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## Fisheries development of Somalia

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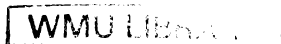
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**WORLD MARITIME UNIVERSITY**

**Malmö, Sweden**

**FISHERIES DEVELOPMENT OF SOMALIA**

**By**

**Commander. Abdullahi Omer Kawden**

**S O M A L I A**

A Paper submitted to the faculty of World Maritime University in partial satisfaction of the requirements for the award of a

**MASTER OF SCIENCE DEGREE  
IN  
PORT AND SHIPPING ADMINISTRATION**

The contents of this paper reflect my personal views and are not necessarily endorsed by the University.

**Signature:**

**Date :**

I have dedicated this paper to my lovely wife  
Farhiya and my five children , Liban, Hodan , Habeen,  
Khairif, and deeqa.

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I would like to express my special gratitude to Professor , Patrick Alderton, my Course Professor of Port and Shipping .

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# FISHERIES DEVELOPMENT OF SOMALIA

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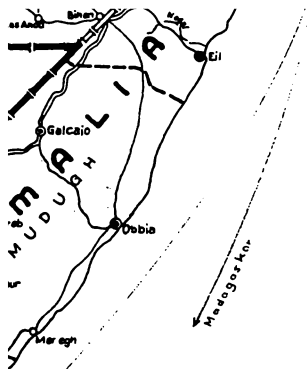


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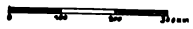
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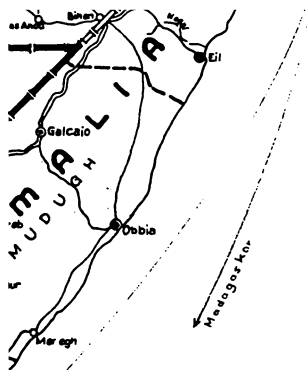


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**SOMALIA**

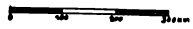




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**SOMALIA**



## INTRODUCTION

Somalia has a coastline of 3,333km, the longest coastline in Africa, excepting South Africa when Namibia is included. Over 1,300km of this coastline is located in the north, facing the Gulf of Aden and stretches from the tip of the horn to the boundaries of Djibouti in the west. The remainder opens to the Indian Ocean and extends to the Kenyan border. One of the major five upwellings in the world exists in Somalia and is located around the Horn where almost 80% of Somali fish resources are found.

Several resource assessment surveys carried out in the past two decades confirm the existence of substantial fisheries resources in Somalia .

Prior to the independence in 1960 the number of people engaged in fisheries was minimal and was restricted to some coastal communities who were fishing for their mere sustenance and for occasional exchange of dry salted products for imported commodities especially from the peninsula.

The Somalis looked to fishing as a contemptible occupation and looked down upon those engaged in such activity. This attitude was grounded on solid economic terms. The majority of the Somalis were engaged in livestock rearing which was preferred to both agriculture and fishery. This was so because livestock provided the greatest economic security for the people and showed a much higher rate of return than the other two sectors namely agriculture and livestock.

As regards agriculture, one season failure of rains was enough to turn the agriculturalist into an instant pauper, while fisheries required fishing boats, gear and spare parts all of which have to be imported.

Furthermore, and apart from the physical risks involved the products were perishable and given the lack of infrastructure and other preservation facilities it was always impossible to bring the product to internal urban consumption centers or to foreign markets abroad. Therefore the number of people involved remained low, the sector's contribution to the economy was minimal and significant. The inferior rating given to the sector, and to those engaged in it was registered in poetry and in other folklore, where-by one poet said : Aman who dives and comes up with a shivering snake has no option but to hide his face in shame.^

It was not until after independence in 1960, that fisheries was recognised by the national government as a very important resource and some concrete programmes were undertaken. Along with agriculture and livestock, fisheries were recognised as a major national resource and policy decision was adopted to grant the top most priority to their development.

Fisheries were in particular recognised to contribute to the following objectives:

1. To increase the gross national product.
2. To provide necessary nourishment to the population.
- 3 To create sizeable employment opportunities for the people.
4. To increase foreign currency earnings of the nation.
5. And to contribute to the introduction of new techniques, which will enhance the productivity of the factor.

. The main objective of my thesis project is to explore then historical and traditional background evolution and the present situation of the Somali fishermen as a whole, the various policies adopted by the Somali government to develop the countrys fisheries

sector. The role of seafood production and consumption within the total picture of other animal proteins supplies, special attention will be given on the international fishing arrangements that exist in the country and their implications for fisheries development. In my study, I will attempt to look thoroughly at the best alternative option. Among the various possible commercial fishing arrangements, that could be undertaken by Somalia to enhance its fisheries development in order to recover from the large drain of the foreign currency. Keeping in mind, that the population of Somalia has been suffering a chronic food shortage in the last decade, the people are predominately of nomadic nature, the isolation of the coast in relation to traditionally frequented grazing lands, and the customary importance of animal meat in the food diet, for satisfaction of its animal protein needs, are very difficult obstacles to overcome in the development of the distribution and consumption of the fish in Somalia. In my following chapters I will discuss something about the fishery legislation, administration, marketing, production, the resettlement of the nomads in coastal fishing zones and the industrial fishing activities in the country.

# CHAPTER ONE

## S O M A L I A

### I:1 General economic data

Area :	637,657 sq.km
Shelf area (22m)	32,500 sq.km
Length of coast	3,333 km
Population	5,400,000
Agricultural GDP	577,000,000 US\$

### I:2. Fisheries data

Commodity balance (1984)

Fish for direct human consumption was :

Production	87,000 tons
Exports	76,000 tons

Gross value of fisheries out put : US\$ 8.1 Million

Trade value of export : US\$ 7.0 Million

### I:3. Structure and characteristics of the industry

#### I:3:1. Marine fisheries

Prior to 1970, traditional fishing activities in Somalia comprised two very active fisheries: The Bunjuni fishery between Kismayo and the Kenyan border, and the north coast fishery of the Horn of Africa and the Gulf of Aden. Since most Somalis have no historical or cultural association with the sea they are traditionally neither fish eaters nor fishermen. Both these fisheries concentrated, therefore, on the production of dried and

salted fish for export; the Bunjuni fishermen in the south traded mainly with Kenya and Tanzania; and the northern fishermen , being mostly from Yemen and Seylawi mixed descent, traded with the Arabian Peninsula. Total annual catches from the traditional sector before the 1970s were probably about 1,2000 tonnes; negligible quantities were consumed inland , though the small urban markets had developed in Mogadishu and Kismayo. However, during the 1970s very great changes occurred.

During the early part of the decade many traditional fishermen gave up fishing partly as a result of Government reorganisation and collectivization of the fishing industry, and partly due to the attraction of alternative, relatively well paid, work which became available in Saudi Arabia and the Gulf. The traditional trading links were severely curtailed by the government and a state run dried fish purchasing operations based in Mogadishu was set up. The Government also made an attempt, with the assistance of the USSR and the World Food Programme, to resettle 16,000 drought stricken nomads in four new fishing communities. In all, 21 fishing cooperatives were established around the coast embracing all fishermen. Many of the cooperatives received new 8m - 10m boats with in board engines and fishing gear. Unfortunately, the effectiveness of these craft were very limited due to inadequacies of the equipment, the withdrawal of the Soviet Union support in 1977 and shortages of spare parts and skilled mechanics. Of the 685 boats originally supplied over the period 1972 - 1979 by the Soviets, and subsequently by the Swedish, Italian and other donors, only few of them are operational in the last recent years .

Since 1981, a policy of privatisation has been pursued and a marked improvement has been noticed in



vessel maintenance and operation. A factory for fibre glass boats has produced 160 boats of 6.4 m between 1978 and 1981. Since late 1982 production has concentrated on larger (8.5m) boats. Moreover, the nomad resettlement programme has been abandoned.

In the industrial sector, between 1974 and 1977, Somalifish, through a joint venture with USSR, operated 10 freezer trawlers which reportedly caught about 4000 tonnes of demersal fish and deepsea lobster. Subsequently, following the Soviet withdrawal, Somalia has entered into a number of joint venture agreements, mainly with Italian companies. During the past years, Somalia has acquired a fleet of three large freezer trawlers supplied under an arrangement with Italy. Two ex-Australian shrimp trawlers have also been operated, though not on a continuous basis. The catch from the offshore sector is probably now averaging about 4,0000 tonnes/year of fish and 3,500 tonnes of lobster.

### Ii3i2 Inland Fisheries

Inland fisheries where they occur are not significant and carried on with primitive gear. Nevertheless, a one man project terminated in 1983 showed promising results using hoop traps in the Juba river, and a small number of Riparian dwellers are now using this equipment commercially.

### Ii3i3 Aquaculture

There is no aquaculture activity in the country, but it may be feasible to combine aquaculture with some existing irrigation schemes.

### I:3:4 Utilization of fish catch

The majority of the Somali catch continues to be exported mainly in the dried form, although a big increase in frozen exports, either directly from offshore fleet or through new cold storage facilities in Mogadishu, Kismayo, and Berbera is expected over the next few years. New fish markets have also been established with the Japanese assistance in Mogadishu.

The tuna processing plants of the north coast, including the Las-Korey cannery established by the Soviet, have generally disappointing records in terms of production as this cannery has never operated at more than 25% capacity.

Only two seasonal tuna canneries at Habo and Qandala continue to be viable. A large freezing and storage plant at Bolimoog has not so far operated economically due to a lack of both catching capacity and market access, though plans do exist for rehabilitating it as part of a comprehensive north coast development programme. Some of the successes have already been achieved in the south, like in the case of the Kismayo processing plant which has been rehabilitated with FAO assistance.

### I:3:5 Consumption of fish

Domestic fresh consumption is limited to coastal areas of poor communication, lack of familiarity with fish, seasonally of supply and traditional preference for meat. It is estimated that only around 1,100 tonnes of fish are consumed per annum in the country. In Mogadishu, it is estimated that consumption of fish is rather in comparison to other cities in the country.

### I:3:6 Economic role of the industry

Fish has never been a great economic importance in Somalia, relative to livestock and agriculture, but the substantial offshore resources have an important foreign exchange earning potential, and , in the longer term, fish protein come to play a much larger role in meeting nutritional requirements of the country.

### I:3:7 State of the industry

The Somali fishing industry is going through a process of re-adjustment after major innovations and changes during the 1970s.. many of which were unsuccessful. Nevertheless, the indications are that the industry is now poised for a period of growth. A new policy of privatization of inshore fishing boats and the planned injection of new facilities and infrastructure suggests a more productive future for the industry in both inshore and offshore sectors. Fishing has a great potential contribution to make domestically, since Somalia is a country which suffers from chronic food shortages.

### I:4. Development prospects

Information on the size of the resources is still rather imprecise, but it is known that substantial unexploited resources do exist. Unfortunately, the most abundant and tapped resources, some 100.000 tonnes potential annual catch of sardines around the Horn of Africa and off Ras Hafun, are also the least valuable, the least accessible and occur in the roughest areas. Moreover, the more valuable demersal stocks which are also not fully exploited are extremely costly to harvest, requiring large and powerful trawlers. Nevertheless, comprehensive development plans exist, covering much of the Somali coast.

In Kismayo and Mogadishu areas new cold storage facilities are planned which should facilitate both greater domestic consumption and the export of the surpluses or high-valued species. In the north, a proposed integrated development programme involves expansion of inshore fisheries as well as the trial fishing of the small pelagics and tuna stocks. In the industrial sector, further additions to the fleet, either new Somali vessels or by means of joint venture are on the process in the coming future.

#### I:4:1 Demand

At approximately 0.4kg/head per year, consumption of fish in Somalia is one of the lowest in the world. While traditional tastes and poor communications have confined the market to certain coastal areas, the shortages of the meat have diverted some demand towards fish among lower income groups. However, although continued increases in per capita fish consumption maybe expected, supply is likely to exceed demand for the foreseeable future, taking into account the need to pursue export market outlets.

#### I:5.RESEARCH

Since the R/V DR. Fridtjof Nansen in 1975 and 1976 and his survey of mesopelagics in 1980/B1, further research has been undertaken by the Italian freezer trawlers licensed to fish since 1978 and by the Spanish trawlers in 1981. Further surveys with the R/V DR.Fridtjof Nansen are planned in the 1984 in the Gulf of Aden and around the Horn of Africa.

## I:6.AID AT PRESENT

United Nations assistance to Somalia began in the late 1960s, with resource surveys, particularly of tuna, off the northern coast. UN involvement has been continuous since then (mainly through UNDP/FAD/SOM/75/008) And throughout the Soviet period, though largely in the Kismayo region rather than in Mogadishu as originally intended. An FAO trust fund project funded by the Swedes has given institutional support to the Ministry of Fisheries .

Sweden and Italy have been particularly active among bilateral donors, providing vessels and equipment, with Sweden concentrated on the in shore fishery and Italy on the developing the offshore fleet. More recently the Federal Republic of Germany has helped with the expansion of cold storage facilities in Kismayo. The UK has also provided experts in small scale fisheries and has helped with the re-engining programme of unserviceable boats. Japan has model fish marketing outlets in Mogadishu.

## I:7. FUTURE AID

Recently , EEC has expressed interest in a comprehensive development of the fishery in the country. Development plans for the north coast including cold storage plants.

## I:8. Administration and Institutions

The Ministry of Fisheries of Somalia was established 16 years ago with the objective of developing Somalia's untapped fish resources and has throughout its existence been supported by expatriate technical staff, initially from some of the European countries but more from the FAO. There are few trained staff in fisheries in

the Ministry and a number of Somali nationals have been sent for training overseas.

# C H A P T E R       T W O

## THE ENVIRONMENT

### 2.1 Topography.

The coastline of Somalia is about 2,000 miles long. There are two major coastal areas, these are the Northcoast, bordering the Gulf of Aden, and the east coast on the open Indian Ocean.

The Gulf Coast of Somalia, between Lovada in the west and Ras Asir. Cape Guardufui in the east, is about 650 miles in length. The term Gulf of Aden is restricted to the waters between the Red Sea entrance at Babel mendab in the west and straight line drawn from Ras Fartak to Ras Asir in the east. The Gulf is regarded as an extension of north western Indian.

The coastline consists a series of sandy beaches, broken at intervals by rocky outcrops or cliffs which often extend into the shallow waters. There are no fringing coral reefs along the coast because of the seasonal occurrence of cold water currents and turbidity from upwelling areas .Coral reefs and out crops are mainly confined to the extereme western Gulf of Tadjura and Perim Islands. There are also no major offshore islands that lie off the Somali coast in the Gulf of Tadjura.

From the beach, the seabed slopes steeply and the continental shelf is very limited in extent. The major shallow water banks are the Perim / Aden bank, which extends a maximum of about 15-20 miles off shore, and the Gulf of Tadjura. Small banks, within the 200 meter contour, are present off the Somali coast at Mait and Alula.

The extreme Western Gulf is less than 100 fm in

depth, while a deep sea basin stretches tongue - like from the east into the central section of the Gulf.

No major river system enters the Gulf. Fresh water enters the sea during isolated flash - floods and stream beds, or wadis, remain dry for the greater part of the seasons. In localities where heavier outflows occur from the adjacent mountain areas, inlets or khors are formed. The runoff from the land appears to have no significant effect on the marine environment.

The coast is generally, unbroken, with no natural harbours.

The larger khors, Luqhaya, Habo, Aluula, and Kandala, however, offer safe anchorage for smaller fishing craft with draft less than 4 feet, which may enter and leave the inlets at the flood tide. A good modern harbour has been constructed at the northern region .

## 2:2 SEASONS

The seasons over the Gulf of Aden are associated with the southwest monsoon, and the northwest monsoon winds. The southwest monsoon reaches the western gulf during the last week in May or the first week of June, and recedes from the west during the last two weeks of September. The monsoon is the most intense in July with maximum wind speed exceeding beaufort 7 . Wind speeds exceeding beaufort 6 occur in June and August. The prevailing winds are across the mouth of the Gulf. The northeast monsoon is established over the Gulf of Aden and the adjacent arabian sea from December to March, arriving earlier and receding later in the east. The monsoon is the most intense in January with wind speed exceeding beaufort 4. The prevailing winds blow into the Gulf of Aden.

Variations of several weeks of the monsoon



seasons may occur from the year to year, but April and October can be considered inter monsoon months over entire area transitions in meteorological and oceanographic conditions are marked during these periods. The following seasons can be recognised on broad basis.

NE monsoon	- Winter	December	- February
Inermoonsoon	- Spring	March	- May
SW monsoon	- Summer	June	- August
Inter moonson	- Autuman	Sept.	- November

Inclement weather and sea conditions, which limit successful fishing operations, are generally prevalent during the southwest monsoon at the peak intensity of the northeast monsoon late December and January. The inter monsoon are periods of light and changeable winds with good fishing weather conditions. The main tuna fishing season on the gulf coast of Somalia generally extends from October through April and May.

There are no distinct rainy seasons over the western gulf. To the east the SW monsoon is wet, the total amount of rainfall is small compared to the east coast of Somalia. The transitory rivers subside rapidly, generally without reaching the sea. Eastwards of Ras Fartak prolonged spells of low cloud or coastal fog with persistent drizzle occur during the SW monsoon.

Relatively low sea temperatures in this area, due to cold upwelling waters, cause the monsoon air to be moist and stable, fog or extensive low cloud therefore forms readily.

Occasionally, heavy rainstorms, which may reach the Western gulf, occur in the late NE monsoon. The autumn transition period may pass without significant rainfall, but scattered thunderstorms may develop in the

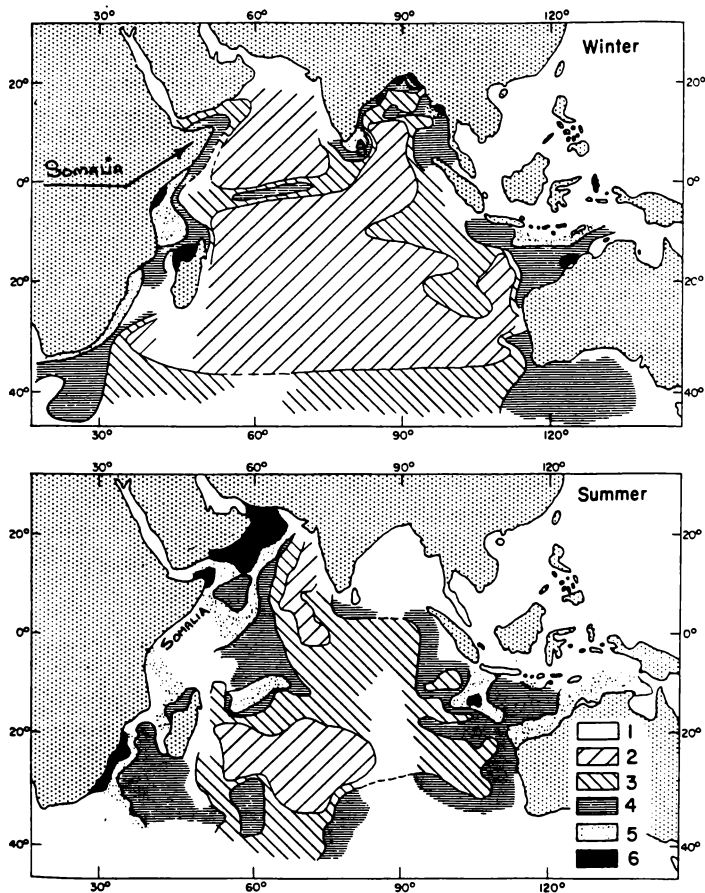
coastal regions. Tropical cyclones, when heavy rainfall can be expected, are infrequent and rarely progress westwards from the Arabian Sea into the Gulf .

## 2:3 OCEANOGRAPHY

The oceanographic conditions of the Gulf of Aden and the Arabian Sea have been described and summarised recently in the atlas of the Arabian Sea for fishery oceanography. Wooster et al.1967. The general conditions prevailing in the Gulf during the NE monsoon are summarised here, based on Servi and Khamisat . and others currents and water masses .

At the end of the SW monsoon in October there is indication of upwelling in the Gulf between Ras Asir and Socotra. In October a weak flow of the North Arabian surface waters enters the mouth of the Gulf. This Arabian Sea current develops more fully from November to April, with maximum speeds not generally exceeding 1.8km/hr, usually half less speed. The flow is compressed the head of the gulf and a thin stream enters the Strait of Babel Mandab. This surface currents remains close to the Arabian Coast and Red Sea surface water flows out along the African coast. However, water flows into the Red Sea between 75 and 150m in all parts of the strait, and below this warm and relatively saline Red Sea intermediate water passes into the Gulf of Aden.

A rise in wind levels occurs in the western Gulf due to extensive movements from the Arabian Sea. This effects an increased African coastal current along the Somali coast. As the NE monsoon becomes weaker, this current becomes stronger and begins to predominate over the Arabian Sea current . In the mouth of the gulf, a great mass of water is deflected to the left on meeting



8. — The distribution of primary production in  $\text{gC/m}^2/\text{d}$  during the period of the northeast monsoon (or northern winter) and during the period of the south-west monsoon (or northern summer).

the current from the Arabian Sea and the cyclonic current is formed in the Eastern Gulf. In November part of the water of African coastal current is deflected around Ras Asir southward . The convergence of currents in the eastern gulf is increased by the arabian coast, which forms a barrier to the current, and an anti-cyclonic region is formed.

The north Arabian surface water lies between 0 - 75 -100 m and is highly saline with temperature of 20 -27 deg. Aden surface water lies between 0-50-75 m and shows wide variations of temperature and salinity.

Subsurface water of minimum salinity lies at 100-350 m in the Gulf and has a temperature of 14 - 18 deg.

#### 2:4 REGIONS OF UPWELLING

The regions where major upwellings of cold water are known to occur when the SW monsoon lie to the east. out side the Gulf of Aden . Off the Arabian coast upwelling occurred over some 1,000 km along the coast. eastwards of Ras Fartak, in 1963. during the late SW monsoon intense upwelling occurs in the Ras Maber - Ras Hafun. Off the Gulf on in the north east coast of Somalia . Upwelling during this period occurs between Ras Asir and Socotra. and in the eastern Gulf of Aden . Very high productivity, nutrient values are generally associated with upwelling areas.

The seasonal inflow, into the Gulf of Aden, of water masses from upwelling areas appear to be major factor governing the size and seasonal distribution and abundance of tuna resources in the country.

#### 2:5 MASS FISH MORTALITY

Mortality may be caused by normal and rapid temperature changes, even when temperatures are considerably above freezing and the acclimatization temperature of the species is relatively high. The dynamics of oxygen minimum layer in the tropics and upwelling areas can cause mass mortalities. Additional mass mortalities in coastal areas can be caused by red tides.

Inadequacy of food may also cause increased mortality . There are many other mortalities which have been little investigated in the past . The greatest cause for mortality of fish , however, is predation (being eaten) another cause of high mortalities of fish might be inadequate supply of food. Unfortunately little is known quantitatively of the effects of starvation and starvation mortality although it is generally assumed to be one of the main process regulating the survival of larvae . It is often assumed , but seldom experimental verified , that currents can transport larvae into the areas of the either abundance or lack of proper food for larvae thus affecting the survival of larvae. Senescent mortality (mortality of old age) is assumed to be one pointed out that spawning stress mortality may constitute a major part of the senescent mortality.

## **2.6 INFLUENCE OF TEMPERATURE ON FISH**

Temperature is the most easily and commonly observed environmental parameter, therefore, results of many studies are available in the literature on various fish temperature relationship. Fish can perceive water temperature changes which are smaller than 0.1 deg.centigrade. Every species has its characteristic acclimatization (optimum) temperature range and temperature tolerance limits which might change

seasonally in a given stock to another of the same species.

Temperature effects the rates of the metabolic process and thus modifies the activity of fish. Consequently growth and feeding rates are also affected by the temperature of the environment. Although temperature changes act as stimuli on fish, these changes may indicate also other changes in the environment, such as adjective changes of water masses.

It is very unlikely that fish can orient in a horizontal temperature field. It is likely that desirable (optimum) temperature is found via vertical movements and random little information is available on the possible rate of changes of acclimatization temperature e.g in response to temperature anomalies. Nor do we understand the position of temperature influence and stimulus in the hierarchy of other stimuli i.e which stimulus causes strong reaction and what is the simultaneous response to several stimuli (e.g to temperature and food availability)

## 2:7 EFFECTS OF CURRENT ON FISH

Many laboratory experiments have indicated that fish do not respond, either to direction or velocity of the flow of water, unless they have visual reference. On the other hand, field observation indicates that fish usually head into the current. It has been theorized, but not fully proven that larger fish e.g tuna and salomon can use current on geoelectric field created by the current for orientation during their long migration. It has been lately demonstrated, using sonic tags, that demersal fish can also use tidal currents for their migrations. Current transport eggs, larvae, and smaller fish. Current boundaries act as environmental boundaries to many species and the year to year variations in surface currents might

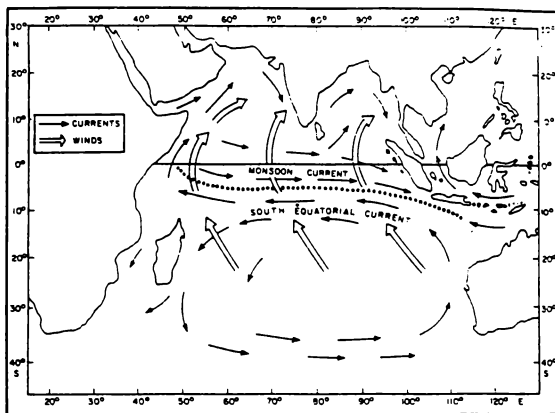


Figure 6.— Wind and surface water circulation during the Northern Hemisphere summer period. (From unpublished report by F.S. Ocell, U.S. Bureau of Commercial Fisheries Biological Laboratory, Honolulu, Hawaii.)

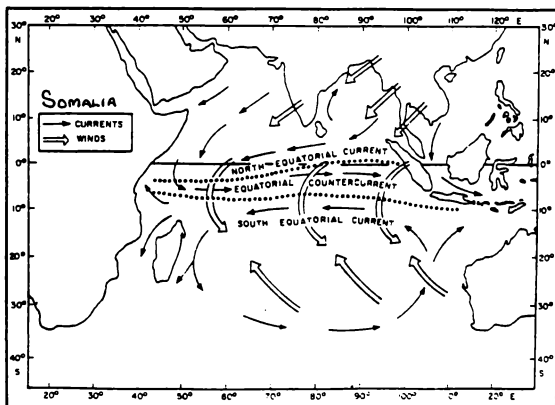


Figure 7.— Wind and surface water circulation during the Northern Hemisphere winter period. (From published report by F.S. Ocell, U.S. Bureau of Commercial Fisheries Biological Laboratory.)

affect the seasonal and the life cycle migrations of pelagic fish and semi pelagic species. The latter aspect has not been demonstrated with empirical data, although it is possible to do so with numerical modelling.

We would expect that currents affect the following aspects of fish distribution:

1.Current transports pelagic fish eggs fry from spawning areas to nursery grounds to feeding grounds. Any anomaly of this ordinary transport can cause variations in the survival of any given year brood.

2.The migration of adult fish could be affected by current serving as a means of orientation, as modifier of migration routes.

3.The diurnal behavior might be affected by currents.

4.A current, especially at its boundaries, might affect the distribution of adult fish, either directly through it effects on them or directly through the aggregation of fish food, or by bringing about the environmental boundaries for them. 5.Currents might affect the properties of the natural environment and thus determine indirectly the abundance of given species and even the limits of its geographical distribution.

## **2.8 EFFECTS OF THE LIGHT ON FISH**

The light reception of fish is by eye and by pinical region which is located near the top of the brain. Most fish possess colour vision. Different species are adopted to different light intensities which can be regulated by depth selection, some species are positively, some negatively photoactic and in some species phototaxis does not occur. Some of phototatic reactions might be related to phototaxis in pelagic prey. The hunter need light for the location of prey, whereas the touchers use



vagile senses (sense of movements) for prey locations. Feeding in most hunters occurs at relatively low light intensities during the morning and evening. Light stimuli affect the diurnal migration and shoaling behavior in most species and thus affect the capture.

# C H A P T E R   T H R E E

## THE FISHERY IN GENERAL

### 3:1 The fish

Fish are but one of many groups of fish ,which populate the deep oceans. A few species are exploited for food by man, but the vast majority are commercially unimportant.

Fish live at nearly all levels of the oceans from the air, water,surface down to the water land boundary. to depth at least as greater as 8,300 meters. Around 85% of the fish species are marine and of these only about 13% occupy the deep ocean. Little more than 250 species are permanent resident in the epipelagic zone. There are approximately 1,000 mesoand bathypelagic species are nearly 1,300 benthic forms dwelling either on the continental slope are the abyssal floor.Those living along the shore and continental shelf to 200 meters depth have about 290 cu.km per species.

The physical constraints of the environment are obviously reflected in evolutionary adaptations, from specialised species inhabiting the upper few centimeters of the ocean surface to those living on the ocean floor some 4,000 - 11,000 meters below.

If we take the characteristics of some commercial fish, like the pelagic fish, that live close to the surface of the sea and ocean, while the demersal and shellfish live for the most part on or near the bottom , although some species such as cod and shrimp may adopt a pelagic habit at certain times. The pelagic fisheries are based mainly on shoaling species, such as sardine or Anchovy which are usually caught with purse-seines and

pelagic trawlers . Tuna are notably being caught with variety of gears. High value species such as whales and sword fish are caught individually with a harpoon while salmon may be caught by gillnets or long lines at sea , or in traps as they enter rivers. Important demersal gears include bottom beam and other trawlers ,and seine nets all of which may be operated for hours at a stretch in order to gain economic catches

Such fisheries normally catch several species simultaneously. Long line fishing in a selective way of catching large demersal species such as cod and ling. Among shellfish, the crustaceans, including lobster and crab, are highly mobile and are caught on the bottom using pots. Shrimps are caught using pelagic trawls. The molluscs, including mussels, Oysters, Clams, and quahogs are relatively sedentary and may be dredged from the bottom of the oceans.

### 3.2 The Traditional Fisheries

The sea like land, provides two main opportunities for the production of food, fishing and aquaculture. Unlike the land ,for the sea the former is by far the more important of the two both in terms of the number of the people employed and economic returns .

The foundations of todays traditional or artisanal fisheries rest a upon vast range of regional gear which has evolved over a long period .The boats of the artisanal fishermen for instance, are often simple dugouts , or planked craft locally built, or sailing vessels sometimes with auxiliary engines. Though varied much of the gear is also simple and includes numerous types , lift scoop nets ,seines gillnets, traps, rafts, spears and lures.

Fishing is frequently a dangerous occupation and

demand skills as well as local knowledge, the risks are great, physically and in terms of income, and many of the traditional fisheries are characterized by close knit, sharing communities where distinct customs are rituals.

The traditional fisheries are mainly concentrated in the developing countries where fishing is usually combined as a part time activity with agriculture. Though capital investment is minimal and incomes are low these fisheries represent the largest single sector in the world fishing and employ about 80% of the worlds fishermen.

In addition, they directly support over 40 million people. In Asia, the Indian and the Pacific Oceans in particular, artisanal fisheries predominate in man power and number of vessels. Modern fishing can result in ruination of artisanal fisheries villages, and for example several attacks have been made on the crews of the trawlers which have strayed near the Raas Xafuun coast of Somali by artisanal fishing grounds. Many experts in fishery and maritime economics like Professor A. D. Couper as he stated in his latest addition The Atlas Times of the Oceans 1985 the importance of artisanal fishery to the majority of the population of islands and coastal areas, and the need to introduce appropriate technology which will enable fishermen to extend their range from villages, and the need to reserve specific near coastal zones of the sea for the artisanal fisheries.

### 3.3 The biology of the oceans.

The biological economy of the ocean, like that of the land, is based almost entirely upon photosynthesis,

and phytoplankton.

1. **Photosynthesis**, is the process by which plants use energy from sunlight to combine together with carbon dioxide and water to produce carbohydrates, being dependent upon sunlight, this primary productivity in the sea is restricted to the near surface layer, the epipelagic or euphotic zone. The depth level where light intensity is just sufficient to support photosynthesis varies with latitude, season, amount of suspended material into the water including the plants themselves.

2. **Phytoplankton** are microscopic algae which float free in mid water, and live in the surface layers of the open ocean. They are the most important form of plant life in the ocean. The supply of nutrients to the oceans, including the trace elements of vitamins necessary for the plant growth, comes from two main sources. First, river waters entering the sea carry salt and other nutrients. This may result in high levels of phytoplankton productivity in the neighborhoods of the major estuaries, but in the economy of the oceans as a whole it is relatively insignificant. For the total salt content of the oceans is so large that river discharge increases the salinity by only about one part in three million year (Atlas map of ocean A.D. Couper P.70) A much more important source of nutrients to the surface waters in the recycling of salts which have sunk in to the deep sea layers locked up in the bodies of animals and plants. In the shallow waters overlying the continental shelf, nutrients cannot sink far beneath the Euphotic zone since the water column is nowhere deeper than about 200 meters. For these depths the nutrient rich water is fairly readily brought back to the surface by the stirring effect of storms. Consequently there is relatively high productivity in the coastal regions compared with that in the open seas.

or oceans. The subtropical regions have temperature and light regimes in the surface layers which would allow the phytoplankton production proceed throughout the year. However, because of the strong thermocline (a permanent feature of these regions with a thin layer of warm water overlaying a much cooler sub-surface water mass). The water column tends to be very stable and the euphotic zones receives and adequate supply of nutrients only in very specific and restricted areas. In the tropic regions of each of the oceans, such areas of relatively high productivity occur between the west ward flowing equatorial currents driven by the trade winds and adjacent eastward flowing equatorial counter currents. finally there are restricted coastal regions of the tropics and subtropics where upwelling occurs, such as off northwest and southwest Africa in the Atlantic off Somalia and Arabian Indian Ocean. With the prevailing high surface temperature and light conditions, these regions support some of the highest phytoplankton productivity rates in the world. Elsewhere in the tropics and subtropics the Euphotic zone receives a very meager supply of nutrients. the phytoplankton productivity is very low, the typical deep blue subtropical oceanic waters, which look so lush and attractive, may therefore with some justification be referred to as the deserts of the ocean.

### 3:4 THE WORLD CATCH

The living resources, unlikely the majority of mineral resources, are renewable and so there is a strong practical interest in assessing the state of fish stock as well as the potential of the fisheries and aquaculture. The impact upon living resources is greatest in the northern parts of the Atlantic and the Pacific, adjacent to the major industrial cores of the world economy and declines with distance from these areas so that in the southern Atlantic and Indo-Pacific were still remain untapped resources. Pressure is particularly great upon shoaling pelagic species which are used for reduction into animal feed ,and upon high value pelagic species such as tuna, salmon and whale.

In the Atlantic, the foundation of the fisheries remain the gadoid stocks, notably cod in the north and hakes in the south. However the most spectacular tonnages caught are those which make up the industrial pelagic fisheries such as the Atlantic and gulf Menhaden along the north American coast, the Caplin, Sandeel, blue whiting and Norway port of the northeast, and the sardinella species, anchovy, horse mackerels of the east and southeast. The herring and mackerel of the north are now exploited mainly for human consumption there is a limited development of fisheries for Antarctic fish species and krill.

The Pacific catches are dominated by the recent rise of industrial fisheries for pelagic species beginning with the Peruvian Anchovy.

The two main concentrations are in the north west Pacific, where Alaska pollack, chub mackerel and Japanese pilchard are predominant, and in the eastern and southeastern Pacific, where thread herring, anchovy, pilchard, chub and jack mackerel have been landing in

increasing quantities during the 1970s. The salmon of the north and the tuna of the tropics are the main high value finfish and the concentration of the shellfish catches in the northeast is also significant. The temperate demersal stocks are less in evidence than in the Atlantic, a reflection of the narrow continental shelves, although the yellow fin sole is caught in large quantities.

Tropical demersal stocks are fished extensively but tonnages are low, reflecting in part the underdevelopment of the Indopacific region. The knowledge of all these resources bears a direct relationship to the pattern of fisheries effort which is greatest in the oceans of the northern hemisphere. Assessment of potential depends primarily upon scientific knowledge combined with fish experience. Estimates vary widely but it is generally thought that present yearly catches of between sixty and seventy million tonnes might be increased by twenty to thirty million tonnes by judicious combination of more intensive fishing, better fisheries management and improved utilization of landings through more effective processing, storage and trade.

In addition, the prospects for aquaculture appear to be improving, and the growth rate of production from this source may outstrip that from conventional fisheries in the foreseeable future.

The days regarding the oceans as a vast, untapped reservoir of food are over as most major commercial stocks are now fully or nearly fully exploited. The potential for greatly increased tonnages lies with so called unconventional species such as krill and mesopelagic fish, notably lantern fish and light fish. Cephalopods are already well in excess of one million tonnes per annum, most of which is caught by the Japanese. One of the most pressing problems is to assess the impact



of the pelagic fisheries upon the ecosystem, most of the major commercial stocks appear to be fully or over - exploited. This may have contributed decisively to basic changes in the ecosystem in the North Sea where herring stock have collapsed and off southern Africa where the pilchard stocks have been devastated.

# CHAPTER FOUR

## The fishery sector of Somalia

### 4:1 Background

The economy of Somalia is based on pastoralism, mainly nomadic, which occupies three quarters of the population and in 1978 provided 90% of the country's exports. Agricultural is practiced on about 700,000 hectares out of an estimated 8 million hectares of cultivated land. Principal crops are maize sorghum, bananas, which are significant export crops, comprising 10% of total exports. The industrial sector is small and concentrated in food and clothing, although it includes an oil refinery as well. Somalia's net foreign trade position is heavily in deficit, as exports comprising less than half the value of imports.

The livestock sector is extremely vulnerable to drought as has been mentioned before and to the disruption of normal migration routes. Drought in 1973-1975 and a combination of drought and military conflict in the neighbouring Ogaden in the 1980s have driven a large number of nomads into relief camps. In the mid 1980s there were almost 1.2 million people in the relief camps, perhaps as many more original inhabitants of the Ogden were inside Somalia but not in camps

During the 1973 - 1975 drought, permanent resettlement of nomads was under taken, including the establishment of four coastal areas designed to convert 35,000 ex-nomads into fishermen. The current relief effort has not gone beyond the primary intervention stage, so it is not known whether further resettlement will be attempted in the coming future.

#### 4:2 RESOURCES

By most estimates, the resources potential of Somali fisheries is far from being realized, although the deep water lobster, and locally, perhaps other stock could be reaching full exploitation.

The white fish authority has the following estimates for potential annual catches (in life weight ), equivalent.

Tunas and makarel	18000 tons
Small pelagic species	150000 tons
Large pelagic fish	80000 tons
Shark and rays	60000 tons
Spiny lobster	2500 tons
Shrimps	800 tons
Turtles	200 tons
Cephalopods	not known
mesopelagic species	not known

\*Source white fish authrity report 1980.

#### 4:3 Artisanal Fisheries

Somali fisheries may be divided into artisanal and industrial , and each sector is characterised by quite different history. Artisanal fisheries involve approximately 4,000 fulltime and 1,0000 part time fishermen using about several thousands of canoes and sailing boats and perhaps 125 functioning motor boats. The fishermen include both traditional fishermen (the great majority)and former nomads resettled areas in the coastal development project centers at brava El Ahmed. Adle and Eil. Total annual artisanal landings,have risen into higher levels in recent years, dropping down sometimes.

caused by the high incidence of break down of the mechanized fleet.

Artisanal production is consumed directly by the fishing communities and dried for both national consumption and national export. Few fishing communities have access to significant fresh fish markets, the main exception being Mogadishu and other coast centers. Berbera the northern port used to supply a ton of fish a day to Hargeysa, and Burao.

#### 4:4 Industrial Fishing

The industrial fishery of Somalia has been more erratic. It had its greatest development in the late Somali-Soviet joint venture Somalifish, which between 1973 - 1977 deployed up to 10 trawlers at that and in 1976 caught 6400 tons of fish and 2500 tons of lobster. The cessation of Soviet participation and withdrawal of the vessels in the late 1977 temporarily eliminated industrial fishing in Somalia. In mid- 1978 the first of an eventual group of Italian freezer trawlers began to fish under license. In late 1979 two Australian - built shrimp trawlers, which had been bought by the Somalifish company began operations. By early 1980 nine Yugoslav - built multi purpose vessels owned by the ministry of fisheries had arrived in the country. There are no data yet on the catch of this varied fleet, but it is expected that produce of the freezer vessels will consist in demersal fish, deep water lobster and some shrimp, all most for export.

#### 4:5 SUPPORT FACILITIES

The paucity of facilities for vessel berthing and maintenance and for preserving and handling catches is a severe limiting factor to the development of Somali fisheries . There are few natural harbours and the only suitable for large vessels are Berbera, Moqadishu, Kismayo. All of these have limited mechanical and electrical repair facilities and modest ice plant , but only Mogadisho, and Kismayo are functioning.

Kismayo also has the slipway ,but its exclusively used by the Somali Navv. Berthing for larger fishing vessels is very limited at Moqadishu and subject to priority according to merchant shipping . Fishing vessels also have a low priority at Berbera and Kismayo.

Most of the smaller landing places suffer from very poor communications with possible markets ,as well as from lack of facilities for boat maintenance and product preservation . Consequently, drying is the dominant form of processing and is conducted at all fishing centers . There are some facilities available to the fisheries sector ,however ,including higher-value methods of processing. The southeast coast fishing communities are receiving technical assistance from FAO, including maintenance services, and have better access to markets, both by road between Kismayo and Mogadisho and by the Prodma carrier vessel between Ras Chiambone and Kisimayo. The factory at Kismayo has been overhauled and is once again being used to freeze spiny lobster as far from south as of Ras Chiambone.

. On the northeast coast, there are tuna canneries at Habo , Candala and Laskoery ,none of which has operated to the capacity in recent years .most importantly because of inadequate fish supplies. The combined design capacity of the three is 100 tons of round

tuna a day. A factory at Bolimoog was designed to freeze 50 tons of fish a day and convert 25 tons to fish meal and oil. It is currently closed for major overhaul of the plant and machinery . Of these places , Bolimoog offers a protected landing. All have mechanical facilities.

#### 4:6 Fisheries Policy of the country.

The objectives for fisheries in the current three year plan stated as follows:

- 1). Economic growth through the utilization of the fishery resources:
- 2). The maximum increase in fish production and the income from it ,consistent with sound fishery management principles .
- 3). Through the increased earnings , to improve the socio -economic conditions of the people in generally and the people in the fishing settlements in particular :
- 4).Increase of foreign exchange earnings through the greater export of fish products;
- 5).To create gainful employment for the greatest number of the people that a viable fishing industry can sustain;
- 6). To increase the domestic consumption of fish as food , which is the most important factor.

. The second and fourth objectives can probably be best achieved through capital intensive industrial fisheries but they are applicable to the smaller scale sector also. The third and fifth objectives will be achieved largely through the development of the artisanal

or small-scale fisheries ,which are more labour intensive and require less capital input.

In a general statement of government policy on economic organisation ,the plan states(pp.4-3):

It is intended that as far as possible the larger production schemes in agriculture, mining, industry.and fisheries should be undertaken by the government itself or by cooperatives. Nevertheless, in some specific cases such as an oil prospecting and development. uranium production and the use of large fishing boats, it is clear that it will be necessary and desirable that local factors of production should be associated with foreign expertise and capital .there are many types of joint venture that this form of organisation may take on mutually advantageous terms ranging from government-to-government assistance to direct participation by foreign private enterprise.

## **C H A P T E R       F I V E**

### **Seafood consumption policy and the fishery sector.**

#### **5.1. The food deficit**

In the 1972/74 food crisis and flare up in commodity prices, combined with an oil price increase in the fall of 1973, have profound effects on agricultural economies and agricultural developments in many countries of the world. Seafood consumption defined as the certainty that every Somali can get an adequate food supply and diet, has become a cause for concern among top level decision makers of the Somali Democratic Republic government. Consecutive droughts which occurred in Somalia in 1973/74 caused local decline in the farm incomes, so that famine occurred and the population in the affected areas could not afford to buy food for survival.

In early 1980s conditions deteriorated, starvation spread among many people and livestock in Somalia causing thousands of casualties.

Food assistance was sought from various countries, specialized Agencies and other humanitarian Organizations, so refugees from the affected areas were settled in camps and supplied with food , medicine and shelter .

However, much is still needed to change the situation and ensure food security specially in the rural areas, therefore the countrys severe instability of agricultural production and increasing deference of the world market to fill in the food deficit result in change in development strategy. In the past few years several countries including Somalia a regional studies of food problems were carried out. Somalia itself mobilized some internal programmings of settling the refugees in the coastal areas in order to exploit fish for their food



consumption.

### 5:2 Trends in the policies for agricultural development

In recent years food production of the country has gradually lagged that population growth, therefore the country has become a net importer of food commodities.

The main reason for the low productivity of agricultural products in the country are the following factors: 1. The impact of climate on soil degradation and desertification.

2. Rainfall scarcity, low efficiency and misuse of the agricultural resources base including land and water resources.

3. Absence of integrated rural development policies.

4. In some, production is kept low by the absence of an efficient marketing system, access roads credit and extension service.

5. Increased urbanisation and the high opportunity cost of labour in the cities.

### 5:3 Livestock population of Somalia

In the continent, Somalia is the largest producer of livestock. Somali economy is traditionally based on the herding of camels, sheep, goats and cattle, which still provide for the subsistence needs of about 75% of the population and furnished a great export trade in livestock on the hoof, skins and recently canned meat. FAO estimated in 1985 livestock population as 2.8 million cattle, 15million sheep and goat 2 million camels, although it was more than this in several previous years. (Ministry of livestock Report)

### 5:4 Animals proteins in the country

The supply and demand for animal proteins in the country are because of the following:

- the fishery resources are under-utilized and not exploited .

- the per capita seafood consumption is very low, because there are no cultural barriers hindering the increase in seafood consumption in the country. The expansion of livestock and poultry production in Somalia will result a decreased dependence on imported food.

However, the development of the under-exploited fishery resources of Somalia can compensate for this shortage in the other animal feed, the general composition of the animal flesh is usually influenced by such important factors as the other sex of animals, seasonal variations and geographical location. fish meat in particular shows such tendency to a remarkable degree.

### 5.5 Coastal fisheries Surveys

Several scientific and commercial surveys were carried out in the country during the last years, the country based surveys that were done in the period 1970/81 in the north west Arabian Sea area, extending from south of Mogadishu on the Somali coast through the gulfs of Aden and Oman to the Iran, and Pakistan border.

During the past few years the littorial countries NWIOR under-took two major sub-regional fisheries surveys and development projects with the assistance of FAO, UNDP etc, these are:

1) The regional surveys and development project (RAB/71/278) which was jointly carried out by eight countries of the region . According to the project documents, the objectives included the development of all sectors of the fisheries industries of the participating countries to a level of effeciency that will allow them effectively and rationally to exploit and utilize the demersal and pelagic resources of the gulfs and adjacent

waters.

2) The project for development of fisheries in areas of the Red Sea and the Gulf of Aden, includes the Gulf of Suez Canal and Aqaba. The objectives of these projects are similar to those of the gulfs projects, although the emphasis included the improvements of fishery production of the small scale fishermen in the participating countries and developing the industrial potential. to prepare the ground , indentify the means that initiate the reactivation and expansion. of the existing marine fisheries and therebv to preserve the fishing communities. to plan and where appropriate, design and initiate investment oriented development schemes (UNDP project, 1978).

#### 5:6 Demand and supply for fish and seafood

Due to the fact that reliable information is lacking much of the avialable estimates of annual catches in Somalia should be indicative only.

The estimates of the amounts of fish and seafood supplied by local fishermen for human consumption or apparently consumed, are not equivalent to estimates of actual consumption. In the Indian Ocean and the Red Sea fish at present play a relative minor role in the national diets , by the wider avialability of an apparent preference of meat, thus fish and seafood consumption is largely affected by the conditions and systems of marketing, distribution, processing and transporting.

In Somalia , incomplete information on artisanal fish production indicated a level of 4,500 tons / year during the 1960s. By or the 1980 it reached 5,000 /year. with the introduction of some hundered mechanized boats, annual landings increased gradually untill they reached a peak about 8.000 tons /year.

In the late years the production fell again to about 5.000 tons. because about 60% Of the new boats were out of order, lacking repair and maintenance. The estimated per capita consumption of fish and sea products stood at 0.4 kg per year.

Due to the periority given by the Somali Government to increase the domestic consumption of fish , fish consumption at present is of the order of 21.000 tons/year at with population of 5.4million.

#### Six Fishing Sector for boost

In view of Somalia five year development plan of 1987 - 91, fisheries production can be increased many times over the Somali minister for fisheries development and marine resources declared at the second fishery symposium in Mogadishu. The Minister addressed both local and foriegn experts . Emphasis centered on pricing policies, provisions of credit, technical assistance and infrastructure as the main tools necessary to stimulate increased production of pelagic fish could be caught annually without adversely affecting the stocks and that similarly, 40.000 tons of large demersal fish, and 30.000 tons of shark and rays could safely be taken each year

Deep water lobster are found along the whole length of Somalia's Indian Ocean Coast and along sectors of its northern coast on the Gulf of Aden. As an indication of potential the trawlers of the USSR fleet caught 1,500 tons in landed weight in 1970 and no significant depletion was observed at that time. similarly was a licenced trawlers, which have reported much higher figures in more recent years.

Shallow water and spining lobster potential has been estimated at 500 tons per annum . While shrimp potential is estimated at 400 tons, turtles, squid, cuttle

fish, octopus and swimming crab are also known to be present in large quantities, but no complete assessment of catch potential has yet been made .

Plans for fisheries development focus first and foremost on the training and equipment of a new fishermen, a process that got under way in 1975 with the resettlement of several thousands of nomads from the interior country side following the 1974 drought locally known as Dabadheer'. Which means (the long tailed) those nomads, they were once described the white waves of the sea as if they were goats and sheep of the sea, underwent training and now have skills in boat repairing, engine installation or alignment and various faces of boat building industry in Somalia.

In the northern region of the sea port of Berbera, the north west coast fisheries project is being backed by the UN commission for the development of fisheries and the FAO until 1989. The project's aim is to expand activities to an area of 500 km .The three year project (1987-1989) calls for building an off-shore infrastructure a supply of new fishing and collector vessels. This is the introduction of a new concept for Somalia in fisheries management. The whole project is aimed at creating a viable commercial operation for all involved, from fisheries to retailers.

Special fisheries surveys have identified several areas where processing and cold storage facilities could be established. One area is the town of Brava, on the southern coast, where a cold storage facility with a capacity of 750 tons was built in 1982. The project established with west German assistance, was directed by giving them markets outlets and opening export revenues for their products. Production for the past few years ranged between 400 tons -

500 tons per year.

In order to increase production around the Mogadishu area and to ensure an adequate supply of this food source for the urban center, the Government has established a modern fish market in the capital city. In addition, two 10 ton cold storage facilities in the Eil Ahmed and Brava district on the south coast have been built with Japanese assistance.

In the 1977 the government established a boat factory to produce small scale fibre glass fishing boats with Swedish financial assistance. During the past four years the factory has been producing 8.5 m boats. One of the major tasks of the project was to find a small scale fishing craft suitable for the relatively rough seas of Somalia .

Fisheries research and training institutes in Somalia is under developed, but there is a small training center for fishermen in Mogadishu. In the northern part of the country several small training center have been established by Food Agricultural Organisation for artisanal fisheries .

In Somalia there are various techniques of fishing used by artisanal fishermen. Generally these techniques include handlines, trolling, surface and bottom long lines, sea bottom traps, cast nets, drift nets and round haul nets, etc.

## C H A P T E R       S I X

### North west fisheries

A review of the fishing industry covering fish resources, fish production, marketing and developmental constraints, was presented to the country in the first part of 1979. This report concluded that there are enormous problems facing the development of the fishing industry in the country. A part from the relative absence of fishing as traditional occupation and the lack of trained manpower, there is the major problem of poor communication and the associated lack of infrastructure ( harbours, roads, etc) .This review will confine itself to the North Coast of Somalia where communication difficulties are most severe. Due to poor communications generally and lack of transport, a significantly smaller survey was done in the North coast of the country. Much effort was directed to areas such as Berbera where there seemed to be reasonable prospect for worthwhile projects. Nevertheless, a considerable effort was made to collect together information relating to all of the fishing centers on the North Coast. Information collected during that time was expanded by detailed discussions with the Ministry of Fisheries, State Planning Commission, the private sector and various international developmental agencies.

### 6.1 GENERAL SITUATION

. The North Coast, which stretches for some 1,000 km, is extremely remote. Land communications are severely restricted and much of the coast is cut off by high ranges of mountains. The coastline is generally flat and the landing places have little protection.(especially from

Berbera to Aluula).

Traditional fishing, which is carried out by private fishermen as well as cooperatives, is based upon shark and large pelagic fish, the bulk of which is dried for export via joint-venture companies. The Aluula district, which includes Habo and Bolimoq, Zeila and lughayo, is traditionally an active fisheries area and attempts have been made to establish canning plants to utilize tuna found in the area. However, the plants at Laskoery, Habo and Candala have had a chequered career and most of the time where all non operational due to lack of fish supplies The Bollimog plant is being modernized and is considered below.

With the exception of the processing plants mentioned above, which are not operating in full , the only outlet for the fish, other than strictly local consumption of fresh fish, is in the form of dried fish. The opportunity to provide refrigeration facilities as a means of developing market outlets will be conditioned by the access to suitable market outlets. It was recognized ,that due to the conditions on the North Coast, the number of centers with market opportunities would be very limited. Domestic markets are limited by the relatively low population and lack of traditional fish consumption as I stated in my former chapter and sometimes export orientated operations are restricted by the scale of production, lack of harbours, etc. Bearing in mind these factors the following locations are open to consideration.

#### 6:1:1. ZEILA

1. This is a minor port with good anchorage and is partly protected by small offshore islands. There are no landing facilities but strangely enough livestock are currently exported . A fisheries cooperative was



established in 1974 and consists of 105 members . The fishing base is on Abu Milih ,Saadadiin ,Ebat and Bulocaddo Islands, which surrounds the town from the offshore side.(archipelaggo)

2. According to the Ministrvs yearly report(1988) there are 6 sixth Russian (8.8 m) and 5 Swedish (6.3) m. fishing boats in Zeila but according to local knowledge which I discovered during my holiday with mv own eyes, the Russian boats are 7, non of which are operational due to lack of spare parts, and 6 Swedish boats. 4 of which are operational.The catch from the 4 Swedish boats is transported in one of the boats to Djibouti (journev time 2 hours), where there is a ready market for the fish.

#### 6:1:2. LUGHAYO

3. A present there are a few fishermen exercising at Lughayo but the Ministry is planning to establish a freezing plant and cooperatives of 10 boats in the near future with the help of FAO. The local market for fresh fish will be limited but it might be feasible in the future to transport fresh fish by road to Djibouti and inland cities .In this area there are a large fish resources both demersal and pelagic. Strangely enough the Yemens who are very clever and have a long history of traditional fishing activities come to this area and smuggle the fish at the night time.We have had many problems with them , even reaching governments levels in both countries.

#### 6:1:3 BERBERA

This is the largest town on the Northern Coast with a population of approximately 2,5000. A fisheries cooperative was set up in 1973 with 46 members and there is an ministry of fisheries regional office. According to

the Ministry of Fisheries of Somalia in Mogadishu, there are 15 Russian and 8 Swedish vessels. Among these vessel only 8 are in operation. Fourteen houri local craft are also in operation by individuals.

The fishing season lasts from 6 to 7 months and the best fishing is from December to February, no fishing being possible from 4 to 5 months of the year. The best fishing grounds lies approximately 30 km from and east of Berbera and catches from the motorized boats range up to 400 kg per day. The main catch is mullet, mackerel , tuna, shark, and grouper.

The fresh fish is sold in Berbera and approximately 5 days per week fish is transported by road to Hargeysa. The fish are cooled in deep freeze containers mounted in an insulated truck. The fishermen receive so.sh 23.20 per kilo of fish. The retail price in Berbera is currently so.sh 35 per kilo and Hargeysa so sh. 42.20 per kilo .

According to the Ministry of Fisheries personnel the demand for fish in Hargeysa is considerable and larger quantities could easily be sold at prices indicated . The sale of fresh fish to Hargeysa and hinterland towns used to be on a large scale and it would appear ,therefore, that sales could be increased in the future as there is an abundance of local inshore fish resources.

#### 6:11:4 MAIT

This minor port, which has a simple pier but is unprotected from the sea, exports livestock to the Middle East. A fisheries cooperative, of 37 members, was established in 1974 and according to the Ministry of Fisheries there are 9 Russian and 4 Swedish vessels.

nowadays not more than 2 boats are currently fishing and catches are presumably very low. The catches are dried. In 1978 the only year for which data is available, 45 tones of dried shark 50 tones of dried fish were produced. The only potential outlet for fresh fish is Erigavo, the capital of that province.

#### 6.1.1.5 LASKOREY

The cannery at this town is relatively modern and includes cold storage and ice plants. This center, as it is operated by a parastatal/commercial body, does not fall within the terms of reference although it is relevant to the industry of the North Coast.

The cannery is most of the time non operational although some of the equipment is still usable, according to the state planners who are currently preparing a proposal to recondition the plant. The plant has had a chequered career because of the unreliable and viable catches of tuna upon which it depends.

Statistics collection from the Ministry stated that between 130 and 150 motorized boats were located at the Laskory factory but the real truth is only 36 boats are operational as many others are sitting idle for lack of Russian spare parts and bad management of maintenance ( no qualified technicians). the rest of the boats had been dispersed to other landings by individual fishermen, and no action has been taken concerning the people who stole the government property. This is very dangerous to the other fishing communities of the country.

Although 3.5 million cans of tuna were produced in 1974 it is difficult to envisage the plant being made a viable operation without further fish catching capacity. Larger vessels may provide an answer but the coast is unprotected, as there are no landing facilities and the

water is relatively shallow . It is difficult, therefore, to see how this could be accomplished.

**6:116 BOSASO**

This minor port is regional administrative headquarters, with a population estimates about 10.000 The coast is not protected and is particularly exposed to North East winds, although the bay within coral reef offers reasonable anchorage. There are 2 piers and trade consist chiefly of imported food and export of livestock.

A fisherv cooperative with 88 members was set up in 1974 and according to the Ministry of Fisheries has 7 Russian and 2 Sirilankan boats .

In 1979 some fish was being landed by these boats. and data indicated the following figures:

	1978	1979
Fresh fish	21.985 kg	62,768 kg
Dried fish	43,959 kg	49.000 kg
Dried fish	17.907 kg	2.000 kg
Shark fins	13,973 kg	4,711 kg
Lobster	343 kg	-

\*Source report of northwest fishery project 1978/79.

Other than the local consumption of fresh there is no market outlet except for dried fish .Thus despite the apparent ability to catch fish, the only likely outlet in the immediate future is to continue to sell dried fish to other fishing companies. This town has a very poor communications and without improved road transport it is difficult to see how the fishing potential can be realized although,there is a road construction, which started last year and which is still in process.Under this construction was also included a small jetty for fishing vessel and dhows.

**6:117 HABO, CANDALA, BOLIMOG,AND ALULA**

These sites are considered together because of their location. This fish processing plant at Bolimog is currently being recommissioned by a firm of Dutch consultants.

The canneries at Habo, Qandal are small and manually operated. They are also relatively old, the one at Habo being established in 1934 . Unlike the Bolimog freezing plant, they can be brought into operation very quickly if fish supplies are resumed. Neither cannery is operating at present but in 1974 the Habo plant produced 225 tons.

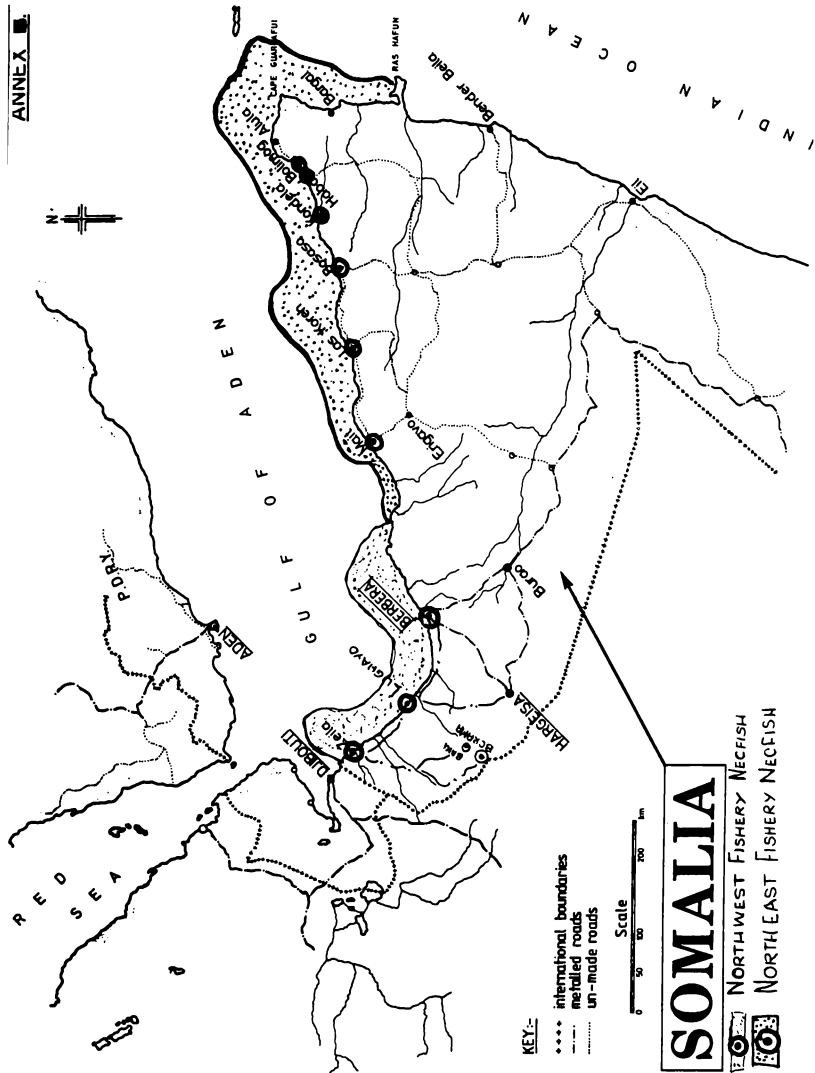
The number of the traditional houris and motorized boats in the area is difficult to estimate particularly as the fishermen move from camp to camp along the coast to follow the fish. However, despite communication difficulties the fish catch can be transported by road to the Bolimog plant. Alula has the largest cooperatives 306. members formed in 1973 ,using mainly traditional craft . Only 4 motorized boats are in Alula. 25 vessels are based at Habo and the Bolimog factory, 10 of which are operational .Fish catches can be considerable as indicated by the following data from Alula :

	1978	1979
Fresh fish	36,132 kg	1,642 kg
Dried shark	173,952 kg	248,182 kg
Shark fins	21,197 kg	32,234 kg
Dried fish	13,674 kg	7,100 kg
Lobster	3,523 kg	4,874 kg

\*Source NECFISH Report of 1978/79

Developments in this area is linked to the recommissioning of the Bolimog plant with it has an ice plant and freezing facilities. At the time the Dutch team were proceeding to make the plant operational despite many difficulties.

The team spent some time studying the Fintechs proposals upon which the recommissioning of this plant is based and holding discussion with Dutch Consultancy. The view was reached that it will be possible to bring the plant in operation but the success of the plant depends on the level of fish supplies. Local craft and motorized boats will be unable to catch sufficient fish to make the plant viable as larger catching vessels are needed. However, it is unlikely that such vessels will be able to operate on this hostile coast without shelter harbour facilities which are currently lacking.



## C H A P T E R     S E V E N .

### 7 : I .   C O N S T I T U T I O N

The constitution of Somalia does not regulate fisheries as such, but it contains certain provisions of particular relevance to fisheries legislation .Territorial sovereignty is proclaimed over land ,the sea ,the water column ,sea bed and subsoil,continental shelf, island and air space.The principle of territorial unity ,which is not defined or used elsewhere in the constitution is not subject to constitution amendment. Although territorial unity and territorial extent are hardly the same concept ,these provisions could make it difficult to modify the extent as well as the nature of Somalias maritime jurisdiction . Both land and marine resources are declared to be state property ,and the state is obligated to promulgate a law prescribing the best methods for exploiting such resources. This provides a firm constitutional base, if not imperative, for fisheries legislation and management.

Provisions on the economic organisation of somalia began with the declaration of socialist state.The state sector is to be the vanguard of development and receive special priority ,the cooperative sector is described as instrumental, the private sector is to be based on the non exploiting ownership, and a mixed sector is to be based on joint ownership between the state and others.

The operation of all of these sectors is subordinated to socialist state planning, and the plan has judicial authority superior to the other laws. These provisions suggest a rather narrow scope for private fishing activities, especially those conducted by large foreign



vessels. In actual application, however, these provisions should be interpreted in light of the goals of economic development ,increased production and equitable distribution. In particular, the role of the state in fisheries should be defined at least in part as a function of the state ability to assume a vanguard role and to use that position to achieve developmental and other goals.

### 7:1:1. Fisheries Legislation

Basic marine fisheries legislation is contained in the maritime code of 1959, which entrusts fisheries regulations to the maritime authority ,which falls under the ministry of marine transport and ports. In 1977, however the ministry of fisheries was established with the following functions, which comprise most of what might be understood as fisheries administration:

1. To formulate the fisheries programme of the party.
2. To build a socialist maritime economy.
3. To obtain benefits from marine resources.
4. To improve the gear and other materials of the fishermen.
5. To develop a programme to make the coastal settlements self-supporting.
6. To organize fishing support industries such as boatyards ,and to make new types of vessels
7. To organize and operate all maritime schools.

8. To construct a technical infrastructure like ports and cold storage facilities
9. To establish a sea and ocean fishing fleet.
10. To disseminate information on the preparation and consumption of fish.
11. To expand foreign marketing of fish for hard currency
12. To prevent pollution through the international law of the sea.
13. To formulate laws regulating fishing in Somali waters.

Since 1977, the Ministry of Fisheries has effectively exercised the fisheries regulatory functions of the maritime code, although it has not necessarily done so by explicit reference to the code.

The maritime code divides fishing into the two principal categories of major and minor fishing activities .Major fishing activities are defined as those carried out exclusively by means of fixed plants or large nets for catching large fish ,including trawling on the high seas carried out with any mechanically propelled vessel.Minor fishing activities include all the rest ,although those that use conventional means which apparently refers to traditional artisanal fishing activities .

Major fishing activities ,whether conducted by Somali or foreign nationals, may only be conducted pursuant to a concession . The concession is a non-exclusive permission to fish in a specific area (.beyond 500 meters from shore).If is subject to the payment of rent which is determined case by case.The duration of the concession extends up to nine years. Concession may also be granted for aquaculture purposes as well as for the shore

facilities required for large scale trawling.

Minor fishing activities require annual licence (issued by the maritime authority) subject to the payment of the relative duty. The licence is subject to the same express reservation for fishing with convention means, and in turn benefits from the provision that major fishing activities do not prejudice the right to engage in minor fishing activities. Fishing in ports and other places of call or passage of ships is subject to the authorisation of the maritime authority, as judgement The minister has general power without paying any indemnity to prohibit fishing in any area for reasons connected with public needs or with sailing or maritime signal requirements. There is no power to prohibit fishing with particular methods or other wise to impose management measures, although the law does not contain a general prohibition of fishing with explosives, electricity or poison, it is also prohibited to catch and sell animals stunned or killed by illegal means. The only reference in the legislation to marine mammals provides for state ownership of stranded cetaceans and a reward of five percent of the value to the finder. Fishing without a concession or licence is punishable with an extreme fine.

## 7.1.2. Maritime jurisdiction

1. Law on the Somali Territorial sea and ports. This law establishes a territorial sea of 200 nautical miles generally measured from the lower water mark although where the coastline is deeply indented or if there is a fringe of islands along, the method of straight base line joining appropriate points is employed. There are provisions of some what uncertain effects for the 200-

mile territorial sea surrounding islands that are themselves within the 200 mile limit, the former distance to be measured from the lower mark in the case of single islands and from the center of the archipelago in the case of group of islands.

Fishing and coastal shipping in the territorial sea are reserved to Somali and authorized vessels. Violation of this provision is punishable to a limited fine. There is evident similarity between the informal composite negotiating text and Somali provisions governing navigation in the territorial sea, with the major difference that the ICNT provisions would only apply to a 12-mile territorial sea and more liberal navigation rights would be recognized in a 200-mile exclusive economic zone. Innocent passage is defined in similar terms to the ICNT except for two cases: ships of state not recognized by Somalia are forbidden passage, and warships must be authorized by the Somali government. There is a general requirement that ships exercising the right of innocent passage obey Somali laws and regulations and orders of the responsible authorities.

### 7:1:3. NAVIGATION

All vessels, including fishing craft must be registered in order to be admitted to navigation, although in practice smaller vessels have not been registered. Registration is available to vessels built anywhere, owned by Somali or foreign citizens. This has given rise to a modest flag of convenience activity, but so far it does not appear that any foreign-owned fishing vessel has sought registration.

Vessel standards for ships over 1000 net registered tons are those set by any of several classification

societies. General requirements applicable to all vessels are seaworthiness and adequate crew and equipment for their intended use. Different crew qualifications are defined ,but the imposition of crew requirements, including the proportion of Somali nationals , is left to maritime authorities. In particular, they also have the authority to issue officers certificates and corresponding responsibility to make certification regulations and conduct examinations. There seems to be some limitations on the formal requirements that can be set for officers ,but relevant provision is not very clear: any person may be engaged as captain ,officer or member of the crew provided he has the experience and aptitude to fulfill those tasks designated to him.

#### Z11:4. PORTS

##### **1. Maritime Code**

The maritime code provides generally for the administration of ports and harbours and governs such matters as entry and exit ,pilotage and the provisions of port service .In particular ,port operations for third parties may onlybe conducted under concession.

##### **2. Law on the establishment of Somali ports agency.**

The Ports Agency was originally established in 1970, is responsible for operation of ports and port services. To this end it has free concession of the maritime demense within port areas. In main ports ,the director of the agency has the responsibilities of harbour master.

The charges levied by the ports agency are determined by tariff issued by the Minister of Marine Transport and Ports. The most significant charges for fishing boats are the general service charges and the entrance fees .There is also mooring charges ,as well as anchorage, berthing

and cargo handling fees .Fishing boats are exempt from compulsory pilotage and towage.Wholly state owned ships pay only half of the general service charge and entrance fees .Ships using the port exclusively for bunkering or provisioning pay one third ,and ships putting in for shelter repairs ,health requirements and similar reasons pay one fourth of the general service charge and fee.

**3. Law on the establishment of the national shipping line.**  
Besides operating its own ships, the line is empowered to provide services to other ships, including any auxiliary activity connected in any way with the shipping trade .In absence of any reference to the concession provisions of the maritime code ,it is not apparent whether this operates to exempt the line from the requirement to hold a concession .

#### **4. Communications**

The installation and operation of radios aboard mercantile ships requires a concession from the minister of communications and posts, who also establishes the conditions which such radios must satisfy .Other radios for private service require a licence ,which may be granted if there are reasons of public interest. Amateur radio, on the other hand, is prohibited.

#### **5. Cooperatives of fishermen's law.**

The basic cooperatives law provides for two different grades of cooperatives, semi-collective and collective ones. The former are promoted as transitional measures where conditions for a fully collective cooperative are lacking , the latter are characterized as the final stage of cooperative development . This division is reflected in fisheries with somewhat different terminology . The transitional phase is represented by the fishery

service and marketing cooperatives, concerned with supply ,processing and marketing. The more advanced fishery production cooperative is a collective fishing enterprise.

The different sectorial ministries are responsible for organising ,assisting and guiding cooperatives in their sectors. All parasatal bodies are obliged to grant cooperatives priority in the supply of services.The cooperatives for their part are bound to carry out their activities in close cooperation or in contract with the competent state organisation .Fishery production cooperatives are required to purchase inputs and market catches through the state organisations and cooperative shops. The co-ordination of cooperative and state activities ,as well as the provision of cooperatives at the local level .is their responsibilities of regional and district cooperative councils . This council comprise elected representatives of the primary cooperatives as well as the delegates of the state .The regional councils also have representatives of the district council.

With fishery cooperatives things are more complex .All members of fishery production cooperative contribute all their boats, nets, processing and storage facilities and other means of production suitable for cooperative usage into the cooperative pool.Members are compensated for the value of their contributions.

## 7:2. THE COASTAL DEVELOPMENT AGENCY.

The coastal development agency is an autonomous agency, subject to the relevant administrative, financial and personal provisions, attached to the ministry of fisheries . Its functions is to teach resettled nomads how to fish ,to organize co-operatives, to construct fishing centers and to supply boats and fishing gear .Its

powers are not specified beyond the power ,without going beyond the limits of the law, to realize its purpose and functions. The director general ,appointed by the president of the republic, is responsible for the functioning of the project,subject to the over sight and ,to a lesser degree ,the approval of the ministry of fisheries. The project maintains separate accounts and has the power to engage its own personnel.

### 7:3. TRADE IN FISHERY PRODUCTS.

In 1974 a general law(Fishry law 1974)was established to govern the sale and export of fish. It provides that individual fishermen may only sell their catch to the fisheries cooperatives in whose territory it was caught . The cooperatives have the corresponding duty to purchase all such fish . The price is established by the ministry of fisheries in consultation with the ministry of commerce and the local government council.Fishing companies are permitted to export their catch directly, but if they wish to sell within Somalia ,they must sell to the cooperatives.

Referring to the above law the cooperatives and fishing companies can export fish without further authorization ,while other legislation makes the export of the dried fish a state monopoly and subjects export crustacea to licence. It is not clear how these opposing provisions are to interpreted. In the case of dried fish , Somalfish exercises the state monopoly to the point of collecting all dried fish for export, but it then sells the product to private exporters. So far as is known, the licensed foreign vessels export their catch, including crustacea, on the authority of their fishing licence alone.



#### 7.4. CUSTOMS DUTY

The customs tariff of Somalia comprises import and export duties, administration and statistical duty, stamp duty, wharfage, warehouse dues, and tax on sugar and alcohol of principal importance for fisheries are import duty ,administration and statistical duties.and wharfage.

The basic tariffs on imports are as follows:

Fish and crustacea (except canned)	50%
Fish waste and fish meal	30%
Fats and oil	30%
Canned fish and crustacea	60%
Salt	100%
Nets, netting, cordage	30%
Fish hooks	50%
Vessels (except pleasure yachts)	free
Internal combustion engines	35%
Motor spirit	.72 so.sh
Heavy oil and lubricants	.60 so.sh
Refrigeration equipment	30%
Food processing machinery	10%
Tin plate	10%
Cans	30%
Paper packing	50%

\*Source Legislative decree no.5 of 11 nov.1968.

In addition, all imported goods are subjected to administrative and statistical duty of 10% and wharfage at the rate of 1.5% of the value which is due on all goods unloaded and loaded in ports.

Cutting across the import tariff is a series of exemptions of great relevance to the fishing industry. Equipment for establishment or expansion of productive or

socially beneficial activities is exempt from import duty

In addition, the following categories of goods, by whom ever imported, are exempted from import and administration and statistical duties:

- Machinery, parts thereof, and ship-building materials.
- Professional fishing equipment.
- Ship stores.
- Jars, boxes, cans and other containers for food stuffs to be exported.
- Fuels and lubricants for ships operating outside territorial waters.

There is no exemption from wharfage, except pursuant to special legislation, but coastal trade and transshipment are only subject to wharfage at the point of shipment.

#### 7:5. Foreign investment law.

This law applies to investments made in Somalia by a foreign person or entity or a Somali residing abroad. The investment may be in the form of cash including reinvested profits, goods (such as fishing boats and gear) or rights such as patents and trade marks. The investment must be for the purpose of establishing, enlarging, renewing, transforming or reactivating an enterprise and to enjoy the major benefits of the law the enterprise should be productive, which includes, amongst others, any enterprise that produces goods services from which economic benefits can be derived.

Application to invest foreign capital is subject to approval of the committee on foreign investments which comprises representatives of the banks ,and ministries of planning, finance, industry, commerce, agricultural, livestock and fisheries.Approved application s are then subject to the ministry of planning who determines that the proposed investment will about the establishment, enlargement, renovation ,transformation or reactivation of an enterprise. Foreign loans are also subject to approval by the committee of foreign investment.

Foreign investors are only allowed to employ foreigners when no qualified Somalis are available, and after one year they are required to submit a plan for the replacement of foreign personnel with nationals .

Foreign personnel can freely transfer abroad half of the payments received in the country, and transfer of three fourths can be authorized by the committee of foreign investments.

The principal benefits of this law regards repatriation of capital and profits, tax exemptions and employment of foreigners. Productive enterprises can repatriate 30%of the investment annually in the form of profits and payments of loan principal and interest.

Special privileges for investment in agriculture, industry, livestock and fisheries include accumulation of repatriation rights for two years and the extension of their carry over to the five succeeding years.Foreign personnel can freely transfer abroad half of their payments received in the country and transfer of three fourths can be authorized by the committee of foreign investment.

## Z16.Immigration law

The law forbids entry into Somalia without a passport permit or endorsement, although an immigration officer may permit disembarkation without any endorsement. The law does not define Somali territory for purposes of entry. Immigration officers are empowered, in case of urgent necessity to search any ship, aircraft or vehicle in the territory of the republic without any warrant.

The immigration law also regulates the employment of foreigners. None may be employed in a post where qualified Somali personnel is available, and Somalis must be paid the same salary as foreigners but this is not true in the on the contrary they are paid significantly less compared with foreigners, and this has discouraged nationals to improve their skills to compete with foreigners, especially those who deal with the maritime sector in the country. This is an important issue in the fishing industry, because all foreigners that are employed in the country must have a working permit.

#### 7:7. Labour code law.

The labour code applies to all employers except military and paramilitary organisations. The provisions of main concern to fisheries are those regulating wages and hours. Pay may be based on time or production and may include share of profits or other bones. Whatever the basis of remunerations, normal hours of work are limited to eight per day with a maximum of 12 hours of over time a week. In occupation that involves intermittent duties or mere presence or care taker authority the normal hours of work will be ten a day and sixty a week. One day of rest per week is the norm, but the minister of labour may establish other rotations for particular occupations.

For these reasons hiring employees of foreigners is governed by law NO.66 of 29 October 1972 on employment

by state organs and private entities. Request for personnel are to be submitted to the Directorate of personnel and establishment division, although in practice this is handled by the local labour office.

### 7.8. International law

International treaty law governing fisheries is largely found in regional and bilateral agreements and the 1958 Geneva conventions. Somalia is not a party to any fishery convention or agreement as such , but it is a member of the Indian Ocean Fishery Commission .The commission was established in 1967 by resolution of the FAO Council and its terms of reference include the promotion of national and regional fisheries development programme and the examination of management problems , with particular reference... to the management of off shore resources .

Somalia is also a participant at the third United Nation Conference on the Law of the Sea , which has been convened to negotiate a comprehensive agreement on a new legal regime for the oceans . Although the negotiation have not yet concluded , there is broad consensus on most of the main issues affecting fisheries, and this is embodied in the informal text of a draft convention on the Law of the Sea. If adopted , the informal text would recognise coastal sovereignty over the 12-mile territorial sea and the resources of the continental shelf, and in addition the right of the coastal state to establish an exclusive economic zone (EEZ) extending up to 200-miles. Delimitation of the EEZ between adjacent or opposite states is to be affected by agreement based on equitable principles, the median or equidistant line, and all relevant circumstances.

Within the EEZ, according to article 56 , the coastal

state would have:

a) Sovereign rights for the purpose of exploring and exploiting, conserving and managing the marine resources, whether living or nonliving, of the sea-bed and sub soil and the super adjacent waters, and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of the energy from the water, current and winds.

b) jurisdiction as provided for in the relevant provisions of the present conventions with regard to:

i) the establishment and use of the artificial islands, installations and structures.

ii) marine scientific research.

iii) the preservation of the marine environment.

c) other rights and duties provided for in the present convention.

In exercise of its sovereign rights over living marine resources in the EEZ, the coastal state would be required to determine the allowable catch of the resources, to determine its own capacity to harvest them, and where this does not exceed the allowable catch, to give other states access to the surplus, subject to coastal conservation and management regulations and other conditions. These may include licensing, payment of fees and other forms of remuneration, which in the case of developing the coastal states, may consist of adequate compensation in the field of financing, equipment and technology relating to the fishing industry, provisions of information, conduct of specified research, placing observers or trainees on board vessels, landing some or all the catch in the coastal, joint venture and other cooperative arrangements, training personnel and transferring of technology, and enforcement procedures.

Where a stock of fish or related occur in the EEZ of two or more states , the states would be required to seek arrangement on appropriate management measures .Similar provisions apply to coastal and fishing states with respect to stocks occurring both in the EEZ and beyond with respect to highly migratory species. Special provisions are made for marine mammals ,anadromous ,catadromous and sedentary species. land locked states and geographically disadvantaged developing coastal states.

The coastal states would be authorized to make necessary enforcement measures in the EEZ, including boarding, inspection ,arrest and judicial proceedings . Arrested vessels and their crew are to be released on bond and penalties for violation of fisheries regulations could not include imprisonment.

## C H A P T E R   E I G H T

### B:I. Fishery administration of Somalia.

Fishery administration in the narrowest sense is fairly straight forward in Somalia ,based as it is on a single ministry with few significant internal divisions. But the role of the state is so pervasive in the Somali economy that many non-fisheries bodies must be counted as having a role in fisheries administration .The consultant investigation were not always adequate to elucidate the roles and relationships of these bodies ,in such cases they are merely identified with minimal description.

#### B:I:1 Ministry of fisheries.

The Ministry ,created in 1977 out of the former Ministry Fisheries and Marine Transport ,is the ministry primarily responsible for all fishery matters ,both developmental and regulatory .The ministry counts over 300 established posts, but it appears that less than half of these are filled. in Mogadisho, the Ministry headquarters has a staff of 106 actually employed, including clerks and typists, but apparently excluding divers and laborers.

The staff is as follows:

Cooperative development .....	25
Research .....	12
Financial Administration.....	13
Planning .....	8
Manpower and training .....	8
Industrialization .....	10
Ministries and deputy and his offices .....	25
*Source ministry of fisheries.	



In the field the ministry has four regional officers, each of whom is responsible for several cooperatives. One of these is also assigned as resident supervisor of the Merca cooperative. Another is general manager of the Prodoma plant in Kismayo. A fifth officer is assigned exclusively to the Mogadishu cooperative. In addition the Ministry pays the chairman and cashier (each on a half-time basis) and driver of each cooperative, although the chairman and cashier are usually members of the local community who are elected to the post, and they cannot be considered as staff of the ministry.

Some of the units of the Ministry are more active than the others, in particular direction, administration and, through the field staff cooperatives. Besides supervision and salaries to cooperative employees of the Ministry also supplies boats and gear, but the institutional mechanism for distribution is not apparent. Besides the regional officers there is no extension capability in the Ministry. The other functions the Ministry might be supposed to have, especially fisheries management, do not seem to be performed.

## **8:1:2 COOPERATIVES**

### **A) Fishermen cooperatives.**

There are 18 fishermen cooperatives which cover the entire coastline except for coastal development project areas. The cooperatives perform a variety of functions, supplying boats and gear, providing processing facilities, marketing catches both members and all others in the cooperatives district, maintaining boats and equipment and organizing work where there are insufficient boats and consequently a

rotation system for their distribution. The cooperatives charge fees for boat and gear rental (typically five to 10% of the catch) and maintain differential between buying and selling prices for fish, which is designed to cover administrative cost.

Grade	Buying	Selling
A	so.sh 12/kg	so.sh 25/kg.
B	..... 7/Kg	.....12/kg.
C	..... 4/kg	..... 6/kg.
D	.....2.5/kg	..... 3/kg.
Lobster	..... 20/kg	..... 55/kg

\*Source Mogadishu cooperative fish market.

Cooperatives are governed by an elected committee of seven members. Executive management is in the hands of a chairman and an accountant who, along with a driver, are paid salaries by the Ministry of Fisheries. The chairman and the accountant are both supposed to be local fishermen, although it is not always possible to find one an with accountant's qualifications.

Most cooperatives are thought to be operating a considerable loss, although there are no available records of their financial situation. very few apparently have their books in proper order and are in a position to calculate and balance their operating costs and income. The others will require assistance to reach this point .

### **9.1.3 Union of the Somali cooperative movement**

The Union of the Somali cooperative movement is responsible for the supervision of all cooperatives on the union of the somali cooperative movements. It appears that eventually the union would provide cooperatives the sort of guidance and services they now receive from the

ministries. It would also channel all foreign technical assistance to cooperatives. The union will have six sectorial divisions comprising agricultural, fisheries, transportation, consumers, building materials and services. The chairman of the fishermen cooperatives at Mogadishu, Ras Chiambone and Bender Beyla are on the executive committee of the union. It is not easy to foresee the eventual relationship between the union and the Ministry of fisheries.

#### **9:1:4 Industrial Fisheries**

Somalia has no active fishing joint ventures, but it is a partner in several entities that could spring to life. One is SIDACO, a Somali-Iraqi agricultural sector joint venture that at one time intended to introduce Spanish shrimp trawlers and Polish freezer trawlers, but has no apparently abandoned any fishing plans. Somalia is a one percent shareholder in the Arab Fisheries Company, but there is no sign of this Pan-Arab joint venture becoming operational. Finally there is Somsec, a joint venture with Italian interest based on Italian government financing for the construction of three trawlers. The constitutive meeting of Somsec had not yet been held at the time of the consultants last visit, but apparently the first of the vessels is nearing completion this year.

#### **9:1:5 PROCESSING PLANTS**

A somewhat jumbled institutional structure governs the five processing plants at Laskorey, Candala, Habo, Bolimoog, and Kismayo. All fall under sectorial responsibilities of the Ministry of fisheries, although Laskorey was originally (and its statue still is) under the Ministry of Industry, which also apparently would have jurisdiction over fishmeal plants if there were any

operations. Laskorey is owned and by operated with Dutch technical advice by ENIP, an autonomous agency. Habo and Qandala are owned by the government in partnership with Italian interests who manage them. Bolimoog is 51% owned by the Somali government (Somali development bank). Simmenthal retains a 49% but it is apparently an inactive partner. The Kismayo plant is wholly owned by the government and operated by the Ministry of Fisheries with technical assistance from the Food Agricultural Organization.

Between technical and supply problems, none of the processing facilities has operated a very high rate in recent years. Major reconditioning efforts are under way and were just completed at Kismayu, Bolimoog and Laskorey. At that time if the government wishes to run any facilities on a commercial basis, it will be desirable to adopt the institutional structure to actual conditions. In particular, Kismayo status as part of the ministry would have to be altered, and Bolimoog would probably need to re-enlist the active participation of Simmenthal or recognise the cooperation. In all cases, it might be necessary to create civil law corporations to provide for the possibilities of joint ventures with partners who would improve the management of the facilities.

#### B.II.6 Ministry of Marine Transport and Ports

The Ministry is generally responsible for the navigation and ports. In 1977 it apparently also granted fishing concessions but this seems, no longer to be the case. The Ministry is responsible for two autonomous agencies, the Somali Ports Agency and the National Shipping Line. The Ports Agency is responsible for harbour management at all recognised ports, in particular Berbera,

Kismayu, and Mogadishu. The National Shipping Line, besides operating its own vessels, acts as a local agent for foreign shipping lines and is empowered to provide other ancillary service to shipping.

#### **B.I.7 Training Institutions**

The national fisheries and marine institute in Mogadishu is the only one devoted specifically to fisheries and maritime training . It is a four-year post intermediate school offering courses in mechanics, navigation ,and fish processing. Until now the institution has not emphasized either the practical or fisheries side of its subjects. Its new location near Mogadishu Fishermens cooperative may encourage a shift to more practically oriented instructions in fisheries.

Other training programmes of potential relevance to fisheries are conducted by the Somali Institute of Development, Administration and Management, the Mogadishu and Hargeysa Technical Institute, and the Afgoi Agricultural Institute. There are proposals in the three year development plan for a Maritime School at Kismayo a faculty of marine science at the National University, and a marine research center, but it is not known if any of these will be funded.

#### **B.I.8 Financial Institutions**

1. Ministry of National Planning and Coordination  
The ministry of Planning has succeeded the State Planning Commission as the agency responsible for development planning, for examining development projects submitted by other parts of Government, for commissioning feasibility studies and for seeking foreign finance. In the past it has frequently occurred that projects were developed and

financing secured without involvement of the Ministry or its predecessor. The Ministry is making a determined effort to curb this practice.

#### **8:2:1 Central Economic Committee**

This is a committee of Somali Revolutionary Party composed of the members of the Central Party Committee, the Chairman of the central Bank and the Minister of Finance. It is generally responsible for economic policy, and has responsibility for approving development projects.

#### **8:2:2. Ministry of Finance**

The Ministry is responsible for the current budget as opposed to the development budget. It is also the parent Ministry of the state owned banks.

#### **8:2:3. Central bank**

The central Bank controls access to foreign exchange and therefore plays a crucial role in the operation of any enterprise, for example when a fishing company, requires foreign supplies such as spare parts. The procedure it has established for approval for foreign exchange applications is so time-consuming that quotation can become outdated before approval, thus requiring the whole process to commence again. A franco valuta system has recently been established, whereby foreign exchange can be used or traded privately. This would ease the administrative problem for fishing operations that managed to accumulate sufficient foreign exchange through sales.

#### **8:2:4. Somali Development Bank**

Somali Development Banks greatest involvement in fisheries has been through its acquisitions of the majority shareholders in Boolimoog, which is in the

process of restoring to operational condition. It then intends to operate the plant in conjunction with chartered vessels for two seasons to determine the feasibility of building a proper port. The Bank would not ordinarily finance port construction itself but would seek long term low interest financing. Medium term financing of fishing enterprises would on the other hand be within the Banks normal lending policy, but only if the particular loans were commercially viable.

The Somali Development Bank had a brief involvement with fishery cooperatives when it managed a lot of money which had a satisfactory repayment experience. The Bank does not regard cooperative loans as a very bankable proposition, so it seems unlikely to take a significant role in their financing.

# CHAPTER NINE

## MARKETING

### 9.1. Fish Marketing in Somalia.

Fish marketing and distribution in Somalia has been improved during the past few years, but there are still a few bottlenecks for the realization of a sound marketing and distribution system.

Although the distribution and data collection system for pereshiable marine products need much improvement, the Ministry and its agencies has already put much effort into the establishment of regular transportation mechanism in the Somali ports to transport marine products to international markets. The number of refrigerated trucks grew from 5 to about 15 trucks most of which owned by Somali privated sector and government enterprises. More over refrigerated containers (freezers and Chillstores) have been established in many potential fishing sites.

As a result of the introduction of these facilities and equipment, for the first time frozen and fresh is flowing from the isolated fishing sites to the urban areas and to fish exporting outlets.

For the season 1987/88 reasonable price changes have been considered. Table 1. shows comparable beach prices for the above years.

<u>9.1.1 Marine Products</u>	<u>prices/kg</u>	
	<u>86/87</u>	<u>87/88</u>
Scale fish .....so.sh	100	150
Tuna &mackerels.....so.sh	120	200
Sharks .....so.sh	60	100
Shark fins .....so.sh	3500	4000



Dry salted Sharks.....so.sh	150	200
Lobster .....	so.sh 360	720
Lobster (small .....	so.sh 1500	2000

quantities in  
resturants)

\*SOURCE yearly fishery report Mogadisho 1988.

In the lower Juba region and Brava district, Somali Marine Products is the main client for the cooperatives there and prices where being increased uniformly to satisfy the cost of production against the export prices of the enterprises as shown in table 2.

### Prices change in the lower Juba regions (beach prices)

	<u>1987</u>	<u>1988</u>
Fish .....	so.sh.26 - 35	45 -65
Lobster, .....	so.sh 170 -220	450 -700

### 9.1.2 Retail prices

Since the liberalisation of prices in 1982 retail prices have shown constant increase. The demand for fish have been suprisingly great and since the landed fish could not satisfy the demand, competition for the limited supply has been refelected in increases of prices.

In Berbera a coldstore, opened in October 1986, and since then there has been an uprpt increase in fish consumption and introduction of products to new urban centers to the Burao and Hargeysa where consumption of fish was hither to unknown.

In Berbera where correct data were maintained, the prices paid to fishermen, retail prices and cost process in different localities is illustrated in Table 3.

### Retail price Table 3.

<u>Date</u>	<u>producer</u>	<u>center</u>	<u>berbera</u>	<u>bur/Harg.</u>
25/2/87	45	60	66	71
16/4/87	45	60	76	85
1/10/87	55	65	85	90
1/12/87	55	70	100	120
1/11/87	65	90	120	130
<u>1/01/88</u>	<u>90</u>	<u>105</u>	<u>130</u>	<u>-</u>

\*Source Northwest fishery report 187/988

<u>Bosaaso</u>	<u>Feb. 1987</u>	<u>Octob. 1988</u>
Groupers	so.sh 50/= kg.	so.sh 90/= kg.
Snappers	so.sh 40/= kg.	so.sh 75/= kg.
Tuna	so.sh 35/= kg.	so.sh 50/= kg.

\*source North east fishery report NECFISH 1987/88.

In the Moagadishu Supermarket retail prices were temporarily fixed, but liable to changes, as shown in the following table below in Somali shilling per kilo.

<u>Fish type</u>	<u>produce price</u>	<u>sale price</u>	<u>retailprice</u>
Tuna & Mackerel	55	80	95
Scale Fish	45	70	85
Sharks & Rays	40	65	80

\*Source Mogadishu fish super market 1988.

It can be noticed that those enterprises offer to the production (cooperative and private individuals) a secure market and other facilities such as repair workshop credit (mainly in the form of fishing gear cash) and service consisting of fuel supply training.

### 9.1.3 Exportation Market

It is encouraging to note that existing export orders are much greater than the quantities available. This low procurement has an adverse effect on both export quantities and prices. To warrant the engagement of refer vessels in order to take a full load requires the accumulation of such quantity over a long period, thus increasing the storage and freezing costs. Another effect of export requirement and attractive prices is the concentration on the part of the private sector such as limited high value products, thus endangering the preservation of the products.

Somali Marine Products (fish & lobster) for 1987 was nearly 259,257 kg at a value of US.\$389,360/= while during 1988 up to October were as shown in table below:

<u>Date</u>	<u>destination</u>	<u>Value \$</u>	<u>Lobster(t)</u>
14/1/88	S. Arabia	103	2.632
5/3/88	France	11	400
18/5/88	S. Arabia	76,940	2,060
10/3/88	Kuwait	800	600
10/3/88	S.Arabia	14.648.20	2,920

\*source Somali marine product 1987.

Destination for 1987 included Spain and Italy.

Neckfish started being exported only during 1988 and amounted: (from Berbera).

<u>Destination</u>	<u>product</u>	<u>weight</u>	<u>value US\$</u>
Italy	fish	14,9000kg	177,000

\*Source Berbera cold storage 1987.

Lobster and fish exported directly by the

private sector was delivered mainly to Saudi Arabia and UAE at 200 - 300 tons per year live lobster is weekly delivered to Italy at 200 - 300 kg despatch.

Dry salted shark and shark fins exclusively exported by private fishermen (businessmen) to east Africa amounted 3550 tons at an estimated value of mill.1.1 us\$.

#### 9:1:4 Somali Marine Products

The activities of this para-statal company is centered on the main cold storage complex at Kismayo, which is fed by the Raas Kiyamboni outstations.

The existing cold storage capacity (750) tons is too large for the local artisanal fisheries to serve. As a result a low average procurement rate only 450 tons per year has been received. See the table below:

<u>Year</u>	<u>production/tons</u>	<u>lobster%</u>
1985	480	12
1986	480	11
1987	459	6
1988	390	7

\*Source Somali Marine product report 1988.

For this purpose the company developed its own fleet which is at present composed of 12 fishing boats equipped with efficient fishing gear and diving equipment for lobster, one 12 m. shrimp trawler (Koyama) which conducted successful trial campaign at Gobwein few miles North of Kismayo, one collector vessel (Raas Binnah) intended to operate in the North Eastern fishing sites (Bargal), Bender Beyla.

The Jula and Jawaya collector trawlers were also

hauled and rare presently operating in Kulmis and Ras Kiyamboni fishing sites . A partial overhaul of the plant itself has been carried out.

The problem of low capacity utilisation is expected to be rectified through the full mobilisation of the production means available. The company is seeking to establish a joint venture arrangement, which is expected to continue inputs from the off shore fishing units.

Somali Marine Products were marketed as shown below:

<u>Destination</u>	<u>National%</u>	<u>Weight%</u>
Europe	70	55
Middle East	28	49
Local market	2	5

\*Source Ministry of fisheries 1988.-

9:1:5 North-west Fishery development project.

This UNDP - UNCD Project is intended to lay down a firm basis for future fishery development in the area of Berbera and Zeila districts. This project was executed by FAO and the Ministry of fisheries and Marine Resources.

Phase one of the project was concentrated in the town of Berbera and has realized the fishing community center complete with necessary facilities and services for fishermen. The centre offers to the fishermen all technical services of boat maintenance, engine repairs and reconditioning, stock of spare parts, fishing gear, fuel and ice always in hand.

Moreover, the centre provides to the fishermen loans from a revolving fund generated by the Ministry of Fisheries and Marine resources. On the experience gained in Berbera Fishing and training community centre, a second phase started in 1987 covering a period of 3 years to end in 1989 at the Zeila and Lughayo districts.

Berbera Fish Training Community Center supplies

fish to the hinterland cities like Burao, Hardeysa towns which raised fish consumptions in these towns from zero to around 500 kgs per day.

The Ministry is planning to expand the project to Mait, 300 km east of Berbera after the completion of phase two. Collector vessels of different capacity and cruising ranges are foreseen in phase two and phase three of the project.

#### 9:11:6 North - East Coast Fisheries Enterprises (NECFISH)

The two major components, namely the offshore pilot project, and the inshore fisheries development are complete. The final report of the offshore component has been completed and presented to the Ministry and to the World Bank, which has financed the projects. The result and findings of this report will be implemented soon.

The inshore fisheries development component was engaged in organizing the land based infrastructure, development of sea based infrastructure and trail of various fishing gear and introduction of fishing methods in the area . the results of the latter is summarized in the following table:

#### 1. Trail Fishing Catch Rates April-88 Sept-88

<u>Gear</u>	<u>Catches</u>	<u>rates%</u>	<u>prime sec.</u>
Pelagic gillnets	15,867 kg	50 %	
Demersal gillnets	3,339 kg	-	
Tolling	3,525 kg	90 %	
Pelagic longline	9,832 kg	42 %	
Tangle nets	76,325 kg		
Deep lobster traps	9441 kg	1.3%	
Beehive fish traps	5925 kg	76 %	
Beachseine nets	516 kg	-	
diving(lobster)	313 kg	-	

(15 men hrs)

\*Source NECH Fishery enterprise Report 1988.

## **2. Model fishing Operations Based on Trail catch rates**

Motorized 6.4m boat with 2 lines.

**Trolling:** 2x6.8 kgper line hour for 6 hours -82kg per day  
for 100 days fished per year - 8.2 tons Species.

### **Motorised Boats 8.5 meters**

**1.Pelagic gillnets** 500m or 90kg per 100-452kg per day set,  
for 125 days fished per year - 56000 tons.

**2.Pelagic long line** 300 hooks 178 kg per 100 hooks - 536  
kg per day set for 125 days fished per year 67 tons

**3.Fish traps** 50 5.4 kg per set - 270 kg per day set fpr 25  
days fished per year 33.8 tons.

**4.Deepwater Lobster traps** 50 traps 1.6 kg per trap per set  
80 kg per day for 125 kg fished per year

### **Species composition(main catch methods)**

<b><u>Pelagic tuna</u></b>	<b><u>Average</u></b>	<b><u>Trolling</u></b>	<b><u>Pelagic nets</u></b>
Yellowtuna	17.8	3.5	4.1
Longtail	5.5	2.5	14.1
Little tuna	-	-	8.2
Skipjack	1.7	1.4	5.6
Sailfish	-	-	8.3
Kingfish	10.9	68.9	3.4
Jacks	-	16.9	5.2
Barracuda	-	3.1	-

### **DEMERSAL**

Grouper	-	-	30.9
Snapper	-	-	14.1
Emporer	-	-	16.2
Other	-	-	26.5
Shark	9	26.9	6.5
Rays	-	5.2	-

Source: The Somali Exploration Project (Nov.1988)

Besides the above activities the project receives production from fishing cooperatives in the area between Lughayo and Bareda in the Eastern tip of the Horn.

Fish is collected by Awdal (former shrimp vessel converted into collector processor), Ras-El-Fil (landing craft) and stored at either Berbera coldstore(450 ton) or in Bosaso(200 ton).

The local sales of the Berbera facility to Berbera, Burao and Hargeysa during Jan.to April 1988 was:

<u>Year</u>	<u>Month</u>	<u>Sales</u>
1988	Jan.	15,708 kg
	Feb.	13,271 kg
	March	9,295 kg
	April	728 kg

\*Source somali exploration project 1988.

#### 9:1:7 External Trade

No import of fish to Somalia from abroad has been recorded except for sporadic canned stuff. Somalia is a fish exporting country and although transport is a major constraint there is a growing export trade in this respect. This export is mainly in frozen goods which is a recent development, coming immediately on the wake of the establishment of the cold store facilities .The Somali Marine product Company based in Kismayo as stated earlier directs about 60% of its products to the export market. Lobster and other high value products such as snappers and groupers are destined to clients in Italy and France, while low priced species goes to Saudi Arabia. The private sector is involved in a growing brisk trade in lobster which mainly goes to European markets. From the cold store in Berbera 32,000 kg of lobster and high value fish were exported to france via Djibouti

#### 9:1:8 Dried Fish Barter Trade Between KENYA and SOMALIA



Salted dried fish is a traditional product all along the coast of East Africa . Fishermen are able to catch enough to supply both their own and accessible villages nearby, often surplus remains , salt from the sea and heat from the sun are easily available, beaches are extensive to spread the fish for drying .Storage and exporting dried fish are simple.

People in the interior are used to dried products from agriculture. Rehydrating them for consumption is familiar practice. Dried fish from the marine sector differs only in one respect : the presence of salt.

Fishermen from coastal areas take thier dried fish far interior places for exchange against agriculture products. Trading dried fish on a barter basis continues even today However, the items most sought after today are consumer goods .

Somali fishermen usually bring their dried fish, dried sharks, shark fins and beche-de-mer to Mombasa. At Mombasa, Kenyan authorities inspect them, impose a duty and permit the Somali fishermen, or traders to take back with them Kenyan produce such as Coffe, tea, vegetable oil, soap and tinned foods. Until recently, this trade was banned by Somalia . On the Kenyan side, this trade receives little encouragement as miscreants use this operation for large-scale smuggling to Somalia of goods into Kenya from other countries .

Kismayo, the Southern township of Somalia is the base from which most Somali fishermen and traders operate Fishermen or traders bring dried fishery products mostly shark meat and fins all the way from kandala, Berada and other fishing villages from the northern part of Somalia to Kismayo. Boatloads of dried fishery products are carried from there to Mombasa. Weather permitting, traders

also landrovers to carry fishery products to Nairobi. Dried fish prices shoot up during the months of September to May , when the SW mosoon make make both fishing and coastal trade difficult, almost reaching twice its prices during July to September. Some traders in Kismayo have appointed agents in Mombasa and Nairobi and provide them with regular supplies of dried fishery products.

At Mombasa, fish traders estimated the quantity of fishery products exchanged for Kenyan produce at about 1000 tons per annum .Shark fins and beche-de-mer are brought into Mombasa from Somalia for re-export. Traders prefer this to exporting them direct from Mogadishu or Kismayo due to the irregular shipping connections and poor communications.

The advantages of improving the barter trade and regularising it as a bilateral arrangement between Kenya and Somalia are:

- Kenya will have in Somalia a market for its domestic production, resulting in increased production. Somalia will also increase its domestic production of fish and fish products.
- Valuable foreign exchange of both countries used for importing these products from other countries will be safe. Most of the items bartered are food products providing a form of regional food security arrangement.
- Customs revenue will increase due to the declared nature of the trade, as duties will be payable. It might be desirable, however, to work out preferential tariffs for this trade.
- Selfreliance and interdependence between Kenya and Somalia will enhance the economic growth of both countries and promote cooperation in other areas.

Depending on the market forces production levels and consumers demands in both countries, temporary local

shortages of goods supplied for barter may be caused by the incentive to export rather than produce for the local market. In the long term, this will lead to increased production.

### 9.1.9 Barriers to Fish Trade

In so far as Somalia is concerned the major barrier to trade is low production. Such low production compounds the already difficult transport problem. It has become difficult to arrange any reliable transportation for such low production. Transport by air-freight which can be afforded in the case of lobster becomes prohibited when other species comes into the picture.

Another barrier is the consumer preference which tremendously limits the marketable product, and makes it difficult for the sale of mixed types of fish. The bulk of the catch realised may not easily be marketable in such lucrative market.

Intra-regional trade is nonexistent except for dry salted fish which is exported to Kenya and other countries in East and Central Africa. The demand for fish in most African countries in unsophisticated and high value fish that makes the export trade viable has no demand in these countries. In addition to these major constraints, lack of knowledge about the available products and the consumers preference remains another obstacle. On top of these two factors, the difficulty of transportation and the non availability of foreign currency in the consumption countries are the two major factors standing in the way of expanded trade within the region. In some very limited countries like Egypt, demand for high value fish exists, but transportation and foreign currency availability remain always the major obstacle.

Fish trade in the USA, the Europe, the Middle East and the Far East countries is more promising.

However, the key to increased trade is increased production particularly of these types that have greater market demand. Increased production facilitates the organisation of regular shipping and the conclusion of long term contracts with clients. All other factors such as packing requirement, adequate health standards and types of processing techniques are secondary matters that can easily be attended to, provided a healthy and growing trade exist. Another factor that will contribute to increased trade is availability of adequate knowledge about different markets and reliable marketing intelligence with regard to different markets and their requirements by type as well as prevailing market prices for different species in the relevant market.

## 9:2:1 SHARK FISHERIES IN SOMALIA

### 9:2:1:1 Classification

Roughly, one can classify as shark all those fish with the gill slits on the sides of the head. Two hundred and fifty to three hundred species are distinguished as sharks which are grouped into twenty families. Sharks belong to the cartilaginous fishes.

### 9:2:1:2 Utilization

The shark is potentially valuable sources of protein for domestic consumption in the producing countries and hard currency earning for exports of all shark products.

In principle every part of sharks body can be fully utilized. These includes fins, the skin, liver, the oil, the teeth, the meat, and jaws. It is difficult to achieve an industrial practice because of the different sizes and biological features of the shark.

### 9:2:1:3 Shark Meat

Sharks have been used as food since man was able to catch them. Shark meat was eaten in the fishing villages and nearby settlements and it was familiar to the inhabitants of the Pacific Islands and those living in the coasts of Africa and Latin America .

Shark meat is lean and somewhat acid compared to other fish. Protein contents differ in the different species but correspond to the contents in the various species of bony fish.

The shark meat is presented in fresh, chilled or frozen forms, usually as steak or fillets of the white meat. Based on fish and trade statistics, Japan ,the UK ,France, Italy and West Germany are the largest consumers.

Italy is the largest importer, followed by France, West Germany and Japan.

#### 9:21:4 Shark Fins

When swimming , sharks balance on their pectoral fins and use their dorsal fins for stabilization, while using their caudal for propulsion like bony fish. For this reason , soft collagen and elastic fibres in thick skin suffice. Shark fins are the most valuable part of its body and are one of the most expensive food in the world.

Shark fins are great in demand, chiefly among the Chinese and Hong Kong for making the ceremonial dishes. Fins from all sharks over 1.5 m in length and from smaller ones are commercially valuable except the fin from nurse shark and the pectoral fins of saw shark. Fins from Hammer head , Blue Shark and Gray Shark are more highly priced than those from other sharks .

The commercial value of shark fins depends on their variety and quality. Fins should be packed whole and together in complete sets. A complete set consisting as follows:

Pectoral fins	50 %
Dorsal fins	25 %
Caudal fins	25 %

The preparation of the shark fins does not require any elaborate treatments, but care is needed in cutting, trimming and drying them otherwise their value is reduced. Fins should be cut from the shark as soon as the fish is caught. Pectoral and dorsal fins are cut along the fish. The tail is removed by straight vertical cut . The three common cutting methods are : crude cut , straight cut and half moon cut.

Quality depends on dryness and cutting the form of presentation is :

- a) Dried (un prepared)
- b) Dried semi prepared skin but otherwise retaining shape.
- c) Dried packed as separated strands in cardboard boxes or in plastic bags.
- d) Frozen form
- e) Canned as shark fin soup.

The fins processed of under form (B) is the most expensive and (D) is the least expensive.

### 9:2:1:5 Shark hides

Hides can be produced from shark which exceed 1-5 m in length. The nurse shark is the most valuable shark for its hide, but good quality hide can be produced from most other species.

The species listed below are considered the most desirable for the production of quality shark leather:

Tiger shark	-	Neberaani
Nurse shark	-	Ceylataani
Bull shark	-	Qoofaar

Hammar shark	-	geesle
Black tip shark	-	baalmadoobe

\*Source annual report of ministry of fisheries 1988.

The hide skin of a shark when cleaned and cured produces a high class shargreen for the manufacture of leather goods such as shoes, document and brief cases, handbags, suitcases wallets, watch straps, and belts.

Hides are in most cases preserved by salting at the landing sites or on board fishing vessels and sold to special enterprises which produce leather. Shark leather usually has a hard surface and it is very durable, so in order to produce a good quality shark skin the following points should be considered:

- a) The skin should be removed as soon as possible and salted before decomposition starts.
- b) As shark spoils more rapidly than other fishes the maximum skinning and salting time limit cannot exceed 24 hrs. warm and humid climate reduces this period to a few hours.
- c) Failure to carry out prompt skinning, cleaning and curing will lead to low a quality shark skin product.

### 9:2:1:6 Shark liver oil

Sharks have on swim bladder and their remaining hydrostatic organ is their numerous liver which is saturated with oil. The weight of the liver of some sharks constitutes 25 % of the total weight of the shark.

The high quality shark liver oil is highly demanded by chemical and pharmaceutical companies. Small quantities of shark liver oil are also used as an auxilliary in the textile and tanning industries and also lubricating oil with exceptional friction and heat resisting qualities.

### 9:2:1:7 Shark jaws and teeth

A full grown shark yields about 150 round teeth of valuable size. Small teeth are not much value.

The jaw bones and teeth of a shark are used in the tourist industry and by individuals throughout the world. Shark teeth and jaw bone are valuable if they measure at least 3.7 cm across the base of the root to the tip. They should be clean and in white colour and free from any traces of rotting or cavities.

The communities listed below are fully engaged in shark fisheries in the country :

fisheries communities of Aluula, Hafuun ,B/Beyla ,Eil,Adale ,Bargal ,Hobiyo ,Gara'd ,Lughayo , Zeila and Berbera.

Most common fishing gear used for shark fishing is longline and gillnets.

The processing method for shark and its products are salting and drying.



# C H A P T E R   T E N

## 10:1. FISH PRODUCTION OF THE COUNTRY

Several commercial surveys and expeditions were carried out in Somali waters and point to abundant fisheries resources. However, these surveys were limited in coverage, duration and methods used, were not definitely conclusive. The exploitable potential stands now at 180,000 - 200,000 per year with no detrimental consequence on the resource. Small shoaling pelagic fish constitutes a very large under exploited resource in Somali waters. A potential catch of approximately 5mt/night by small boats seining in the north can be realized. Off-shore large seiners might take up - to 10,000 tones per annum. Similarly large pelagic species certainly appear to an abundant and under utilized resources. These resources can be fished by the artisanal sector, but the opportunity exists for seasonal fishing by the large off-shore vessels. As for demersal fish custacean a mean catch by trawlers of 2000 hp of 25mt/day was expected and probably more, using heavier gear.

### 10:1:1 TOTAL FISH PRODUCTION.

The following table below shows the total fish production over the last years in tons.

<u>Year</u>	<u>Fish industry</u>	<u>crustacean</u>	<u>artisanal</u>	<u>total</u>
1978	236	100	3,586	3,919
1979	3,080	800	4,000	7,880
1980	8,530	1,800	4,000	14,300
1981	4,792	476	4,255	9,523
1982	3,904	436	4,390	8,730
1983	5,356	559	5,280	11,195
1984	11,363	552	7,724	19,630

1985	11,938	462	4,067	16,467
1986	4,800	802	12,653	18,255
1987	10,748	10,748	8,088	19,852

\* Source country report of Somalia 30 May 1988 ECA.

The most significant and sustained growth happens in the artisanal sector whereby a serious effort was made by the provision of motorized boats, fishing gear, training, repair centers and in the establishment of fishing freezing facilities which offered secure markets to the artisanal production. The fish industrial sector shows a consistent decline up to 1983, which is due to the dissolution of the joint fishing venture, by USSR fishing vessels. The increased rates in 1983 and subsequent year are due to the granting of fishing licences to foreign fishing companies.

#### 10:1:2 SECTORIAL FISH PRODUCTION

Sectorial fish production with regard to marine artisanal and marine industrial production is dealt with in the above table. In so far as aquaculture is concerned no activity undertaken in the country. Inland fishing centres has been located around the two major rivers namely Juba and Shabelle. No fishing activities are conducted on the Juba river, but intense fishing is carried out in the adjacent swamps. As for the Shabelle River no fishing is conducted from Jowhar up river up to the border, but the down river area constitutes a very significant fishing region, due to the large population there in and the existence of fishing tradition. Prospects for the development of inland fishing business is great.

However, before any meaningful development programmes can be undertaken, it will be necessary to carry out more thorough surveys for determination of

resource potentials and expected catch rates. Some preliminary surveys have already been started by the Ministry of Fisheries. From these surveys the following catch rates have been observed:

<u>River</u>	<u>Length</u>	<u>Width</u>	<u>Area</u>	<u>Catch/yr</u>
Juba	800km	122m	98,000km	2,133
Shabelle	1,100km	82m	90,000km	4,033

\*Source Ministry of fisheries annual report 1988.

### 10:1:3 MEANS OF PRODUCTION

The inland fisheries sector which is at a pilotage stage only the odd canoe and 6.4 GRB boat is used. In the marine artisanal sector seven types of craft are used, all but one are manufactured locally, however engines and spare parts are imported from abroad, which is one of our foreign currency leakage.

#### Description of the boats

<u>Country</u>	<u>Size</u>	<u>Capacity</u>	<u>H.P</u>
Sweden	6.4m	800kg	8
Sweden	8.5m	2000kg	22
Russian	6.9m	4000kg	18
Sri Lanka	8.7m	3000kg	22 Sail
boat	6.0m	2000kg	-Canoe
3.0m	300kg	-#Source Ministry of fisheries annual report 1988.	

Since recently a 6.7m boat and 10m boat have been manufactured in the GRP factory in Mogadishu. The total number of craft is 354 motorized boats, 176 traditional sailing boats and 891 canoes. It is generally agreed that only 50% of these crafts are not always fully operational, due to the lack of spare parts, fuel or

repair facilities.

There are 28 small coastal settlements with a total population of 90,000 however, the number of fulltime fishermen is about 4,000. Part time fishermen are estimated at 10,000. There are another 15,280 ex-nomads resettled in four locations as a result of the severe drought of 1974-75.

In the past 2-3 years several hundreds of retired civil and retired military officials and recent school leavers, have been oriented in the artisanal fishing sector and have provided with 271 boats under soft loan arrangement payable over 10 years at 5% interest rate per year.

In the marine industrial sector fishing is undertaken by foreign licensed deep seas trawlers and by several Somali stern freezer trawlers. Licence is granted against the payment of 20% royalty of the value of the catch. On limited occasions royalty has been taken in kind. The catch rates realized by these operations are well below the estimated rates in the surveys mentioned.

#### 10:1:4 Constraints and problems at production level

The major constraints to the development of a reliable fisheries policy is the lack of sufficient and accurate data as to the volume and types of resources available. Only on the availability of such data can correct policy be undertaken. This coupled with the fact that fisheries is a new undertaking where no accumulated expertise exists, makes its efficient operation rather difficult. Another constraint lies in the field of inputs whereby all such items as cold storage, refrigerated trucks, spare parts, fishing gear and fuel have to be imported. The impact of this state of affairs. Given the low productivity of the sector, the distance involved and

the scarcity and high cost of foreign currency can easily be imagined. As I stated previously the Somali coast line is very extensive. The coast line suffers from a lack of roads and other types infrastructure (jetties, repair centres etc.). Most of the coast line is inaccessible and isolated from the major export outlets. This situation coupled with perishability of the product further depresses the production of the sector and explains the present low exploitation of resource.

Such present low exploitation and the non availability of accurate and reliable data discourages the involvement of both local and foreign entrepreneurs in the Somali fishery sector.

#### 10:1:5 UTILIZATION

It is difficult to give an accurate and global figure of the utilization given the unreliable data compilation in existence. However, reference to the particular areas of production may be given an indication to various levels of fish utilization. It has to be stated that due to the long distance involved and the lack of preservation facilities in most of the coast line, coupled with the poor road situation and the absence of other infrastructure, most the artisanal catch consists of shark which are dry salted and exported in that form to neighboring consuming countries.

In most parts of coastline where population is sparse, the market for fresh fish is limited. Most of the artisanal fish landed in the capital city of Mogadishu is consumed fresh, although accurate figures for auction carried out on the beach are not available. In the Berbera cold store facility with a capacity of 400 tons, which started operations in October 1986, 62,907 kg of fresh fish were sold and 4,000 kg frozen fish for the

period October and December 1986.

In Kismayo cold store facility with capacity of 750 tons. where there is an annual production of 500 tons is realized. Approximately 40% of processed fish is not of exportable type and is marketed in the local market in frozen form. Similarly the Mogadishu fish market with capacity of 30 tons , markets its product in frozen form.

The artisanal curing techniques used in Somalia are drying salting, smoking, canning and freezing. The two main important techniques commonly used are dry salting and freezing methods. There are three canning factories in operation in the country at present. These are very old enterprises with obsolete machinery and have no immediate impact on the fish market.

#### 10.1.7 The re settled nomads and the role of women in fishing.

Most people in the cooperatives seem to have adapted rather well to sedentary life, especially young people. The memories of the hardships suffered during the drought are still very much alive in peoples minds, and the fact that food and water now is readily available all the time is greatly appreciated. Access to education is likewise regarded very highly.

Interpersonal contact with local people is quite good, intermarriages seem to occur frequently, and cultural differences are as distinct as often believed. If anything, there are some resentments on the part of the local population towards the resettled nomads because they are seen as privileged by the government. Old people surprisingly constitute the group which has most difficulties in adapting to the new way of life. Although no reliable statistical data one scapes from the cooperatives were available, oral reports indicated that

it is among the above mentioned group the highest percentage of escape incidence is found. More serious is the fact that some young men are leaving the settlements, especially since many of them have been trained in professions of essential values to the cooperatives. The professions in question are typically the technical ones such as mechanics, electricians, drivers, etc., and many young professionals are attracted by the prospects of highly paid jobs in other parts of the country and especially abroad, e.g in Saudi Arabia. One will therefore suggest that the future training of technical staff be reserved people who are the least likely to leave the cooperatives for jobs elsewhere, i.e middle aged men with wives and children.

The young men on the other hand , should all be required to undergo training as fishermen. If some of them display skills and talents that can prove to be more useful in other sectors of the cooperative, e.g in administration, they can always be transferred to these sectors later on, the fishing experience still being an important asset.

It is interesting to mention that all cooperatives have definite overweight of males. This may be another reason for which many bachelors choose to leave else where. Two special cases should , however:

- 1) Eel Ahmed, where the male/female ratio is extremely high because many fishermen's families are still in Brawa.

- 2) Badey, which has more than twice as many males than females in the age group 7-15, while there are almost three times as many women as men in the 15-50 group. This apparently illogical sex distribution can in part be explained by the fact that most of the resettled nomads in Badey are originally from the surrounding

districts and still have relatives nearby who are pursuing the pastoralist way of life . Consequently, many men have placed their wives and children in the cooperatives where they will be given free rations and education, while the men themselves are in the interior trying to build up a new stock. At the same time, it is likely that the young girls are sent with their fathers and grandmothers in order to take care and herd sheep and goats as it traditionally has been . so this would explain the low female figures in the age 7-15 age bracket. In traditional Somali society it is not regarded as useful for a girl to get an education.

Unfortunately, these findings cannot be set up with the other fishing cooperatives, since Badey was the only place where statistics on the age composition were available. There is undoubtedly a certain degree of general dissatisfaction among the resettled nomads. One of the major causes seems to be that there exists much under employment in the fishing cooperatives, mainly because they are all working well below their potential. Some of these problems can be attributed to the actual structure of the cooperatives, as discussed in a following section report. However, other problems are of a more technical and educational nature, respectively.

On the technical side, there is a lack of fishing boats in working condition. There is a chronic lack of spare parts partly, but not solely, due to the discontinuance of Soviet aid. This, however, is a problem already pointed out in various technical reports.

On the educational side , it is evident that the resettled nomads suffer from inadequate instruction and training, especially when it comes to fishing. The only technique that really seems to have been introduced by the former Soviet advisors is net fishing, and even this



technique has not been taught properly. According to all people interviewed, the Soviet fishing experts never joined the prospective fishermen out of the fishing grounds. All instructions were done through the verbal communication on shore. Unnecessary to say, it is quite impossible to teach people, who never seen the ocean before in their lives, proper fishing techniques and adequate seamanship in such an indirect way.

Some additional instruction was and still given by local fishermen but even this is of limited value, since they traditionally have fished mainly for subsistence, and for whom in most cases fishing has been made but a part time activity. Hence, they are quite unfamiliar with market oriented fishing and lack the adequate knowledge of techniques used in more large scale and cooperative fishing as well. When it comes to the social adaptation of the nomads in the cooperatives the problems are, as has already been pointed out, not as prominent as one would perhaps expect. Of course, the change from nomadic pastoralism to sedentary fishing is a major one, and in such a large scale actually unprecedented in history. However, this is not to say that such a change cannot be successful particularly not in the case of the resettlement of nomads in Somalia. There are three factors which are bound to ease the traumas involved that one must remember,

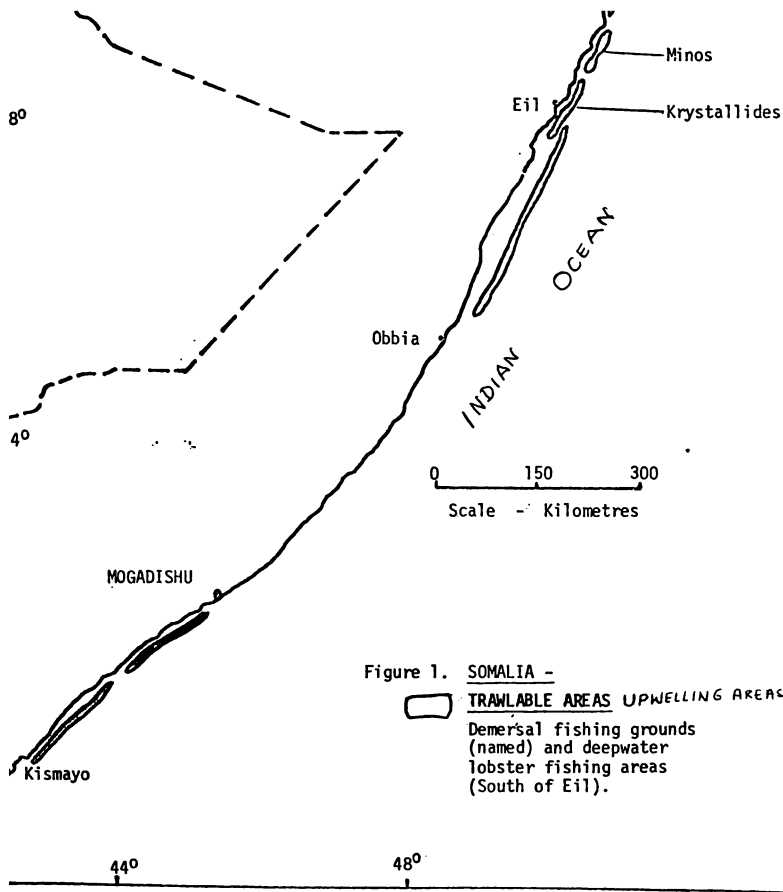
- 1) Practically all Somalis belong to what one refers to as one ^ethnic group^. They speak the same language with only relatively minor dialectical differences, they adhere to the same religion which for centuries has been a very cohesive force; they all share the same historical and even cultural background, even sedentarized Somalis generally relatives who are still pastoralists or whose families were nomadic only a couple

of generations back, and finally, there have traditionally been no actual class differences among Somalis(although some differentiation occurred along family lines).

2). When the nomads were located, they had barely survived one of the worst droughts in the history of Somalia. They had lost practically all their herds which were their one and only means of subsistence. Thus, most of the resettled people have nothing to go back to.

3). Despite arguments to the contrary, a nomad will not always remain a nomad, at least not in the Somali case. Numerous historical pieces of information says that many Somalis had traditionally quite readily left their nomadic life-style in order to settle down in just about every corner of the world. In fact perhaps as many as one million Somalis, most of them former nomads or descendants of former nomads, today live outside the Horn of Africa. Only the Somali pastoralists' readiness to pursue new ways of life.

This having been said, one must not overlook the fact that there will necessarily still be a number of problems involved in such large scale resettlement schemes as the one witnessed in Somalia. When it comes to fishing, it is often argued that Somali by tradition regard fishing as a disrespectful activity and tend to see fish-eating as disposable. This is unquestionably true, however, these taboo attitudes are not greater obstacles than that they can be overcome. Indeed, they have already been overcome to a large extent by the resettled people in the fishing cooperatives. When there is a certain degree of dissatisfaction, it is not so much because of cultural barriers, but rather because the cooperatives do not yet function as well as they should. The people feel they are still in a sort of relief camp, receiving handouts to stay alive. They would prefer to see more concrete results of



alive. They would prefer to see more concrete results of their own labour and be able to provide for themselves and their families. In other words, it is here argued that the degree of satisfaction among the resettled nomads will increase proportionally with the successful working cooperatives, and a higher degree of satisfaction will in turn improve the whole functioning of the cooperatives. These two factors, which can be seen as the social and the economic factor, go hand in hand. However the economic factor is the base and must come first.

The women in the newly emerging processing operations are growing and women represent a respectable percentage in the working force in the processing sectors of the new enterprises. There are also some women who exercise fishing activities within off-shore fishing these women are mainly those who live on the South coast of Somalia, the called Bunjuni tribe the only Somali tribe who live on a fish diet as they do not have livestock. The women population living on the northern coast of Somalia never engage or exercise in fishing activities, only men go to sea. Women remain at home waiting for their husbands and the fish brought from the sea in order to prepare it for human consumption.

Recommendations and conclusions

In a country where fishing tradition was totally lacking, the achievements realized in such a short time is far from being mean . The most far reaching consequence of these recent activities in the tremendous interest on the part of the Somali people to engage in, invest and fully exploit the fisheries resources. Professional carder both at scientific and technical levels are very minimal. Those. who are engaged in all aspects of fishery development are mainly unskilled personnel.

Despite the effort and the investment made in the sector, which has not attained viability, both catch rates of the fishing fleets and the capacity utilization of the fishing enterprises are below desired economic level.

A fresh look should be directed to the exploitation of the deep sea resources available. This can be achieved in cooperation with foreign fishing fleets on an equitable and mutual beneficial basis . Despite the effort so far made, the contribution of the sector to GNP to the foreign exchange earnings of the nation, and to the creation of employment opportunities, is very low. So far I have been describing almost the true picture of the present conditions of the fishing sector of our national economy, its problems and constraints, but also its importance and its role in the general development of the country . It is obvious, there fore, to draw up a national fishery development plan, which covers every bit of the Somali coast from Ras Kiyamboni in the South to Zeila on the North coast.

During the preparation of the plan the following two problems must be considered:

1). At present time there is no real production there, the government must remember that any plan towards the development of the fishery is starting from the scratch.

2). No fishery development plan can work its own, but it depends on the socio-economic changes which occur in the society as a whole. Considering my thesis project the recommendations that can be provided for the purpose of fishery and the coastal communities can be divided in two categories:

1>. Recommendations that relate with socio-economic development of the coastal communities as a whole.

2>. Recommendations which are related only to the fishery activities. These two basic concepts which are complementary to each other should therefore be planned together and parallelly implemented

#### 11.1 Development of coastal communities.

In the past few years, it has been realized or noticed that the socio-economic development of the coastal districts and remote fishing villages was quite slow which resulted in the immigration of the coastal population to the more developed inland districts.

The coastal areas have been abandoned because of the lack of the following facilities:

- |                      |                   |
|----------------------|-------------------|
| -Roads,              | -Electricity      |
| -Education           | -Markets          |
| -Health              | -Fuel             |
| -Food                | -Marine transport |
| -Fishing gear supply | -Communication    |

Therefore, it is the responsibility of the central government, the local government and the private sector to restore to the above areas to their due development

### 11:2 Fisheries Development

In order to organize the coastal fishing communities it is necessary, for their development , to provide the following essential facilities and services:

**1. Fishing vessels (boats) :** Most of the existing traditional fishing craft are old non-operational, the rest not suitable for modern fishing technology and the conditions of our waters. Therefore, it is necessary to provide new and modern fishing craft which can perform in the conditions of our waters and better fishing methods.

**2. Fishing Gear:** The fishing gear used throughout our coast is uniform, thus it is low productive. Also there are no fishing gear manufacturing facilities in the country resulting in more difficulties for fishermen to obtain the necessary gear.

This Ministry, therefore, proposes the improvement of the existing fishing gear and at the same time introduce new gear and methods of fishing for the purpose of increasing production.

**3. Training:** The present fishermen use old traditional methods of fishing , moreover most of them have never received training to improve their skills related to fishing activities , such as fishing methods, mending and constructing fishing gear, boats and engine repairing maintenance, fish processing and handling etc. Therefore, it is recommended to set up systematic training schemes for the fishermen and anybody wishing to become a fishermen.

**4.Maintenance and repairing the equipment:** One of the main constraints which halted the good performance of fishery related equipment is the lack of repairing and maintenance facilities such as workshop and spare parts. This may cause a brand new fishing boat to be un operational simply because there is a lack of spare parts. The establishment of workshops and other services along the coast is therefore essential.

**5. Jetties:** Considering the geographical characteristics of our coast having no natural harbours and shelters essential for the handling of the catch, it is highly important to built small jetties in the potential fishing areas of the coast.

**6.Cold storage facilities:** Fish is a highly perishable product which requires to be frozen or kept in ice while still fresh .At present there are few such facilities along the coast, therefore, it is necessary to construct cold stores and ice making machines in the appropriate coastal areas.

**7.Processing plants:** Besides the large scale processing facilities there is a need to create small scale processing plants, which could enable the coastal fishing communities to conserve their products. There can be earning , smoking and fish meal plants.

**8.Marine transport:** As I mentioned earlier the coastal areas are almost unaccessible from inland and present difficulties to the transportation of fish products and other goods. I therefore propose the establishment of nearly (7) carrier vessels complete with cold storage and other facilities on board.

**9.Road system:** For the purpose of better communication and exchange of goods, it is necessary to improve or build new roads linking the coastal districts to the inland areas.



**10. Markets:** The fish production increase is independent on the internal and external marketing network. The Ministry of Fisheries ,therefore, through promotions of fish consumption campaigns, is planning to expand the internal markets and find new external markets.

**11.The fishing zones:** Considering the geographical characteristics and other environmental and natural similarities, the Ministry of Fisheries has decided to divide the coast into (7) fishing zones, each consisting of several fishing centers and headquarters. The main purpose of the grouping is as follows:

- a) To facilitate separate parallel investment inputs.
- b) To make easier the development of the coastal communities.
- c)To concentrate the fish trade and permanent information.
- d). To indicate the development areas, where fishing companies, international organization and governments could assist or cooperate.
- e). To help and make use of the technology, transport fuel supply, food and all other infrastructure of the area.
- f).To improve the surveillance, follow up and conservation of the marine resources.

**12.Marine research:** Several research activities, mainly stock assessment, has been conducted in our waters by international organizations, but still the result are not reliable, therefore, the continuation and verification of these and the conduct of more reliable research activities are necessary .This will, of course help us to plan the rational exploitation of our resources. Here below I will list the existing services and infrastructures of the country 1987/88 \*source Ministry of fisheries report.

**1. Artisanal fishing crafts:**

- a) Motorized boats

338

b) Sail boats	176
c) Canoes	891

## **2.Canning factories.**

- a) Laskorey
- b) Habo
- c) Candala and bolimoog

## **3.Cold storages.**

- |            |              |
|------------|--------------|
| a) Kismayo | d) Moqadisho |
| b) Berbera | e) El -Ahmed |
| c) Zeila   | f) Brava     |

## **4.Jetties:**

- |                 |          |
|-----------------|----------|
| - Ras-Kiyamboni | - Bosaso |
| - Kulmis        | - Zeila  |
| - Merca         | - Mait   |
| - Lughayo       | - Hiis   |

To conclude , my thesis project consists of a basic ideas regarding the future development of the coastal fishing communities, whereas more detailed and specific studies can be carried out to materialize these ideas . It also suggests up some proposals to overcome the major constraints of fisheries as a whole.

Considering the large resources indicated in our waters, which is very encouraging, the Ministry is convinced that a rapid progress can be achieved if the above proposals and recommendations are literally or at least partially followed.

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