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# Illegal, Unreported and Unregulated (IUU) Fishing in the Territorial Waters of Somalia

**Final Report**

**APRIL 2015**

Adeso

# Illegal Unreported and Unregulated (IUU) Fishing

# in the Territorial Waters of Somalia

APRIL 2015

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**Caption:** Fishermen land their boat in Boosaaso, Somalia. (Credit: Kifle W. Hagos)

TACS

THE UNIVERSITY OF RHODE ISLAND GRADUATE SCHOOL OF OCEANOGRAPHY

COASTAL RESOURCES CENTER

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The team of consultants is confident and hopeful that this work will be significant to Somalia's fisheries authorities when drafting marine fisheries legislation, fisheries management plans and fisheries policies on the sustainable management of this resource and deterrence against illegal fishing. It is hoped that this will enable the people of Somalia to take full advantage of their coastal and offshore marine resources.

**TABLE OF CONTENTS**

**LIST OF FIGURES**



**LIST OF TABLES**

**LIST OF BOXES**

**ACRONYMS**

| | |
|---|---|
| **Adeso** | African Development Solutions |
| **AU NEPAD** | African Union New Partnership for Africa's Development |
| **CESVI** | Italian Non-Profit Organization |
| **CITES** | Convention on International Trade of Endangered Species |
| **COOPI** | Cooperazione Internazionale - Italian humanitarian organization |
| **CRC** | Coastal Resources Center |
| **DG** | Director General |
| **DRC** | Danish Refugee Council |
| **EBFM** | Ecosystem-Based Fisheries Management |
| **EEZ** | Exclusive Economic Zone |
| **EPAP** | Ecosystem Principles Advisory Panel |
| **EU CAP** | European Union Capacity Development |
| **EU** | European Union |
| **FAO** | The United Nation's Food and Agriculture Organization |
| **FGS** | Federal Government of Somalia |
| **FRP** | Fiber Reinforced Plastic |
| **FRS** | Federal Republic of Somalia |
| **FSFA** | Federal Somali Fisheries Authority |
| **HAVOYOCO** | Local Non-Profit Organization in Somaliland |
| **IDP** | Internally Displaced Population |
| **IMO** | International Maritime Organization of the UN |
| **IOM** | International Organization for Migration |
| **IPOA-IUU** | FAO International Plan of Action to Prevent, Deter & Eliminate IUU |
| **IUU** | Illegal, Unreported & Unregulated Fishing |
| **JICA** | Japan International Cooperation Agency |
| **KAALO** | A Somali Non-Governmental Organization |
| **MCS** | Monitoring Control & Surveillance |
| **MRSS** | Marine Resources & Security Strategy |
| **NGO** | Non-Governmental Organization |
| **NM** | Nautical Mile |
| **NRM** | Natural Resources Management |
| **OXFAM** | UK-Based International Non-Governmental Organization |
| **PSS** | Puntland State of Somalia |
| **PSU** | Puntland State University |
| **SAWLIM** | Somali Water & Land Information Management |

| | |
|---|---|
| **SPU** | Special Police Unit |
| **STIDIT** | Dutch Non-Governmental Organization |
| **TACS** | Trans-Africa Consultancy Services LLC |
| **TED** | Turtle Excluding Device |
| **TURF** | Territorial Use Rights in Fisheries |
| **UN** | United Nations |
| **UNCLOS** | United Nations Convention of the Law of the Sea |
| **UNDP** | United Nations Development Program |
| **UNEP** | United Nations Environmental Program |
| **URI** | University of Rhode Island |
| **VMS** | Vessel Monitoring System |
| **WB** | The World Bank |
| **WFP** | The United Nation's World Food Program |

## EXECUTIVE SUMMARY

This report presents results of a study on illegal, unreported and unregulated (IUU) fishing in the territorial waters of Somalia carried out in Somalia between the months of June and November 2014. At 3,900 km, Somalia has the longest coastline in Africa (1,200 km along the Gulf of Aden and 2,700 km along the Indian Ocean). The country's declared 200 nautical mile (nm) Exclusive Economic Zone (EEZ), which covers 830,390 $km^2$, is much larger than its land area of 637,540 $km^2$, making patrolling and surveillance for fisheries enforcement difficult. At the same time, Somalia has enormous potential to harness its marine resources to develop fisheries. If fully utilized, and with political stability, these resources could have a positive economic impact on the country.

The main objectives of the study were:

- To identify and analyze the key factors that foster illegal fishing and its impact on Somalia's marine ecosystems and livelihoods;
- To carry out extensive fact finding missions and interviews in coastal areas of Somalia with fishing communities, fishing industry representatives and relevant stakeholders such as local authorities;
- To gather evidence on illegal fishing, its impact on local communities and marine resources; and,
- To identify specific form(s) of support to enable the government(s) in Somalia to curb illegal fishing

*Overview of IUU in Somalia*

It is difficult to estimate what annual loss IUU vessels from neighboring and distant nations cause Somalia. Estimates range from US$ 100 million (MRAG, 2005) to over US $450 million (Waldo, 2009). In addition to revenue loss, illegal fishing vessels cause overfishing, reduce fish stocks, affect local catches, harm the marine environment and destroy communities as they lose opportunities to catch, process and trade fish.

The operations of these illegal fishing vessels affect the import and export markets as they stop legal catches from being exported. IUU fishermen also tend to use fishing methods and equipment that do not meet current regulations. This leads to a large amount of untargeted fish caught, habitat damage and long-term impacts on fish stocks.

The most tangible economic impact of IUU fishing on Somalia is the direct loss of the value of fish catches that could benefit the nation if stopped. In addition to the loss of national income from fish lost to IUU fishing, illegal fishing causes losses of employment in fishing and post-harvest fish handling, landing fees, license fees, taxes and other revenues payable by legal fishing companies.

The indirect harm of IUU fishing to Somalia also includes a loss of income and employment in other sectors and activities in the supply chain upstream (fishing gear, boats and equipment, etc.) and downstream (fish processing and packaging, marketing and transport, etc.) from the fishing operation itself (MRAG, 2005). As IUU fishing vessels are constantly fearful of being spotted, they exploit resources irresponsibly. They have unsustainable impacts on both target species and the marine ecosystem and vulnerable species such as coral reefs, dugongs and turtles, whose catches are mitigated by regulations on legitimate fishing practices. This negatively affects ocean productivity, biodiversity and the ecosystem's resilience, leading to a reduction in food security for artisanal fishermen and to future catches.

In addition to its national economic impacts, IUU fishing also affects fishermen's livelihoods.

It causes conflict with Somalia's artisanal fishermen. Fishermen and fisherwomen reported this to the Consultants during meetings in fishing villages and in survey responses during interviews. Many fishermen find their fishing nets destroyed by illegal fishing vessels and are threatened by IUU fishing vessels as being mistaken as pirates[1]. Under normal circumstances, when industrial fishing vessels destroy artisan fishermen nets, they willingly compensate for the loss of these nets to avoid conflicts, but illegal fishing vessels cannot be held responsible as they never come to port.

*Study Methodology*

Ten major coastal towns and fishing villages were selected for this study and were sampled as follows: one each in Jubbaland, Benadir and Galmudug; four in Puntland; and three in Somaliland. These 10 coastal towns covered all segments of the coastline, including both the Red Sea and Indian Ocean. The survey therefore aimed for a representative sample of landing sites encompassing all the major administrative regions of the country, and a representative sample of fishermen in those villages where surveys took place, and given the practicalities of a limited timeframe and budget available for the survey. The target was to interview approximately 30-40 individual fishermen per community to ensure adequate representation. In total, interviews and systematic household survey questionnaires were conducted with 372 fishermen but approximately over 450 others were interviewed informally and in village meetings as key informants.

Data was aggregated and split into three categories: Somaliland, Puntland and 'Other'. This 'Other' category includes Kismaayo, Mogadishu, and Hobyo.

*Key findings*

The Somali marine fishery sector can be characterized as predominantly small scale. Fishermen use open fiberglass skiffs from three to six meters in length and most are motorized; equipped with outboard or to a lesser extent, inboard engines. The average fisherman has been fishing for approximately 15 years, has lived in the communities and fished there for over two decades, and is on average 38 years-old. Most have an average of four to five years of formal schooling and live in households with approximately eight members. More than half own their fishing boats, fish within 50 km of their communities and over a third fish within 10 km. Seasonal migration of fishermen is minimal and mainly reported in Somaliland. Around half the fishermen are members of fishing cooperatives.

Overall, the majority of fishermen (87 percent) reported no requirement to report **fish landings** but there was a great deal of variation in the percentage response among the different locations surveyed There was also a great deal of variation as to which department recorded **landing data**. The absence of reporting requirements and ambiguity over who records landing data indicates that there are likely significant weaknesses in collection of landings data. This would suggest a weak information base on which to assess stock status and ultimately make decisions on management measures needed to ensure fishing remains within sustainable limits.

Fifty four percent of fishermen reported no requirement for **fishing boat registration,** and 12 percent did not know about it. Half did not know about needing to paint **registration numbers** on their fishing vessels. When asked which **entity was responsible** for fishing boat registration, 41 percent said the fisheries office and 47 percent the Port Authority, which plays that role in Somaliland and Puntland,

1 Personal communication with fishermen and fisherwomen in the fishing village of Badey (Eyl), June 13, 2014.

while the fisheries authority does in the other states. The absence of information on the number and size of vessels, horsepower, types and size of fishing gear makes management decisions for maintaining optimum sustainable yields more difficult, if not impossible, to assess.

Sixty percent of fishermen interviewed for the study reported no limits on number of **fishing boat licenses,** and 29 percent said that they did not know about limitations. A higher percentage of fishermen reported license limits in Somaliland. Somaliland would seem the most likely place for instituting a managed access-licensing program as they seemed more familiar with the concept of licensing and limits on licensing. Around three quarters of fishermen said there were no restrictions on who could fish, and 18 percent did not know. Somaliland had the largest percentage of fishermen reporting restrictions. Among the few saying there were restrictions, most (72 percent) reported only local villagers, 20 percent said Somalis, and eight percent said others were permitted to fish. The majority of fishermen said only locals or Somalis should fish. This demonstrates a preference by fishermen that **access to fishing rights** should be preserved for Somalis and not rented out to foreigners. Forty seven percent of fishermen said that there were no **restrictions on fishing** in their area: 43 percent said restrictions existed, and 10 percent did not know. About two-thirds of the fishermen in Puntland said they knew about regulations in Puntland, compared to a third in other locations. Interestingly, fishermen in Somaliland were the least knowledgeable about fisheries regulations. Either regulations may not be enforced, or most fishermen are unaware of regulations.

Eighty six percent of fishermen reported **sighting foreign fishing vessels** near their village over the past year, with the relative frequency of sightings varying across locations. Half of the respondents reported constantly seeing foreign fishing vessels off their coast and the percentage of respondents seeing vessels “all the time” was much higher in Puntland indicating that illegal fishing is likely more severe there. The number of respondents reporting “all the time” has more than doubled in five years. People blamed anti-piracy patrols for making illegal fishing easier, suggesting that recent successes in anti-piracy actions have made illegal fishing by foreigners easier. Two thirds of the fishermen in the sample believed that foreign fishers committed most of the illegal fishing, while about a third identified both Somalis and foreigners as illegal fishers. Fishermen from Somaliland are more likely to identify both Somalis and foreigners as illegal.

When asked to identify the **nationality of foreign illegal fishing vessels**, fishermen in the sample identified more than eight countries, including Yemen, Iran, Spain, China/Taiwan, Oman, India, Kenya and Russia. More countries, including Saudi Arabia, United Arab Emirates (UAE), Thailand, Sri Lanka, France, Spain, Germany and Honduras are mentioned in literature. It may be difficult for local fishermen to know the exact origin of a foreign fishing vessel as a fishing vessel from one country could fly the flag of another country or could be operated by crew from a third country with a fishing licence from a different country. It is also difficult for fishermen to know whether any fishing vessel is officially licensed in Somalia. Overall, Yemen is mentioned overwhelmingly in Somaliland and Iran is ranked in second place. It is interesting to note the regional nature of the problem, with neighbors Yemen, Iran, Oman, India and Kenya accounting for the majority of violations. Almost 45 percent reported foreign vessels fishing less than five km from the shore. Thirty-nine percent reported foreign fishing vessels between five and 50 km from the shore. Puntland fishermen perceive more foreign fishermen within five km from the shore than the other sampled regions. This indicates that community-based surveillance involving fishermen/local leaders could play a significant role in improving the reporting of violations. On various aspects of enforcement, 41 percent of fishermen reported a lack of knowledge. It is important to note that a significant percentage of local fishermen (25 percent) and clans (11 percent) were identified as enforcers, again suggesting that they would appeal to fishing communities looking to carry out community-based surveillance and assistance in enforcement.

**Recommendations**

Analysis of the survey data has indicated a great deal of perceived illegal fishing, by both foreigners and Somalis. Both foreign and domestic IUU fishing will need to be addressed if Somalia's fisheries are to be managed properly and to truly benefit the Somali people. Results of the analysis indicate that Somalia's strategy to combat illegal fishing may require a multifaceted approach. Clearly, the problem of IUU fishing should be raised in regional meetings, as Somalia's neighbors seem to be behaving badly in their own back yard. The following are recommendations for minimizing and deterring IUU fishing:

- Somalia needs to sign/ratify the Port State Measures Agreement to combat IUU fishing, and support flag state and coastal state measures by signing the FAO's International Plan of Action (IPOA) to **prevent, deter and eliminate IUU fishing**.
- The country should **update** existing **fisheries laws** and enact new ones, harmonize Federal and States laws across Somalia to enable uniform enforcement, and simplify revenue collection and distribution.
- Introduce Monitoring, Control and Surveillance (MCS) systems at federal level that include the registration and licensing of foreign and domestic fishing vessels and fishermen.
- **Extend the enforcement system to include a community-based approach** that provides local surveillance (many more eyes) along the extensive Somali coastline that Somalia's Navy, Coast Guard and Police cannot fully patrol.
- Work with FAO and other development partners at federal and state level to establish a proper information system for long-term data collection and analysis of fisheries stock assessment.
- Use computer based, satellite aided Vessel Monitoring Systems (VMS) for foreign fishing control.
- Introduce a more explicit decentralized fisheries administration with the state authorities' role and jurisdiction clearly laid out.
- Solicit support from international partners to:
    - Develop fisheries infrastructure, including landing sites, ice plants and cold storage facilities, quality control units, data collection/analysis centers, MCS and VMS systems.
    - Promote fish as a healthy, nutritious, locally available and affordable food via mass media and communications networks to increase local demand and consumption.
    - Set up training programs and a fisheries training center to help build the capacity of fisheries authorities at all levels and the fishing communities, including women and youth.

*Limitations*

Although the initial intention was to cover more villages and interview more fishermen, insecurity in some locations in South Central Somalia (including Hobyo and Kismaayo) led to smaller sample sizes on those locations.

The survey showed significant inter-community variability, which may pose challenges to drawing generalizations on any other region or community in Somalia. Nevertheless, this survey does provide a snapshot of what the marine fisheries sector is like in Somalia and Somaliland and a preliminary perspective of fishermen's views concerning a number of issues revolving around IUU fishing and community development.

## 1.0 INTRODUCTION

This report was prepared by a team of consultants from the United States - Trans-Africa Consultancy Services (TACS), a consultancy firm based in Barrington, Rhode Island (RI), with help from the Coastal Resources Center (CRC) of the University of Rhode Island's Graduate School of Oceanography in Narragansett, RI. This is the final report of a project on the "**Study of Illegal, Unreported and Unregulated (IUU) Fishing in the Territorial Waters of Somalia."**

Adeso, who commissioned this study with funding from the European Union, is a humanitarian and development agency based in Kenya, with operations in Somalia and South Sudan as well.

### 1.1 Terms of Reference

The main objectives, as noted in ANNEX 6, were to:

- Identify and analyze the fundamental types of illegal fishing; unlicensed foreign industrial vessel, unreported or misreported fishing on the part of "licensed" vessels, illegal fishing in prohibited areas (particularly close to shore, and with illegal nets), and illegal fishing by artisanal vessels.
- Identify and analyze the key (domestic and international) factors that foster illegal fishing and its impacts on Somalia's marine ecosystems and livelihoods (through synthesis of the empirical and anecdotal available knowledge.
- Carry out extensive fact finding missions and interviews in all coastal areas of Somalia with fishing communities, fishing industry (or business people operating in the Somali fishing sector), as well as relevant stakeholders, such as local authorities and gather evidence on illegal fishing, its impact on the local communities' marine resources and the links to piracy. Better understand the areas of vulnerability that allow illegal fishing to thrive (at policy and governance level);
- Identify specific form(s) of support to enable the Somalia government to better implement their responsibilities with respect to illegal fishing and high seas fisheries
- Identify policy options and strategies to combat illegal fishing.
- Produce a policy and advocacy paper on illegal fishing in Somalia based on key findings and analysis.

#### Methodology

This study involved secondary and primary research combining both qualitative and quantitative techniques. The consultants used the following methods:

- Reviewed the relevant literature, including: Reports on Somalia by FAO, UNDP and World Bank, Sea Around US Project, documents of FGS and State of Puntland, Somaliland website and other literature as stated in footnotes and references.
- Designed methodology for surveying Somali fishing communities regarding IUU fishing. The sample included ten fishing towns and villages representing all areas of Somalia, from city to small village, from the coast in Berbera to Kismaayo, and all coastal states of Somalia and Somaliland (Fig. 1). 372 fishermen were formally interviewed using extensive individual survey questionnaires (Table 1) and the survey used rapid

assessment methodologies, key informant interviews with an additional number of fishermen (about 450). See “Design and Methodology for the Survey of Somalia Fishing Communities Concerning IUU Fishing” (ANNEX IV of Inception Report, June 03, 2014).

- Employed teams of local survey enumerators and trained them on the survey methodology and how to administer the Somali-translated questionnaire,
    - Prior to administering the survey instrument, the survey of fishery sites were characterized via rapid assessment methods including visual walks through the community and semi-structured conversations with key informants (ANNEX I).
    - At each survey site, a systematic survey sampling design was used and the head of the household was interviewed. In some cases, fishermen were randomly selected at community landing centers. The target was to interview 30-40 individuals per community to ensure adequate representation.
- Checked the accuracy of, and corrected the resulting coded, data entries made into Excel spreadsheets for all interviewees.
- Conducted brief key informant interviews with officials at the Ministries of Fisheries and Environment in Puntland.
- Conducted key informant interviews with representatives of multilateral agencies and non-governmental organizations active in Somalia and based in Nairobi.
- Interviews were also done with prominent Somali individuals with knowledge of Somalia's fisheries sector.

**1.2 Challenges and Limitations of this Study**

This survey was conducted in ten fishing communities along the coastal areas of the country with just under 400 fishermen of formal structured interviews and over 400 key informant interviews. The survey represents a small sample of Somalia's fishermen and fish landing sites. Nevertheless, it aimed to be representative of the various administrative regions and representative within the communities where interviews took place. While the survey shows significant inter-community variability, which makes generalizing any of the results to any other region or community difficult, it does provide a snapshot of the marine fisheries sector in Somalia and Somaliland. It expresses a preliminary perspective of fishermen’s views on a number of issues revolving around illegal, unreported and unregulated (IUU) fishing and community development. The methodology for this report rested mainly on ascertaining fishermen's perceptions of IUU fishing issues. As such, it has limitations, as does almost any study trying to understand the extent of illegal activities and the reasons for such behavior. For instance, this survey was not able to gather any direct information on mislabeled or misreported fish products, or obtain estimates on the volume of illegal fish catches by domestic or foreign vessels.

Questionnaires on key informant interviews were sent via email to fisheries authorities at federal and state levels and included Somaliland. Reports from Puntland and Somaliland were received. However, responses from others were not received at the time of writing.

### 1.3 Scope of Field Survey

In administering the structured questionnaire, the consultants and Adeso team selected the following ten major towns and fishing villages in the Somali coastal areas of Kismaayo (Jubbaland), Mogadishu (Benadir), Hobyo (Galmudug), Garacad, Eyl, Bargaad, Boosaaso (Puntland), Lasqoray, Maydh, and Berbera (Somaliland). (See Figure 1 below)

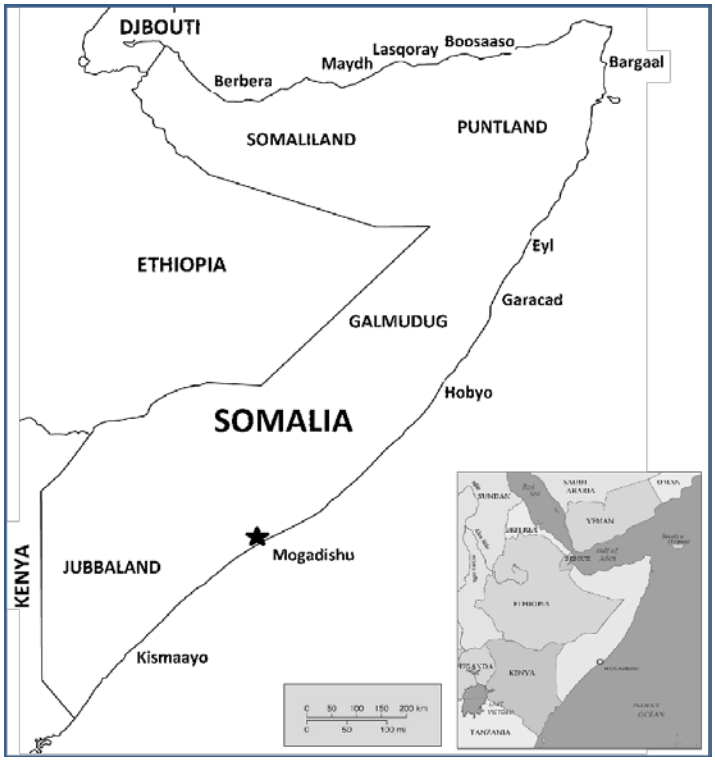


**Figure 1.** Map of Fishing Landing Sites Surveyed in Somalia

## 2.0 OVERVIEW OF FISHERIES SECTOR

### 2.1 Background

Somalia has a very extensive and long coastline, and the longest in Africa. While many observers may consider Somalia a failed state, there are clear administrative differences between the regions of the self-declared Republic of Somaliland, the autonomous Puntland State of Somalia and the other federal states of south and central Somalia. In most large countries with extensive coastlines, some level of administrative decentralization is common, and it seems Somalia is moving in this direction. Somaliland and Puntland have relatively recently enacted laws and regulations for the fishing industry and in some cases have issued foreign fishing licenses. The federal government has also started revising the 1985 fisheries act, but it is unclear as to how it is being enforced. Confusion over maritime boundaries, jurisdiction and decentralized authorities in the states makes understanding what is illegal fishing and what is legal quite difficult.

On September 26, 2014 Graziano da Silva, FAO's Director General at the UN's General Assembly, said: "Globally, ten percent of the world's population depends on fisheries for their livelihoods, and 4.3 billion people are reliant on fish for 15 per cent of their animal protein intake." According to the latest edition of FAO's 'The State of World Fisheries and Aquaculture report[2'], the fisheries and aquaculture sector is facing major challenges that range from harmful fishing practices, weak governance and poor management, to the scourge of illegal, unreported and unregulated (IUU) fishing. Beyond its negative effects on the status of fish stocks and the environment, Mr. da Silva said that IUU fishing also carries a very high cost to the tune of $20 billion per year.

IUU fishing generally refers to fishing conducted in violation of national laws or internationally agreed conservation and management measures in oceans across the world. It can include; fishing without a license or quota for certain species, unauthorized transshipments to cargo vessels, failing to report catches or making false reports, keeping undersized fish or fish that are otherwise protected by regulations, fishing in closed areas or during closed season, and using prohibited fishing gear. IUU fishing poses a direct threat to food security and socio-economic stability in many parts of the world, and mostly to developing countries.

Experts estimate that the global annual economic loss from IUU fishing is between $10 billion and $23.5 billion, which represents between 11 and 26 million tons of fish (Ganapathiraju et al., 2011). By evading conservation and management measures, companies engaging in IUU fishing can cut corners and lower their operating costs. As a result, their illegally caught products provide unfair market competition for law-abiding fishermen and seafood industries.

### 2.2 Weak Fisheries Governances in Somalia and Somaliland

Weak governance of the fisheries sector is defined, among other things by: the absence of fisheries laws and regulations, weak fisheries authority at all levels, poor data collection and

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2 State of the World Fisheries and Aquaculture, 2014 FAO. http://www.fao.org/3/d1eaa9a1-5a71-4e42-86c0-f2111f07de16/i3720e.pdf

analysis, low stakeholder participation, absence of fisheries infrastructure, and shortage of trained personnel.

The absences of central government, lack of peace and security and widespread internecine fighting have encouraged illegal fishing by foreign flagged vessels. As the civil war intensified, it was expedient for foreign illegal fishing vessels to enter Somali waters, as there was no authority to prevent them. Exacerbating this situation was the ambiguity of Somalia's 'declaration of 200 nm territorial sea' alleged to be not in conformity with UN Law of the Sea (UNCLOS).

Somalia has since declared 200 nm EEZ in accordance with the provisions of UNCLOS. However, declared EEZ boundaries with adjacent and juxtaposed countries may still present problems regarding questions of jurisdiction and legitimacy of Somalia's claims in some maritime areas. This includes not only fisheries but other offshore resources as well, such as oil and gas. Somalia has recently taken Kenya to the International Court of Justice to arbitrate their disputed maritime boundary and an area where recent oil and gas deposits have been found.

Somalia's and Somaliland's lack of unified approach towards a common fisheries policy and management system has given way to illegal fishing. Interim agreements signed last year by the fisheries authorities of the FGS, Federal Member States and Somaliland are positive steps that need follow up actions.

A new fisheries policy that allows stakeholder participation is needed. As part of this study it's proposed to form Regional Fisheries Management Committees, which have new national approach involving all stakeholders. This approach should be for sustainable exploitation of fisheries resources and protection of their habitats. The emphasis in the management or co-management of these resources is on stakeholder participation (i.e., involving fishing communities, regional administrations, local organizations and the private sector). Global experience demonstrates that co-management approaches are more effective than top down systems. This is particularly true for small-scale fisheries where landing sites are highly dispersed over long coastlines.

### 2.3 Fisheries Laws and Regulations in Somalia

On May 6, 2013, the Federal Minister of Natural Resources submitted a revised version of the No. 23 1985 Fisheries Law[3] to the Prime Minister for discussion in Parliament and eventual promulgation into law. At the time of writing, it was not known if it had yet become a law.

This law requires all local and foreign fishing vessels to be registered and licensed. The FGS, its member states and Somaliland have all agreed that a newly established Federal Somali Fishing Authority[4] has the authority to license foreign fishing vessels for the offshore, highly migratory

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3 Letter of Minister of Natural Resources to Prime Minister of FGS dated 05/06/2013 on revised Fisheries Law No. 23 of 1985

4 Seychelles Communique of April 6, 2014 and Addis Ababa Communique of May 3, 2014.

stocks in the Somali EEZ. It is not known at what stage this agency is at with operations and what its enforcement mechanisms are.

In Puntland, fisheries regulation is similar to federal law, as they both stem from the 1985 Somali Fisheries Law No. 23. Puntland requires fishermen and fishing vessels to be registered and licensed of, but having the institutional and human resources to implement these mandates is another issue.

The Somaliland fisheries law also derives from the 1985 Somali Fisheries Law, but is more advanced, and all laws are posted on a website (http://www.somalilandlaw.com/). Some laws are written in Somali, but many, including the fisheries regulation, have been translated into English. This regulation, like federal and Puntland laws and regulations, requires all fishermen and fishing vessels to be registered, and data collection for all fishing activities.

The latest 2012 Somaliland Fisheries Regulation is more detailed than the federal and Puntland laws. It requires every fishing vessel to maintain a fishing logbook, all local vessels to be registered and licensed and to pay fees and royalties, joint venture licenses to be issued, all foreign fishing vessels to be registered, licensed and to pay fees and royalties.

While the survey conducted for this report provides information on local fishermen's knowledge and perceptions on some of these laws, it did not include information on how many joint venture and foreign fishing vessels have been licensed and how much is being paid in fees and royalties.

### 2.4 Potential of Fisheries Sector

At 3,900km, Somalia has one the longest coastline in Africa (1,200 km along the Gulf of Aden and 2,700 km along the Indian Ocean). The country's declared 200 nautical mile (nm) Exclusive Economic Zone (EEZ) covers 830,390 $km^2$ (Figure 2). As per the provisions of the Law of the Sea, Somalia is responsible for managing fisheries within this zone. The vastness of Somalia's maritime zone makes patrolling and surveillance for fisheries enforcement difficult, and the EEZ is much larger than Somalia's land area of 637,540 $km^2$. As a result, Somalia has enormous potential to harness its marine resources to develop fisheries. If fully utilized, and with political stability, these resources could have a positive economic impact on the country.

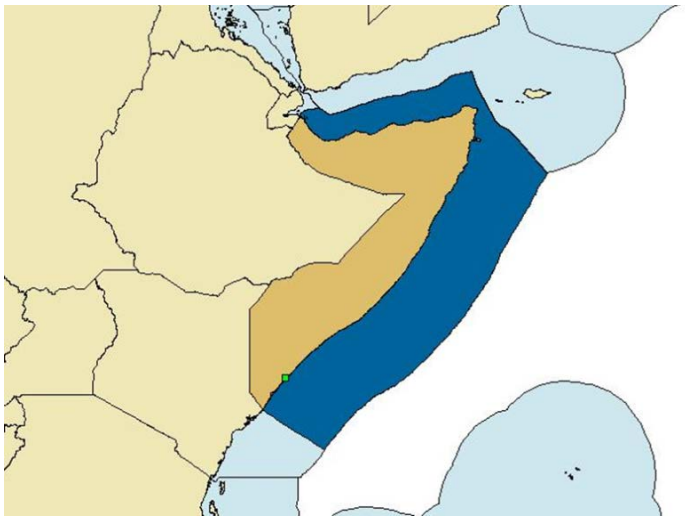

**Figure 2:** The EEZ of Somalia in dark blue. (Source: Sea Around Us Project, originally from FAO)

*(Disclaimer: The maritime limits and boundaries shown on this map are not to be considered as an authority on the delimitation of international maritime boundaries)*

Marine resources in Somalia have the potential to increase local seafood consumption, create products for export substitution and redouble efforts to transform the means of production for exports. These opportunities provide new possibilities to create jobs, improve people's nutrition and increase Somalia's foreign exchange. Figure 3 explains the potential of Somali fisheries by showing the productivity of the marine ecosystem. The region is rich in maritime resources thanks mainly to the upwelling of deep nutrient rich waters to the surface (Hitchcock and Olson, 1992). This explains the irony of food insecurity in a region of plenty.

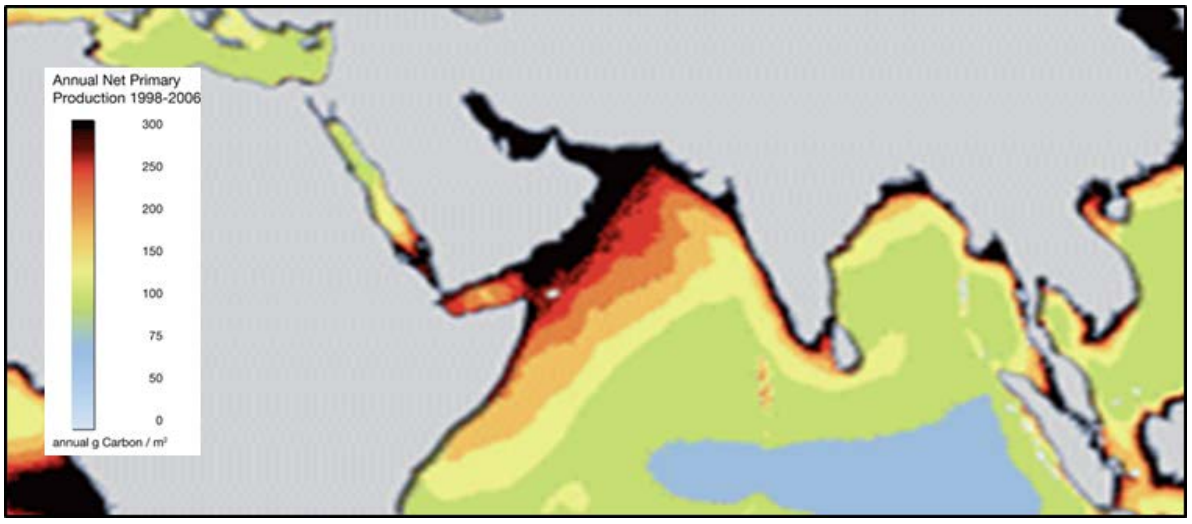


**Figure 3**: The potential of Somalia's maritime zones. The dark color indicates the productivity of the marine ecosystem. (Source: [http://www.fsnau.org/ipc/ipc-map)](http://www.fsnau.org/ipc/ipc-map)

## 2.5 Fisheries of Somalia before the Civil War

Prior to 1991, the marine fisheries of Somalia, divided into the artisanal and industrial sectors, accounted for 60 percent and 40 percent of production respectively. Annual catches of artisanal fisheries in the 1970s peaked at 8,000 t in 1975. In the '80s, it ranged from 4,000 t in 1980 to 7,700 t in 1984. Industrial fishery production was at its lowest in 1982, with 3,900 t of fish and 436 t of lobster and peaked in 1985 with 11,940 t of fish and 462 t of lobster (FAO, 2003). Somalia's industrial sector was first organized into joint ventures in the '70s with a Soviet fishing company, and in 1983 with an Italian company. The former increased the annual catch to 3,400 t of fish and 150 t of crustaceans until 1977, when relations between the two countries cooled and drastically reduced annual fish catches. The latter brought fish production to its peak in 1985. Across all years, the total estimated annual production never exceeded 20,000 t.

Norwegian cruise ships, the *PRV Dr. Fridijof Nansen,* were the first to assess the fisheries resources of Somali waters in 1975-76. The annual estimate was 8,000 t of tuna and mackerel, 100,000 t of small pelagics, 40,000 t of large demersal, 30,000 t of sharks and rays and 2,000 t of spiny lobster (Mohamed and Herzi, 2005).

Prior to the outbreak of civil war in 1991, fisheries played a minor role in Somalia's economy. While livestock accounted for around half, crops 38 percent and forestry 10 percent, fisheries only made up one percent of the Gross Domestic Product (GDP) (FAO, 2004). In 1989, FAO records show annual fishery product exports earned US$ 15 million. This was below the value of the sustainable yield of the country's fisheries resources. The landings by species (Figure 4) were as high as 30-40,000 tons/year, but could be much higher without reaching the maximum sustainable yield. In 1990, the fisheries sector employed 30,000 Somalis full-time and 60,000 part-time. In the same year, fisheries made up two percent of the country’s GDP, compared to agriculture's 50 percent (FAO, 2005).

Traditionally, fish is consumed fresh, but excess fish was salted, dried and sold in neighboring countries such as Yemen and Kenya. Domestic fish consumption was limited to fishing communities and nearby villages. A few decades before the outbreak of civil war, per capita fish consumption was 0.16 kg/year according to FAO reports. Consumption increased about tenfold at the height of the war. The appearance of storage facilities and ice production have played a role in increasing consumption as fish shelf life has slightly improved in major cities and towns.

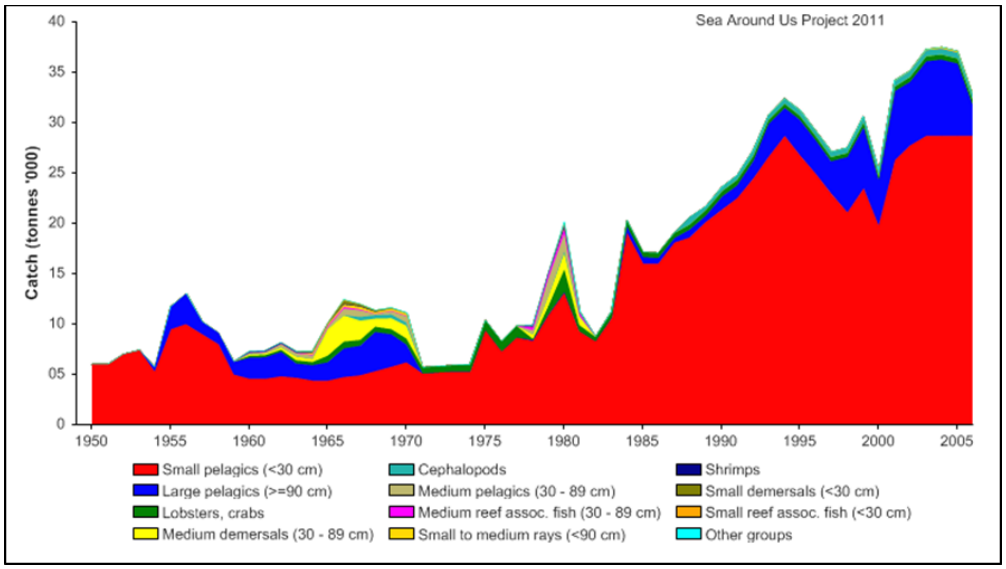


**Figure 4 (a)**: Landings by Functional Groups in Somali waters 1950-2005 (Source: Sea Around Us[5], 2011)

### 2.6 Fisheries of Somalia after the Civil War

The Somalia civil war, which started in 1991 and lasted decades, devastated the economy, including the fisheries sector. Most of the fisheries infrastructure collapsed due to war or disuse. A report by the Somali Fisheries Society indicates that over 2,000 fishermen lost their jobs as fishing communities disintegrated. A generation of fishermen was lost. The same report estimated the potential of the Somali fisheries to be about 300,000 t fin-fish and 10,000 t crustaceans. However, the actual annual catches for the year 2000 were estimated at 2,000 t fin-fish, 450 t lobsters, 100 t sharks and 10 t shrimp; a total of 2,570 t/year (Somali Fisheries Society, 2000). The FAO estimated that in 2001, Somalia's fisheries output was worth US $ 55 million.

In 2003, annual fisheries production was 18,000 t, of which 2,650 t was for export. The country also imported 283 t of fish, bringing total local consumption to 15,633 t. This places Somalia's per capita fish consumption at 1.6 kg/year, one of the world's lowest given the global average of 15kg/year (FAO, 2003). But after two decades of civil war, fish consumption almost doubled. While fish consumption is still limited to fishing communities, it has increased in urban areas, mainly due to people being exposed to non-traditional eating habits and the influence of returning Somali expatriates and seafood traders. Fish campaigns by organizations such as Adeso and UN agencies, including FAO and WFP, may have also helped.

Somalia's instability still hampers fisheries growth, as it does all other economic sectors. Not only was all infrastructures built after independence destroyed during the civil war, but there

[5] The Sea Around Us Project is a collaboration between the University of British Columbia and the Environment Group of the Pew Charitable Trusts.

has been no new infrastructure built for more than two decades. Although the civil war halted domestic growth of the fish trade, high quality fish and lobsters were exported to the Arabian Gulf States (FAO, 2003). But exports dwindled from 2004 to 2011 (Figure 3a). Dried shark meat and shark fin exports also bring in high prices for artisanal fisheries.

Fishing communities are concentrated around seven major towns: Kismaayo, Mogadishu, Eyl, Bargaal, Bolimog, Las Qoray and Berbera. However, fishermen are spread across 50 fishing villages and towns that are dotted along the Somali coast. The civil war has forced many Somali fishermen in southern parts of the country to flee to neighboring Kenya or shifted them to northern parts of the country for safety.

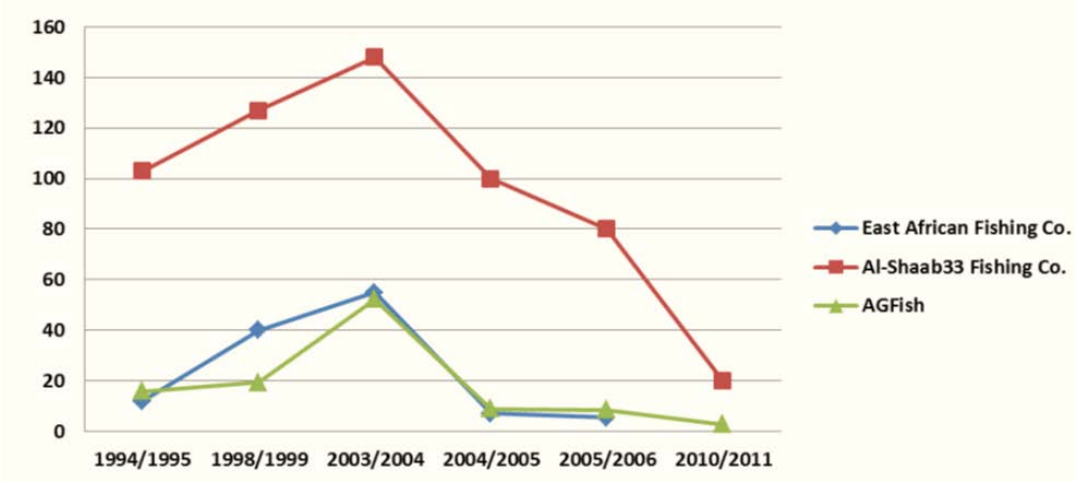


**Fig. 4(b):** The decline of fisheries export in tons per year due to civil war. (Source: Woldemichael, 2014)

A 2006 study by CARE Somalia showed the potential for commercial scale fish and shellfish of coastal Somalia that was being utilized at subsistence level. “Fishing is carried out by about 700 fishing vessels, with or without licenses and frequent IUU trawling operations within 1km of shore, with extensive destruction of coral reefs, depletion of fish stocks, and destroying of fishermen’s nets”, according to the CARE report. The study states that in 2006, there were 8,430 fishermen and 1,091 operational boats catching on average 100 kg of fish per day. Over an average of 180-200 fishing days, they caught about 20,000 tons of fish per year (Wailes and Mohamed, 2006). This is small compared to the estimated sustainable yield of Somalia's fisheries resources, approximately, 30,000 tons/Year (Pizzali, 2010). Fisheries’ contribution to the overall economy is still quite small. In the early 2000s, fisheries products accounted for about three percent of total exports. Fisheries made up about two percent of GDP and average fish consumption provided less than one gram of protein per capita per day (FAO, 2003).

## 3.0 STAKEHOLDER ROLE IN FISHERIES

International aid agencies worked with the Somali government from 1960 to 1980 to build the fisheries sector, investing millions of dollars. But these efforts did not transform the fishing industry because majority of Somalis did not eat fish and had little interest in fishing (Hulburt and Spivak, 2013). In the 1980s, the government of Somalia tried to develop the fisheries sector to increase fish production (Sommer et al., 1996) and launched several donor-supported projects. But during the civil war most of the facilities, processing plants, equipment and fishing gear got lost or destroyed.

Since the 1991 civil war, Somalia's fisheries sector has received very little support. A few emergency supplies of fishing gear have come from a few international organizations, including FAO, Adeso, Care International and Italy's COOPI. Compared to the livestock and agricultural sectors, fisheries have received very little attention from the international community (FAO, 2005). Lately, development agencies including FAO, UNDP, World Bank, EU, JICA, Oxfam, Adeso, STIDIT and local organizations such as KAALO and HAVOYOCO have been involved in small-scale fisheries projects in Somalia and Somaliland.

Fisheries development activities are focused on Puntland State and Somaliland due to the relatively favorable environment with regard to security. Nevertheless, current international development programs are too little to satisfy the requirements to revive the fisheries sector and to make tangible changes to fishing community livelihoods. International cooperation is crucial at this moment, as Somalia slowly recovers from over two decades of war and intermittent natural disasters. To help realize its marine fisheries potential, Somalia now, more than ever, needs a concrete contribution from the international community. Given the right, targeted support the Somali fisheries sector could quickly recover from decades of neglect and destruction.

### 3.1 Multilateral Agencies

#### *3.1.1 Food and Agricultural Organization (FAO)*

The Food and Agriculture Organization (FAO) is the UN's lead agency for fisheries development, improved nutrition and food security. FAO has years of experience working in Somalia, before and after the war.

FAO Somalia works on food security and nutrition information. It provides regular updates on food security and the nutrition situation throughout Somalia through the Food Security Assessment Unit. It is involved in a number of fisheries development projects in Puntland State

and Somaliland and has a number of projects in the pipeline[6]. Overall, FAO has one of its biggest working programs in Somalia with approximately US 7 million[7] spent on activities..

### *3.1.2 The United Nations Development Program (UNDP)*

The United Nations Development Program (UNDP) supported several research activities for Somalia's fisheries from 1994–1995 (FAO, 2005). From 2004, UNDP carried out a thorough review of the fisheries sector in the central and southern parts of Somalia. At the same time UNDP has provided support to a number of small-scale pilot fishery development programs with the aim of reducing poverty, developing the artisanal fisheries sector and accelerating recovery from civil war destruction (FAO, 2005). UNDP also worked in Puntland, trying to improve livelihoods and promote economic diversification as part of the UNDP Strategy for Poverty Reduction and Economic Recovery (PRER) (Mohamed and Herzi, 2005).

### *3.1.3 The World Bank (WB)*

The World Bank supported Somalia's fisheries sector in 2004 with a US$1.6 million pilot project funded by Japan's development fund for Tsunami livelihood recovery. The project was designed to increase incomes by training coastal fishing communities in new techniques and by building fish storage facilities to allow them to market their catch (World Bank, 2013).

In 2012, the World Bank unveiled a US$14 million grant to strengthen the Somaliland administration, including its fishing industry. US$1.2 million was allocated directly to the Ministry of Fisheries to develop a registration process and licensing procedure for foreign and local fishing vessels and local fishermen on post-harvest fish handling.

In addition, the World Bank is a lead agency of a multi-donor trust fund intended to create a Multi-Partner Fund (MPF) for Somalia with the objective of funding critical reconstruction priorities agreed with the Somali government. The MPF is proposed for an initial ten-year period (2014 to 2023), with funds ranging from US$70-140 million in the first two years, and annual contributions of US$20-70 million expected thereafter (WB, 2013). If this proposal is realized, it will indirectly support the fisheries sector with general infrastructure vital for fisheries rehabilitation.

### *3.1.4 The European Union*

The European Union (EU), through the Mission on Regional Maritime Capacity Building in the Horn of Africa (EUCAP Nestor), has helped states in the region, including Somalia, to enhance their maritime capacity and governance[8]. This may have started as part of the anti-piracy

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[6] As discussed at a coordination meeting called for by the Director General of the Ministry of Fisheries, Puntland State in Boosaaso on August 21, 2014

[7] http://www.fao.org/about/who-we-are/director-gen/faodg-news-archive/detail/en/c/269816/

[8] http://www.eeas.europa.eu/csdp/missions-and-operations/eucap-nestor/index_en.htm

initiative, but it aims to support the development of Somalia's judiciary and a land-based coastal police capability supported by regulatory framework, which are currently considered vital for Somalia. The mission works with the FGS, Puntland State and Somaliland. In 2014, the EUCAP Nestor trained about 150 Coast Guards[9] in Somalia and Somaliland. The coastguards could be key to deterring IUU. No details are available yet, but a leading official interviewed at the Ministry of Fisheries in Somaliland said that projects financed by EU, Norway and the UK Department for International Development (DFID) are in the pipeline.

### 3.2 Local and International NGOs

The International NGOs Oxfam (UK) and STIDIT (Dutch), in cooperation with the European Union (EU) and in partnership with the Ministry of Fisheries and Marine Resources of Puntland State and local organizations, are supporting the fisheries sectors in Somalia (Puntland) and Somaliland. KAALO is the local implementing partner in Puntland and in Somaliland, it is HAVOYOCO. This partnership involves working with the government on capacity building and with the private sector, including fishing communities, on increasing fish production and improving the livelihoods of fishermen and their families. The EU is providing €5 million to fund a two-phase[10]/three year (2014-2016) project. Oxfam is the implementing agency for the first phase, and Dutch organization STIDIT[11] is involved in the second. Adeso is also an active contributor in the fisheries sector, including in port development, and provision of training and fishing gear to the coastal communities, as well as coastal habitat restoration through the planting of mangroves, among other activities[12].

In addition, other organizations active in Puntland, including the International Organization for Migration (IOM), the Danish Refugee Council (DRC) and CESVI are involved in training fishermen, private fishing companies and coastal communities, securing provision of fishing equipment and establishing fishing infrastructure along the coastal areas in coordination with Puntland's Ministry of Fisheries and Marine Resources[13].

### 3.3 Role of Government

The absence of a central government in Mogadishu for many years has led to major tribulations in Somalia. Many years of war and foreign intervention had also halted all attempts to form a national government. This has negatively affected management of the fisheries sector and allowed foreign fishing companies, including from the region, to transgress into Somali waters-a practice that continues to this day. Over the last two years, constructive attempts have been

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9 Personal communication with Marco Hekkens of the Somalia office of EU CAP Nestor, August 16, 2014, Nairobi.

10 Personal communication with Ed Pomfre and Ahmed Yusuf Hirsi of OXFAM, August 8, 2014, Nairobi, Kenya.

11 http://www.stidit.nl/en/projecten/project.html?txttnews%5Btt_newsD=342

12 Remarks made by Adeso Executive Director, Degan Ali, April 21, 2015.

13 Coordination meeting called for by the Director General of Ministry of Fisheries and Marine resources of Puntland, August 21, 2014, in Boosaaso, Puntland State of Somalia.

made towards managing Somali fisheries resources. The federal government, federal member states and Somaliland held a number of meetings to coordinate management of the fisheries sector. As part of the Somali Maritime Resources and Security Strategy (Fisheries Working Group), successive meetings took place first in the Seychelles and later in the Ethiopian capital Addis Ababa in May 2014 (MRSS, 2014).

At the Seychelles meeting on April 6, 2014, representatives from the FGS, Jubbaland, Galmudug, Puntland and Somaliland deliberated on various maritime issues, including the protection of fisheries resources. They also discussed illegal fishing, the security of Somalia and the need to conserve, manage and sustainably exploit marine resources, as well as the risks of illegal fishing and toxic waste dumping in Somali waters[14]. They appealed to the international community for support with the drafting of fisheries laws, improving monitoring, control and surveillance (MCS) and marine research, and creating employment opportunities for Somali youth in the marine sector. To follow up the Seychelles meeting, representatives from FGS and Member States attended a meeting in Addis Ababa. They recommended formalizing the EEZ and establishing a Federal Somali Fishing Authority (FSFA) that would be mandated to manage, conserve and administer offshore, highly migratory fish stocks[15]. Regarding fisheries regulations, the FGS adopted a revised and updated version of the Somalia Fishing Law (No. 23) of 1985[16] of the Democratic Republic of Somalia. This law requires all local and foreign fishing vessels to be registered and licensed. However, there are limitations to its enforcement due to a lack of security, the shortage of funds and trained manpower. Puntland State and Somaliland have fisheries laws in place that are also based on the 1985 Fishery Law (No. 23). Puntland State's fisheries law has provisions for the registration of fishermen and fishing vessels (artisanal boats and industrial vessels). The Republic of Somaliland also issued a regulation on the registration and licensing of fishing vessels in 2012[17] that is more detailed than the other two laws.

As is the case with the FGS, Puntland State and Somaliland also lack the financial and technical resources needed to make their fisheries' laws effective at deterring local and foreign vessels from fishing illegally. On a positive note however, last September Puntland authorities apprehended South Korean trawlers allegedly fishing illegally just 3.2 km from the shore[18]. If such actions by authorities in Puntland or Somaliland continue and the fishing companies and crew are appropriately penalized for their illegal actions, it could deter other illegal fishing vessels in the region.

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14 Seychelles Communique, April 6, 2014

15 Addis Ababa Communique, May 3, 2014.

16 A draft version of this law was submitted by the Ministry of Natural Resources of the FGS to the Prime Minister for cabinet discussion and approval (Source: Ministry of Natural Resources of the FGS, June 5, 2013).

17 http://www.somalilandlaw.com/somaliland_fishery_law.html Accessed on Oct. 23, 2014.

18 http://www.aljazeera.com/news/africa/2014/09/somalia-cracks-down-illegal-fishing-201492320535275716.html.

The current fisheries laws in force at federal and state levels and in Somaliland need to be updated and harmonized to enable uniform and effective enforcement. In this regard, Somalia and Somaliland will have to jointly plan an enforcement mechanism and coordinate their enforcing units to protect the fisheries resources effectively. This could be done in cooperation with international partners. At present, the enforcement of existing fisheries laws is very weak or non-existent.

In Somaliland, vessels are legally obliged to report their total catch by type for each fishing period, but not all vessels follow that law to the letter. Industrial vessels are required to have two onboard observers, but they may be under pressure as the vessel owners pay them. Another cause for concern is the lack of coordination between the various ministries and departments involved in fisheries[19]. With regard to illegal fishing in Somaliland waters, Yemenis are reportedly the main culprits. They catch all sorts of fish but particularly target bottom feeders. Other intruders fishing illegally in offshore waters may be there but difficult to identify. The enormous number of Yemeni fishing boats could damage fish habitats and stocks in the long term. Egyptian vessels licensed by the Ministry and using bottom trawls are also causing large-scale habitat destruction that photo evidence supports.

### 3.4 Role of Neighboring Countries

Foreign vessels fishing illegally in Somali waters can be divided into two types: regional and international. **Regional vessels** come from Kenya, Iran, Saudi Arabia, United Arab Emirates (UAE) and Yemen (Schelbey and Rosenau, 2013). They usually operate within Somalia's territorial sea (12 nm) and are often visible from the Somali coastal villages. They may interact with Somali fishermen, and some apparently buy fish from artisanal fishermen, who transship their catch at sea. Many vessel operators allegedly buy counterfeit fishing licenses from corrupt Somali officials, warlords, businessmen, fishermen, or even pirates. These vessels fish so close to the shore that they compete with local artisanal fishermen for resources and destroy local fishermen's fishing nets. They often engage in bottom trawling thereby destroying vital habitats and depleting fish stocks.

**International vessels** come from China, Taiwan, Thailand, Sri Lanka, India, France, Spain, Germany, Honduras and Russia. Most fish within Somalia's 200-nm EEZ waters (Schelbey and Rosenau, 2013). These vessels have limited interaction with coastal communities, but some acquire counterfeit Somali fishing license. The list of illegal fishing vessel flag states violating Somali waters is almost double those listed by the fishermen interviewed in this study. It is difficult for Somali fishermen to identify which country an illegal fishing vessel belongs to from afar. These illegal fishing vessels use all means to disguise their identity because they are violating International agreements.

It is difficult to estimate what annual loss these IUU vessels from neighboring and distant nations cause Somalia. Estimates range from US$ 100 million (MRAG, 2005) to over US$450 million (Waldo, 2009). In addition to revenue loss, illegal fishing vessels cause overfishing, reduce fish stocks, affect local catches, harm the marine environment and destroy communities

[19] Communicated by the key informant interview of the fisheries authority.

as they lose opportunities to catch, process and trade fish. As a particular fish's market value increases, so do the chances of IUU fishing for that particular fish because the profit from selling it increases. Most fish that are IUU fished have diminished stocks.

The operation of these illegal fishing vessels affects the import and export markets as they stop legal catches from being exported. IUU fishing is associated with large amounts of bycatch through the targeting of highly priced species and the flouting of regulations on equipment, closed seasons and prohibited areas. IUU fishermen tend to use fishing methods and equipment that do not meet current regulations. This leads to a large amount of untargeted fish (bycatch of various types) caught, habitat damage and long-term impacts on fish stocks.

## 4.0 ILLEGAL FISHING AND EFFECTS ON SOMALIA

Somalia can deter illegal fishing by following actions taken by FAO and its partners to combat illegal fishing. One is to promote adherence to the 2009 FAO Port State Measures Agreement and the 2014 FAO Voluntary Guidelines on Flag State Performance (FAO 2014). Many nations are also working with the International Maritime Organization (IMO) to develop a Global Record of Fishing Vessels that is currently considered crucial to Somalia.

### 4.1 Impacts of IUU Fishing

The most tangible economic impact of IUU fishing on Somalia is the direct loss of the value of fish catches that could benefit the nation if stopped. In addition to the loss of national income from fish lost to IUU, illegal fishing causes losses of employment in fishing and post-harvest fish handling, landing fees, license fees, taxes and other revenues payable by legal fishing companies. The indirect harm of IUU fishing to Somalia also includes a loss of income and employment in other sectors and activities in the supply chain upstream (fishing gear, boats and equipment, etc.) and downstream (fish processing and packaging, marketing and transport, etc.) from the fishing operation itself (MRAG, 2005). As IUU fishing vessels are constantly fearful of being spotted, they exploit resources irresponsibly. They have unsustainable impacts on both target species and the marine ecosystem and vulnerable species such as coral reefs, dugongs and turtles, whose catches are mitigated by regulations on legitimate fishing practices. This negatively affects ocean productivity, biodiversity and the ecosystem's resilience, leading to a reduction in food security for artisanal fishermen and to future catches. In addition to its national economic impacts, IUU also affects fishermen's livelihoods.

IUU fishing causes conflict with Somalia's artisanal fishermen. Fishermen and fisherwomen reported this to the Consultants during meetings in the fishing villages and in survey responses during interviews. Many fishermen find their fishing nets destroyed by illegal fishing vessels and are threatened by IUU fishing vessels as being mistaken as pirates[20]. Under normal circumstances, when industrial fishing vessels destroy artisan fishermen nets, they willingly compensate for the loss of these nets to avoid conflicts, but illegal fishing vessels cannot be held responsible as they never come to port.

"The current overcapacity of the world fishing fleet, both in terms of numbers of vessels and technological power, created largely through subsidies to the fishing sector in developed countries, has contributed to the problem of illegal fishing" (MRAG, 2005). When local coastal waters are overfished, overcapitalized fleets often turn their attention to illegal fishing in waters of coastal states like Somalia that are unable to patrol and enforce fisheries regulations or bans on foreign fleets fishing.

### 4.2 Lost Value to IUU Fishing

It is very difficult to value the resources lost to illegal fishing. The Marine Resources Assessment Group (MRAG) carried out a study in 2005 for the UK's Department of International

[20] Personal communication with fishermen and fisherwomen in the fishing village of Badey (Eyl), June 13, 2014.

Development to estimate the annual value of illegal fishing in ten countries that included Somalia. The MRAG study showed that in one year (2003-2004) Somalia lost close to $ 100 million to IUU fishing (Figure 5). The estimated total loss from IUU across all ten countries in the study was approximately $ 372 million a year.

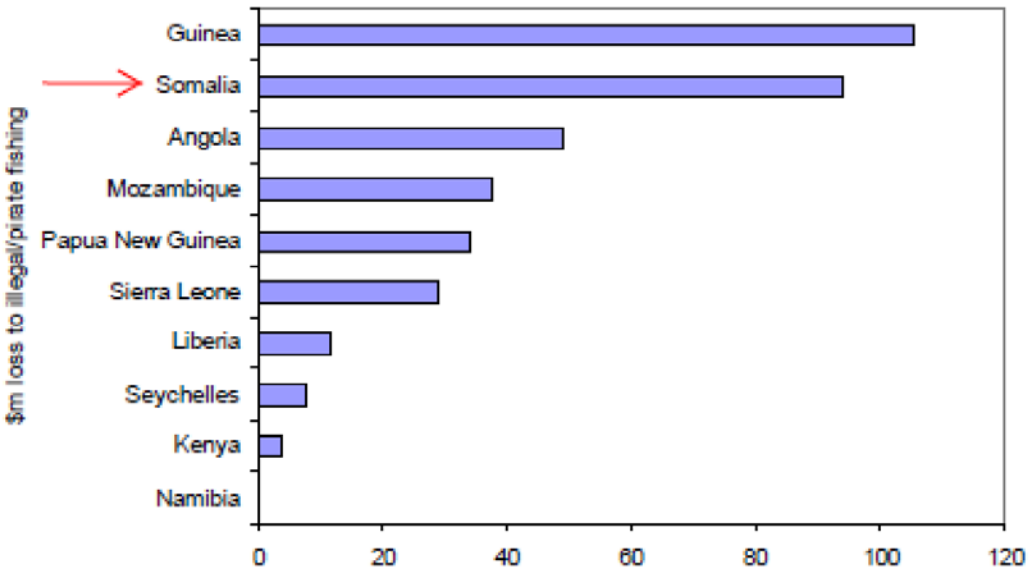


**Figure. 5**: Estimated annual value of illegal fishing in the EEZs of ten countries, including Somalia from 2003 to 2004. *(Source: MRAG, 2005)*

IUU fishing is an unlawful and risky business for the perpetrators. However, they take the decision to be involved in this risky and illegal action by balancing the cost of being apprehended with the economic benefit of evading the law and consequences. An investigation by Sumaila and Keith (2006) concluded that the expected benefits from IUU fishing exceed the expected cost of being caught by five to one. The study results show that fines for apprehended vessels would have to go up 24 times for the expected cost to equal the expected benefit. Because most IUU fishing vessels have frequented areas illegally before they are apprehended Somali authorizes have to determine the penalty and maximum possible cost for vessels fishing in Somali waters.

### 4.3 Potential Impact of Eliminating IUU Fishing

IUU fishing has paralyzed fishing communities in many countries, especially in Sub-Saharan Africa. In Somalia, it is even worse because Somali waters have had no controls for many years, and the impact of IUU fishing is very difficult to quantify. However, the loss to Somalia's fisheries from IUU fishing is estimated to be at least US$100 million (MARG, 2005) (Fig. 5). This value translates to an annual average harvest of some 50,000 MT of lost fish (Teutcher, 2005) in Somalia. If IUU fishing stopped, these fish could be landed at the country's fishing ports and that catch would have a solid impact on Somalia's economy. A study on the impact of IUU

fishing on Somalia's GDP (Fig. 6) concluded that eliminating it would increase Somalia's GDP from four to six percent.

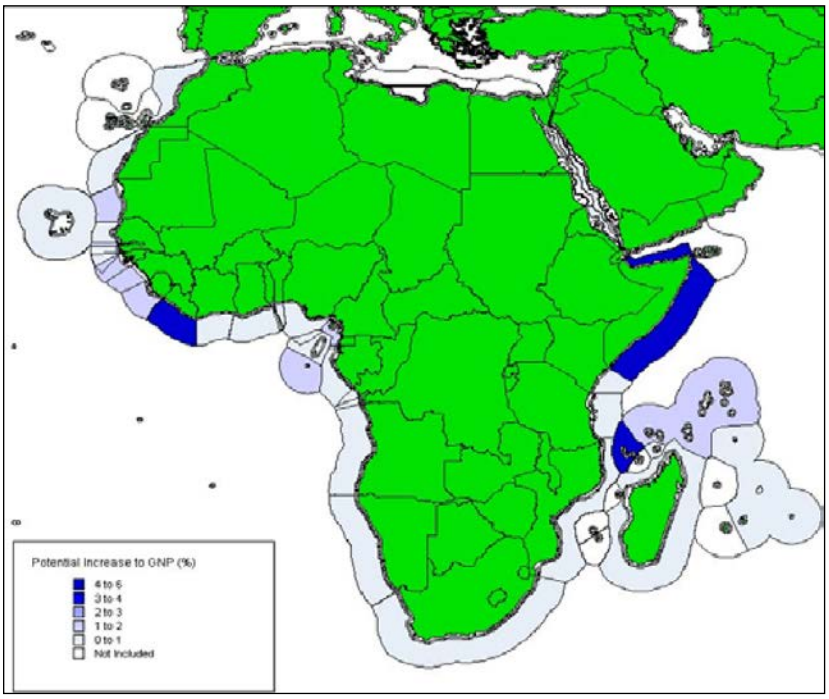


**Figure 6:** Potential increase in GNP that Somalia might accrue by eliminating IUU fishing. *(Source: MRAG, 2005)*

### 4.4 Global Occurrences of IUU Fishing

IUU fishing is a global problem and affects many developing countries as well as developed nations (Fig. 7). The type of IUU fishing, duration and intensity varies from region to region and country to country. The Indian Ocean has one of the highest intensities of IUU fishing and Somalia has one of the highest impacts.

IUU fishing is a global problem and needs to be dealt with globally. The impacts of this problem, however, are felt more by the small and weak countries that are directly affected and lack the means to protect their territorial waters and EEZs. A study examining illegal and unreported marine harvests in the United States found that up to 32 percent of imported wild shrimp, crab, salmon, pollock, tuna and other catch is caught illegally (Ganapathiraju et al., 2014).

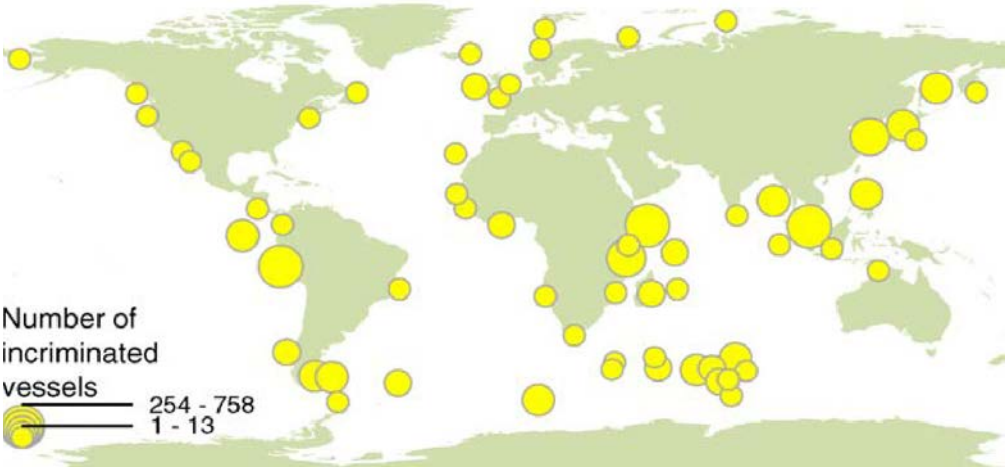


**Figure 7:** Number of IUU fishing vessels incriminated between 1980 and 2003.
*(Source: Based on Sea Around Us IUU database; www.seaaroundus.org)*

Some European Union (EU) actions may have unintentionally encouraged IUU fishing. Between 1994 and 2010, the EU gave more than €26 million to over 130 Italian, French and Spanish fishing boats, many of which had already been convicted of serious infringements[21]. In 2005 and 2006 Spain, received 46 percent of the EU's aid and public money. In June 2010, the Spanish fisheries company Albacora, that owned the Albacore Uno vessel, was fined €5 million by the US government for illegal fishing in US waters. Four months later, the Spanish government gave it €307,000 to improve its security to protect its fleet from the risk of Indian Ocean piracy[22]. Similarly, the European Commission banned imports of fish from Sri Lanka as it had failed to tackle illegal fishing by its vessels (FishFile Lite_2014). On June 17, 2014, US President Barack Obama established a Presidential Task Force on Combating Illegal, Unreported, and Unregulated Fishing and Seafood Fraud[23] to ensure that seafood sold in the United States was legally and sustainably caught and to combat the negative impacts of seafood fraud.

### 4.5 IUU Fishing and Links to Piracy:

The problem of illegal fishing is considered a form of piracy on natural resources and is often coined "pirate fishing". It is also believed to be the root cause of Somali piracy (Bawumia & Sumaila, 2010). Both piracy and illegal fishing take place in a situation where there is lapse of governance and centralized control as is the case in Somalia. It's difficult to tell how many pirates were earlier fishermen. It's perceived by fishermen and foreign experts that many small fishermen have turned to foreign illegal fishing vessels and big merchant ships (Schbley and Rosenau 2013). This is because their fishing grounds have been wiped out and their fishing nets were destroyed by much larger illegal foreign vessels. As a result they claim that they were not able to earn a living from fishing.

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21 http://www.slowfood.com/slowfish/pagine/deu/news/dettaglio_news.lasso?-idn=19. Accessed on August 27, 2014.

22 http://www.slowfood.com/slowfish/pagine/deu/news/dettaglio_news.lasso?-idn=19. Accessed, on 08/27/2014.

23 White House Press Release, June 17, 2014.

The presence of the anti-piracy task force off the Somali coasts might have minimized piracy but not illegal fishing. This has not been helpful to the local fishing communities. Fishermen reported that their livelihoods have been negatively impacted both by illegal fishing and by anti-piracy patrol activities. The illegal fishing vessels and anti-piracy patrol navies mistake local fishermen for pirates. The fishermen alleged that they are shot at by IUU fishing vessels and anti-piracy navies during their usual fishing trips. This has caused them to reduce their fishing trips thus affected their livelihoods.

IUU fishing and piracy are terrible experience for Somalia. The former deprived the country of its fisheries resources and the latter damaged the reputation of the country, ravaged its economy and exposed its security. They can only be unraveled jointly by Somalia and interested parties, including: the foreign navies in the region, Gulf of Aden and Western Indian Ocean littoral states and relevant international organizations. In Somalia proper all actors are duty bound to join in responsibly.

The causes of illegal fishing can be addressed, first, by legislating maritime and fisheries laws, taking necessary steps to enforce these laws nationally, and signing international conventions on eliminating the threat of IUU fishing. The problem of piracy cannot be solved militarily. The root causes must be addressed, including youth employment and peace and security issues. While collaboration of all stakeholders in the fight to eliminate maritime piracy and IUU fishing is vital, this is a Somali national issue and has to be initiated and led by Somali authorities. While only 21 percent of respondents in our survey either strongly agree or agree that foreign piracy patrols protected foreign fishers, 74 percent either agreed or strongly agreed that anti-piracy patrols affected their livelihood.

### 4.6 Reports on IUU Fishing

The governments of Somalia and Somaliland have not yet developed the technical, financial and human resources means to be able to minimize or even stop the intrusion of foreign illegal fishing vessels into their territorial waters. The situation remains unchanged for over twenty years since the outbreak of the civil war. While the lack of control of Somalia's territorial waters have led to proliferation of IUU fishing, there are indications that the situation may be changing. The governments in Somalia and Somaliland are gradually improving their performances and public awareness on the impacts of IUU fishing is rising. Changes in approach towards IUU fishing in the EU and US markets is also building up pressure on IUU fishing companies and their flag nations to play by international rules. These are positive indicators for Somali authorities to take stern measures on foreign fishing vessels violating territorial their waters.

It has been reported in the past several months sending messages that foreign IUU fishing is affecting the socio-economic life of the population. It was reported in September of last year that the government of Puntland State of Somalia cracked down on an upsurge of IUU fishing vessels off the coasts of Somalia. The State President ordered four South Korean trawlers into port following claims that they broke local laws (Aljazeera, 2014).

Early this year on March 31, it was reported that the reduction in piracy has led to the rise of IUU fishing. This rise of illegal fishing is a threat to revive piracy back into Somalia. It was reported that angry fishermen seized two Iranian owned fishing vessels and 48 sailors on board (Reuters, 2015). The report stated that UN and Somali officials were concerned that after three years of break, as a result of the presence of national navies of over thirty countries, piracy could reemerge if proper action is not taken to curb illegal fishing. In addition to being a threat to national security it is also impacting the economic wellbeing of fishers. Another report in *Garowe Online* on May 17 reported the complaints of residents of Northeastern Somalia, including the Mayor. They stated that IUU fishing is affecting their livelihoods.

## 5.0 SURVEY INVESTIGATING IUU FISHING

The following sections of this report were initially presented as *Results of Survey Investigation*[24], which provided a summary and analysis of the field survey data and individual interviews for this study. The project focused on understanding the dimensions of IUU fisheries in Somalia's EEZ. As per the agreement between Adeso and TransAfrica Consultancy Services, the survey was designed to *"analyze the fundamental types of illegal fishing and identify the key factors that foster illegal fishing"* in Somalia. In addition, the survey was designed to help assess *"ecosystem and livelihood impacts and evidence concerning illegal fishing."* The results represent the views of the fishermen surveyed in coastal communities across Somalia on these issues.

### 5.1 Conceptual Framework

The survey framework draws from the following FAO definitions of IUU fishing:[25]

- **Illegal fishing** takes place when vessels operate in violation of the laws of a fishery. This can apply to fisheries that are under the jurisdiction of a coastal state or to high seas fisheries regulated by regional organizations.
- **Unreported fishing** is fishing that has been unreported or misreported to the relevant national authority or regional organization, in contravention of applicable laws and regulations.
- **Unregulated fishing** generally refers to fishing by vessels without nationality, or vessels flying the flag of a country not party to the regional organization governing that fishing area or species.

Additionally, the survey framework draws from the socio-economic theory of regulatory compliance as described by Sutinen and Kuperan[26] (Figure 8). These key factors, or lack thereof, foster illegal fishing. Lastly, the survey also includes a number of additional questions and topics based on discussions with Adeso staff and other key informants in Nairobi. There are a number of general questions about perceptions of changes in the fishery, general development issues and related environmental issues such as waste dumping at sea. Several questions aim to draw links between IUU fishing and piracy. Very little recent secondary information is available on Somalia's fisheries sector. Even recently published literature quotes statistics dating back almost a decade[27]. Therefore, the survey is also designed to collect some basic information on the fishing industry. The survey approach used is similar to that outlined by Pollnac &

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[24] Pollnac, R.B., B. Crawford and K. Hagos. 2014. Results of the Survey Investigating the Fishery and Illegal Fishing in Somalia. Trans-Africa Consultancy Services, for African Development Solutions. 92p.

[25] ftp://ftp.fao.org/FI/DOCUMENT/tc-fsp/2013/VolGuidelines_adopted.pdf

[26] Sutinen, J.G. and K. Kuperan. 1999. A socio-economic theory of regulatory compliance. *Journal of Social Economics*. 26(1/2/3): 174-193.

[27] Kaija Hurlburt, K and R. Spivak. 2013. The Fishing Sector in Somalia/Somaliland Shuraako, p.11.

Crawford[28]. This involves rapid assessment methodologies, key informant interviews and more extensive individual survey questionnaires.

To determine the presence of illegal fishing is somewhat difficult as individuals are often reluctant to talk about illegal activities or admit to such behaviors themselves. Hence, fishermen were not asked if they were directly involved in illegal fishing, but survey questions were designed to ask who does it, where it takes place and what types of illegal activities it includes. It was also designed to determine types of "illegal" fishing perceived by fishermen.

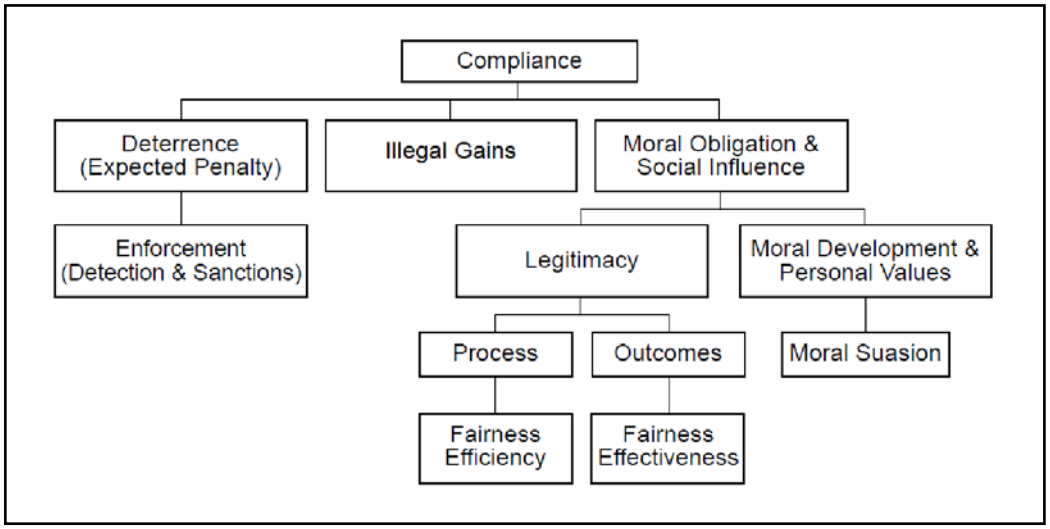


**Figure 8.** Determinants of Compliance *(Source: Sutinen and Kuperan 1999)*

Defining illegal fishing activities is also problematic in Somalia, as some people question whether its claim over fisheries jurisdiction to 200 nm from shore was properly done and is acceptable under international law. However, Somalia was initially a signatory to the UN Convention on Law of the Sea[29], and the Federal Government of Somalia (FGS) recently renewed this commitment. On June 30 2014, the FGS declared the outer limits of the EEZ of Somalia and gave the UN its geographic coordinates[30]. Since Somalia is a signatory to the UN

[28] Mohamed Mohamud Mohamed and Mohamud Hirad Herzi. 2005. Feasibility Report on the Fisheries Sector in Puntland. UNDP Somalia. p.17.
Ahmed H. O. Gulaid. 2005. Feasibility Report on the Fisheries Sector in Somaliland. UNDP Somalia. p.33.
FAO Fishery Country Profile – The Somali Republic. 2005.
Pollnac, R.B. and B. Crawford. 2000. Assessing Behavioral Aspects of Coastal Resource Use. Coastal Resources Center, University of Rhode Island. p.139.
(http://www.crc.uri.edu/download/Assessing_Behavioral_Aspects.pdf)

[29] Somalia signed UNCLOS in 1982 and ratified it on July 24, 1989 Source: Communique of the Somali Maritime Resource and Security Strategy (MRSS) Fisheries Working Group, Seychelles, April 6, 2014.

[30] Proclamation by the President of the Federal Republic of Somalia with an attachment of the Geographic Coordinates of the outer limits of the EEZ, dated June 30, 2014.

Convention on Law of the Sea, we will assume for the purposes of this work that Somalia has a valid and legal claim to exercise exclusive use rights to the fisheries with a 200 nm EEZ. Since the study began, Somalia has lodged a claim to the EEZ maritime boundaries with the UN. This is a generally accepted practice and acknowledged by most coastal states. Within this zone, Somalia can and should regulate fishing activities by Somali fishermen, and if they so choose, deny or grant access rights to foreign flagged fishing vessels and an associated regulatory regime for management. There may be further ambiguity in Somalia as to what different autonomous regional authorities may view as their legal right to manage fisheries within the 200 nm zone compared to the views of the internationally recognized central government. Two meetings of the Somali Maritime Resource and Security Strategy (MRSS) and Fisheries Working Group that included central government and regional authorities, were held in the Seychelles from April 2-6, 2014, and in Addis Ababa on May 3, 2014 and aimed at resolving a number of issues. It is our understanding that foreign fishing licensing in the future will be controlled at the federal level. Representatives of the FGS, Puntland, Somaliland, Galmudug and Juba attended the first meeting, which called on the international community to support initiatives, and issued a communiqué asking the FGS to:

- Formalize the Somali EEZ
- Issue fishing licenses for offshore highly migratory pelagic stocks after prior agreement with federal member states and Somaliland on revenue sharing, transparency, MCS and other modalities
- Allow states to issue licenses for non-highly migratory species.

Representatives from the FGS, Jubbaland, Galmudug and Puntland attended the second meeting in Addis Ababa during which participants agreed to establish a Federal Somali Fishing Authority (FSFA) to manage offshore highly migratory stocks, publish licensing procedures, license revenue sharing among the parties and manage other issues. The Policy Paper (2014)[31] also touches more fully on these issues. Key informant interviews, especially at the regional level, and the survey asked about these issues, and the policy brief incorporates the results of these discussions. We did not attempt to extract the legal issues beyond the scope of this study. However, the study does examine what various fisheries stakeholders think is "legal," including whether any traditional use rights are asserted by clans or local leaders. Information collected in the survey is outlined below and adapted from Pollnac (1998)[32]

[31] Improving the Development and Management of Somalia's Marine Fisheries and Controlling Illegal, Unreported and Unregulated Fishing A Policy Paper. Trans-Africa Consultancy Services, for African Development Solutions. 12p.

[32] Pollnac. R.B. 1998. *Rapid Assessment of Management Parameters for Coral Reefs.* Coastal Resources Center, University of Rhode Island. Coastal Management Report #2205 ICLARM Contribution #1445.

### 5.2 Survey Instrument and Sample

A full description of the design and methodology for the surveys conducted and presented in this report is available in the report provided to Adeso by Crawford, et al. 2014.[33] The methodology is summarized below. The fieldwork attempted to provide a snapshot of the fishery, given prevailing time, budget and security constraints.

### 5.3 Village Rapid Assessments

Prior to carrying out the survey, the fishery survey sites were characterized via rapid assessment methods including a visual walk through of the community and semi-structured conversations with key informants. The information was initially acquired by going to the landing areas (beach, pier, dock, etc.), observing the landings, asking questions concerning the various data types listed and obtaining local names for species, gear, boats[34], locations and times as well as any legal restrictions on fisheries. The supervising field officer coordinated the administration of the survey and conducted this rapid assessment. Summaries of each village, based on the rapid assessment and key informant interviews, are provided in Annex 1. The information collected during the rapid assessment considered the following questions:

**1. What**: What types of fishery resources are exploited by people in the community?

**2. Who:** Who in the community exploits the resources? To what extent do fishermen only fish as their sole source of income and livelihood, or do they have other sources of income and livelihoods?

**3. When:** Time of year, month, moon, tide, day, etc.?

**4. Where:** Where are the resources gathered? What are the use rights?

**5. Why:** What are the resources gathered for? Household consumption? Selling in the market? (Approximately how much do each use?)

**6. How:** How are the resources gathered (fishing equipment, methods)? Source of equipment (if any)? Source of spare parts, maintenance, and fuel (if needed)?

**7- How:** How are the resources distributed? (If sold, how is it sold? When, where, to whom?) If traded, how? (For what, when, where, & with whom?) If given to kinsmen or

[33] Crawford, B., R. Pollnac and Hagos K., June 2014. Design and Methodology for the Survey of Somalia Fishing Communities Concerning IUU Fishing. Trans-Africa Consultancy Services, for African Development Solutions. 35p.

[34] Boat type may not be as simple as the FAO, etc. publications usage, especially for little researched fisheries. For example, in Oman, besides the reed *shasha* (of which there were several varieties), wooden plank boats (which some group as large "*huri*" were also referred to as *lansh.* Other wood plank fishing vessels (slightly smaller) were referred to as *shahuf* (but *badan* on the Batina coast). Also, *huri* were distinguished as to whether they were dugout or plank built. Similar linguistic variation applies to vessels along the Swahili coast in the far south of Somalia, but the terms are in Swahili.

other families, is it reciprocal? Does local fish get processed in any way? Fishermen use ice, do drying, smoking, pickling, etc.?

### 5.4 Survey Questionnaire for Individual Fishermen

The sample survey form is included in Annex 2. It was translated and pretested in Somalia and includes variables meant to provide a description of the background to fishing (legal and illegal) in Somalia, as laid out in the conceptual framework. The sample includes ten towns representing all areas of Somalia, from cities to small villages along the Indian Ocean and Gulf of Aden coast, including the longstanding autonomous states of Somaliland, Puntland and other federal states. Names of towns sampled and sample size are in Table 1, and Figure 2 shows the map of sampled locations.

**Table 1. Towns, political groupings and sample sizes**

| | Somaliland | Puntland | Other | Total |
|---|---|---|---|---|
| Maydh | 36 | 0 | 0 | 36 |
| Berberra | 36 | 0 | 0 | 36 |
| Eyl | 0 | 36 | 0 | 36 |
| Garacad | 0 | 36 | 0 | 36 |
| Bosaso | 0 | 36 | 0 | 36 |
| Las Qoray | 0 | 36 | 0 | 36 |
| Bergaal | 0 | 36 | 0 | 36 |
| Kismayo | 0 | 0 | 42 | 42 |
| Mogadishu | 0 | 0 | 42 | 42 |
| Hobyo | 0 | 0 | 36 | 36 |
| **Total** | **72** | **180** | **120** | **372** |

We designed the survey to select a representative sample of fish landing sites from several of the main coastal administrative regions of the country, including Somaliland, Puntland, Galmudug, Jubbaland and Benadir. This was not a random sample but a purposeful sample that ensured all coastal regions were covered. The final sites sampled were selected from a list of 20 Adeso-recommended sites and factored in budget, timing and security considerations. Due to the extensive coastline, distances covered, and taking into account cost factors and differences in local dialects, we used several different survey teams in the different surveyed areas of Somaliland, Puntland and three other southern coastal states.

Surveying fishermen at a landing site.

At each landing site, we used a systematic sampling design in which every third or fifth house was selected depending on community size, and interviewed the head of the household. In some cases, fishermen were selected at random at community landing centers. The target was to interview approximately 30-40 individuals per community to ensure adequate representation. Time and budget did not allow for a more rigorous sampling frame such as developing a list of all fishing households and randomly selecting respondents or for including a larger number of surveyed communities or sampled individuals at each landing site. While it could be argued that the final sample of individuals was not truly random, we conducted some statistical analysis of differences between three regions as shown in the below results that we consider to generally represent the country's fishermen given the sampling caveats noted above. Ideally, the Somali government should undertake more rigorous surveys such as the "FRAME" survey, using the FAO methodologies[35]. The FRAME survey is a much more extensive census-based approach of all landing sites and provides better information for determining fishing effort. When combined with other surveys on landings data, it can help to determine whether the various fisheries are experiencing overfishing or not. These surveys provide basics of catch and landings data only, however, and are not designed to collect any information on IUU fishing as this one did.

While the field supervisor conducted key informant interviews, several locally hired field enumerators conducted individual oral interviews with fishermen and in some cases with women working in fisheries (marketing/processing), and recorded their verbal answers on a

[35] http://www.fao.org/docrep/004/Y2790E/y2790e00.htm#Contents **Sample-Based Fishery Surveys - A Technical Handbook. FAO Fisheries Technical Paper 25.**

hard copy questionnaire. The field supervisors also conducted village meetings in each surveyed landing site. The results of these meetings and other key informant interviews and observations are found in Annex 1. Data from the survey forms was coded into Excel files in the field and sent to supervising researchers for review and quality control checks. After completion of the fieldwork, the original survey forms were sent to supervising researchers to double check field coding entries and correct them where needed. Data files for each village were then merged and analyzed using SYSTAT statistical software.

### 5.4 (a) Statistical Method Used

Throughout the paper, commonly used descriptive statistics (mean, standard deviation, frequency distribution displayed as percent distribution) are used to describe differences between geographically grouped data (Blalock 1979). The groupings used are Somaliland, Puntland and Other. Since the values are derived from a sample of cases, we needed to determine whether the differences observed in the samples could have occurred by chance alone. To accomplish this, we use inferential statistics appropriate to the data type to determine the probability of difference between the groups. Chi Squared ($\chi^2$) is used to determine whether frequency distributions differ between groups, Kruskal-Wallis H (ordinal analysis of variance) for differences of variables measured on an ordinal scale (e.g., low, medium, high; small, medium, large), and Analysis of Variance (F-Ratio) for continuous variables measured on a metric scale (Tabichnick & Fidell 2007, Blalock 1979).
Since a test of statistical significance tells us nothing about the strength of the relationship (Ziliak & McCloskey 2011), we also present effect sizes to provide this important information (Cohen 1994). Effect sizes (in the analyses presented in this report) vary between 0.0 and 1.0, with 0.0 indicating no effect and 1.0 indicating that all of the differences between the groups can be explained by the grouping (the strongest effect). For chi-square tests we use Cramer's-V, a coefficient appropriate when there are more than two rows and columns in the table being tested. The effect size we used for Analysis of Variance is $R^2$, which is the squared multiple correlation between the groups and the variable described. Like most researchers, we consider an effect size of less than 0.3 a small effect, 0.3 to 0.5 medium, and greater than 0.5 as large.

### 5.5 Survey Results

#### *5.5.1 Background Information*

This section of the report provides information on some of the basic characteristics of the fishery and respondents interviewed in this survey. We aggregated data by various regions under the assumption that the characteristics of the fishery would vary in each area. The initial draft reported data by landing sites surveyed and showed considerable variation by area and region. For simplicity, we grouped data into three categories based largely on administrative regions. It should be noted, however, that these groups also include geographical differences. For instance, Somaliland's landing sites are all along the Gulf of Aden shoreline, whereas Puntland's include both the Gulf and northern Indian Ocean. The 'other' category includes the more southern landing sites along the Indian Ocean that are not found in autonomous states or have only recently obtained autonomy. This 'other' category includes Kismaayo, Mogadishu and Hobyo.

More information on the actual questions individual fishermen were asked are found in the survey form in Annex 2. Further explanation of the individual variables reported here is found in the data coding instructions in the Crawford et al. 2014 report cited earlier.

Table 1 provides select background information on survey respondents by location. Fishermen answered direct questions about their age, the number of years they had been fishing and living in the area, years of formal schooling completed, people in their household and whether they owned a fishing vessel or not. The average surveyed fishermen had been working in fishing for about 17 years. Their average age was 39, suggesting that they started in their early 20s. The average respondent had lived in the area for 23 years, and had about 4.6 years of formal education (primary only). Household size and percentage boat ownership varied among locations ($p<0.01$). Household size was larger in the locations classified as "other" and percent boat ownership was higher in Somaliland, Puntland and the "other" locations[36]. There was no significant difference among regions concerning the fishermen's years of fishing, age, residency and education. Somaliland and Puntland tended to have smaller households and less boat ownership than the other regions. On average, the level of boat ownership nationwide exceeded 50 percent and suggested small crew sizes in the predominantly outboard-operated fiberglass skiffs

[36] 'Other' refers to landing sites in Mogadishu, Kismaayo, Hobyo and Garacad.

| Table 2. Background information on sample by location | | | | | | |
|---|---|---|---|---|---|---|
| **Location** | **Years Fishing** | **Years Resident** | **Age** | **Years of Formal Education** | **Household Size** | **% Boat Owners** |
| Somaliland | 15.14 | 23.44 | 38.21 | 4.33 | 7.49 | 41.67 |
| Puntland | 17.58 | 23.20 | 39.51 | 5.03 | 7.44 | 64.44 |
| Other | 17.67 | 22.69 | 37.93 | 4.11 | 9.25 | 70.80 |
| **N** | **372** | **369** | **372** | **367** | **371** | **365** |
| Multiple R | 0.10 | 0.02 | 0.06 | 0.12 | 0.21 | V = 0.21 |
| Squared Multiple R | 0.01 | 0.00 | 0.00 | 0.02 | 0.05 | ------ |
| F Ratio | 1.95 | 0.09 | 0.78 | 2.78 | 8.85 | $\chi^2 = 16.79$ |
| p | >0.05 | >0.05 | >0.05 | >0.05 | <0.01 | <0.01 |
| $R^2$and Cramer's V are used for effect size indicators throughout this report. For ANOVA, $R^2$ is used in other parts of the report. | | | | | | |

Box 1 shows types of fishing vessels used and a brief definition. Table 3 shows the distribution of boat types across the sampling sites.

| Box 1. Boat types used by fishermen in sample | |
|---|---|
| **Local Boat Name** | **Definition** |
| Saximaad/ Baaraforde/ Faara boota | Fiberglass skiff with outboard |
| Volvo/Laash | Fiberglass with inboard |
| Houri | Wooden boat with outboard |
| Saab | N/A |
| Shuraac | Sail |
| Sweden | Made in Sweden |
| Dhow | Dhow motorized |
| Sambuk | Wooden boat with inboard engine |

The boats used in most sites were fiberglass skiffs with an outboard engine. For landing sites along an open coastline, fiberglass skiffs allow easy beaching and landing from a sandy beach. Fiberglass is popular because wood is not always available and fiberglass does not rot. Boats with inboard engines often moor at sea and therefore usually require protected harbors. Dhows and sail vessels are found only in the south under the Swahili influence of Somalia's southern neighbors. There is clearly variability among the sites, but the fiberglass boats are most common and there are very few examples of other boat types.

**Table 3. Percent distribution of boat types used by location**

| Boat Type | Somaliland | Puntland | Other | Total | N |
|---|---|---|---|---|---|
| Saximaad | 73.61 | 90.56 | 42.50 | 71.77 | 267 |
| Laash | 25.00 | 7.78 | 42.50 | 22.31 | 83 |
| Houri | 1.39 | 1.67 | 1.67 | 1.61 | 6 |
| Saab | 0.00 | 0.00 | 5.00 | 1.61 | 6 |
| Shurrac | 0.00 | 0.00 | 2.50 | 0.81 | 3 |
| Sweden | 0.00 | 0.00 | 0.83 | 0.27 | 1 |
| Dhow | 0.00 | 0.00 | 2.50 | 0.81 | 3 |
| Sambuk | 0.00 | 0.00 | 2.50 | 0.81 | 3 |
| **N** | **72** | **180** | **120** | | **372** |

$\chi^2 = 63.50$, df = 2, $p<0.01$, V=0.43 (***for shaded variables only.***
Since more than one-fifth of the fitted cells have frequency < 5,
significance test on entire table would be unreliable.)

Wooden skiff (*houri*) with outboard engine, above. Fiberglass skiff with outboard, above, and with inboards, below.


Vessel length varied among sites, with the most frequently found sizes between 3 and 6 meters (Table 4). Vessels of 10 meters or longer were found mainly in Somaliland. The reason for this difference may be due to a preference for smaller boats as they are easier to launch and beach along the open and exposed Indian Ocean coastline. As Table 3 shows, variation among locations with regard to vessel size is quite high and statistically significant. Table 5 indicates that most vessels in the sample are motorized (c. 90 percent), with the largest in Puntland and the smallest in "other" states. The differences are statistically significant ($p<0.01$).

| Table 4. Percent distribution of boat length (meters) | | | | | |
|---|---|---|---|---|---|
| Boat Length (meters) | Somaliland | Puntland | Other | Total | N |
| 1 | 0.00 | 0.57 | 0.00 | 0.28 | 1 |
| 2 | 4.41 | 9.14 | 2.70 | 6.21 | 22 |
| 3 | 13.24 | 14.86 | 8.11 | 12.43 | 44 |
| 4 | 35.29 | 38.86 | 15.32 | 30.79 | 109 |
| 5 | 13.24 | 23.43 | 17.12 | 19.49 | 69 |
| 6 | 8.82 | 10.86 | 27.03 | 15.54 | 55 |
| 7 | 5.88 | 1.71 | 18.92 | 7.91 | 28 |
| 8 | 10.29 | 0.00 | 9.01 | 4.80 | 17 |
| 9 | 1.47 | 0.00 | 0.90 | 0.56 | 2 |
| 10 | 4.41 | 0.00 | 0.90 | 1.13 | 4 |
| 11 | 0.00 | 0.57 | 0.00 | 0.28 | 1 |
| 12 | 1.47 | 0.00 | 0.00 | 0.28 | 1 |
| 15 | 1.47 | 0.00 | 0.00 | 0.28 | 1 |
| **N** | **68** | **175** | **111** | | **354** |

$\chi^2 = 79.18$, df = 12, p<0.01 V=0.34 (***for shaded variables only***.
Since more than one-fifth of the fitted cells have frequency < 5,
Significance test on entire table would be unreliable.)

| Table 5. Percent distribution of vessel power type | | | | | |
|---|---|---|---|---|---|
| Vessel Power | Somaliland | Puntland | Other | Total | N |
| Paddle/Oar | 3.57 | 1.69 | 17.27 | 7.00 | 24 |
| Motorized | 94.64 | 98.31 | 73.64 | 89.80 | 308 |
| Sail | 1.79 | 0.00 | 9.09 | 3.21 | 11 |
| Total | 100.00 | 100.00 | 100.00 | 100.00 | |
| **N** | **56** | **177** | **110** | | **343** |

$\chi^2 = 29.80$, df = 2, p<0.01 V=0.30 (***for shaded variables only***. Since more than one-fifth of the fitted cells have frequency < 5, significance test on entire table would be unreliable.)

Asked about fishing gear used, respondents often mentioned several types. Table 6 provides the top four gear types mentioned. Differences between locations are statistically significant (p<0.01). The most common gear types were gill nets, long lines and hand lines. The average

respondents from Somaliland and Puntland mentioned 3.5 or 3.4 gear types respectively. In contrast, those from the "other" category listed 2.3. These differences are statistically significant (F ratio = 44.15, df = 2369, $p<0.01$, $R^2= 0.19$). Preferences for different gear types in different regions or communities is not unusual and often reflect differences in fish types and stocks available locally, or can be just the preferences of different fishermen and cultural groups. For instance, lobster traps are only found in Somaliland and Puntland. Purse seines and ring nets in the south likely target the more abundant small pelagic fish stocks found in the region.

**Table 6. Percent distribution of use of different gears**

| Gear Type | Somaliland | Puntland | Other | Total | N | χ2 | p | V |
|---|---|---|---|---|---|---|---|---|
| Bottom Gillnet | 93.06 | 72.78 | 39.17 | 65.86 | 245 | 65.54 | <0.01 | 0.42 |
| Surface Gillnet | 88.89 | 86.67 | 28.33 | 68.28 | 254 | 130.63 | <0.01 | 0.59 |
| Purse Seine/Ring Net | 0.00 | 0.00 | 20.00 | 6.45 | 24 | 53.88 | <0.01 | 0.38 |
| Long Line | 79.17 | 72.78 | 55.00 | 68.28 | 254 | 15.39 | <0.01 | 0.20 |
| Hand Line | 79.17 | 72.78 | 41.67 | 63.98 | 238 | 39.18 | <0.01 | 0.32 |
| Lobster Trap | 4.17 | 19.44 | 0.00 | 10.22 | 38 | 33.24 | <0.01 | 0.30 |
| Fish Trap | 2.78 | 7.78 | 27.50 | 13.17 | 49 | 32.92 | <0.01 | 0.30 |
| Anchor/Float | 0.00 | 2.78 | 1.67 | 1.88 | 7 | 2.19 | * | 0.08 |
| Other | 4.17 | 5.00 | 19.17 | 9.41 | 35 | 19.83 | <0.01 | 0.23 |
| N | 72 | 180 | 120 | | 372 | | | |

*N too small to estimate reliable probability

Fishing activity varies throughout the year (Tables 7 and 8), but in general, May through August are the least active months. The peak fishing seasons are February through April and September through October. Responses to questions on high and low fishing months are shown in Tables 8 and 9. Some variability among locations can be seen in these tables below, but a twice-yearly seasonal peak for fishing prevails in all.

| Table 7. Percent distribution of high fishing months | | | | | |
|---|---|---|---|---|---|
| **Month** | **Somaliland** | **Puntland** | **Other** | **Total** | **N** |
| Jan | 4.17 | 6.11 | 13.33 | 8.06 | 30 |
| Feb | 2.78 | 13.89 | 5.83 | 9.14 | 34 |
| Mar | 27.78 | 15.56 | 23.33 | 20.43 | 76 |
| Apr | 8.33 | 7.78 | 38.33 | 17.74 | 66 |
| May | 5.56 | 0.00 | 0.83 | 1.34 | 5 |
| Jun | 0.00 | 0.00 | 0.00 | 0.00 | 0 |
| Jul | 0.00 | 0.00 | 0.83 | 0.27 | 1 |
| Aug | 1.39 | 0.00 | 0.00 | 0.27 | 1 |
| Sep | 20.83 | 12.22 | 2.50 | 10.75 | 40 |
| Oct | 11.11 | 30.00 | 14.17 | 21.24 | 79 |
| Nov | 8.33 | 11.11 | 0.83 | 7.26 | 27 |
| Dec | 9.72 | 3.33 | 0.00 | 3.49 | 13 |
| **N** | **72** | **180** | **120** | | **372** |
| Chi-Sq. not calculated due to high number of very low frequency cells.<br>Probabilities would be unreliable. | | | | | |

| Table 8. Percent distribution of low fishing months | | | | | |
|---|---|---|---|---|---|
| **Month** | **Somaliland** | **Puntland** | **Other** | **Total** | **N** |
| Jan | 0.00 | 1.11 | 0.00 | 0.54 | 2 |
| Feb | 0.00 | 5.56 | 0.83 | 2.96 | 11 |
| Mar | 5.56 | 6.11 | 0.00 | 4.03 | 15 |
| Apr | 1.39 | 11.11 | 0.83 | 5.91 | 22 |
| May | 5.56 | 16.11 | 3.33 | 9.95 | 37 |
| Jun | 26.39 | 23.33 | 8.33 | 19.09 | 71 |
| Jul | 54.17 | 17.78 | 48.33 | 34.68 | 129 |
| Aug | 4.17 | 14.44 | 17.50 | 13.44 | 50 |
| Sep | 1.39 | 2.22 | 19.17 | 7.53 | 28 |
| Oct | 1.39 | 1.11 | 0.83 | 1.08 | 4 |
| Nov | 0.00 | 0.56 | 0.83 | 0.54 | 2 |
| Dec | 0.00 | 0.56 | 0.00 | 0.27 | 1 |
| **N** | **72** | **180** | **120** | | **372** |
| Chi-Sq. not calculated due to high number of very low frequency cells.<br>Probabilities would be unreliable. | | | | | |

Respondents were asked to identify where they fish using three possible responses (Table 8) and could choose more than one response where relevant. Most fishermen (55 percent) in the sample said that they fished up to 50 km from shore, while 37 percent only fished less than 10km from the shore (Table 9). Just eight percent of respondents said that they migrated by following the fish as they moved along the shoreline. On average, Puntland fishermen fished further from shore, and Somaliland had the highest number of migratory fishermen at 30 percent. The differences between locations are statistically significant. The higher percentage of non-motorized vessels in "Other" southern states likely accounts for why they tend to fish closer to home than others.

**Table 9. Percent distribution of fishing locations**

| Fishing Location | Somaliland | Puntland | Other | Total | N |
|---|---|---|---|---|---|
| Less than 10KM | 15.49 | 27.93 | 64.17 | 37.30 | 138 |
| Up to 50KM | 54.93 | 69.27 | 32.50 | 54.59 | 202 |
| Migratory | 29.58 | 2.79 | 3.33 | 8.11 | 30 |
| **N** | **71** | **179** | **120** | | **370** |

$\chi^2 = 104.29$, df = 4 $p<0.01$ V=0.38

All fishermen outside Puntland said that they fished on over half the days available per year (Table 10). The average daily catch (in kg) varied widely among the locations, ranging from 65 to 119kg ($p<0.01$), whereas the difference in average income (in US Dollars) was not statistically significant ($p>0.05$). However, average income related to boat ownership, with boat owners reporting average incomes of US$ 56.04 versus US$ 40.54 for non-owners ($t = 2.15$, df = 361, $p<0.05$). Overall, approximately four percent of the catch was used for subsistence (home consumption) but this also varied widely among locations, ranging from 2.1 to 9.8 percent. In the overall sample, 84 percent of respondents reported fish as their major source of protein, and this ranged from 77 to 89 percent across the three locations ($p<0.01$). Cooperative membership varied little ($p>0.05$) across the locations, from a low of 47 percent in Somaliland to a high of 53 percent in Puntland (Table 11).

It is important to note the high level of dependency on fish for protein, even if the percentage of catch used for home consumption is small. Relative to daily catches, it ranges from approximately 2-6 kg per day per fishermen, which is a significant contributor to food protein supply in fisher households of between seven to nine people. This indicates that fishermen are mainly "commercial" in nature, and although many operate from relatively small-scale vessels, they depend on fishing for income generation. They also depend on fish for food (protein) security. In coastal fishing communities, there is high dependence on the fishery for their livelihoods and for food, even though the average per capita fish consumption in Somalia is low. Previous reports have shown that that Somalis, especially pastoralists, show a certain disdain

for fish. But more research may be needed to determine whether this is principally due to the poor quality of supplies moving inland, as fish could help reduce food insecurity if it was more widely accepted as a meat alternative.

It should be noted that Puntland has higher catches and reported income and also sells much of its catch at-sea. This indicates that there is excess supply beyond what local communities and nearby markets can absorb, or there is a price premium for sale at-sea. Sea sales are likely being exported. If Somalis ate fish and a good quality was supplied locally rather than exported at sea or lost to IUU fishing, then there would be greater local food self-sufficiency and perhaps less risk of food shortages.

That almost half of all fishermen belong to a cooperative may also be an opportunity to link the associations' membership with co-management institutions and ultimately, to user rights (either catch quotas in the long term or territorial use rights in the short term as effective management tools). But failed cooperatives have a long history across the world, so any decision on a cooperative-dependent management strategy would require a closer look at their functionality. Cooperatives have proven successful for fish marketing but also for limiting access rights to fishing areas in countries such as Japan, Mexico and Chile.

**Table 10. Days fished, catch, income, subsistence and cooperative membership by location**

| Region | Days fished per year | Avg. catch Kg/day | Avg. Income (US$) per day | % Subsist. | Fish Major Protein % | % Coop. member |
|---|---|---|---|---|---|---|
| Somaliland | 193.79 | 64.82 | 45.32 | 9.79 | 88.6 | 47.2 |
| Puntland | 141.75 | 118.93 | 56.15 | 2.13 | 87.6 | 53.1 |
| Other | 202.64 | 68.78 | 41.63 | 3.58 | 76.7 | 48.1 |
| F-value | 25.76 | 14.00 | 1.87 | 39.90 | 7.72* | 4.20* |
| df | 2 365 | 2 364 | 2 367 | 2 367 | 2 | 2 |
| p | <0.01 | <0.01 | 0.15 | <0.01 | <0.05 | 0.12 |
| $R^{2**}$ | 0.12 | 0.07 | 0.01 | 0.18 | 0.14** | 0.11** |
| N | 368 | 367 | 370 | 370 | 368 | 366 |

**Chi-Sq. and **V for last 2 columns in table.*

When asked about the five main fish they caught over the past year, fishermen reported 124 different types (see Annex 3 for names). Not all fishermen listed five. Focusing on types named by at least 30 fishermen (about 8 percent of the sample), we examined percent distribution of the 16 highest frequency types reported across the three locations (Table 111).

Table 11 clearly indicates that the three locations differ with regard to the main types of fish caught. Differences in locations for all 16 types are statistically significant, with mostly moderate to high effect sizes (Cramer's V). Since some fishermen listed fewer than five main

types of fish, it appears that there is a possibility that the locations might differ with regard to number of important types. The number of fish types mentioned was calculated for each fisherman sampled, and the differences in mean number between locations were examined using analysis of variance. The analysis indicated that fishermen in Puntland mentioned a mean 4.34 types compared to only 2.9 and 3.1 in Somaliland and "other" locations respectively. This difference is statistically significant (F ratio = 80.47, df = 2 369, $p < 0.01$, $R^2 = 0.30$) and indicates a more diversified fishery in Puntland than other regions with mackerel, the most frequently mentioned, followed by high value species such as yellow fin tuna, and demersals (grouper and snapper). Somaliland respondents mentioned Emperor fish and other demersals such as the threadfin and halibut most, followed by the small pelagics; anchovy and mackerel. Fishermen from other states mentioned *Yunbi* (pelagic species) most, followed by the large pelagics skipjack tuna and sharks, then the demersals; emperor, snappers and grouper. In all cases, we found that the fishermen exploited a variety of pelagic and demersal fish species. This is also reflected in the diversity of gear types described previously in Table 5 where bottom gill nets and traps target demersal species, and long lines, surface gill nets and purse seines target the pelagic species.

**Table 11. Percent distribution of high frequency fish types harvested**

| English Name | Somali Name | Somaliland | Puntland | Other | Total | N | χ2 | p | V |
|---|---|---|---|---|---|---|---|---|---|
| Indian threadfin | Leered | 44.44 | 0.00 | 0.83 | 8.87 | 33 | 139.82 | <0.01 | 0.61 |
| Emperor | Gacash | 50.00 | 46.67 | 30.83 | 42.20 | 157 | 9.62 | <0.05 | 0.16 |
| Indian halibut | Shirwa | 44.44 | 3.89 | 2.50 | 11.29 | 42 | 98.12 | <0.01 | 0.51 |
| Yellowfin tuna | Tabadin | 29.17 | 72.78 | 2.50 | 41.67 | 155 | 152.05 | <0.01 | 0.64 |
| Anchovy | Saynug | 40.28 | 25.00 | 0.00 | 19.89 | 74 | 51.52 | <0.01 | 0.37 |
| Shark | Libaax | 8.33 | 10.00 | 34.17 | 17.47 | 65 | 34.33 | <0.01 | 0.30 |
| Grouper | Faras | 23.61 | 40.56 | 0.83 | 24.46 | 91 | 61.52 | <0.01 | 0.41 |
| Mackerel | Taraaqued | 27.78 | 87.78 | 10.00 | 51.08 | 190 | 193.70 | <0.01 | 0.72 |
| | Gaguado | 8.33 | 15.56 | 2.50 | 9.95 | 37 | 13.96 | <0.01 | 0.19 |
| Grouper | Sumaan | 13.89 | 51.67 | 14.17 | 32.26 | 120 | 60.12 | <0.01 | 0.40 |
| | Ascebe | 1.39 | 16.67 | 0.83 | 8.60 | 32 | 28.87 | <0.01 | 0.28 |
| Snapper | Qandabo | 2.78 | 53.33 | 26.67 | 34.9 | 13 | 63.16 | <0.0 | 0.41 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 5 | 0 | | 1 | |
| Red snapper | Silgo | 0.00 | 9.44 | 19.17 | 10.75 | 40 | 17.85 | <0.01 | 0.22 |
| Skipjack tuna | Jeader | 0.00 | 0.56 | 45.00 | 14.78 | 55 | 128.37 | <0.01 | 0.59 |
| | Yunbi | 0.00 | 0.00 | 79.17 | 25.54 | 95 | 267.92 | <0.01 | 0.85 |
| Swordfish | Dambiri | 0.00 | 0.00 | 37.50 | 12.10 | 45 | 107.50 | <0.01 | 0.54 |
| | | **N** | **72** | **180** | **120** | | **372** | | |

Top, Skipjack tuna on display at a landing site. Below, Pelagic and demersal fish at a landing site.

Fishermen sell their catch in various locations (Table 12). Overall, the most frequent sales point is in the local community (46 percent); 35 percent sell to other boats at sea, reportedly operated by Yemeni traders[37]. Only 19 percent sell in other communities. As with other fishing activities, this varies widely among locations, with 65 percent of the fishermen from Puntland selling to boats at sea, over half (56 percent) from Somaliland selling outside their community, and 70 percent from ather areas selling in town. Differences are statistically significant (p<0.01).

**Table 12 Percent distribution of fish buyers/markets**

| Market Location | Somaliland | Puntland | Other | Total | N |
|---|---|---|---|---|---|
| In Community | 41.67 | 31.84 | 70.34 | 46.07 | 170 |
| Outside Community | 55.56 | 2.79 | 21.19 | 18.97 | 70 |
| Boats at Sea | 2.78 | 65.36 | 8.47 | 34.96 | 129 |
| **N** | **72** | **179** | **118** | | **369** |
| $\chi^2 = 191.39$, df = 4 p<0.01 V=0.51 | | | | | |

In terms of fish prices (Table 13), most fishermen (71 percent) said that they have either stayed the same or decreased over the past five years. Only 29 percent reported an increase in prices paid (Table 13). Again, there is much variation between the ports, with fishermen from Somaliland tending to report price increases and those from Puntland and Other reporting stable or decreasing prices. The differences are statistically significant (p<0.01). The large percentage of falling prices or stable prices in Puntland and other states is troubling, and likely an indication that production is outstripping demand. The lack of adequate post-harvest handling and transportation infrastructure in these areas could be stopping fishermen getting higher prices, and improving this should perhaps be a development priority. Further investigation is needed to determine why proceeds are rising in Somaliland and could possibly provide insights for fisheries development projects in Puntland and other states. The overall analysis has so far indicated a fair degree of variation among the surveyed regions.

**Table 13 Percent distribution of change in fish prices**

| Price Change | Somaliland | Puntland | Other | Total | N |
|---|---|---|---|---|---|
| Price Decrease | 2.90 | 47.46 | 32.50 | 34.15 | 125 |
| Price Same | 13.04 | 44.63 | 38.33 | 36.61 | 134 |
| Price Increase | 84.06 | 7.91 | 29.17 | 29.23 | 107 |
| **N** | **69** | **177** | **120** | | **366** |
| $\chi^2 = 141.15$, df = 4 p<0.01 V=0.44 | | | | | |

[37] A rapid analysis of the fisher folk registration data in Puntland State of Somalia. 2014. MINISTRY OF FISHERIES & MARINE RESOURCES OF PUNTLAND STATE OF SOMALIA (MoFMR) & FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

A woman fish buyer in Boosaaso

### *5.5.2 Reporting, Registration and Regulations*

This section of the report provides findings on the extent of IUU fishing and the extent to which local fisheries are regulated, landings reported and how knowledgeable and perceptive local fishermen are about illegal fishing. It includes information on local and foreign fishing. These are only the perceptions of fishermen of IUU fishing, and may or may not be consistent with official regulations or what may be required by law but unacknowledged, unrecognized or unknown among local fishermen. While reliance on the awareness and perceptions of local fishermen may be this methodology's weakness, where there are differences in knowledge and perceptions of fishermen with what is actual law or a regulation indicates a problem for fisheries regulators and authorities. Whether fishermen are aware of or can perceive certain conditions or not raises questions of legitimacy that will affect local compliance to rules. In addition, since we were unable to interview illegal foreign fishermen for this survey, we had to rely on local knowledge and perceptions to gauge the extent and perpetrators of foreign IUU fishing.

The reports of landings, registration and licensing of fishing vessels and fishermen and establishment of fisheries regulations to prevent overfishing is generally the responsibility of government fisheries agencies at federal and state levels. A brief overview of existing laws and regulations is provided below. In this survey, local fishermen were asked about the extent to which laws were implemented by Somali authorities and the degree to which fishermen complied. While most people equated IUU fishing with foreign vessels fishing illegally in the EEZs of nation states or on the high seas, in the developing country context, domestic IUU can be an equally daunting problem. The survey design and results below attempt to provide insights into both domestic and foreign IUU fishing issues.

*a. Landings Data Reporting*

The responses to the question about whether fishermen were required to report landings are shown in Table 14. While 87 percent of the fishermen said there was no requirement, 13 percent said there was. The largest number reporting requirements were from Boosaaso and

Mogadishu. These findings indicate a great deal of confusion regarding reporting. Among location, differences were not statistically significant (p>0.05).

| Table 14. Percent distribution of reporting requirements by location | | | | | |
|---|---|---|---|---|---|
| **Reporting Requirement** | **Somaliland** | **Puntland** | **Other** | **Total** | **N** |
| No | 88.24 | 88.89 | 84.03 | 87.19 | 320 |
| Yes | 11.76 | 11.11 | 15.97 | 12.81 | 47 |
| **N** | **68** | **180** | **119** | | **367** |
| $\chi 2 = 1.59$, df = 2 p=0.45 V=0.07 | | | | | |

In response to a question about who fisherman must report to (Table 15), most (88 percent) said "officials", while 12 percent reported other, indicating more confusion.

| Table 15. To whom the fishermen report | | | | | |
|---|---|---|---|---|---|
| **Person Reporting Landings** | **Somaliland** | **Puntland** | **Other** | **Total** | **N** |
| Official | 100.00 | 90.48 | 80.00 | 88.00 | 44 |
| Other | 0.00 | 9.52 | 20.00 | 12.00 | 6 |
| **N** | **9** | **21** | **20** | | **50** |
| Chi-Sq. not calculated due to high number of very low frequency cells. Probabilities would be unreliable. | | | | | |

Fishermen were also asked if there were requirements for reporting in the past. Approximately 94 percent said no, six percent said yes and 0.3 percent (one person) said "don't know" (Table 16) – once again indicating a lack of information or confusion. Most indicating past reporting requirements were from "other", where 16.5 percent of the fishermen said that past reporting was required.

| Table 16. Percent distribution for requirement for reporting in the past | | | | | |
|---|---|---|---|---|---|
| **Reporting Requirement** | **Somaliland** | **Puntland** | **Other** | **Total** | **N** |
| No | 98.31 | 99.38 | 82.57 | 93.60 | 307 |
| Yes | 1.69 | 0.63 | 16.51 | 6.10 | 20 |
| Don't Know | 0.00 | 0.00 | 0.92 | 0.30 | 1 |
| **N** | **59** | **160** | **109** | | **328** |
| $\chi^2 = 31.35$, df = 2, p<0.01 V=0.31 (***for shaded variables only***.) Since more than one-fifth of the fitted cells have frequency < 5, significance test on entire table would be unreliable. | | | | | |

Regarding the question on whether or not someone recorded landings and fish types at their port, 88 percent replied “no” and 12 percent said “yes” (Table 17). Once again, there were variations between locations. The largest percent saying “yes” were from Puntland. The differences are statistically significant ($p<0.01$).

**Table 17. Percent distribution of recording landings data**

| | Somaliland | Puntland | Other | Total | N |
|---|---|---|---|---|---|
| No | 88.41 | 84.92 | 91.45 | 87.67 | 320 |
| Yes | 11.59 | 15.08 | 8.55 | 12.33 | 45 |
| **N** | **69** | **179** | **117** | | **365** |
| $\chi^2 = 2.84$, df = 2 p=0.24 V=0.09 | | | | | |

In response to a question concerning who recorded landings data, about 1/3 (34 percent) of fishermen said a fisheries officer (Table 18). Once again, there was a great deal of variation.

**Table 18. Percent distribution of identity of person responsible for recording landings**

| Person Responsible | Somaliland | Puntland | Other | Total | N |
|---|---|---|---|---|---|
| Fisheries Officer | 62.50 | 25.93 | 33.33 | 34.21 | 13 |
| Local Official | 12.50 | 0.00 | 0.00 | 2.63 | 1 |
| Other | 25.00 | 74.07 | 66.67 | 63.16 | 24 |
| **N** | **8** | **27** | **3** | | **38** |
| Chi-Sq. not calculated due to high number of very low frequency cells. Probabilities would be unreliable. | | | | | |

In response to a question concerning whether or not landings were recorded in the past, 55 percent said no and 39 percent reported that they didn’t know (table 19). Once again, there is a great deal of statistically significant ($p<0.01$) variability in responses between ports .

**Table 19. Percent distribution of responses reflecting a belief that landings were recorded in the past**

| Landings Recorded in Past | Somaliland | Puntland | Other | Total | N |
|---|---|---|---|---|---|
| No | 43.28 | 56.89 | 60.34 | 55.43 | 194 |
| Yes | 11.94 | 0.60 | 8.62 | 5.43 | 19 |
| Don't Know | 44.78 | 42.51 | 31.03 | 39.14 | 137 |
| **N** | **67** | **167** | **116** | | **350** |
| $\chi^2 = 19.92$, df = 4 p<0.01 V=0.17 | | | | | |

The findings in Tables 18 and 19 suggest that most fishermen expect fisheries officers or local officials to collect fisheries data, even if they do not know whether this is currently underway or this happened in the past.

The above findings on landings reporting can be interpreted in several ways. If there are fisheries staff collecting landings data, most fishermen are not aware of it and likely do not understand why landings data should be collected. Another explanation could be that data is not collected at most landing sites. Regardless of the potential explanation, this indicates that there are likely significant weaknesses in the collection of landings data in Somalia. This means that there is a weak information base from which to assess stock status and ultimately make decisions on management measures needed to ensure fishing does not exceed sustainable limits. This points to capacity development needs within Somali fisheries agencies.

*b. Vessel Registration*

Turning to requirements for fishing boat registration, 54 percent of fishermen reported no requirement, 35 percent reported a requirement and 12 percent said that they didn't know (Table 20). Once again, there is a great deal of inter-port variation with a relatively high percent of Somaliland fishermen reporting "yes" in contrast to the other ports. The differences are statistically significant (p<0.01

**Table 20. Percent distribution of knowledge of a requirement for fishing boat registration**

| Requirement for Boat Registration | Somaliland | Puntland | Other | Total | N |
|---|---|---|---|---|---|
| No | 18.57 | 57.78 | 68.10 | 53.55 | 196 |
| Yes | 77.14 | 27.78 | 20.69 | 34.97 | 128 |
| Don't Know | 4.29 | 14.44 | 11.21 | 11.48 | 42 |
| **N** | **70** | **180** | **116** | | **366** |
| $\chi^2 = 70.75$, df = 4 p<0.01 V=0.31 | | | | | |

With regard to knowing about requirements for a registration number painted on fishing vessels, 48 percent of the total sample said "no," 36 percent said "yes" and 16 percent said they didn't know. Once again, among the sampled locations, variation is very high with 57 percent of the fishermen from Puntland and Other saying "no" and 77 percent of the fishermen from Somaliland saying "yes" (table 21). The differences are statistically significant (p<0.01).

| Table 21. Percent distribution of requirement for a registration number painted on fishing boat | | | | | |
|---|---|---|---|---|---|
| **Number Required to be Painted on Vessel** | **Somaliland** | **Puntland** | **Other** | **Total** | **N** |
| No | 18.57 | 56.88 | 56.82 | 48.43 | 154 |
| Yes | 77.14 | 21.25 | 28.41 | 35.53 | 113 |
| Don't Know | 4.29 | 21.88 | 14.77 | 16.04 | 51 |
| **N** | **70** | **160** | **88** | | **318** |
| $\chi^2 = 70.59$, df = 4 $p<0.01$ V=0.44 | | | | | |

Fishermen were asked to report the approximate number of fishing boats in their community that are registered with painted numbers on their boats. Responses ranged from “none” (35 percent) to “all,”(16 percent) with a great deal of statistically significant (p<0.01) inter-location variation (Table 22).

**Table 22. Percent distribution of perception of boat registration compliance**

| Registration Compliance | Somaliland | Puntland | Other | Total | N |
|---|---|---|---|---|---|
| None | 0.00 | 57.33 | 43.94 | 34.78 | 72 |
| Few | 9.09 | 16.00 | 12.12 | 12.56 | 26 |
| Half | 7.58 | 14.67 | 10.61 | 11.11 | 23 |
| Most | 37.88 | 6.67 | 33.33 | 25.12 | 52 |
| All | 45.45 | 5.33 | 0.00 | 16.43 | 34 |
| **N** | **66** | **75** | **66** | | **207** |
| $\chi^2 = 105.01$, df = 8 p<0.01 V=0.50 | | | | | |

Concerning the entity responsible for fishing boat registration, 41 percent of the sample identified the fisheries officer, 47 percent pointed out the maritime or port authority, nine percent indicated another category and three percent did not know (Table 23). Once again, inter-location variability is quite high and the differences are statistically significant (p<0.01). Regional differences suggest differences in who is responsible for vessel registration, with people in Somaliland and Puntland believing that port authorities play that role, and in other states, that this is the fisheries authorities' role.

**Table 23. Percent distribution of entity responsible for fishing boat registration**

| Responsible Entity | Somaliland | Puntland | Other | Total | N |
|---|---|---|---|---|---|
| Fisheries | 20.63 | 19.57 | 79.66 | 41.07 | 69 |
| Port Authority | 74.60 | 65.22 | 3.39 | 47.02 | 79 |
| Other | 4.76 | 13.04 | 10.17 | 8.93 | 15 |
| Don’t Know | 0.00 | 2.17 | 6.78 | 2.98 | 5 |
| **N** | **63** | **46** | **59** | | **168** |
| $\chi^2 = 71.55$, df = 2, p<0.01 V=0.70 (***for shaded variables only*** since more than one-fifth of the fitted cells have frequency < 5, .significance test on entire table would be unreliable.) | | | | | |

When asked whether registration fees existed, about half of the fishermen in the sample said no, 32 percent knew there was a fee, and 18 percent didn't know (Table 24) Variation by state is, once again, quite significant, also statistically ($p<0.01$) and may reflect differences in who is actually authorized to register vessels. In some cases, vessels may be registered with a port authority and then need a fishing license from the fishing agency. In some cases, the same fisheries authority can do registration and/or licensing for vessel and fishing. What is important here is that fishing vessels, even small scale, and particularly if motorized, should be registered and obtain fishing licenses. As with landings, data on the number of vessels, size, horsepower, types and size of fishing gear used – all part of a registration and licensing database – helps managers assess fishing catch-effort relationships and derive the status of the various fish stocks. The absence of such information makes management decisions on how to maintain optimum sustainable yields more difficult, if not impossible, to assess.

**Table 24. Percent distribution of knowledge of registration fee**

| Registration Fee | Somaliland | Puntland | Other | Total | N |
|---|---|---|---|---|---|
| No | 37.29 | 40.20 | 74.32 | 50.21 | 118 |
| Yes | 47.46 | 31.37 | 20.27 | 31.91 | 75 |
| Don't Know | 15.25 | 28.43 | 5.41 | 17.87 | 42 |
| **N** | **59** | **102** | **74** | | **235** |
| $\chi^2 = 33.21$, df = 4 $p<0.01$ V=0.27 | | | | | |

Reported registration fee amounts are shown below in Table 25. Location variation of fees is not statistically significant.

***Table 25. Reported boat registration fee (US$)***

| Registration Fee | *Somaliland* | *Puntland* | *Other* | *F-ratio* | *p* |
|---|---|---|---|---|---|
| Mean | *19.43* | *17.55* | *24.12* | *0.17* | *>0.05* |
| Std. Error | 6.20 | 5.34 | 9.91 | | |
| **N** | **23** | **31** | **9** | | |

Knowledge of the existence of registration fees is relatively important here. Many developing countries that require fishing vessel registration do not always require fees. Fees provide revenues to fisheries authorities that help recoup at least some of the cost of registration and licensing – important information when combined with landings – that can help managers assess the status of fish stocks and whether there is overfishing or not. Acceptance of fees by fishermen also sets a future precedent and the possible acceptance of limited access, transferable and salable licenses and access fees.

The above findings on vessel registration are slightly more encouraging than the findings on landings data. Over half of fishermen said that vessels had to be registered, over one third said they should have numbers displayed on their hulls, and that over half of vessels had registration numbers on their hulls. The percentage in Somaliland is quite high, suggesting a more competent state fisheries authority with a robust registration program. Vessel registration is important, as vessels painted with a registration number are less likely to be used in acts of piracy, as they are easily traced back to the vessel's registrant. Note that Puntland, known as the capital of piracy, had the fewest fishermen reporting registration numbers painted on the vessel hulls.

*c. Vessel Licensing and Managed Access*

Some fishermen in the sample spoke about their beliefs surrounding limitations on the number of fishing boat licenses (Table 26). Most (60 percent) reported no limit, 11 percent reported a limit and 29 percent said that they did not know. Inter-location differences are statistically significant ($p<0.01$). Many more Somaliland fishermen reported license limits compared to other areas. Considering that the belief that registrations fees are also necessary is also higher in Somaliland, it would seem the best place to consider instituting a managed access licensing program.

**Table 26. Beliefs concerning limits on number of boat licenses.**

| Boat Limits | Somaliland | Puntland | Other | Total | N |
|---|---|---|---|---|---|
| No | 48.57 | 49.61 | 78.45 | 60.00 | 189 |
| Yes | 30.00 | 5.43 | 6.90 | 11.43 | 36 |
| Don't Know | 21.43 | 44.96 | 14.66 | 28.57 | 90 |
| **N** | **70** | **129** | **116** | | **315** |
| $\chi^2 = 58.94$, df = 4 $p<0.01$ V=0.31 | | | | | |

When asked about restrictions on who could fish, about three-quarters of the fishermen surveyed said there were no restrictions, eight percent said they existed and 18 percent did not know (Table 27). Somaliland's fishermen reported the most restrictions. The differences are statistically significant ($p<0.01$). Again, these findings suggest that Somaliland may be a more suitable place to consider implementing managed access regimes.

**Table 27. Perceptions on existence of restrictions on who is allowed to fish**

| Fishing Access Restrictions | Somaliland | Puntland | Other | Total | N |
|---|---|---|---|---|---|
| No | 61.11 | 69.33 | 88.89 | 74.15 | 261 |
| Yes | 19.44 | 5.52 | 3.42 | 7.67 | 27 |
| Don't Know | 19.44 | 25.15 | 7.69 | 18.18 | 64 |
| **N** | **72** | **163** | **117** | | **352** |
| $\chi^2 = 33.84$, df = 4 $p<0.01$ V=0.22 | | | | | |

Among the few fishermen reporting restrictions, most said that only local villagers or Somalis were permitted to fish (Table 28). Since many people in all locations perceived locals as having preferred access, Territorial Use Rights in Fisheries (TURFs) are likely to be an acceptable management measure to help reduce or prevent overfishing and manage access to various fishing grounds. The overwhelming majority of fishermen said only Somalis or locals should fish. This shows that fishermen think that access to fishing rights should be the preserve of Somalis, and not for rent to foreign fishing fleets. Foreign access agreements may be useful in the short term until the Somali private sector shows that it is interested in, and capable of exploiting offshore resources, assuming resources are not overexploited. However, fishermen would prefer a national policy granting access rights to Somali fishermen only. While there may be the need for more Somali investment in the local fishing sector, this may be constrained until better post-harvest handling and transportation infrastructure is in place. Even if local demand is not yet high, there is no reason why Somali entrepreneurs and companies could not catch, process and export fish products, retaining more added values in the country and increasing export value.

**Table 28. Perceptions concerning who is allowed to fish**

| Fishing Access | Somaliland | Puntland | Other | Total | N |
|---|---|---|---|---|---|
| Local Villagers | 83.33 | 66.67 | 50.00 | 72.00 | 18 |
| Somalis | 16.67 | 22.22 | 25.00 | 20.00 | 5 |
| Other | 0.00 | 11.11 | 25.00 | 8.00 | 2 |
| **N** | **12** | **9** | **4** | | **25** |

Chi-Sq. not calculated due to high number of very low frequency cells.
Probabilities would be unreliable.

*d. Fishermen Registration*

When fishermen were asked if they needed to register, 65 percent said no, 26 percent said yes, and nine percent did not know (Table 29). Average fees are shown in Table 30. Inter-location variation is not statistically significant in either table (29 and 30). Fishermen registration is key to understanding the level of fishing effort and degree of stock exploitation. It is also a necessary precursor to limiting access regimes (access can be limited in terms of the number of boats and/or the number of fishermen). Beliefs on fishermen registration are similar to those on vessel registration in Puntland and other states, but lower in Somaliland.

| Table 29. Percent distribution of perception that one must register to be a fisherman | | | | | |
|---|---|---|---|---|---|
| **Fisher Registration Requirement** | **Somaliland** | **Puntland** | **Other** | **Total** | **N** |
| No | 61.11 | 62.36 | 70.59 | 64.77 | 239.00 |
| Yes | 31.94 | 24.16 | 24.37 | 25.75 | 95.00 |
| Don't Know | 6.94 | 13.48 | 5.04 | 9.49 | 35.00 |
| **N** | **72** | **178** | **119** | | **369** |
| $\chi^2 = 8.23$, df = 4 p>0.05 V=0.11 | | | | | |

| Table 30. Mean reported fee (US$) to register as a fisherman | | | |
|---|---|---|---|
| **Location** | **Mean** | **Standard Error** | **N** |
| Somaliland | 22.78 | 11.09 | 9 |
| Puntland | 9.59 | 10.03 | 11 |
| Other | 24.56 | 11.09 | 9 |
| F=0.62 df = 2 26 p>0.05 | | | |

Most fishermen surveyed said that there were no landing fees in their ports and that they did need to share their catches with local leaders (Tables 31 and 32). Differences are not statistically significant. Local landing fees are one way to generate local revenue to support fisheries management efforts. This is especially relevant to decentralized fisheries management systems, and particularly community-based management. Again, Somaliland seems to be ahead of other states in the collection of landing fees and could be a good place to pilot community-based management initiatives such as TURFs. Local leaders in countries such as Ghana may expect a share of the catch in return for services provided in managing the fishing community, but this does not seem to be the case in Somalia.

| Table 31. Percent distribution of reported existence of landing fees | | | | | |
|---|---|---|---|---|---|
| **Landing Fee** | **Somaliland** | **Puntland** | **Other** | **Total** | **N** |
| No | 80.56 | 98.89 | 95.80 | 94.34 | 350 |
| Yes | 19.44 | 1.11 | 3.36 | 5.39 | 20 |
| Don't Know | 0.00 | 0.00 | 0.84 | 0.27 | 1 |
| **N** | **72** | **180** | **119** | | **371** |
| Chi-Sq. not calculated due to high number of very low frequency cells.<br>Probabilities would be unreliable. | | | | | |

| Table 32. Percent distribution of reported requirement to share landings with local leader | | | | | |
|---|---|---|---|---|---|
| **Share of Landings for Local Leader** | **Somaliland** | **Puntland** | **Other** | **Total** | **N** |
| No | 96.88 | 99.44 | 94.83 | 97.50 | 351 |
| Yes | 3.13 | 0.56 | 5.17 | 2.50 | 9 |
| **N** | **64** | **180** | **116** | | **360** |
| Chi-Sq. not calculated due to high number of very low frequency cells. Probabilities would be unreliable. | | | | | |

*e. Fishing Regulations*

Almost all fisheries resources nowadays require a regulatory regime to manage them sustainably and to avoid overfishing and stocks collapsing, which in turn reduce the profitability of the fish harvest and the social benefits accrued from a healthy fisheries sector. Fisheries authorities are generally responsible for establishing regulations that meet the nation's fisheries objectives, such as maintaining food security, high employment or profitability. These regulations can be promulgated from the top down and to fishermen, or drafted with co-management institutions and varying levels of input from fishermen. In some cases, decision-making can be left completely to fishermen that get exclusive rights to the harvest. Most fishermen asked whether there were any restrictions on fishing in their area said no (47 percent), almost as many said yes (43 percent) and ten percent said that they did not know (Table 33). Inter-location variation is quite high and statistically significant ($p<0.01$), indicating a great deal of variability regarding knowledge of fishing regulations. About two-thirds of the fishermen in Puntland knew about regulations, compared to very few (less than 30 percent) in other locations. It is worthwhile noting that they knew the least about fisheries regulations, even though they had greater perceptions of vessel registration and landings fees than those in other states. Either there aren't any regulations, or most fishermen are unaware of them. Either scenario is not good. Somaliland should consider enacting regulations to prevent overfishing and ensure fishermen are aware of regulations. On the other hand, Puntland seems to have much higher awareness of regulations.

| Table 33. Percent distribution of fishermen's beliefs concerning existence of fishing regulations | | | | | |
|---|---|---|---|---|---|
| **Existence of Regulations** | **Somaliland** | **Puntland** | **Other** | **Total** | **N** |
| No | 76.39 | 31.67 | 53.78 | 47.44 | 176 |
| Yes | 6.94 | 66.11 | 28.57 | 42.59 | 158 |
| Don't Know | 16.67 | 2.22 | 17.65 | 9.97 | 37 |
| **N** | **72** | **180** | **119** | | **371** |
| $\chi^2 = 94.63$, df = 4 $p<0.01$ V=0.36 | | | | | |

Fishermen were asked about types of regulations and their percent distribution (Table 34). Once again, there was significant inter-location variability, with Puntland fishermen knowing the most about regulation types. The most common regulations concerned fish types (e.g. prohibited species or size limit), gear limits (e.g. mesh size net length limit or number of traps) and seasonal closures. Area closures and gear type restrictions were also mentioned but less frequently. Restrictions on fish species caught, fish length and types of gear used can be enforced by shoreline patrolling and surveillance as well as by sea patrols, which can be more costly and difficult to operate. Seasonal closures of a given fishery can also be enforced by landing sites, as those fish species cannot be landed during seasonal closures, and possession of banned fish during a closed season can be easy to enforce at landing sites. Area closures, such as a fishery reserve or marine protected area, are popular tools used worldwide, =more for demersal species than pelagic species. However, these require more costly at-sea patrols to ensure fishermen do not enter and fish in the restricted areas.

**Table 34. Percent distribution of reported fishing regulation types**

| Regulation Type | Somaliland | Puntland | Other | Total | N | $\chi$ 2 | p | V |
|---|---|---|---|---|---|---|---|---|
| Fish Type | 4.17 | 41.67 | 2.50 | 21.77 | 81 | 81.09 | <0.01 | 0.47 |
| Gear Type | 2.78 | 5.56 | 1.67 | 3.76 | 14 | 3.25 | * | 0.09 |
| Gear Limits | 0.00 | 46.67 | 4.17 | 23.92 | 89 | 99.53 | <0.01 | 0.52 |
| Season Closure | 0.00 | 42.22 | 15.00 | 25.27 | 94 | 58.44 | <0.01 | 0.40 |
| Area Closure | 0.00 | 1.11 | 6.67 | 2.69 | 10 | 10.96 | * | 0.17 |
| Seasonal Closed Area | 0.00 | 4.44 | 8.33 | 4.84 | 18 | 6.90 | <0.05 | 0.14 |
| Daily Quota | 0.00 | 0.56 | 2.50 | 1.08 | 4 | 3.53 | * | 0.10 |
| Rights Limits | 0.00 | 0.00 | 1.67 | 0.54 | 2 | 4.22 | * | 0.11 |
| Other | 0.00 | 0.56 | 0.00 | 0.27 | 1 | 1.07 | * | 0.05 |
| **N** | **72** | **180** | **120** | | **372** | | | **372** |

*N too small to calculate reliable probability

Overall, the responses indicate a tendency to rely mainly on input controls such as gear limits, seasonal closures and restrictions on certain fish species and no reliance at this time on output controls. While output controls are often seen a better approach to controlling fishing effort, they require greater capacity to collect landings data and get vessels and fishermen registered and licensed. From the findings above, Somalia seems to have long way to go to put these preconditions in place.

### *5.5.3 Illegal Fishing*

Asked whether they observed foreign fishing vessels near their villages in the past year, most fishermen reported sightings (86 percent, Table 35). Fishermen from Puntland reported the most sightings and Somaliland the least. Differences are statistically significant ($p<0.01$) but high in all locations.

**Table 35. Percent distribution of fishermen observing foreign fishing near village in the past year**

| Observations of Foreign Fishing in past Year | Somaliland | Puntland | Other | Total | N |
|---|---|---|---|---|---|
| No | 32.86 | 5.06 | 15.97 | 13.90 | 51 |
| Yes | 67.14 | 94.94 | 84.03 | 86.10 | 316 |
| **N** | **70** | **178** | **119** | | **367** |
| $\chi^2 = 33.08$, df = 2 $p<0.01$ V=0.30 | | | | | |

Relative frequency of sightings varies across locations ($p<0.01$), but overall, half the fishermen in the sample reported currently seeing foreign vessels fishing off their coastline all the time (Table 36). Puntland had a much higher percentage of respondents stating “all the time”, indicating a more severe foreign fishing problem in this area.

| Table 36. Percent distribution of frequency of foreign vessel sightings at the current time | | | | | |
|---|---|---|---|---|---|
| **Frequency** | **Somaliland** | **Puntland** | **Other** | **Total** | **N** |
| Never | 16.07 | 1.14 | 1.89 | 3.86 | 13 |
| Rarely | 10.71 | 5.14 | 12.26 | 8.31 | 28 |
| Some of the Time | 10.71 | 6.86 | 30.19 | 14.84 | 50 |
| Frequently | 23.21 | 20.00 | 27.36 | 22.85 | 77 |
| All the Time | 39.29 | 66.86 | 28.30 | 50.15 | 169 |
| **N** | **56** | **175** | **106** | | **337** |
| Kruskal-Wallis Test Statistic: 46.80, p<0.01 | | | | | |

Sightings have reportedly increased since five years ago (Table 37) when only 23 percent of the surveyed fishermen reported seeing foreign vessels off their shoreline all the time. Inter-port variation in sightings can be seen in Tables 35 and 36. Inter-port variation was not statistically significant ($p>0.05$) five years ago. It would seem the problem is more severe now, as more than twice as many people stated "all the time" for the current period (Table 36) compared to five years ago (Table 37). Increased foreign fishing may be due to a recent weakening of deterrence factors that include patrolling shores and apprehending or sanctioning violators. While it is difficult to show actual cause, in some of the following sections, anti-piracy patrols are blamed for making illegal fishing easier (there is less likelihood of pirate attacks to deter foreign fishing vessels), so recent success in anti-piracy campaigns may be unintentionally making illegal fishing by foreign vessels easier.

| Table 37. Percent distribution of frequency of foreign vessel sightings 5 years ago | | | | | |
|---|---|---|---|---|---|
| **Frequency** | **Somaliland** | **Puntland** | **Other** | **Total** | **N** |
| Never | 11.43 | 8.94 | 5.50 | 8.38 | 30 |
| Rarely | 5.71 | 18.99 | 11.93 | 14.25 | 51 |
| Some of the Time | 31.43 | 25.14 | 35.78 | 29.61 | 106 |
| Frequently | 21.43 | 24.58 | 25.69 | 24.30 | 87 |
| All the Time | 30.00 | 22.35 | 21.10 | 23.46 | 84 |
| **N** | **70** | **179** | **109** | | **358** |
| Kruskal-Wallis Test Statistic: 1.76, p>0.05 | | | | | |

Most fishermen in the sample (54 percent) believe that these foreign boats do not possess permits to fish off their shoreline (Table 38). There is statistically significant ($p<0.05$) inter-port variation in these beliefs, but most say that they either don't have permits or that they do not know.

If foreign fishing is permitted, the presence of foreign fishing vessels offshore is not an indication of illegal fishing. However, very few have stated (yes) that they believe these boats have permits. If foreign fishing is allowed, it needs to be explained in detail to fishermen, as most believe foreign vessels are the main source of illegal fishing. Making ownership records of permits publicly available could help local authorities and fishermen to determine which vessels are fishing illegally. If information on sightings was provided to enforcement officers, it could help with more targeted enforcement efforts (also see the policy paper, Hagos and Crawford, 2014, with recommendations on establishing community-based surveillance groups).

| Table 38. Percent distribution of beliefs concerning foreign boats' possession of permits | | | | | |
|---|---|---|---|---|---|
| **Possession of Permit** | **Somaliland** | **Puntland** | **Other** | **Total** | **N** |
| No | 51.39 | 49.71 | 63.25 | 54.42 | 197 |
| Yes | 12.50 | 5.78 | 5.13 | 6.91 | 25 |
| Don't Know | 36.11 | 44.51 | 31.62 | 38.67 | 140 |
| **N** | **72** | **173** | **117** | | **362** |
| $\chi^2 = 9.77$, df = 4 $p<0.05$ V=0.12 | | | | | |

While most fishermen in the sample believed that foreign fishermen commit most of the illegal fishing (66 percent), about a third of the fishermen identified both Somalis and foreigners as fishing illegally (Table 39), and mostly in Somaliland. These differences are statistically significant ($p<0.01$).

| Table 39. Percent distribution of beliefs concerning nationality of illegal fishermen | | | | | |
|---|---|---|---|---|---|
| **Nationality** | **Somaliland** | **Puntland** | **Other** | **Total** | **N** |
| Somalis | 2.78 | 0.56 | 0.00 | 0.81 | 3 |
| Foreign Vessels | 47.22 | 70.56 | 70.09 | 65.85 | 243 |
| Both | 50.00 | 28.89 | 29.91 | 33.33 | 123 |
| **N** | **72** | **180** | **117** | | **369** |
| $\chi^2 = 12.34$, df = 2, p<0.01 V=0.18 (***for shaded variables only***. Since more than one-fifth of the fitted cells have frequency < 5, significance test on entire table would be unreliable.) | | | | | |

When asked to identify the nationality of foreign boats fishing illegally, fishermen mentioned more than eight countries (Table 40). We did not ask how fishermen knew the identity of illegal foreign fishing vessels. However, if they are engaged in transshipment of fish at sea to foreign vessels, or observe vessels at sea, and those vessels may have registration makings on hulls, or the types of vessels are distinct among countries, they likely judge the nationality of foreign vessels offshore. What is harder for local fishermen to tell is whether any are officially licensed. They may presume all foreign vessels are fishing illegally, especially given the responses to survey questions that strongly opposed giving foreign vessels Somali fishing licenses.

| Table 40. Percent distribution of countries reported fishing illegally in Somali waters | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Country** | **Somaliland** | **Puntland** | **Other** | **Total** | **N** | **χ2** | **p** | **V** |
| Yemen | 80.00 | 24.02 | 46.15 | 41.80 | 153 | 66.15 | <0.01 | 0.43 |
| Iran | 47.14 | 67.04 | 30.77 | 51.64 | 189 | 37.97 | <0.01 | 0.32 |
| Spain | 4.29 | 0.00 | 25.64 | 9.02 | 33 | 59.07 | <0.01 | 0.40 |
| China/Taiwan | 38.57 | 7.26 | 29.06 | 20.22 | 74 | 38.91 | <0.01 | 0.33 |
| Oman | 12.86 | 1.68 | 8.55 | 6.01 | 22 | 13.09 | <0.01 | 0.19 |
| India | 14.29 | 3.35 | 11.11 | 7.92 | 29 | 10.64 | <0.01 | 0.17 |
| Kenya | 1.43 | 0.00 | 7.69 | 2.73 | 10 | 16.31 | * | 0.21 |
| Russia | 0.00 | 0.56 | 10.26 | 3.55 | 13 | 22.61 | * | 0.25 |
| Other | 1.43 | 1.68 | 14.53 | 5.74 | 21 | 24.59 | <0.01 | 0.26 |
| Don't know | 8.57 | 10.61 | 2.56 | 7.65 | 28 | 6.59 | <0.05 | 0.13 |
| **N** | **70** | **179** | **117** | | **366** | | | |
| *N too small to calculate reliable probability<br>Percent sum to more than 100 as many respondents had more than one response | | | | | | | | |

Yemen, Iran and China/Taiwan were most frequently identified. An analysis of variance examining the number of countries identified across the three regions indicated that Somaliland fishermen mentioned the most (mean = 2.04), "Other" next most (mean 1.79) and Puntland the least (mean = 1.06). These differences are statistically significant ($F= 30.80$, $df = 2\ 369$, $p<0.01$). Yemen is mentioned overwhelmingly in Somaliland and in second rank to Iran overall. This is not surprising given the close proximity of Yemen to Somalia. It is interesting to note the regional nature of the problem with neighbors Yemen, Iran, Oman, India and Kenya mentioned in the majority of responses. This is followed by the more distant water fleets of China/Taiwan, Russia and Spain.

This data indicates that a Somalia strategy to combat illegal fishing may need a multifaceted approach. Clearly the IUU fishing problem should be raised at regional forums, as Somalia's neighbors seem to be behaving badly in their own back yard. While this was beyond the scope of this study, obtaining additional information on the destination of products caught would help determine whether port state measures could also be effective. If IUU-caught fish in Somali waters are destined for export markets in the EU, then Somalia could work with the EU to prohibit imports. Regardless of where the IUU-caught product is offloaded, EU and other nations such as the United States could consider sanctions against these nations for condoning pirate fishing, and ban all fish imports from these nations regardless of where it is caught. The EU and US have imposed such sanctions on other nations seen as not taking strong enough measures to prevent pirate fishing by vessels flying their flag (flag state measures[38] in addition to port state measures[39]).

Respondents were given four multiple choice responses to questions about how close to shore foreign vessels were fishing, as shown in table 40. Most respondents reported foreign vessels fishing within five km (Table 41) of the shore. Thirty-nine percent reported foreign fishing between five and 50km from the shore. Location variation of perceptions is statistically significant ($p<0.01$). Puntland fishermen perceived more foreign fishermen within five km of the shore than those in the two other locations. This indicates that community-based surveillance initiatives involving fishermen and local leaders could play a significant role in improving enforcement, as it would be easy to do shore-based surveillance and reporting of violations. Linking reporting of IUU fishing via community radio broadcasts should also be considered.

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[38] See Voluntary Guidelines for Flag State Performance: ftp://ftp.fao.org/FI/DOCUMENT/tc-fsp/2013/VolGuidelines_adopted.pdf

[39] See http://www.fao.org/fishery/topic/166283/en for more information on the benefits of port state measures and full text of FAO Agreement on port state measures at: http://www.fao.org/fileadmin/user_upload/legal/docs/1_037t-e.pdf. Somalia is not yet a signatory to this agreement: http://www.fao.org/fileadmin/user_upload/legal/docs/6_037s-e.pdf as of Aug, 2014.

| Table 41. Percent distribution of perceptions of how close to shore foreign vessels are fishing | | | | | |
|---|---|---|---|---|---|
| **Location** | **Somaliland** | **Puntland** | **Other** | **Total** | **N** |
| Within 5km | 11.11 | 68.72 | 31.03 | 45.50 | 167 |
| 5 to 50km | 47.22 | 20.67 | 62.07 | 38.96 | 143 |
| Very far | 25.00 | 1.68 | 3.45 | 6.81 | 25 |
| Everywhere | 16.67 | 8.94 | 3.45 | 8.72 | 32 |
| **N** | **72** | **179** | **116** | | **367** |
| $\chi^2 = 130.52$, df = 6 p<0.01 V=0.42 | | | | | |

### *5.5.4 Enforcement*

The following tables provide fishermen's views on various aspects of enforcement, including who they perceive to be undertaking enforcement, and whether fishermen themselves or traditional leaders play de-facto roles compared to conventional authorities such as the fisheries authorities, navy or police. In many countries, informal actions by fishermen themselves or traditional authorities can deter illegal fishing through peer pressure or by imposing informal sanctions and penalties. Some countries have capitalized on informal roles and have moved to legally formalize them. In the Philippines, fishermen are used as an auxiliary force that complements conventional and formal law enforcement agencies. Survey questions in this section included whether foreign navies (anti-piracy patrols) are perceived as playing a role in fisheries enforcement. Fishermen were also asked about the frequency of patrols-an indicator of how likely illegal activity is detected that influences the degree of deterrence.

Table 42 identifies the regulations' enforcers that fishermen mentioned. Again, locations vary greatly, with many (41 percent) fishermen saying that they do not know. This variation is again, statistically significant (p<0.01).

It's important to note that many local fishermen and clans were identified as enforcers. It is doubtful that these groups currently have the legal authority to undertake such enforcement. However, the fact that fishermen identify these groups suggests again that community-based surveillance and assistance in enforcement actions would appeal to fishing communities. Community-based enforcement approaches are gaining support in countries like Senegal, the Philippines and Indonesia. These should not be considered a replacement for conventional enforcement authorities, but as extensions of the enforcement system that provides many more eyes along the very extensive Somali coastline that local navy, coast guard and police cannot fully patrol.

| Table 42. Percent distribution of those identified as fishery regulation enforcers | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Enforcement Agency** | **Somaliland** | **Puntland** | **Other** | **Total** | **N** | **$\chi 2$** | **p** | **V** |
| Don't Know | 27.78 | 50.00 | 33.33 | 40.32 | 150 | 14.15 | <0.01 | 0.20 |
| Federal Fisheries | 27.78 | 2.78 | 12.50 | 10.75 | 40 | 34.06 | <0.01 | 0.30 |
| Regional Fisheries | 5.56 | 0.00 | 15.83 | 6.18 | 23 | 31.18 | <0.01 | 0.29 |
| Police | 25.00 | 13.89 | 2.50 | 12.37 | 46 | 21.77 | <0.01 | 0.24 |
| Navy | 4.17 | 1.11 | 3.33 | 2.42 | 9 | 2.66 | * | 0.08 |
| Foreign Navies | 4.17 | 1.67 | 3.33 | 2.69 | 10 | 1.51 | * | 0.06 |
| Clans | 9.72 | 11.11 | 10.83 | 10.75 | 40 | 0.10 | >0.05 | 0.02 |
| Local Fishermen | 44.44 | 19.44 | 20.83 | 24.73 | 92 | 18.71 | <0.01 | 0.22 |
| Other | 6.94 | 0.56 | 7.50 | 4.03 | 15 | 10.93 | * | 0.17 |
| **N** | **72** | **180** | **120** | | **372** | | | |
| *N too small to calculate reliable probability | | | | | | | | |

Table 43 shows how many fishermen reported seeing enforcers patrol their waters in percent distribution. The majority (58 percent) of respondents reported that they never saw enforcers. Somaliland fishermen reported seeing enforcers more than others ($p<0.01$).

| Table 43. Percent distribution of perceived enforcement frequency | | | | | |
|---|---|---|---|---|---|
| **Frequency** | **Somaliland** | **Puntland** | **Other** | **Total** | **N** |
| Never | 39.44 | 69.44 | 50.00 | 57.70 | 206 |
| Rarely | 12.68 | 11.67 | 11.32 | 11.76 | 42 |
| Some of the time | 18.31 | 11.67 | 13.21 | 13.45 | 48 |
| Frequently | 9.86 | 6.11 | 16.04 | 9.80 | 35 |
| All the time | 19.72 | 1.11 | 9.43 | 7.28 | 26 |
| **N** | **71** | **180** | **106** | | **357** |
| $\chi^2 = 43.11$, df = 8 p<0.01 V=0.25 U= 30.65 p<0.01 | | | | | |

The many fishermen saying that they never saw enforcement patrols (Table 43) also suggests the need to consider a community-based approach. That so many Somalis have cell phones means that reporting of alleged violations to law enforcement groups could be accomplished relatively easily, as some countries have set up toll-free numbers to allow for this. This allows enforcement agencies to improve their response to alleged violations and direct patrol vessels to sites where illegal activity has been reported. Over time, plotting of sightings (modern cell phones and smart phones are capable of identifying where violations are generally taking place) could be accomplished. Applications could be created to provide such information for every report. These could be plotted over time and help enforcement agencies work out where and when (time of year, day and location) violations occur most frequently, again allowing for the establishment of "smart" patrolling patterns.

### *5.5.5 Environmental Issues*

Turning to the important indicator of environmental (e.g., pollution, etc.) issues, Table 44 shows the percent distribution of fishermen reporting large quantities of dead fish washed up on their local beaches. As this was raised as a concern while the survey was being developed and in discussions with key informants in Nairobi, questions on this were added to the survey. Some key respondents believed that these deaths were caused by the illegal dumping of toxic waste in Somali waters. While this survey cannot ascertain precise cause of fish kills, questions were added to help clarify the prevalence of such beliefs and severity of the problem (geographic extent and frequency of occurrences – see Table 43 below and one question on this topic in Box 4 in the next section of this report).

**Table 44. Percent distribution of fishermen reporting fish kills along their coastline in past year and mean number of incidents**

| Fish Kills in Last Year | Somaliland | Puntland | Other | Total | N |
|---|---|---|---|---|---|
| No | 70.00 | 48.60 | 27.83 | 46.15 | 168 |
| Yes | 30.00 | 51.40 | 72.17 | 53.85 | 196 |
| **N** | **70** | **179** | **115** | | **364** |
| $\chi^2 = 31.99$, df = 2 p<0.01 V=0.30 | | | | | |
| Incidents (mean) | 5.95 | 3.76 | 2.60 | | |
| F-ratio = 11.01 df = 2 222 p<0.01 | | | | | |

Overall, 54 percent of the fishermen reported fish kills, with the highest frequencies in the communities classified as "other" (72 percent). Mean reported incidences varied between 3.76 and 5.95 and Somaliland reported the largest number of incidences. Differences in Table 44 are statistically significant (p<0.01).

Fish kills could have several causes, from algal blooms resulting from excessive nutrient loading into near shore waters that creates anoxic conditions, dead and discarded by-catch from

trawling vessels washing ashore, or other pollution sources. The survey results cannot tell us the causes, but the frequency of such reports from over two to almost six per year is cause for further investigation on this issue to try to determine them.

### *5.5.6 Fishery Change, Impact, Condition, Development and Compliance Indicators*

Items used to develop indicators of fishery change, impact, conditions, development and compliance are shown in Boxes 2, 3 & 4. The change questions in Box 2 were designed to understand how quality of life in fishing communities may be changing and also to help understand changes in fish catch and income (indirect indicators of fishery health. Impact indicators in Box 3 focused on respondents' perceptions of the impacts of foreign fishing, illegal fishing, anti-piracy patrols and piracy.

**Box 2. Change indicators**

1 My fish catch over the past five years has *Increased(1) not changed at all (0) reduced (-1)*

2 My income over the last five years has*Increased(1) not changed at all (0) reduced (-1)*

*3* Peace and Order in my community has*Increased(1) not changed at all (0) reduced (-1)*

*4* Development of our village has*Increased(1) not changed at all (0) reduced (-1)*

**Box 3 Impact indicators**

Foreign fishing vessels should be allowed to fish in Somali waters.

*Strongly disagree (5) somewhat Disagree (4) Neither (3) Somewhat Agree (2) strongly agree ()*

Anti-piracy patrols by Foreign Navies protect foreign fishing vessels operating illegally in Somali waters

*Strongly disagree (1) Somewhat Disagree (2) Neither (3) Somewhat Agree (4) Strongly agree (5)*

Illegal fishing negatively impacts my livelihood.

*Strongly disagree (1) Somewhat Disagree (2) Neither (3) Somewhat Agree (4) Strongly agree (5)*

Illegal fishing has no impact on marine ecosystems.

*Strongly disagree (5) somewhat Disagree (4) Neither (3) Somewhat Agree (2) strongly agree (1)*

Foreign fishing has no impact on my fish catch

*Strongly disagree (5) somewhat Disagree (4) Neither (3) Somewhat Agree (2) strongly agree (1)*

Piracy does not restrict me from fishing from where I want to fish.

*Strongly disagree (5) somewhat Disagree (4) Neither (3) Somewhat Agree (2) strongly agree (1)*

Piracy keeps away illegal foreign fishers.

*Strongly disagree (5) somewhat Disagree (4) Neither (3) Somewhat Agree (2) strongly agree (1)*

Anti-piracy actions by foreign Navies negatively impacts my fishing livelihood

*Strongly disagree (1) Somewhat Disagree (2) Neither (3) Somewhat Agree (4) Strongly agree (5)*

Box 4 also attempts to gain insight into the condition and status of the fishery resources as perceived by fishermen, and a sense of other types of development issues in these communities. Global experience has taught us that solutions focused solely on the fisheries

resource alone are often insufficient to improving quality of life in fishing communities. In addition, an integrated "livelihoods" approach proposed by many fisheries experts, presumes that solutions, hard choices and restrictions on fishing efforts may be impossible to implement unless other benefits and incentives are on offer. Such incentives lessen the negative short-term impacts of management measures that might improve the resource's health but in the short term, have negative socio-economic impacts on fishermen and their households.

**Box 4. Fishery sector and community development indicators**

There is a lack of capital for investing in improved fishing gears and boats

*disagree (1) Neither (0) agree (-1)*

There is adequate transportation to get my fish to good markets

*disagree (-1) Neither (0) agree (1)*

Fish spoils as it is not adequately processed or preserved

*disagree (1) Neither (0) agree (-1)*

Too many fishermen in my community trying to catch fish

*disagree (1) Neither (0) agree (-1)*

Not too many Somalis from outside my community coming in to catch fish

*disagree (-1) Neither (0) agree (1)*

Foreign fishing vessels fishing nearby are taking all the fish

*disagree (1) Neither (0) agree (-1)*

There are still plenty of fish left in the sea to catch

*disagree (-1) Neither (0) agree (1)*

Fishermen are leaving my village as they can no longer make a living from the sea

*disagree (1) Neither (0) agree (-1)*

Waste dumped from foreign boats at sea is not harming the fish and environment

*disagree (-1) Neither (0) agree (1)*

No one is in charge of management of the fish resources in my community

*disagree (1) Neither (0) agree (-1)*

We are successfully enforcing Somali laws regarding fishing

*disagree (-1) Neither (0) agree (1)*

There is a Lack of alternative income or employment for my family other than fishing

*disagree (1) Neither (0) agree (-1)*

There are adequate water supply and toilet facilities in the community

*disagree (-1) Neither (0) agree (1)*

I would like my sons to become fishermen like me

*disagree (-1) Neither (0) agree (1)*

Box 5 provides indicators on the strength or presence of factors determining local fishermen's compliance with fisheries rules, as shown in Figure 8 of this report. While these indicators help us understand ways to strengthen compliance, they only provide a few indirect clues about ways of deterring IUU fishing by foreign vessels. Ideally, there would be a survey of foreign fishermen engaged in IUU fishing, but this was too difficult in this study and beyond its scope.

**Box 5 Determinants of Compliance Indicators**

| **Legitimacy Items** | **Disagree** | | **Undecided** | **Agree** | |
|---|---|---|---|---|---|
| | **Strongly** | **Moderately** | | **Moderately** | **Strongly** |
| Fishing rules help preserve and protect fisheries resources | 1 | 2 | 3 | 4 | 5 |
| Fishing rules only benefit some fishermen | 5 | 4 | 3 | 2 | 1 |
| Fishing rules will improve the wellbeing of all fishers | 1 | 2 | 3 | 4 | 5 |
| The views of fishermen **are not** considered in the formulation of fisheries regulations. | 5 | 4 | 3 | 2 | 1 |
| Fishing rules are enforced differently depending on your social status | 5 | 4 | 3 | 2 | 1 |
| Fishermen who break the rules more often are penalized more severely than those who only do it occasionally | 1 | 2 | 3 | 4 | 5 |
| **Deterrence Items** | **Disagree** | | **Undecided** | **Agree** | |
| | **Strongly** | **Moderately** | | **Moderately** | **Strongly** |
| Fines and Penalties imposed on local Somalis for violating fishing rules **are not** severe enough to reduce their illegal fishing | 5 | 4 | 3 | 2 | 1 |
| Fines and Penalties imposed on foreigners for violating fishing laws are high enough to reduce their illegal fishing activities | 1 | 2 | 3 | 4 | 5 |
| Local Somali Violators of fishing rules are ALWAYS caught | 1 | 2 | 3 | 4 | 5 |
| Foreign Violators of fishing rules are NEVER caught | 5 | 4 | 3 | 2 | 1 |
| Local Somali Violators of fishing rules that are caught are NEVER penalized for the violation (e.g. pay fine, serve jail time, have gear or boat taken) | 5 | 4 | 3 | 2 | 1 |
| Foreign Violators of fishing rules that are caught are ALWAYS penalized for the | 1 | 2 | 3 | 4 | 5 |

| Legitimacy Items | Disagree | | Undecided | Agree | |
|---|---|---|---|---|---|
| | Strongly | Moderately | | Moderately | Strongly |
| Fishing rules help preserve and protect fisheries resources | 1 | 2 | 3 | 4 | 5 |
| Fishing rules only benefit some fishermen | 5 | 4 | 3 | 2 | 1 |
| Fishing rules will improve the wellbeing of all fishers | 1 | 2 | 3 | 4 | 5 |
| The views of fishermen **are not** considered in the formulation of fisheries regulations. | 5 | 4 | 3 | 2 | 1 |
| Fishing rules are enforced differently depending on your social status | 5 | 4 | 3 | 2 | 1 |
| Fishermen who break the rules more often are penalized more severely than those who only do it occasionally | 1 | 2 | 3 | 4 | 5 |
| violation (e.g. pay fine, serve jail time, have gear or boat taken) | | | | | |
| **Gains Items** | **Disagree** | | **Undecided** | **Agree** | |
| | **Strongly** | **Moderately** | | **Moderately** | **Strongly** |
| Despite the penalties it is economically beneficial to break fishing rules | 5 | 4 | 3 | 2 | 1 |
| If I engage in illegal fishing activities or not, it makes no difference in how much money I can earn from fishing | 1 | 2 | 3 | 4 | 5 |
| **Moral Items** | **Disagree** | | **Undecided** | **Agree** | |
| | **Strongly** | **Moderately** | | **Moderately** | **Strongly** |
| My friendship with other fishermen **will not** change, even if they frequently violate fishing rules | 5 | 4 | 3 | 2 | 1 |
| I believe it is my moral duty to obey the fishing laws | 1 | 2 | 3 | 4 | 5 |
| If I see a local fishermen violating fishing rules I **will not** report them to local authorities | 5 | 4 | 3 | 2 | 1 |
| If I see a foreign fishing vessel fishing in local waters I will report it to the authorities | 1 | 2 | 3 | 4 | 5 |

### 5.5.7 Perceived Changes in Fishery, Income, Peace and Order and Development

Table 45 shows respondents' perceptions of change compared to five years ago (Box 2). The majority of respondents believe that fish catches and income have declined, suggesting that

overfishing may be occurring and negatively impacting fishermen. On the other hand, most feel that peace and order and development have increased.

| Table 45. Change indicators | | | | |
|---|---|---|---|---|
| **Indicator** | **Reduced** | **No Change** | **Increased** | **N** |
| Catch Change | 51.12 | 19.27 | 29.61 | 358 |
| Income Change | 55.77 | 19.72 | 24.51 | 355 |
| Peace & Order Change | 3.93 | 25.56 | 70.51 | 356 |
| Development Change | 24.93 | 24.93 | 50.14 | 357 |

Table 46 provides an analysis of location differences in change indicators. All differences are statistically significant ($p<0.01$). Overall, Somaliland's fishermen from Somaliland perceive the most positive changes and Puntland's the most negative. For Somaliland, all the indicators are moving in a positive direction. For Puntland and the other states, fishery indicators and related income indicators hint at significant challenges in developing fisheries.

| Table 46. Distribution of mean values for change indicators | | | | |
|---|---|---|---|---|
| **Location** | **Catch Change** | **Income Change** | **Peace & Order Change** | **Dev. Change** |
| Somaliland | 0.92 | 0.84 | 0.76 | 0.73 |
| Puntland | -0.68 | -0.73 | 0.75 | 0.04 |
| Other | -0.19 | -0.37 | 0.45 | 0.28 |
| **N** | **358** | **355** | **356** | **357** |
| Kruskal-Wallis H | 160.99 | 167.62 | 24.98 | 29.43 |
| p | <0.01 | <0.01 | <0.01 | <0.01 |

### *5.5.8 Perceptions of Impact from IUU Fishing, Piracy and Anti-Piracy Patrols*

Table 47 presents frequency distributions of responses to impact indicator questions (Box 3). Concerning these indicators, more than 88 percent disagreed that foreign fishing should be allowed, but 71 percent strongly disagreed with the statement that foreign piracy patrols protect foreign fishermen. Sixty eight percent strongly agreed that illegal fishing impacts fishermen's livelihoods, 81 percent felt strongly that it impacts marine ecosystems, and 82 percent strongly agreed that it impacts their catches. Respondents were split on whether piracy restricts where they fish. Sixty nine percent of respondents either agreed or strongly agreed that piracy deters illegal fishing. Seventy seven percent either agreed or strongly agreed that anti-piracy patrols affect their livelihood. These responses tend to indicate a very negative perception towards illegal fishing and anti-piracy campaigns, and respondents believed that these actions had ecological and economic consequences.

| Table 47. Percent distribution of Impact indicator responses | | | | | | |
|---|---|---|---|---|---|---|
| **Statement** | **Strongly Disagree** | **Somewhat Disagree** | **Neither** | **Somewhat Agree** | **Strongly Agree** | **N** |
| Allow Foreign Fishing | 86.79 | 1.62 | 0.81 | 2.16 | 8.63 | 371 |
| Foreign Piracy Patrols Protect Foreign Fishermen | 71.35 | 5.14 | 2.97 | 4.59 | 15.95 | 370 |
| Illegal Fishing Impacts Livelihood | 16.85 | 0.82 | 4.62 | 9.51 | 68.21 | 368 |
| Illegal Fishing has No Impact on Ecosystems | 81.35 | 4.32 | 1.08 | 3.24 | 10.00 | 370 |
| Foreign Fishing Doesn't Impact My Catch | 82.21 | 4.04 | 1.35 | 1.62 | 10.78 | 371 |
| Piracy does not Restrict Fishing Location | 30.54 | 12.16 | 9.19 | 15.95 | 32.16 | 370 |
| Piracy Deters Illegal Foreign Fishermen | 19.29 | 5.43 | 5.71 | 18.21 | 51.36 | 368 |
| Foreign Navy Anti-Piracy Hurts My Fishing Livelihood | 12.77 | 3.80 | 6.25 | 13.86 | 63.32 | 368 |

Table 48 includes mean values for responses to the impact indicator questions. Because values associated with agree and disagree responses vary according to the question (see values in Box 3), interpretation of the means need to take this into account. For example, mean values for "allow foreign fishing" are all above 3, indicating general disagreement with that question. Concerning the statement "foreign piracy patrols protect foreign fishermen," the values are below 3, in this case indicating general disagreement. Except for piracy's impact on fishing location and deterrence of illegal foreign fishermen, differences among the regions are statistically significant ($p<0.05$). In general, Puntland and other states have the strongest opinions against allowing foreign fishing and the belief that it negatively affects their livelihood, catch and the ecosystem.

| Table 48. Inter-location differences in impact indicators (mean values) | | | | | | |
|---|---|---|---|---|---|---|
| **Statement** | **Somaliland** | **Puntland** | **Other** | **Kruskal Wallis** | **p** | **N** |
| Allow Foreign Fishing* | 3.74 | 4.75 | 4.76 | 42.57 | <0.01 | 371 |
| Foreign Anti-Piracy Patrols Protect Foreign Fishermen** | 2.62 | 1.72 | 1.70 | 22.24 | <0.01 | 370 |
| Illegal Fishing Impacts Livelihood** | 3.60 | 4.38 | 4.03 | 28.37 | <0.01 | 368 |
| Illegal Fishing does not Impact Ecosystems* | 3.44 | 4.78 | 4.52 | 60.09 | <0.01 | 370 |
| Foreign Fishing Doesn't Impact My Catch* | 3.68 | 4.72 | 4.52 | 42.71 | <0.01 | 371 |
| Piracy Does not Restrict Fishing Location* | 2.53 | 3.01 | 3.06 | 5.41 | >0.05 | 370 |
| Piracy Deters Illegal Foreign Fishermen* | 3.47 | 2.99 | 2.94 | 5.41 | >0.05 | 370 |
| Foreign Navy Anti-Piracy Hurts My Fishing Livelihood** | 3.63 | 4.47 | 3.86 | 48.92 | <0.01 | 368 |
| *Strongly Disagree = 5, Strongly Agree = 1 **Strongly Agree = 5, Strongly Disagree = 1 | | | | | | |

### *5.5.9 Perceptions of Fishery Condition and Development Indicators*

Summary indicators were developed by summing values for indicators on the condition of fishery resources, general development and on compliance factors (Boxes 4 and 5). For the indicators in Box 4 (development scale), the potential range of scores could be as high as +14 and as low as -14. Compliance indicators were calculated for each sub-category in Box 5. For Box 5, the potential range of scores for the legitimacy and deterrence scales were from 6 to 30, for the illegal gains scale from 2 to 10 and for the morality scale, from 4 to 20. Descriptive statistics for these composite indicators are in Table 49. Distributions of responses for the development scale items are in Table 50.

| Table 49. Descriptive statistics for composite indicators | | | | | |
|---|---|---|---|---|---|
| **Statistic** | **Legitimacy Scale** | **Deterrence Scale** | **Illegal Gains Scale** | **Morality Scale** | **Development Scale** |
| Number of Cases | 371 | 370 | 370 | 369 | 347 |
| Minimum | 9.00 | 6.00 | 2.00 | 7.00 | -11.00 |
| Maximum | 30.00 | 27.00 | 10.00 | 20.00 | 12.00 |
| Arithmetic Mean | 20.03 | 16.98 | 6.13 | 16.56 | 4.66 |

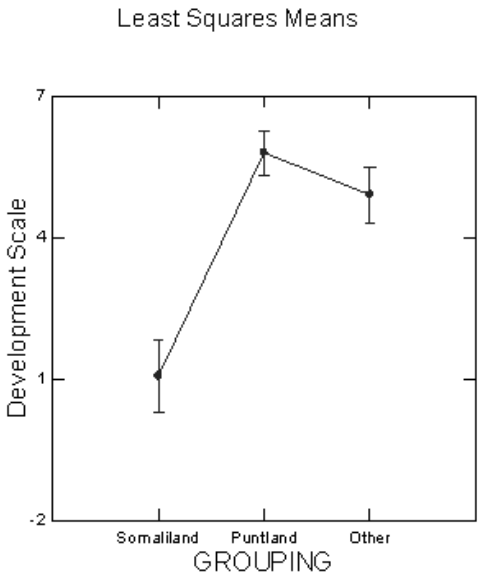
| Table 50. Fishery condition and development indicators | | | | |
|---|---|---|---|---|
| **Statement** | **Disagree** | **Neither** | **Agree** | **N** |
| Lack Capital | 11.96 | 2.17 | 85.87 | 368 |
| Adequate Transportation | 73.37 | 2.99 | 23.64 | 368 |

| | | | | |
|---|---|---|---|---|
| Inadequate Fish Processing | 6.79 | 5.43 | 87.77 | 368 |
| Too Many Fishermen | 5.15 | 6.23 | 88.62 | 369 |
| Not too Many Somalis from Outside | 51.23 | 5.45 | 43.32 | 367 |
| Foreign Vessels Nearby Take all the Fish | 4.62 | 2.45 | 92.93 | 368 |
| Still Plenty of Fish in Sea | 13.66 | 1.64 | 84.70 | 366 |
| Fishermen Leave Village | 20.66 | 12.67 | 66.39 | 363 |
| Waste Dumped from Foreign Boats Causes no Harm | 83.33 | 2.19 | 14.48 | 366 |
| No One in Charge of Management | 23.71 | 4.36 | 71.93 | 367 |
| We Are Enforcing Somali Fishing Laws | 20.49 | 9.56 | 69.95 | 366 |
| Lack of Alternative Income | 18.90 | 6.58 | 74.52 | 365 |
| Adequate Water Supply & Toilet | 33.15 | 9.59 | 57.26 | 365 |
| Would Like Son to Become Fisherman | 47.14 | 4.36 | 48.50 | 367 |

The responses to a number of questions about the fishing sector and community development issues listed above show that overwhelming numbers of fishermen believe that development constraints include a lack of capital, as well as inadequate transportation and fish processing infrastructure. Most feel that there are too many fishermen, another sign of likely overfishing that is affecting incomes and catches. Respondents are almost evenly split on whether too many migrants are affecting fishing. Many said that foreign fishing vessels were taking large amounts of fish and that there are few fish left in the sea. This suggests a perception of over foreign and local fishing, impacting fishing numbers and contributing to overfishing problems. The economic situation is forcing many to leave coastal villages. Most believe that waste dumped by foreign vessels is harming the sea. While most feel that no one is in charge of management, some believe that laws are being successfully enforced. About half the fishermen want their sons to become fishermen. This suggests that large numbers do not see a bright future in this sector, which is unsurprising given perceptions of declining catches, income and fish. Unfortunately, most see few alternatives to fishing.

Results of the analysis of the composite development scale are in Figure 9. A higher score tends to suggest a more favorable perspective on the overall condition of the fishery and the community's development status. Puntland achieved the highest mean score (5.8), the 'other' states category came next (4.9), and Somaliland had the lowest (1.1). These differences are statistically significant (F ratio = 53.32, df = 2 344, $p<0.01$, $R^2 = 0.24$). However, in all cases the outlook was positive (greater than zero).

**Figure 9. Plot of mean values for composite development indicator.**




### *5.5.10 Perceptions Concerning Fishery Regulatory Compliance Factors*

**Table 50. Fishery condition and development indicators**

| Statement | Disagree | Neither | Agree | N |
|---|---|---|---|---|
| Lack Capital | 11.96 | 2.17 | 85.87 | 368 |
| Adequate Transportation | 73.37 | 2.99 | 23.64 | 368 |
| Inadequate Fish Processing | 6.79 | 5.43 | 87.77 | 368 |
| Too Many Fishermen | 5.15 | 6.23 | 88.62 | 369 |
| Not too Many Somalis from Outside | 51.23 | 5.45 | 43.32 | 367 |
| Foreign Vessels Nearby Take all the Fish | 4.62 | 2.45 | 92.93 | 368 |
| Still Plenty of Fish in Sea | 13.66 | 1.64 | 84.70 | 366 |
| Fishermen Leave Village | 20.66 | 12.67 | 66.39 | 363 |
| Waste Dumped from Foreign Boats Causes no Harm | 83.33 | 2.19 | 14.48 | 366 |
| No One in Charge of Management | 23.71 | 4.36 | 71.93 | 36 |

| Table 50. Fishery condition and development indicators | | | | |
|---|---|---|---|---|
| | | | | 7 |
| We Are Enforcing Somali Fishing Laws | 20.49 | 9.56 | 69.95 | 366 |
| Lack of Alternative Income | 18.90 | 6.58 | 74.52 | 365 |
| Adequate Water Supply & Toilet | 33.15 | 9.59 | 57.26 | 365 |
| Would Like Son to Become Fisherman | 47.14 | 4.36 | 48.50 | 367 |

Table 50 shows responses to questions concerning the key determinants of compliance as outlined in Figure 1. On legitimacy factors, a large percentage of respondents (79 to 81 percent) strongly agreed that rules were environmentally beneficial and improved the well-being of fishermen, while about 60 percent believed that frequent violators were penalized more severely. Fishermen had varying opinions on whether rules benefit only some fishermen, enforcement related to status and fishermen were not considered during rulemaking.

These results tend to suggest that most fishermen in our sample consider the current rules legitimate but unlikely to weigh heavily on Somali fishermen's illegal activities. Areas of potential improvement include; ensuring that regulations have general benefits among large segments of the fishermen, special status is not factored into sanctions on deviants, and fishermen have greater involvement in setting rules on fisheries through co-management.

| Table 51 Percent distribution of determinants of compliance indicator values | | | | | | |
|---|---|---|---|---|---|---|
| **Compliance Indicator** | **Strongly Disagree** | **Somewhat Disagree** | **Neither** | **Somewhat Agree** | **Strongly Agree** | **N** |
| **Legitimacy** | | | | | | |
| Rules Protect Resources | 11.59 | 0.54 | 2.43 | 6.74 | 78.71 | 371 |
| Rules Only Benefit Some Fishermen | 34.50 | 14.02 | 5.93 | 19.95 | 25.61 | 370 |
| Rules improve Wellbeing of All Fishermen | 7.28 | 1.35 | 1.89 | 8.89 | 80.59 | 371 |
| Fisher Views Not Considered in Rules | 21.02 | 14.82 | 12.94 | 14.82 | 36.39 | 371 |
| Rule Enforcement Related to Status | 27.22 | 14.02 | 9.70 | 18.87 | 30.19 | 371 |
| Frequent Violators Penalized More Severely | 45.55 | 15.09 | 13.48 | 7.82 | 18.06 | 371 |
| **Deterrence** | | | | | | |
| Fines on Locals Not Severe | 19.14 | 2.16 | 3.77 | 29.38 | 45.55 | 37 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Enough | | | | | | 1 |
| Fines on Foreigners are Severe Enough | 13.78 | 1.62 | 9.19 | 4.59 | 70.81 | 370 |
| Local Violators Always Caught | 37.20 | 11.32 | 11.59 | 21.02 | 18.87 | 371 |
| Foreign Violators Never Caught | 11.59 | 2.43 | 4.31 | 5.12 | 76.55 | 371 |
| Local Violators Never Penalized | 17.79 | 8.36 | 9.16 | 24.53 | 40.16 | 371 |
| Foreign Violators Always Penalized | 25.07 | 2.16 | 3.23 | 5.66 | 63.88 | 371 |
| **Illegal Gains** | | | | | | |
| Violations Economically Beneficial | 61.08 | 10.27 | 12.70 | 7.57 | 8.38 | 370 |
| Violate or Not Doesn't Impact Income | 56.06 | 12.94 | 9.97 | 11.86 | 9.16 | 371 |
| **Moral Suasion** | | | | | | |
| Friendship not Related to Violation | 52.16 | 6.22 | 4.86 | 14.32 | 22.43 | 370 |
| Moral Duty to Obey Laws | 7.55 | 1.35 | 1.62 | 3.50 | 85.98 | 371 |
| Will not Report Local Violators | 70.00 | 6.49 | 4.32 | 2.16 | 17.03 | 370 |
| Will Report Foreign Violators | 13.21 | 0.54 | 2.70 | 5.39 | 78.17 | 371 |

Concerning deterrence factors, a majority felt that fines for locals were not severe enough, but severe enough for illegal foreign fishermen. Opinion is more evenly split as to whether locals are ever caught, but most felt that local violators were rarely penalized. Concerning foreign violators, 77 percent strongly agreed with the statement that they are never caught. There was no information on actual level of fines paid by locals and foreigners for comparison, but it is interesting to note that respondents would= support higher penalties for local fishermen, the majority believing them too low. Higher penalties would increase deterrence and likely compliance. These results tend to suggest that deterrence factors are weak and need to be strengthened. Particular attention needs to be paid to the fact that most fishermen think that foreign violators of Somali fishing regulations are rarely caught. In the long term, such views could erode Somali fishermen's propensity to comply with rules.

On illegal gains factors, most disagreed that it was economically beneficial when weighted against potential penalties but that violating the rules would impact income. These responses tend to contradict each other and therefore suggest that among Somali fishermen, illegal gains are not currently a significant factor in determining illegal fishing behavior.

Concerning the moral persuasion factors, 86 percent of respondents indicated a strong sense of morality in obeying rules and not discriminating based on status or origin when reporting violators. These are all very positive values that suggest that the involvement of fishermen in surveillance and enforcement, utilization of community peer pressure and community-based management could increase compliance of Somali fishermen.

For the four different composite scales on regulatory compliance (Figures 10-13), a higher score represents a more favorable belief on these factors and their likelihood of significantly influencing compliant behavior. Since the composite scores are not uniformly weighted, the mean scores across composite indicators cannot be directly compared. The figures below are therefore only useful for inter-regional comparisons.

Figure 10 illustrates mean values on the composite legitimacy indicator. “Other” achieved the highest mean score on the legitimacy scale (21.9), then Somaliland (19.8) and then Puntland (18.9). These differences are statistically significant (F ratio = 19.53, df = 2368, $p<0.01$, $R^2 = 0.10$).

Plot of mean values for the composite deterrence indicator is in Figure 11. Somaliland and Puntland achieved the highest mean scores on the composite deterrence scale (17.7 and 17.9 respectively), and “other” states achieved the lowest (15.1). The differences in scores are statistically significant (F ratio = 37.79, df = 2367, $p<0.01$, $R^2 = 0.17$).

**Figure 10. Plot of mean values for composite legitimacy indicator.**

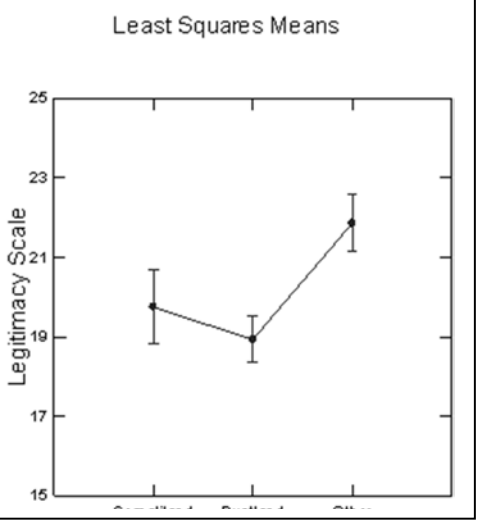



**Figure 11. Plot of mean values for composite deterrence scale.**

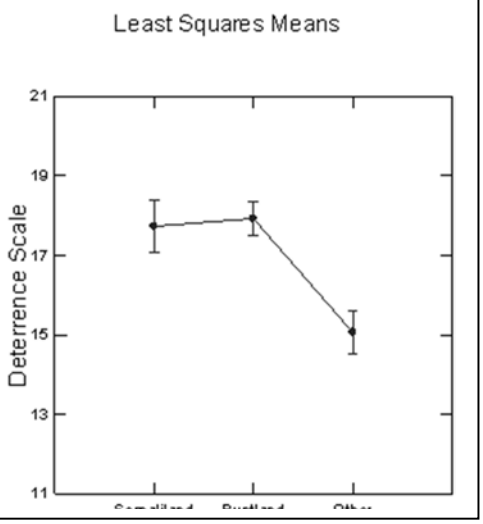



Figure 12 illustrates the mean values for the composite gains scale. Mean scores for the three locations are clustered around 6.0, with Somaliland at 5.85, Puntland at 6.17, and Other at 6.24. The differences are not statistically significant (F ratio = 2.01, df = 2367, $p>0.05$, $R^2 = 0.01$).

Plot of mean values for the composite morality scale is in Figure 13. Puntland achieved the highest score on the morality scale (17.59), then 'Other' (16.12) and Somaliland the lowest (14.68). The differences are statistically significant (F ratio = 24.37, df = 2366, $p<0.01$, $R^2 = 0.12$).

Comparing across all four composite indicators, Puntland tends to score highly on all but the legitimacy scale. Somaliland tends to score low on all but the deterrence scale and the "other" states have more varied scoring depending on the indicator. The above figures indicate that the scores on the various compliance indicators vary considerably from region to region. This suggests that strategies to improve compliance among Somali fishermen will need to be tailored for each location to have the best impact.

**Figure 12. Plot of mean values for composite gains scale.**

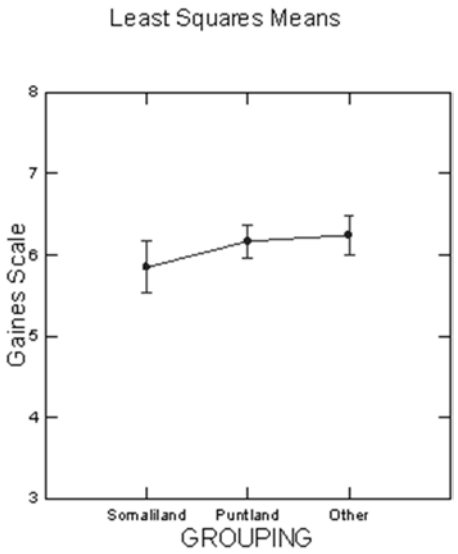
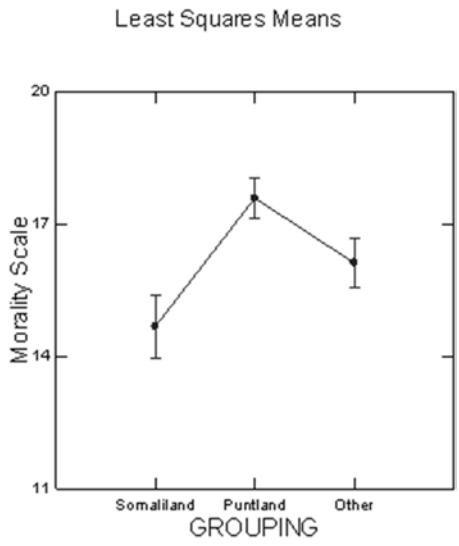



**Figure 13. Plot of mean values for composite morality scale.**



## 6.0 SUMMARY AND CONCLUSIONS

### 6.1 The Somali Fishery

The Somali marine fishery sector can be characterized as predominantly small scale. Fishermen use open fiberglass skiffs from three to six meters in length and most are motorized; equipped with outboard or to a lesser extent, inboard engines. The average fisherman has been fishing for approximately 15 years, has lived in the communities and fished there for over two decades, and is on average 38 years-old. Most have an average of four to five years of formal schooling and live in households with approximately eight members. More than half own their fishing boats, fish within 50 km of their communities and over a third fish within 10 km. Seasonal migration of fishermen is minimal and mainly reported in Somaliland. Around half the fishermen are members of fishing cooperatives.

A variety of gears such as gill nets, purse seines, long lines, hand lines and traps are used to exploit large and small pelagic fish stocks as well as demersal fisheries. There are two peak fishing seasons per year: March-April and September-October. The number of fishing days per year varies, from approximately 140 to 200 days. Catches average between 65 to 120 kg per day depending on the locality. The average daily income from fishing is related to boat ownership, where boat owners report average incomes of US$ 56.04 versus US$ 40.54 for non-owners. Most catch is sold, but between two to nine percent is retained for subsistence needs. This translates to 2-6 kg of fish per fishermen helping to feed households with an average of seven to nine people. More than three quarters of fishermen say that fish is the biggest source of protein in their household. Mackerel and yellowfin tuna are the most common pelagic fish species caught, whereas emperors, snapper and grouper are the most commonly caught bottom dwelling demersals. Most fish are marketed to local communities on the landing sites, although in Puntland, many are sold at-sea to Yemeni traders, and in Somaliland, more than half are sold beyond the community.

### 6.2 Illegal, Unreported and Unregulated Fishing

Overall, the analysis of the survey data has indicated a great deal of perceived illegal fishing by Somalis themselves and foreigners. Both domestic and foreign IUU fishing will need to be addressed if Somalia's fisheries are to be managed properly and for maximum benefit of the Somali people.

On the domestic side of fishery, much of the small-scale catch is landed locally. However, in most cases, the details on these landings do not seem to be recorded or reported to authorities. Approximately 87 percent of fishermen said that there were no reporting requirements for fish landed and approximately 95 percent stated that there was no requirement in the recent past. The best evidence of this comes from an examination of FAO databases lacking almost three decades of statistics on Somalia. Most reports of annual landings from Somalia quote a figure of around 30,000 MT with the sustainable yield estimated at around 120,000-200,000 MT per year. These figures lead many people to believe that fish stocks in Somalia, unlike in most other countries, have great potential for the expansion of further landings. However, given reports of foreign IUU fishing in Somali waters that is valued at

around US$ 300 million per year, and the fact that most locally caught fish is also not recorded, any presumptions about under-exploited stocks must be viewed with suspicion. For instance, if we look at reported daily landings by Puntland fishermen of 119kg/day, extrapolate to an annual catch based on a reported 142 days fishing per year and multiply by the estimated 6,500 fishermen in Puntland (according to FAO), this translates to 110,000 MT of fish caught annually just in Puntland. This is more than the usually quoted figure fish landed in the whole of Somalia. There is reason to believe that under reporting of local landings is quite high. This is a challenge to most developing nations and particularly to countries like Somalia that have extensive coastlines and a large number of small-scale landing sites. FAO provides recommendations on how to address this problem with various statistical sampling frames mentioned earlier in this report.

Our survey shows that fishermen believe that there are still plenty of fish in the sea but also that there are too many local and international fishermen chasing them. More than half say that catches and income from fishing have declined. These qualitative indicators suggest that the local fishing industry may already be declining. This study was not able to clarify whether these trends were an allocation issue – as local perceptions suggest foreign IUU fishing has been increasing – or down to declining fisheries infrastructure that stops fish being moved to market beyond local communities and/or stops fishing vessels and engines from being operational. Years of conflict hampered the maintenance of vital infrastructure.

### 6.3 At-Sea Transfers of Catch

In Puntland, much of the fish caught by local fishermen is sold at-sea and never brought to shore, and is therefore not recorded as caught or landed in Somalia by Somali fishermen, even if data was recorded at local landing sites. Since most of these fish are reportedly bought by Yemeni traders, it is considered to have neither landed in Yemen nor been caught in Somalia waters. It is unclear whether selling fish at sea is illegal in Somalia or Puntland. Such transshipment is banned in many countries to ensure such catches pass through local landing sites and processing facilities. It also confounds data collection systems in terms of volume of landings and source of catches even though it may be profitable to both fishermen and traders. It can clearly be principally seen as unreported and unregulated catch, so another aspect of IUU fishing that requires closer investigation and action. There is clearly much work to be done to understand the extent and magnitude of the problem and to build more robust fish catch-reporting systems with local fisheries authorities in Somalia.

### 6.4 Illegal Foreign Fishing

Somalia fishermen reported foreign illegal fishing as rather ubiquitous, with half the respondents in this survey saying that it occurs all the time, and a quarter saying that it occurs frequently, with increased sightings over the past five years. Over half of the fishermen surveyed believed that that the foreign fishing vessels they saw did not have fishing permits, but over a third said that they did not know. Relying on perceptions of illegal fishing is problematic in that some of the foreign fishing spotted by fishermen may be “legally” permitted since Somaliland has reportedly issued some foreign fishing permits. This survey was

not able to determine the degree to which visible foreign boats were illegal or legal. The volume of illegally caught fish was also beyond the scope of this study.

Fishermen said that most of the foreign fishing was conducted by regional countries, and especially Iran and Yemen. Oman, India and Kenya were also mentioned, but less frequently. Distant fleets from China/Taiwan were mentioned third, and boats from Russia and Spain were noted, but much less frequently. More than 88 percent of respondents in our survey said that foreign fishing should not be allowed.

### 6.5 Somali Regulations on Fishing

The federal government passed laws in 1985 requiring the registration and licensing of domestic and foreign fishing vessels and are currently trying to amend this act. Somaliland and Puntland have recently passed state laws requiring registration, licensing and reporting. The survey examined the fishermen's knowledge and awareness of such requirements and the degree to which they were being implemented.

Fishermen said that a number of types of fisheries regulations were in place. The most common regulations were on species restrictions, gear limits and seasonal closures. Area closures and gear type restrictions were also mentioned, but less frequently. From an enforcement standpoint, restrictions on fish species caught or length and gear can be enforced via shoreline patrolling and surveillance in addition to sea patrols, which can be more costly and difficult. Seasonal closures of fisheries can be enforced from landing sites as those fish species cannot be landed during a seasonal closure, and if possession is also banned during a closed period, easier to enforce too. Area closures such as a fishery reserves or marine protected area are popular tools worldwide and particularly useful for demersal species compared to pelagic species. However, these usually require more costly sea patrols to ensure fishermen do not enter and fish in restricted areas. This report did not obtain any information on the level of illegal fishing with respect to the various regulations mentioned above, either by domestic or foreign vessels. That would require more in-depth research beyond the scope of this limited survey.

Overall, the responses indicated a tendency to rely mainly on input controls such as gear limits, seasonal closures and restrictions on certain fish species, and not to rely on output controls. While output controls are often considered superior approaches to controlling fishing efforts, more work is needed to collect landings data and get vessels and fishermen registered and licensed. From the findings above, Somalia has a long way to go in putting these preconditions in place.

### 6.6 Factors that Foster IUU Fishing

Results of the analysis suggest that IUU is mainly due to inadequate surveillance and monitoring, as well as a lack of Somali fishermen's knowledge of fishing regulations. While these findings apply to all sites surveyed, the analysis shows a great deal of regional variability for illegal fishing. This is probably due to reported differences in surveillance, and monitoring as well as differences in the fishermen's access to information concerning fishery regulations.

These results suggest that most fishermen in our sample see current rules as legitimate and are therefore unlikely to affect Somali fishermen's illegal activities. Areas of potential improvement

are: 1) Implementing regulatory framework to maximize benefits of this industry for a large segment of the fishermen, 2) Adopting non-discriminatory sanctions for violators, and 3) Increasing fishermen's involvement in setting fisheries rules through co-management.

### 6.7 Impacts of IUU Fishing, Piracy and Anti-Piracy Campaigns

Concerning these impact indicators, 71 percent strongly disagreed with the statement that foreign piracy patrols protect foreign fishermen. Sixty eight percent strongly agreed that illegal fishing impacts livelihoods of fishermen, 81 percent felt strongly that it impacts marine ecosystems, and 82 percent strongly agreed it impacts their catches. Respondents were equally split on whether piracy restricts where they can fish. Sixty nine percent of respondents either agreed or strongly agreed that piracy deters illegal fishing. Seventy seven percent either agreed or strongly agreed that anti-piracy patrols affect their livelihood. These responses tended to indicate a very negative perception towards illegal fishing and anti-piracy campaigns, and that these actions have ecological and economic consequences.

### 6.8 Vulnerability of Fishing Communities and Key Development Challenges

With respect to the responses to a number of indicators concerning the fishing sector and community development issues described above, there are overwhelming numbers that believe development constraints include a lack of capital, as well as inadequate transportation and fish processing infrastructure. Most felt there were too many fishermen, another sign of overfishing that is having an impact on incomes and fish catch. Respondents were almost evenly split as to whether too many migrants are affecting fishing. Large numbers agreed that foreign fishing vessels were taking large amounts of fish, and that there were few fish left. This suggests a perception that both foreign and local fishing are impacting fishing abundance and contributing to overfishing. Fishermen reported that the economic situation is forcing many to leave the coastal villages. Most believe that waste dumped from foreign vessels is harming the sea, but we have no evidence of whether this is directly linked to illegal foreign fishing (dumping of dead by-catch). Anecdotal reports of coral reef damage from destructive fishing practices were not verified in this survey, but this does not mean it does not occur. While most feel that no one is in charge of management, they do believe that laws are being successfully enforced. Fishermen are about evenly split on whether they want their sons to become fishermen. This suggests that large numbers do not see a bright future in this sector, which is not surprising given perceptions that catches, income and fish are in decline.

## 7.0 RECOMMENDATIONS

The following recommendations are based on the results of this survey. Many are echoed in the Policy and Advocacy papers produced by the same team of consultants.

### 7.1 Reporting of Catches/Landings

Somalia federal and state fisheries authorities should work closely with the FAO and other development partners to establish a proper data and information system for reporting landings of small-scale fleets and commercial and industrial sectors, including any foreign fishing or joint ventures. With the high prevalence of cell phones, innovative and low cost systems for fishermen to self-report could be developed, if coupled with incentives for reporting and auditing to ensure the reports' accuracy.

An in-depth study of at-sea fish sales in Puntland should be done with the aim of understanding advantages of this practice for Somali fishermen and ways to report such landings even without coming to a fish landing site. That almost all fishermen have cell phones provides opportunities for some or all to self-report the volume of catches sold at sea via SMS texts to fisheries authorities, or via a smart app with occasional at sea auditing by fisheries inspectors to keep them relatively honest in their reporting (and assuring them that the data would not be linked to any taxation or landing fee system). If this practice (at-sea sales) benefits Puntland fishermen economically, and catch volumes could be accurately assessed, banning such practice-perhaps a common policy option-should not be considered.

### 7.2 MCS and Enforcement Systems

- The entire federal and state MCS system needs to be looked at closely, and to have its priorities developed. This includes the registration and licensing of domestic, as well as foreign fishing vessels and fishermen. Somaliland seems to be leading other states in developing a registration program for vessels and a previously mentioned report showed that the registration of fishermen in Puntland is underway. This program is a model and should be expanded coast wide.
- Fisheries enforcement needs more involvement of fishermen, particularly in community-based surveillance and reporting. This could be accomplished in part by using SMS and cell phone technologies to report infractions, and via community radio call-ins.
- Somali states should explore ways of coordinating and cooperating with foreign navies to obtain information on IUU fishing in Somalia's EEZ. It is doubtful whether these foreign navies would want to make actual apprehensions, but that could be a topic of discussion if Somali enforcement officers were placed on board and made official arrests instead of foreign navy personnel. Even if foreign navies provide Somali authorities better information about foreign fishing locations, without being able to apprehend and arrest violators at sea, the information will still not be acted upon nor serve as much of a deterrent.

- State security agencies should have equipment, including patrol boats, vehicles, radio communication, aerial survey (or coordination with air force or police, etc.) to effectively survey the coastline and enforce the law.
- MSC methods and effective enforcement mechanisms should be adopted, including training fishing officers (observers) to accompany industrial fishing vessels-domestic and foreign-to ensure these vessels' real-time catch submissions, effort data and payment of revenues.
- Computer-based, satellite-aided surveillance and survey activities, including the use of Vessel Monitoring Systems (VMS), real-time data and revenue collection system should be established nationwide. Information should then be sent to a central processing and analysis center.

### 7.3 Fisheries Regulatory Regimes and Administration

- Somalia should have a more explicitly decentralized fisheries administration with clearly outlined state authorities and jurisdiction. Management of near shore waters and small-scale fisheries could be delegated to state authorities and federal authorities retained for larger scale commercial and industrial fishing and large pelagic fisheries. As stocks like tuna are shared with other countries in the region, national jurisdiction is needed to manage them, as it requires coordination with Regional Fisheries Management Organizations. Along with decentralization, collaborative management schemes should be developed, which will likely need some form of regional management committee, especially for the wide-ranging pelagic species, but not excluding community based schemes that could be especially appropriate for demersal stocks. The role of traditional clan leaders in co-management institutions should be considered. As suggested in the Framework for Fisheries Legislation, these committees will be the primary agents for managing fisheries in Somali regional waters and will play a decisive role in combating IUU fishing, by adopting and implementing management measures. These measures, among other things, could include sharing information and coordinating on IUU matters with neighboring regional committees, improving monitoring and control programs and adopting of better regulations for matters of regional importance.
- TURFs and associated co-management committees for each TURF would seem to be an appropriate regulatory model to pilot. TURFS are often associated with fisheries, marine reserves or no-take zones and are more appropriate for locations that rely on demersal stocks. For pelagic regimes, regional style co-management groups would be more appropriate and using size limits (no juveniles) and seasonal closures would be good starting points, as developing better catch, effort data and stock assessment capabilities can lead to considerations of quota systems and catch shares.

### 7.4 International Cooperation to Combat IUU Fishing

- Somalia needs to sign or ratify the Port State Measures Agreement. This is the first binding global instrument focusing specifically on combating IUU fishing. It establishes minimum standards for the conduct of dockside inspections and training of inspectors and requires parties to restrict port entry and port services for vessels that are known or reasonably suspected of having been involved in IUU fishing. Somalia, as a nation affected by the menace of IUU fishing, must take measures to participate in these agreements. For developed countries, this instrument gives them an advantage to promote sustainable management of fish stocks and support their fishing communities' economies[40]. For Somalia and other countries targeted by IUU fishing vessels, this agreement means more. IUU fishing negatively affects coastal fishing communities livelihoods, the country's fishing sector and the health of ecosystems on which fisheries depend. Therefore, Somalia should be at the forefront of the campaign to implement the Port State Measures Agreement.
- Somalia should support flag state measures to combat IUU fishing. The FAO International plan of action to prevent, deter and eliminate (IPOA-IUU) is a voluntary instrument that applies to all states and entities and to all fishermen. This instrument addresses measures to prevent, deter and eliminate IUU fishing. These measures focus on all state responsibilities, flag state responsibilities, coastal state measures, port state measures, internationally agreed market-related measures and research and regional fisheries management organizations. It also addresses requirements of developing countries. Although this instrument is voluntary, it could be an important instrument for Somalia to see how to deal with IUU fishing in its waters.
- Somalia should actively participate in global and regional fisheries agreements. It is in Somalia's national interest to participate actively in regional and global fisheries agreements and conventions, especially those related to IUU fishing.

### 7.5 Fisheries Sector Development Needs and Opportunities

- Supporting infrastructure development for the small-scale fisheries sector needs significant investment. This includes building road infrastructure and providing ice and cold storage capabilities. These projects are rather costly, and road and non-sector specific development facilities are outside fishery authority's mandates. Another option would be to look more closely at improved drying and salting processes as interim alternatives to ice and cold stores, especially for domestic markets. High value export commodities and fish cold stores will require ice and transportation upgrades. To this extent, practical ways to promoting private sector investment in cold stores and ice facilities should be preferable to government-run or cooperative facilities, since these have a poor track record globally for upkeep and operations. But since so many fishermen are members of cooperatives, this could be considered if careful

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40 http://www.nmfs.noaa.gov/ia/iuu/iuu_overview.html. Accessed on October 22, 2014.

organizational development, business capacity development and business feasibility and planning and are done first.

- Promotion of fish as a healthy, nutritious and locally available food supply should be undertaken via mass media and communications campaigns to increase local demand and per capita consumption. This is presuming that low per capita consumption is not a quality and distribution problem, nor a cultural or individual preference. Surveys on consumer preferences and reasons for not eating more fish could help with understanding the reasons for low per capita consumption and with tailoring messages to specific groups more effectively.

- Somalia should seek funding for training programs and set up a fisheries training center. Continuous training of staff will eventually improve governance capacity across all aspects of fisheries management, including fishery officers, quality inspectors, managers, community leaders-including women-and leaders of regional and local administrators.
- Traditionally, livestock husbandry is more predominant among the Somali rural population, with camels, goats and sheep the main domestic animals. However, the endurance of this livelihood depends on rainfall, which is difficult to predict in the Horn of Africa region and leads to intermittent drought and famine. Marine resources could be a dependable alternative source of food and employment. Given the enormous potential in the fisheries sector, it is essential to develop fisheries and bring it into mainstream Somali society, especially to the younger generation and in northern Puntland and Somaliland. These two regions seem to have basic requirements in terms of peace and stability combined with essential fisheries rules and regulations already in place.

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## ANNEX I: RAPID ASSESSMENT PROFILES

### *Eyl*

**General Description of the Community**

Eyl is small town that has been around for centuries, it was properly established when Italy ruled from 1904 to 1925. There are around 400 households. The town is split into two separate villages; one is near the beach and the other about a ten-minute drive towards the mountains. Fishing plays a very large role in this community. All types of resources are exploited in this town, but the main one is fish. Everybody takes part in fishing activities, either by preparing the equipment, financing the boats, going out to sea as fishermen, selling the fish in the market or preparing food at home. How much you can exploit the resources is dependent on you and your finances. Fishermen in this town are highly dependent on fishing as their source of income as other sources of income are very limited in Eyl. There is currently very little illegal fishing in Eyl.

Fish is collected at the seashore and belong to certain individuals. These resources are gathered since fish is one of the staple foods in the village so there needs to be a supply of fish for the home. Fish is also sold in town and later distributed to other towns through a network of brokers. Fishing equipment and boats are purchased from larger cities and towns (mostly the city of Boosaaso). Fishermen in Eyl do all the maintenance for their own equipment. People distribute resources however they see fit. Since the resources belong to them, they can do with it as they please. In Eyl, no fish is given to the local tribesmen. Local fish is no way processed.

**Fisheries Jurisdiction**

Traditional leaders and the police work together to keep the town peaceful and stable. There is a local fishermen association in the area but it is quite weak. There is no ministry of fishing in this region but traditional leaders play a role in the fishing activities. Local fishermen management committees provide access for the fish to good markets. This committee also tries to raise contributions and plan fishing activities on a small scale. Traditional leaders, which are elected by the community, put themselves in charge of the environment that handles fishing. They also play an intermediary role and try to solve disputes among local fishermen.

**Restrictions on Fishing**

To the respondents' knowledge, there are no local boats registered or licensed by the municipality. Big fishing vessels that operate commercially (not local) are taxed. Another tax is in place for fishermen who have a shop. There is no information collected about local fishing, fishing ships take what they want and so do the local fishermen, although fishing ID cards have been issued.

**Illegal Fishing**

There used to be many foreign boats fishing along the shoreline, but during the last two months the number of IUU ships have decreased. Foreigners carry out the majority of illegal activities. The respondents believe Somali citizens have natural birthrights to fish in this sea and therefore

cannot act illegally (although there are certain Somali citizens that help the foreign ships fish illegally, which is frowned upon). There are suspected Somali informers in the village warning the foreign boats when they should leave. The respondents believe that Yemeni boats operate with government permission, while Iran operates illegally. The respondents also believe that NATO also takes benefits. People believe the problem is weak governance and enforcement. The respondents say that piracy is the result of illegal fishing. The Puntland government spoke strongly against the issue, and there is a small marine army present in Boosaaso. However, the solution is a united Somalia with the power to protect its countries assets. Foreign fishermen need to hire local security to protect them when fishing along Eyl's shores. Yemeni sailors hire Somali guards (legally) while other foreign fishing vessels do so illegally. Pirates have been known to kidnap and extort foreign fishermen. These pirates have also hijacked boats to use for piracy. They then abandon boats, waste the fish inside, and lose the equipment, and cause the fishermen to suffer financially. Ex-pirates in this area will either join the ranks of the many unemployed Somali citizens or try to find work for them.

Many fishermen have left their jobs to become builders, soldiers or other professions due to the overexploitation of local fish. IUU have hurt the economy. Many fishermen lost their gear because IUU fishing vessel nets took their gear, meaning fisherman had to take out loans to buy new equipment (to only to lose it again due to IUU). In the past, non-fishermen have come to the sea to fish in times of drought. Individuals with small herds of goats and camels would fish as a secondary income.

**Monitoring and Enforcement**

The municipality conducts marine fishing enforcement activities but they do not have boats, so it's difficult to accomplish anything. It only has a few police and marines. There are no local citizens acting as monitoring and surveillance groups, but local citizens have tried to create an awareness campaign. There have been no arrests made for illegal fishing in Eyl. Tribe/clan leaders will warn fishermen who break the rules and report it to the relevant authorities if the problem persists..

**Environment and Developing Issues**

Some individuals have heard rumors about the foreign boats dumping toxic waste in Somali waters, while others claim to have seen weird substances in the water (making the sea change color and causing people's eyes to hurt). There have been a few instances of "lots of dead fish" during 2000-2006, reportedly due to a toxin released by foreign ships. Concerns about the environment mainly focus on the seabeds and reefs destroyed by illegal fishing nets. This has destroyed the natural habitat of fish in Eyl. There is much room for improvement in all areas of life within this small town. Some aid has reached the town, including food from NGOs, and other assistance such as a fish cooling system and roads.

**Commercial Landing Sites**

There are currently two small cold storages owned by private citizens in Eyl and one big one being built by an NGO called FOA. Foreign boats rarely land in Eyl's ports and if they do, they

are registered. There are Somali observers of foreign and local boats in this town. None of the respondents knew about reporting the amount and location of fish caught.

**Lasqoray**

**General Description of the Community**

The community in Lasqoray depends on fishing for its livelihood and most residents have settled in this small fishing village to catch fish. The population is at least 1000and the main source of income is fishing. The government invests very little in the community, but there is private investment. Comparatively speaking, the general environment in Lasqoray is mostly peaceful, although there are still elements of fear. The most exploited fish are sea types such as tuna, swordfish and other large fish. Almost everyone in the community is dependent on fishing or the sea, no particular group in the community has a monopoly on these resources and everyone is free to use it. Mostly men go out to sea to fish and women trade in the fish brought back to the village. Fishermen in this region rely on fishing as their main source of income, there is very little work alternative in this community. However, some fishermen own and operate businesses such as small shops and stores.

Illegal, unreported and unregulated fishing takes place all the time and it occurs mostly when the fish are most plentiful. During the closed season when local fishermen using small boats are unable to fish due to high tides and strong winds, foreign fishermen have the sea all to themselves because they operate larger fishing vessels. The community's catch is sold to whoever is there to buy it, and some of the fish caught is used by the community. The fishing resources are gathered to be sold and to be used for food consumption at home. The percentage sold is much higher than used for home consumption, which can be as small as 0.5 to 1 percent.

Resources such as fishing gear, equipment and boats are purchased from the large, nearby city of Boosaaso. The fishermen get spare parts from Yemen & Boosaaso, but the fuel they use usually comes from local fuel stations in Lasqoray. The fishermen maintain their own fishing equipment and sell their fish to anyone who pays a suitable price. The fish belongs to whoever has caught it, and no fish is given to tribe leaders. There are no processing procedures after the fish is caught.

**Fisheries Jurisdiction**

The community takes responsibility for the fishing activities in town and everyone plays a role. There are local fishermen associations in the area, but they are not operational and can do very little. There are local fishermen management committees however, their capacity is limited and they do very little management. However, they can give advice. There might be an entity in charge of the environment that handles fishing issues in this region; however, little has been done. The respondents do not believe there is anyone present that has the authority to regulate fishing in the community, nor is there an authority responsible for landing sites.

**Restrictions on Fishing**
There are usually no restrictions on fishing apart from the restriction on catching pregnant or baby fish. There are restrictions on illegal foreign fishing but they are not enforced. There are no current restrictions to prevent fishermen from fishing where they want; it is free and open. There is no official ban on fishing during certain times of the year, but it is not advisable to fish during the summer season.

**Licensing and Reporting**
All respondents answered no to local boats being registered/ licensed by the municipality, there being a local fishing tax, and to the collection of local fishing information/data.

**Illegal Fishing**
The respondents see foreign fishing vessels fishing very close to the coastline all the time. At night, respondents could see bright lights in the ocean. Foreign fishermen are the biggest culprits of illegal fishing in this area. They are usually from Iran and Yemen and like to catch the best fish to send back home. The cause of this illegal fishing problem is the lack of coast guards and a strong government to protect its shores. There is also a lack of proper restrictions to prevent IUU. There is no current link or relationship between piracy and illegal fishing, apart from the fact that piracy first started as a way to combat illegal fishing in these waters. Little is being done at the moment to solve this problem, although respondents have heard plans to tackle the issue from the government. A coastal guard and strong sea restrictions are needed, plus a working relationship between the community and its government and lastly, strict punishment for those who break the law. Foreign fishermen do need to hire local security for protection as almost all have Somali security staff onboard and also have a relationship with local people that have given them permission to fish in these waters (these Somali people are known).

Pirates in this region have been known to kidnap or extort foreign fishermen, although it is rare now. Some pirates have been known to harass local fishermen and take transportation, food, water, and qat (a local drug). As piracy has declined in this region, some of them have gone back to fishing. Most pirates were fishermen, especially those from the Indian Ocean. Quite a few fishermen have left the country in search of jobs and a new life. Others have stayed and started small businesses, or left for larger towns to become builders, drivers, etc. Sometimes non-fishermen will come to the sea to fish during times of drought.

**Monitoring and Enforcing**
There is no municipality in this town to enforce any fishing activities or supply equipment and resources. Sometimes local citizens will report illegal fishing to the Puntland government but they mostly don't because they believe the government already knows. Community fishermen in this region do not partake in illegal fishing. Tribe/clan leaders rarely sanction fishermen who break the rules but they sometimes advise the fishermen to look after their environment.

**Environment and Development Issues**

Most respondents have heard of foreign boats dumping toxic waste in Somali waters. Some of the respondents have seen "lots of dead fish" landing on the beach and blame this occurrence on the toxic dumping and illegal fishing activities by foreigners. However, other respondents claim to have never seen it. The only environmental concerns that respondents were aware of in the town were problems relating to illegal, unreported, unregulated fishing and the destruction of the environment from charcoal production in the region. There is lack of development in the entire country; but as a community, the respondents are used to it. The town needs better healthcare (the current hospital is not working). The roads in and out of the city are not tarmac and go through dangerous areas. There is no funding for community fishing projects.

**Commercial Landing Sites**

There are no fish processing in the community and only the tuna factory has cold storage. Foreign boats land at the village port but they are not registered. Either Somali agencies or Somali businessmen are responsible for these foreign boats. All respondents answered "no" to there being Somali observers on foreign or local boats and to fishermen reporting the amount of fish caught and the location of the catch.

**Hobyo**

**General Description of the Community**

The city of Hobyo is a mid-size town established a very long time ago. It has quite a large population of around 10,000 people. Hobyo is known for being relatively safe and secure. The only available fishing resources and assets for citizens are boats and gear, but both are basic and are quite old. Both young and old men are capable fishermen and the whole community takes part in fishing activities (whether they go out to sea or purchase a boat or employ others). Most fishermen in Hobyo only receive income from fishing. Illegal fishing takes place throughout the year in Hobyo.

Fishing resources are not gathered at a single location or place currently the season is over and there is no market. There are usually only two reasons why fish are caught; to sell in the local market or to eat at home. Roughly five percent of the fish is used at home and 95 percent is sold for profit. Fishing resources are improperly gathered and people store them in various places. Fishing equipment and fuel is purchased from the local market and very little maintenance is done on the fishing equipment. The resources are distributed individually. They are sold according to market demand. Sometimes family members receive fish gladly. iThe tribe leaders come from families who can provide for them if they wish. Fish in Hobyo is processed sometimes, but the only two local techniques are smoking and drying.

**Fisheries Jurisdiction**

Many people are responsible for the fishing activities in town, such as tribal leaders and the local ministry of fishing and environment. There are local fishermen associations in the area but there is no cooperation among them, they are not well developed and are newly built with very

little activity. Local fishermen management committees are only nominated and have yet to do any real activities. There is no one officially in charge of the environment that handles fishing issues. Tribe leaders will occasionally solve small problems in the fishing community.

**Restrictions on Fishing**

There are absolutely no restrictions on fishing in Hobyo Fishermen are free to go and fish whenever they want. Fishing is only banned during high tide season.

**Licensing and Reporting**

Most respondents said that local boats didn't need any registration or license. There are no local taxes on fishing/landing fees that fishermen need to pay in this area as well. No fishing information/data is gathered in Hobyo.

**Illegal Fishing**

You can find foreign fishing boats most of the time around the shoreline of Hobyo as they can get close without any problem or resistance. Foreign fishermen are responsible for the illegal fishing in Somalia. Fishermen from Yemen, Iran, and Oman like to catch everything and sell to the Gulf, while fishermen from Taiwan and China like to catch Sharks and sell to the international fishing markets. Illegal fishing is caused by local state government lacking a strong army/navy and having insufficient boats to monitor their own waters. There is no link or relationship between illegal fishing and piracy, but sometimes pirates hijack illegal fishing boats to then hijack other foreign boats or ships. Nothing much is done to try to solve this situation. This is why the respondents want the UN to get involved and oversee the protection of Somalia's natural resources. They also need to provide coastal guards with sufficient boats to monitor and protect the coastline. They need more help from the international community and governments and they need help with building a stronger regional government. Foreign fishermen need to hire local security to protect them in these seas.

Pirates in this area have been known to kidnap the foreign fishermen for ransom or to use their boats to hunt others. They do not harass local fishermen. Piracy is decreasing but the respondents do not believe that pirates will go back to fishing-even though most were ex-fishermen-because they can't adapt to their old lifestyle.

Some fishermen have left their jobs to do other things because local fish are over exploited. They will go anywhere and everywhere to find their daily bread. Non-fishermen do not come to fish during times of drought because they don't have the proper equipment that requires capital and experience to operate.

**Monitoring and Enforcement**

The municipality does not do any fishing enforcement. The municipality's manpower consists of around 200 policemen (25 marines but with no equipment or boats). Local citizens do not get involved with monitoring and surveillance because the 25 local marines in the village are supposed to do it. No one reports illegal fishing activity unless asked. There have been no

arrests for illegal fishing because no one in the village has the power to enforce them. Clan leaders have been known to sanction fishermen who have broken the rules.

**Environment and Development Issues**

All respondents have heard of foreign ships dumping toxins in Somali waters. They have heard of “lots of dead fish” and believe the cause is waste being dumped from foreign boats illegally. The biggest problem in Hobyo is illegal fishing. There are no development issues in this particular area. There are currently no funds to help the local fishing community. However, a few years ago the fishermen received some fishing equipment (just once).

**Commercial Landing Sites**

Currently, Hobyo does not have any cold storage facilities or any ports. There are no monitors on foreign or local vessels. Fishermen in Hobyo neither report the amount of fish they catch nor where they catch them.

**Boosaaso**

**General Description of the Community**

Boosaaso is one of the largest cities in the state of Puntland with over 200,000 people. For many people, Boosaaso is a commercial hub through which Puntland's goods flow. It has a large port (comparatively speaking), and for many people fishing is not considered their main source of income. It is considered a secure and safe place with few violent incidents. Fishermen in Boosaaso have access to many fishing resources and all fishing equipment can be found within the city. The region's only boat factory is in Boosaaso, that has a fishing zone and relatively large fish markets. Everyone plays a role in the economy, depending on their financial capabilities and how much they invest in fishing equipment. You can be a fishermen, fish broker, equipment merchant, etc. Most fishermen in Boosaaso are dependent on fishing as their main source of income but others have second jobs such as restaurant workers.

Illegal fishing occurs throughout the year, even when the sea is unsafe for local fishermen (due to them having smaller boats). Fishing resources are usually gathered in the fish market while a fishermen association plays a role in boosting Boosaaso’s fish industry. The private sector has the rights to the fish industry, and everyone is entitled to his or her property. One of the reasons why the fishing resources are gathered is to establish a strong stable market and have one price for the products. The fish used for home consumption is around 2/3kg for every 20kg, but it differs for each household.

In Boosaaso, ship and fishing equipment is bought abroad (mainly in the U.A.E) while boats are built within the city. Spare parts and fuel is found locally, as well as maintenance workshops and fuel stations. Fish is sold to everyone within the community, including restaurants and companies. Local fish are not processed in Boosaaso but are usually sold fresh.

**Fisheries Jurisdiction**

In Boosaaso, the ministry of fishing is responsible for fishing activities in town. They have issued ID cards for fishermen and tried to ensure that all boasts are registered. Local associations also

help out and try to involve with the management of fishing activities. There are multiple local fishing associations in the Boosaaso area that help with marketing fish and coordinating fish-related activities. These associations liaise with the government and fishing community. However, some complain that these associations do not properly distribute the assets they possess. There are no local fishing management committees in the area. The ministry of fisheries is in charge of the environment as well as handling fishing issues in Boosaaso (they recently set up a new office in the fish market). Traditional leaders, along with government officials from the ministry of fishing, try to solve disputes and promote clean landing sites and hygiene.

**Restrictions on Fishing**

There are a few restrictions on fishing in this area, like not taking baby fishes. Fishermen in this area are free to go where they please and there are no restricted areas at sea. During heavy sea storms or when the sea is unsteady, the government will advise people not to fish.

**Licensing and Reporting**

The Ministry of Fishing registers and licenses local boats. For fishermen to sell or trade their fish in the market, they must first pay tax. Very little information is collected about local fishing, but the ministry of fishing is responsible for tax collection.

**Illegal Fishing**

Occasionally foreign fishing boats will be spotted close to the shoreline, although it has not been a problem recently. Somali brokers have been noted for helping foreign fishermen carry out their illegal activities, but foreign ships are the ones who do the majority of the illegal fishing in Boosaaso. Foreign fishermen in this area come from Iran, Taiwan, Asia, and Yemen. The respondents claim that even NATO ships have been blamed for taking advantage of the lack of enforcement in the sea. It is claimed that NATO ships have been protecting these foreign illegal fishing vessels. The belief behind the cause of these illegal fishing problems is a lack of a coast guard and weak government leadership. Not much is being done to solve these problems. The respondents feel as though the Somali brokers involved in IUU fishing need to be apprehended. They also feel that there needs to be an establishment of a strong marine army that will be used to control the sea and stop corrupt politicians giving foreign ships licenses.

The respondents do not know if there is a link between illegal fishing and piracy, but they say that pirates and known for hating foreign fishing boats. Foreign fishermen need to hire local security to protect them when fishing in this area, though they don't hire pirates for this task. It has been noted that whenever pirates have the chance, they will extort or kidnap foreign fishermen (although piracy has drastically declined in the region). These pirates will also harass local fishermen by stealing and raiding fishing boats. Pirates have re-entered the community since the recent decrease in piracy and are trying to find a way to survive. Some will do so by fishing, since most were ex-fishermen.

Due to over exploitation of local fish, some fishermen in this area have left their jobs and gone to find any kind of work in other large cities like Garowe and Galkayo. During times of droughts, skilled non-fishermen will go to sea to fish.

**Monitoring and Enforcement**

The municipality has established a small marine force to protect the sea and have a way of enforcing fishing activities. This small marine force is mainly used to protect from pirates and terrorists. The municipality has a few boats but they are underequipped to handle the large task of protecting one of Africa's longest coastlines. No local citizens act as monitoring and surveillance groups because they would be considered pirates and subjected to heavy fire and resistance. Every year people are fined for illegal fishing in Boosaaso. Their boats will be seized goods confiscated, and it will be fined for its IUU activities. Tribe/clan leaders don't sanction or punish fishermen who break the rules since they do not have the authority to do so, but they will warn and reprimand them.

**Environment and Development Issues**

All the respondents have heard about foreign boats dumping toxic waste in Somali waters. They have also heard of "lots of dead fish" landing on the beach, and some have seen them wash up on shore. The respondents believe that this phenomenon is caused by toxic waste being dumped in the water. There are many concerns about habitat destruction due to the heavy charcoal production in the Bari region where Boosaaso is located. The natural environment in Boosaaso is being destroyed and it affects the livestock and grazing grounds. The large fishing nets used by IUU fishing boats are also destroying the reef, seabed, and coral marine life.

There are development issues in Boosaaso as well. Companies awarded contracts do not carry out their duties as they should and the end product is below par. There are many facilities to improve, however the lifestyle is much better in Boosaaso compared to other remote fishing villages. There is funding for fishing projects in the area, like for a cold store and other small funds to reach the populace. However there are complaints that the funds don't reach the right people.

**Commercial Landing Sites**

Within the community there are cold storage facilities belonging to the association. Sometimes foreign fishing boats will land at Boosaaso ports but they will be registered. Occasionally there are Somali observers on local or foreign boats (whether they monitor or are there to guard, the respondents did not know). Fishermen will report the amount of fish caught and location either to the government or to the fishermen association.

**Garaad**

**General Description of the Community**

Garad is a small fishing village in the state of Puntland, where it was established around the same time the capital city of Somalia, Mogadishu. There are around 840 families living in the village. Most families rely on fishing as their main source of income but also raise livestock and

sheep as a secondary source. All fishing resources made available to the community are exploited. Everyone takes part in the exploitation of the resources. Men are usually the fishermen, and women fish merchants. The fish is either sold to boats at sea or to women who have invested in fridges to keep fish cold. The women will later sell the fish to delivery trucks that take it out of town. Women also sponsor male fishermen by providing them fishing boats or gear in return for some of the catch.

Some fishermen have shops and small businesses within the community. However, most rely on fishing activities as their main source of income. Illegal fishing occurs all the time in Garad. However, over the last two months, IUU shipping has drastically decreased. Respondents related the sharp drop in IUU fishing with the president of Puntland's speech declaring a crackdown on it.

Fish is kept in a cold storage facility in the village. Each villager has a bucket or barrel to store fish, or the fishermen combine their catches (with a note stating how many kg each fisherman has stored). Boats are taken to the beach, turned upside down and left there. Fishing gear is stored away, and the fish placed in cold storage. The boats are purchased from Bosaso, and fishermen do their own maintenance. People distribute their fish shares however they like as there is no system in place. Fish is sold to the highest bidder. Only shark is processed in this town with local fish sold fresh.

**Fisheries Jurisdiction**

No one is overtly responsible for fishing activities in the town. Only one person represents the ministry of fishing for the Puntland government and he does not have the necessary resources or capacity to fully carry out all required duties. Elders and tribal leaders play a role when in all local affairs. There was a fishermen's association in 2006 and it disbanded, although the title still exists. There are no local fishermen management committees in this region. People of the community (represented by the traditional leaders of the town) are in charge of the environment and handle fishing issues. Traditional town leaders have the authority to regulate local fishing and solve conflicts.

**Restrictions on Fishing**

Very young fish are not allowed to be caught in this region. All Somalis are free to fish anywhere they choose but at certain times of the year, it is advised not to go fishing, like during dangerous sea seasons (usually July to September) and during the month of Ramadan when people fast.

**Licensing and Reporting**

For large commercial ships to fish in this area they need to pay 100 dollars (each time they visit) and one barrel of oil. There is no tax on local fishermen or any small-scale Somali fishermen. Only the captain's name and amount of tax paid per ship are recorded (orally or informally) in Garad.

**Illegal Fishing**

Two months ago, seeing foreign fishing boats close to the shore was a frequent occurrence. Foreign fishermen do the most illegal fishing in this area because all Somali citizens have natural birthrights to these waters (they cannot be illegal unless they are helping foreigners). These foreign fishermen are usually Middle Eastern or south East Asian. They take everything they can, even the coral and reefs, destroying the entire environment. These fishermen are most likely to sell the fish to international markets. The cause of illegal fishing is the lack of enforcement and the temptation of plenty of fish in Somali waters (unlike on their own shores). There is no link between illegal fishing and piracy in this town. People believe them to be two separate issues. Nothing has been done to solve these problems, but the President has spoken against these illegal actions. Some boats were captured up north a while ago due to illegal activities. The respondents advised a need for a much stronger navy. Foreign fishermen need to hire local security to protect them when fishing this region.

When piracy was high, foreigners avoided fishing around Garad because they were afraid of being kidnapped. Pirates never harassed local fishermen, just created social problems at home such as unruly, illicit or immoral behavior (which was frowned upon). There are no more pirates in Garad, as they drowned at sea, were arrested or killed in fighting. The remaining are scattered and weak. Pirates originally came from East Africa (Somalia, Djibouti, Ethiopia, and Kenya). Many of these pirates are ex-fishermen.

Plenty of fishermen left Garaad due to the exploitation of local fish. They moved to various places, usually bigger cities, where they believe there are more opportunities. Non-fishermen close to the shore come to fish in times of drought, especially those with previous fishing experiences.

**Monitoring and Enforcement**

The municipality does not have any fishing enforcement activities. Private Citizens try to enforce their waters however they are usually mistaken as pirates. The only equipment/asset the municipality has is a representative from the ministry of fishing. People have been arrested for illegal fishing in this area. A long time ago a Taiwanese ship was seized, fined and had its fish confiscated. Local tribe/clan leaders do not sanction fishermen who break the rules since Somali people have the right to fish here and it is usually crime free.

**Environment and Development Issues**

All the respondents have heard of foreign ships dumping toxins into Somali's waters but they have never seen it. There have been isolated cases of "lots of dead fish" washing up to Garad's shoreline, although they have not been on a large scale. This is believed to be from large nets used by foreign boats. In Garad, there are no land-based environmental concerns because 15 years ago, the local elders and traditional leaders banned charcoal production. However, IUU fishing is destroying the reef and coral. There are also development issues in this such as no electricity supply in town, (citizens have to use motors that run on fuel) no water unless you dig wells. There is only small private investment in private property. Respondents believe that

having security at sea would have a trickle effect and bring land security. Roads also need to be tarmacked and a port built (there is currently no port) with cold storage. There is no funding for fishing projects within the community. NGOs will occasionally visit, like ACRC that provided some aid a year ago.

**Commercial Landing Sites**

In Garad there is a large cold storage facility, but the power is really weak, requires a lot of energy to operate and is expensive to run. Last year the cold storage was not used due to its inefficiency. Fish are therefore transported to other cities on pickup trucks with regular fridges loaded with fish on the back. Foreign boats do not come to Garad since there is no port. Somali observers on foreign/ local boats support IUU fishing. Neither the amount of fish caught nor the location fished at is ever recorded in Garad.

**Baargaal**

**General Description of the Community**

The fishing village of Baargaal is around 6/7 km2. The population is very small with around 1000 residents living in this small fishing town. For the majority of the residents, the main source of income is fishing. General security in the town is quite good, as everybody knows one another and crime is low. Development and government investment is almost non-existent.

The fishing resources used and exploited by the community are only the fish caught at sea and used for their home consumption or sold for income purposes. Anyone is allowed to exploit the community's fishing resources and there are no entry barriers but you have to be a Somali citizen (including Somaliland citizens). Foreigners fishing illegally are not welcome, but the people have no way of stopping them. Key informants believe that foreign fishing vessels operating illegally in the region exploit the majority of the fishing resource. What Somali fishermen catch is comparatively miniscule. The women in the community buy from the fishermen and resell fish in the local market for profit. Most fishermen only receive an income from their fishing activities and don't have any other alternative sources. There is no specific month or time of the year for illegal fishing; it occurs year-round.

The fishing boats are lined up on the beach near the village and the fishing gear stored indoors. If it is personal property it belongs to the owner, but natural fisheries resources are thought to belong to everyone. The fishing resources are harvested mainly for commercial reasons, so that fishermen can sell them to earn a living. Fish are also brought home to cook and eat. Each family or house consumes a different amount to what it sells. The main source of fishing resources and equipment within the Puntland region is the large port town of Boosaaso in the Bari region. Regarding international markets, Yemen is a good supplier and close to the Somali coast. Fuel is purchased from Yemeni boats at sea. Spare parts maintain fishing equipment and boats.

There are no long-term contractual arrangements between fishermen and merchants. Fish caught at sea is sold to the highest bidder at the most suitable price and usually sold to other boats. The local fish is not processed in any way, but consumed fresh.

**Fisheries Jurisdiction**

Key informants believed that the local state government was responsible for managing fishing activities, but others thought that no one was responsible. There is a local fishermen's association in the small fishing village of Baargaal called "Dankulmis". This roughly translates to "purpose-get together." Dankulmis tries to manage fishing affairs and mediate on conflicts between fishermen. All respondents that no one was in charge of environmental affairs in the community and that there was no one with any real authority to regulate local fishing. However, for the sake of peace and stability, the traditional elders or leaders within the community try to solve conflicts and disputes themselves.

**Restrictions on Fishing**

There are restrictions imposed on fishermen, such as prohibitions on catching gravid egg-bearing fish and small juvenile fish. However, these are cultural traditions and not fully enforceable laws. Fishermen are allowed to fish wherever they want. There are no geographical restricted areas. Fishing is banned during the summer season.

**Licensing and Reporting**

There are no local boats registered or licensed by the municipality. There are no local taxes or fishing/landing fees that fishermen are required to pay. Local fishing information or data is neither collected nor reported.

**Illegal Fishing**

Illegal fishing in this region is extremely high. The president of Puntland has called it a national catastrophe. Residents see the foreign fishing vessels all the time, operating and fishing illegally close to the coastline. Of course, it is the foreign fishermen who are doing most of the illegal fishing in this region. They have the capacity and the resources to carry out their illegal fishing activities. The foreign fishermen are usually from Iran or Yemen (Thailand has also been mentioned). These foreign fishermen like to catch all types of fish and send it back home. The primary cause of IUU Fishing is a lack of government (or lack of strong government) or national sea guard or navy to protect the Somali coastline. There is no stated link between illegal fishing and piracy, apart from the two parties' mutual dislike. Nothing is currently being done to address this problem. Key informants would like to see a strong government that can tackle this issue and the establishment of a local navy. They also want harder or stricter fines imposed on those caught doing IUU fishing. Foreign fishing vessels and ships hire local Somali security staff (but not pirates). Some people said that pirates don't kidnap foreign fishermen, but others said that pirates like to hijack foreign fishing vessels so they can use them to carry out more criminal activities. All respondents said that pirates do not harass local fishermen. Pirates were originally fishermen, so now that piracy is decreasing they will go back to their previous profession or look for other opportunities.

All respondents said that many fishermen become jobless and have to migrate from the country or try to find jobs in the inland towns. When fishermen go out to sea to catch fish they sometimes can't catch enough to pay for the trip. Non-traditional fishermen from inland come to the sea to fish during times of drought.

**Monitoring and Enforcement**

The municipality does not do any fishing enforcement activities. The municipality has no real assets or equipment in the village for fisheries enforcement. No local citizens act as monitoring and surveillance groups, nor do they report illegal fishing to local authorities. Respondents said that people are never arrested for illegal fishing in the community. Tribe/clan leaders do not have the power to punish or expel fishermen who break the rules, but they sometimes warn them.

**Environment and Development Issues**

Residents have heard of incidences of toxic waste dumping in Somali waters by foreign boats. Regarding having seen or heard about "lots of dead fish" landing on the beach, they believe this is caused by the main reasons; either toxic waste being dumped into their oceans, or activities being carried out by illegal foreign fishing boats. There are major environmental concerns about ex fishermen producing charcoal. There are many community development issues such as a lack of access to proper healthcare and education. There is no funding or help for village fishing projects.

**Commercial Landing Sites**

There is a fish processing and cold storage facility in the community that belongs to the Dankulmis association. Foreign boats land here but are not registered. There are no Somali observers on foreign or local fishing boats. Fishermen do not report the amount of fish they catch or where they caught it.

**Maydh**

**General Description of the Community**

Maydh is a small fishing town that locals say has existed for centuries. It has around 400 households. Fishing is vital to Maydh's economy and its people depend on fishing to maintain their daily income. All types of resources in Maydh are exploited; people will sell whatever they can get their hands on. Seawater fish are exploited most, from large pelagic fish to small coral fish. Within this small community, everybody is interested in fishing but the equipment that they own or can afford limits people. The better the equipment, the more fish you catch. Most fishermen in Maydh only earn income through fishing because other jobs are very limited. There does not seem to be any illegal fishing in these areas. Fishing vessels here pay taxes the Somaliland government.

Most fish is caught and stored at the seashore. The boats are lined up and turned upside down, the fishing gear kept inside and the fish stored away, sold or taken home to eat. The fish, gear and the boats are owned privately. Some of the fish are cooked and eaten at home. The rest is sold at the market in town, and can then be transported and sold to other towns. Everything in Maydh is brought from larger towns or abroad. Local fishermen maintain their own equipment, although some boats look quite old and tarnished. Fish in Maydh are sold at all times of the year to whoever wants to buy it. There is no tradition that local tribe leaders should be given a share of fish catches, although fish can be distributed to family members if the fishermen choose to do so. There is no processing procedure for local fish that are caught.

**Fisheries Jurisdiction**
In Maydh, the Somaliland Government (ministry of fishing) is responsible for the fishing activities in town. There are also around five local fishing associations that work closely together and share resources. Answers to questions about whether there were any fishermen's management committees in Maydh prompted various responses. Some respondents said that there was such a committee in town, others there wasn't or they didn't know. Several groups are responsible for handling environmental fishing issues. These groups include the Somaliland government, the coastguard, and tribal leaders. Different groups in Maydh regulate local fishing on multiple levels. The government, local mayors, and tribal elders have varying levels of authority and respect from the community. Each group will get involved at some point, depending on how big the issue is.

**Licensing and Reporting**
There are no restrictions on fishing in Maydh. Fishermen are free to go where they please and there are no sea restrictions. The respondents are not sure whether anyone collects or reports local fishing information/data but said that the amount of information recorded might be very little.

**Illegal Fishing**
It is very rare to see foreign fishing boats close to the shoreline. Most boats in the area are registered and taxed. The respondents believe that foreign fishermen and vessels are responsible for most illegal fishing in town. These foreign fishermen are from Yemen and Iran. They like to catch all types of fish to send it back home. Illegal fishing in the area is due to poor coast guards, although some respondents (including the mayor of the village) claim that there is no illegal fishing in the village or in the entire Somaliland region. The respondents don't believe that illegal fishing and piracy are linked.

To stop illegal fishing, some respondents recommended an increase in coastal guards, although they don't believe it is a big problem and that Somaliland is improving. In this region, it is not necessary for foreign fishermen to hire local security for protection. The respondents do not know if pirates extort or kidnap foreign fishermen and haven't heard of pirates harassing local fishermen. On Maydh's shores, there are no pirates. The respondents are not sure if any local fishermen have left their jobs to do other things due to local fish being exploited. If it has happened, it might be due to lack of proper equipment and sufficient resources to fish well. During hard times such as droughts, non-fishermen have come to sea to fish since it can be tough to maintain their livestock.

**Monitoring and Enforcement** The Municipality is responsible for fishing enforcement activities and do some monitoring. It does not have any resources or equipment. Since there is no IUU fishing in Maydh, there are no local citizens to act as monitoring/surveillance groups. But if there were IUU fishing, it would be the local elders who would report it to the proper

authorities. The respondents don't know/believe of people arrested for illegal fishing in the area. Tribe/clan leaders never sanction fishermen who break the rules.

**Environment and Development Issues**

Some respondents have heard of toxic dumping of waste in Somali waters by foreign boats while others have not heard of such incidents occurring in this region. Most of the respondents stated that they have never seen or heard of "lots of dead fish," some say it sometimes occurs and it could be caused by poison in the water or the cold. In the region, the major environmental concern is about charcoal production that needs to be resolved. Although the village is slowly developing, demand far outpaces new infrastructure. Although there are private businessmen developing ice production and storage, there is still plenty of room for improvement. There is not really any funding to help community fishing projects, but there are local NGOs providing services like storage and ice production.

**Commercial Landing Sites**

Currently, there are no fish processing or cold storage facilities in the community, but one is under construction. Sometimes foreign boats will land at the ports but when they do, they are registered. There are no Somali observers on foreign or local boats in this region. Fishermen in Maydh usually do not report the amount of fish caught or the location of the catch.

**South Central Somalia Fishing Communities of Mogadishu and Kismaayo**

South Central Somalia has a long coastline (1,200 km) and about 45 percent of the country's EEZ. These waters have diverse stocks of large and small commercially important fish including tuna, shark, snapper, sardines, anchovies and lobster. Reliable and recent data on the status of the fisheries is not available to inform sound planning and management is impossible until an accurate assessment of fisheries stocks and catch is carried out. Fishing methods are not advanced but are effective. Post catch and market infrastructure is generally poor and is a constraint to maintaining fish quality and gaining higher prices. Little value is added by processing. Benadir's coastline starts from Abdiaziz up to Jazeera and Marka and is about 200km long. Coral fringing reef is found in many places. The continental shelf along both coasts is narrow; usually extending to between 6 and 30km from the shore. During this south-west monsoon (May to August) currents of generally northeasterly direction are running along both coasts, creating a variable amount of upwelling in the area. There is upwelling of cold water. In general, the pelagic fish stocks in South Central Somalia's EEZ are thought to be able to provide sustainable annual catches of some 100 000 t, based on several fish surveys conducted in the 1980s. Because of known pelagic fish resources, which are large, and tuna and mackerel species, which have high unit values, the long-term development of these resources could be of vast importance to the economy in South Central Somalia.

The artisanal fishing fleet is composed mainly of houris, which are simple canoes, usually operated with two paddles, but sometimes with a 5hp outboard engine. There are also 6.4m glass reinforced plastic (GRP) boats fitted with 10–15hp inboard engines or 10–15hp outboards;

and 8.5 m GRP boats fitted with 20–30hp inboard engines. The last-named are the most popular, and much used by the artisanal fishery sector as they are very strong, long-lasting and very effective, although the most expensive. They are all locally made by several privately owned boatyards in the two cities. The artisanal fishing fleet is estimated at about 750 motorized boats of between 6.4 m and 8.5 m, and about 380 traditional sailboats, and non-motorized houris (canoes). Unfortunately, most of the motorized boats (about 70 percent) are out of order due to lack of spare or replacement parts and other equipment.

The fishing gear employed by the artisanal fishery is simple and effective, consisting of hand lines, gill nets and long lines. The canoe-based fishermen, since their boats are too small for other types of fishing gear, use hand lining. However, mechanized boats also carry hand lines to be used during idle periods, especially after setting gill nets or drift nets. Long lines are also used for shark, tuna and other big fish species like king mackerel, which are the most popular and most favored species in Mogadishu and Kismayo. Gill nets are used as drifts or bottom-set nets mainly for shark species and have mesh sizes in the 150–200 mm range. The main groups are below:

Large pelagic stocks: The large pelagic species are tuna and big mackerels, mainly yellowfin tuna (Thunnus albacares), longtail tuna (Thunnus tonggol), bonito (Sarda orientalis), skipjack tuna (Katsuwonus pelamis) and Spanish mackerel (Scomberomorus commerson). They are usually caught in inshore waters; their seasonal variations in abundance are considerable, confirming the oceanic migratory pattern of these species. There are two peaks in the landings: in November and in March. However, during the southwest monsoon, their abundance is assumed to be low. They also make important contributions to artisanal fishery production. The primary season for Spanish mackerel is March–June, and for tunas it is October–November. These stocks are lightly exploited by the artisanal fishery sector, but are heavily exploited by the industrial fishery sector, mainly by foreign-flag distant-water fishing fleets, and it is possible that they are overexploited. The foreign vessels compete with the artisanal fishermen, by coming close inshore and inflicting losses, including physical confrontation between the two sides, which has led to gear losses, and at times to loss of life.

The small pelagic fish species of interest are Indian oil sardinella (Sardinella longiceps), rainbow sardine (Dussumieria acuta), scads (Decapturus ruselli, D. macrosoma) and, to a less extent, anchovies (Engraulis japonicus, Stolephorus indicus). Their main distribution areas are off the northeast coast, and part of these stocks makes seasonal migrations into the regions between Banadir and Juba in Kismayo.. They are also exploited by a great number of foreign-flag vessels from distant-water fishing fleets, as well as by national deep-water vessels. The status of the stocks is unknown, and catch reports are unreliable.

**Mogadishu**

Mogadishu has two fishing associations that cooperate as a consortium, namely Hibo Fisheries Association and Al-Amin. They have a total membership of over 500 members, with each group comprising about 23 members. The cooperatives are not very active, but they are the only fisheries organizations at village level. The Ministry of Fisheries and Marine Resources put the number of full time fishermen in Mogadishu at 800. There are two main landing sites in

Mogadishu: Abdiaziz and Hamarweine. The landing site in Hamarweine was renovated by FAO recently but the Abdiaziz site is in bad shape due to the war, so most fishermen sell their catch outside the building. There are no official landing statistics in the area as nobody is recording landings. The catch is consumed at home or sold fresh in markets. Some are dried and salted. The shrimps and lobsters are refrigerated and later sold for resale as chilled or frozen product. Fishing activities do not take place for six months of the year due to "monsoon season", so complementary sources of income are necessary for the households. Half the respondents involved in fishing activities said that they did not sell their fish to traders. It is therefore thought that these fishermen keep their catch for self-consumption or for direct sale at market. Fish with export value for export are neither caught nor sold by these fishermen. This situation is however different compared to rural coastal area. On average, fishing activities enable each fisherman to earn 561 USD per annum. This amount is related to the monetization of just the fish sold and it is reported that fishing activities are only undertaken during six months of the year. Fishermen are working in teams on boats, and on average the respondents said they kept 36% of their catch after sharing. Based on informal discussions, it seems that IDPs are mainly hired to clean the fish before it is sold on the market. Local merchants own the boats.

**Kismaayo**

Fishing is a major livelihood activity around Kismaayo that involves 40-60 percent of the community. Night fishing from 04.00pm to 06.00am reportedly occurs between November and April, but not during the monsoon season (May-October) due to high winds.

Kismaayo has two fishermen's associations: AL-Amin and Juba Fishing Associations. The regional fisheries minister estimates the numbers of fishermen in Kismaayo as over 600.

The level of monthly income is reportedly between 40 to 60 USD. There is no cold chain system in the fish market but some fishermen use salt to preserve fish. Normal fishing usually occurs between 05.00pm and 05.00am, or for lobsters, between 03.00am to 05.00am. The main catches are lobster, kingfish, demersal and sea cucumber. Kingfish, lobster and sea cucumber are exported to Kenya and Dubai. There is no reliable fish market in Kismaayo but there are brokers from companies based in Kenya who have some storage and transport the fish. The main methods of conservation used are ice and salt. Kismaayo has one landing site in Athanley. The market for fish in Kismaayo does not yet exist, but FAO has promised to rebuild it with new equipment. The design is ready and construction will begin soon. The houri is the most commonly used boat in Benadir and Kismaayo, a few sail boats are found and boats are equipped with engines located model and not marine type. The most common gears are hand lines, troll-lines and mesh nets; while traps, beach seines and cast nets are also used too in the area. The area of grounds exploited directly by the artisanal fishermen is unknown. There is limited seaworthiness of most of the boats; most fishing takes place between 5 -20km from shore. Beyond 30km dip is reported to be dangerous as there are foreign vessels fishing in the area, which reportedly sometimes harass the local fishermen by spraying them with hot water or bullets.

The governance and management of fisheries resources in South Central Somalia is currently not very strong as there is no reliable structure after years of war. The current structure is a

clan-based system, which is not strong enough to deliver the required policy directions. Productive sectors are highly dependent on its natural resources. Key issues in this area include (i) population displacement due to insecurity and large movement of people and animals to safer places; (ii) destitute people's drive for survival (iii) absence of a natural resource policy, management strategy and framework and of the institutional, human and financial resources needed to manage, regulate, monitor and promote sustainable use of natural resources. There are no structures to regulate management as well as licensing and reporting

Foreign vessels are said to be flocking to Somalia's unguarded coast. According to community members in Mogadishu and Kismaayo, "millions worth of seafood" is lost from illegal fishing by foreign vessels. They said that the amount lost to IUU was a "staggering sum." That, however, was the context of piracy as we know it today. The violent reaction was particularly prompted when foreign vessels attacked the fishing nets of Somali fishermen, freezing both activities of fishermen and their livelihoods. They used trawlers and water hoses to submerge local boats, which often remain rudimentary and traditional in nature. Many Somalis see piracy differently to how the international community portrays it—as a global threat against international maritime trade. Many key informants stated that piracy is simply an alternative to having a formal coast guard that protects Somalia's marine resources and its territorial sovereignty. They see these armed pirates as god sent sons of Somalia providing public services and protecting the shores in the absence of a strong Somali federal government. In fact, some argue that local fishermen raised their concerns for the world community to intervene, but were ignored. However, there was international outcry over the local fishermen who banded together in armed violence against illegal fishing. Initially, their goal was to draw international attention to the issue of IUU in Somali waters. The pushback from local fishermen was received well by ordinary Somalis, and in certain quarters, armed militias have joined forces against foreign vessels. In the midst of that commotion, again the international community failed to address the fundamental issue of illegal fishery on the coast of Somalia that remains the lifeline of millions of coastal communities. The corporate media's narrative simply painted pirates as militias that pose a threat to the world's economy – dismissing the legitimate perspective of local fisheries and the environmental hazards such as dumping.

Moreover, piracy seems to be declining in Somalia as a result of dispatching scores of international warships to patrol the coast, but the problem of illegal fishing remains unaddressed. This will hardly tackle the issue of piracy in the long term, because as there is a need to counter the prevailing conditions that led to the resurgence of piracy. Similarly, international warships on the coast of Somalia continue to deter Somali piracy, but analysts warn that it could return once the international warships leave the scene. Maintaining a costly patrol mission along the longest coast in Africa is not sustainable long term. What will certainly work is to provide the Somali federal government the capacity to build effective coast guards that deal not only with piracy, but also the illegal fishery and dumping that devastate the livelihoods of poor coastal communities across Somalia. With this approach, the Somali people will see the international community as a partner and the network of pirates as the bad guys that should be confronted by local stakeholders. This alternative deserves a try as it involves

less than a quarter of what the international community currently commits currently to fighting piracy in the Horn of Africa.

The United Nations Arms Embargo on Somalia is worthy of note as it makes the Somalia government tell the UN Somalia & Eritrea Monitoring Group about any military equipment purchased or training conducted for the development of security sector institutions. In the case of Somalia's semi-autonomous regions, their ability to comply with the UN Arms Embargo on Somalia is limited with regards to developing MCS resources such as training and equipping a navy or coast guard. Reportedly, in early 2011 a program to train approximately 1000 coastguards with a private security contractor to stop Somali maritime piracy in the region was suspended after substantial UN pressure.

The ongoing Somali maritime piracy security crisis clearly affects the law enforcement capability in Somalia and its semi-autonomous regions.

## ANNEX II: LIST OF PERSONS MET

| # | Name | Organization and Address |
|---|---|---|
| 1 | Ibrahim Ali Hassein | Adeso, Country Director - Somalia,<br>P. O. Box 70331- 00400, Nairobi, Kenya<br>Phone: + 254 704 828 655 (Mobile)<br>+ 254 20 8000881/8009268 (Office)<br>Email: iahussein@Adesoafrica.org<br>Skype: iahussein …….. www.Adesoafrica.org |
| 2 | Dr. Sadia Ali Aden | Adeso, Deputy Country Director – Somalia<br>P. O. Box 70331-00400, Nairobi, Kenya<br>Phone: +254 706 060 825 (Mobile)<br>+254 20 8000881/8009268 (Office)<br>Email: sadden@Adesoafrica.org<br>Skype: Nabad.galyo www.Adesoafrica.org |
| 3 | Abdi Mohamed Dahir | Adeso, Program Director NRM Project, Garowe, Somalia<br>Phone: + 252 907 797 305 (cell)<br>+ 252 90 740 7473 (Mobile)<br>E-mail: amdahir@Adesoafrica.org<br>Web: www.Adesoafrica.org |
| 4 | Fatima Jibrell | Adeso, Senior Advisor/Founder<br>P. O. Box 70331-00400, Nairobi, Kenya<br>Phone: + 252 9079 7844 (Kenya Mobile)<br>+ 254 717 444 448 (Puntland Mobile)<br>+ 254 20 8000881 (Office)<br>Email: fjibrell@gmail.com |
| 5 | Dennis Nyaberi | Adeso, Procurement Advisor<br>P. O. Box, Nairobi, Kenya<br>Phone: +254 716 898 159 + 254 733 707 503 (Mobile)<br>+ 254 20 8000881/8009268<br>Email: dnyaberi@Adesoafrica.org<br>Skype: dnyaberi |
| 6 | Charles Anguba Maumo | Adeso, Manager, Monitoring and Evaluation<br>P.O. Box 70331-00400, Nairobi, Kenya<br>Phone: + 254 708 154 901 (Mobile)<br>+ 254 20 8000881<br>Email: camaumo@Adesoafrica.org |
| 7 | Jorge Torres | FAO – Somalia, Fisheries Officer<br>Ngecha Road Campus, Off Lower Kabete Road<br>P. O. Box 30470-00100, Nairobi, Kenya<br>Phone: +254 20 4000 282/4000 000 (Office)<br>.+ 254 701 530 369 (Mobile)<br>Email: Jorge.Torres@fao.org |
| 8 | John Purvis | FAO, Project Coordinator, Fisheries Sector<br>Ngecha Road Campus, Off Lower Kabete Road<br>P. O. Box 30470-00100, Nairobi, Kenya<br>Phone: +254 20 4000 000 (Office)<br>.+ 254 707 222 090 (Mobile)<br>Email: John.Purvis@fao.org |
| 9 | Mohammed Y. Abshir | Consultant, Governance Issues<br>Email: abshirwaldo@gmail.com |
| 10 | Bashir Hussein | Fin Church Aid, Country Director, Somaliland<br>Phone: + 252 634 759 979<br>+ 254 702 104 818<br>Email: bashir.hussein@kna.fi |
| 11 | John Paul Muindi | International Maritime Organization<br>Regional Coordinator, Eastern and Southern Africa<br>UN Complex Gigiri, P. O. Box 30218-00100<br>Nairobi, Kenya |

| | | |
|---|---|---|
| | | Phone: +254 20 762 4377/4378 (Office)<br>+ 254 733 512534 (Mobile)<br>Email: jmuindi@imo.org; www.imo.org |
| 12 | Ed Pomfret | Campaign and Policy Manager, OXFAM Somalia<br>The Atrium, Chaka Rd, Kilmani , Nairobi, Kenya<br>+ 254 7066 25893 (Mobile)<br>Ed.pomfret@oxfamnovib.nl<br>Skype: edpomfret. www.oxfam.org/somalia |
| 13 | Ahmed Yusuf Hirsi | OXFAM Somalia, Hargeisa<br>+ 252 063 4404 913<br>Ahmed.hersi@oxfamnovib.nl |
| 14 | Kiruja Micheni | International Maritime Organization (IMO),<br>Training Coordinator<br>Project Implementation Unit, Djibouti Code of Conduct<br>UN Complex, Gigiri, P O Box 30218-00100<br>Nairobi, Kenya<br>Office Phone: + 254 20 762 1193<br>Cellphone: + 254 701796 680<br>Email; kmicheni@imo.org; www.imo.org |
| 15 | Omer Ahmed | EUCAP NESTOR Horn of Africa<br>Legal Advisor Somalia and Somaliland<br>CBA Center, Mara and Ragati Rd. Upper Hill<br>P O Box 30745-00100, Nairobi, Kenya<br>Mobile: +254 727 106 753<br>Email: omerword@yahoo.com |
| 16 | Dixon G. Wariunge | Head, Sectretariat for the Nairobi Convention<br>Div. of Env-l Policy Implementation (DEP)<br>United Nations Environmental Programme<br>P.O.Box 30552 (00100), Nairobi, Kenya<br>Phone: +254 20 762 2025 (Off.); +254 710 602 514 (Mobile)<br>E-mail: Dixon.waruige@unep.org; www.unep.org |
| 17 | Abdiwahid M. Hersi | DG., Min. of Fisheries and Marine Resources<br>Garowe, Puntland State of Somalia<br>Phone: +252 907 648 573 Puntland<br>+254 726 724 822 Nairobi<br>+ 253 77 650 631 Djibouti<br>E-mail: joar.hersi@gmail.com |
| 18 | Marco Hekkens | Senior Maritime Adviser – Somaliland<br>EU CAP Nestor<br>EU Regional Maritime Capacity Building<br>CBA Center, Mara and Ragat Road, Upper Hill<br>P.O.Box 30475, 00100, Nairobi, Kenya<br>Mobile: + 254 715 546 162/ +252 633 607 663<br>E-mail: marco.hekkens@eucap-nestor-eu; www.eucap-nestor.eu |
| 19 | Ali Farah | Project Director, Puntland Development Research Center (PDRC), Garowe, Puntland State of Somalia. |
| 20 | Hussein Dahir Afrah | Managing Director, HIDIG, FRP Factory, Bosaso, Puntland, State of Somalia |
| 21 | Suban A. Mohamed | NRM Program Reporting Officer, Nairobi |

## ANNEX III: TERMS OF REFERENCE FOR ILLEGAL FISHING IN THE TERRITORIAL WATERS OF SOMALIA

| | |
|---|---|
| Organization | Adeso – African Development Solutions, www.Adesoafrica.org |
| Project | Natural Resource Management (NRM) |
| Position Type | Short-term consultancy |
| Study/assessment Topic | Illegal Fishing in the Territorial Waters of Somalia |
| Position Location | Somalia |
| Duration | 90 days |
| Reporting to | NRM Program Director |
| Working with | Working alone with close coordination with Adeso focal points, field teams and partners |
| Starting Date | In October 2013 |
| Vacancy contact | Please send applications to consultancy@Adesoafrica.org – Adeso will only respond to short-listed applicants. |

**Organizational Background**

Adeso is a humanitarian and development organization that is changing the way people think about and deliver aid in Africa. We are an NGO in Africa working very differently than most international organizations. We believe that development should come from within, not outside African communities. That it is Africans themselves who must determine Africa's future, and that while international aid has provided much-needed support, it often falls short of creating lasting change at grassroots level. We want to change this, and our strong bonds with African communities mean we are uniquely placed to do so.

**Illegal Fishing in Somali Waters**

Illegal, unreported and unregulated (IUU) fishing remains one of the greatest threats to sustainable world fisheries and to the livelihoods of those who depend on them. While no precise figures are known, it is widely accepted that the scale of illegal fishing is huge and worth an estimated US$10-23 billion dollars annually according to a recent MRAG[1] study. The adverse ecological impacts of illegal fishing are wide ranging including: compromising the scientific basis of fish stock management, threatening the sustainability of fisheries that many depend on for food and income; and having profound impacts on non-target species, marine habitat and ecology. These illegal actions combined with port generated pollution are resulting in a great deal of coral reef destruction. In the absence of efforts to enact truly protective and far-sighted environmental policies, little thought is being given to the future environmental impacts.

Illegal fishing may either involve infringement of regulations by licensed vessels or by vessels that are neither regulated nor required to report their catch. Crucially, illegal fishing undermines efforts to conserve and manage fisheries and leads to the loss of social and

economic opportunities and on occasion negatively effects on food security. Little data exists on the extent of illegal fishing in many developing countries, but the practice is prevalent, more so on Somalia's vast yet highly insecure and unguarded coastline. After the collapse of the Somali central government, it faces countless and multifaceted problems of environmental governance, including marine resource governance. The negligence over untapped marine resources has led to depleted resources via indiscriminately illegal, unregulated and unreported fishing activities. Although illegal fishing in the Somali territorial and exclusive economic zone waters is evident and has been noted in many international reports, it its existence is primarily drawn from anecdotal evidence.

**Objectives**

The purpose of this study is to conduct empirical evidence based research on the existence of illegal fishing in Somali waters and to assess both the economic and ecological impact of illegal fishing on Somali fisher communities and domestic fish-processing industry. It is hoped that this evidence-based study will provide clear recommendations for policy action, advocacy strategy to combat IUU fishing, in Somalia and internationally, and conservation and food security for fishing communities.

The objectives of this consultancy are:

1. To analyze the fundamental types of illegal fishing (unlicensed foreign industrial vessels; unreported or misreported fishing on the part of "licensed" vessels, illegal fishing in prohibited areas, particularly close to shore, and with illegal nets; and illegal fishing by artisanal vessels);
2. To analyze and identify the key (domestic and international) factors that foster illegal fishing and its impacts on Somalia marine ecosystems and livelihoods (through synthesis of available knowledge both empirical and anecdotal);
3. To carry out extensive fact finding missions and interviews in all coastal areas of Somalia with fishing communities, fishing industry (or business people operating in the Somali fishing sector) as well as relevant stakeholders such as local authorities, to gather evidence on illegal fishing, it's impact on the local communities and marine resources, and the links to piracy);
4. To derive a better understanding of the areas of vulnerability that enable illegal fishing activity to thrive (both at policy and governance level);
5. To identify specific form(s) of support to enable the Somalia government to better implement their responsibilities in respect of illegal fishing and high seas fisheries;
6. To identify policy options and strategies to combat illegal fishing;
7. To produce a policy paper and advocacy paper on illegal fishing in Somalia based on key findings and analysis.

**Deliverables**

1. Draft national legislation for the protection and management of marine and coastal environments.
2. Brief inception report detailing key questions and approaches of the study.

3. Final report on the consultancy (validated with the stakeholders). In addition to these, it is maybe worthwhile to consider as deliverables (also as per the objectives):
4. Policy paper
5. Advocacy paper (designed both for "legal" duty bearers such as Somali authorities, as well as the "moral" duty bearers such as the UN, EU and other multi-lateral organisms/institutions and the rest of the International Community at large.
6. Recommendations that will effectively inform future national legislation for the Somali fishery sector and the conservation and management of the marine ecosystem.

**Methodology**

This study will involve secondary and primary research combining both qualitative and quantitative techniques. Five key methods shall be employed:

- Desk review;
- Study survey;
- Interviewing fishermen, fish traders and local fish processors;
- Interviewing key informants (including from the ministries of Fisheries, Environment, Wildlife and Tourism and of Security) and possibly regional organisms overseeing the fishing sector or marine environment conservation, etc.;
- Interviewing local authorities.

**Scope of Study**

The consulting company or research institution will work closely with the NRM project technical team at Adeso. When administrating structured questionnaires, the consultants should go beyond the major towns to the remote coastal areas, including Bandarbeyla, Ceelaayo, Eyl, Garacad, Hurdiya, Lasqorey and Qandala in Puntland, Zaylac, and Berbera in Somaliland, and H´Hobyo, Harardhere, Eldheer, Adale, Warsheikh, Merca, Brava and Kismayo in South & Central Somalia.

**Qualifications:**

The consultant should be a highly qualified person or preferably a multidisciplinary consulting firm or research institution with expertise that should have:

- A team of experts and at least ten years experience in marine/natural resource management;
- Substantial experience in research, evaluation and surveys as well as designing actionable policy and advocacy recommendations for national governments and international bodies;
- Proven knowledge and experience of the fisheries sector, with particular emphasis on IUU fishing;
- Expert knowledge and a willingness to travel to Somalia to collect relevant data;
- An understanding of operating in an insecure environment with a history of conflict;
- Previous work experience in Somalia is also desirable.

**Copyright and Intellectual Property Rights**

In consideration of the fees paid, the consulting company or research institution expressly assigns to Adeso any copyright arising from works produces during the contract. All images (whether used for online or print purposes) must however bear the consulting institution's photo credit, as specified by international intellectual property rights. The consulting institution may not use, reproduce or otherwise disseminate or authorize others to use, reproduce or disseminate such works without prior consent from Adeso.

**Application Process**

The selection committee will review applications on a rolling basis. Adeso is an equal opportunities employer. After assessment, the consultant firms/individuals will be selected by short list in accordance with Adeso's policies and procedures. The most suitable candidate will be interviewed and contracted Adeso will evaluate the proposals and award the assignment also based on technical and financial feasibility. Adeso reserves the right to accept or reject proposals without giving reasons and is not bound to accept the lowest or highest bidder.

Each application package should include the following:

- An application letter addressing the selection criteria, including how the consulting company or research institution's previous experience matches the consultancy objectives as well as the interest for the position. It should also indicate the proposed methodology for the exercise, relevant experience, the consulting company or research institution's availability and consultancy rates. The letter should be no longer than two pages;
- Updated CVs including relevant work experience and qualifications;
- Contact details of at least 2 references;
- A sample of recent similar work;
- Quotation.

Applications not including all of the above information will not be reviewed. All applications should be sent to Adeso at consultancy@adesoafrica.org with the subject line: Illegal Fishing in the Territorial Waters of Somalia

## ANNEX IV: SURVEY FORM

## (Translation in Somali)

Survey Identification NUMBER_____ (NUMBER)
INTERVIEWER_____ (INTERVIEWER)
Date_____ Time_____ Town/Village_____ (LOCATION)
Regional administrative unit: (1)Somaliland (2)Puntland (3)Galmudug (4)Jubaaland (5) Banadir (POLITUNIT)

## Informed consent statement

Trans-Africa Consultant Services has been contracted by Adeso, a Regional Non-governmental Organization with humanitarian assistance initiatives in Somalia, to conduct a baseline survey of fishing activities in Somalis. ***(Trans-Africa Consultant Services wuxuu qandaraas ka qaatay Adeso oo ah haya'ad ka shaqaysa hawlaha bini-aadanimo iyo horumarka , kaaso isu xil saaray inuu daraasad ku sameeyo kaluumaysiga sharci darrada ah ee xeebaha Soomaaliya)***

We would like you to participate in this study by answering a number of questions concerning fishing practices in community. (***Waxaan kaa codsanayna inaad ka qaybqadato daraasadaan kana jawaabtid adigoo raali aha, su'aalahan ku saabsan kaluumaysiga sharci darrada ah ee ka socda deegaankan).***

The survey should take about 30 minutes. Participation is voluntary. All your responses will be treated with strict confidentiality and will be used for research purposes only. ***(Su'aalo waydiintan waxay qaadan doontaa 30 daqiiqo ka qaybqadashadaaduna waa iskaa wax u qabso. Dhammaan jawaabahaaga waxaa loo isticmaali doonaa daraasadan oo keliya.)***

Your individual responses will not be revealed in any way. Only average responses will be reported. Your identity will not. The responses will be anonymous. ***(Qof kasta oo ka qaybqaatay daraasadan wixii uu ku jawaabo waxay ka mid noqonayaan jawaabaha guud ee bulshada la waraystay bixiyeen mana jiri doonto qof jawabtiisa si gooni ah loo shaacin doono.)***

If at any time you are not comfortable answering any questions, you can refuse to answer or decide to stop the interview altogether. ***(Kuma khasbanid inaad ka jawaabto codsigayaga, haday jirto su,aal aadan jeclayn inaad ka jawaabtona xor ayaad u tahay)***

If you have any complaints, you can call Kifle Hagos of TACS in the USA at +1-401-837-3419 or Abdi Mohammed Dahir, the Adeso supervisor, at +252-9077-97-305. (Hand out a card with these contact details to respondents that agree to be interviewed. (***Wixii aad dhibsato waxaad la xiriiri kartaa madaxda darasaadka***)

Can I interview you? ***Mudane/marwo hada raali ma ku tahay inaan waraysiga bilowno***

(If respondent says yes – interview, if no, go to next household) ***Warayste hadii jawaabtu tahay HAA bilow waraysiga hadii kalena aad guriga ku xiga Halkan waxaa ka bilamaya xogta waraysiga kaluumaystaha***

***General Information about the interviewee and fishing activities***

*First we would like to ask you about your fishing background and your household.* ***(Mudane/marwo waxan jeclaan lahayn inaan ku waydiiyo taariikhda kaluumaysigaaga)***

1. How long have you been a fisherman? _____ (FISHYEARS)
   (If female head of fishing household, how long involved in processing marketing fish)
   ***(Muddo intee le,eg kalumaysanaysey ama shaqada kaluunka ku dhexjirtey)***
   How long have you lived in this town? _____ (RESIDENTYEARS)
   ***(Intee ku nolayd degmadan)***

2. How old are you? Years _____ (AGE)

***(Imisa jir baad taha)***

3. Do you own a boat for fishing? Yes (1) No(0) (OWNER)

***(Doon ma leedaha) Haa (1) Maya (O)***

Vessel Type used for fishing_____ (BOATTYPE)

***(Waa noocee)***

Length_____ meters (LENGTH)

***(Wa imisa cabirkeedu)***

Is the boat: (1) non-motorized/ paddle/oar (2) motorized (3) sail (ENGINE)

***(Ma matoor baa mise Huuri)*** (1) non-motorized/ paddle/oar (2) motorized (3) sail

What fishing gear do you use with the boat?

***(Waa noocee qalabka kaluumaysiga aad u isicmaasho doonta?)***

GType 1_____ GType 2_____ GType 3_____ (GEARTYPE 1,2,3)

4. Position on the boat? (1)Captain (2) Crew (3) Other (identify) _____ (POSITION)

***(Imisa qof ayaa ku shaqaysa doont)*** (1)Captain (2) Crew (3) Other (identify) _____

Are you a member of fishing cooperative or association? (1)Yes (0)No (COOP)

***Ma ka tirsan tahay Iskaashato Haa (1) Maya (0)***

5. Was fishing a primary or secondary source of income for your household during the last 12 months?

***(Sanadkii la soo dhaafay ilaha koowaad ama labaad ee dakhliga gurigaagu ma kaluumaysi buu ahaa)***

(1)Primary (2) Secondary
(FISHINCOME)

6. About how many days did you spend fishing during the last 12 months? _____days (DAYSFISHING)

***(Sanadkii hore intee maalmood ayaad kaluumaysatay)***

7. Where do you fish in relation to your village? Check all that apply (FISHWHERE)

***(Nawaaxigee ka kalumaysataa)***

(1) Always within close proximity, less than 10km from the village
(2) As far as 50km offshore
(3) I migrate along the coast seasonally as the fish move

8. What month is the fish catch usually the highest?_____ (SEASONHIGH)

**(Bishee kaluumaysigu ugu fican yahay)**

9. What month is the fish catch usually the lowest? _____ (SEASONLOW)

**(Bishee kaluumaysigu ugu liitaa)**

10. Over the past year, on average, how much fish do you catch per day? (kg)_____ (AVGCATCH)

***(Sanadkii hore intee kiilo oo kaluun ah ayaad jilaabatay ama soo qabatay maalintii)***

On average,how much money do you earn each day from fishing? $ _____ (AVGINCOME)

***(Isku celcelis maalintii intee kaasoo gasha kaluumaysiga)***

How much of your fish catch is for home consumption versus sold in markets?_____ (SUBSIST)

***Kaluunkaad soo jilaabato intee guriga u isticmashaa markaad barbardhigto inta aad suuqyada u iibgeyso***

Which do you eat more of? (1)Fish (2) Other sources of protein such as beef, goat, chicken (NUTRIFISH)

***(kee baa in badan cuntaa (1) kalluunka (2) hilbaha kale ee borotiinka leh sida lo'da, ariga, digaaga)***

(If some is sold) Where do you sell your fish?

***(Hadaad kaluun suuqgeynaysid xagee ku iibisaa)***

(1)In the community (2) Markets outside the community (3) Boats at sea (WHERESELL)

The price I get for my fish over the past five years has:

***(Shantii sano ee la soo dhaafay qiimaha kaluunku (1) kor buu u kacay (2)isma badalin (3) hoos buu u dhacay)***

(1) Increased (0) not changed at all (-1) decreased (PRICE)

11. What are the 5 main types of fish you caught during the past year?

***(Sanadkii hore sheeg shanta nooc ee ugu badnaa kalluunkii aad soo jilaabatey)***

Please mention in order of importance, most important, second in importance, etc. (FISHTYPE 1,2,3,4,5)

***(Fadlan sheeg kaluunka noocyada ugu suuqa fican iyo kala mudnaantooda)***

TYP1_____ TYP2_____ TYP3 _____TYP4_____ TYP5_____

12. Total years of formal education _____ (YEARSEDU)

***(Isugeyn imisa sanno ayaad waxbaranaysay)***

13. Number of people in your household_____ (HOUSESIZE)

***(Qoyskaagu intee ka kooban yahay)***

14: Gender: (***Lab)*** (1) Male ***(Dhedig)*** (2) Female (GENDER)

***(Un)Reported fisheries***

Are you **required to report landings** from your fishing trips to any authorities? Yes(1) No(0) (REPORT)

***(Miyaa lagaa rabaa inaad dawlada ama maamulka u sheegto wixii aad kalluun maalintaas soo qabsatay)***

***Haa (1) Maya (O)***

If Y, to who? (1)government official (2)clan or local leader (3) Other_____ (REPORTWHO)

***Haa hadey tahay waa kuma (1) dawlad (2) qabiil ama odey dhaqameed (3) kale***

If N, Were you required to report in the past? Yes (1) No(0) (REPORTPAST)

***Maya hadey tahay hadda ka hor ma lagaa rabay inaad sheegto dawlad ama odey dhaqameed Haa (1) Maya (O)***

If Y, How long ago?___ (REPORTWHEN)

***Haa hadey tahay imisa ayaa laga joogaa?_____)***

Does **anyone record fish landings** and type of fish caught at your landing site? Yes(1)No(0) (RECORDFISH)

***(Ma jirtaa cid aruurisa xogta kalluunka la soo jilaabo iyo noocyadiisa) Haa (1) Maya (O)***

If Y, who? _____ (RECORDWHO)

***(Hadaad haa ku jawaabto yaa xogta aruuriya) Who? _____***

If N, Was anyone collecting landings data in the past? Yes(1) No(0) Don't know(9) (RECORDPAST)

***(Hadaad maya ku jawaabto ma jirtey cid berri hore xogtan oo kale arurin jirtey) Haa (1) Maya (O)*** Don't know(9) ***Ma garanaayo(9) or Ma aqaan (9)??***

If Y, How long ago _____ (RECORDWHEN)

***(Haa haday tahay imisa ayaa laga joogaa _____)***

***(Un)Regulated Fisheries***

Are you required to **register your fishing vessel** with authorities? Yes(1) No(2) Don't know(9) (BOATREGREQ)

***(Ma lagaaga baahan yahay inaad diiwaangeliso gaadiidkaaga kallumaysiga sida laashka, doonta ama markabka)***

***Haa (1) Maya (O)*** Don't know(9)

Must the registration number be painted on the boat? Yes(1) No(2) Don't know(9) (BOATREGNUM)

***(Ma sharci baa in doonta kaluumaysigu targo dhinaca lagaga qoro mise maha) Haa (1) Maya (O)*** Don't know(9)

If yes, approximately how many boats in your community are registered with painted numbers?

***(Degmadaada qiyaas ahaan imisa doomood ayaa taariiko ku dhagan tahay )***

(1)None (2) Few (3) About one-half (4) Most (5) All (BOATREGCOM)

Register the boat with who? (***Yaa diwaangeliya)***

(1)Fisheries Agency (2) Maritime or Ports authority (3) Other_____ (BOATREGWHO)

Are you required to pay a fee***? (Diwaangelintu ma lacag baa)*** Yes (1) No(0) Don't know(9) (BOATREGFEE)

***Haa (1) Maya (O)*** Don't know(9)

If Yes, amount? ____ (BOATREGAMT)

Are there **limits on the number of licenses** allowed? Yes(1) No(0) Don't know(9) (BOATLIMIT)

***(Diiwaangelintu ma xadidan tahay mise cid kasta waa u furan tahay) Haa (1) Maya (O)*** Don't know(9)

Are there restrictions on **who is allowed to fish** in your area? Yes(1) No(0) Don't know(9)(RESTRICT)

***(Ma jirtaa sharci qeexaya cidda nawaaxiga ama agagaarkaan ka kaluumaysan karta) Haa (1) Maya (O)*** Don't know(9)

If yes, Who?_____ (RESTRICTWHO)

Are your required **to register as afishermen** with anyone? Yes(1) No(0) Don't know(9) (REGISTER)

***(Si aad u kaluumaysato ma muhiim baa inaad dawlad ama cid kale iska diiwaangeliso)***

***Haa (1) Maya (O)*** Don't know(9)

If Y, with who? _____ (REGWHO)

***(Haa hadey tahay, waa noocee)***

If Y,Are you required to pay a fee? Yes(1) No(2) Don't know(9) (REGFEE)

***(Haa hadey tahay, ma lagaa raba inaad lacag bixiso? Haa (1) Maya (2) Ma aqaan (9)***

If Yes, amount? ____ (REGAMT)

***(Haa hadey tahay, waa imisa cadadka lacagta aad bixiso _____)***

Are you required to pay anyone a fee or tax for amount fish landed? Yes(1) No(0) (FISHFEE)

***(Kaluunka aad soo jilaabato ma jirtaa cid lacag ka qaada sida canshuur ama khidmad kale) Haa (1) Maya (O)***

Amount_____ (FISHFEEAMT)

per ___(box or Kg?) (FISHFEEUNIT)

Do you have to provide a share of landed fish to a local leader? Yes(1) No(0) ***Haa (1) Maya (O)*** (FISHSHARE)

***Madaxda degmada ama beeshu kaluunka aad soo jilaabato saami ma ku leeyihiin***

If yes, Explain the rule/system: (***Hadii jawaabtu haa tahay maxay tahay sababta aad u bixiso saamigan)***

_____

Is fishing in your area restricted in any way, such as a restriction on fishing gear type, type of fish caught quantity or size caught, seasonal or area closures? Yes(1) No(0) Don't know(9) (FISHREGS)

**(Ma jiraa sharci xadidaaya noocyo ka mid ah qalabka kalluumaysiga, noocyo kaluunka ka mid ah, tiro ama miisaan aan ladhaafi karin marka lakalumaysanayo, xiliyo aan lakaluumaysan Karin iyo aagag xirmaysan oo aan laga kaluumaysan Karin.)** ***Haa (1) Maya (O)*** Don't know(9)

If Yes, what type of restrictions or regulations are there in your area? (circle all that apply) (REGTYPE 1,2,3)

***(Hadii jawaabtaadu tahay haa sharaxaad ka bixi sharciga jira iyo sida uu wax u xadidaayo sidoo kale gobaabin geli haduu sharcigu khuseeyo qodobada hoos ku qoran)***

(1) Prohibition on type of fish caught(***Mamnuucid jilaabashada noocyo kalluunka ka mid ah)***

(2) Prohibition on type of gear used (***Mamnuucid nooc doonyaha kalluumaysiga ka mid ah)***

(3)( ***Xadidid cabirka Shabaagta kalumaysiga)*** Restriction on gear (net length, mesh size)

(4)( ***xili bad xiran ah*** )(Closed season)

(5) ***Meelo mar kasta xiran (***Permanent closed area)

(6) (***Xiliyo melaha qaarkood xiran yihiin xiliyo gaara)*** Seasonal closed area

(7)(***Xadayn maalintii inta kaluun laga soo qaban karo degmadaan xeebteeda)*** (Daily landing quota/limit)

(8)***Xadayn cadada kaluumaysi ee sanadkii*** (Annual landing quota/limit)

(9) (***dad gaar ah oo sharcigu siinaayo inay kalluumaystaan*** )(Fishing rights for only some people)

(10) ***Kale*** (Other_____)

Are there penalties for violating the rules? Yes(1) No(2) Don't know(9) (PENALITY) ***(Ma jiraa ganaax laga qaado cidii sharciga jebisa) Haa (1) Maya (0)*** Don't know(9)

If Yes, what type? (circle all that apply) (PENALTYPE1,2,3)

***(Haduu jiro ma la kulmaa ciqaabahan hoos ku qoran, fadlan gobaabin geli midda uu la kulmi karo)***

(1)Fines

(2)Jail

(3)Confiscation of Gear

(4)Confiscation of Boat

(5)Other _____

***(Kalluumaysiga sharci darada ah)*** (Illegal Fishing)

Over the past year, have you ever seen foreign fishing vessels fishing near your village Yes(1) No(0) (FORFISH) (***Sanadihii la soo dhafay ma aragtay kalluumaysato ajnebi ah oo ka kaluumaysanaya agagaarka xeebta degmadaada***

***Haa (1) Maya (0)***

If Yes, how frequently does this occur now? (***Hadaad aragtay imisa jeer*** )

*All the time (5) frequently (4) some of the time (3) rarely (2) Never (1)* *(FORFREQ)*

***Mar kasta(5) Inta badan(4) Mararka qaar(3) ma badna(2) Waligey ma arag(1)***

5 years ago? ***Shan (5) sano ka hor***

*All the time (5) Frequently (4) Some of the time (3) Rarely (2) Never (1)* *(FORPAST)*

***Mar kasta(5) Inta badan(4) Mararka qaar(3) ma badna(2) Waligey ma arag(1)***

To your knowledge, do they have permits to fish here? Yes(1) No(2) Don't know(9) (FORPERMIT) (***Miyaad og tahay inay sharciga kalluumaysiga dalka wataan iyo in kale) Haa (1) Maya (0)*** Don't know(9)

Who does the illegal fishing? (1)Somalis, (2)Foreign vessels (3)Both (WHOILLEGAL) ***Yaa sameeya kalluumaysiga sharci darada ah (1) Somaalida (2) ajaanibta (3) labaduba***

If foreigners, which countries do it? (check all that apply) (FORWHO)

***(Haday yihiin ajaaniib dalalkee xeebtan sharci daro uga kaluumaysta)***

(1)Yemen (2) Iran (3)Spain (4)China/Taiwan (5) Oman (6)India (7) Kenyan

(8) Russian (9) Other_____ (10) Don't Know

How close do they come to shore**? (Ilaa intee xeebta u soo jirsadaan?)**

(1) very close - within 5 km, (2)5-50km from shore, (3)very far offshore (4)everywhere (FORWHERE)

***(1) aad ugu dhow – 5 km (2)u jirta xeebta 5-50km (3)aad ugu fog xeebta (4)meel kasta***

***<u>Fines</u>***

Had you ever had your fishing vessel taken or confiscated for any reason? Yes(1) No(0) If Yes: (FISHFINE)

***(Weligaa doon ma lagaa dhacay sababtu waxay doonto ha ahaatee) Haa (1) Maya (O)***

Why? (***Sabab)*** _____ (FINEWHY)

By whom? (***Yaa kaa dhacay, eeg liiska hoose)*** (FINEWHO)

1= ***Wakaalada Kalluumaysi*** (Federal Fisheries agency)

2 Regional autonomous fisheries agency

3= ***Booliis*** (Police)

4= ***Maraakiib Dagaal*** (Navy)

5= ***Maraakiib Dagaal ee dawlado kale*** (foreign Navies)

6= ***Qabiilo*** (local clans)

7= ***Kalluumasato deegaan*** (local fishers themselves)

8= ***Kale*** (other)_____

0= ***Ma garanaayo*** (no response or don't know)

Was the boat ever returned***? (Ma laguu soo celiyey doontadii)*** Yes(1) No(2) ***Haa (1) Maya (O)*** (BOATRETURN)

Did you have to pay money to have your boat returned? Yes(1) No(0) (BOATFINE) ***Soo celinteedii lacag miyaad ku bixisay Haa (1) Maya (O)***

***Haa hadey tahay imisa ayey ahayd lacagta aad bixisay*** If Yes, how much? _____ (FINEAMOUNT)

***Impacts (Saamayn)***

*The following statements will be read to you and you will be asked whether you agree or disagree or neither, and then whether you agree or disagree Strongly or just Somewhat* ***(Su,aalahan soo socda waxaa lagaa rabaa inaad igu raacididama igu diidid ama midna aadan samayn hadii mugdi kaaga jiro, sidoo kale hadaad igu raacdid iyo hadii kaleba waxaa laga rabaa inaad tiraahdo arintaas aad iyo aad baan kuugu waafaqsanahay ama aad dhahdo marna kuguma raacsani arintaas ama aad jawaab waxaas oo dhan ka duwan bixisid sida aad fikirkkaaga ku hayso)***

Foreign fishing vessels should be allowed to fish in Somali waters. (FOROK) ***Ma aminsan tahay maraakiibta ajnebiga in loo ogolaado inay ka kaluuumaystaan biyaha Soomaaliya?***

*Strongly disagree (1) somewhat Disagree (2) Neither (3) Somewhat Agree (4) strongly agree (5)*

***Aad ayaan u udiidanahay(1) Xoogaa waan diidanahay(2) midna(3) xoogaa wan raacsanahay(4)***

***aad ayaan uraacsanahay(5)***

Anti-piracy patrols by Foreign Navies protect foreign fishing vessels operating illegally in Somali waters (PIRACYPATROL) (***Ma aminsan tahay marakiibta ciidamada shisheeye ee badda Soomaaliya jooga inay wardiyeeyaan maraakiibta sharci darada kaga kaluumaysta biyaha Soomaaaliya iyagoo sheeganaaya inay badda ka ilaalinayaan Burcad badeed)***

*Strongly disagree (1) Somewhat Disagree (2) Neither (3) Somewhat Agree (4) Strongly agree (5)*

***Aad ayaan u udiidanahay(1) Xoogaa waan diidanahay(2) midna(3) xoogaa wan raacsanahay(4)***

***aad ayaan uraacsanahay(5)***

Illegal fishing negatively impacts my livelihood. (IUULIVE)
(***Kaluumaysiga sharcidarada ahi sixun ma u saameeyey noloshaada)***

*Strongly disagree (1) Somewhat Disagree (2) Neither (3) Somewhat Agree (4) Strongly agree (5)*

***Aad ayaan u udiidanahay(1) Xoogaa waan diidanahay(2) midna(3) xoogaa wan raacsanahay(4)***

***aad ayaan uraacsanahay(5)***

Illegal fishing has no impact on marine ecosystems. (IUUIMPACT)
(***Kaluumaysiga sharcidarada ah dhul xeebeedkeena waxba uma dhimin)***

*Strongly disagree (1) Somewhat Disagree (2) Neither (3) Somewhat Agree (4) Strongly agree (5)*

***Aad ayaan u udiidanahay(1) Xoogaa waan diidanahay(2) midna(3) xoogaa wan raacsanahay(4)***

***aad ayaan uraacsanahay(5)***

Foreign fishing has no impact on my fish catch (FORIMPACT)
(***Kaluumaysatada ajnebiga ah waxba uma dhimin kalluumaysigayagii)***

*Strongly disagree (1) Somewhat Disagree (2) Neither (3) Somewhat Agree (4) Strongly agree (5)*

***Aad ayaan u udiidanahay (1) Xoogaa waan diidanahay(2) midna(3) xoogaa wan raacsanahay(4)***

***aad ayaan uraacsanahay(5)***

Piracy does not restrict me from fishing from where I want to fish. (PIRACYIMPACT) (***Burcad badeedu waxba ima dhibaan meeshaan donaan ka kaluumaysan karaa)***

*Strongly disagree (1) Somewhat Disagree (2) Neither (3) Somewhat Agree (4) Strongly agree (5)*

***Aad ayaan u udiidanahay (1) Xoogaa waan diidanahay(2) midna(3) xoogaa wan raacsanahay(4)***

***aad ayaan uraacsanahay(5)***

Piracy keeps away illegal foreign fishers. (PIRACYIUU)
(***Burcad badeedu waxay durkiyeen maraakiibtii ajaanibta ee sharci darada xeebteena uga kaluumaysan jirey)***

*Strongly disagree (1) Somewhat Disagree (2) Neither (3) Somewhat Agree (4) Strongly agree (5)*

***Aad ayaan u udiidanahay(1) Xoogaa waan diidanahay(2) midna(3) xoogaa wan raacsanahay(4)***

***aad ayaan uraacsanahay(5)***

Anti-piracy actions by foreign Navies negatively impacts my fishing livelihood (ANTIPIRACY) ***Marakiibta Burcad badeeda waardiyeysa waxay dhib u geysteen nidaamkayagii kalluumeysiga***

*Strongly disagree (1) Somewhat Disagree (2) Neither (3) Somewhat Agree (4) Strongly agree (5)*

***Aad ayaan u udiidanahay(1) Xoogaa waan diidanahay(2) midna(3) xoogaa wan raacsanahay(4)***

***aad ayaan uraacsanahay(5)***

Over the past year, have there been instances of large quantities of dead fish washing

up on the beaches of your village? Yes(1) No(0) ***Haa (1) Maya (O)*** (FISHKILL)

***Sanadkii la soo dhaafay ma aragteen kalluun badan oo dhintay oo ku soo caaryey xeebta deegaankaaga ku dhereran***

If Yes, How often has this occurred over the past year? ___ times (KILLFREQ)

***(Imisa jeer ayaad aragtay sanadkan iyo kuwii horeba ___ mar)***

What do you think is causing this problem ***(Maxaa dhibaatadan keenay baad u malaynaysaa***) (KILLREASON)

_____

***Enforcement (Fulinta Sharciga)***

Who enforces the fishing regulations? (***Yaa ilaaliya sharciga kalluumaysiga ee xeebtan)***

***Sax mari dhammaan qaybaha hoose ee ku khuseeya*** (Circle all that apply) (ENFORCEWHO1,2,3)

1= ***Wakaalada Kalluumaysi*** (Federal Fisheries agency)

2 Regional autonomous fisheries agency

3= ***Booliis*** (Police)

4= ***Maraakiib Dagaal*** (Navy)

5= ***Maraakiib Dagaal ee dawlado kale*** (foreign Navies)

6= ***Qabiilo*** (local clans)

7= ***Kalluumasato deegaan*** (local fishers themselves)

8= ***Kale*** (other)_____

0= ***Ma garanaayo*** (no response or don't know)

*I will read you a statement, then I will give you five choices of answers. Select one.*

**(Waxaan kuu akhriyi doonaa qoraal ama bayaan, ka dibna waxaan ku siin doonaa shan jawaabood oo aad ku kala dooran karto tan kugu haboon. Hal jawaab ka dooro )**

We see the enforcers patrolling in our waters: ***(Waxaan aragnaa ilaalo wardiyeynaysa biyaha xeebteena)***

**Markasta** *(All the time (5)* ***Ints badan*** *(Frequently (4)* ***Mararka qaarkood*** *(Some of the time (3)*

***Mar mar dhifa*** *(Rarely (2)* ***Marna ma arag*** *(Never (1)* *(ENFORCEFREQ)*

***Determinants of Compliance***

*I will read you a statement and ask you to Agree, Disagree or say if you are Undecided, then, if you agree or disagree, I will ask if you agree or disagree strongly or Moderately.*

***(oraal ama oraah ayaan kuu akhrin doonaa waxan ku waydiin doonaa inaad si adag igudiidid,dhexdhexaad igudiidid, iyo inad si adag iigu raacdid,dhexdhexaad igu raacdid.)***

| **Statement** ***(Oraah qoraal)*** | **Disagree(*Ma aqbalin)*** | | **Undecided *(aan la go'aamin)*** | **Agree *(raacsanahay)*** | | **Variable** |
|---|---|---|---|---|---|---|
| | **Strongly (*aad ah)*** | **Moderately *(dhexdhexaad)*** | | **Moderately *(dhexdhexaad)*** | **Strongly *(aad ah)*** | |
| Fishing rules help preserve and protect fisheries resources ( ***Sharciyada kallumaysigu waxay gacan ka gaystaan ilaalinta khayraadka kalluumaysiga)*** | 1 | 2 | 3 | 4 | 5 | LEGIT1 |
| Fishing rules only benefit some fishermen ***(Sharciyada kallumaysigu kaliya waxuu faa'iido u leeyahay ama u daneeya qaar ka mid ah kalluumaysata)*** | 1 | 2 | 3 | 4 | 5 | LEGIT2 |
| Fishing rules will improve the wellbeing of all fishers (***Sharciyada kallumaysigu waxuu hagaajin doonaa nolosha dhammaan kalluumaysata)*** | 1 | 2 | 3 | 4 | 5 | LEGIT3 |
| The views of fishermen **are not** considered in the formulation of fisheries regulations ***( Marka la samaynaayo sharciyada kallumaysiga, lama tixgeliyo fikradaha kalluumaysata)*** | 1 | 2 | 3 | 4 | 5 | LEGIT4 |
| Fishing rules are enforced differently depending on your social status ***( Fulinta sharciyada kallumaysiga waxaa lagu saleeyaa heerka aad bulshada ka joogto)*** | 1 | 2 | 3 | 4 | 5 | LEGIT5 |
| Fishermen who break the rules more often are penalized more severely than those who only do it occasionally (***Kalluumaysata inta badan jabisa sharciyada kallumaysiga waxaa loo ciqaabaa si ka darran kuwa sharciga jabiya mar mar)*** | 1 | 2 | 3 | 4 | 5 | LEGIT6 |

| ***Oraah qoraal* (Statement)** | **Disagree*(Ma aqbalin)*** | | **Undecided (aan la go'aamin)** | **Agree (*raacsanahay)*** | | |
|---|---|---|---|---|---|---|
| | **Strongly (aad ah)** | **Moderately (dhexdhexaad)** | | **Moderate (dhexdhaxaad ah)** | **Strongly (aad ah)** | |
| Fines and Penalties imposed on local Somalis for violating fishing rules **are not** severe enough to reduce their illegal fishing ***(Ganaaxa iyo ciqaabta la saaro Soomaalida ku xadgudubta sharciyada kalluumaysiga ma aha kuwa culus oo joojin karo kalluumaysiga sharci darrada ah)*** | 1 | 2 | 3 | 4 | 5 | DETER1 |
| Fines and Penalties imposed on foreigners for violating fishing laws are high enough to reduce their illegal fishing activities ***(Ganaaxa iyo ciqaabta la saaro ajaanibta ku xadgudubta sharciyada kalluumaysiga ma aha kuwa culus oo joojin karo kalluumaysiga sharci darrada ah)*** | 1 | 2 | 3 | 4 | 5 | DETER2 |
| Local Somali Violators of fishing rules are ALWAYS caught ***(Kalluumaysatada Soomaalida ee ah ku xadgudbayaasha sharciga kalluumaysiga markasta waa la soo qabtaa)*** | 1 | 2 | 3 | 4 | 5 | DETER3 |
| Foreign Violators of fishing rules are NEVER caught ***(Kalluumaysata ajaaniibta ah xadgudbayaasha sharciga kalluumaysiga lama soo qabto)*** | 1 | 2 | 3 | 4 | 5 | DETER4 |
| Local Somali Violators of fishing rules that are caught are NEVER penalized for the violation (e.g. pay fine, serve jail time, have gear or boat taken ***(Dadka Soomaalida ah ee k u xadgudba sharuucda kalluumaysiga lama qabto lamana ciaqaabo (sida ganaax, xabsi dheer, lagama qaato doonta ama markabka)*** | 1 | 2 | 3 | 4 | 5 | DETER5 |
| Foreign Violators of fishing rules that are caught are ALWAYS penalized for the violation (e.g. pay fine, serve jail time, have gear or boat taken ***( Dadka ajaaniibta ah ee k u xadgudba sharuucda kalluumaysiga lama qabto lamana ciaqaabo (sida ganaax, xabsi dheer, lagama qaato doonta ama markabka)*** | 1 | 2 | 3 | 4 | 5 | DETER6 |

| ***Oraah qoraal* (Statement)** | **Disagree(*Ma aqbalin)*** | | **Undecided *(aan la go'aamin)*** | **Agree (raacsanahay)** | | ***Variable*** |
|---|---|---|---|---|---|---|
| | **Strongly *(aad ah)*** | **Moderately *(dhexdhexaad)*** | | **Moderately (dhexdhexaad)** | **Strongly *(aad ah)*** | |
| Despite the penalties it is economically beneficial to break fishing rules ***(In kastoo ganaax adaga la saaro hadana dhaqaale ahaan waa u qalantaa in la jabiyo sharciyada kalluumaysiga)*** | 1 | 2 | 3 | 4 | 5 | GAINS1 |
| If I engage in illegal fishing activities or not, it makes no difference in how much money I can earn from fishing) | 1 | 2 | 3 | 4 | 5 | GAINS2 |
| My friendship with other fishermen **will not** change, even if they frequently violate fishing rules ***(Saaxiibtinimadayda kaluumaysatada kale isma badali doonto xataa hadii ay si joogta ah u jabiyaan xeerarka kallumaysiga)*** | 1 | **2** | 3 | 4 | **5** | MORAL 1 |
| (I believe it is my moral duty to obey the fishing laws) ***Waxaan rumaysanahay inay tahay waajib igu tahay inaan ilaaliyo sharciyada kalluumaysiga*** | 1 | 2 | 3 | 4 | 5 | MORAL2 |
| If I see a local fishermen violating fishing rules I **will not** report them to local authorities ***(Hadaan arko kalluumaysato Soomaali ah oo ku gudbaayo sharuucda kalluumaysiga uma soo sheegi doono dawlada)*** | 1 | 2 | 3 | 4 | 5 | MORAL3 |
| If I see a foreign fishing vessel fishing in local waters I will report it to the authorities ***(Hadaan arko kalluumaysato ajaanib ah oo si sharci daro ah u kalluumaysanaayo biyaha badda dawlada ayaan usoo sheegi doonaa)*** | 1 | 2 | 3 | 4 | 5 | MORAL4 |

***General Issues in the Fishing Sector and for Community Development***

***(Xaaladaha guud ee qaybta kalumaysiga iyo Horumarinta Bulshada)***

*The following statements will be read to you. Choose one of several responses that best describe your situation****(Qoraaladan soo socda waa laguu akhriyi doonaa ka dooro mid ka mida tan ugu fican ee qeexaysa xaaladaada)***

My fish catch over the past five years has *Increased(1) not changed at all (0) reduced (-1) (CATCHCHANGE)*
***Kalluumaysigayga shantii sanno ee la soo dhaafay waa siyaaday (1) is ma badalin (0) way-yaraatay (-1))***

My income over the last five years has *Increased(1) not changed at all (0) reduced (-1) (INCCHANGE)*
***Dakhliga I soo galay shantii sanno ee la soo dhaafay wuu siyadayay(1) isma badalin(0) wuu yaraday(-1)***

Peace and Order in my community has *Increased(1) not changed at all (0) reduced (-1) (PEACE)*

***nabada iyo kaladanbeyna bulshadaydu way korartay (1) waxba iskama badalin (0) way yaraatay (-1)***

Development of our village has *Increased(1) not changed at all (0) reduced (-1) (DEVELOP)*

***Horumarka xaafadeenu waa kordhay (1) waxba iskama badalin (0) hoos ayuu u dhacay (-1)***

*If there have been changes in any of the above, can you explain why?*

***Haday ay jiraan isbadelo ku saabsan waxyaalaha kore , ma sharxi kartaa sababta?***

_____

*(Do you agree or disagree with the following statements concerning fishing in your community:*

***Ma raacsan tahay mise ma raacsanid qoraalka soo socda ee khuseeya kalluumaysiga bulshadaada***

There is a lack of capital for investing in improved fishing gears and boats

*disagree (-1) Neither (0) agree (1*)
(CAPITAL)

***Waxaan jirin hanti maalgashi oo sare u qaadaysa agabka kalluumaysi iyo doonyaha***

***ma raacsani (-1) Midkoodna (0) waan raacsanahay (1)***

There is adequate transportation to get my fish to good markets disagree (-1) Neither (0) agree (1) (TRANSPORT)

**Waxaa jira gadiid igu filan suuqgaynta kalluunka aad soo qabsado**

***ma raacsani (-1) Midkoodna (0) waan raacsanahay (1)***

Fish spoils as it is not adequately processed or preserved disagree (-1) Neither (0) agree (1) (SPOIL)

***ma raacsani (-1) Midkoodna (0) waan raacsanahay (1)***

There are too many fishermen in my community are trying to catch fish disagree (-1) Neither (0) agree (1)

***Kalluunku wuu qurmayaa hadii aan la hagaajin ama aan si quman loo kaydin***

***ma raacsani (-1) Midkoodna (0) waan raacsanahay (1)***
*(TOOMANY)*

There are not too many Somalis from outside my community coming in to catch fish here)

*disagree (-1) Neither (0) agree (1)*
*(MANYOUT)*

***Waxaa jira kallumaysato badan oo bulshadayda ka mid ah kuwaasoo isku dayaaya inay kalumaystaan***

***ma raacsani (-1) Midkoodna (0) waan raacsanahay (1)***

Foreign fishing vessels fishing nearby are taking all the fish disagree (-1) Neither (0) agree (1) (FORNEAR)

***noomayimadan kalumaysato kale oo ka baxsan degankena si ay halkan uga jilaabtaan***

***ma raacsani (-1) Midkoodna (0) waan raacsanahay (1)***

There are still plenty of fish left in the sea to catch

*disagree (-1) Neither (0) agree (1)*
(NOFISH)

***Wali waxaa jira maraakiib shisheeye ee jiriifka oo ka kaluumaysta meela nagu dhow xaalufiyana dhammaan kalluunka***

***ma raacsani (-1) Midkoodna (0) waan raacsanahay (1)***

Fishermen are leaving my village as they can no longer make a living from the sea)

*disagree (-1) Neither (0) agree (1)*
*(MENLEAVE)*

***Badeenu wa hodan walina waa laga kaluumaysan karaa***

***ma raacsani (-1) Midkoodna (0) waan raacsanahay (1)***

Waste dumped from foreign boats at sea is not harming the fish and environment

disagree (-1) Neither (0) agree (1) (WASTE)

***Sunta maraakiibta shisheeye ku shubaan badda khatar kuma aha baya'adda badda iyo kalluunka***

***ma aqbalin(-1) Midkoodna (0) wan aqbalay(1)***

No one is in charge of management of the fish resources in my community

disagree (-1) Neither (0) agree (1)
(NOMGT)

***Ma jiro qof mas'uul uga ah bulshadeena maamulida khayraadka kallumaysiga***

***ma raacsani (-1) Midkoodna (0) waan raacsanahay (1)***

We are successfully enforcing Somali laws regarding fishing disagree (-1) Neither (0) agree (1) (NOENF)

***Waxaan ku guulaysanaynaa inaan fulino sharciga kalluumaysiga Soomaaliya***

***ma raacsani (-1) Midkoodna (0) waan raacsanahay (1)***

There is a lack of alternative income or employment for my family other than fishing)

disagree (-1) Neither (0) agree (1)
(LACKALT)

***Qoyskaygu ma haystaan fursad kale oo dakhli ama shaqo kale oo aan ahayn kalluumaysiga***

***ma raacsani (-1) Midkoodna (0) waan raacsanahay (1)***

There are adequate water supply and toilet facilities in the community disagree (-1) Neither (0) agree (1) (WATER)

***Bulshadeenu waxay heli karaan biyo iyo musqulo ama suuliyo ku filan***

***ma raacsani (-1) Midkoodna (0) waan raacsanahay (1***)

I would like my sons to become fishermen like me disagree (-1) Neither (0) agree (1) (SONS)

***Waxaan jeclaan lahaa inuu wiilkaygu noqdo kallumayste sidayda oo kale ah***

***ma raacsani (-1) Midkoodna (0) waan raacsanahay (1)***