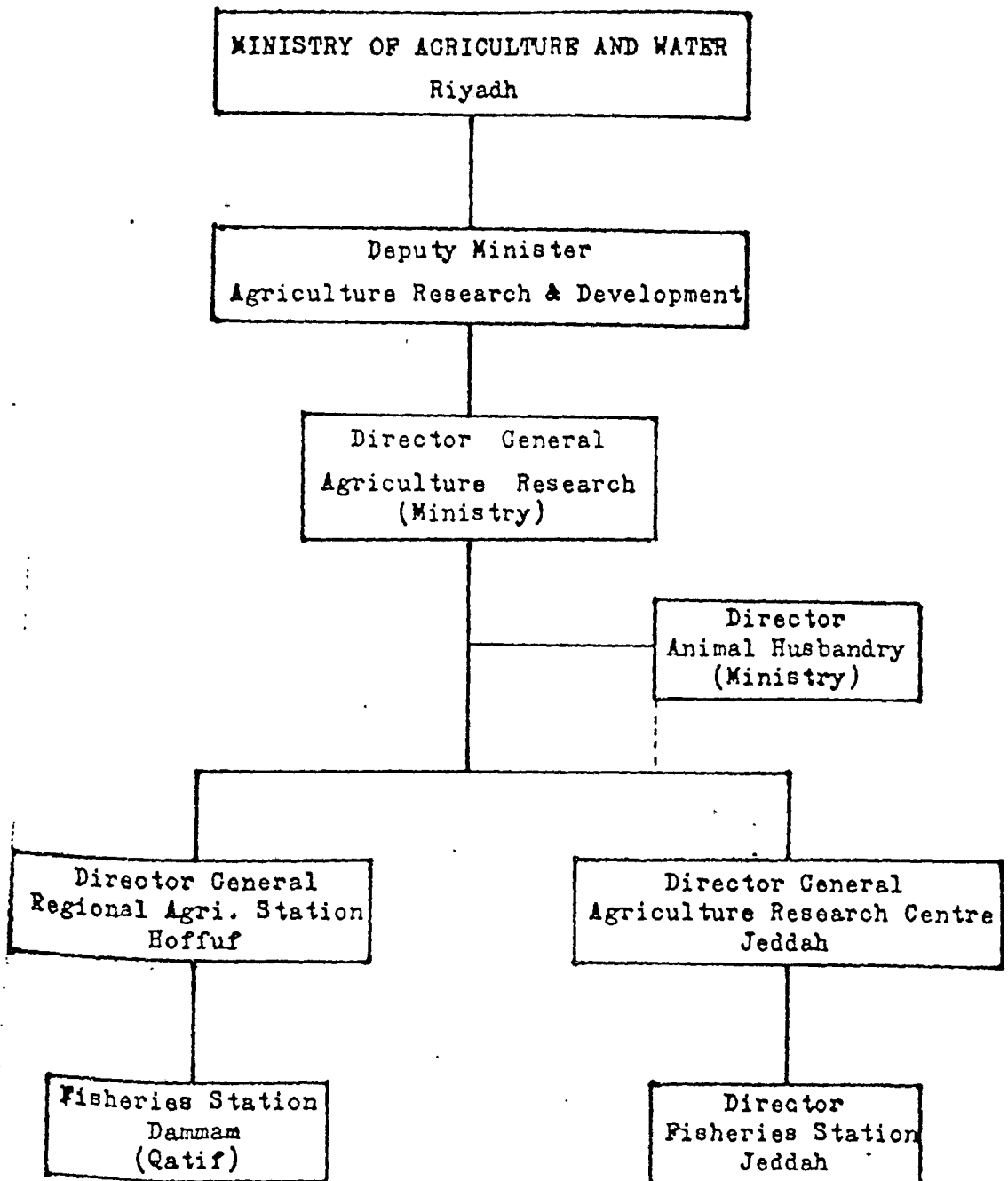
Through appropriate management of the fishing stocks and an adequate development of the fisheries the objectives of the government can be achieved.

Catching, handling and processing, distribution, marketing, conservation, etc. are interconnected. In an attempt to manage fisheries, governments may seek scientific advice and support programs of scientific research formulated and executed by qualified oceanographers, fisheries biologists or graduates of schools of fisheries.

Although the private sector provided most of the marketing effort before, today the government has its share of responsibilities in this field also.

An active research and development program has also the advantage for the government to gain and maintain the required knowledge and experience for competent execution of the regulatory functions concerned.

ORGANIZATION CHART CONCERNING
FISHERIES IN SAUDI ARABIA



3.2 Institutions Directly Involved in Fisheries

Chart No.1 shows the present organization of the fisheries administration in the Kingdom.

3.2.1 The Ministry of Agriculture and Water

The Minister is responsible for the overall development and administration of fisheries. The Minister of Agriculture and Water is assisted by the following personnel:

- a. The Deputy Minister in charge of Agriculture Research and Development.
- b. The Director General of Department of Agriculture Research, dealing with the administrative matters.
- c. The Director of Animal Husbandry Division dealing with matters of fisheries.
- d. The services of a Senior Fisheries Advisors from Food and Agriculture Organization (FAO) of the United Nations.
- e. The Jeddah Fisheries Station

Headed by a Director, it is under the administrative control of the Director General of Agriculture Research Centre, Jeddah.

It is in charge of

- the licensing of fishermen and fishing boats,- the collection of fisheries statistics,
- performs marine biological studies and exploratory fishing.

The Director General of Agriculture Research Center reports the matters concerning Fisheries Station

Jeddah to the Ministry in Riyadh.

f. Fisheries Station Dammam

Under the administrative control of the Regional Office of the Ministry of Agriculture and Water in Hoffuf and the Ministry in Riyadh, it is in charge of

- the issue of licences for fishermen and fishing boats;
- collects statistics on fish marketing.

3.2.2 Other Agencies Involved in the Administration of Fisheries

In addition to the Ministry of Agriculture and Water, other ministries and agencies of the government are also involved in fisheries. The inter-ministerial relationship in regard to fisheries is outlined below:

A. Ministry of the Interior

The Ministry of the Interior is represented by the Frontier Forces (Coast Guard).

The Frontier Forces activities include the following:

- Responsible for security of the coastline of the Kingdom.
- Enforcement of the law in the "protected areas" and other areas restricted for fishing.
- Determines the places where the fishing boats can land their catches.
- Enforces the rules governing fishing, seasons, fishing gear, fishing methods and safety equipment

for fishing boats.

- Specifies the areas along the sea shore where fish farms can be established.
- Grants permission to recruit non-Saudi fishermen.

B. Ministry of Transport and Communication

- It is responsible for registration of fishing boats.

C. Ports Authority of Saudi Arabia

- Constructs, control and maintains fishing harbours.

D. Ministry of Post, Telegraph and Telephone

- Issues licences for wireless sets used on fishing vessels.

E. Ministry of Industry and Electricity

- Issues permits for construction of ice plants, cold storages and fish processing plants.
- Recommends loans from the Industrial Development Fund for private industries/fishermen for construction of ice plants, cold storages, and fish processing plants.

F. Ministry of Commerce

- Regulates import and export of fish and fish products.
- Ensures conformity of fish quality with the existing quality standards.

- Regulates import of fishing gear and equipment.

G. Ministry of Labour and Social Affairs

- Issues licences for establishment of cooperative societies for fishermen and supervises their function.
- Licenses the labour force.

H. Ministry of Municipality and Rural Affairs

- Builds fish markets and supervises the marketing activities.

I. Ministry of Finance and National Economy

- Maintains statistics concerning the import and export of fish and fish products.

3.3 Fisheries Regulations

The objectives of the fishing policy are:

- to ensure that the living resources of the territorial sea of a state are not endangered by overexploitation, the latter adequately assessed by scientific evaluations.
- to maintain and restore the fish stocks at levels which can produce the maximum sustainable yield.

To comply with these government policies the state has the right to regulate the fishing activities of nationals as well as foreigners operating in the state's territorial sea, through appropriate legislation and conditions. These

regulations are aimed at conserving and managing the living resources as well as minerals in the bottom of the seas.

In general there are two types of regulations:

1. Measures directed to conservation and management of the resource and
 2. Measures directed to regulate fishing access to the resource specially to non-nationals.
-
1. Typical measures of the first type deal with
 - total amount of catch allowed, .
 - size of fish landed,
 - mesh sizes,
 - closed areas,
 - species to be caught, quotas.
 - fishing seasons, etc.

All these measures are of scientific nature and they are proper of biological departments within the institutions directly involved in fisheries.

2. The second type of measures deal with the access to the resource, specially to non-national fishermen:
 - Issuance of fishing permits,
 - Licensing the number of vessels,
 - Permits for equipment and gear,

Both types of regulations are the responsibility of the Ministry of Agriculture and Water. Due to the nature of the activities to be regulated, several institutions are also involved.

3.4 Legislation Concerning Aquaculture

There exist no particular legislation regarding aquaculture in Saudi Arabia. The following is aimed at helping those responsible for the regulation of fisheries to draft appropriate legislation in this area.

In most countries the laws governing the water resources deal with its use, misuse and waste, quality and environmental aspects.

As the importance of aquaculture increases in food production, the legislation governing this field should ensure that the legal issues concerning this activity are properly covered. In so doing, it is important to distinguish between different types of aquaculture, as the rules vary according to the type of the aquaculture, e.g

- mariculture,
- sea cage farming,
- sea ranching

all of these primarily depend on the general marine fisheries law, whereas aquaculture which is also called fish farming or fish culture, due to its use of public lands for its purpose, primarily depends on the laws concerning the public land or public water resources.

Aquaculture done on private lands, however, may depend exclusively on the land, water and environmental laws. Unlike marine fisheries, international laws may have little impact on aquaculture.

Because aquaculture cannot be classified as agriculture, animal husbandry or fishing as such, it has no firm legal status of its own yet. The state and its legal systems

could, therefore, deal with it in various ways.

The legislation can distinguish between freshwater and seawater aquacultures. Freshwater aquaculture legislation can be included in laws governing the activities taking place in the rural environment and inland fisheries, whereas seawater aquaculture must consider the international and general fisheries laws.

In most cases, however, the legislation cover fisheries in general and have no particular provisions for aquaculture. As far as the fisheries legislations are concerned, some states seem not to distinguish between the cultured and captured fish. In such states, aquaculture is considered to be an integral part of fisheries and the culture of fish is considered on the same level as catching and stocking of fish.

In drafting aquaculture legislation, therefore, definition of the activity is of primary importance. Since most aquaculture is done in tidal areas e.g. foreshore, bays and inlets, or inland, the land laws may play an important role particularly where there is no specific definition in a law relating to aquaculture. In such instances, the legal provisions governing the high and low water marks, riparian rights etc. will greatly influence the legal definition of aquaculture when drafting the legislation.

3.5 International Organizations Involved in the Development of Saudi Arabian Fisheries

The Ministry of Agriculture and Water is assisted upon request by the following international organizations which have some connection with fish and fisheries business.

These organizations and their objectives are as follows:

- a. Food and Agriculture Organization (FAO) of United Nations
 - general development of agriculture, water, animal husbandry and fisheries.
- b. General Secretariat of the Conference of Arab Ministers of Agriculture in the Gulf and Arabian Peninsula
 - general development of agriculture in the member countries.
- c. UN Educational, Scientific and Cultural Organization (UNESCO)
 - education and training in specialized subjects including fisheries.
- d. International Maritime Organization (IMO)
 - promotion of contacts and cooperation among governments regarding marine affairs, protection of marine environment and safety of navigation.
- e. UN Environment Program (UNEP)
 - protection of environment.
 - Indian Ocean Fisheries Commission (IOFC) of the FAO for the Near East - cooperative action for general development of fisheries in the region.
- f. Red Sea and Gulf of Aden Environment Program
 - cooperative control over pollution.

- g. International Union for Conservation of Nature and Natural Resources (IUCN)
 - taking measures to conserve natural resources.

ENDNOTES

- 1/ Agriculture Research Department, Ministry of Agriculture and Water, Kingdom of Saudi Arabia, "Fisheries of Saudi Arabia", 1982, pp. 1-8
- 2/ Ibid, pp. 15-20

CHAPTER 4

MANAGEMENT OF FISHERIES RESOURCES

Management can be regarded as a process "to have effective control of" 1/. End, benefit, who and what are implied in the basic concept. The answer belongs to rulers according to the characteristics of every country.

4.1 The Need for a Modern Fishing Policy

Decreasing landings, specially of the most valuable species of fish, and the increase in the fishing effort in terms of ton/miles of fish caught in the waters of the Red Sea and the Gulf are now a reality. 2/ */

Several factors are responsible for the drop in catch of some valuable species of fish, among others,

- the impact of technological modernization on fishing itself, resulting from the progress in the techniques for finding, catching, storing and transporting fish.
- the increase in seafood demand and market preferences for a few valuable species,
- pollution associated with the extraction of crude oil in the Gulf area,

*/ For reference see The World Conservation Union. A Plan to Protect Areas in Saudi Arabia, Switzerland, 1990, p. 137

- oil spills, especially the Gulf War oil spill of 1991,-
- outflows from the petrochemical and the chemical industries, etc.

All these factors are pressing the stocks, from which the livelihood of the traditional fisheries depends.

Although the above is good for explaining the problem, the yield of stocks and fisheries in general depend more on the following aspects:

- a. The growth rate of the stock,
- b. Maturity (age, size of fish) of the stocks,
- c. Rate of reproduction or migration of stocks,
- d. Attrition due to natural causes (diseases) and induced causes such as water pollution, overfishing, improper fishing methods, etc.

4.2 Basis for a Fisheries Policy and the Management of Fisheries

The General Framework

The policy and the management of fisheries resources should have its general framework in the Law of the Sea Convention, UNCLOS 1982, to which the Kingdom of Saudi Arabia is a signatory, encompasses all aspects of the uses and resources of the oceans and established a framework for the regulation of all ocean spaces. Some provisions of the Convention deal with the following aspects:

- a. Exploitation of living resources and their conservation;
- b. Protection and preservation from pollution of the marine environment;

- c. Exploitation of non-living resources;
- d. Marine scientific research; 3/

Articles 61-62 of UNCLOS vest property rights of the stocks in coastal states.

- Article 61 par.(1) stipulates that the coastal State shall determine the total allowable catch (TAC) of the living resources in its "Exclusive Economic Zone",
- Article 62 par.(2) gives the right to the coastal state to determine its harvesting capacity, and the injunction to share is not an obligation on the coastal State.

Regarding transboundary stocks,

- Article 63 stipulates that States shall seek, either directly or through appropriate subregional or regional organizations to agree upon the measures necessary to coordinate and ensure the conservation and development of such stocks.

Apart from these rights granted to states, UNCLOS(Art. 61) established certain obligations regarding the conservation of the living resources:

Coastal states shall

1. Determine the allowable catch of the living marine resources.
2. Apply conservation measures for the maintenance of the living resources.
3. Design measures to maintain and/or restore populations of harvested species at levels which can produce the maximum sustainable yield.
4. Ensure that populations of harvested species be maintained at reproductive levels

5. Disseminate information and data relevant to the conservation of fish stocks. 4/

These set of rights and obligations should be the framework by which states design their modern fishing policy. How to translate these principles into a workable set of regulations should be the job of experts in the field. However, the overall policy will mainly depend on the political will of governments and also upon the reality and characteristics of the country.

4.3 Goals of Fishery Management and Development 5/

In order to develop a viable fishery management the following goals should be consider

- The maximal food production from fishery resources.
- Compatibility of fishery-resource use with enhancement of the harvestable productivity and with preservation of the ecological balance of the aquatic environment.
- Allocation of access to fishery resources
- Economically viable fishing, etc.

The Fishery Management Policy Objectives can be divided into 3 main categories

A. Resource use and allocation of resources 6/

- Establishment of an effective management regime for the natural resources.
- Safeguard of the base for productive fisheries.
- Incorporation in resource management models of the major social, economic, biological and environmental components of the system.

- Total allowable catch and seasonal or annual catch quotas being based on economic and social net-benefit maximization, rather than on the biological-yield capability of fish stocks.

B. Economic Development 7/

The economical development of the fisheries should consider the following

- Optimal production capacity, application of technology, craft mix and length of operating season in the fishing fleets.
- Improved efficiency in port markets.
- Economics of location and scale in the fish-processing sector.
- Elimination or minimization of wastage at all stages of production.
- Effective intelligence services for the fishing industry and the fish trade.

C. Social and cultural development objectives 8/

- Maintenance of a skill labor force for the fisheries.
- Alternative employment opportunities.

4.4 Strategies for Fishery Management

1. Resource Management

- Obtain national control of fishery-resource.
- Provide for redevelopment and enhancement of fish stocks whose natural habitat or environment is amendable to effective modification.

- Research and administrative capability, etc.

2. Fishing operations

- apply systems of entry control in all commercial fisheries.
- Coordinate fishing fleet and operating season.
- Provide for the withdrawal of excessive catching capacity in congested fleets and in areas of low productivity.
- Abolish the use of destructive and wasteful fishing gear and fish-handling practices.

3. Fish Processing

- Differentiation of port-market prices according to the quality of fish landed.
- Provide for the allocation of landings.
- Promote the transfer of technology from research to development.

4.5 Existing Fishery Regulation in Saudi Arabia

The oldest fisheries regulation in the Kingdom was published in 1954 after the creation of the Ministry of Agriculture and Water by Royal decree M/934 of 19 June 1954. It was concentrated on licences for fishermen, fishing areas, safety of fishermen and prohibition of the use of explosives.

The 1954 decree was amended many times, until 1970 when a re-structuring of the Ministry Agriculture and Water was carried out and a new fishery regulation was published. In the new regulation a detailed definition of fishermen, fishing rights, methods, vessels (artisanal, industrial), areas of operation and times of operation, was given.

Other regulations related to fisheries:

1. The Directorate of Coast Guard Administration, Royal Decree 218/318 of 29 Moharram 1353 H.
2. Saudi Arabia Territorial Sea Legislation, royal Decree 33 of 27 Rajab 1377 H.
3. Legislation to possess the Red Sea resources, Royal Decree M/27 of Rajab 1388 H.
4. The Frontier Forces Legislation. Royal Decree M/26 of 24 J. Thani 1394 H.
5. Marine Ports and Harbours Legislation. Royal Decree M/27 of 24 J. Thani 1394 H.
6. Establishment of Port Security Units. His Royal Highness the Minister of the Interior Decree 4/Q/S of 14 J. Awal 1390 H.
7. Joining of Port Security Units to the Frontier Forces organization. His Royal Highness the Minister of Interior Decree 2S/7074 of 26 J. Thani 1399 H.
8. Pleasure and Fisheries Legislation. His Royal Highness the Minister of Interior Decree 29/TSS 3135 of 20 Rajab 1405 H.

All this legislative efforts have directed their fishing regulations more at

- the determination of boundaries,
- licensing of fishing boats,
- control of foreign fishing vessels,
- prohibition of destructive fishing methods,
- organization of cooperatives

than to establish measures to protect species and their habitats or the formulation of programs demanded by the Law of the Sea Convention.

In controlling the access by nationals and foreigners to fishing areas, the policy is very specific in the question of nationality. Only Saudis have the right to fish in the Kingdom's waters.

An additional effort is necessary to design the control of the fishing effort by:

- limiting catches per species,
- limiting the access to specific areas,
- reducing fishing time, in order to allow species to reproduce and grow to an adequate size by controlling mesh size, and control of closed areas.
- Landing of catches in designated areas only.

The goals and objectives should take the form of regulations, conditions, executive decrees or ministerial regulations, etc. They should be differentiated into two main types:

- a. Conservation and management measures (such as seasons, closed areas, mesh sizes, size of fish, quantity per species, etc)
- b. Access of foreign fishing vessels (conditions, frequency, licensing, type of vessel, type of gear, quota).

ENDNOTES

- 1/ The American Everyday Dictionary
- 2/ Abuzinada, Abdulaziz H. and others. **Towards Restoring the Ecological Viability of the Marine Life in the Gulf.** Paper Presented before the National Commission for the Wildlife Conservation and Development, Riyadh, Saudi Arabia, 1989.
- 3/ UN. **Guidelines for Maritime Legislation**, second edition, Bangkok, nd, p. 19
- 4/ Materials on bases for UNCLOS, 1981 (Handouts).
- 5/ Extracted from Rowena Lawson. Economics of Fisheries Development. Francis Pinter, London, 1984, pp. 275-278. Cited in Kenneth C. Lucas. Fisheries Management, (Handouts).
- 6/ Ibid, p. 276
- 7/ Ibid, p. 276
- 8/ Ibid, p. 278

CHAPTER 5

ENFORCEMENT OF FISHERIES REGULATIONS

5.1 Enforcement and the Fisheries Management Functions

Regulations in general, in order to be efficient and effective, need to be enforced. Fishing in particular, is the world's most vulnerable activity. Abuses of the ocean resources are frequent, due in the one hand to the vastness of the seas and oceans, where control is almost impossible and on the other hand due to the general believe that the resources of the seas in general and fish stocks in particular are there to last for ever.

If there is a need to regulate the fisheries activity, there is also the need to enforce regulations, otherwise the function of managing the resource may result in empty efforts.

The jurisdiction and discretions granted to the coastal states regarding its fishing resources are given by UNCLOS 1982, Arts. 56, 58, 62, 65, 73 and 82. While the LAW of the Sea Convention gives the right to states to enforce regulations within the territorial waters, methods to enforce them are the competence of the state. Exceptions are made in the ways and methods of imposing penalties to violators of the regulations.

5.2 The Present Situation of Enforcement in Saudi Arabia

The Ministry of Agriculture and Water, as the institution in charge of the management of fishing and fisheries

policy and regulations and the Ministry of the Interior through the Frontier Forces (Coast Guard) are in charge of the enforcement of regulations.

5.3 The Frontier Forces (Saudi Arabian Coast Guard)

The Frontier Forces Directorate (Saudi Coast Guard Administration) was established by Royal Decree 318/218 of 13 May 1934. Its name was changed to Frontier Forces General Directorate by Royal Decree 1407 of 29 September 1975. It was established to control the security of the internal waters and the territorial sea, ports, coasts, islands, land boundaries and other official frontier entrances to prevent illegal entries of persons and commodities to the country.

Among other functions, the Frontier Forces has to comply with directives emanating from the Ministry of Agriculture regarding the enforcement of measures regarding fisheries, such as the following:

Measures for:	Nationals	Foreigners
Designated areas	X	X
Season (shrimps)	X	X
Vessel's ownership	---	X
Permits and licence	X	X
Minimum Saudi crew	X	---
Explosives onboard	X	X
Safety of vessel	X	X
Smuggling control	X	X
Illegal Immigration	X	X

The Frontier Forces carries out only the enforcement of the law in protected and restricted areas for fishing, and enforces the rules governing fishing, and it is not prepared for the technical aspects of control of fisheries which needs specially trained personnel.

5.3.1 Organization of the Frontier Forces

Established under the Ministry of the Interior, the Frontier Forces functional organization includes the following:

1. The Frontier Forces General Directorate

- a. Department of Operations
- b. General Affairs Department
- c. Official Affairs Department
- d. Logistics Department
- e. Marine Affairs Department
- f. Financial Affairs Department
- g. Landing and Aviation Department
- h. Communications Department
- i. Engineering Department
- j. Budget Department
- k. Investigations Department
- l. Tender and Contract Department

Each one of these departments is divided in sections to fulfill their functions.

The geographic organization of the Frontier Forces includes regions, districts, units and stations and checkpoints.

5.3.2 Maritime Regions

There are four regions directly reporting to the Director General. Each maritime regions commander is assisted by a staff similar to those in the General Directorate in charge of regional planning, coordination and evaluation of activities carried out by the districts and unit commanders.

The maritime regions through their respective districts and units carry out the following functions:

1. Patrol boat surveillance of the district territory.
2. Land patrol of the districts coasts.
3. Coasts and internal waters surveillance in coastal stations and checkpoints.

5.3.2.1 Dammam Frontier Forces Region

The function of this region is to carry out, among other duties, the coastal surveillance over 560 kms of coast line and islands. This region is divided into five districts and nine units.

5.3.2.2 Alwajh Frontier Forces Region

This region is responsible for the coastal surveillance on the Red Sea extending from Alaquaba in the border with Jordan to Yanbu. It is divided into four districts and three units.

5.3.2.3 Jeddah Frontier Forces Region

This region is responsible for the coastal surveillance on

the Red Sea extending from Yanbu to Alquahma in the north. It is divided into five districts and seven units.

5.3.2.4 Gizan Frontier Forces Region

This region is responsible for the coastal surveillance on the Red Sea extending from the north of Alquahma to Miday in north Yemen. It is divided into three districts and four units.

There are different types of Units in each District:

1. General Security Units
2. Port Security Units
3. Marine Units
4. Hovercraft Units
5. Maritime Stations and Check Points

Though the Frontier Forces General Directorate was established to carry out the basic duties and responsibilities for security and protection, the enforcement of fishing regulations at sea is a marginal activity for this organization.

CHAPTER 6

MAJOR PROBLEMS AFFECTING THE MANAGEMENT OF FISHERIES IN SAUDI ARABIA

6.1 Problems of Supply of Fishing Products due to Increases in Demand

The transformation of the Saudi economy, from traditional agriculture to a modern economy resulted in higher labour, capital and maintenance costs for the fishing business.

Economic advances brought also changes in the dietary attitude of Saudis towards sea food. The increase in consumption was covered, first with imports of fishing products and afterwards with the national supply of fisheries. Industrial fishing started to make available fishing products on the markets, in addition to the supply from cooperatives and excedents of the artisanal fishermen. Processing plants were established in Damman and Jaizan as the demand increased.

All these have exerted considerable pressure upon the stocks, especially those close to the coast lines. As the volume of catch per species per effort increases with the introduction of new technology (industrial/commercial) the distance to make the catch has also increased, thus causing the fishing industry to intensify the effort.

In addition to problems of volumes and consumption the lack of control of size and maturity of the species, and open seasons (except for shrimps) for all species are also contributing to the attrition of stocks.

The expansion of the oil industry and the availability of better paying jobs have also resulted in the decrease of labour force in the fishing industry, which obliges the industry to import manpower. The dietary habits of foreigners has contributed to the expansion of the industry.

6.2 Obsolescence of Regulations

The fisheries laws and regulations in most countries of the region were enacted or elaborated before and during the 1970s. As already mentioned on pages 37 and 38 of this paper all regulations dated back t the 1950s and 1960s.

These laws and regulations deal in one way or another with

- the determination of boundary,
- licensing of fishing boats,
- prohibition of destructive fishing methods (poisons, explosives, use of chemicals, etc.),
- regulation of fish marketing and the organization of fishermen's cooperatives.

However, non of the regulations deal with the kind of fisheries programs demanded by the UNCLOS regime.

There is no mention in the regulations of stock management in terms of the maximum sustainable yield or optimum yield. International commercial fishing arrangements are left to the decision of the authorized fishery administration bodies with no specific guidelines in the provisions of the laws themselves.

Licensing of fishing vessels and/or fishermen are simply

made for record purposes and collection of fees. They are not incorporated in the management schemes, in terms of periodic information collected from the fishermen on catch, catch composition, size, etc.

The management of fisheries requires clear and consistent objectives, as well as measurable goals and a permanent assessment of the goals achieved. A process of reassessment and formulation of new goals and objectives is the most important phase to review regulations and policies.

6.3 Gulf Oil Spill and its Implication on the Fishing Industry

Oil spills are caused by natural seepage from oil bearing strata, oil refineries, shipping accidents, or by deliberate actions like the incident during the Gulf War.

Despite the existence of some regulation controlling pollution, flushing of oil tankers in the Gulf, which is one of the world's busiest oil loading and trading center, has been a prolific source of pollution of the Gulf waters.

According to the statements made in 1990 by some officials of the United Nations Environmental Programme (UNEP), the Gulf waters are 43 times more polluted than any other equal area of water in the world. This is before the recent pollution caused by the Gulf War.

The effect of the pollution in the Gulf is aggravated by its peculiar physical environment and weather. This area covering 240,000 kilometers, has an average depth of only 25 meters, with the northern and western shores being as

shallow as only 15 meters in some areas, some of which have the most productive biotites. The depth on the eastern coast is about 60 meters and near the Strait of Hormuz it is about 100 meters.

Unlike in the open seas, the semi-enclosed nature of the Gulf tends to slow down the process of natural dispersion of oil spills. Studies reveal that intermixing of waters in the Gulf is a slow process. It takes about 3-4 years for the Gulf waters to mix in the Arabian Sea. This is due to the geographical location of the Gulf separating it from the Arabian Sea by the Strait of Hormuz and Gulf of Oman.

The high salinity of water caused by rapid evaporation, and lack or shortage of fresh water inflow due to scarcity of rain and rivers, disturbs the life cycle of shrimps, and the shrimps' food chain. It can also result in the presence of a large quantity of suspended material in water which, in turn, accelerates sedimentation of the oil spills, thus harming the benthic organisms.

Sudden and wide variations in water temperatures in the Gulf affect the physical and chemical decomposition and transformation of oil spills.

The weak anti-clockwise circulation of water results in accumulation of pollutants in the shallow coasts of the Gulf. Oil gets trapped in the mangrove-rich and marshy areas, reefs, bays, lagoons and other inlets, causing damage to marine life.

Particles of oil in the water are inadvertently ingested by marine organisms. They are either excreted unchanged, metabolized or incorporated in the body tissue. The impact ranges from toxic, through no effect, to a

beneficial source of energy. There is no evidence, however, that it accumulates in higher levels of the food chain as the persistent pesticides do.

Due to the extreme conditions of the Gulf, the ecological communities in this area are not well suited to recover from environmental disasters. The impact of oil spills on the marine species would depend on the quality of the site affected. Specialized habitats such as mangroves, grassbeds and coral reefs are at great risk. Once they are destroyed they are slow to recover because similar communities are widely separated in the Gulf, making repopulation difficult.

Salt grass marshes and mangroves swamps which occupy the quietest waters and have a fine grained substrate are specially vulnerable to long term damage. They are among the most difficult sites to clean in the Gulf. They occur infrequently in the Gulf waters and are critical habitats for many forms of marine life.

6.3.1 Impact on Seafood Resources

There are several ways in which the fisheries stocks are affected.

1. Fish is generally hit by the physical affects of oil rather than by its chemical toxicity. The impact on different species, however, varies considerably. Free swimming fish and shrimp are rarely affected directly by oil spill, whereas the mortality rate is generally high in eggs and larvae.
2. Most of the species may be able to survive the oil

spill, but fish stocks will still be hit, affecting their movement, health or reproduction.

3. Some of the fish species sensing trouble in the traditional environment may resort to mass migration from the affected areas to safer havens in far away areas in the open sea.
4. Oil spills are highly harmful to the health of mangroves which are the nurseries of fish and shrimp in some of the coastal areas.
5. Although, according to the British Royal Commission, the risk from oil contaminated seafood is one of taint only, and not poison, oil spills may render the fishery products unacceptable to consumers.
6. The presence of oil in the sea makes fishing operations impossible. With the onset of an oil spill, fishing operations are suspended. This adversely affects the artisanal fishermen, fishing companies and the consumer.
7. Reduced levels of solar irradiation due to oil spills lead to reduced primary productivity, thus affecting the availability of foods throughout the food chain, and ultimately decreasing fisheries resources.

The recent oil pollution in the Gulf during the Gulf War has resulted in the slow growth of the shrimp thus delaying the shrimp season. The catches have been much lower, probably due to the sharp decline in the proportion of the female shrimp carrying eggs. This indicates a

further decline in the shrimp population in the Gulf next year. The toxic material in the waters has caused the regions favorite fish, Hamour (grouper) to contract a disease although there is no indication of any problem for consumption of this species.

Oil pollution in the Gulf region is worsening as oil tankers routinely empty sludge directly in the waterway, mostly to avoid increased dumping fees.

Delegates and speakers at the Middle East Environmental Conference in 1991 said the Gulf War spill of 6 million to 8 million barrels only added to the already serious problem of illegal oil sludge dumping. The adverse impact of this pollution on the marine environment of the area will, no doubt, surface in the years to come.

6.3.2 Efforts to Combat Pollution in the Gulf Area 2/

In late January 1991, the world became aware of massive releases of crude oil into the Arabian Gulf. It was apparent that the spill was one of the largest ever and posed a serious threat to the marine and coastal resources of the region. It was clear that no one government would be able to handle the enormous clean-up efforts required and that international co-operation and assistance would be necessary.

Almost immediately a number of governments made it known to IMO that they would be willing to render assistance in dealing with the incident, and it became clear that IMO could, if requested commence channelling such offers to governments of the region as envisaged by the recently adopted International Convention on Oil Pollution

Preparedness, Response and Co-operation, 1990 (OPRC Convention).

The Government of Saudi Arabia invited IMO to screen offers of international assistance on its behalf and to ascertain the terms and conditions attached to such offers several other governments of the region also requested IMO to initiate international action to combat the spillage.

The main impact of the spill has been on Saudi Arabia's marine and coastal environment for which national response efforts have been co-ordinated through the Metrological and Environmental Protection Administration (MEPA) operation center in Dhahran. MEPA has been assisted in its efforts by an International Interagency Assessment Team (IIAT), led initially by oil pollution specialists from the United States and later led by specialists from IMO .

The IIAT included several pollution combating and environmental specialists from other countries. The IIAT continuously drew together information on the movement and extent of the oil spills, together with details of the on going efforts to combat the pollution and recommended spill response strategies.

6.4 The Lack of Reliable Fisheries Data

One problem encountered in the fisheries of Saudi Arabia is the lack the type of basic information (not to mentioned life-history information) that is well known for almost every species of any commercial importance in developed fisheries. This information gap persists despite the fact that most of the species in Saudi waters have been fished locally for hundreds of years.

Basic statistic is specially needed in order

- to assessed periodically the state of the stocks,
- to control the volumes of catch allowed,
- to control of gear and the number of fishing vessels operating in each area.
- production, species particulars, landings, and so on.

ENDNOTES

- 1/ Speech on "The Devastating Effects of Oil Spills on Sea Life and Fisheries" by Nasser Othman Al Saleh, Ph.D., General Manager, Saudi Fisheries Company, Dammam, Kingdom of Saudi Arabia, Dubai, U.A.E., 22-23 October 1991.
- 2/ IMO Special Report Report No. 677. One Year Later. A Summary of Activities of IMO During the Persian/Arabian Gulf Oil Pollution Emergency, 21 February 1992.

CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

Looking at the supply of protein, other than fish, in the Arabian peninsula, one encounters that this is at least scarce. In the case of Saudi Arabia, the country is a net importer of animal protein (different kinds of meats). The economy of Saudi Arabia depends on the oil production and has an increasing percentage of urban population with a significant proportion of foreigners. In Saudi Arabia there are no cultural barriers hindering the increase in seafood consumption. Fishery is the most economically feasible activity to secure cheap protein for the increasing population of Saudi Arabia.

The role of governments regarding fisheries is broad. The main role is meeting the needs of the people and conservation of the resources, either sea or land resources.

The exploitation of such resources must be regulated through an adequate policy and a well organized management of the resource.

The objectives of fisheries management is to exploit the living resources of the ocean in a sustainable way through the implementation of regulations and adequate measures.

In both coasts of Saudi Arabia, the Red Sea in the Western part of the Kingdom and the Gulf in the eastern part, since long ago fisheries have co-existed along with mutually complementary activities.

Fishing along the Red Sea is more difficult than in the Gulf due to hydro-meteorological conditions and the topography of the area. Whereas fishing in the area of the Gulf is more abundant due to the special conditions of the marine flora, catches in the Red sea are two thirds of the volumes caught in the country, the reason for this has been explained in Chapter 2 of this paper.

Fisheries in Saudi Arabia are in a very crucial point in its development due to pollution of the Gulf waters.

The Ministry of Agriculture and Water is in charge of the administration of marine resources in Saudi Arabia. The Ministry issues regulations and these are enforced by the Ministry of the Interior through the Frontier Forces. These regulations dated back to 1960s and 1970s and in need of urgent review.

The Frontier Forces General Directorate was established under the Ministry of the Interior to carry out the basic duties and responsibilities for security protection of the internal waters and the territorial sea, coasts, islands and boundaries, ports and other official frontier entrances. To assure prevention against smuggling, entrance of illegal immigrants, crimes and destruction, security protection and other responsibilities and functions.

The Frontier Forces are organized in 12 departments after the main functions of the Directorate and the geographical organization includes 4 maritime regions on both coasts and a total of 17 maritime districts and several units under each district. All units are equipped to fulfill its functions.

The Frontier Forces have established maritime stations all over the coasts closer to small fisheries locations to enforce regulations.

In spite of all of this effort, the enforcement of fishing regulations is a marginal activity to the Frontier Forces, due mainly to lack of proper-trained personnel to carry out this function. To have personnel trained in all aspects of fishing and enforcement of its regulations is costly and the fishing areas are vast. Instead of regarding the enforcement activity as a security function it should be seen as conservation function with all the implications and trained people it takes.

RECOMMENDATIONS

Fisheries Management

1. The establishment of an effective management regime for the natural resources of the seas in general and the fisheries in particular should be the aim of any fishery policy.
2. Total allowable catch and seasonal or annual catch quotas being based on economic and social net-benefits maximization, rather than on the biological-yield capacity of fish stocks should be the principle behind any governmental effort to regulate fisheries.
3. One of the goals of fishery management should be the compatibility of fishery resources with the enhancement of the harvestable productivity and with

preservation of the ecological balance of the aquatic environment.

4. The task of formulating and applying regulations for fisheries should be placed in the fisheries department. With this measure the number of government departments and officials that the fishermen or the fisheries industry will have to deal with will be reduced. The fisheries department should have complete and independent jurisdiction over all matters affecting fisheries.

International Cooperation

5. The country should seek international assistance for the combat of pollution at sea and the prevention of pollution in those areas declared of some importance for fishing.
6. Support regional cooperation within the area of control of spills and pollution combat and warnings.

Enforcement of Regulations

7. Enforcement should be carried out by personnel of the Ministry of Agriculture through the Department of Coastal Fisheries Surveillance, now placed within the Coast Guard structure, keeping the logistics of the surveillance effort under coordination with the Frontier Forces (Coast Guard).
8. Enforcement of fishing regulations should be directed towards inspection, surveillance and the spreading of fishing information as a way to educate fishermen in aspects of the biology of species, appropriate fishing

technology and conservation measures.

9. The Fisheries Department should be empowered with ways and means to enforce all those measures contained in the various regulations.

Acquaculture

10. In drafting aquaculture legislation, definition of the activity is of primary importance. Since most aquaculture is done in tidal areas e.g. foreshore, bays and inlets, or inland, the land laws may play an important role particularly where there is no specific definition in a law relating to aquaculture.
11. As the importance of aquaculture increases in food production, the legislation governing this field should be enacted to ensure that legal issues concerning this activity are properly covered. It is important to distinguish between different types of aquaculture, e.g. mariculture, sea cage farming, sea ranching, freshwater and seawater aquacultures.