

UNCTAD-DOALOS OETS Project

Workshop on the implementation of priority actions on sustainable trade of swordfish and other longline fisheries under Barbados Oceans Economy and Trade Strategies

22 July 2022 0900 hrs AST | 1500 hrs CET Fisheries Division, Bridgetown

Swordfish Market Analysis

Task:

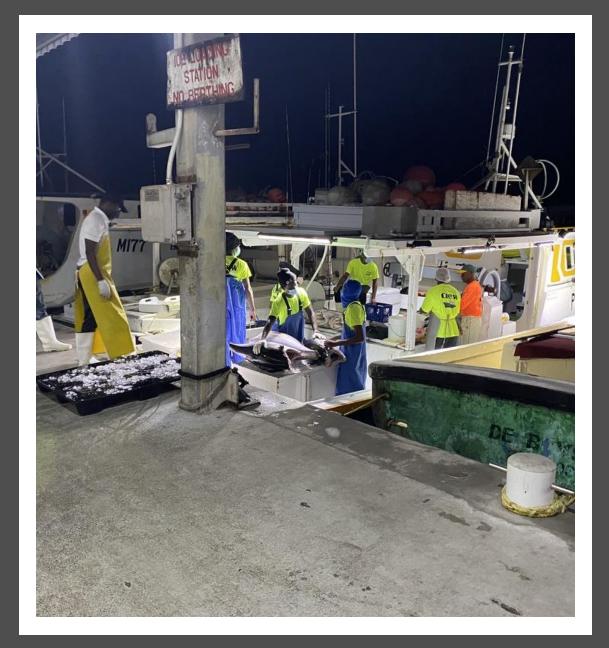
Explore the market potential both local and export for Swordfish and prepare a report on the preliminary findings.

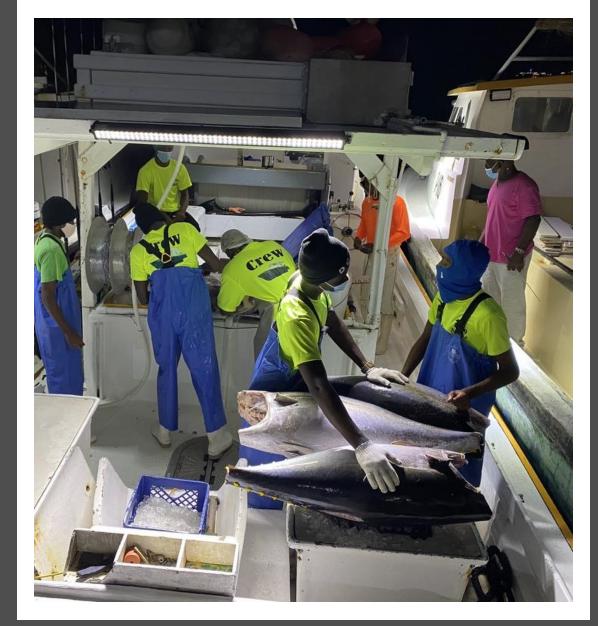
Objective:

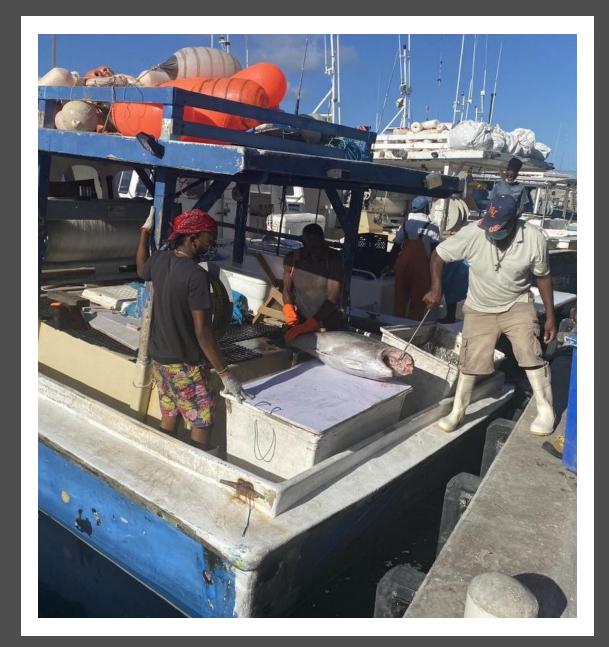
To expand sustainable production opportunities available within the Barbados quota allocations for Swordfish under the International Commission for the Conservation of Atlantic Tunas (ICCAT).

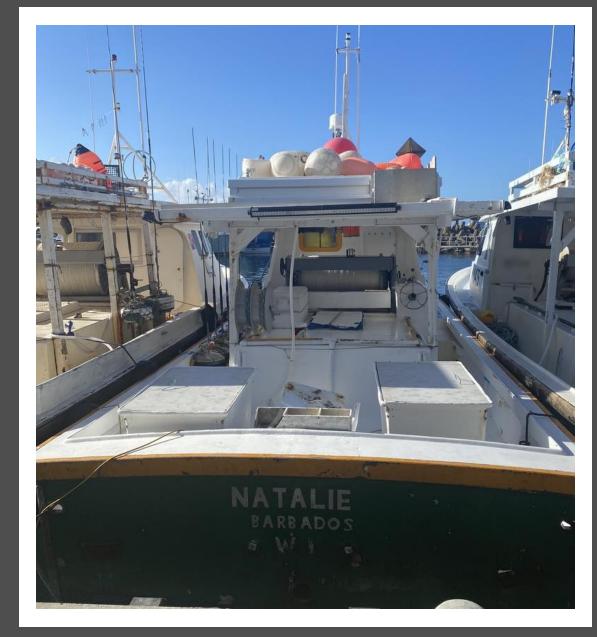
Presented by: Dr. Shelly-Ann Cox







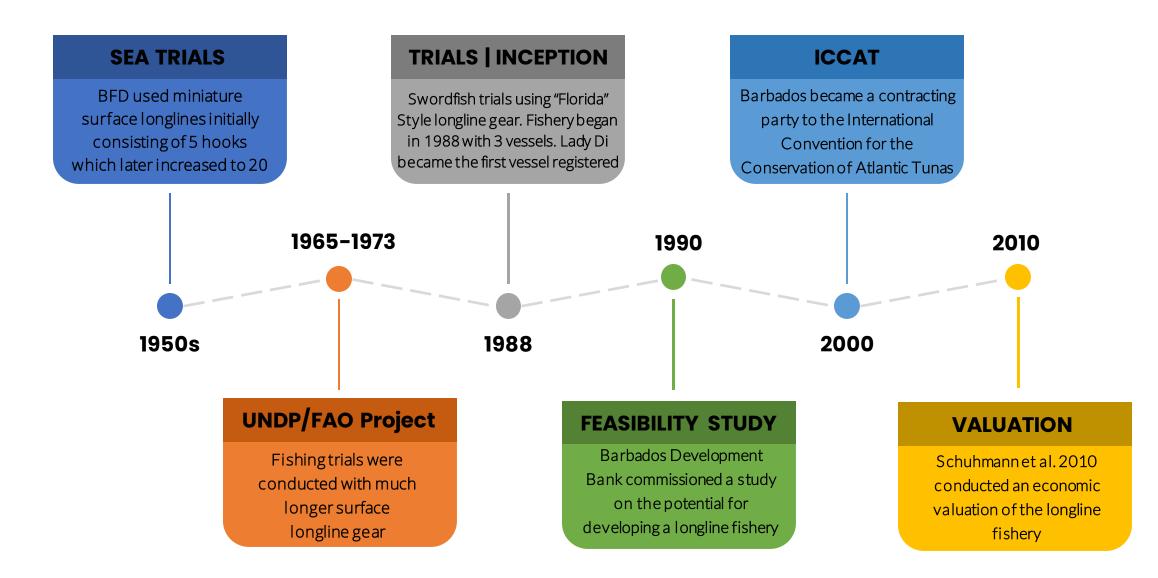




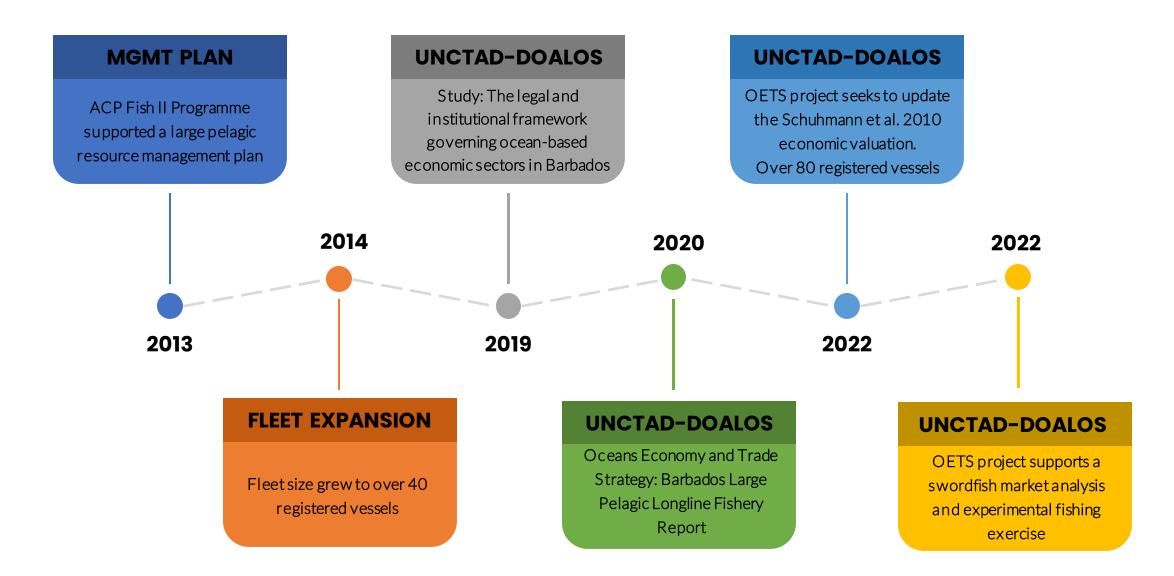




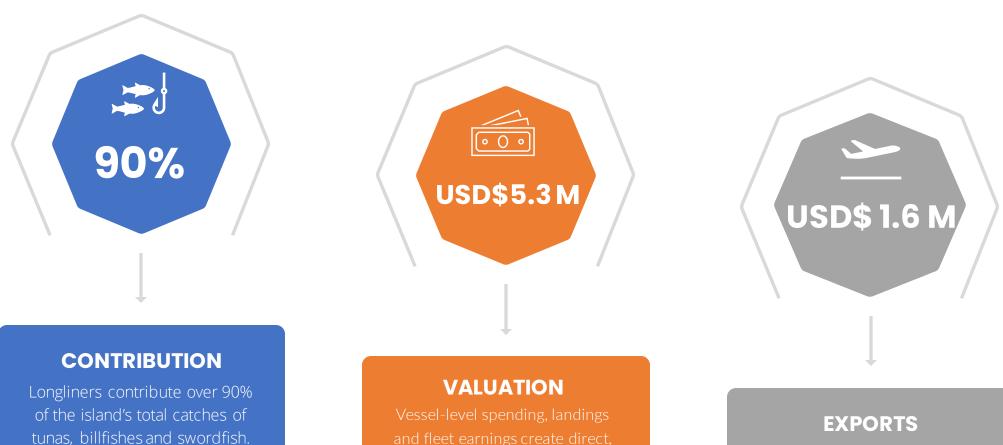
HISTORY OF THE BARBADOS LONGLINE FISHERY



HISTORY OF THE BARBADOS LONGLINE FISHERY



SUMMARY STATISTICS



Over the last 10 years*, around 176t tuna was exported from Barbados

Sources: Leslie 2021 | Schuhmann et al. 2010

SUMMARY STATISTICS







135 male longline fishers Average age: 44 years

VESSEL OWNERS

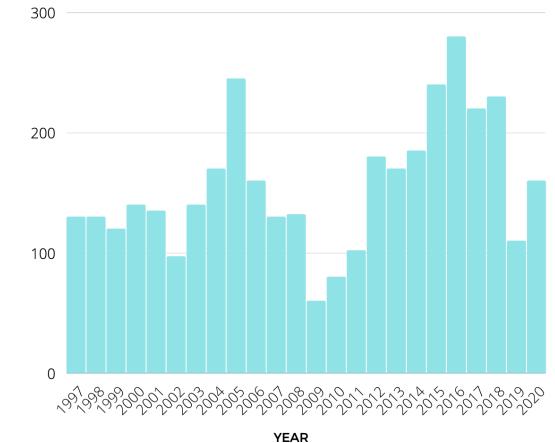
22 are also fishers. Average age of 51 years and 12% are female

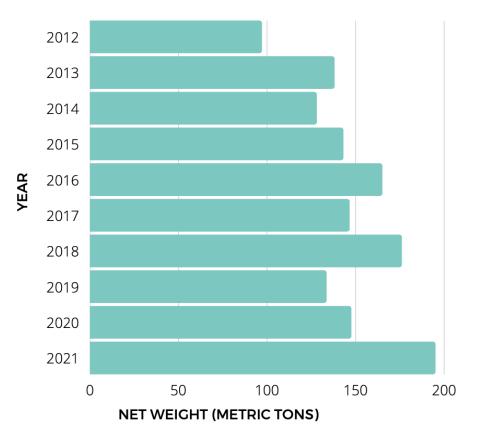


LANDINGS

Average of 320 mt per year in total landings

Schuhmann et al. 2010





Annual Tuna Landings (metric tons) (1997-2020) Source: Data received from Fisheries Division Annual Tuna Exports (metric tons) (2012-2021) Source: Data received from sole Tuna Exporter

SWOT Analysis:

In Barbados, the longline fishery targets Yellow Fin Tuna (YFT) and Big eye tuna (BET) for export to the US

Strengths

Experienced captains On-vessel fish handling industry standard Consistent air lifts Responsive industry ready for change Meets USA sanitation standards for headed and gutted Barbadian dollar pegged to United States dollar

Opportunities

Strong global demand for raw tuna Increase market access through: ready-to-eat HACCP, entering into a FIP, traceability Electronic landings data capture Import substitution Increase exports of yellowfin and bigeye (grade 1 and volume)

Weaknesses

High operating costs Aging infrastructure Inconsistent data collection Grading risk on fishers Dependent on single importer Co-management limitations Inefficient vessel management

Threats

Systemic barriers to supply capacity development and export
Limited active participation at ICCAT
Climate change impacts
High fuel taxes
Cost recovery low and inconsistently collected
Lack of availability of credit
Competition for cheap, duty free fish imports in certain segments (i.e. processing and hotels)

Source: UNCTAD, DOALOS & FAO. 2021.

Swordfish Market Analysis

LITERATURE REVIEW

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Conduct a literature review of existing market analysis studies and other relevant reports, journal articles and grey literature.

STAKEHOLDER ANALYSIS

Prepare a stakeholder matrix/map and stakeholder engagement strategy and plan

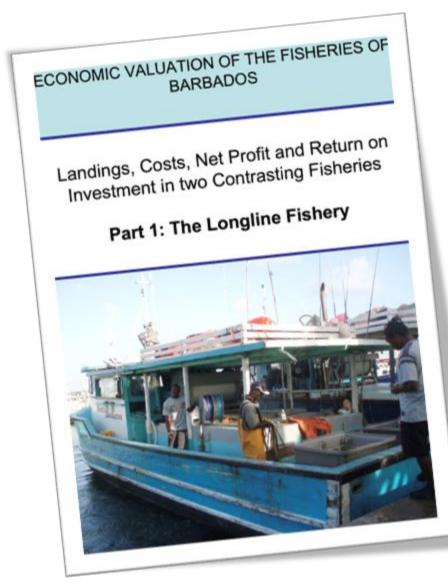
DATA COLLECTION & ANALYSIS

Data downloads and analysis. Key informant interviews, focus groups with BFD and at least 10 key stakeholders. Participatory observation. Field trials. Qualitative data analysis

WORKSHOP

Develop workshop concept note, flyer and agenda. Present findings of the market analysis at workshop. Document proceedings.

Literature Review



Current Status of the Longline fishery in Barbados

JULIAN WALCOTT¹, HAZEL A. OXENFORD¹, and PETER SCHUHMANN²

¹Centre for Resource Management and Environmental Studies (CERMES), University of the West Indies, Cave Hill Campus, Barbados
²Department of Economics and Finance, University of North Carolina, Wilmington 601 S College Road, Wilmington, North Carolina 28403

ABSTRACT

The local fishing industry is matritionally, economically and accially important to Barbados, but recent developments are poorly documented and managers lack up-lo-due information. The longith freel, for example, has grown rapidly since the introduction of the first local vessel in 1990, and has undergone a number of shifts in target species, gear design and fishing operations over this period. However, the current nature of the longine fleet and its fushing operations remain unreported. This study addecosone ip productivity. Data were collected frough structured and informal interviews with vessel capatians and owners, personal observation and cach monitoring at the main landing site, and at sea observation and monitoring during fishing try vessels in the Barbardon floet, fishing averation and antifying and structured and informal interviews with vessel capatians are velowed and bayes trans, but swortfish, blue and white marin landing using and a sea observation and monitoring are used to a structure of an information the vessel is a structure of an information transcript searce veloped to a structure of an information transcript searce veloped to a structure of an information transcript searce and an allowing searced 20-4 of the signal. The vessels in the Barbardon floet, fishing very extrement of all and distribution of the signal. The vessels of this high investment fishery are privately owned and financed. Despite approximately 40 % of the catch attracting foreing exchange, comonic productivity is highly variable.

KEY WORDS: Longline, yellowfin tuna, billfish, economic valuation, Barbados

Estado Actual de la Pesqueria de Palangre en Barbados

La industria personatori ACCAURA de una la Cospuesta de Contantego Con La Artorizada, pero los últimos contecimientos en la contenta de la co

PALABRAS CLAVES: Palangre, el rabil, marlines, la valoración económica, Barbados

Etat Actual de la Pêche a la « Longline » a la Barbade

L'industrie de pèche locale est importante coconniquement et socialement ainsi que pour l'alimentation des Barbadiens, muis no évolution rotecute est pas comme et le septionniaries manage d'informitantes actualisés. La folicit de pèche à la solugita », par exemple, s'est rapidement développée depuis l'introduction du premier navire local en 1990, et a subi un certain nombre de dangements pour ce qui concerne les especies cibles, les molés des engins de pèche el se operations de pèche au cours de cette période. Copendant, il n'existe aucun rapport sur la nature actuelle de la fiotille à la « longline », et de ses opérations. La présente deule pailice e manage d'informatione on dérivrunt la folitile courante, les spécifications da nurve, les opérations de pèche, les captures annuelles et la productivité économique. Les données ont été récoltées grice à l'ess interviews informesis et structurés des captures annuelles et la productivité économique. Les données ont été récoltées grice à l'ess interviews informesis et structurés des captures annuelles et la productivité economique. Les données ont été récoltées grice à l'ess interviews informesis et structurés des de dosservant moit de suivis pendant les campagnes de pêche. Les données de débaugement et ausai été extraites de la base de de dissourent ausai et de suivis d'est de la base de débaugement d'essoure de 200 – 600 tunne annuellement. Les principales ensignificativement ausai ette struites de la base de de dissourent ausai et de suivis d'extra de la base de de dissourent ausai et de suivis de cette pêche à la sui la principales ensignificativement ausai et la principales estructures des ZEE à l'est de l'Ille. Les navires de cette pêche à fort investissement apartiennent à des propriétaires prives qui les financent. ZEE à l'est de l'Ille. Les navires de cette pêche à fort investissement apartiennent à des propriétaires prives qui les financent.

MOTS CLÉS: Longline, Albacore, Marlin, Evaluation

Proceedings of the 61st Gulf and Caribbean Fisheries Institute November 10 - 14, 2008 Gosier, Guadeloupe, French West Indies

Taking stock of the first 27 years of the Barbados longline fishery.

Christopher Parker^{1*}, Mercille Earle² and Antoinette Marshall-Gill³

Fisheries Division

Princess Alice Highway

Bridgetown

Abstract

From a modest start in 1988 of three vessels by 2014 the Barbados longline fishing fleet had grown to over 40 registered vessels. However, the fishery faces many challenges including competition with larger and better technologically equipped international longline fleets for often diminishing populations of highly migratory large pelagic species; and operating within the management restrictions of the International Convention for the Conservation of Atlantic Tunas (ICCAT), the international fisheries management organisation responsible for managing fisheries for large pelagic species. As the longline fishery is valuable and likely to expand further it is prudent for stakeholders to carefully determine its development course. To inform this process, an analysis of pertinent information on fleet development and catch trends in the fishery over the first 27-years of its existence along with an examination of some of the challenges posed to various development options for the fishery are presented in this paper.

1fishbarbados.fb@caribsurf.com;

Keywords: longline, longliner, large pelagics, ICCAT

Stakeholder Map





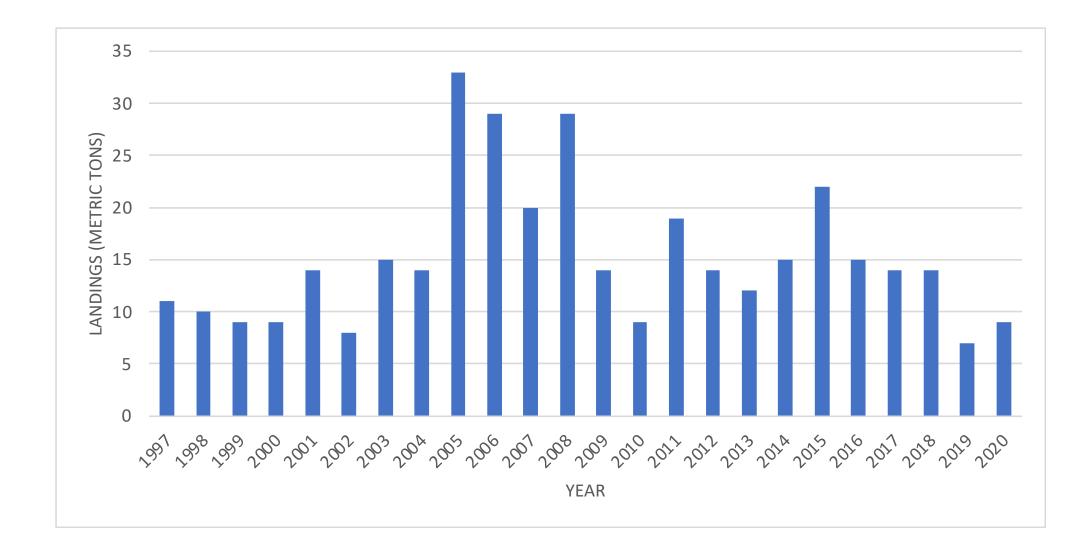
Respondent Profile

| Interviewees | No. of respondents | Gender |
|------------------------------------|--------------------|------------|
| Longline boat owners | 12 | 12 M 0 F |
| Longline captains and crew members | 25 | 25 M 0 F |
| Sport fishers | 2 | 2 M 0 F |
| Fish vendors | 5 | 2 M 3 F |
| Large fish processors | 4 | 4 M 0 F |
| Restaurants and hotels | 4 | 3 M 1 F |
| Fisheries management officials | 3 | 2 M 1 F |
| TOTAL | 55 | 52 M 3 F |

^[1] Respondents were mostly male given the fact that the fishery is male dominated. There are no female longline fishers and only a few female-owned active vessels (n=5).

Swordfish Landings, Exports and M475

Annual Swordfish landings captured by longline vessels (1997-2020). Source: Fisheries Division



Exports

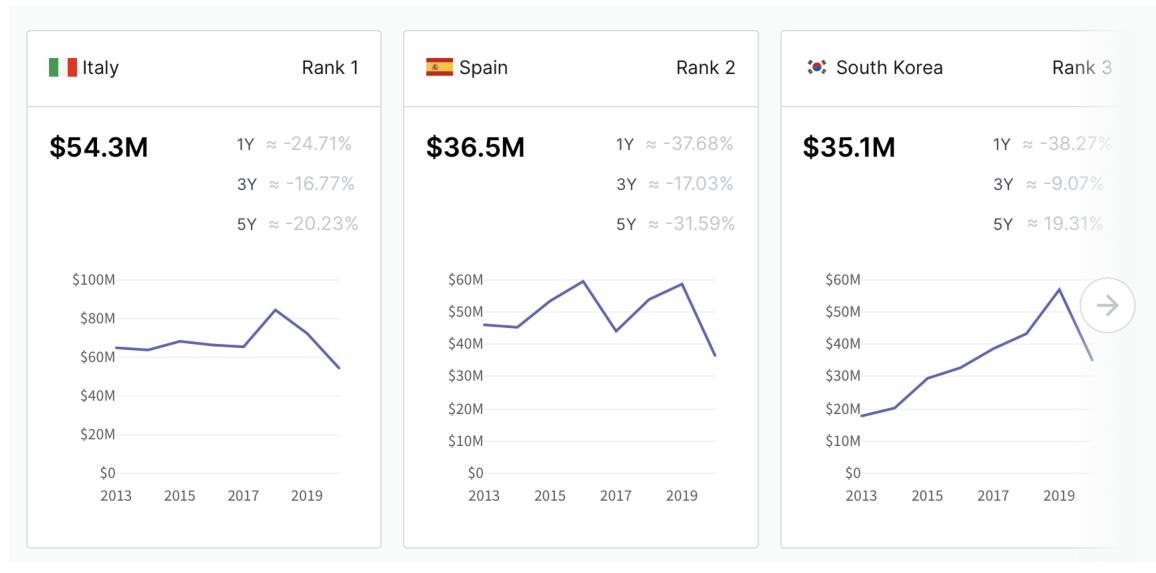
| YEAR | VALUE (USD) |
|------|-----------------------------------|
| 2020 | \$2000 |
| 2022 | (3 fish at the time of reporting) |



Imports

| YEAR | WEIGHT | VALUE (USD) |
|------|----------------------------|----------------|
| 2020 | 127, 911 kg /281,404.2 lbs | \$564,994.00 |
| 2021 | 326,502 kg/ 718,304.40 lbs | \$1,063,012.00 |

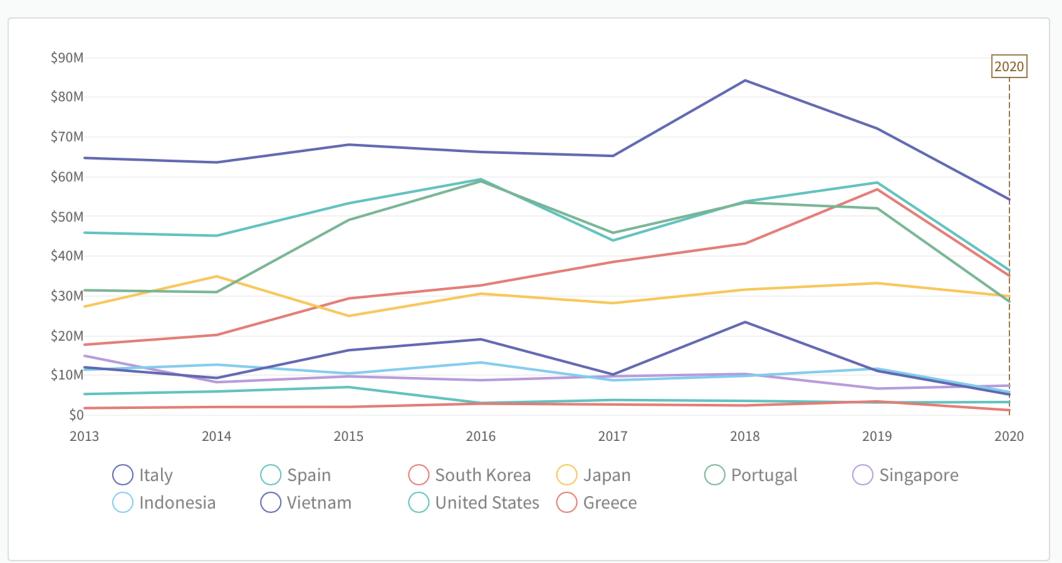
Top 3 Importers of Swordfish



Source: https://www.tridge.com/intelligences/swordfish/import

Import Trends of Top 10 Importers of Swordfish

This is the import trends of the top 10 importers of Swordfish from 2013 to 2020.



Source: https://www.tridge.com/intelligences/swordfish/import

Employing a Value Chain Lens

Simplified Swordfish Value Chain





PRIMARY ACTIVITIES

Inputs

- Input costs for longline vessels generally range from USD\$4500
 \$9000 for a typical trip (7-14 days).
- Fuel, ice, squid bait, food and gear replacements are the main recurring costs
- Additional costs that are not paid every trip include cooking gas, oil, and filters and other preventive maintenance costs, vessel insurance, subscriptions to Vessel Monitoring Systems (VMS), satellite data products and satellite phones.



Harvest

- Anecdotal evidence from key informants suggests that fishing at night during the full moon is the best time to catch Swordfish
- Some empirical studies have shown that surface longlines set at night are more productive for capturing swordfish
- Swordfish harvesting techniques using surface longline gear are quite like the gear targeting yellowfin and bigeye tunas but lines may be weighted to 120 feet, and buoys configured differently.





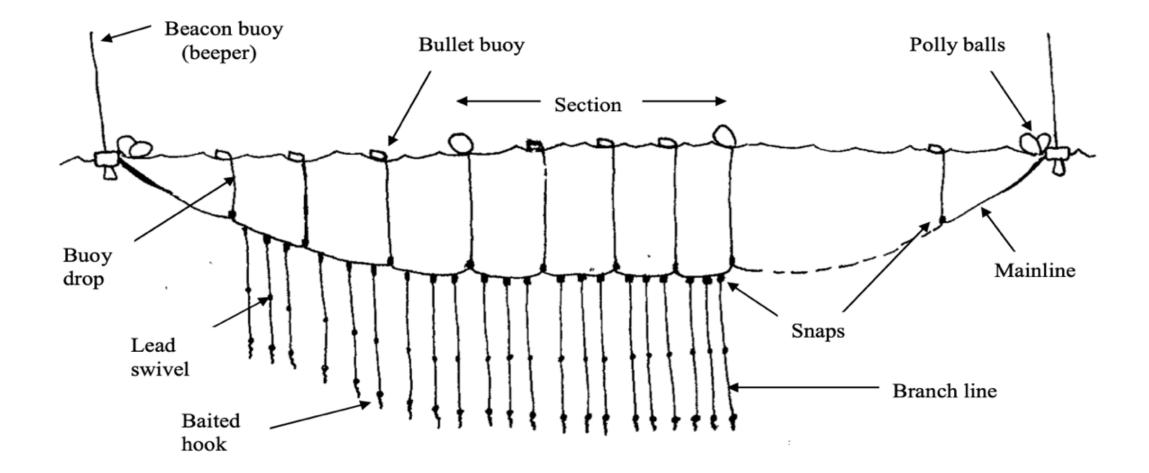
Harvest

- Longline captains and crew members, and sport fishers also informed that there are swordfish breeding grounds close to shore, approximately 4 miles off the West Coast of Barbados by the 'shelf'.
- This is where juveniles referred to colloquially as 'mice, 'rats' and 'pups' were occasionally caught. The names correspond to the size in weight where mice are less than 25 lbs, rats are greater than 25 lbs, but less than 50 lbs and pups are greater than 50 lbs but less than 100 lbs.

Harvest

- Adults are referred to colloquially as 'markers' at 100 lbs, 'double markers', 200 lbs and 'triple marker', 300 lbs. Larger swordfish referred to as 'Monsters' are known to be caught in the North and Northwest of Barbados.
- Other fishing grounds identified were 90 miles south of Barbados and even further offshore in the Southeast area known as the 'Research Ridge' (KI BBD 4).

Typical longline fishing gear set up



Source: Walcott et al 2009

Processing and Packaging

- Swordfish is landed headed and gutted at the Bridgetown Fisheries Complex and sold directly to fish vendors, larger fish processors and restaurateurs who then transport it to their plants or places of operation for further processing.
- In some cases, the Swordfish is cut into smaller pieces, weighed, boxed, and prepared for export to Miami.
- Larger fish processors import headed and gutted Swordfish (preferred size is 80 lbs) from Trinidad and Tobago primarily and process at their plants.

Processing and Packaging

- The fish is prepared to suit their clientele's needs (loins, steaks, fillets, etc.) and then collected or delivered.
- Swordfish is also prepared boneless and skinless and vacuumpacked by large processors usually for local supermarket chains.
- There is an online fish vendor that also sells vacuum-packed boneless and skinless Swordfish at a premium price of USD\$10.00 per lb



Swordfish being prepared for export

Marketing and Sales

- Locally caught fresh Swordfish is highly sought after by seafood companies and their clientele.
- Vendors usually purchase Swordfish directly from the boats at USD\$4.00/lb (KI BBD 5).
- The market price for fresh Swordfish ranges from USD\$5.00 10.00/lb.
- Frozen Swordfish is usually sold by large fish processors at USD\$6.00-7.00/lb.

Marketing and Sales

- Fish vendors generally sell to market visitors or make deliveries to individuals. Large fish processors sell to hotels, restaurants, fryers, and even to individuals depending on the demand (KI BBD 3).
- The winter season (December-April) is usually when demand increases to account for the tourism season.
- The export market currently pays \$5.50-7.50/lb for fresh Swordfish (KI BBD 1). These prices are currently higher than the prices paid by vendors when they buy directly from the boat.

Marketing and Sales

- Marketing is usually done by word of mouth, radio announcements, websites, and social media.
- During the COVID-19 pandemic period, many online seafood marketplaces were launched making it easier for consumers to make online payments and have Swordfish conveniently delivered right to their door.
- Swordfish is usually marketed as a smart seafood choice which is sustainably managed and responsibly harvested.

Marketing and Sales

- In Barbados, the nutritional value of Swordfish is less promoted, and generally less known.
- This contrasts with international markets, including the United States, where swordfish nutritional properties are the main messages used in marketing.
- Swordfish is an excellent source of selenium, Omega-3, niacin, zinc, vitamin B12, D and other micronutrients that offer important heart health, immune system and cancer-fighting properties and other benefits (Cobas et al. 2022).



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Swordfish

Swordfish

1

Add to Cart

PRODUCT INFO

Premium custom cuts of local, wild caught fish - At Hooked we do things a bit differently. Fish is offloaded fresh in the morning and cleaned & steaked. We only package the most premium cuts removing all 'waste pieces' like bones and skin. Next we vacuum seal your fish to preserve the freshness. We offer custom packaging where you can choose how many steaks you would like in each vacuum sealed pack. Prices are listed in Barbados Dollars.

ORDERING & DELIVERY

Fresh, local, swordfish, vaccum sealed to lock in freshness. Price listed is

for a 1 pound pack of about 4 steaks / pack.

Hooked accepts orders all week for delivery on Thursdays. Delivery is FREE on all orders over \$100 BDS. We do not currently accept payment online but you can pay with cash or cheque upon delivery or collection.

Consumers

- Consumers stated that they generally prefer fresh Swordfish and are willing to pay between USD\$5.00-\$6.00/lb.
- Hotels and restaurants are willing to pay premium prices for fresh Swordfish at USD\$6.00 or more during the tourism high season (November – April) when demand is high.
- Two all-inclusive hotels interviewed reported that they purchase 1,000 lbs of Swordfish a year at \$6.00/lb.

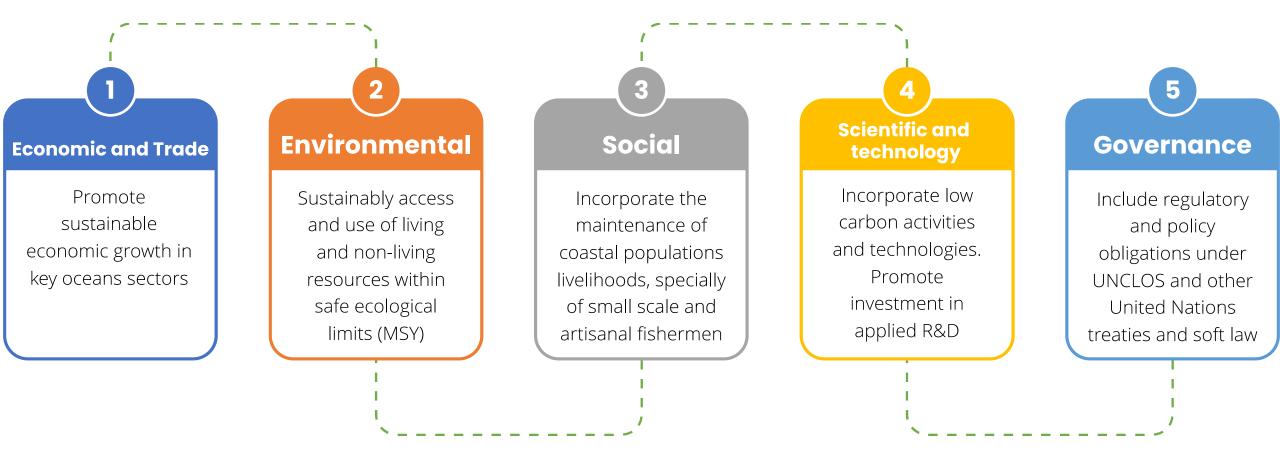
Consumers

- As discussed at the beginning of the section, international demand for Swordfish is increasing.
- The trend may be due to recent prices being offered by importers. This may also be a response to the increased demand for healthy products.
- At present the Barbados exporter is the main source for data on Tuna and Swordfish exports that is sent to the Fisheries Division for archiving. Barbados' Fisheries Division also monitors import trends to inform the fishing fleet of potential opportunities.

Key Recommendations

ADY CARMEN-TI

UNCTAD's OCEANS ECONOMY PILLARS



Economic and Trade Recommendations

• Input costs reduction strategies:

- Importing squid directly from Argentina
- Use of cost-effective bait including mackerel and jacks
- Renewable energy systems to power equipment and charge batteries
- Fuel efficient or hybrid engines
- Locally produced biofuel e.g. Bio-CNG
- Solar-powered ice machine
- Local production of circle hooks and other tackle
- Explore new markets (Attend International Seafood Expos)
- Innovative marketing strategies

Environmental Recommendations

- The impact of single-use plastic light sticks on the environment should be considered in fishing operations
- Local fishing gear companies should be encouraged to keep cost-effective reusable battery operator light sticks in stock and explore bioplastic alternatives.
- Abandoned, lost, or otherwise discarded fishing gear (ALDFG) from longline fishing operations is also an environmental problem that is increasingly of concern.

Social Recommendations

- To gain sufficient public buy-in, the public needs to be convinced that our Bajan Swordfish, Yellowfin and Bigeye tuna has the capacity to add to our economy, cultural heritage and food quality in a significant way.
- Human-centred marketing
- Comprehensive Gender-neutral marketing strategy and plan

Scientific and Technology Recommendations

- Future research and development studies can consider the use of advanced tagging technology devices, such as archival tags and pop-up satellite archival tags
- The use of VMS can also support efforts at mapping Swordfish fishing grounds areas and catch per unit effort (CPUE). VMS supports the development of data driven solutions.
- The creation of a National Fisheries Innovation hub or cluster should be considered as a standalone initiative or as part of existing blue economy hubs e.g. UNDP Blue Lab to inspire creativity and offer the opportunity for ideas to become a reality.

Governance Recommendations

- The integration of traditional and local knowledge with natural and scientific information should be institutionalised within existing governance arrangements
- Mobilising local knowledge for evidence-based policymaking is essential for more effective and sustainable implementation of the fisheries policy and associated management plans
- Policy formulation and fisheries management plans at the national level should integrate risk management concepts to ensure sustainability across the OETS pillars and build resilience to external factors.

Swordfish Experimental Exercise

Presented by:

Alphonso 'Ali Cat' Norgrove Nigel 'Rat Jones' Clarke Everton Brathwaite Dr. Shelly-Ann Cox



Fishing gear procured to date

| ltem | Quantity |
|----------------------------------|----------|
| Light sticks (Hi-Liner) | 7650 |
| Mustad 39960ST 15/0 Circle Hook | 1000 |
| Mustad 39960ST 16/0 Circle Hook | 1000 |
| Monofilament line (25 lb spools) | 10 |
| Snaps with swivels | 1700 |
| Hi-Liner Turtle Release kit | 2 |
| Hook Tubs | 4 |
| 8-0 Swivels | 1800 |
| Line protectors | 2500 |
| D crimps | 2000 |











Gear preparation X038

Gear preparation P139



Procurement of Gear and Equipment



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| 304003007 SNAP S/S 3. | 1,200 75X125X8/0 | 2.590 50Bag | 3,108.00 |
| 308044002 LIGHT STICK | | | 7,227.00 |
| 309000366 Hook Circle | 2,000 Nickle #38 | 3.300 | 6,600.00 |
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UNCTAD-DOALOS OETS Project Swordfish Experimental Exercise DATA SHEET

| Vessel No.: | Departure date: | Catch location (lat): |
|--------------|-----------------|------------------------|
| Vessel Name: | Arrival date: | Catch location (long): |
| Captain: | Catch date: | Distance from shore: |

| | Species | Length | Weight | Hook type | Hook | Live/Dead |
|-----|---------|--------|--------|-------------|----------|------------|
| | | | | J or Circle | position | at capture |
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Thank You!

Photo credits:

Miguel Davis | Clish Gittens | S. Cox | Canva Stock Imagery

Contact Information:

Dr. Shelly-Ann Cox Founder and CEO Blue Shell Productions Email: shellyanncox@icloud.com Website: https://blueshell.pro

