



PROJECT BADWEYN PAPER SERIES:

SOMALI COASTAL DEVELOPMENT OPPORTUNITIES



SECURE FISHERIES

Advancing Sustainable Fisheries

a program of One Earth Future

PROJECT BADWEYN PAPER SERIES:

SOMALI COASTAL DEVELOPMENT OPPORTUNITIES

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July 2018

<http://dx.doi.org/10.18289/OEF.2018.032>

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Cover Image: A Somali fisher carries a sailfish to Mogadishu's fish market. AU-UN IST Photo/Stuart Price
All satellite images from Google Earth.

ACKNOWLEDGEMENTS

The authors would like to thank the Somali fishers, government officials, and international organization employees who provided information for our case studies. We appreciate the input provided by Sarah Glaser, Laura Burroughs, and Mahad Awale.

Design & layout by Liz Allen, One Earth Future.

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EXECUTIVE SUMMARY

Somali fisheries offer great potential for growth to improve coastal livelihood security. The Federal Government of Somalia, regional governments, and the international community have prioritized coastal industries, especially fisheries, in their planned development efforts. Previous and current efforts have been predominantly concentrated in the most populated coastal cities, but there are many opportunities to create projects in underserved areas that will improve local food and economic security while delivering long-term benefits and positive returns on investment. This report outlines a science-based method for identifying favorable locations for fishing-sector investments. We use local knowledge of fisheries and sector needs to describe an approach to developing fisheries while maintaining the health and resilience of the resources to ensure future economic security.

In this report, we use fisheries landing site data derived from satellite imagery and overlay current international development projects to identify locations where new developments could have a large impact. We focus on areas that, to date, have not received significant investment or development assistance but have access via a road. We chose six communities for further research on livelihoods and fisheries. We combined fish catch estimates, measures of their sustainability, and information on foreign fishing to create a fishing profile of each community.

Our research finds that Somali fishing communities need:

- improvements to civic infrastructure like roads;
- expansion of fishing infrastructure like freezers, ice makers, and processing facilities;
- better access to the ocean through jetties or docks;
- investment in skills like hygienic fish processing;
- a robust system for collecting, storing, and reporting catch data;
- integration of women's associations in trainings and decision-making;
- an expanded role for fishing cooperatives to build sector stability;
- markets for underutilized, sustainably fished products;
- systems to identify and report illegal fishing; and
- education and management measures to divert effort toward more sustainable fisheries.

Looking out on Berbera harbor, Jean-Pierre Larroque



Our case studies span multiple states in the Somali region and show that while the overarching needs of coastal communities are similar, there are different opportunities among locations based on the main catch in an area, regional differences in fisheries management and governance, and the local security situation. The case study locations and their primary opportunities for development are as follows.

Bereda

- A jetty or dock to serve local fishers and traders coming from nearby countries
- Education about the ban on lobster fishing in Puntland and why it is important to the future viability of the lobster fishery, and implementation of more sustainable fishing practices

Hordio

- Installation of sources of reliable and renewable energy for the community
- A market for sustainably caught sardines for human consumption or use in local farming as animal feed or fertilizer

Bander Beyla

- Implementation of a fish catch data collection system in conjunction with the fishing cooperative, women's association, and regional and federal government authorities
- Education around identifying and reporting illegal fishing

Maydh

- Improved fishing infrastructure and a paved road between Maydh and the regional capital, Erigabo
- Encouraging a shift in fishing practices to target more sustainable but still lucrative species like jacks and trevallies

Hawaay

- Investment in freezers and processing facilities coupled with facility maintenance trainings
- Education about hygienic fish processing including the salting and drying of fish

Merca

- Increased area security and improved civic infrastructure to allow efficient transportation of fish products to nearby Mogadishu

Overall, this new approach to identifying Somali coastal development opportunities can guide international donors and private investors in order to ensure that future projects increase the resilience of Somali communities while maximizing project impact.



I. INTRODUCTION

The Somali coast has long been considered an area of opportunity for economic growth. Development plans from Somali federal and regional governments identify expanding the fisheries sector as a major goal with the potential to improve food and economic security in coastal communities. International aid groups have also turned their attention to fisheries as a growing sector with significant investment potential. Both the government and development groups concentrate their efforts in the most populated coastal areas. Our research highlights the potential to expand these efforts to other coastal communities that have similarly abundant fisheries resources and a fishing community but limited access to financial and development support.

Current efforts to develop domestic fisheries along the Somali coast concentrate predominantly on the most populated coastal cities like Berbera, Bosasso, and Mogadishu. These locations draw international attention and support for many reasons. First, higher population numbers mean investments will impact a greater number of recipients. Second, ease of access is favorable, in terms of infrastructure, including major roads and airports, and security options that enable donors and implementors to travel to and operate in these areas safely. Third, demand for fish is greater. International development projects often have constricted budgets and timelines, so executing efforts where access is easy and where positive impact will be large and most immediate is important for demonstrating return on investment.

However, our research identifies opportunities to expand efforts to underserved communities that stand to realize significant gains from increased donor attention and support for their fishing sectors. Distributing fishing efforts along the coast and strengthening the value chains in more remote areas can help fulfill market demand in the cities while avoiding depletion of local fish populations in the most heavily fished areas. This will also support a wider range of people throughout the country, including in more remote coastal areas.

In any location, lasting growth and the long-term success of developments hinge on balancing increased fishing-sector efficiency with management of the fisheries to ensure fish populations can withstand exploitation over the long term. Appropriate management measures depend on scientific assessments of the species caught most frequently by both domestic and foreign fleets. This information can orient new efforts toward abundant fisheries, reducing competition between local and foreign fishers.



Though data are currently insufficient for a comprehensive scientific assessment of the health of Somali fisheries, existing tools can inform decisions on where and how fisheries development should proceed. This report provides a framework for a science-based needs assessment and includes examples of its use in six localities. The approach recommended here is based on ecological principles and local knowledge that can inform development work to ensure projects benefit Somalis in both the short and long term; in the short term through directed and focused effort, and in the long term through ecosystem sustainability that supports healthy fish populations for reliable future exploitation.

Our approach uses publicly available data to identify locations with potential for growth in order to inform future development efforts and governance measures in underserved regions. The initial assessment is based on landing site sizes, recent development project locations, and reconstructed fish catch measurements in Somali waters. We then focus on six locations spanning Puntland, Somaliland, Hirshabelle, and South West Somalia as case studies assessing the benefits and drawbacks of establishing projects in these places. We use local knowledge from fishers, ministry officials, and international aid workers to give local context to our assessment results and guide our identification of development opportunities in each place.



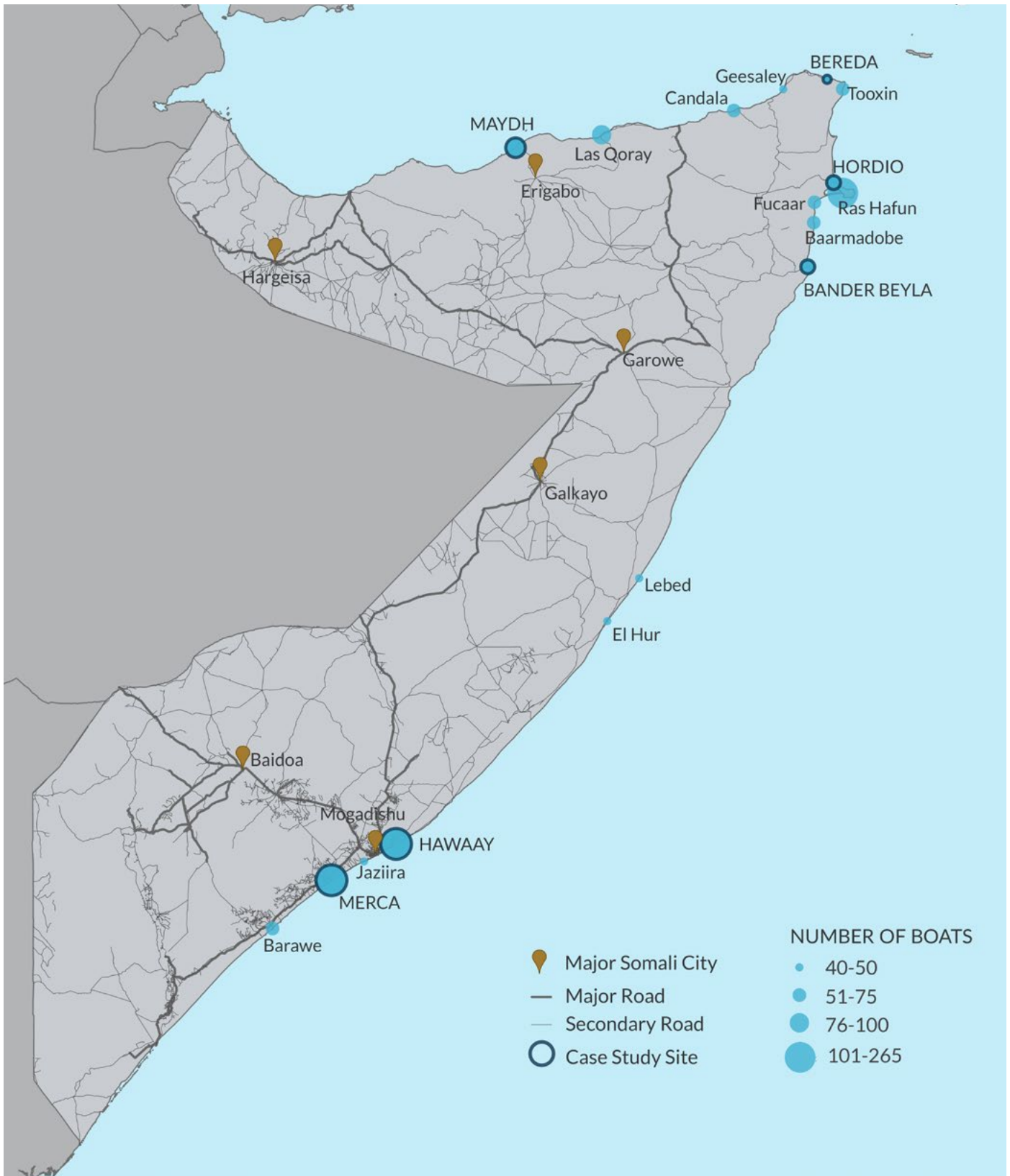
A Somali man pushes a barrow loaded with freshly caught fish from the Indian Ocean towards Mogadishu's fish market. AU-UN IST Photo/Stuart Price

Somali Development Plan Goals for the Fishing Sector

The Somali Federal Ministry of Fisheries and Marine Resources outlined the major needs of the Somali fishing sector in the *National Development Plan*¹ and the *Somali Fisheries Development Framework 2018–2020*.² These needs are

1. **INFRASTRUCTURE** for access to the fishery and quality assurance including landing facilities, ice makers, cold storage, processing facilities, training facilities, and transportation for seafood products;
2. improved **SKILLS** leading to increased employment, especially among youth, women, and internally displaced persons;
3. **FISHERIES GOVERNANCE** including fisheries laws, regulations, and institutions at the federal, regional, and local levels;
4. **ENFORCEMENT** capacity and frameworks to address illegal, unregulated, and unreported (IUU) fishing;
5. **DATA COLLECTION** and assessment of fish stock status and sustainability;
6. **MARKET** expansion efforts increasing Somali fish consumption and the exporting of fish internationally; and
7. **INVESTMENTS** by the private and public sectors.

FIGURE 1: COMMUNITIES WITH DEVELOPMENT POTENTIAL



Donors, investors, and government decision-makers must translate each of these seven needs into plans of action for specific fishing communities. But fully understanding how to best address those needs through project development or support on a local scale is challenging when knowledge of underserved communities and the fisheries on which they depend is lacking. This knowledge gap can create a vicious cycle of neglect. The lack of knowledge leads to a lack of projects in underserved communities, and the lack of projects perpetuates the lack of attention to investment and development. Conversely, community-level information can support effective fisheries governance measures and guide investments that maximize impact and return.

This report describes each of these needs in six fishing communities. This localized approach is intended to support decision-makers from the government and the development community as they assess the opportunities for future projects in the fishing sector. In our identification of locations for potential growth, we consider each category above, identify gaps, and highlight priorities at a local scale.

Methodology

Initial Assessment

Three main data sources informed our initial identification of underserved locations:

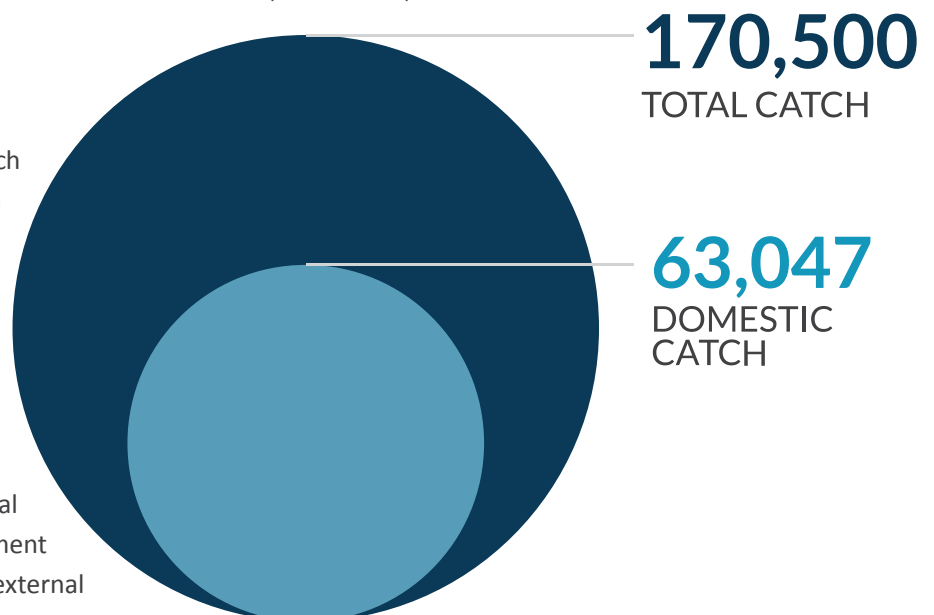
1. Landing sites derived from satellite imagery³
2. Current and recent development projects⁴
3. Primary and secondary roads⁵

Landing sites were limited to those with greater than 40 boats in order to focus on places where investments will affect the largest number of people and to eliminate sites that may be temporary or seasonal or that are not associated with a permanent settlement. This subset of sites was compared to the map of current development work. Because our goal is to identify new areas in need of assistance, landing sites that already have development projects were excluded from analysis. Though some towns may have more than one landing site, we grouped these by location (sites within 5 kilometers of each other) under the assumption that trainings, infrastructure projects, and governance efforts will be sufficient for the needs of the whole town.

This approach yielded a list of 17 towns for further analysis (Figure 1, blue circles). Each contains at least 40 boats, making them sizeable fishing communities according to satellite imagery. Our research did not discover any current development projects in these locations.⁶

Because this assessment is oriented toward development projects undertaken by international organizations, it is crucial that the towns where new development might be implemented are accessible by external

FIGURE 2: TOTAL & DOMESTIC CATCH IN SOMALI WATERS (MT/YEAR)



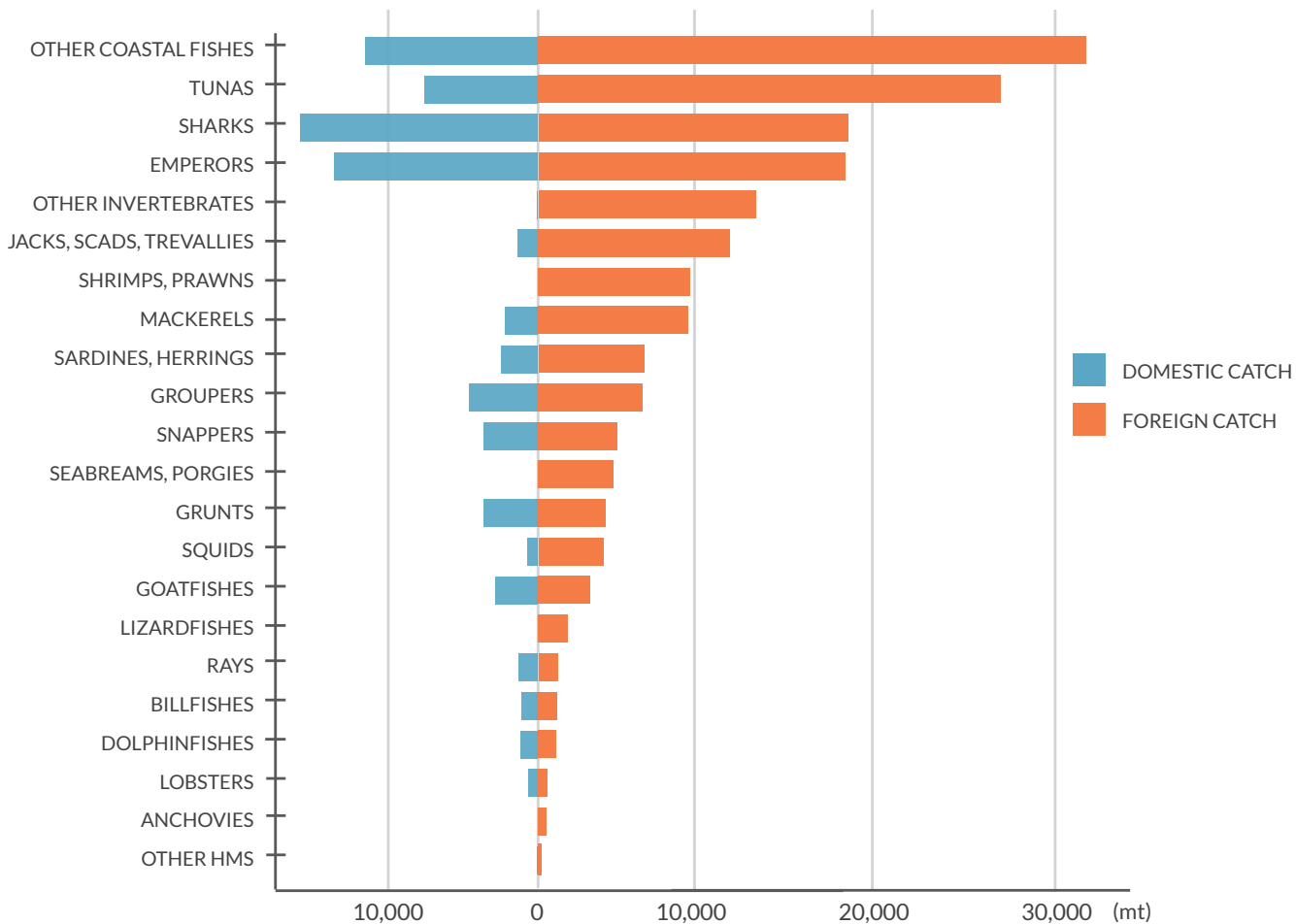
stakeholders arriving from other domestic or international locations. Five of these towns that host a large population of fishers (Tooxin, Ras Hafun, Fucaar, Baarmadobe, and Lebed) do not have adequate road access, which makes building infrastructure, collecting data, conducting trainings, and expanding markets difficult. More work on civic infrastructure like roads and airports is needed in these locations before significant work on fisheries can begin.

One important variable that we did not consider in our initial assessment is the security situation on the Somali coast. While security is vital to establishing a project in any location, we did not use it as a factor in our initial identification of sites because of its unpredictability. It is necessary to reassess the safety of a location continuously throughout a project, so using such a variable metric in our baseline analysis proved to not be worthwhile. Instead, we considered security in our identification of potential projects in the case study locations described below.

Catch and Sustainability

There are no consistent catch data collection systems for Somali domestic fisheries. We therefore used the catch reconstruction by Secure Fisheries and the Sea Around Us project⁷ to examine catch and fisheries sustainability in Somali waters. The Sea Around Us hosts downloadable catch data on its website⁸ at a resolution of 0.5×0.5 degrees. These disaggregated data show the theoretical geographic distribution of catch (in metric tons, or mt) in Somali waters. It is important to note that though the numbers used and displayed throughout this report are the most accurate catch estimates available for Somali waters, they may not represent actual catch numbers. To account for this, we report the average of the most recent five years of data available (2010–2014) in order to generally show geographic catch distribution and species composition (Figure 3).

FIGURE 3: FOREIGN AND DOMESTIC CATCH COMPOSITION



We further separated the gridded Sea Around Us data into each of the 20 fish species categories identified in *Securing Somali Fisheries*⁹ as being the most commercially important. We assigned a sustainability designation to each category based on the sustainability analysis in *Securing Somali Fisheries*, assessed in 2014.

For each 0.5×0.5 -degree cell within Somali territorial waters,¹⁰ we determined the percent of total catch comprising sustainable species groups (Figure 4). We used the line delineating the claimed territorial waters from 1972 instead of the declared exclusive economic zone (EEZ) from 2014 because designating catch as foreign or domestic in the disputed areas of the EEZ is not possible. For data-deficient species groups, we assumed that half of the catch is sustainable and added that amount to the sustainable catch.

We also calculated the percentage of foreign and domestic fishing occurring in Somali waters (Figure 5), especially near the areas of interest for development. This is useful

FIGURE 5: CATCH BY FOREIGN VESSELS

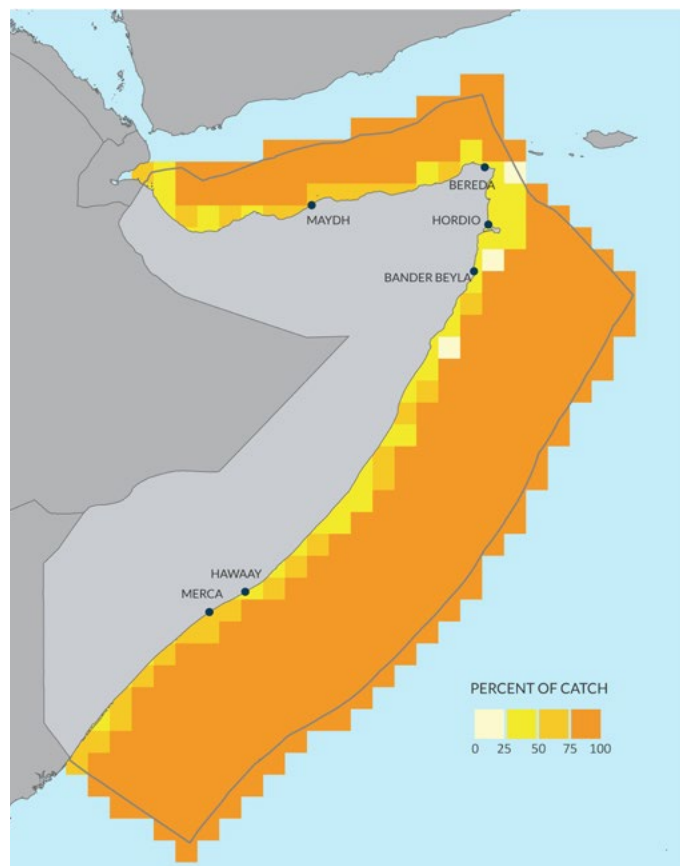
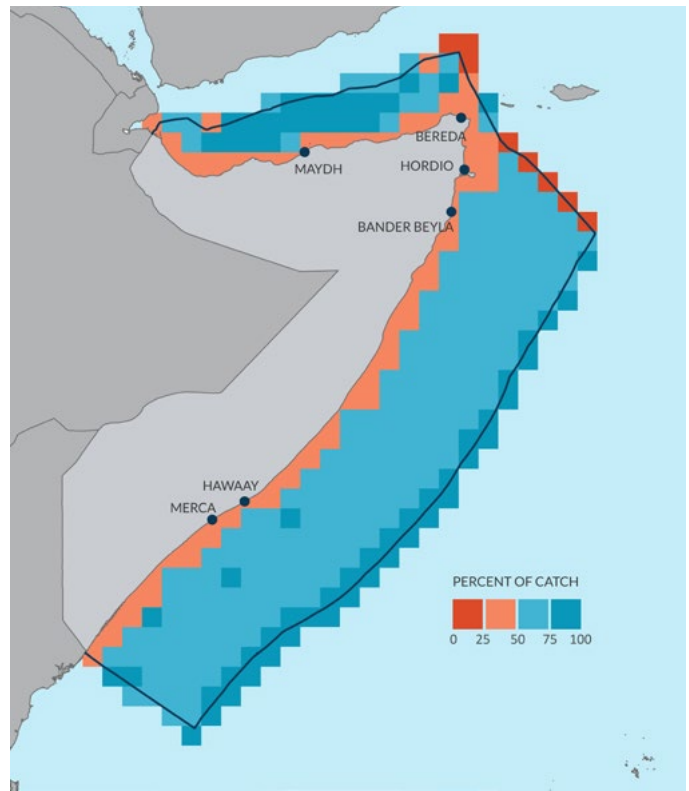


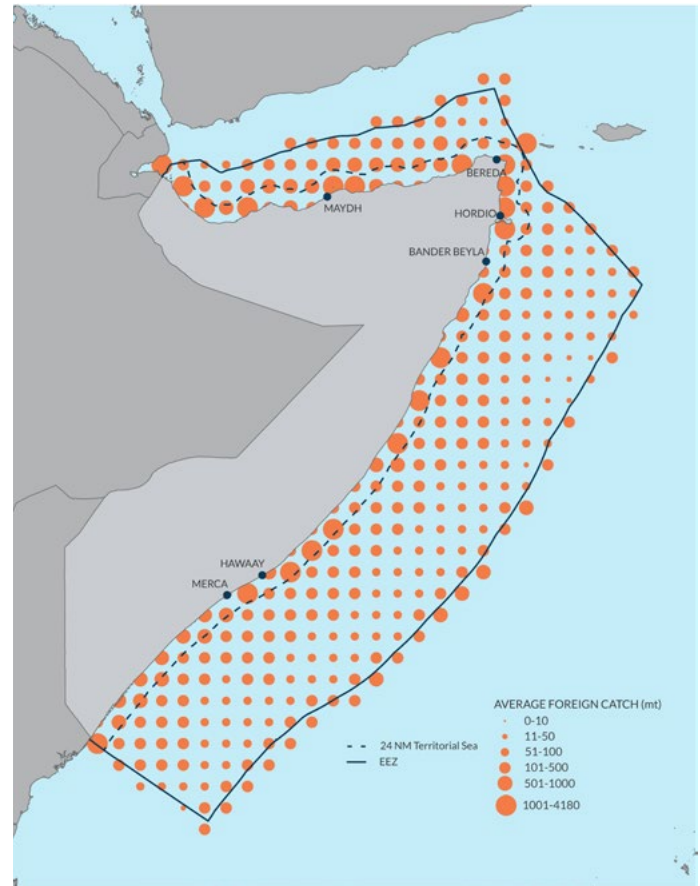
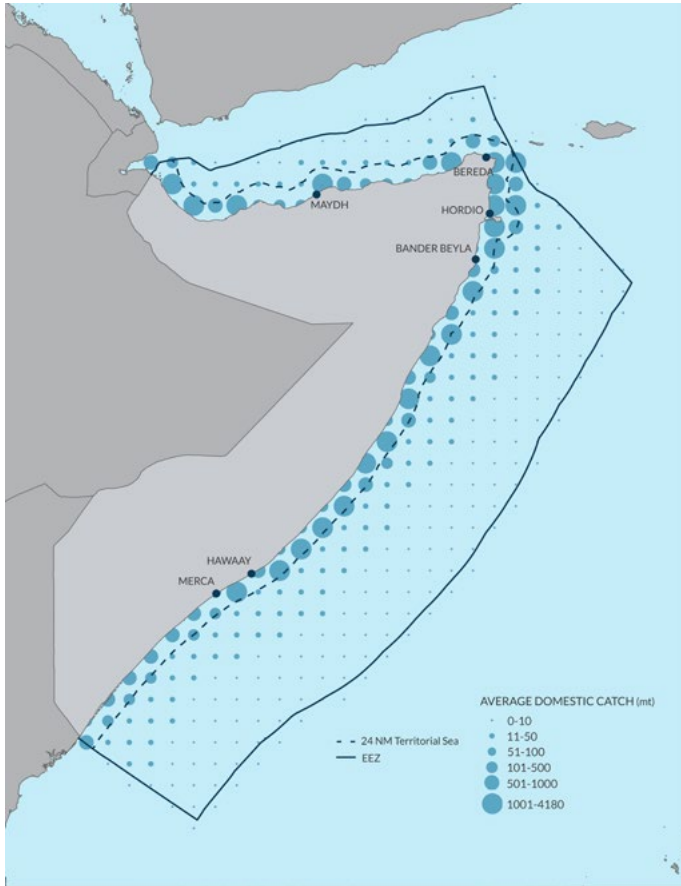
FIGURE 4: PERCENT OF CATCH THAT IS SUSTAINABLE



for determining where more attention and resources may be needed to support enforcement capacity and fisheries governance mechanisms in order to ensure local Somali needs and foreign fishing licensing revenues are prioritized. We used the same spatially disaggregated dataset to examine catch by domestic and foreign vessels (Figure 6).

Outside of 24 nautical miles (NM), the majority of fishing is by foreign vessels. Somali boats are generally small and better suited to fishing close to shore. Foreign vessels are generally larger and often target highly migratory species including tuna and billfishes (see Box I: Tunas in Somali Waters). As shown in the maps of domestic and foreign fishing (Figure 6), while Somalis do not fish far beyond the inshore fishing area, foreign vessels are fishing both outside and within that boundary. The waters within 24 NM are reserved for Somali fishers by federal law;¹¹ however, conflicting regional and federal laws, confusion over licensing jurisdiction, and lack of enforcement capacity mean foreign fishing is occurring near shore in direct competition with Somali fishers.

FIGURE 6: SPATIAL DISTRIBUTION OF CATCH IN SOMALI WATERS
DOMESTIC CATCH FOREIGN CATCH



Case Study Locations

Based on our analysis, we chose as case studies six sites that have both many fishers and road access to a town. The types of fishes caught vary among the six sites, as does the amount of foreign fishing. We chose towns of variable size in three regions and will explore in depth the existing fisheries and associated infrastructure, the challenges faced by fishers, and the potential for intervention by international donors, local investors, and Somali government agencies.

The six case study locations are

1. Bereda
2. Hordio
3. Bander Beyla
4. Maydh
5. Hawaay
6. Merca

For each location, we created a profile of the town and the status of its fisheries using the initial assessment and anecdotal information from fishers, ministry staff, and aid workers. We informally gathered information from these sources on the main species caught in order to gain an understanding of the fisheries that are central to the local

economies. The main species caught as reported by fishers are not always congruent with the highest catch estimates in the Sea Around Us data, and we do not have locally reported catch amounts. We expect these estimates to differ based on the assumptions of the Sea Around Us model, differences in local naming and knowledge of fish by species, and different scopes and means of collecting the information. We present the catch as reported by both sources and highlight the places where one or both indicate an opportunity for development. We use this information to identify projects that promote local long-term resilience. We present these case studies as examples of the type of science-based, locally supported rapid assessment that could be implemented for future planning of fishing-related projects.

Major Challenges Across All Case Study Locations

Infrastructure

There are significant challenges to undertaking an accurate needs assessment of these fishing locations and executing projects in any of them. Though roads into each town exist, road quality is often poor, indicating that attention to basic civic infrastructure needs to be prioritized. There have not been recent reliable censuses taken to understand the general population, and we therefore lack a breakdown of the number of people involved in the fishing sector. None of the locations have a jetty or dock, making landing fish difficult. These basic community needs require immediate attention to improve livelihoods across all economic sectors. Once infrastructure needs are addressed, the fishing sector can build the value chain for fish products.



Boats anchored along Lido Beach, Mahad Omar Nor

BOX I: TUNAS IN SOMALI WATERS

By Ciera A. Villegas

Tunas are a significant part of both foreign and domestic catch in Somali waters. In the analysis presented in this report, we combined information about all tuna species into one category. However, there are many separate species of tuna in Somali waters, and they have different biological characteristics, roles in the ecosystem, and migration patterns. These differences matter for management and sustainability as well as business planning. Four species—yellowfin, skipjack, bigeye, and kawakawa—are of major commercial importance. These species vary in their economic and ecological sustainability, driven partly by how they reproduce and in what form they are eaten (canned, frozen, dried, or fresh).

Highly Migratory Species

Highly migratory species (HMS) of tuna swim through the EEZs of multiple countries and beyond to the high seas. In the Indian Ocean, they are managed by the Indian Ocean Tuna Commission (IOTC), which collects data submitted voluntarily by tuna-fishing countries and performs scientific assessments of tuna stocks. In Somali waters, foreign vessels targeting HMS are primarily large industrial longline or purse seine vessels from Asia and Europe, or smaller gillnet vessels from neighboring countries such as Yemen and Iran. Asian and European fleets target yellowfin, skipjack, and bigeye tuna; Yemen targets yellowfin and kawakawa tuna; and Iran targets yellowfin and skipjack tuna. Domestic fishers typically catch the same species using small-scale fishing gear like handlines and gillnets.





Somalis seeking long-term fishing sector stability and investors and international donors seeking the best return on their investments should steer away from



unsustainably fished yellowfin tuna and instead target skipjack, bigeye, and kawakawa. By using fishing methods that target only the latter species and limit bycatch, Somalis can help fill the increasing international demand for sustainably caught fish.

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CATCH THESE, NOT THOSE				
	 <p>YELLOWFIN TUNA (<i>Thunnus albacares</i>) UNSUSTAINABLY FISHED*</p>	 <p>SKIPJACK TUNA (<i>Katsuwonus pelamis</i>) SUSTAINABLY FISHED*</p>	 <p>BIGEYE TUNA (<i>Thunnus obesus</i>) SUSTAINABLY FISHED*</p>	 <p>KAWAKAWA TUNA (<i>Euthynnus affinis</i>) SUSTAINABLY FISHED*</p>
REPRODUCTION	eggs are released every few days eggs and larvae float for extended periods of time and can easily be scooped up by bigger fish	millions of eggs are simultaneously released almost daily eggs float and larvae are sensitive to certain temperatures (15–30°C)	millions of eggs are simultaneously released almost daily	releases 0.21 million eggs at one time
EATS THINGS LIKE	crab larvae, squid, and other smaller fish	crab larvae, squid, and mollusks	shrimps, crabs, squid, and other fish	other fishes, shrimp, and squid
EATEN BY	big pelagic predators like sharks	larger tunas, billfishes, and sharks	larger tunas and billfish	marlins and sharks
CAUGHT BY	purse seines, longlines, and gillnets	purse seine, gillnet, and pole-and-line	longline, purse seine, and other artisanal gear (pole-and-line, handline, small longline, gillnet, trolling)	gillnets, handlines and trolling, and coastal purse seiners
CONSUMPTION BY HUMANS	fresh (especially in the Japanese sashimi market) frozen and canned for markets in western Europe (especially Italy), the USA, and Japan	smoked and dried for katsuobushi production frozen and canned Japan imported more frozen skipjack in 2017 compared to 2016	fresh in the sashimi market frozen and canned	fresh, especially in sushi markets frozen and canned used in pet food
SOMALI MARKET	Processing infrastructure (i.e., freezers, canneries) is needed in order to obtain significant revenue from the export of yellowfin tuna products. This fish is already unsustainably harvested and is heavily targeted by foreign fishing fleets. Other sustainably fished tuna such as skipjack would be a better economic and ecological alternative.	Because skipjack produce so many young fish it is an attractive alternative for unsustainable stocks such as yellowfin tuna that produce fewer young. The katsuobushi market could be a potential source of revenue for domestic fishers with little capacity to freeze and can tuna.	Because bigeye produce so many young fish it is an attractive alternative to its unsustainable counterpart, yellowfin tuna	Kawakawa produce significantly fewer young fish than skipjack and bigeye tuna; however, it is still an attractive alternative to its unsustainable counterpart, yellowfin tuna.



Packing fish for transport in Berbera, Jean-Pierre Larroque

Before new market expansion will be feasible, quality control of fish products must be improved. From landing the fish through export, fish must be kept cold to avoid spoilage and maintain quality. Storage freezers are important to this effort, as are ice makers and freezer trucks. Training on quality control techniques and hygienic processing is critical to ensuring high-value products make it to domestic or export markets.

Skills

Skills development requires increased support in each of the case study locations. Attention by development groups is often on discrete projects with tangible, immediate results rather than long-term sustainability. For example, freezers have been installed in many coastal towns. While this is a helpful intervention and would be valuable to the communities in this study, those communities where freezers exist continue to need support for skills development to be able to take full advantage. Without education on how to properly store fish and how to maintain this valuable piece of equipment, a freezer may go unused or be inoperable after the aid group leaves.

Trainings have been implemented in many of the larger towns where development work is occurring.¹² These trainings attempt to improve efficiencies along the value chain beyond catching fish. Aid organizations teach processing methods that meet quality and cleanliness standards, thereby improving the value of fish products. They also train people in boatbuilding and gear repair to ensure investments in material items last for the long term. Where they happen, these trainings are frequently targeted to women and youth, enabling segments of the population to gain employment where few opportunities exist otherwise. Coupling infrastructure improvements and gear donations with training programs means the community can maximize the value of contributed materials.

Data Collection

There are no fish catch data collection systems in place in our case study locations, and few exist anywhere in the Somali region. Catch data are needed to adequately understand and manage fishing activities and ensure healthy fish stocks that can support human needs over the long term. While some cooperatives and businesses may keep catch records, there is no centralized system or repository to inform the fish stock assessments and fishing regulations that are necessary to preserve local livelihoods dependent on fishing. Without data collection initiatives involving multiple stakeholders, it will be impossible to secure the future of domestic fisheries. The international community can advise on methods and provide materials for data collection, thereby empowering fishers, cooperatives, government officials, and academic institutions to create a data collection system to suit their local fisheries.

Women's Associations

In many coastal towns, women's associations provide education and assistance with running fishing businesses. Coordinating trainings with established local associations has several benefits for the community and development goals. The local

organization can ensure trainings target the people most in need and offer the right skills. The associations could also be given the means to conduct trainings themselves, allowing them to disseminate the knowledge and skills widely and create institutional memory. It is valuable for external actors to connect with established associations because they retain vital cultural and market knowledge that enhances development outcomes. Furthermore, associations serve as collective and centralized structures for fisheries management and resource governance. Existing systems and networks can be expanded to further assist the fisheries sector. For example, using the existing network of associations to create and centralize a catch data collection system would improve the chance that the system would be accepted and successful. Involving the women's associations in fisheries work increases women's participation in decision-making and resource governance, ensuring outcomes benefit the whole community.

Resource Conflict and Sustainability

In every fishing site along the Somali coast, the catch of vulnerable species, especially sharks (Figure 8), is concerningly high. As top predators that maintain the balance of the coastal ecosystem (see Box II: Sharks), sharks ensure the health of other fish populations. Decimating their populations destroys other fisheries in turn.¹³ Somali fishers could improve the sustainability of their fleets by moving away from slow-growing species, like sharks, groupers, and snappers, to smaller species that reproduce more rapidly and are more sustainable, like sardines (see Box III: More Sustainable Alternatives) and coastal tunas (see Box I: Tunas in Somali Waters). Making this shift requires countering the lost revenue from lucrative shark-fin exports with alternative markets. Deterring fishers requires regulations on vulnerable species and enforcement coupled with education around why short-term changes will lead to long-term livelihood security.

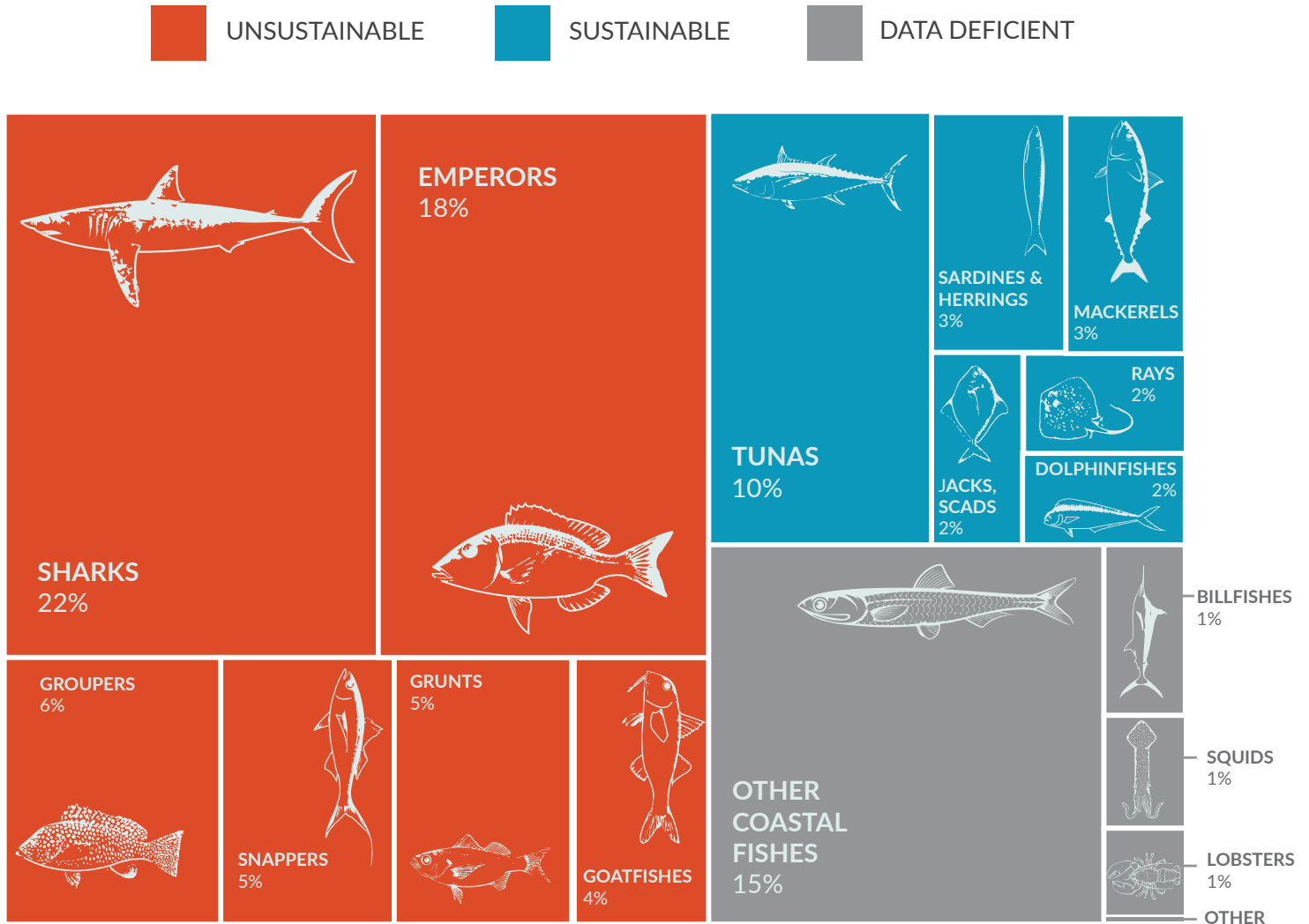
The sustainability of the resource supports the long-term survival of fishing businesses and is an important consideration for market expansion. Expanding a fishery if a resource is declining only ensures livelihood security until the fishery collapses entirely. Therefore, the case studies presented here focus on improvements that can be made to governing unsustainable resources while managing currently healthy resources to maintain their population levels.

We also focus on the need for improved enforcement to decrease the likelihood of conflict among fishers. Competition between foreign and domestic fishers for declining resources can lead to the increased occurrence and intensity of conflict between the fleets. As stocks decline, fishers must move farther from their normal fishing range. This could lead to more foreign fishing in Somali waters as foreign fleets range far from their home countries. Similarly, local fishers may have to leave their traditional fishing grounds in search of greater catch. Not only does this pit local fishers in competition against each other, it increases the chances that a Somali vessel will encounter a foreign one, increasing the likelihood of conflict.



Women's associations play an important role in coastal towns. UN Photo / Ilyas Ahmed

FIGURE 7: SOMALI DOMESTIC CATCH COMPOSITION & SUSTAINABILITY
Percent of total average catch per year

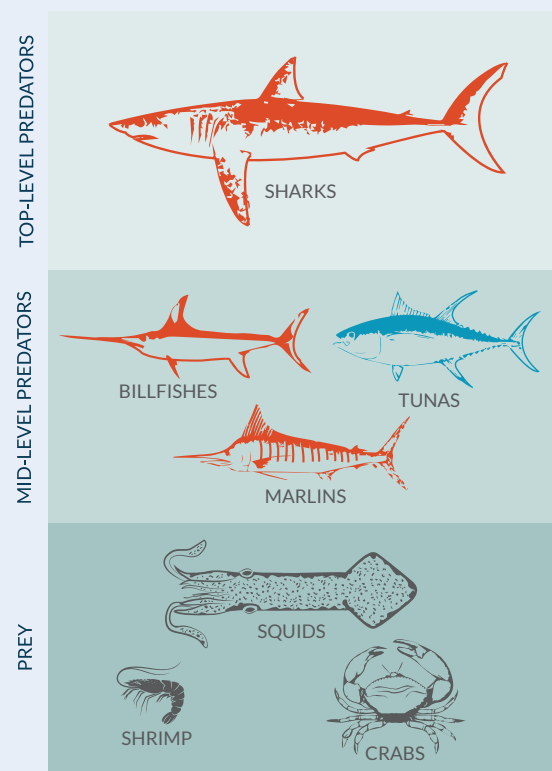


BOX II: SHARKS

By Ciera A. Villegas

Since the 1980s and 1990s, shark fishing has increased to satisfy market demands for their fins, liver oil, and meat, resulting in global shark-population declines. Sharks are also snagged as bycatch on longlines and in purse seines that are targeting tunas, mackerels, and billfishes. Sharks are slow to reproduce compared to spawning fishes like anchovies, sardines, and herrings. While these fast-spawning species release huge numbers of young at once, most sharks in the Somali region give birth to only a few young at a time, and shark pups can develop in the womb for as long as 18 months. This reproductive strategy increases the survival rates of young sharks, but the slower process means rebuilding shark populations after overfishing takes time, if they can recover at all.

Sharks are important predators in coastal environments and reducing their populations can reshape entire ecosystems. Sharks feed on a wide variety of prey and travel large distances. Their mobility allows them to connect distant marine ecosystems to each other, and this connectivity can improve ocean health.



Shark caught by Somali fishers, at market, AU UN IST PHOTO / Ilyas A. Abukar

Despite this vulnerability to overfishing, shark liver oil, dried shark fins, and shark meat are important local and export products. The globalized trade to meet demand in Asian markets for shark-fin soup, a traditional and usually expensive Chinese dish, is a major driver of shark fishing. Additionally, Somalis export shark meat to Kenya, where it is generally a cheap source of animal protein for human consumption. Nonetheless, Somalis can protect their livelihoods by preserving the long-term health of marine ecosystems and concentrating fishing efforts on other species. Education initiatives and investments around sustainable fishing practices can help redirect fishing efforts to other desirable but fast-spawning fishes like sardines, anchovies, herrings, and sustainably fished tuna.

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II. CASE STUDIES: PUNTLAND

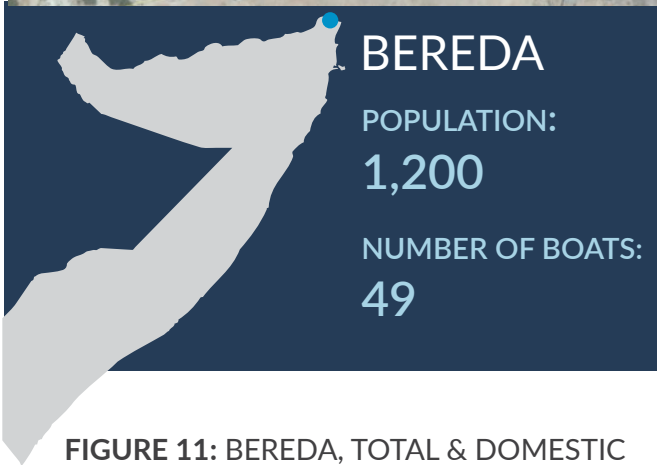
Three of our case studies cover locations in Puntland: Bereda, Hordio, and Bander Beyla. Puntland is a semi-autonomous region within Somalia. Its fisheries governing body is the Puntland Ministry of Fisheries. In 2004, the Puntland government enacted a fishing law based on the federal fishing law in place at the time, Fisheries Law No. 23 of 30 November 1985.¹⁴

Puntland's regulations are extensive and authorize the ministry to issue licenses to foreign and domestic fishers, though the fees for domestic fishers are small. These regional regulations are enforced by the ministry in conjunction with the Puntland Maritime Police Force (PMPF). One recent regulation directly affecting local fishers is a ban on lobster fishing that went into effect in September 2014 and is still in place. Fishers who are caught violating the laws are subject to fines or vessel confiscation.

At the local level, fishing cooperatives and women's associations exist in most towns to serve the fishing sector. Fishers, traders, processors, and others involved in the sector pay dues to be members of their local cooperative. They are managed by elected members and are responsible for supporting the fishers and advocating for their interests, collaborating with the ministry, and resolving disputes. Women's associations offer training, education, and advice on fishing and business to local people. The level of involvement in the community of these organizations varies among locations. These groups can be critical entry points through which outside organizations can build trust within communities.

Puntland fishing communities have faced myriad challenges in recent years. The tsunami in 2004 was devastating to many of the coastal communities, destroying infrastructure as well as fishing vessels and gear. Rebuilding has been slow in many places and most have not fully recovered.

A more insidious and persistent threat affecting fishing communities is the constant presence of foreign trawling vessels off the coast of Puntland.¹⁵ They illegally fish close to shore, overlapping with domestic fishers in both range and target species. These vessels drag nets along the bottom, catching everything in their path. Bottom-trawling is a destructive fishing practice that damages fish habitats and catches sensitive species like turtles as bycatch. The highly visible practice has been a source of great contention in coastal communities and has bred resentment among locals toward foreign vessels and toward a government that is not effectively enforcing the law. Building regional enforcement capacity is a priority for the government and an area where international community support is valuable. Local efforts to identify and report active foreign vessels to the proper authorities could be implemented to maintain the sovereignty of the Somali domestic fishing territory inside 24 NM.



Bereda is a small town in the far northeast corner of Somalia in the Puntland region. The population is approximately 1,200. It is stable and there are no current security risks. It is accessible by boat or by car via a dirt road that is difficult to traverse.

Of the main species categories reportedly caught in Bereda, kingfish, skipjack, kawakawa, and sardines are sustainable. Data on lobster catch is not sufficient to assess their sustainability; however, in 2014 Puntland banned lobster fishing because the population was overexploited.

Foreign fishing is common in this part of Puntland. Our analysis shows that foreign fishing in the area is less than 40 percent. However, unlike offshore tuna vessels, foreign trawlers are active near Bereda and target the same reef fishes as the local fishers, including snapper, emperor, and grouper. Yemeni fishing vessels are also active here.

The Puntland fishing law provides the governance framework for foreign and domestic fisheries in Puntland. The Puntland government has made some regulations such as the ban on lobster fishing, however their intervention in domestic fishing is limited.

FIGURE 11: BEREDA, TOTAL & DOMESTIC CATCH (MT/YEAR)

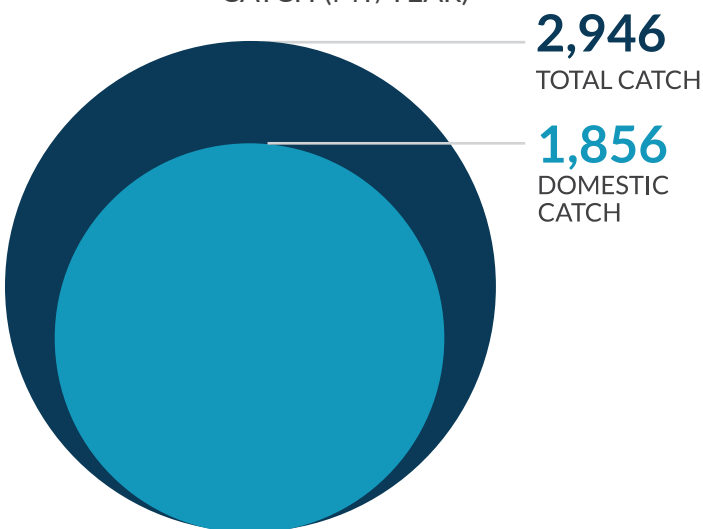
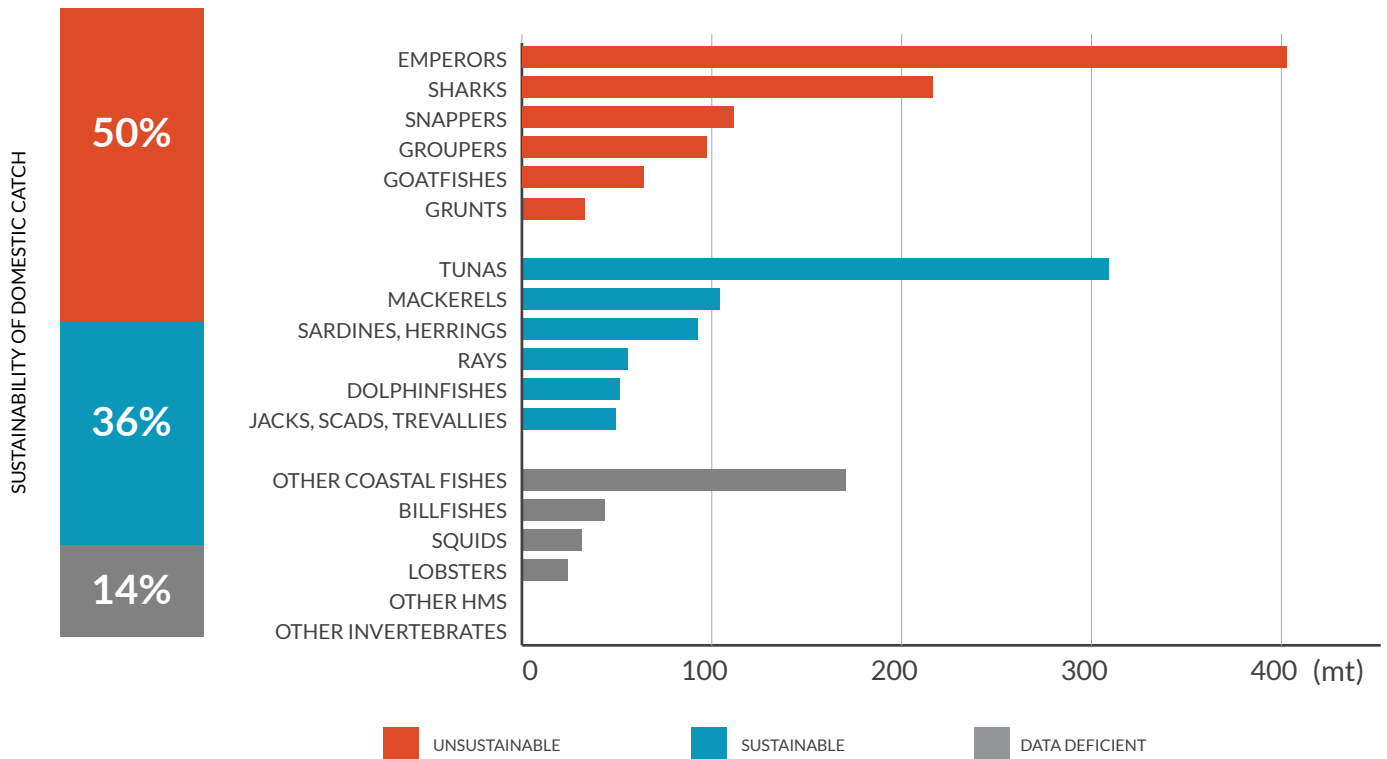


FIGURE 8: DOMESTIC CATCH SUSTAINABILITY & COMPOSITION IN BEREDA
Data from The Sea Around Us



Infrastructure

Bereda has a beach landing site with no jetty or other infrastructure. There is one privately owned ice-making machine in Bereda.

Fisheries Governance

Bereda’s fishers are regulated by the Puntland laws and regulations that apply to the region. There is a fisheries cooperative and a women’s organization in Bereda, but their activities are limited.

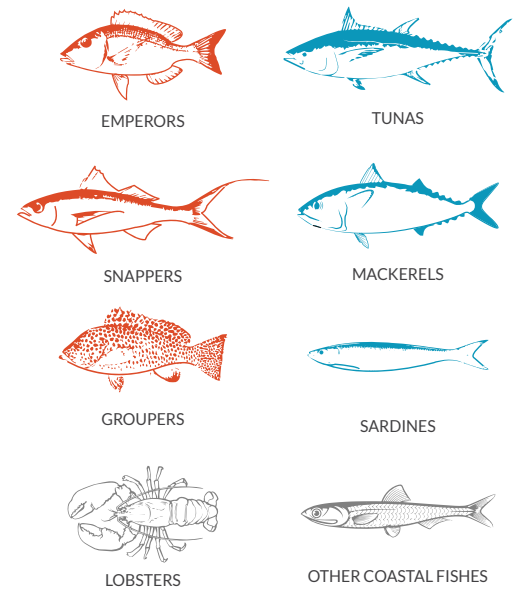
Enforcement

There is no local enforcement system. Regional enforcement is carried out by the regional PMPF and the Ministry of Fisheries. However, according to our contacts, little attention is paid to local fishers’ activities.

Market

The local market for fish from Bereda is in inland towns such as Kardo, Garowe, Galkayo, and other small towns nearby. Fish, especially shark, is exported to Yemen, the United Arab Emirates (UAE), and Kenya.

BEREDA: MAIN CATCH Reported by Local Fishers



Local fishers reported these fish as being the main species or types they catch. They did not report quantities.

Investments

There is one relevant private company in Bereda, the Bareeda Fishing Company. They own the ice-making machine and provide electricity to the town.

Potential for Development

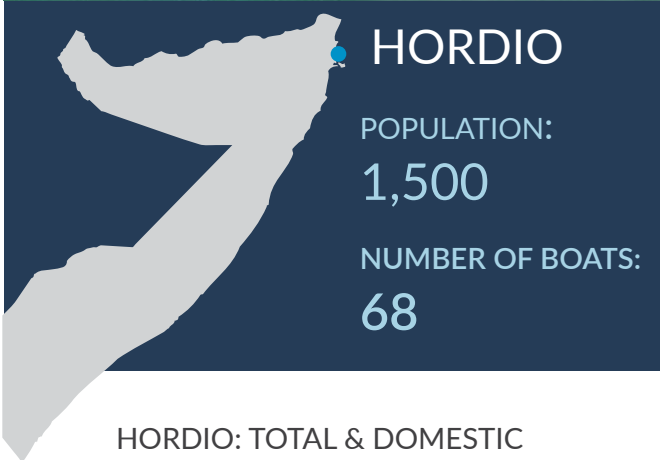
As a small town with limited capacity and resources, Bereda is in need of improved civic and fisheries infrastructure. Improving roads would allow easier access to nearby inland towns to sell fish. Building a jetty or dock would be useful for local fishers and for boats coming from across the Gulf of Aden to buy fish.

When the conflict in Yemen is resolved, Bereda's proximity to Yemen provides an opportunity to expand the market there, especially if infrastructure is improved. Somali fishers can easily take their catch to Yemen, or Yemeni boats can come and purchase catch from them to take back across the gulf. Because there is a functioning ice machine in Bereda, fishers can hygienically store the fish for such a journey. However, the ice machine is privately owned, so the cost of ice would need to be factored into the price they attain for their catch.

Enhancing the fisheries cooperative would be beneficial to the community. If there is a future market expansion, using cooperative power to set prices on fish and ice would likely mean better prices on both for the fishers. The cooperative could also be instrumental in engaging with the regional maritime police force to aid in enforcement of fishing regulations; they would be able to monitor their members and ensure they are fishing legally, and they could report foreign fishing to Puntland authorities.

Despite its low population, catch in the area near Bereda is one of the highest in the case studies. This is likely because there is a high concentration of domestic fishers in northeast Puntland, so it is possible that not all 1,856 mt of catch per year can be attributed to Bereda's fishers. While 43 percent of the catch in the Bereda area is of sustainable species, fishers report that sharks are their main export and that they are catching lobsters in direct opposition to the regional regulation. If they continue, these practices

will likely lead to a decline in fisheries health over time and therefore threaten the viability of the fishing industry. Education initiatives for fishers through the cooperative and the private company on targeting more sustainable species such as sardines, coastal tunas, and mackerels may be successful in changing these patterns and reorienting fishing efforts toward more sustainable practices. To that end, it is useful to provide appropriate gear for catching these species and to train fishers on its use and repair. Likewise, education about why the ban on lobster fishing is in place may foster an understanding of basic sustainability practices and how ignoring the regulation will affect their futures. Adhering to the ban in the short term and creating regulations like minimum length requirements for caught lobsters in the long term will mean the resource will be available well into the future.



Hordio is located in northeastern Puntland just north of the Ras Hafun peninsula. The waters in this area and surrounding the peninsula are rich fishing grounds and are often targeted by foreign fishers, especially bottom-trawlers that have operated in that area for decades. There is a high concentration of domestic fishing in the area as well. Multiple large landing sites are present on the peninsula, but they do not have reliable access by road.

Hordio and the surrounding towns grew during the 1920s and 1930s when an Italian salt factory created widespread employment in the area. The salt factory shut down in the 1950s and is in total disrepair.¹⁶ However, some of the infrastructure remains and is visible in satellite imagery. The tsunami in 2004 caused significant damage to many nearby towns. While it was affected, Hordio was partially protected by the peninsula and its location, sparing it from catastrophic damage.¹⁷ Currently, Hordio has a population of approximately 1,500 and the security situation is stable.

The main catch is similar along northeastern Puntland, including the Ras Hafun peninsula and Bander Beyla (see page 25 for the Bander Beyla case study). The sustainable species that fishers report catching include mackerel, sardines, and tunas including skipjack and kawakawa. A large proportion of the catch in our analysis and reported by fishers is of unsustainable fish including shark, grouper, snapper, emperor, and lobster.

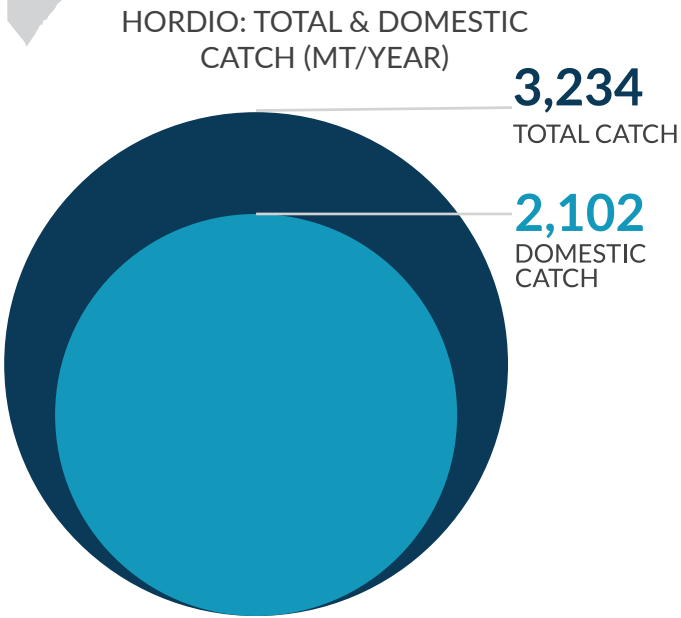
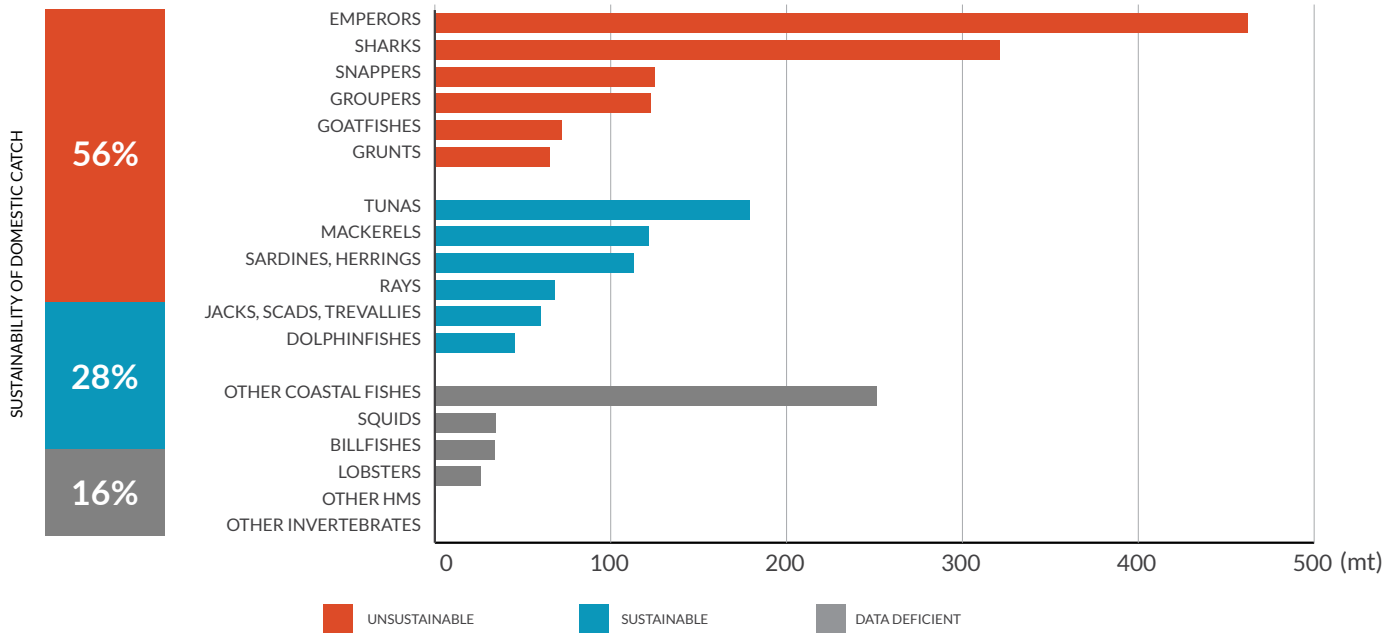


FIGURE 9: DOMESTIC CATCH SUSTAINABILITY & COMPOSITION IN HORDIO
Data from The Sea Around Us



Infrastructure

It is notable that Hordio does not have an electricity system. Businesses use generators for electricity, which is inefficient and costly. There is a cold storage unit built by the Food and Agriculture Organization of the United Nations (FAO) with a capacity of 3.5 tons, but without electricity, it is currently not operational. Only one poorly maintained road links Hordio to the rest of the country.

Fisheries Governance

Hordio’s fishers are regulated by the Puntland laws and regulations. There is a fisheries cooperative and a women’s organization in Hordio, but their activities are limited.

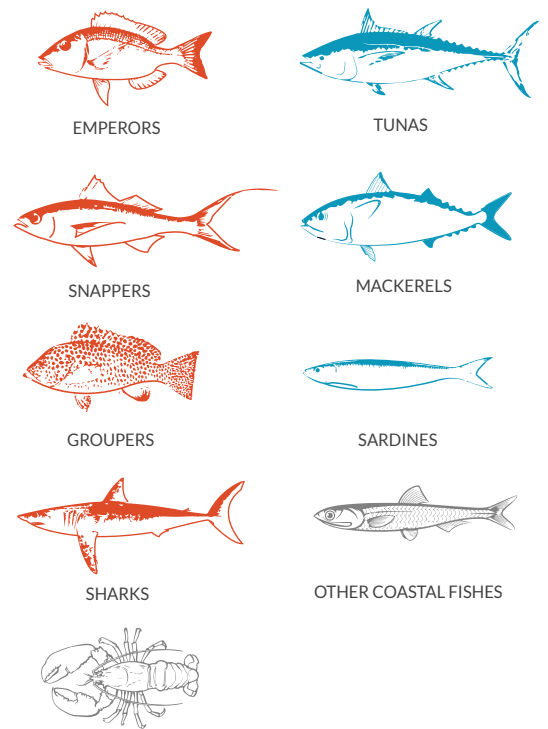
Enforcement

There is no local enforcement system. Regional enforcement is carried out by the regional PMPF and the Ministry of Fisheries. However, according to our contacts, little attention is paid to local fishers’ activities.

Market

As with other locations, the current fish market is both local and export-oriented. Domestically, fish is sent to the interior urban

HORDIO: MAIN CATCH Reported by Local Fishers



Local fishers reported these fish as being the main species or types they catch. They did not report quantities.

settlements. Exported fish of all types is sent to regional markets such as Yemen. Lobster tail and shark fin are shipped to the UAE, and dried shark meat is sent to Kenya through Mombasa.

Investments

Aside from the non-operational freezer, there has been little investment in Hordio from the international community or private investors.

Potential For Development

Before tackling any fishing projects, improving the civic infrastructure in Hordio is key. Reliable electricity is vital to producing marketable fish products. New projects should consider renewable energy sources like solar and wind to decrease the use of generators and provide electricity to the whole community. Better roads and transportation methods for fish products are crucial to accessing markets.

Fishers in Hordio are catching sardines (see Box III: More Sustainable Alternatives), a sustainable fishery that may be useful for a variety of non-human direct applications such as animal feed and fertilizer. Creating a market for these fish and redirecting efforts toward sardines and away from the unsustainable demersal species is a way to ensure the long-term success of fisheries development. If a market for these fish is identified, directly targeting these fish with the appropriate gear would increase fishing efficiency, allowing fishers to spend less time at sea and reducing catch of unwanted species. Thus, there is opportunity for providing gear in Hordio and educating fishers on how to use it to improve their efficiency. Catching more fish in less time means a greater profit for the effort expended. However, education is crucial to fostering an understanding of which fish should be targeted. If efforts are not made to shift fishing away from sharks and slow-growing coastal species, improving efficiency could mean a faster decline of these already unsustainable stocks.



Hordio grew as a port city during the 1920s and 1930s with the presence of an Italian salt factory.

Because of the prevalence of destructive foreign trawling in this area, bolstering enforcement mechanisms is an opportunity in Hordio. The federal law states that foreign fishing is not allowed within 24 NM of shore and that bottom-trawling is prohibited. Improving reporting of illegal fishing would decrease competition between foreign and domestic fishers for fishing grounds and resources. Work in this area includes educating fishers on how to document and report illegal fishing to the PMPF so that appropriate measures can be taken to stop the trawlers.

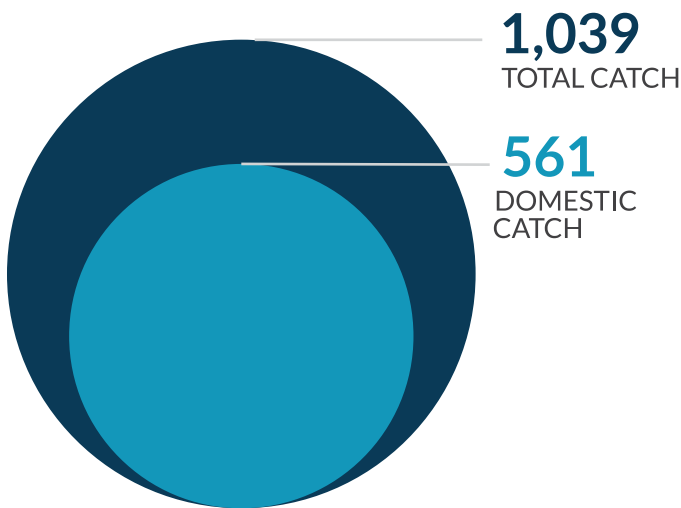


BANDER BEYLA
 POPULATION:
3,000
 NUMBER OF BOATS:
68

Bander Beyla is located in northeast Puntland, 80 km south of Hordio. A historic port town and maritime-oriented community, Bander Beyla depends on fishing for its economy. Though it was known to harbor pirates in 2010–2012, they were removed from the community and it is now a peaceful place with few security risks.

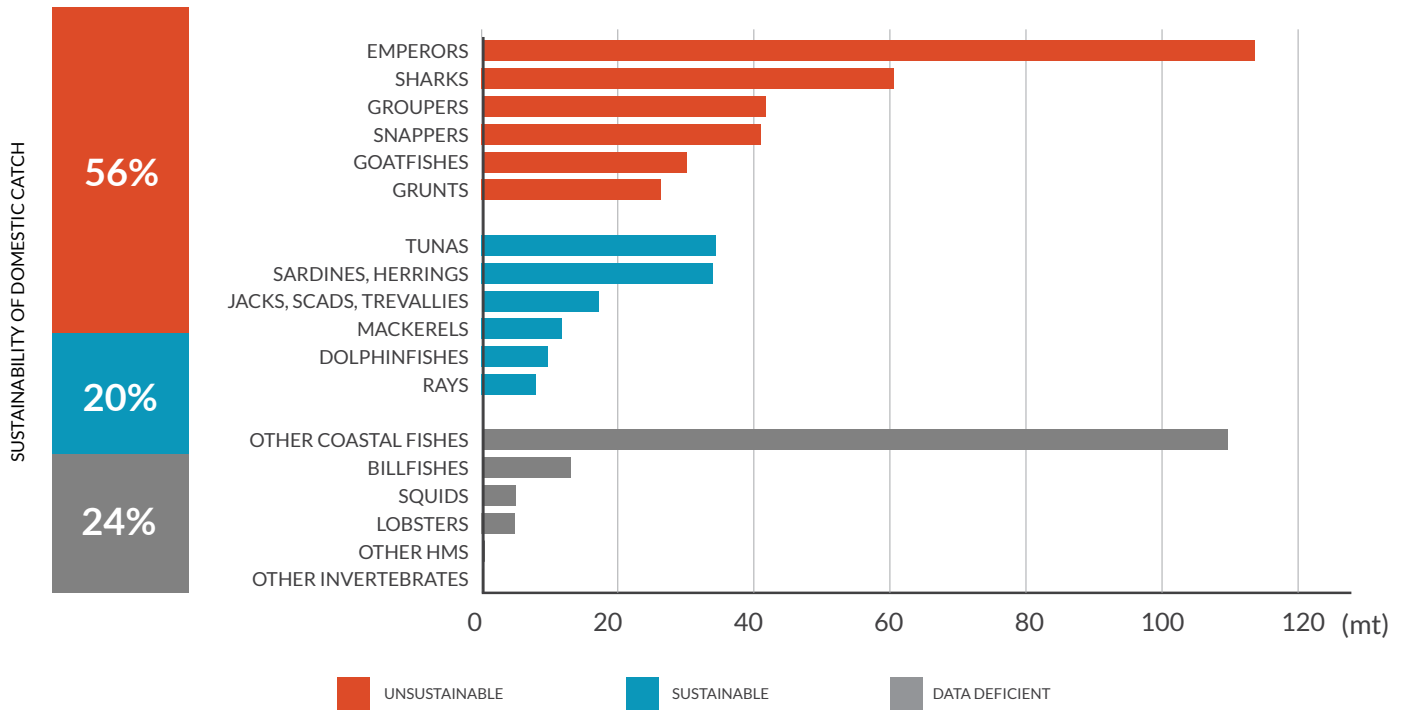
There are approximately 3,000 people living in the town. Bander Beyla has been impacted by several recent events that have disrupted the livelihoods of its citizens. The town’s fishing infrastructure was badly damaged by the 2004 tsunami. Though some rebuilding occurred, there is not a robust infrastructure system to support fishing. In 2011 and again in 2017, a devastating drought spread across the region, leading some in the area to move away from their failing crops and livestock and turn to fishing as their sole means of income and food, putting more pressure on an underdeveloped fishing sector and the fish stocks on which the community depends.^{18,19}

BANDER BEYLA: TOTAL & DOMESTIC CATCH (MT/YEAR)



The main fish products are similar to those in Hordio and include kingfish (Spanish mackerel), yellowfin tuna, skipjack tuna, kawakawa, scavenger, billfish, sardine, snapper, emperor, shark for fins and meat, and lobster. Of these, only mackerel, some tuna, and sardines are sustainable. As in Hordio, there are foreign trawling vessels that operate close to shore targeting species similar to those in the domestic catch.

FIGURE 10: DOMESTIC CATCH SUSTAINABILITY & COMPOSITION IN BANDER BEYLA
Data from The Sea Around Us



Infrastructure

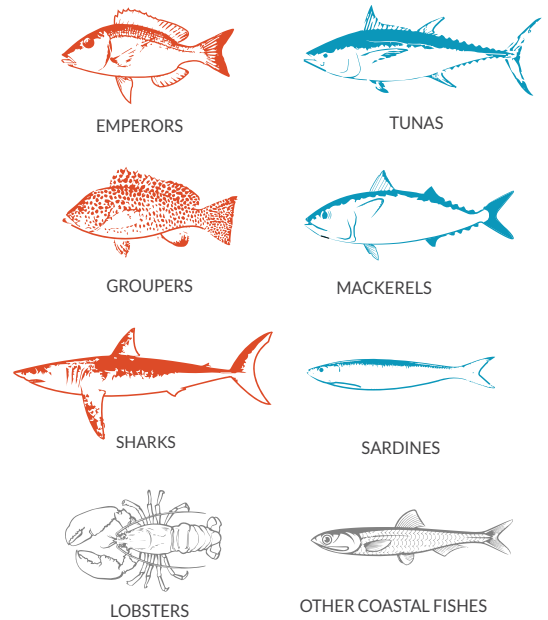
Civic infrastructure in Bander Beyla is slightly better than in the other case studies discussed. There are passable roads connecting it to other coastal towns such as Bosasso and Eyl, and to inland urban centers such as Garowe, Galkayo, and Kardo.

The 2004 tsunami and resulting destruction was a major blow to the community, but it also brought international attention to the area and instigated many development activities. The tsunami damaged fishing gear and buildings, and the international aid community responded soon after by distributing fishing gear and boats to get fishers back on the water.²⁰ VSF Suisse and FAO constructed a post-harvest processing facility with cold storage, a plate freezer, and an area for gear storage and repair to help rebuild the fishing sector after the tsunami. Unfortunately, in the time between the new development and now, much of that infrastructure has fallen into disrepair.

Fisheries Governance

Bander Beyla’s fishers are regulated by the Puntland laws and regulations that apply to the region. There is a fisheries cooperative and a women’s organization in Bander Beyla, but their activities are limited.

BANDER BEYLA: MAIN CATCH Reported by Local Fishers



Local fishers reported these fish as being the main species or types they catch. They did not report quantities.



Overlooking the town of Bander Beyla in Puntland, Jamamd.

Enforcement

There is no local enforcement system. Regional enforcement is carried out by the regional PMPF and the Ministry of Fisheries. However, according to our contacts, little attention is paid to local fishers' activities.

Market

The current market for fish is both local and international. The domestic market includes the major inland cities in Puntland because the town is fairly well connected to them by road. The export market includes Yemen, which buys most of the fish products. Lobster tail and shark fins are sent to the UAE. Dried shark meat goes to Mombasa, Kenya.

Investments

Because Bander Beyla is an established fishing community that managed to survive so many threats to its fishing sector, it has garnered attention from local and international investors. Bander Beyla is home to one of the largest private fishing companies in Puntland, the Corno Africa

Fishing Company (CAFCO), which received international financing to grow their business by expanding their cold storage capacity.²¹ Promoting Inclusive Markets in Somalia (PIMS) is making similar investments in fishing companies in the area.

There are some development projects that are not directly related to fishing but serve the community. The World Food Programme and Save the Children have been working in Bander Beyla to provide food and healthcare. Additionally, the Joint Program on Local Governance is working to improve the roads within the town.

Potential For Development

The opportunities in Bander Beyla are similar to those in Hordio because of their close proximity and similar catch composition. Bander Beyla has the advantage of having current projects that are focusing on civic infrastructure, so more attention could be paid to improving fishing infrastructure and data collection. Enhancing the connection between the cooperative, the women's association, private companies, Puntland's government, and the federal

government is the first step. These relationships are key to establishing local governance mechanisms. From there, education initiatives and catch data collection projects are possible.

As in Hordio, fishers in Bander Beyla are catching sardines (see Box III: More Sustainable Alternatives), a sustainable fishery that may be useful for a variety of non-human direct applications such as animal feed and fertilizer. Creating a market for these fish and redirecting efforts toward sardines and away from unsustainable sharks, large reef fishes, and lobsters could be a way to ensure long-term success for fisheries development. Another opportunity is providing the appropriate gear to efficiently catch sardines and educating fishers on its use. Importantly, education programs need to create an understanding of why a shift in primary catch is crucial to maintaining the fishing sector.

As in Hordio, the prevalence of destructive foreign trawling in this area presents a governance challenge. The federal law states that foreign fishing is not allowed within 24 nautical miles of shore and that bottom-trawling is prohibited. Improving law enforcement capacity and the reporting of illegal fishing would decrease competition between foreign and domestic fishers for fishing grounds and resources. Work in this area includes educating fishers on how to document and report illegal fishing to the PMPF so that appropriate measures can be taken to stop the fishers.

BOX III: MORE SUSTAINABLE ALTERNATIVES

By Ciera A. Villegas

Anchovies, sardines, and herrings are excellent sources of protein, fats, and nutrients. Their small size means they can be easily dried or salted, making anchovies a good food source in places with limited refrigeration. These fishes live in large schools and typically spawn tens of thousands of young at a time. Thus, they can serve as a more sustainable food source than species like sharks that produce few young at once or species that are overexploited, like yellowfin tuna. Additionally, their schooling behavior means many fish can be caught by small-scale vessels with minimal effort and high efficiency.

Shifting Somali fishing efforts to catching these small schooling fishes will require appropriate gear and infrastructure. Additionally, having management measures in place that consider environmental effects from climate change, water quality, and population dynamics is necessary before expanding these fisheries. Because these small schooling species are typically caught with purse seines, bycatch of vulnerable and endangered species like sea turtles, sharks, and tuna is a risk. Bycatch regulation, reporting, and monitoring alongside the expansion of anchovy, sardine, and herring fisheries will help maintain the long-term viability of these sustainably fished Somali stocks.

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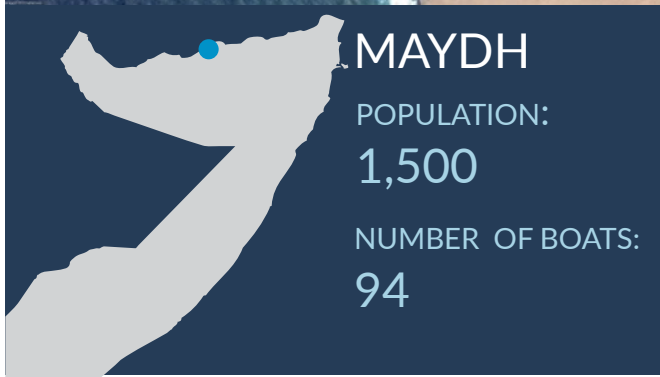
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III. CASE STUDY: SOMALILAND

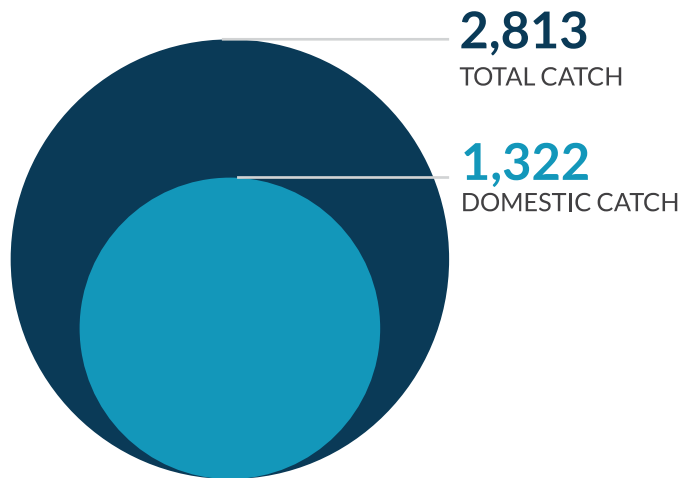
One of our case studies covers a location in Somaliland: Maydh. Somaliland comprises the northwest portion of the Somali region bordering the Gulf of Aden. Though it declared its independence in 1991, it has not been internationally recognized as an independent state. However, it maintains its own government system and laws, including fishing laws and regulations and a fisheries ministry. The port in Berbera is the largest in Somaliland and one of the largest in the region. It is an important access point for exporting fish and other goods to countries across the Gulf of Aden and around the world, but with few paved roads and little other infrastructure, getting fish from remote coastal towns to the port for export is difficult.²²

The Somaliland Ministry of Fisheries and Marine Resources has limited resources and capacity to govern Somaliland fisheries. There are no limits on artisanal fish catch. Previous ministry officials issued licenses to Egyptian trawlers and their fishing has impacted local habitats and fisheries production. One report²³ estimates that local production decreased by 50 percent after the trawlers began operating in 2004. An additional challenge to fishers in Somaliland has been the ongoing conflict in Yemen. The number of Yemeni dhows that provide a consistent market for Somaliland fishers has decreased dramatically since the Yemeni civil war escalated in 2015.²⁴ Without civic infrastructure like good roads and freezers, Somaliland fishers have few other market opportunities.



Maydh is a small fishing community in the Sanag region of Somaliland with a population of around 1,500. It is an ancient town that long functioned as the Sanag region’s only port. It is approximately 75 km away from the regional capital, Erigabo, which is the main market for seafood caught in Maydh. There are no current conflicts in Maydh and it is considered a safe place to operate.

MAYDH: TOTAL & DOMESTIC CATCH (MT/YEAR)

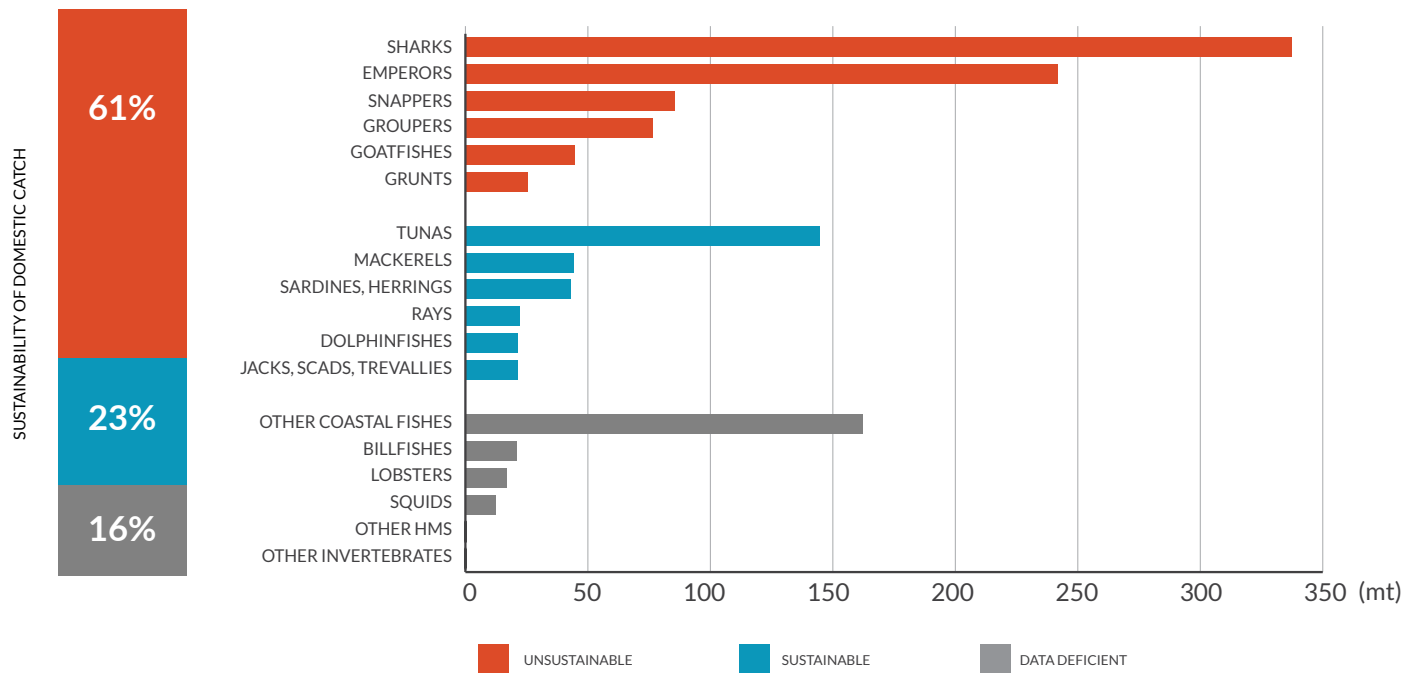


Locals involved in the fishing industry report that the main fish species caught are snappers, trevally, kingfish (Spanish mackerel), yellowfin tuna, frigate tuna, and emperor. Though tuna overall is considered sustainable according to the Indian Ocean Tuna Commission, or IOTC (see Box I: Tunas in Somali Waters), there are not enough data to assess the sustainability of frigate tuna, and the IOTC lists yellowfin tuna as unsustainable.²⁵ Though fishers do not currently report sharks as a main target species, historically, the catch of sharks was high. Fishers sold shark fins to traders from Dubai for Asian markets and the dried shark meat went to Mombasa.²⁶ The Sea Around Us data indicate they are a substantial portion of fish catch in Maydh, so it is possible this practice is ongoing but unreported.

Foreign catch in the waters off Maydh is greater than 50 percent of the total catch in the area. Most of this fishing is

likely by Yemeni vessels that pay a fee to the community for access to their fishing grounds. This practice has recently been outlawed by the Somaliland government, but with little means for enforcement, it is unclear how effective this ban will be. However, locals do not report any IUU fishing activity²⁷ indicating they do not consider Yemeni fishers to be illegal or Somali fishers do not encounter foreign fishers.

FIGURE 11: DOMESTIC CATCH SUSTAINABILITY & COMPOSITION IN MAYDH
Data from The Sea Around Us

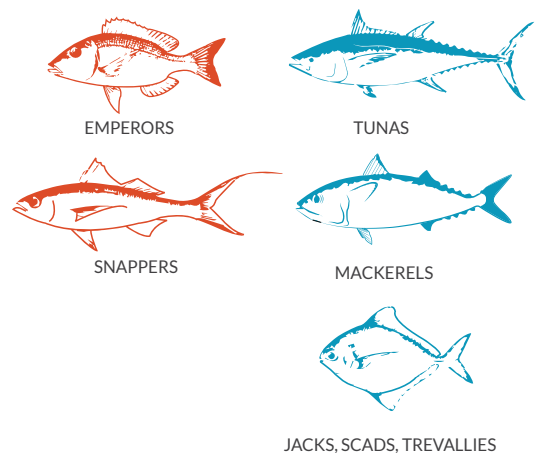


Infrastructure

Maydh has one operational cold storage unit. There was a wooden dock constructed in the late 1980s, but it was mostly destroyed in a storm in the mid-1990s. The structure is still visible, even on the satellite imagery, but does not extend far enough into the water to be useful for docking, even at the highest tides.²⁸ Though a road exists between Maydh and Erigabo, it is dirt, making travel tedious and difficult, especially during the rainy season.

There are some development efforts occurring in Maydh. The Somaliland Development Fund (SDF) is a pool of international donors who support development projects in Somaliland. Partner organizations include the Department for International Development (DFID) from the United Kingdom, the Danish International Development Organization (Danida), Norway, and the Netherlands. The SDF is in the process of building an ice plant and fixing the jetty to make it usable by fishing boats and vessels carrying other goods.

MAYDH: MAIN CATCH Reported by Local Fishers



Local fishers reported these fish as being the main species or types they catch. They did not report quantities.

Prior to our conversations with locals, we were unaware of current development efforts in Maydh. Had they been included in the development project dataset used in the initial assessment, Maydh may not have made it through our initial assessment to be a case study. We include it as an example how important local knowledge is to the project identification process and to note how development projects can build upon each other to support a community.

Skills

Besides fishing, the people of Maydh were traditionally boatbuilders in the past,²⁹ but with new boat designs and materials, the traditional industry is now obsolete.

Fisheries Governance

Somaliland's Ministry of Fisheries and Marine Resources has an office in Maydh. Local fisheries management may exist at different levels but is often not well-coordinated.³⁰ Small-scale domestic fishing is not restricted.

There is a voluntary fishing cooperative in Maydh that is tasked with supporting the fishers and lobbying for their interests.

Enforcement

There are fishery laws and regulations to govern fisheries in Somaliland, but enforcement capacity is low. If there is a local fishing issue, different levels of government, tribal leaders, or the coast guard may get involved depending on the severity of the issue.

Market

Erigabo is the closest large city, making it the main market for fish from Maydh. However, the condition of the road and the lack of an ice facility means fresh fish caught in Maydh can spoil before reaching Erigabo. Dried fish, which travels more readily, is a less desirable product to the Somali palate. The private fishing companies in Maydh package and export fish to local and international markets including the UAE, Saudi Arabia, and China.³¹

Investments

In Maydh, there are at least two fishing companies that receive some external financing: Pontus Marine³² and the Zakia Fishing Company.³³ Both have a fleet of small boats, freezers, ice makers, and processing and packaging



Beach and boats docked along the shore of Maydh

facilities. Pontus Marine ships its products via air, while Zakia has a large boat with a freezer they use to collect the catch and store it. Zakia also has a freezer truck that they use to transport their products around the region.

Potential Development

Besides the work already taking place, the main opportunities are to improve infrastructure in Maydh and to pave the road between Maydh and Erigabo. This would benefit the town as a whole and open the corridor for more commerce in all sectors, including fishing. With improvements to the dock, Maydh could serve as a small port for the entire Sanag region, providing there is reliable transportation between Maydh and the capital.

Because Maydh is small but has an office for the ministry, a fishing cooperative, and growing fishing businesses, it is a good candidate to be a site where organized fisheries data collection can begin. Data collection carried out by the cooperative and collated by the government is necessary to more fully understand the state of fisheries resources and build a broader regional fishery assessment. Maydh is a good candidate for a location to conduct pilot projects to establish the feasibility of systematic data collection in Somaliland.

Bolstering the fishing cooperative and fostering engagement between it and private companies could have follow-on benefits for the local community. Projects in Maydh could involve training women and youth in both gear and mechanical maintenance and repair, how to process and package fish, and other non-fishing skills that would improve their chances of employment in one of the growing fishing businesses. Collaboration between the cooperative and private companies on price setting would also benefit both entities.

Without an ice-making facility for use by the cooperative fishers outside of private companies, the main fish product coming from Maydh is dried fish. Though frozen fish fetches a higher market price and Somalis prefer its taste, the market for dried fish can be expanded while the ice facility is completed. A campaign encouraging fish eating in Erigabo and other cities could be helpful in educating inland



Maydh Island fishers preparing to scrape up guano, Abdi Jama.

citizens on ways to prepare fish and the health benefits, thereby creating greater demand for fish products.

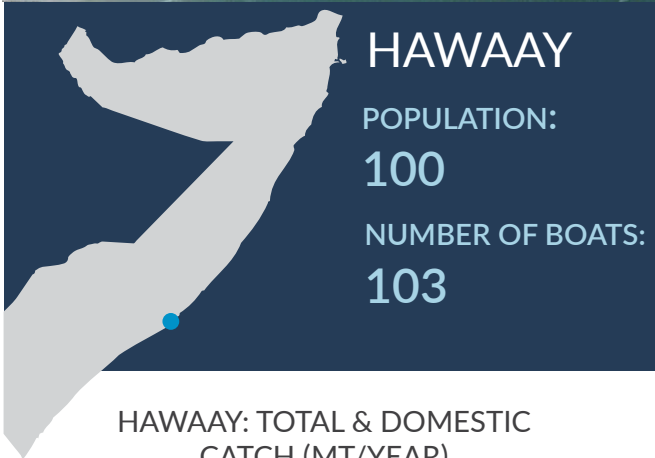
Existing laws prohibit most foreign fishing in Somaliland, yet the proportion of foreign fishing near Maydh is high (53 percent). Increasing enforcement capacity through building up and training the coast guard or maritime police force is necessary to control foreign fishing. In lieu of having a full law enforcement team based in Maydh, fishers could be trained to recognize and report illegal fishing to the Somaliland Coast Guard, the only law enforcement authority that currently exists, which is based in Berbera.

Caution is warranted when considering market or capacity expansion. Rather than increasing the amount of catch, fishers would benefit from focusing on the more sustainable but still lucrative species such as trevally and jacks. Provision of more selective gear and trainings in how to efficiently target these species would be beneficial to fishers and create a system with long-term production potential.

The background of the page is a dark blue map of Somalia. A white circle with a light blue center is positioned on the southern coast of the country, indicating the location of the case study.

IV. CASE STUDY: HIRSHABELLE STATE

One of our case studies covers a location in Hirshabelle State: Hawaay. The Hiiraan and Middle Shabelle areas of Somalia combine to form Hirshabelle State. This region has served as the breadbasket for the Horn of Africa throughout history because the Shabelle River provides fresh water and irrigation for crops. The coast has many well-established fishing communities that benefit from the proximity of the markets and export capabilities of Mogadishu. However, as in other regions, fishing communities have endured decades of meager production yields due to the lack of adequate equipment, skills, resources, and markets. Hirshabelle's Ministry of Planning has identified the strategic goal of developing the fishing industry as being a top economic development priority. Fisheries are governed by the Federal Government of Somalia based in Mogadishu. Federal fishing laws and regulations are enacted by the Ministry of Fisheries and Marine Resources.



Hawaay, the smallest site in this assessment, has an estimated population of 100. Much of the land is privately owned, but there is a small fishing community. The presence of fishing boats in the area increases temporarily during the monsoon season (April–June) when the Mogadishu landing sites are unavailable to small boats due to large waves.

As in other coastal towns, Yemeni boats commonly fish near Hawaay. Large Yemeni vessels act as motherships to collect fish catch. They acquire licenses from the federal Ministry of Fisheries and Marine Resources in Mogadishu, then send smaller Yemeni boats to Hawaay, Elamaan, Warshiikh, and Adale while the larger boat remains near Mogadishu to collect the catch and transport it back to Yemen.

According to local fishers, the fishing grounds near Hawaay are especially productive. The main catch is reported to be lobster, snapper, grouper, tuna, and shark.

HAWAAY: TOTAL & DOMESTIC CATCH (MT/YEAR)

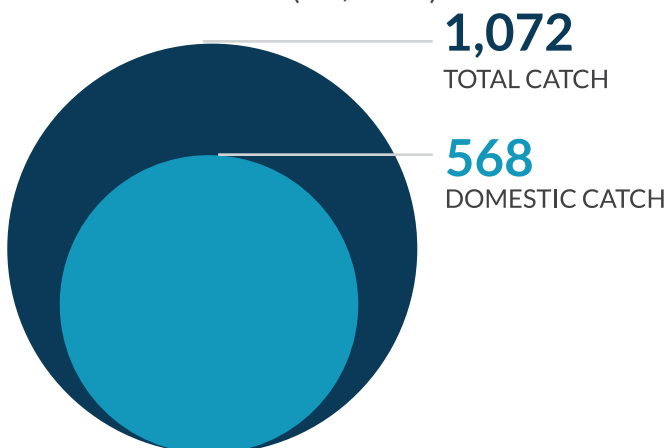
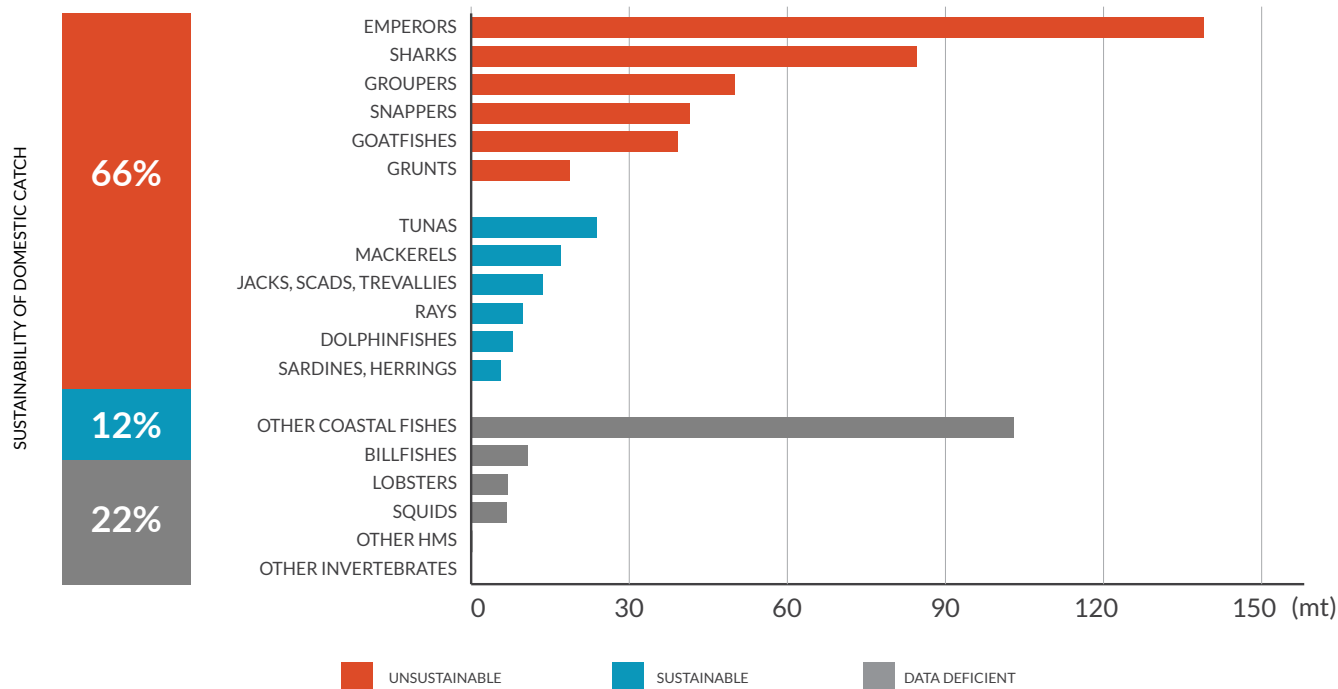


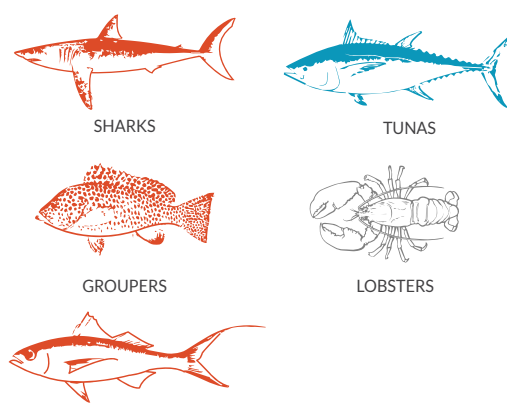
FIGURE 12: DOMESTIC CATCH SUSTAINABILITY & COMPOSITION IN HAWAAY
Data from The Sea Around Us



Infrastructure

Hawaay was first established in the 1970s by an Italian business owner as a hub for catching, processing, and storing lobster for export to Italy and the UAE. This business had an associated cold storage facility, an ice plant, and other facilities for processing, packaging, and exporting the product. At that time, about 10 to 20 tons of lobster were exported annually. After the collapse of the Somali government in 1991 and the ensuing civil war, a Somali took over the operation but was unable to keep it running. The business folded, and the associated infrastructure is not currently operational.

HAWAAY: MAIN CATCH Reported by Local Fishers



Local fishers reported these fish as being the main species or types they catch. They did not report quantities.

Fisheries Governance

There are no local regulations on fishing in Hawaay.

Enforcement

There are no enforcement mechanisms in place in Hawaay.

Market

The main local market for fish is Mogadishu. Dried shark meat is exported to Kenya, and lobsters are exported to the UAE.

Investments

There are no current international projects or private investments in Hawaay.

Potential for Development

The large population and the presence of African Union Mission in Somalia (AMISOM) troops and other international actors in Mogadishu means there may be more demand for fish there than in other areas of Somalia. This is a market opportunity for fishers from Hawaay and the surrounding area. Proper preservation of the fish is necessary to ensure it will make it to Mogadishu, so investing in freezers and conducting trainings on other hygienic methods of processing and storing fish would be beneficial. In lieu of major infrastructure installments, trainings about other hygienic fish preservation methods like salting and drying would be useful, especially to women, who are often involved in fish processing. Though salted and dried fish does not fetch as high a price as frozen fish, the small population in Hawaay means there will be more opportunities to sell fish in any form outside of the town.

Because fishers cite lobster as being part of the main catch in Hawaay, there is potential for education on sustainable fishing of localized stocks. Lobsters prefer specific habitats and area easy to catch; therefore, they are also easily



Cooler from a former fishing company based in Hawaay, Abdinasir A. Hassan.

overexploited. To avoid decimating the population and eliminating this source of livelihood, trainings could be implemented to ensure fishers are only taking lobsters over a certain size and avoiding females of reproductive age.



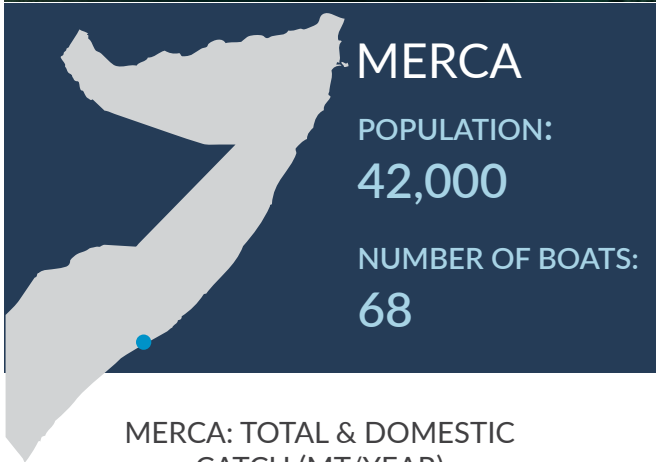
Ruins on the beach of Hawaay, Abdinasir A. Hassan.

V. CASE STUDY: SOUTH WEST STATE

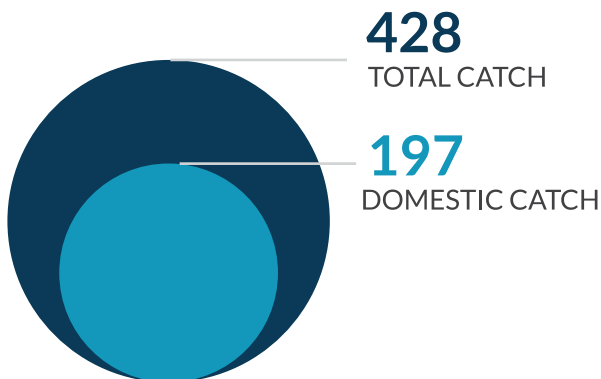
One of our case studies covers a location in South West State: Merca. A reconciliation conference in Baidoa in October 2014 combined three southern Somali regions to form the Interim South West Administration (ISWA). South West State has a regional constitution endorsed by the conference delegates which was formally enacted in November 2014. Like Hirshabelle State to the north, the South West State of Somalia is an agriculturally rich area with both the Juba and Shabelle Rivers running through it. There is potential to develop and expand the production of irrigated and rain-fed agriculture and livestock in this area. With access to the markets of Mogadishu and Ethiopia, commerce in the region is growing, including fisheries. Fisheries are a major economic driver, with the largest artisanal fishing communities traditionally based in the Lower Shabelle region of the South West State.

The South West State is under federal jurisdiction and is subject to the federal fishing law and regulations put forth by the Ministry of Fisheries and Marine Resources. This region faces security challenges that make development work difficult.





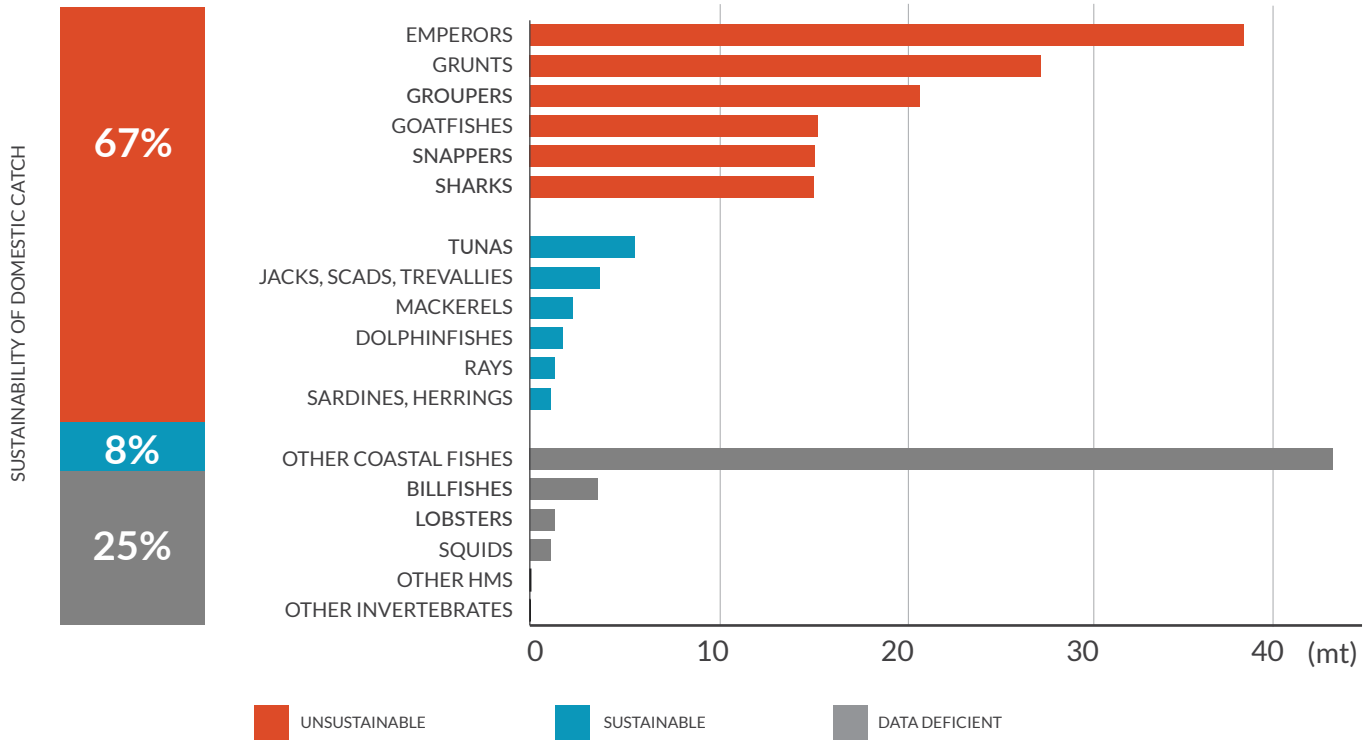
MERCA: TOTAL & DOMESTIC CATCH (MT/YEAR)



Among the locations in our case studies, Merca has the largest population. According to a 2014 survey by the United Nations Population Fund (UNFPA), the Merca district’s urban population is around 42,000, though there is not a good estimate. It is located about 100 km south of Mogadishu in an area of Al-Shabaab activity, so the security situation is not stable, making it a difficult place for international organizations to operate. Though the town is under government control, Al-Shabaab activity along the roads and in rural areas makes transportation difficult. We did not include security in our initial assessment, but future identification of sites for fisheries development will incorporate this variable.

Fishers report that their main catch includes snapper, grouper, tuna, billfish, shark, and lobster. All of these are unsustainable or data-deficient except some species of tunas.

FIGURE 13: DOMESTIC CATCH SUSTAINABILITY & COMPOSITION IN MERCA
Data from The Sea Around us



Infrastructure

Merca has little civic infrastructure. While there is a road connecting it to Mogadishu, it is difficult to use during the rainy season. Merca used to have a port and the lighthouse tower is still visible, but there is currently no functioning port or fisheries infrastructure.

Fisheries Governance

There are no local regulations on fishing in Merca.

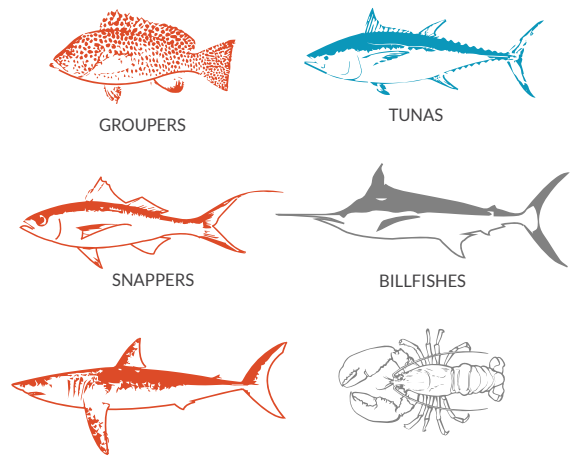
Enforcement

There are no fisheries enforcement actions being taken in Merca.

Market

The main market for fish from Merca is Mogadishu. Lobster is shipped to Dubai, UAE and dried shark goes to Mombasa, Kenya.

MERCA: MAIN CATCH Reported by Local Fishers



Local fishers reported these fish as being the main species or types they catch. They did not report quantities.

Investments

There are limited current international or private investments in Merca.

Potential for Development

Unfortunately, the security situation in Merca prohibits most activities that would improve fishing livelihoods. If security improves, there is potential to benefit from the markets of Mogadishu and neighboring Kenya. In order to take full advantage of these markets, significant improvements would need to be made to the processing and storage of fish and to the roads leading out of Merca.



A member of the Somali National Army stands guard on a beach near the city of Merca. AU-UN IST PHOTO / Tobin Jones





Mosque in Merca, somaliweyn/Google Earth.

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OEF'S APPROACH

OEF is a self-funded, private operating foundation seeking to create a more peaceful world through collaborative, data-driven initiatives. OEF focuses on enhancing maritime cooperation, creating sustainable jobs in fragile economies and research which actively contributes to thought leadership on global issues. As an operating foundation, One Earth Future provides strategic, financial and administrative support allowing its programs to focus deeply on complex problems and to create constructive alternatives to violent conflict.

Secure Fisheries is a program of One Earth Future. Secure Fisheries works with local, regional, and international stakeholders to strengthen fisheries governance, combat illegal fishing, and promote sustainability in fragile and post-conflict regions as a pathway towards greater peace and stability.



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