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 | 1500hrs 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

1950s

BFD used miniature surface longlines initially consisting of 5 hooks which later increased to 20

1965–1973

TRIALS | INCEPTION

Swordfish trials using “Florida” Style longline gear. Fishery began in 1988 with 3 vessels. Lady Di became the first vessel registered

1988

UNDP/FAO Project

Fishing trials were conducted with much longer surface longline gear

1990

FEASIBILITY STUDY

Barbados Development Bank commissioned a study on the potential for developing a longline fishery

2000

ICCAT

Barbados became a contracting party to the International Convention for the Conservation of Atlantic Tunas

2010

VALUATION

Schuhmann et al. 2010 conducted an economic valuation of the longline fishery
HISTORY OF THE BARBADOS LONGLINE FISHERY

**MGMT PLAN**
ACP Fish II Programme supported a large pelagic resource management plan

**2014**

**FLEET EXPANSION**
Fleet size grew to over 40 registered vessels

**2019**

**UNCTAD-DOALOS**
Study: The legal and institutional framework governing ocean-based economic sectors in Barbados

**UNCTAD-DOALOS**
OETS project seeks to update the Schuhmann et al. 2010 economic valuation.
Over 80 registered vessels

**2020**

**UNCTAD-DOALOS**
Oceans Economy and Trade Strategy: Barbados Large Pelagic Longline Fishery Report

**2022**

**UNCTAD-DOALOS**
OETS project supports a swordfish market analysis and experimental fishing exercise
Longliners contribute over 90% of the island’s total catches of tunas, billfishes and swordfish.

Vessel-level spending, landings and fleet earnings create direct, indirect, induced and value-added economic impacts.

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

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

320 mt
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

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

**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)

**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)

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

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

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

Develop workshop concept note, flyer and agenda. Present findings of the market analysis at workshop. Document proceedings.
ECONOMIC VALUATION OF THE FISHERIES OF BARBADOS

Landings, Costs, Net Profit and Return on Investment in two Contrasting Fisheries

Part 1: The Longline Fishery

Current Status of the Longline fishery in Barbados

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1Center for Resource Management and Environmental Studies (CRIMES), University of the West Indies, Cave Hill Campus, Barbados
2Department of Economics, and 3Economics, University of North Carolina, Chapel Hill, NC 27514-3300

ABSTRACT

The fishing industry is an important contributor to the economy of Barbados, yet recent developments in overfishing and illegal, unreported and unregulated fishing activities mean that the fishery is facing a major sustainability challenge. The percentage of landings from the longline fishery has declined since the 1990s. In this study, we analyze the economic performance of the longline fishery to understand its performance and contribution to the economy. The study shows that the longline fishery has a significant impact on the economy of Barbados, with the majority of fishers being self-employed and the majority of fishers being male. The study also highlights the importance of sustainable management practices to ensure the long-term viability of the fishery.

KEY WORDS: Longline, valuation, economic performance, Barbados

Estado Actual de la Pesquería de Palangre en Barbados

La pesca es una actividad económica fundamental en la economía de Barbados, pero recientes desarrollos en sobrepescado y pesca ilegal, no reportada y no regulada significan que la pesquería está enfrentando un desafío importante de sostenibilidad. La participación en la pesca de palangre ha disminuido desde los años 1990. En este estudio, analizamos el desempeño económico de la pesquería de palangre para entender su desempeño y contribución a la economía. El estudio muestra que la pesquería de palangre tiene un impacto significativo en la economía de Barbados, con la mayoría de los pescadores siendo autoempleados y la mayoría de los pescadores siendo hombres. El estudio también destaca la importancia de prácticas de gestión sostenible para garantizar la viabilidad a largo plazo de la pesquería.

PALABRAS CLAVE: Palangre, valuation, desempeño económico, Barbados

Etat Actuel de la Pêche de la Longline à la Barbade

L’industrie de pêche est une composante économique importante et constitue une première source de revenus pour les communautés des Îles aux Bahamas, mais des développements récents en surpêche et pêche illégale, non-répertoriée et non-régulée signifient que la pêche est confrontée à un défi de sostenibilité majeur. La participation à la pêche à la ligne a diminué depuis les années 1990. Dans cette étude, nous analysons le rendement économique de la pêche à la ligne pour comprendre son rendement et sa contribution à l’économie. L’étude montre que la pêche à la ligne a un impact significatif sur l’économie des Îles aux Bahamas, avec la majorité des pêcheurs étant auto-employés et la majorité des pêcheurs étant des hommes. L’étude met également en évidence l’importance des pratiques de gestion durable pour garantir la viabilité à long terme de la pêche.
KEY FINDINGS
Respondent Profile

<table>
<thead>
<tr>
<th>Interviewees</th>
<th>No. of respondents</th>
<th>Gender</th>
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<tbody>
<tr>
<td>Longline boat owners</td>
<td>12</td>
<td>12 M</td>
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<td>Longline captains and crew members</td>
<td>25</td>
<td>25 M</td>
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<tr>
<td>Sport fishers</td>
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<td>Fish vendors</td>
<td>5</td>
<td>2 M</td>
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<td>Large fish processors</td>
<td>4</td>
<td>4 M</td>
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<td>Restaurants and hotels</td>
<td>4</td>
<td>3 M</td>
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<tr>
<td>Fisheries management officials</td>
<td>3</td>
<td>2 M</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>55</strong></td>
<td>**52 M</td>
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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 Imports
Source: Fisheries Division
## Exports

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<tr>
<th>YEAR</th>
<th>VALUE (USD)</th>
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<tr>
<td>2020</td>
<td>$2000</td>
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<tr>
<td>2022</td>
<td>(3 fish at the time of reporting)</td>
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</table>
## Imports

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<thead>
<tr>
<th>YEAR</th>
<th>WEIGHT</th>
<th>VALUE (USD)</th>
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<tbody>
<tr>
<td>2020</td>
<td>127,911 kg / 281,404.2 lbs</td>
<td>$564,994.00</td>
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<tr>
<td>2021</td>
<td>326,502 kg / 718,304.40 lbs</td>
<td>$1,063,012.00</td>
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</table>
Top 3 Importers of Swordfish

- **Italy**
  - Rank 1
  - $54.3M
  - 1Y ≈ -24.71%
  - 3Y ≈ -16.77%
  - 5Y ≈ -20.23%

- **Spain**
  - Rank 2
  - $36.5M
  - 1Y ≈ -37.68%
  - 3Y ≈ -17.03%
  - 5Y ≈ -31.59%

- **South Korea**
  - Rank 3
  - $35.1M
  - 1Y ≈ -38.27%
  - 3Y ≈ -9.07%
  - 5Y ≈ 19.31%

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

QUALITY CONTROL
ENVIRONMENTAL AND SOCIAL SAFEGUARDS
RESEARCH AND DEVELOPMENT
INFRASTRUCTURE | PROCUREMENT
INPUTS HARVEST PROCESSING AND DISTRIBUTION MARKETING AND SALES CONSUMERS

PRIMARY ACTIVITIES

SUPPORT ACTIVITIES

QUALITY CONTROL
ENVIRONMENTAL AND SOCIAL SAFEGUARDS
RESEARCH AND DEVELOPMENT
INFRASTRUCTURE | PROCUREMENT
INPUTS HARVEST PROCESSING AND DISTRIBUTION MARKETING AND SALES CONSUMERS

PRIMARY ACTIVITIES

SUPPORT 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.
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 vacuum-packed 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).
SWORDFISH
Local Swordfish Available!
246-546-8946 | info@theculpepper.com
www.theculpepper.com

ISLANDWIDE DELIVERY

TRELLIS
ESTATE

HOOKE

ORDERING & DELIVERY
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.

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.

Swordfish
$20.00
Quantity
1
Add to Cart

Fresh, local, swordfish, vacuum sealed to lock in freshness. Price listed is for a 1 pound pack of about 4 steaks / pack.
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.
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
UNCTAD's OCEANS ECONOMY PILLARS

1. Economic and Trade
   Promote sustainable economic growth in key oceans sectors

2. Environmental
   Sustainably access and use of living and non-living resources within safe ecological limits (MSY)

3. Social
   Incorporate the maintenance of coastal populations livelihoods, specially of small scale and artisanal fishermen

4. Scientific and technology
   Incorporate low carbon activities and technologies. Promote investment in applied R&D

5. Governance
   Include regulatory and policy obligations under UNCLOS and other United Nations treaties and soft law
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

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>Light sticks (Hi-Liner)</td>
<td>7650</td>
</tr>
<tr>
<td>Mustad 39960ST 15/0 Circle Hook</td>
<td>1000</td>
</tr>
<tr>
<td>Mustad 39960ST 16/0 Circle Hook</td>
<td>1000</td>
</tr>
<tr>
<td>Monofilament line (25 lb spools)</td>
<td>10</td>
</tr>
<tr>
<td>Snaps with swivels</td>
<td>1700</td>
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<tr>
<td>Hi-Liner Turtle Release kit</td>
<td>2</td>
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<tr>
<td>Hook Tubs</td>
<td>4</td>
</tr>
<tr>
<td>8-0 Swivels</td>
<td>1800</td>
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<tr>
<td>Line protectors</td>
<td>2500</td>
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<td>D crimps</td>
<td>2000</td>
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Gear preparation X038
Gear preparation P139
Procurement of Gear and Equipment
<table>
<thead>
<tr>
<th>Species</th>
<th>Length</th>
<th>Weight</th>
<th>Hook type</th>
<th>Hook position</th>
<th>Live/Dead at capture</th>
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Thank You!

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