Caribbean Regional Fisheries Mechanism

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CRFM Fishery Report - 2019 / 2

Fishery Assessment Report - Eastern Caribbean Four-wing Flyingfish, *Hirundichthys affinis*

CRFM Secretariat, Belize
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CRFM FISHERY REPORT – 2019/ 2

Fishery Assessment Report - Eastern Caribbean Four-wing Flyingfish, *Hirundichthys affinis*

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FOREWORD

This document is a combination of outputs of the consultancy: "Technical Support to Enhance Data and Information Management for Decision Support to the Eastern Caribbean Flyingfish Fishery". The consultancy took place under CLME+ Strategic Action Programme Sub-Project #3 EAF for the Eastern Caribbean Flyingfish and aims to contribute to the delivery of Output 5. Long-term enhancement of livelihood/human well-being facilitated (O5.1, O5.2, O5.3) under COMPONENT 3 of the main CLME+ Project Document: "*Transition to an ecosystem approach for the Eastern Caribbean flyingfish fisheries demonstrated*". It has been developed in support of (a) the CLME+ Strategic Action Programme (SAP), politically endorsed at the regional level in 2013 and (b) the approved Eastern Caribbean Flyingfish Fisheries Management Plan 2020-2025. The following documents, extracted from the final technical report submitted by NEXUS Coastal Resource Management Ltd., have been compiled for the Fishery Report: (1) Management Performance Review; (2) Management, Monitoring and Evaluation Report; (3) Report on EAF Management and Policy Cycle; (4) Gender in Eastern Caribbean Flyingfish Fisheries; (5) catch Documentation Scheme Report, including a sample CDS for Barbados; (6) Multi-Objective Assessment Report; (7) Recommendations for Enhanced Data Collection Systems; (8) National Vessel Census Report; and (9) Resource and Fisheries Assessment.

I am confident that this fishery report will advance the respective processes towards long-term enhancement of livelihoods and human well-being, by enhancing data and information management for decision support to the fishery.

LIST OF ACRONYMS AND ABBREVIATIONS

AIC	Akaike's Information Criterion
CBA	Cost Benefit Analysis
CCCFP	Caribbean Community Common Fisheries Policy
CCRF	Code of Conduct for Responsible Fisheries
CDS	Catch Documentation System
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLME	Caribbean Large Marine Ecosystem
CLME+	Caribbean and North Brazil Shelf Large Marine Ecosystems
CLME+ project	UNDP/GEF Catalysing Implementation of the Strategic Action Programme for the Sustainable Management of shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems project
CPUE	Catch Per Unit Effort
CRFM	Caribbean Regional Fisheries Mechanism
EA	Environmental Assessment
EAF	Ecosystem Approach to Fisheries
ECFF-FMP	Eastern Caribbean Flyingfish – Fishery Management Plan
EEZ	Exclusive Economic Zone
EGNI	Estimated Gross National Income
ETP	Endangered, Threatened and Protected species
EVM	Electronic Video Monitoring
EYS	Expected Years of Schooling
FAD	Fish Aggregating Device
FAO	Food and Agriculture Organization of the United Nations
FIRMS	Fisheries and Resources Monitoring System
GDI	Gender Development Index
GDP	Gross Domestic Product
GPS	Global Positioning System
HACCP	Hazard Analysis Critical Control Point
HDI	Human Development Index
ICCAT	International Commission for the Conservation of Atlantic Tunas
IUU	Illegal, Unreported and Unregulated fishing
LEB	Life Expectancy at Birth
LTK	Local and Traditional Knowledge
M&E	Monitoring & Evaluation
MPA	Marine Protected Areas
MSY	Maximum Sustainable Yield
MYS	Mean Years of Schooling
NGO	Non-Governmental Organization
NPV	Net Present Value
OECS	Organization of Eastern Caribbean States
RFID	Radio-Frequency Identification
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UWI	University of the West Indies
WECAFC	Western Central Atlantic Fishery Commission

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1. MANAGEMENT PERFORMANCE REVIEW

1.1 OVERVIEW

The four-wing flyingfish (*Hirundichthys affinis*) fishery has historically been the most important small pelagic fishery in the Windward Islands of the Eastern Caribbean. Throughout the region, flyingfish fisheries include directed commercial and artisanal fisheries as well as bait fisheries

The socioeconomic significance of the flyingfish fishery varies among the countries in the region. Flyingfish has been targeted by fishers in Barbados, Dominica, Grenada, Martinique (France), Saint Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago for local consumption, bait, and limited export. In the case of Barbados, flyingfish is a culturally important species. An estimated 6,000 people are involved in the flyingfish fishery, and fisher landings typically account for nearly two-thirds of the country's total annual harvest. While still an important fishery in other Eastern Caribbean countries, flyingfish is less economically and culturally important outside of Barbados. The region's Fisheries Divisions place varying levels of effort on fishery data collection activities. As a result, Fisheries Divisions have been managing this fishery in the absence of proper and reliable assessments.

In recent years, fishers have experienced fluctuations in flyingfish abundance leading to reduced catches. They have also noted the presence of different flyingfish species which could be due in part to influxes of sargassum seaweed. Several regional technical level organizations (e.g., Caribbean Regional Fisheries Mechanism (CRFM), Organization of Eastern Caribbean States (OECS), Western Central Atlantic Fishery Commission (WECAFC) work with Fisheries Divisions to advise on the management of the fishery.

The Eastern Caribbean Flyingfish Fishery Management Plan (ECFF-FMP) is the guiding fishery management document and recommends that managers improve and harmonize data collection systems and analysis in the sub-region. The type, amount, and accuracy of flyingfish fishery data that Member States collect varies. Because of this, there is a need among these nations to harmonize their data collection and data sharing abilities to more effectively manage this shared resource.

Accessible, dependable, and timely data are essential for fisheries management. In recent history fisheries management has been dominated by strategies based on science-based stock assessments which require the following data streams: catch/landings of directed and bycatch species, spatial data, temporal data, fisheries gear type, and level of effort.

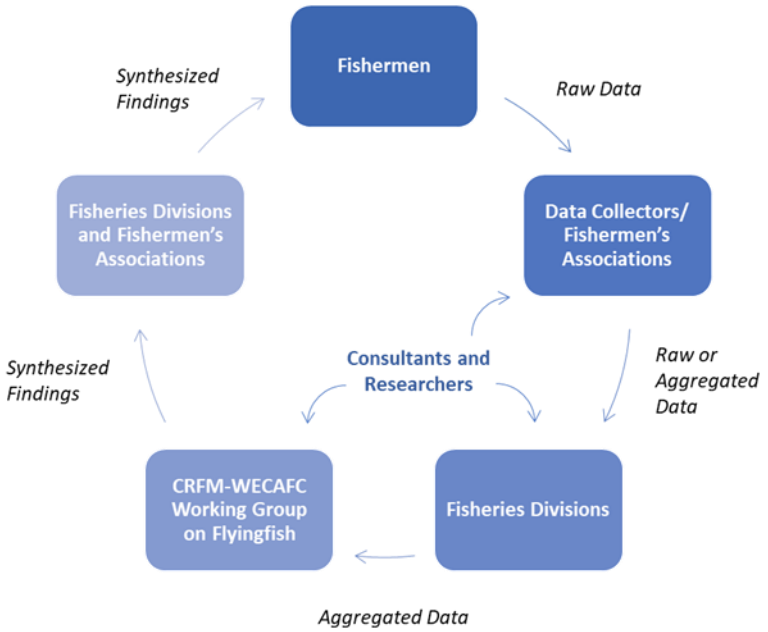

Figure 1.1: Flyingfish Fishery Data Collection and Sharing (from ERG, Sub-Regional Data Policy for Eastern Caribbean Flyingfish)

The draft Sub-Regional Data Policy for Eastern Caribbean Flyingfish notes that raw data collected and compiled from landing sites is the foundation for national and regional assessments (see Figure 1.1). This data collection system is an important foundation to collecting the information needed to make robust and effective management decisions. However, additional streams of information are now seen as essential to long-term sustainable management decision-making. Furthermore, it is important that the region's data collection system be affordable and able to withstand changes in national fiscal conditions.

The NEXUS Team conducted interviews and meetings with Fisheries Division staff, fishers, fish marketing personnel, academic researchers, representatives of multi-national organizations and representatives of fisher organizations regarding several aspects of the fishery management and operations in the Eastern Caribbean flyingfish fishery. Based on these discussions it became apparent that, like most nations, there are multiple factors that undermine the effectiveness of management systems. Furthermore, there are multiple influencers within the current system that have positively contributed to management performance.

The following is a review of the identified factors that influence and contribute to the performance of national and regional flyingfish fisheries management. This report expands on those considerations presented in NEXUS' "Management, Monitoring and Evaluation Report" which deals with the specific indicators/metrics used to monitor/evaluate performance of the objectives defined in legal/regulatory management instruments, such as Sub-regional Fisheries Management Plan (FMP).

1.2 CURRENT MANAGEMENT CONSTRAINTS

There are multiple factors that undermine the potential effectiveness of management measures. These factors are often the result of circumstance beyond the control of fisheries managers. However, some of these factors can be mitigated by the efforts of Fisheries Division staff. It is important to understand that there is an inter-relationship between many of these factors so addressing one may often have an impact on others. As a result, efforts to mitigate barriers/constraints in the performance of management activities

can have compound positive impact on the overall management system. This highlights the need to set priority for determining the order in which constraints should be addressed.

The following constraints to management performance were identified during project implementation. The limitations of data availability, financial resources, human resources, political will, and environmental condition are all easily apparent, and interdependent.

1.2.1 Political Will

Political will can affect management performance in many ways. The political will of the government, fisheries administrations, fishers, consumers and even the academic community can all impart barriers to effective EAF-based management.

The politics of fisheries has a long and complex history. In a parliamentary democracy, fishers can have significant influence in elections and as a result, there individual personal interests can undermine sustainable management. It has been noted by many academics involved in research on resource management systems that management objective is defined outside the political system, and, fisheries management objectives are often defined to meet science-based bio-physical management priorities, which can often be at odds with the day to day livelihood objectives of fishers and fishing communities.

During interviews with fishers, processors, academics, and managers, political factors were referenced of as being a factor in the undermining of management performance, in that, each group perceived the political will to effect good management being unduly influenced by other groups. People were cognizant of the complexity created by balancing multiple and competing priorities between sectors created by individual's needs, national economic well-being, and environmental limits. This is also reflected in the rich and deep body of literature and academic publications on the matter.

Changes to fisher practices that may be in the long-term interest of the fishery may have short term negative implications to individual fishers. This is a common occurrence internationally, and as a result, fishers have been known to use their political influence to inhibit or prevent necessary changes to meet long-term management goals. Consequently, governments may be slow to harmonize legislation that is being developed at a regional/sub-regional level, particularly, if the need for these changes is not clearly understood and agreed to by the local fishing industry. Similarly, governments may also be reluctant to introduce regulations that are poorly perceived or not understood by fishers.

Internationally, it has been noted that there is often a distrust between fishers and fishery managers that lead to a lack of confidence that the other group can contribute to the management interests of each other. This leads to poor communications between fishers and fisheries managers. This lack of confidence was also noted during discussions with fishery managers and fishers involved in the flyingfish fishery. Despite the growing body of evidence that including fishers in management planning and decision-making results in robust management, there has been little progress in this regard in the Eastern Caribbean flyingfish fishery. Furthermore, there is a lingering lack of trust by Fisheries Managers about fishers' participation in the management process, and as a result little commitment to including fishers' organizations in fisheries management. Fishers also seem reluctant to participate in fisheries management systems, which can be the result of educational differences, and understanding of science/economic based terminology.

It was observed during interviews that fishers lack willingness to accept regulatory changes that would advance long-term sustainable management, and there is a lack of willingness amongst Fisheries Divisions to increase fishers' involvement in management activities which can be the result of poor communications between fishers and fisheries divisions and levels of "fisheries literacy" (see section below). It is likely that increased financial support for communications/extension services and fishers training programs will

have a positive impact on political will for enhancement of management activities and management performance.

1.2.2 Fiscal Capacity

It is a common statement by government administrations that there is insufficient financial support for their programs and activities. However, this is a particularly true statement within Fisheries Divisions in Member States. Unfortunately, the general economic climate regionally limits the availability of funds for fisheries management. Since there is unlikely to be sufficient financial resources to cover the costs of salaries for staff personnel for every aspect of fisheries management (such as management planning, resource assessment, data management, research, enforcement/compliance, extension services, etc.) staff are often asked with multiple areas of responsibility. Regrettably, this issue has been compounded by insufficient budgets necessary to cover the activities within each area of responsibility, in particular, routine data collection at all landing sites, extensions services (travel), routine staff training, and regular/frequent fishery independent studies.

Externally funded projects have been used to augment the data collection, training and extension services, and academic research projects by Universities (UWI as well as other extra-regional institutions) have conducted fishery independent studies, however these are often inconsistent with the specific needs and management responsibilities of the Fisheries Divisions.

1.2.3 Availability of Data

As noted in the Section 1, the primary location of data collection are the landing sites. Unfortunately, not all sites have complete and consistent coverage. Furthermore, catch data for flyingfish not harvested for commercial purposes (personal consumption and bait) is not entered into the database. This leads to structural uncertainties in the data, which undermines the robustness of the management system.

Effort data is only collected from vessels active at principle landing sites as well as the vessel registry systems. Unfortunately, as was noted by Fisheries Division staff, registration systems are not always up-to-date and may contain redundancies (i.e. vessels no longer active in the fishery, or vessels that may have been entered more than once in the system due to changes in name or ownership). Similarly, there is no specific activity to collect information on the type and amount of fishing gear used by fishers or the duration of their fishing activities. This lack of effort data also undermines the robustness of management plans.

During interviews with Fisheries Division staff it was also noted that there is little effort to collect economic, social, and cultural information about the flyingfish fishery as a matter of routine (possibly due to staff shortages, and insufficient budgets for travel). This information is valuable in understanding the stresses on harvesters, the effectiveness of management activities, and contribution of the fishery to the blue economy (an emerging management objective).

The issues experienced in each Member State with respect to shortcomings in the data collection systems is compounded by differences in data structures between Member States (some use databases, some use spread sheets and individual member States use different categorization/terminology). As a result, uncertainties within individual Member States is compounded at the sub-regional level. This has a direct impact on management performance.

1.2.4 Insufficient Human Resources

The issue of limitations in data collection can be directly contributed to issues related to the level of budgetary support for fisheries divisions fiscal capacity within Fisheries Divisions to conduct data collection activities and to hire sufficient personnel.

Fisheries management requires people with varying knowledges and skillsets. Unfortunately, as noted above the budgetary reality of small-island States means that it is difficult for Fisheries Divisions to have all the necessary skills and knowledge within one agency. As a result, accommodation has to be made to address this reality and people working within the Fisheries Divisions may be tasked with activities for which they have not been trained or educated. Accordingly, Fisheries Division staff are often required to wear "multiple hats" and to be responsible for management activities outside of their area of expertise. These capacity issues can undermine management performance both at the national and regional level as has been noted in data collection and management.

Another area where budgetary constraints has compromised effective management relates to extension and outreach services. These services are essential to building and maintaining positive working relationships between government and the fishing industry. Not only does the lack of sufficient budget undermine the ability of Fisheries Division to hire enough staff to undertake these services it has limited the ability of Fisheries Divisions to cover the costs associated with in-country travel. Clearly lack of dedicated extension officers and insufficient funding for travel undermines the relationship between fishers and Fisheries Divisions. This has implications to knowledge sharing, data collection, and innovative development within the overall fishery.

1.2.5 Environmental Condition

Climate change and the associated effects on local environmental condition are also a significant factor affecting management performance within Member States. Clearly, changes in environmental condition is a matter outside the control of fisheries managers, however, it has had a significant impact on regular fishery management activities, including data collection and analysis, in part by creating additional work for staff.

Climate change effects have become an important focus of national governments and international organizations and agencies involved in fisheries development and management. This often involves tasking national fishery division staff with work on research projects, and participation in meetings and workshops related to the topic. FAO has a significant program on climate change impacts on fisheries that Member States have been actively involved[1]. The collective body of work has highlighted the significance of climate change impacts on fisheries contributions to food security, the significant negative impacts of severe climate events on the safety of fishers, fisheries infrastructure, boats and fishing equipment, and coastal fishing communities, and the urgent need for fisheries managers to develop adaptation strategies for in order to maintain effective management performance.

1.2.6 Insufficient Ocean Literacy

Internationally, greater attention has been paid to increasing general "ocean literacy", particularly amongst coastal communities. Ocean literacy involves raising public understanding of the ocean's influence on coastal peoples and their influence on the ocean. As ocean-literacy is enhanced, people should understand the essential principles and fundamental concepts of ocean resource ecosystems and management principles. As a result, they can communicate about the ocean in a meaningful way and they are able to make informed and responsible decisions regarding the ocean and its resources.

Enhancing oceans literacy, by definition, requires an enhancement of fisheries literacy, that is, increasing public awareness of the influence fisheries has on local communities and their influence on the fishery across the value chain. Enhancing oceans literacy can increase awareness of the relationships and impacts of decisions within each various stage of the fishery, across the value chain, has on other participants in the fishery value chain, and on other ocean use sectors.

[1] FAO (2018), *Impacts of climate change on fisheries and aquaculture Synthesis of current knowledge, adaptation and mitigation options*, Fisheries and Aquaculture Technical Paper 627

As noted above, increasing wider public awareness of oceans issues, particularly fisheries, can promote the political will to enhance management performance at all levels. Thus, increase oceans literacy can increase fishers understanding of the importance of scientific studies, and promote reliable data collection systems on the social, economic, cultural as well as scientific (bio-physical) state of the fishery.

1.2.7 Lack of Holistic Management Approach

Another factor that may have contributed to undermining management performance is the inability of Fisheries Divisions to implement a holistic management approach. During interviews of fisheries personnel, fishers, and market staff, it was noted that no single agency is responsible for management of the overall value chain and noted above, data collection by Fisheries Divisions has focused on the determination the abundance and distribution of biological resources for science-based management purposes.

Taking a more holistic (EAF) approach to management of the total fishery value chain by a single department can facilitate increased management performance.[2] Management objectives related to the optimization of social and economic benefits of the fishery within the bio-physical limitations of the resource can be better achieved through a streamlined management structure. It was noted during interviews of fishery managers, marketers, and fishers in the Eastern Caribbean that several different government agencies are involved, each with a specific area of responsibility. This can create inefficiencies and confusion in the management process.

New efforts to advance the total use of fish harvest through development of products to reduce waste, thus creating greater value to fishers, marketers, and processors, can be better coordinated by a single government agency. Management of the fishery from harvest to end consumer (including non-consumptive benefits of fishery such as tourism) are currently being advanced in a new approach to integrated ocean management, often referred to as the blue economy, in the region.

1.3 CURRENT MANAGEMENT STRENGTHS

In the previous section we noted some of the identified issues and conditions that may continue to undermine fisheries management performance in the Eastern Caribbean flyingfish fishery. There are also several existing factors that have contributed to positive fishery management performance. The following highlights some of these factors that should be safeguarded in order to support their continued contribution to sustaining the Eastern Caribbean flyingfish fishery.

1.3.1 Regional Collaboration

There is a strong history and culture of regional cooperation amongst the Member States of the Organization of Eastern Caribbean States (OECS), and more widely, amongst the Member States of the Caribbean Regional Fisheries Mechanism (CRFM). This has contributed to collaboration on fishery management planning (as evident with the development of the sub-regional FMP) and the sharing of technical expertise, both bilaterally between Member States and establishing core experts' groups in the OECS and CRFM.

Regional bodies, such as the CRFM, can address issues related to building the human resource capacity within Member States. Expertise that is required within each Fisheries Division but cannot be maintained due to budgetary constraints can be pooled into the regional organizations. Common pool expertise is a benefit of regional collaboration.

[2] It is noted that the CRFM Ministerial Council has adopted the EAF approach to fisheries management for regional fisheries, and Member States are endeavouring to fully adopt this approach.

One aspect of fisheries management where regional collaboration has been initiated, but additional support is warranted, is in data sharing/compilation. Efforts to pool data and information into a common database/common platform have been initiated. However, these initiatives have been undertaken with limited resources. It is essential that sufficient fiscal and human resources are available at the regional organization to support Member state in this fundamentally important initiative.

1.3.2 Qualified and Professional Fisheries Division Staff

It was noted during project interviews and meetings that the Member State Fisheries Divisions and regional organizations currently have dedicated, professional and well-educated staff. Staff members have endeavored to conduct the burdensome tasks of all aspects of fisheries management in the face of adverse financial support during times of significant environmental change. Governments should acknowledge and recognize the important input from staff members both within their Member States and at the regional level and should work with them to advance changes to enhance fishery management performance.

1.3.3 Scale of Fisheries

Fishery operations tend to be small, individual entrepreneur enterprises. Furthermore, there tends to be small number of fishers in the industry relative to other industrial fishery States. Additionally, the fleet tends to be relatively homogenous in scale in that there are only small to medium size, artisanal, to semi-industrial vessels. This uniformity simplifies the types of interactions between Fisheries Divisions and the fishing industry.

1.3.4 Integrated Fishery Operations

The current fishery is not species dependent. Fishers access to the fishing industry is not tied to a single specific species and they are able to catch a variety of species while at sea. As a result, fishers will land all the species that they catch.

Additionally, the livelihood of many fishers is not tied solely to fish harvesting and they are able to access other sources of income without compromising their access to the fishery.

This multi-species access and the opportunity to diversify income sources in the fishery facilitates integrated coastal resource management thus promoting sound management performance.

1.4 RECOMMENDATIONS

Access to and use of fisheries data is a fundamental matter in the development and implementation of fishery management plans. Without sufficient data and the ability to monitor impacts of fish harvesting, environmental condition for fish stocks, social condition within fishing communities, economic condition of fishing communities and markets, etc., Fisheries Managers are inhibited by lack of sufficient information regarding the actual state of the fishery and hence, inhibited in their ability to effect sound management decisions. As noted in the previous sections, several factors exist that impact the effective performance of the fishery. Efforts must be taken to mitigate factors that compromise management performance and aim at strengthening those factors that promote positive management performance. Therefore, it is recommended that consideration be given to the following:

- While it may be a difficult task to change political will regarding support for fisheries management, Fisheries Managers should be encouraged to identify, document and analyse barriers related to support for fisheries management, including political barriers to implementing fisheries regulations. This should include social, economic, administrative and policy barriers. Oftentimes, these barriers can be mitigated through open and honest public discussion to identify political,

social, and economic barriers and options for consideration by government, fisheries managers, and fishers to address these barriers.

- Continue to advance the regional and sub-regional organizations involved in fisheries management by providing enough financial support to enable development of sufficient and full-time expertise in fisheries policy and planning, data compilation (including fishery independent surveys), fisheries economics and marketing, and training. This can provide cost savings at the national level through rationalization of staff within national Fisheries Divisions, in that there will be less need to hire and maintain skills that will be available in the regional organizations.
- In particular, with respect to regional collaboration on fisheries data management, Member States should provide the CRFM Secretariat with a sufficient core budget to cover data management costs (equipment and communications) and full-time professional staff.
- Introduce and enforce regulations requiring fishers to keep daily log sheets (or logbooks) to record catch and landings (including discards) as a condition of access to the fishery.
- Promote meaningful co-management by increasing the roles and responsibilities of fishers and fishers' organizations in fisheries data collection, and in fisheries management planning. This may require additional training (such as that discussed above) and support for organizational development, however this can greatly impact the availability of timely data and promote compliance amongst fishes, thus leading to costs savings in fisheries management.
- Promote ocean literacy to support wider public understanding of the importance of the ocean as a source of economic, social, and cultural well-being (Blue Economy) and the means and measures needed to maintain a sustainable ocean economy. Ocean literacy programs should involve fishers in delivery of public education activities and as participants in/recipients of training activities. As noted in the "Constraints" discussion, enhancing oceans literacy can have significant benefits to management performance.
- Maintain the integrated approach to fishers' operations. Continue to enable fishers' access to multi-species harvesting and to enable fishers to engage in multiple economic activities to provide sustainable livelihood (harvesting, marketing, tourism, etc.)
- Related to the integrated approach to fishers' livelihood activities, the governments should examine and implement strategies to integrate fishery operations (full value chain) with other marine resource sectors (tourism, transportation, energy, aquaculture, etc.). This may involve, as a preliminary step, cross sectoral committees/working groups to share information and management objectives/approaches.
- Integrating fisheries with other sectors within the Blue Economy, we ensure competitive resource-use activities do not undermine optimal benefits of the fishery to the economy, or other resource activities do not compromise the long-term sustainability of the fishery. This may require development of coherent marine spatial plans and sharing fisheries information across sectors to ensure sensitive fishery habitat and harvest areas are not compromised through development strategies that focus on single sectors.
- Conduct performance evaluations of Fisheries Division staff and Fishers Organizations to identify areas where additional training may be beneficial and to identify whether fisheries management objectives are being met so that strategic actions should be implemented, or where objectives should to be re-evaluated.

2. MANAGEMENT, MONITORING AND EVALUATION

2.1 OVERVIEW

The Study Team conducted a series of meetings, interviews, and discussions with industry personnel and fisheries staff that provided insight into the current monitoring and evaluation that is conducted for the flyingfish fishery in the Eastern Caribbean. Although there may have been informal review of Fisheries Division monitoring systems it is understood that there has been no detailed concerted effort to reevaluate national Fisheries Division progress to enhance monitoring systems. As such, this report highlights the importance of a monitoring and evaluation system in the management of the flyingfish fishery and presents practical recommendations that can be applied at a national and sub-regional level.

The Eastern Caribbean flyingfish fishery exists within the western tropical Atlantic Ocean and is recognized as the single most important small pelagic species in the Eastern Caribbean. The Eastern Caribbean flyingfish fishery stock is shared by Barbados, Dominica, Grenada, Martinique (France), St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago.

There are three key species of flyingfish, *Hirundichthys affinis, Cypselurus cyanopterus and Parexocoetus brachypterus,* that are regularly harvested out of the around thirteen species that occur in the region. Of those three species, the four-wing (*Hirundichthys affinis*) is the most sought-after species, accounting for approximately 99% of the commercial harvest.

In addition to being an important food fishery, particularly in Barbados, flyingfish is an important foraging species for a number of larger pelagic species such as tuna. Thus, the majority of Member States harvest the species to use as commercial bait. The commercial flyingfish fishery is highly season occurring between December and June and is largely based on the seasonal availability of the species.

The purpose of monitoring is to consistently gather data that is evaluated and can then help to inform on the state of meeting the defined management objectives, and consequently, any management actions that should be taken. As such, the monitoring and evaluation stages of a management plan should be implemented early on. It is a crucial aspect of a management plan because it[3]:

- Informs on the status of the management plan;
- Identifies areas of the management plan that require improvement;
- Identify new opportunities for management; and,
- Determines where additional financial or logistical support is needed, or where cuts can be made.

A key component of monitoring and evaluation is the identification of performance metrics. Knowing which metrics are needed in order to assess the status of an objective is important because it ensures that time and resources are not wasted in the collection of unnecessary data. Therefore, each objective should be carefully reviewed to determine what type of data would best measure the performance of each objective.

The type of data that is collected for monitoring and evaluation depends on the performance metrics that are identified and selected by Fisheries Managers for each of the management objectives. Metrics will vary for social, economic, ecological or biophysical indicators, and may be collected by various departments, agencies or organizations. However, it is the responsibility of the agency assigned for specific management objectives to compile the relevant data from its various sources and perform an evaluation. While data should be continuously collected, the evaluation process should be conducted at

[3] Thia-Eng, C. (1993). Essential elements of integrated coastal zone management. *Ocean & Coastal Management, 21*(1-3), 81-108.

consistent and pre-determined intervals. It should also be done "objectively", which may in some circumstances require a third-party to conduct an independent evaluation.

2.2 REVIEW OF MANAGEMENT PRIORITIES/ OBJECTIVES

2.2.1 Sub-Regional FMP Objectives

The following series of tables provide an overview of the objectives of the Sub-Regional Fisheries Management Plan (FMP) for the Eastern Caribbean flyingfish fishery. For each general objective there is also one or more operational objective associated with it, as well as a list of actions and indicators. In some cases, specific milestones and responsible agencies are also defined. In the case of general objective 2.1, seven operational objectives were listed in the sub-regional FMP, each with their own set of actions and indicators, which therefore warranted an individual table for each operational objective.

All Objectives and Sub-objectives are presented, as written in the revised sub-regional Management Plan, including target dates or trigger point harvest levels, without alteration despite the obvious need to revise these targets.

Management Goal 1 Sustained Fishery Resource
General Objective 1.1 Sustained Resource

General objective 1.1: Prevent overfishing to maintain a healthy stock and ensure that there are flyingfish available for future generations.

Operational Objectives	Current average catch rates sustained over the long-term and throughout the area of distribution Stock biomass is maintained at or above MSY level
Actions	Adoption of a precautionary sub-regional total annual catch trigger point of 5000 tons, at which point further action shall be taken to ensure the stock does not become overfished; Conduct an assessment to estimate stock abundance of flyingfish, such as a regional synoptic survey, prior to any significant development in the fishery.
Indicators	Average CPUE Total landings Stock abundance
Responsible Agency	Fisheries Divisions
Milestones	Catch trigger point in place by 2019/2020.

General Objective 1.2 Accurate information

General Objective 1.2: Ensuring that an effective data collection system is in place to provide accurate information and knowledge about the state of the fishery

Operational Objectives	National data collection improved and gaps filled
Actions	The strengthening of the current national data collection systems to facilitate: assessment of the resource status and establishment of improved management target and reference points; estimation of existing levels of fishing effort and fishing capacity Monitoring and evaluation of the status of implementation of the national and sub-regional fisheries management plans against the objectives and indicators agreed upon.
Indicators	Sampling coverage Sampling design
Responsible Agency	Fisheries Divisions in collaboration with universities, consultants, NGOs
Milestones	New data collection systems in place 2019/2020

Management Goal 2. Effective fisheries management
General Objective 2.1 Effective management

General Objective 2.1: Ensuring that there is an effective system for adaptive and responsive management and enforcement

Operational Objective 1	Establish authorized access to fishery
Actions	Establishment of an authorized national entry (license/permit) system for flyingfish fisheries
Indicators	License/permit system operational
Responsible Agency	Fisheries Divisions
Milestones	All fleets licensed by 2020.

General Objective 2.1: Ensuring that there is an effective system for adaptive and responsive management and enforcement

Operational Objective 2	Establish precautionary measures as required
Actions	Implementation of a precautionary sub-regional freeze on expansion of flyingfish fishing effort and/or fishing capacity applied to all authorised vessel types, should the agreed catch trigger point be realized, and timely reassessment of the resource status and identification of any required changes to the management measures
Indicators	Variety of indicators as required (e.g. fleet size)
Responsible Agency	Fisheries Divisions
Milestones	Freeze in place by 2019.

General Objective 2.1: Ensuring that there is an effective system for adaptive and responsive management and enforcement

Operational Objective 3	Ensure ability to make and enforce management decisions.
Actions	Develop a protocol to improve and harmonize fisheries management legislation, to address specifically flyingfish vessel licensing and registration systems in the sub-region.
Indicators	Legislation and regulations in place and enforced. Number of infractions.
Responsible Agency	National governments
Milestones	Legislation and regulations in place by 2019/2020.

General Objective 2.1: Ensuring that there is an effective system for adaptive and responsive management and enforcement

Operational Objective 4	Ensure ability to collaborate effectively with stakeholders and other countries and organizations both vertically and horizontally.
Actions	Create stakeholder networks to encourage engagement. Hold regular stakeholder consultation meetings.
Indicators	Number of stakeholders engaged in consultation and feedback
Responsible Agency	None Given
Milestones	None Given

General Objective 2.1: Ensuring that there is an effective system for adaptive and responsive management and enforcement

Operational Objective 5	Adaptation to external drivers/ perturbations
Actions	Conduct research on the impacts of global warming and ocean acidification, invasive species, FADs
Indicators	Ocean pH and temperature, Presence of invasive species (Sargassum).
Responsible Agency	Environmental Ministries
Milestones	None Given

General Objective 2.1: Ensuring that there is an effective system for adaptive and responsive management and enforcement

Operational Objective 6	Data are seamlessly shared between countries.
Actions	Establish a harmonized sub-regional database
Indicators	Sub-regional database operational
Responsible Agency	None given
Milestones	Harmonized regional database in place 2019/2020

General Objective 2.1: Ensuring that there is an effective system for adaptive and responsive management and enforcement

Operational Objective 7	Timely submission of data and information to CRFM
Actions	Annual reporting, by States with a real interest in the flyingfish fishery to the CRFM and, similarly, non-CRFM Member States to the WECAFC, on progress made in development and implementation of national fisheries management plans (including associated proposed management measures) and submission of catch and effort data for flyingfish fisheries in an agreed, standardized format, to the respective Secretariats.
Indicators	Annual submission of data
Responsible Agency	None given
Milestones	First annual report uploaded to database 2020.

Management Goal 3. Optimal use of fishery for long-term benefit
General Objective 3.1 Social benefits and economic/financial returns

General Objective 3.1: Ensure 0ptimal social, economic and financial benefits for all involved in the fishery.

Operational Objective	Optimize social, economic and financial benefits derived from the fishery.
Actions	Conduct socio economic assessment of fishery and post-harvest industry. Identify methods for adding value to the flyingfish products and building capacity along the value chain.
Indicators	Percent population employed in the fishery Average household income Return on investment Credit access Value of flyingfish products
Responsible Agency	Labour Ministries
Milestones	None given

General Objective 3.2 Affordable food source

General Objective 3.2: Ensure that flying fish remains an affordable and available source of food for the future.

Operational Objective	Ensure that flying fish remains an affordable and available source of food for the future.
Actions	Implement market adjustments to maintain demand and affordability.
Indicators	Per capita fish consumption Percentage of population consuming flyingfish Market price of flyingfish Average market price
Responsible Agency	None given
Milestones	None given

General objective 3.3 Fair access to fishing grounds

General Objective 3.3: Ensure fair access to fishing grounds and minimize conflict/competition with other resource sectors/users.

Operational Objectives	Ensure fair access to fishing grounds Minimize conflict/competition with other resource sectors/users.
Actions	Create or support the creation of marine spatial plan to mitigate potential conflicts between resource user groups.
Indicators	Number of vessels and fishers licensed, Bilateral/multilateral access agreements in place Number of conflicts with other resource users.
Responsible Agency	Fisheries Divisions Energy sector Tourism sector
Milestones	Spatial plan completed by 2020

General objective 3.4 Optimal utilization/processing for domestic and export markets

General Objective 3.4: Promote fish quality and safety for consumers and develop value addition for the post-harvest sector for domestic and export markets.

Operational Objectives	Promote fish quality and safety for consumers. Develop value addition for the post-harvest sector for domestic and export markets.
Actions	Improve access to and safety of landing site facilities, and repair damaged infrastructure. Install ice machines at landing sites. Implement Health and Food Safety quality standards for all landing and processing facilities.
Indicators	Fish and fishery products related SPS standards (e.g. HACCP) Value of post-harvest production Export value
Responsible Agency	Fisheries Divisions in collaboration with fishing community
Milestones	All landing and processing facilities meet HACCP standards by 2021

Management Goal 4. Sustained ecosystem health

General Objective 4.1 Healthy Habitat

General Objective 4.1: Ensure healthy habitat with minimal degradation and minimal cumulative impacts from pollution, seismic oil and gas exploration, climate change and other negative effects.

Operational Objectives	Maintain off-shore pelagic habitat health. Minimize habitat degradation.
Actions	Create harmonized regional coastal water quality standards for the protection of aquatic life, measured in the receiving environment, especially near areas of oil exploration.
Indicators	Water quality (e.g. adapted from Environment Canada Guidelines for the Protection of Aquatic Life Marine debris/pollution occurrence
Responsible Agency	Environmental Ministries
Milestones	Water quality guidelines implemented and enforced by 2020.

General Objective 4.2 Healthy and resilient ecosystem

General Objective 4.2: Maintain marine biodiversity and balanced trophic levels in the marine ecosystem.

Operational Objectives	Maintain aquatic biodiversity and balanced ecosystem Adaptation to climate change and weather extremes
Actions	Establish catch size limits for pelagic fishes trophically linked to flyingfish to encourage natural species and size compositions and trophic levels in the pelagic fishery.
Indicators	Species composition of catches (including size) Trophic levels (predator –prey composition) Adaptation and vulnerability indicators
Responsible Agency	Fisheries Divisions
Milestones	100% mature fish catch in the pelagic fishery by 2021

2.3 MEMBER STATE MANAGEMENT OBJECTIVES

Similar to the Sub-Regional FMP, some Member States have fisheries management plans with multiple broad objectives, each with specific sub-objectives. Monitoring and evaluation of performance of each broad and specific sub-objective will involve differing information from multiple sources to evaluate performance in achieving these objectives. This will involve coordination amongst various departments, agencies and organizations. The following provided a review of the most recently available Fishery Management Plans for selected countries.

As in the case of the Sub-regional FMP above, all Objectives and Sub-objectives are presented, as written in the national Management Plans, including specific targets, without alteration, despite the obvious need to revise these targets.

2.3.1 Barbados

The following are the goals and associated objectives for the harvest sector outlined in the 2004-2006 Barbados FMP:

Trained and well-informed fishers and fisherfolk organizations playing an active and vital role in the sustainable management of the fisheries resources and in quality assurance of seafood.

- Prepare a compendium of existing information/data on each of the local fisheries.
- Work with fishers to transform existing fisheries data into user-friendly information in the form of videos, posters, brochure, newsletters.
- Distribute information via radio, television, seminars, training courses, exhibitions and extension.
- Investigate why existing fisherfolk organizations are not functioning effectively.
- Work with stakeholders to strengthen fisherfolk organizations and foster wider cooperation in the harvest sector.
- Work with stakeholders to implement, monitor and review the agreed strategies for enhancing stakeholders' participation.
- Hold seminars, workshops and site meetings on regional and international issues impacting on local fisheries.
- Strengthen harvest sector legislation by amendment and re-drafting.
- Develop compliance guidelines.
- Develop public awareness programmes for legislation.

- Sensitize the enforcement agencies on the importance of enforcing fisheries management regulations.
- Strengthen the monitoring and surveillance capabilities of appropriate enforcement agencies.
- Involve fishers in monitoring and enforcement programmes.
- Source Government and non-Government funding and assistance for major projects.
- Build trust between fishers and Government by working closely with fishers on major fisheries issues.
- Assess the harvest sector training needs of fishers.
- Collaborate with other local training institutions and fishers to develop training courses to meet the harvest sector's needs.
- Have courses certified and recognized at the national level.
- Sensitize fishers to the benefits of training.
- Institute mandatory training for boat captains in safety at sea, navigation and fish handling.

Well-maintained and designed vessels complying with national legislation and standards for design, construction, safety at sea and hygienic storage and handling of fish.

- Finalize the draft legislation safety and fish handling.
- Prepare guidelines on compliance with legislation.
- Work with fishers in implementing and enforcing standards.
- Mandatory training of fishers in vessel maintenance, basis engine care, fishing vessel management, safety at sea.
- Provide user-friendly information, extension and training materials.
- Promote the use of maintenance plans by boat owners and captains.
- Conduct frequent spot inspections of vessels by Authorized Officers.
- Improve the Government hurricane preparedness plans and include mitigation measures, recovery and rehabilitation.
- Encourage boat owners to prepare hurricane preparedness plans.
- Conduct disaster management workshops for stakeholders.
- Provide training in boat design, construction, inspection, certification and safety at sea.
- Work with existing boat builders to improve design, construction and methods.
- Encourage experienced and approved boat builders to offer apprenticeships in boat building.
- Develop strategies to recruit young people to careers boat building.
- Ensure that onboard fish storage facilities are appropriately designed and properly maintained.
- Provide mandatory training in handling of catch at sea and offloading at landing sites.
- Work with fishers to improve their fish handling techniques.

Fishers using responsible fishing practices and not engaged in activities that undermine the effectiveness of any accepted national, regional or international fisheries management measures.

- Identify existing irresponsible fishing practices.
- Educate fishers about the dangers of irresponsible fishing practices through promotion of the Code of Conduct for Responsible Fisheries.
- Update existing legislation and develop new legislation from time to time to counteract existing and new in irresponsible fishing practices.
- Put systems in place to monitor fishing and enforce legislation.
- Work with regional counterparts to promote the use of responsible fishing practices throughout the region.
- Acquire journals, literature and videos of new fishing technology and techniques for the Fisheries Division library.

- Make the material accessible to stakeholders through the Fisheries Division's library and via the internet.
- Where necessary convert material into user-friendly information for dissemination to stakeholders.
- Use the Fisheries Division's vessel to demonstrate the use and advantages of the new fishing technology and techniques.
- Conduct cost benefit analyses to demonstrate the effectiveness of the new fishing technology and techniques.
- Promote beneficial new fishing technology and techniques.
- Evaluate local fishing capacity.
- Develop an action plan for managing local fishing capacity.

Modern and appropriate infrastructure that supports the loading of supplies, sanitary offloading of catch, and construction or repair of vessels.

- Continue to work with stakeholders to assess the existing loading and offloading facilities and identify the needs.
- Review the management and operation of landing facilities and upgrade as necessary.
- Put measures in place to ensure the proper maintenance of fish landing facilities and delivery of services to the stakeholders.
- Peruse the construction of boatyards facilities in Bridgetown and the north of the island.
- Remove derelict and unused vessels from active boatyard areas.
- Ensure the proper management and upkeep of existing and new boatyards.

Fishers supporting and benefiting from social services which contribute to their well-being in times of need.

- Sensitize fisherfolk on the benefits of contributing to the National Insurance Scheme, pension plans and other personal insurance schemes.
- Work with National Insurance Scheme, insurance companies and fishers to develop strategies to that will enable fishers to contribute to and benefit from social programmes.

Local and regional fisheries stakeholders working together to manage national and shared fisheries resources.

- Assist local fishers in seeking funding for projects that will bring regional fishers together to discuss their common interests and set up channels of communication to facilitate ongoing discussion.
- Support regional initiatives to set up regional fisherfolk organization.
- Work with other countries to develop and strengthen the Caribbean Regional Fisheries Mechanism.
- Promote the need for a regional fisheries policy.
- Work with local and regional fisheries stakeholders to draft a regional fisheries policy and identify the necessary mechanisms and resources to put such a policy in place.
- Support regional efforts to set up better linkages among regional fisheries institutions.
- Goals and associated objectives for the post-harvest sector in the 2004-2006 FMP:

Trained fishers, informed fisherfolk organizations and other stakeholders playing an active role in fish quality assurance, food safety and small business enterprises.

- Assess the post-harvest stakeholders training needs.

- Collaborate with other local training institutions and stakeholders to develop training courses and extension programmes to meet the post-harvest needs.
- Have courses certified and recognized at the national level.
- Institute mandatory training for primary post-harvest stakeholders.
- Provide signage on fishing handling at the markets.
- Build the institutional capacity necessary to deliver the training courses and extension programmes.
- Source Government and non-Government funding and assistance in local and overseas training of government and non-government stakeholders.
- Work with stakeholder to develop user-friendly information on the handling of fish and the operation of small business enterprises, in the form of videos, posters, brochures, newsletters.
- Institute mandatory training in fish handling for primary post- harvest stakeholders.
- Investigate why existing fisherfolk organizations are not functioning.
- Work with fisherfolk to strengthen their organizations.
- Seek international assistance in the fisherfolk organizations.
- Work closely with stakeholders in decision-making on post- harvest issues.
- Involve stakeholders in implementation, monitoring of post- harvest standards.
- Source suitable training for fisheries and market staff.
- Develop and disseminate user-friendly material to sensitize the public on fish quality issues.
- Place appropriate quality assurance signage at strategic locations in the market place.

Adequate National seafood legislation and standards with systems and procedures in place to ensure compliance.

- Finalize fish quality and inspection legislation and standards.
- Prepare compliance information.
- Work with stakeholders to implement, enforce and monitor compliance.
- Set up an enforcement unit with trained inspectors.
- Develop clear enforcement and monitoring procedures and guidelines.
- Provide local and overseas training for inspectors.
- Develop stakeholder and public awareness programmed.
- Conduct training workshops for stakeholders.
- Post appropriate signage at strategic location.

Individuals and agencies producing and marketing quality value-added seafood products.

Seek technical assistance to identify economically viable valued-added products using local fish.

- Prepare technical information package on the production of valued-added items.
- Put systems in place to encourage investment in the production of valued-added items (including incentive and financial support).
- Provide technical and training assistance to stakeholders.
- Promote the production of valued-added production.
- Strengthen the Fisheries Division's capability to conduct extension and technical training in the production of value- added products.

Flyingfish Goals and Objectives

The flyingfish fishery falls within the pelagic fisheries of Barbados and has one goal associated with it:

Regional cooperation in the management and sustainable utilization of these shared resources

- Promote and collaborate in the development and implementation of a harmonized regional data collection and recording programmed.

- Collaborate with fishers and students in fisheries research.
- Engage in joint regional fisheries research especially stock assessments for example the CRFM working groups on large pelagics and the FAO ad hoc flyingfish working group.
- Increase participation in ICCAT data collection and assessments.
- Promote the concept of a common regional fishing zone.
- Where necessary, negotiate fishing access agreements with neighbouring states.
- Develop mechanisms to facilitate local stakeholder inputs into regional and international management decisions.
- Assist in the formation and work of viable regional decision-making and management mechanisms for regionally shared fishery resources such as flyingfish and dolphinfish.
- Play a more active role in formulation of policies and management measures for internationally shared large pelagic stocks at appropriate international forums such as ICCAT.
- Implement the provisions of regional and international agreements that facilitate management of shared stocks.

The 2004-2006 FMP also lists possible additional management measures to be considered for the flyingfish fishery. These management measures take the form of general objectives that either complement or reiterate the goal and objectives listed above:

- Promote the establishment of a regional organization or arrangement for making management decisions concerning shared resources.
- Cooperate and collaborate with Caribbean states to assess and manage the resources.
- Promote collaboration and cooperation between government and the fishing industry in the management of this resource.
- Possibly control increases in fishing effort by adopting a precautionary approach to licensing new vessels.

2.3.2 Grenada

The draft FMP from 2002 outlines the following general strategic objectives for fisheries management and development in Grenada:

- Sustain and increase yields from fisheries resources for the purpose of satisfying and enhancing human food consumption and in general contributing to the socio-economic options available to the Grenada community.
- Provide for recognition of the fishing industry as a key factor of production within an integrated national economy.
- Highlight Traditional Fisheries-based Knowledge as a contributor to both fishing community and national development
- Apply the concept of maximum sustainable yield in the management of specific stocks and habitat and use as reference point in conservation and management programmes.
- Highlight and promote the approach of gear selectivity as a point of reference for managing the application of appropriate technology in targeting species and stocks within the fisheries.
- Ensure that fisheries waters, fish stocks, habitat and sea space are protected from misuse by either local or foreign fishers.
- Ensure that various fisheries sector services providers are controlled and facilitated for the socio-economic development of the Grenada community as a whole.
- Ensure that all fish trade and fish production utilization activities are consistent with the UNFAO Code of Conduct for responsible fisheries and with international agreements such as CITES.
- Promote the Eco-systems Approach to a management of stocks and habitat in the fishery waters of Grenada.

- Apply the Co-management Approach to all the fisheries management and development programmes.
- Establish and maintain a data and information system so as to facilitate management and development within the fisheries sector.
- Promote an integrated, appropriately-scaled and cost-effective physical fisheries infrastructure and also provide for human resource development within the sector.
- Ensure the security of the fishing fleet by facilitating Safety at Sea, ship to shore communications support and with demarcation of marine boundaries defining the fishing zone.
- Establish and maintain human resource capabilities for conducting or facilitating needs-research with respect to fisheries management and development.
- Cooperate with other nation states in the management of shared, straddling and highly migratory fish stocks.

2.3.3 Trinidad & Tobago

A Fisheries Management Bill was drafted in 2011, however, it does not appear to have been adopted. Part V of the Bill calls for the development of an FMP and outlines in article 41 the management objectives that should be included:

- In setting management objectives for each fishery, priority shall be given to long-term sustainability of resources, as qualified by relevant environmental and socio-economic factors.
- Secondary management objectives may be established to provide inter alia that:
- the economic conditions under which the fishing industry operate promote responsible fisheries;
- the interests of fishers, including those engaged in artisanal fisheries, are taken into account;
- biodiversity of aquatic habitats and ecosystems is conserved, and endangered species are protected;
- depleted stocks are allowed to recover or, where appropriate, are actively restored;
- adverse environmental impacts on the resources from fishing, including pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, and impacts on associated or dependent species, are minimized.

2.4 PERFORMANCE METRICS

To ensure efficiency of time, financial and human resources in the monitoring and evaluation process, it is necessary to determine the metrics for monitoring the performance of the management plan that are readily and cost-effectively measurable. The following subsections review each objective given in the sub-regional and Member State FMPs and provide a corresponding list of metrics, as well as sources of information for those metrics that can be used to monitoring management performance.

2.4.1 Sub-Regional FMP Performance Metrics

The sub-regional FMP provided a list of indicators for each objective, but not the metrics or sources of information to assess the metrics. As such, each objective and its corresponding indicators were assessed, and metrics and sources of information were identified. Catch and landings data, number of fishers' organizations, number of licensed and registered vessels and number of licensed and registered fisherfolk were the metrics identified for multiple objectives of the sub-regional FMP. When evaluating the fishery based on these metrics, logbooks, fisherfolk organization surveys and reports, government reports, and registration databases are the main sources of information that should be reviewed.

Objective	Indicators Given	Metric	Information Source
Prevent overfishing to maintain a healthy stock and ensure that there are flyingfish available for future generations.	Average CPUE Total landings Stock abundance	Number of fish caught Amount of fish landed Number of days fished	Logbooks Government field reports (dockside and fish markets)
Ensuring that an effective data collection system is in place to provide accurate information and knowledge about the state of the fishery	Sampling coverage Sampling design	Number of logbooks distributed to licensed fishers Number of completed logbooks Number of fisherfolk organizations	Logbooks Survey of fisherfolk organizations
Ensuring that there is an effective system for adaptive and responsive management and enforcement.	License/permit system operational Variety of indicators as required (e.g. fleet size) Legislation and regulations in place and enforced. Number of infractions. Number of stakeholders engaged in consultation and feedback. Ocean pH and temperature, Presence of invasive species (Sargassum). Annual submission of data.	Number of completed logbooks Field sampling data Number of registered and/or licensed fishing vessels Number of fisherfolk organizations Number of members in fisherfolk organizations Number of licensed fisher folk Catch and Landings data	Logbooks Licensing and registration databases Government field reports Fisherfolk Organization reports
Ensure 0ptimal social, economic and financial benefits for all involved in the fishery.	Percent population employed in the fishery Average household income Return on investment Credit access Value of flyingfish products	Employment data in harvesting, marketing, processing and distributing sectors Cost earnings Wages and salaries Unit price of fish Export weight and value Enterprise counts	Government reports Employment statistics Census Market reports (domestic, export/ import)
Ensure that flying fish remains an affordable and available source of food for the future.	Per capita fish consumption Percentage of population consuming flyingfish Market price of flyingfish Average market price	Weight and value of fish Cost per unit effort Enterprise counts Value chain analysis	Survey Government reports Academic research

Objective	**Indicators Given**	**Metric**	**Information Source**
Ensure fair access to fishing grounds and minimize conflict/competition with other resource sectors/users.	Number of vessels and fishers licensed, Bilateral/multilateral access agreements in place Number of conflicts with other resource users.	Number of incidents reported annually Number of bilateral and multilateral agreements in place Number of sectors (users) who want access to the same space	Government Reports Incident reports Census/ Statistics Logbooks
Promote fish quality and safety for consumers and develop value addition for the post-harvest sector for domestic and export markets.	Fish and fishery products related SPS standards (e.g. HACCP) Value of post-harvest production Export value	Enterprise counts Catch and landings data Percentage of product waste at markets and processing facilities Number of fishers who participate in training programs on fish handling	Government Reports Surveys Logbooks
Ensure healthy habitat with minimal degradation and minimal cumulative impacts from pollution, seismic oil and gas exploration, climate change and other negative effects.	Water quality (e.g. adapted from Environment Canada Guidelines for the Protection of Aquatic Life Marine debris/pollution occurrence	Number of people employed in collecting water quality data Frequency of water quality testing	Government Reports Surveys Academic reports Field reports
Maintain marine biodiversity and balanced trophic levels in the marine ecosystem.	Species composition of catches (including size) Trophic levels (predator –prey composition) Adaptation and vulnerability indicators	Number of fish caught Amount of fish landed Number of days fished Number of protected areas	Logbooks Field reports Government reports

2.4.2 Member State Management Performance Metrics

2.4.2.1 Barbados

The following table provides a list of metrics and information sources that can be used to monitor and evaluate the objectives presented in the 2004-2006 Barbados Fisheries Management Plan. Metrics regarding employment, training and budget were common, and therefore employment statistics, government budget reports, and surveys were the most common sources of information listed. Government reports and logbooks are also important sources of information since they can provide data on licensing and registration, and catch and landings.

Objective	Metric	Information Source
Trained and well-informed fishers and fisherfolk organizations playing an active and vital role in the sustainable management of the fisheries resources and in quality assurance of seafood.	Number of training sessions available on an annual basis Number of training and information materials provided to fishers annually Budget available for training Number of people employed in providing training Number of people employed in monitoring for quality compliance Budget available for quality compliance monitoring	Employment statistics Government budget reports Survey of fisher organizations
Well-maintained and designed vessels complying with national legislation and standards for design, construction, safety at sea and hygienic storage and handling of fish.	Vessel inspection rubric or template Number of vessels inspected annually Number of people employed in compliance monitoring Budget available for compliance monitoring Number of training sessions available on an annual basis Number of training and information materials provided annually Budget available for training	Fisheries Division reporting Government budget reports Employment statistics Annual survey of industry
Fishers using responsible fishing practices and not engaged in activities that undermine the effectiveness of any accepted national, regional or international fisheries management measures.	Number of licensed fishers Number of licensed vessels Number of licensed fishers with logbooks Percentage of completed logbooks Number of infractions per year Budget available for training fishers' in record keeping and responsible fishing practices Number of training sessions available per year Number of people employed in compliance monitoring Budget available for compliance monitoring	Government reporting Fishermen organization survey Government budget reports Employment statistics Logbooks
Modern and appropriate infrastructure that supports the loading of supplies, sanitary offloading of catch, and construction or repair of vessels.	Number of accidents or near accidents Number of vessels per landing site Number of landing sites with appropriate infrastructure Periodic assessments of landing sites Number of people employed in the maintenance and construction of appropriate infrastructure Budget available for maintenance and construction of appropriate infrastructure	Annual survey Employment statistics Budget reports
Fishers supporting and benefiting from social services	Management instruments to promote fisher participation in social service	Census/ Statistics Government reports

Objective	Metric	Information Source
which contribute to their well-being in times of need.	programs Periodic audit	
Local and regional fisheries stakeholders working together to manage national and shared fisheries resources.	Number of programs/ working groups/ organizations that facilitate collaboration between local and regional authorities	Annual survey Budget reports Fisherfolk organization survey and reports Government reports and statistics
Trained fishers, informed fisherfolk organizations and other stakeholders playing an active role in fish quality assurance, food safety and small business enterprises.	Number of training programs delivered annually Budget available for training programs Number of fisherfolk organizations delivering training Number of fishers that are members of fisherfolk organizations Census	Fisherfolk organization annual survey Budget reports Government reporting and statistics
Adequate National seafood legislation and standards with systems and procedures in place to ensure compliance.	Number of infractions per year Budget available for monitoring compliance Number of people employed in compliance monitoring	Budget reports Employment statistics Government reporting
Individuals and agencies producing and marketing quality value-added seafood products.	Percentage of value-added seafood products Number of businesses involved in value-added products	Survey
Regional cooperation in the management and sustainable utilization of these shared resources.	Number of formal collaboration instruments between nations Budget available for participation in regional organization management activities.	Government reporting Government budget reports

2.4.2.2 Grenada

The following table presents the metrics and sources of information identified for each of the objectives listed in the draft 2002 Fisheries Management Plan for Grenada. Catch and landings data, budget, training, and employment are the major themes present in the metrics. As such, logbooks, budget reports, surveys, employment statistics and government reports are the information sources that were most commonly identified.

Objective	Metric	Information Source
Sustain and increase yields from fisheries resources for the purpose of satisfying and enhancing human food consumption and in general contributing to the socio-economic options available to the Grenada community.	Number of fish caught Amount of fish landed Number of days fished % of landings sold in domestic market Number of people employed along value chain Landed volume and value Cost and earnings of harvesters Costs and revenues associated with marketing, processing, distributing and retailing	Log books Employment statistics Survey Government reporting and statistics

Objective	**Metric**	**Information Source**
	Total imports and exports Enterprise counts	
Provide for recognition of the fishing industry as a key factor of production within an integrated national economy.	Economic assessment of fishery (contribution to GDP) Presence of policies regarding blue economy	Government reporting and statistics
Highlight Traditional Fisheries-based Knowledge as a contributor to both fishing community and national development.	Number of traditional knowledge studies on generation, mobilization, and protection of traditional knowledge Institutional organizations in fishing sectors and national departments related to traditional knowledge	Survey Government reports
Apply the concept of maximum sustainable yield in the management of specific stocks and habitat and use as reference point in conservation and management programmes.	Number of fish caught Amount of fish landed Number of days fished Calculation of maximum sustainable yield on annual or biannual basis Budget for stock assessment Number of people employed in stock assessment	Logbook Government report Government budget report Employment statistics
Highlight and promote the approach of gear selectivity as a point of reference for managing the application of appropriate technology in targeting species and stocks within the fisheries.	Budget for gear acquisition and enhancement Number of training programs Budget for training Number of people employed in training	Budget reports Employment statistics Survey
Ensure that fisheries waters, fish stocks, habitat and sea space are protected from misuse by either local or foreign fishers.	Number of people employed in compliance monitoring Catch documentation scheme in place Number of infractions Budget for compliance monitoring Number of MPAs in place	Employment statistics Budget reports Survey Government reporting
Ensure that various fisheries sector services providers are controlled and facilitated for the socio-economic development of the Grenada community as a whole.	Number of fishery sector representatives participate in Government funded and operated training programs Number of registered and licensed fishers	Government reports Survey
Ensure that all fish trade and fish production utilization activities are consistent with the UNFAO Code of Conduct for responsible fisheries and with international agreements such as CITES.	Budget for training Number or people employed in training Budget for compliance monitoring Number of people employed in compliance monitoring Rubric or template for monitoring compliance	Budget reports Employment statistics
Promote the Eco-systems Approach to a management of	Number of training programs delivered Number of people employed in	Budget reports Employment statistics

Objective	Metric	Information Source
stocks and habitat in the fishery waters of Grenada.	training Budget for training	Survey
Apply the Co-management Approach to all the fisheries management and development programmes.	Number of fishermen's organizations Number of fishers that are members of fisherfolk organizations Number of programs/ working groups facilitating collaboration	Survey Government reporting Fisherfolk organization reporting
Establish and maintain a data and information system so as to facilitate management and development within the fisheries sector.	Percentage of completed logbooks Number of data collectors and data analysts trained in the Fisheries Division Percentage of data that is inputted into database system Budget available for data management	Logbooks Survey Government reports Budget reports
Promote an integrated, appropriately-scaled and cost-effective physical fisheries infrastructure and also provide for human resource development within the sector.	Number of landing sites with appropriate infrastructure Periodic assessments of landing sites Number of people employed in the maintenance and construction of appropriate infrastructure Budget available for maintenance and construction of appropriate infrastructure Budget for training and development Number or people employed in training and development	Sector wide annual survey Employment statistics Budget reports
Ensure the security of the fishing fleet by facilitating Safety at Sea, ship to shore communications support and with demarcation of marine boundaries defining the fishing zone.	Number of fishers participated in Safety at Sea and other training	Survey
Establish and maintain human resource capabilities for conducting or facilitating needs-research with respect to fisheries management and development.	Number of staff within Fisheries Division Budget for training Budget for hiring Collaboration agreements between Fisheries Division and regional academic institutions	Government reports Survey
Cooperate with other nation states in the management of shared, straddling and highly migratory fish stocks.	Number of formal collaboration instruments between nations Budget available for participation in regional organization management activities	Budget reports Government reports

2.4.2.3 Trinidad & Tobago

The following table summarizes the metrics and information sources identified for each objective outlined in Trinidad & Tobago's 2011 draft Fisheries Management Bill. Since these objectives are more like general principles, they are quite vague and difficult to measure. As such, the metrics identified are not an

exhaustive list because the objectives themselves are not specific. Similar to the trend of the tables above, catch and landings data and the number of registered and licensed fisherfolk were identified for multiple objectives. Logbooks and Government reports were the two most common sources of information identified.

Objective	**Metric**	**Information Source**
In setting management objectives for each fishery, priority shall be given to long-term sustainability of resources, as qualified by relevant environmental and socio-economic factors.	State of the fishery Socio-economic condition of the fishing sector	Government reports Census and statistics
the economic conditions under which the fishing industry operate promote responsible fisheries;	Number of fish caught Amount of fish landed Number of days fished Number of registered and licensed fishers Number of incidents of IUU fishing reported Cost and earnings data	Logbooks Government reports
the interests of fishers, including those engaged in artisanal fisheries, are taken into account;	Number of fisherfolk organizations Number of meetings held with fisherfolk organizations annually	Survey Government reports
biodiversity of aquatic habitats and ecosystems is conserved, and endangered species are protected;	Catch documentation scheme in place Number of infringements Number of people employed in monitoring compliance Budget for monitoring compliance	Employment statistics Budget reports Government reports
depleted stocks are allowed to recover or, where appropriate, are actively restored;	Frequency of stock assessments Number of fishery closures Number of research studies conducted	Government reports Academic reports
adverse environmental impacts on the resources from fishing, including pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, and impacts on associated or dependent species, are minimized.	Catch and landings data Number of registered and licensed fishers Budget for training Budget for compliance monitoring Frequency of stock assessments	Government reports Statistics Logbooks

2.5 DISCUSSION AND RECOMMENDATIONS

The success of a management plan requires more than just setting objectives but also requires monitoring the progress of actions to meet these objectives and evaluating their effectiveness. This allows for necessary changes in management actions to be identified and the course of action to be adapted. This is accomplished by way of reviewing and evaluating metrics established for each objective. In the previous section, metrics were identified for each of the sub-regional FMP objectives, as well as the objectives of each Member State. Along with these metrics, we have identified potential sources of information for the

review and evaluation of the respective metrics. Within this framework consideration must be given to where, when, and how management performance will be reviewed.

It should be clearly understood by all persons involved in management performance review that there does not exist a perfect management system. All nations are, or should be, working to enhance their management performance, and third-party experts, who may be involved in performance review, will not have all the answers. Rather, Fisheries Division staff should use external expertise only if deemed necessary to provide different perspective to locally specific circumstance and condition. The process of management performance review should not be undertaken as a means to review staff performance but as a process through which Fisheries Division staff can collectively participate in advancing national and sub-regional fishery management processes.

While monitoring occurs continuously, review and evaluation should take place periodically. The exact interval that is chosen will depend on various factors, such as season, fiscal calendar, capacity within authorized agencies or departments, etc. Intervals can be quarterly, biannually, yearly, biennially, or even in 5- or 10-year increments. It is up to the discretion of the responsible agencies and departments to determine the interval that is most appropriate to ensure adequate management of the fishery.

It is imperative that an effective review and evaluation process be **constructive**, **impartial** and **non-critical**.

These attributes can be achieved through collaboration with an arm's length agent, which may also help to reduce internal costs. In the case of the flyingfish fishery, collaboration with local academic institutions to review and evaluate the performance of the Fisheries Division in meeting their management objectives should be considered since these institutions would be credible and cost-effective collaborative partners.

Another point to consider is the role of legislation in the monitoring and evaluation process. Legislation that requires mandatory vessel licensing and registration, fisher licensing and registration, landing slips, and fisher logbook completion, supports the collection of data that is needed to assess the condition of the fishery and fishing industry. In essence, legislation can provide a basis for monitoring. In the Eastern Caribbean, many Member States do not currently have the capacity or focused efforts to collect the data necessary to adequately evaluate the flyingfish fishery. Catch and landings data, and the number of licensed vessels and fishers are common metrics that were identified for monitoring the objectives outlined in the FMPs. Mandatory landing and purchase slips, logbooks, licenses, and registration would provide a means to monitor the fishery and sources of data for the review and evaluation of the fishery objectives. However, having access to data is only the foundation for management review, and a concerted effort must be made to collect, compile and analyze the data to monitor and review the state of the fishery with respect to multiple management objectives.

As noted above, fisheries managers in the Eastern Caribbean are faced with constraints on both funding and capacity. In order to reduce internal costs and obtain the necessary capacity to undertake the monitoring and evaluation process, Member States should leverage partnerships, collaborations, or sponsorships of the following nature:

- Academic institutions with shared interests, both local and international
- Internship programs for post-secondary and graduate students looking to gain experience;
- International organizations that provide funding;
- Tech companies and startups looking to promote their products; and,
- Citizen science.

With insufficient funding being a major limitation, it is important to explore ways to integrate different metrics so as to reduce costs. For example, some of the common metrics that were listed in the tables of the previous section were related to training and licensing. This included:

- number of licensed fishers,
- number of licensed vessels,
- number of licensed fisherfolk that received training,
- number of training sessions,
- budget for training, and
- number of people employed in training.

If the licensing of vessels and fishers were coupled with training, it could ensure that every vessel operator and fisher have received training prior to registration. Licensing and registration fees could offset some of the costs associated with training, and periodic re-training sessions every 5 to 10 years would ensure that the fleet is up-to-date and aligned with best practices.

Another factor that may undermine the success of the monitoring and evaluation process is the insufficient capacity which can affect morale and cohesion within the Fisheries Divisions, particularly during periods of economic uncertainty hence reduction in budget support for fisheries management. The employment uncertainty within Fisheries Divisions can hinder the success of the Division. Conversely, inefficiencies resulting from staff position vacancies within the Division may also result in individuals being overworked. Resultant internal politics can also place an unnecessary burden on the staff and reduce team efficiency and comradery. An internal evaluation of the Fisheries Divisions is recommended to determine where efficiency can be improved. This can be helpful in advancing overall national fishery management monitoring and evaluation processes. The following actions should also be considered to help improve cohesion of the department and departmental productivity:

- Team building exercises;
- Incentivize good, timely work;
- Realignment of the department's mission and values, and code of conduct;
- Weekly meetings to align the team and update on the progress of ongoing projects; and,
- Implement an internal feedback system that allows for the team to continuously give non-critical feedback on the workings of the department, allowing it to adapt and improve over time.

In consideration of the above, it is recommended that concerted efforts are made by the responsible agencies to determine how and when the monitoring and evaluation process will occur. A periodic review that is constructive, impartial, and non-critical should be undertaken in collaboration with a third-party organization, such as expert consultancies or local academic institutions. Collaborations and partnerships with external groups are also recommended to support the gaps in funding and capacity. Funding opportunities can be creative, such as coupling the income from one regulation to fund training programs or the implementation of other regulations. Finally, an intradepartmental cohesion-building strategy would be beneficial to promote an effective and productive work environment. Together, these shifts would improve the level of monitoring and evaluation taking place in each of the Member States, helping to further the goals set forth in their respective FMPs, as well as the goals of the sub-regional FMP.

3. EAF MANAGEMENT AND POLICY CYCLE IMPLEMENTATION & NATIONAL RECOMMENDATIONS FOR SUB-REGIONAL FMP

3.1 INTRODUCTION

The Ecosystem Approach to Fisheries (EAF) is an attempt to integrate broader sources of information, including socio-economic and biophysical information, that are important for understanding the fishery and management decision-making processes. These differing disciplines use distinct types of information that are derived from various sources and involve multiple terminologies. The quality of the various forms of data needed to support EAF management decision-making is dependent on the reliability of the data sources. Therefore, considerations must be given to what data is needed (i.e. economic data, catch data, effort data, etc.), what is the minimum data needed to understand the state of the fishery and trends, what capacities are required for analysis, and how the information contributes to EAF management.

Much of the information needs are dealt with in other sections of this fishery report. More information is provided in the Final Technical Report: Technical Support on Implementation of Management/ Stress Reduction Measures in the Eastern Caribbean Flyingfish Fishery

3.2 SOCIAL AND ECONOMIC DATA GAPS AND REQUIREMENTS

Fisheries represents an important income and livelihood for people throughout the Eastern Caribbean. Often, the need to meet personal and family requirements for income exceeds the capacity of the biological resource thus leading to conditions where over-harvesting or illegal, unreported and unregulated (IUU) fishing to occur. To address this situation fisheries managers should have a sound grasp on the social and economic condition of the fishing industry, of communities dependent on fisheries, and of global trends in fisheries economy. Married with sound biological and biophysical information on the state and condition of local fish stocks fisheries policies and management plans can be better informed.

Furthermore, the increased global awareness of the economic relationships between ocean resource sectors, climate change and the well-being of coastal populations has led to the emerging concepts associated with the blue economy. This highlights the need to understand the economic and social aspects of the fishery and how they relate to other activities in the marine space. Accordingly, economic understanding of the fishery is important not just to improve fisheries management but also how the fishery relates to other aspects of the blue economy.

While some economic information is collected and compiled by international organizations, much of the economic and social information needed for national decision making is collected locally. This includes information about the value chain of the domestic fishery and information about gender aspects of the local fishing industry. Value chain information involves multiple types of data that provide insight into the incentives, motivations, requirements, state and trends of the local fishing industry.

3.3 VALUE CHAIN COMPONENTS

Fisheries value chain refers to the activities performed to harvest, process, market and distribute seafood products. Value chain analysis provides the opportunity to identify cost and differentiation competitive advantages, such as productivity and processing improvements, buying and distribution efficiencies and value-added opportunities that broaden product markets and industry-level returns. Figure 3.1 illustrates the elements and flows that comprise the flyingfish fishery value chain:

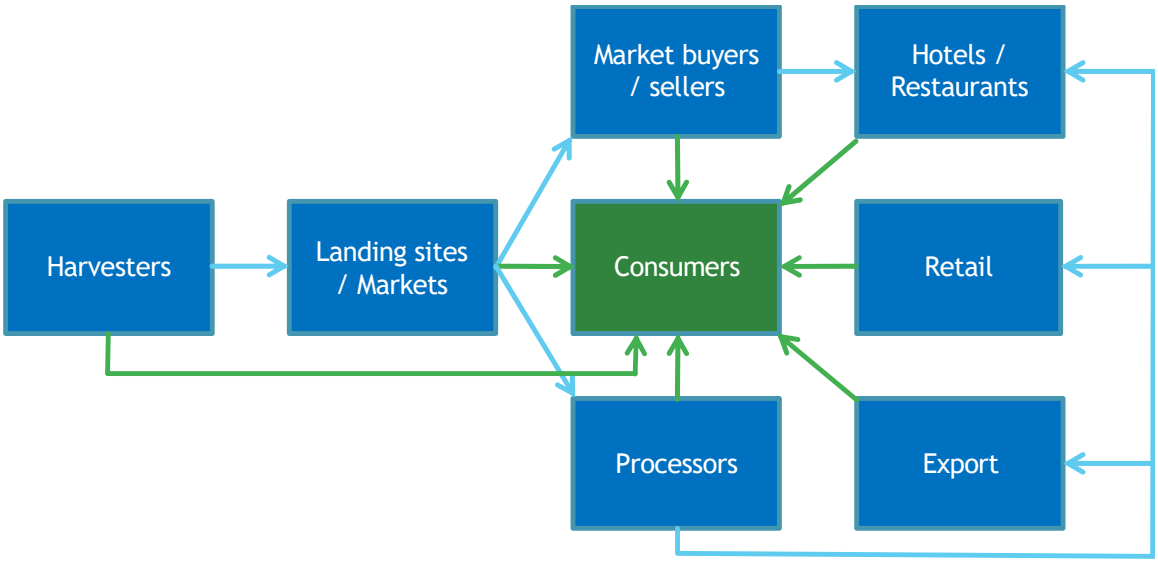

Figure 3.1: Flyingfish Fishery Value Chain Components

It should be noted that Figure 3.1 focuses on the value chain components of Barbados as it has the complex flyingfish value chain in the Eastern Caribbean due to flyingfish being used as a commercial, bait and food fishery.

As with most seafood value chains, consumers can access flyingfish through several different channels. This creates a fluid value chain with several different avenues for flyingfish to get from the sea to the consumer's plate. Through each of these avenues margin increases as the product moves and is transformed through the value chain system. Economic returns tend to be lowest for harvesters who are generally pure price takers. This is particularly true in the flyingfish fishery where product differentiation is virtually non-existent. For example, because flyingfish are sold by the unit or "grain" and measured by the box, price premiums are not currently paid for size, quality, or freshness. Price fluctuates based on the availability of supply, as demand appears to remain fairly constant over time. Data on the cost of harvesting flyingfish was not available, so the calculation of harvester gross margin could not be completed.

Across the value chain there are multiple nodes where social and economic information relevant to fisheries management can be and should be collected. This will be dealt with in greater detail below.

For additional information regarding the value chain analysis of the Eastern Caribbean flyingfish fishery please refer to "Value Chain Analysis Report" under CLME/SP3-FF/EOI-ELW/01/17 Technical Support to Facilitate Long-Term Enhancements of the Livelihoods and Human Well-being for Eastern Caribbean Flyingfish Fisheries project.

3.3.1 Fleet Management Data

A significant investment in the fishery relates to capitalization of the fishing fleet and its ongoing maintenance and operation. As a result, knowledge about the costs of the fleet helps better understand the social and economic condition of the fishery. Information about the fishing fleet can be gathered through multiple sources including, vessel registration and licensing systems, vessel census and surveys of support industries (i.e. boat builders, boat yards, mechanics, etc.).

The rationale and approaches to a vessel census in the Eastern Caribbean should include fiscal and economic considerations that ensure that information collected and compiled on the state of the fishing fleet is cost effective and focuses on the emerging *Blue Economy* approaches to integrated management of the marine sector. Therefore, a census to systematically acquire and record information about the owners and operators of fishing vessels, should be included in a wider data collection program of all boats within all sectors within Member States. A vessel census is an important element of the overall data acquisition and analysis process.

Vessel data compiled during regular censuses provide information on fishing effort and socio-economic condition within the fishery that is needed for effective management planning. Censuses are usually repeated with a fixed frequency, often every five or ten years, to provide a time series of trends and conditions. These censuses should be wide-sweeping to collect information about all vessels including pleasure craft that may be involved in the harvest of target species, such as flyingfish. Unfortunately, Member State's Fisheries Divisions have not completed an up-to-date vessel census and there may be logistical issues related to the coordination with other departments and agencies who may be involved in this process.

Furthermore, information on the fishing fleet can be extracted from a formal national vessel registration system. Fisheries vessels should be registered through the Fisheries Division, while other types of vessels (i.e. recreational fishing, pleasure craft, and transport vessels) should be registered through the appropriate government department responsible for the sector. Proof of vessel registration should be provided by fishers at the time of fisher registration/license renewal. A robust and complete central vessel registration system will reduce the need for frequent censuses; however, censuses are a useful means to verify the completeness and compliance of vessel registration systems and should be conducted on a ten-year cycle.

3.3.2 Gender and Social Data

Gender and social data are often de-emphasized or overlooked in dealing with fisheries management decision-making. However, this information is key to better understanding the state of the human environment in relation to the fishery. Accordingly, collecting sex disaggregated data about people's roles within the fishery, wage structures and educational/training programs is essential to better understand the drivers and means to optimize the benefits of the fishery to local communities.

Gender and social data are not usually maintained within a specific data set within one government agency. As a result, multiple agency information will need to be compiled to better understand gender and social aspects of the fishery. Gender and social data may be gathered by government departments and agencies that are responsible for:

- Environment
- Blue Economy/ Maritime Affairs
- Agriculture
- Education
- Finance, Economic Affairs and investment
- Health and Wellness
- Housing, Lands and Rural Development
- Labour
- People Empowerment
- Small Business, Entrepreneurship and Commerce
- Public Service
- Youth and Community Empowerment.

The following data should be collected and analyzed to better understand the social dynamics and economic benefits of the fishery to inform EAF policies and management processes.

- Sex-disaggregated data on employment
- Men/women ratio of employment in the fishery (harvesters, processors, sellers, marketers, etc.)
- Number of men and women in supervisory and management positions in the fishery departments
- Number of men and women involved in decision making regarding the fishery
- Household decision making power
- Autonomy and empowerment of women within local society/culture
- Economic empowerment
- Gender equity, stigma and discrimination within fishery
- Ration of men and women in fisheries training and educational programs
- Sex-disaggregated data provides a more complete understanding of livelihoods in the fishery sector, which provides decision makers with the necessary information to develop better policies and enhance EAF management processes.

3.3.3 Considerations

Robust EAF management plans can effectively employ value chain data to fully address the economic and social state of the fishery. Much of this information can be collected on a routine basis along the various nodes (i.e. harvest, market, process, broker, retail, and consumer) of the value chain.

Specifically, the following value chain data should be routinely collected and analyzed to support the development and implementation of fisheries policy as well as EAF management purposes:

- Landed weight and value;
- Exported weight and value;
- Cost and earnings of each node in the value chain;
- Wages and salaries for occupations in fishing, fish marketing, processing, transportation / warehousing, fishery related support activities;
- Inputs and outputs from processing facilities; and,
- Labour market demographics and characteristics for the fishery.
- In addition to the economic data collected along the value chain, social information needed to fully understand the health and state of the fishery should be routinely collected from sources outside regular Fisheries Divisions data collection processes. The type of social information needed include:
- Gender specific employment data across value chain nodes;
- Gender and age specific wage and earnings data in the fishery harvesting, processing, marketing and management;
- Training and education levels within each node of the fishery (as well as availability of training and education programs); and,
- Levels of employment and unemployment within fishery dependent communities.

It is recommended that Member States consider including socio-economic data in the information that is collected, analyzed and stored by Fisheries Divisions and other relevant government departments. Additional information of the types of data to collect and the responsible agency is described in detail in. Table 3.1.

Table 3.1: Data Requirements and Responsible Agency

Flyingfish Data Required	Responsible Agency
Harvesters	
Fishing Effort (days)	Fisheries Division – Logbooks filled out by harvesters
Catch (number of species)	Fisheries Division – Logbooks filled out by harvesters
Location of Fishing Activity	Fisheries Division – Logbooks filled out by harvesters
Landed weight	Fisheries Division – Purchased slips filled out by data collectors at landings sites
Landed value	Fisheries Division – Purchased slips filled out by data collectors at landings sites
Number of harvesters/employees	Fisheries Division/ Statistical Office – Through harvester registration systems
Number of vessels by type	Fisheries Division/ Statistical Office – Through vessel registration systems and national vessel census
Harvester income (gender disaggregated data)	Government Department responsible for employment, income and revenue
Hourly wages (gender disaggregated data)	Government Department responsible for employment, income and revenue
Vessel earning (per trip, season, year)	Fisheries Divisions – Logbooks and Landing Slips
Market prices – purchases from harvesters	Government Departments responsible for fish markets
Who buys fish – all buyer types	Government Departments responsible for fish markets - Survey
Vessel operating cost – all types **Fuel** **Equipment** **Labour** **Food**	Fisher Organizations – Surveys; Statistical Office; Fisheries Division
Investment cost to enter fishery **Boats** **Equipment**	Fisher Organizations – Surveys; Statistical Office; Fisheries Division
Percentage of harvester income earned from flyingfish (gender disaggregated data)	Fisheries Division – Landing and purchase slips
Other sources of income / livelihood outside fishery	Fisheries Division and Statistical Office - Survey
Local and traditional knowledge	Fishers' Organizations
Markets	
Employment at markets (gender disaggregated data)	Government Departments responsible for fish markets
Occupations at markets (gender disaggregated data)	Government Departments responsible for fish markets
Wages/salaries for market workers (gender disaggregated data)	Government Departments responsible for fish markets; Statistical Office

Flyingfish Data Required	Responsible Agency
Operating/maintenance costs – markets	Government Departments responsible for fish markets
Processing at markets **Kilos** **Value**	Government Departments responsible for fish markets
Price sold at markets	Government Departments responsible for fish markets
Distribution	
How is flyingfish transported from markets/landing sites?	Government Departments responsible for fish markets - Surveys
Where does it go?	Government Departments responsible for fish markets - Surveys
Cost of transportation/storage (per kilo, per kilometer)	Government Departments responsible for fish markets - Surveys
Processing	
Processing jobs (e.g. cutting, filleting, packaging, etc.)	Government Departments responsible for fish markets – Surveys; Departments responsible for employment
Number of processors	Government Departments responsible for fish markets – Surveys; Departments responsible for employment
Number processing workers/employment	Government Departments responsible for fish markets – Surveys; Departments responsible for employment
Processing worker earnings/hourly wages (gender disaggregated data)	Government Departments responsible for fish markets – Surveys; Departments responsible for employment
Number of days/weeks/months in operation per year	Government Departments responsible for fish markets – Surveys; Departments responsible for employment
Total processing throughput (weight/value) **All species** **Flyingfish**	Government Departments responsible for fish markets – Surveys
Processing revenue/production per year	Government Departments responsible for fish markets – Surveys
Cost of operations/gross margin on revenue	Government Departments responsible for fish markets – Surveys
Price per kilo bought from market	Government Departments responsible for fish markets – Surveys
Flyingfish product forms (e.g. frozen fillets, breaded, etc.)	Fisheries Division and Government Departments responsible for fish markets – Surveys
Cost of production by flyingfish product	Government Departments responsible for fish markets – Surveys
Destination of final products – local (e.g. grocery, hotels, restaurants, etc.) **Percent of sales to each**	Government Departments responsible for fish markets – Surveys

Flyingfish Data Required	Responsible Agency
Destination of final products – export (e.g. grocery, hotels, restaurants, etc.) **Countries** **Percent of sales to each**	Government Departments responsible for fish markets – Surveys
Total value local sales	Government Departments responsible for fish markets; Survey of Retail Marketers and Restaurants
Total value export sales	Government Departments responsible for fish markets; Departments responsible for international trade; Statistical Office
Cost of transportation **By method** **Local** **Export**	Government Departments responsible for fish markets – Surveys
Retail locations/destinations final product	Government Departments responsible for fish markets - Retail Marketers and Restaurants Survey
Total annual retail sales	Statistical Office
Other Industries	
Employment (gender disaggregated data) **Boatbuilding** **Equipment manufacture / sales**	Statistical Office and Departments responsible for employment

3.3.4 Biophysical Data Gaps & Requirements

While fishing is an economic activity that supports the economic, social and cultural well-being of coastal communities, understanding the health and well-being of the natural resource is essential to good management of the industry. Without understanding the status of fishing stocks harvesting efforts can ultimately result in biological and economic decline. Therefore, in addition to understanding the economic state of the fishery and the communities that depend on the industry it is fundamentally important to understand the state of the resource. Sound EAF management involves matching the socio-economic drivers and biophysical limits of the fishery. Accordingly, information related to the biophysical aspects of the fishery should be routinely collected. This can be done through catch and landings reporting/tracking, harvester ecological knowledge and fishery independent surveys.

3.3.5 Catch & Effort Data

Understanding the state of the key resources upon which the fishery is dependent is difficult to determine without extensive long-term data upon which the abundance, age structure and trends in the stocks can be determine. While Member State Fisheries Divisions each have defined landings data collection systems these are implemented to varying degrees depending on the nature and location of the landing sites. There is less attention paid to catch monitoring, which can be important for harvests that are not used for commercial marketing (Bait or food consumption). Since both catch and landings, along with the data on the level of effort used to catch the fish, are used to assess the resource through monitoring trends and model stock status, it is important that due diligence be given to collecting.

It has been recommended that consideration be given to:

- introducing mandatory logbooks for fisheries to record catch and effort, as well as spatial information on their harvests;

- using third-party dockside monitoring and use of purchase slips to provide an independent verification/sources of data; and,
- potentially using electronic monitoring systems to provide real-time data.

3.3.6 Logbooks

As a foundational system for record keeping, requiring all fishers to keep detailed government-issued logbooks of their catch, landings, and other relevant information. Specifically, logbooks can be used to track:

- Date
- Fisher and/or Vessel
- Duration of Fishing (days)
- Fishing location
- Species Caught
- Catch Weight (kg)
- Landing location
- Amount of fish landed
- Amount of fish discarded

3.3.7 Electronic Monitoring (vessel/dockside)

Electronic video monitoring, both on vessels and dockside, is an emerging use of technology that is improving managers' capacities to collect and store data. Some electronic monitoring systems incorporate cameras, sensors and tags (hydraulic, rotation, radio-frequency identification (RFID) tags, etc.) to monitor and collect data on fisheries. Managers can use the systems to collect or verify data on fisher catch of target; bycatch; and endangered, threatened, and protected species. These tools can also determine the length, size and sex of certain species. Electronic video monitoring can also be used by managers to monitor fishery activity, enforce regulations, and to collect various types of oceanographic data, including pH, temperature, and salinity.

Collaboration between Fisheries Divisions, fishers' organizations and service providers can be useful in assessing cost-effective electronic monitoring systems for potential use in country-specific circumstances. Subject to the results of the assessment, fisheries divisions can develop strategies to fund, acquire, and deploy an electronic monitoring system. Due to fiscal limitations and scale of the fishery, electronic monitoring systems should be simple, cost effective and specific to the data needs of the fisheries managers.

3.3.8 Purchase Slips

Buyers are most commonly responsible for providing fishers with purchase slips that clearly indicate the date, time, and the quantity of fish that they purchased. Buyers then submit copies of these purchase slips to fisheries divisions which provides a cross check on landings data and introduces an important point of cross-reference between bio-physical and socio-economic data.

3.3.9 Fishery-Independent Studies

In addition to industry generated data, it is also important for Fisheries Divisions to track and monitor stock status/environmental trends through research surveys that are independent of the fishing industry. Scientific surveys provide invaluable information on age composition and distribution of the stock as well as information on foraging species and habitat condition. Furthermore, specialized surveys should be conducted to collect oceanographic information needed to fully understand the bio-physical aspects of the fishery. Fishery-independent surveys and oceanographic studies are often conducted by government agencies, through third party contractor or through Academic research projects by Universities and NGOs.

3.3.10 Local and Traditional Knowledge

Local and traditional knowledge (LTK) embodies different meanings around the world. LTK is the body of knowledge that is accumulated over time at the community level. It is built on the longstanding and intimate use and occupation of a place and is intertwined with people's cultural and social identity.

LTK can be used to fill information gaps and shortcomings of science-based data (biophysical, economic, and social) gathered by fisheries management agencies and researchers. There is a wealth of valuable knowledge that fishers hold about the resource, local environment and changing climate. This LTK can be useful to further advance the effectiveness of policy development and implementation as well as EAF management decision making processes.

Regrettably there has not been significant effort to collect and use LTK for management in the flyingfish fishery. As a result, Member States should establish a formal process to integrate LTK into governance systems including collection, storage and use to ensure proper, culturally appropriate methods are implemented. Consideration should be given to fishers' intellectual property rights in designing and implementing data collection processes to ensure that LTK can be integrated with information from other data sources, such as scientific studies.

3.3.11 Considerations

Robust EAF management plans require up-to-date and accurate information about the biophysical condition of the fishery. This information should be extracted from the day-to-day operations of the commercial fishery and specialized surveys. Specifically, the following biophysical data should be routinely collected and analyzed to support the development and implementation of fisheries policy as well as EAF management purposes:

- Individual fishers' catch and landings data (weight and/or number of fish). Data should be collected from:
- fisher standardized logbooks,
- landing/purchase slips, and
- dockside monitoring.
- Effort data should be extracted from logbooks and vessel registration systems/ censuses
- In addition to the biophysical data needed to fully understand the health and status of the fishery information may need to be collected from sources outside regular Fisheries Divisions data collection processes. This may include:
- Scientific surveys/studies to collect oceanographic data
- Fishery independent surveys to collect data on stock abundance and distribution (conducted by the Fisheries Divisions and/or academic institutions)
- Traditional knowledge surveys/studies
- Information from other departments that may relate to environmental condition, vessel movement and operation, etc.
- Sufficient budgets are needed within Member State Fisheries Divisions to ensure data collection is conducted in a cost effective and cost-efficient manner. This may involve collaboration and participation of fishers and fishers' organizations. Accordingly, consideration should be given to provide appropriate training to fishers to actively participate in data collection (i.e. record keeping, participation in scientific research studies, etc.).

Additional information of the types of data to collect and the responsible agency is described in detail in. Table 3.1.

3.4 SUB-REGIONAL FISHERIES MANAGEMENT PLAN RECOMMENDATIONS

It is understood that a key objective of the recent studies focusing on the flyingfish fishery is to update and provide additional recommendations to the FMP to ensure it addresses the collective interests and objectives of the various stakeholders involved in the industry. These recommendations are based on analyzed research, interviews with industry stakeholders (i.e. government, fishers, producers, marketers, etc.), identified information gaps and review of the revised FMP provided by Blue Earth Consulting.

It is important to note that none of the recommendations presented for the Sub-Regional Fisheries Management Plan (FMP) for the Eastern Caribbean Flyingfish Fishery should undermine the integrated fisheries management approach that is currently being implemented in each of the Member States. Furthermore, the recommendations made should not compromise the current practice of multi-species harvesting by fishers or the integrated multi-species management by government. Thus, the following recommendations are offered for consideration by CRFM and Member States.

Reorganization of FMP
It is recommended that the FMP be reorganized to make it consistent with other standard management plans in other jurisdictions. The following Table of Contents is offered for consideration.

Collection of Data
Data collection must be conducted on a regular basis and compiled data should be integrated into a common reliable, accessible and easily usable database. Data need not be collected directly by Fisheries Divisions but can be collected through other organizations (i.e. fisheries organizations) or from other activities (i.e. export marketing information, value chain, local consumption, registries, etc.).

To facilitate collaborative management of shared flyingfish resources between Member States data should be collected in a common format and shared through the use of a common database. This database should be maintained and updated regularly so that the most current catch and effort data is accessible throughout the sub-region.

Furthermore, up-to-date socio-economic should be compiled and included in the shared sub-regional database. This data should be aggregated to protect the privacy of individual fishers and fishing enterprises.

Environmental data that relates to fisheries production, such as presences of sargassum, should be collected and compiled into the sub-regional database.

Format of Data Collected - The data that is being collected needs to be consistent to ensure it can be easily integrated for multiple different uses across all departments. Thus, there needs to be consistency in units (i.e. kg or lbs.), schedule (i.e. how often it is being collected), and format (i.e. electronic, paper, etc.).

Integrated Management - Management of the flyingfish fishery should be considered as a part of an overall marine resource management strategy, often referred to as "Blue Economy". Accordingly, flyingfish fishery management activities should be integrated with management of other marine sectors so that the ecosystem approach to management will be supported by new efforts to promote the Blue Economy. This may require future modification of the FMP.

Stock Assessment Data Collection -The greatest advancement for stock assessments will come from reliable collection of fishing data. Vessel and gear type, catch volume, and time spent fishing for flyingfish should be gathered from each fishing trip, whether it is for bait or consumption. In order to

collect information in a manner that everyone participates, yet a minimum of administrative resources is needed, a system with mandatory reporting is strongly recommended.

Stock assessments will be greatly enhanced by improved understanding of the factors that contribute to annual variability in flyingfish catches. It is important to distinguish whether flyingfish move between low and high catchability areas, or whether the stock fluctuates in response to other environmental factors. Biomass assessments independent of the fishery are recommended, along with investigation of leading factors thought to influence flyingfish populations.

Some progress is possible by reviewing all of the flyingfish information available to determine which recent data-limited fisheries analysis tools could improve stock assessments. A workshop is recommended to bring key people with available information together for a comprehensive discussion.

Precautionary Approach - The precautionary approach is a foundational principle of sub-regional fisheries management planning. An important element of the precautionary approach is up-to-date information on the state of the fishery. As a result, greater emphasis on data collection within Member State Fisheries Divisions is needed. This should be reflected and strengthened within the FMP and supported by appropriate Member State regulatory measures.

Supporting Regulation - The FMP sets common procedures amongst Member States. However, there are inconsistencies between Member States with respect to regulations regarding data collection that affect collaborative marine management. As a result, Member States need to develop and implement common regulations that supports data collection.

4. GENDER SENSITIVE VALUATION OF EASTERN CARIBBEAN FLYINGFISH FISHERY

Disclaimer
The analysis and conclusions contained in this section are based largely on data collected and reported in 2007, as well as from a small number of interviews with fishery stakeholders conducted in 2017. Due to the age and constraints of available data, flyingfish industry revenue, income, and economic benefit figures contained herein should be considered high-level estimates and indications of general scale rather than precise representations of the value of the industry. All figures and conclusions presented in this section should be used and cited with due consideration.

4.1 INTRODUCTION

Conducting fisheries valuations can be a complex exercise involving estimating the monetary value benefits and costs associated with participation in and execution of the fishery. Deriving a total economic value requires calculating these benefits and costs in terms of their use and non-use, direct and indirect, market and non-market values garnered from existing data sources as well as from purpose-designed surveys and consultations.

The following analysis of the gender-sensitive value of the Eastern Caribbean flyingfish fishery has been limited in three ways. First, data constraints necessarily limited the calculation of value to an estimate of future landings, processor value-add, and employment income of specific related occupations. Secondly, the analysis was based on available market-derived data and did not include non-market valuations that would require the development of new data gathering tools and initiatives. Thirdly, the analysis has been limited in geographic scope to Barbados, as it is the only country in the region with a complete functioning value chain.

4.2 CONSTRAINTS AND CHALLANGES

In order to conduct a thorough gender sensitive valuation of the Eastern Caribbean flyingfish fishery, key data was required that was challenging to source. Specifically:

- Labour market characteristics for fishery industry / occupation, including gender considerations
- Landed volume and value
- Cost and earnings of harvesters
- Income (individual and/or household) for all occupations related to the flyingfish fishery and support activities
- Costs and revenues associated with marketing, processing, distributing, and retailing flyingfish
- The number of people employed in all occupations related to the flyingfish fishery
- Total imports and exports of flyingfish
- Enterprise counts

Much of this data was unavailable through Member States' Fisheries Divisions and statistical agencies and was gathered through a small sample of stakeholders and from past reports and data sets.

4.3 ECONOMIC VALUATION OF FISHERIES

The following sections outline the main approaches to estimating the economic value of fisheries.

4.3.1 Use Values

Use value - refers to the economic value of benefits that accrue to society as a result of the use or interaction with fisheries. Use values are classified as either direct or indirect.

Direct use value – direct use value is a category of benefits associated primarily with consumptive interaction with fisheries through harvesting of fish for commercial, subsistence, or recreational purposes. Direct use value can also be applied to academic, scientific, or other research activity in the fishery.

Indirect use value – indirect use value is a category of benefits associated primarily with non-consumptive interaction with fisheries. Examples include employment generated in fisheries related sectors (e.g. government, supply and value chains, research) and the fishery's role in ecosystem regulation.

Non-use Values

Non-use value refers to the economic value to society of non-consumptive interaction with fisheries. Non-use values include supporting and regulating functions (e.g. food chain stability, water quality effects), existence (i.e. society places value on the mere existence of the fishery), cultural identity, religious importance, and option value (i.e. the value placed on supporting a fishery for its assumed importance to future generations).

4.3.2 Fisheries Valuation Methods

Market Valuation Techniques

Market valuation techniques are employed to value a fishery when markets exist for the products and services supplied by the ecosystem. Landed value and processing value-added are concrete examples of market-based valuation.

Cost-Benefit Analysis

Cost-benefit analysis (CBA) is the most common method used to value fisheries and other resource-use strategies. CBA monetizes and compares the stream of benefits versus costs associated with a particular fisheries management approach. The present value of a future stream of costs and benefits is calculated to arrive at the net present value (NPV) of a particular fisheries management approach. In the context of valuing the Eastern Caribbean flyingfish fishery, CBA has limited use due to data constraints on the investment and operational cost side of the fishery. While principal benefits (i.e. landed value, value added) are known with some degree of certainty, the NPV of the existing or projected flyingfish fishery cannot be determined.

Non-market Valuation Techniques

Where market prices for use and non-use values are unavailable, a range of non-market valuation techniques can be applied.

Revealed Preference

Revealed preference refers to the method of implying market value from the behaviour and spending by consumers on products, services, and activities associated with the fishery in question. Examples include travel cost (e.g. the cost people incur to travel to participate in a recreational fishery), and hedonic valuation (e.g. the cost a harvester would incur to purchase a boat to participate in the fishery).

Stated Preference

Stated preference valuation is a survey-based approach that asks respondents to place monetary value on a range of choices, rankings, or other indicators associated with non-market benefits of a fishery. Examples include contingent valuation (e.g. what consumers would be willing to pay for preservation of a fish stock or ecosystem), conjoint analysis (i.e. a ranking of a range of fishery conditions).

Cost-Based

Cost-based approaches use estimates of replacement value or the cost of avoiding a particular outcome to approximate market value. An example would be the food security value of the subsistence flyingfish harvest (i.e. what flyingfish harvesters would have to pay to replace the catch they bring home).

4.3.3 Valuing the Barbados Flyingfish Fishery

Given the known limitations on data available for the Barbados flyingfish fishery, as well as the constraints on conducting further research (i.e. project scope and budget of project, remoteness of survey sites, integrated nature of the fishery), the primary valuation of the fishery was limited to landed value, processor value added, and wages earned in harvesting, markets, and filleting flyingfish. Fishery value was stated as a gross value, as investment and operational cost data needed to assess net value were unavailable.

Valuing further indirect and non-market values of the fishery would require the development of a complex survey-based research initiative, which was beyond the scope of this project.

The following analysis was also limited to the Barbados flyingfish fishery, as it has the only complete value chain in the region.

Principal Benefits

The principal benefits used to determine the value of the fishery were limited to landed value, processor value added, and wages earned in harvesting, markets, and filleting flyingfish.

Landed Value

The following calculation of landed value was based on landed value and value-added data compiled during a comprehensive analysis of the fishery in 2007[4]. While these data are 20 years old, research conducted in 2017 indicated that market prices and consumer demand for flyingfish have remained relatively stable over that period. The Table 4.1 outlines average annual landed value of the Barbados flyingfish fishery over the two study periods. All monetary figures are expressed in inflation-adjusted 2016 BBD$.

Table 4.1: Average annual landed value of the Barbados Flyingfish Fishery 1999-2003 & 2003-2016

	1999-2003	**2003-2016**
Annual avg landed weight (MT)	1,833	1,344
Annual avg landed value ($BBD)	4,691,131	3,440,372
$BBD / MT	2,559	2,560
$BBD / kg	2.56	2.56

Based on Mahon (2007), average annual landed weight and value over the period 1999 to 2003 were 1,833 tonnes and BBD$4,691,131 respectively. This equates to a landed value of BBD$2.56 per kilogram whole. Average annual landed weight from 2003 to 2016 was 1,344 tonnes[5]. Applying the per-kilogram landed value derived by Mahon results in an average annual landed value of BBD$3,440,372 from 2003 to 2016. Gross Domestic Product (GDP) of Barbados averaged BBD$8.8 billion from 2003 to 2016. Estimated landings in the flyingfish fishery contributed 0.04% to average annual GDP over that period.

[4] Mahon R., C. Parker, T. Sinckler and S. Willoughby and J. Johnson. 2007. The value of Barbados' fisheries: a preliminary assessment. Fisheries Division, Ministry of Agriculture and Rural Development, Barbados, Fisheries Management Plan Public Information Document No. 2: 24 pp.

[5] FAO. 2017. Fishery and Aquaculture Statistics. Global production by production source 1950-2015 (FishstatJ). In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 2017. www.fao.org/fishery/statistics/software/fishstatj/en

Value Added

Mahon (2007) determined that, from 1999 to 2003, processors added an average annual BBD$34,836,981 in value through processing to the annual average BBD$4,691,131 worth of flyingfish landed in Barbados. That represents a value-added multiplier of 7.43 which, when applied to the estimated average annual landed value from 2003 to 2016, results in an average annual processor value added of BBD$25,548,676. Table 4.2 outlines this calculation. All monetary figures are expressed in inflation-adjusted 2016 BBD$.

Table 4.2: Average annual processor value added to flyingfish in Barbados

	Calculation	**BBD$**
Avg annual landed value 1999-2003 (LV_1)	-	4,691,131
Avg annual processor value added 1999-2003 (VA_1)	-	34,836,981
Value added multiplier (VAM)	VA_1/LV_1	7.43
Avg annual landed value 2003-2016 (LV_2)	-	3,440,372
Avg annual processor value added 2003-2016 (VA_2)	$(LV_2)(VAM)$	25,548,676

Gross Domestic Product (GDP) of Barbados averaged BBD$8.8 billion from 2003 to 2016. Estimated processor value added in the flyingfish fishery contributed 0.22% to average annual GDP over that period. It should be noted that there was no data available to estimate what percentage of flyingfish landings was processed. Interviews conducted in 2017 indicated this percentage had declined in recent years.

Estimated Wages

Harvesting

Data collected from Fisheries Division personnel and industry stakeholders during 2017 consultations indicated that there were approximately 2,000 full-time and 200 part-time flyingfish harvesters fishing approximately 100 days per year. Average daily income was estimated to be BBD$250 per harvester (NEXUS Coastal Resource Management Value Chain report). Total annual employment income earned from harvesting flyingfish is therefore estimated to be in the range of BBD$53 million. Table 4.3 outlines this calculation. All monetary figures are expressed in inflation-adjusted 2016 BBD$.

Table 4.3: Total annual employment income earned from harvesting flyingfish in Barbados

Harvesters	**Calculation**	**Data / Results**
Full-time workers (FT)	-	2,000
Part-time workers (PT)	-	200
Average earnings - $BBD/day (AE)	-	250
Days harvesting (DH)	-	100
Estimated annual full-time employment income (FTI)	(FT)(AE)(DH)	$50,000,000
Estimated annual part-time employment income (PTI)	(PT)(AE)(DH/2)	$2,500,000
Estimated annual total employment income	FTI + PTI	**BBD$52,500,000**

Gross Domestic Product (GDP) of Barbados averaged BBD$8.8 billion from 2003 to 2016. Estimated harvesting income in the flyingfish fishery contributed 0.60% to average annual GDP over that period.

It should be noted that no data was available to determine how many of these 100 days flyingfish were harvested exclusively, as the fishery is opportunistic and not targeted. This calculation also assumes part-time harvesters fish half of those days.

Markets

These data also indicated that there were an estimated 1,000 full-time and 200 part-time workers employed at landing site markets. Assuming these workers earn an average wage of BBD$6.25 per hour for 800 hours (one 100-day flyingfish season) per year, annual employment income would total close to BBD$6,000,000. Table 4.4 below outlines this calculation. All monetary figures are expressed in inflation-adjusted 2016 BBD$.

Table 4.4: Average annual employment income of workers (full-time & part-time) at landing site markets

Markets	**Calculation**	**Data / Results**
Full-time workers (FT)	-	1,000
Part-time workers (PT)	-	200
Minimum hourly wage (MW)	-	BBD$6.25
Total hours/year (H)	-	800
Total full-time employment income (FTI)	(FT)(MW)(H)	$5,000,000
Total part-time employment income (PTI)	(PT)(MW)(H/2)	$500,000
Total employment income	FTI + PTI	**BBD$5,500,000**

Gross Domestic Product (GDP) of Barbados averaged BBD$8.8 billion from 2003 to 2016. Estimated flyingfish market income contributed 0.06% to average annual GDP over that period.

It should be noted that this calculation is based on income earned for 40 hours per week for the 100-day flyingfish at the current national minimum wage, as no other wage data was available. It also assumes part-time workers worked half that period.

Processing and other value chain income

Total employment in seafood processing was estimated at 125 across approximately 7 plants in 2017. Stakeholder interviews conducted in 2017 indicated that average earnings for a skilled flyingfish filleter were BBD$690 per week. Because no data was available to estimate what percentage of processing employees and/or production effort was focused on flyingfish alone, a calculation of average annual value and percent of GDP was not possible.

It should be noted that there are several other sectors in which workers derive a portion of their annual income from the flyingfish fishery, including tourism and hospitality, recreation, transportation and distribution, retail, other marine industries, etc.

Total Fishery Value

The following table (Table 4.5) outlines the calculation of the total economic value of the Barbados flyingfish fishery. All monetary figures are expressed in inflation-adjusted 2016 BBD$.

Table 4.5: Total economic value of the Barbados Flyingfish Fishery

Element	**BBD$**
Landed value	3,440,372
Value added	25,548,676
Harvesting income	52,500,000
Market income	5,500,000
Total estimated annual value	**86,989,048**

The Barbados flyingfish fishery has an estimated annual value of BBD$86,989,048 given all assumptions and limitations outlined in this report. Gross Domestic Product (GDP) of Barbados averaged BBD$8.8 billion from 2003 to 2016. Estimated flyingfish fishery total value contributed 0.99% to average annual GDP over that period.

Present Value of the Barbados Flyingfish Fishery

An estimate of the current value of the Barbados flyingfish fishery involves calculating the present value of future expected landed value and value added. Ideally, a calculation of the net present value (NPV) of the fishery would be conducted using estimates of all use and non-use benefits (i.e. total value) counterbalanced with an estimate of associated fixed and variable costs. This future stream of costs and benefits would be discounted to reflect their current-day monetary value using an appropriate discount rate. Due to a lack of data on the total value and associated costs of the fishery, the analysis must be limited to a simple calculation of the present value of expected future benefits.

A critically important factor in any fisheries valuation is the selection of the discount rate that drives the results of the present value calculation. The discount rate allows for the comparison of costs and benefits that occur over a period of years. It should be a reflection of how society perceives of and discounts benefits that will not occur for years to come. While the selection of a discount rate has generated much controversy in the literature, a common practice in NPV analysis is to apply a private discount rate that reflects in some way the opportunity cost of investment in private capital and/or domestic savings. For the purposes of this analysis, the Barbados bank rate as it stood at the time of this research (2017), which was 7%.

Present Value Analysis

As noted above, the estimated PV of the Barbados flyingfish fishery is determined by discounting the future stream of estimated benefits to the present using the 2017 Barbados bank rate. Present value of future benefits derived from the Barbados flyingfish fishery is calculated as follows:

$$\mathbf{PV} = \sum_{i=1}^{ATB} \left(\frac{ATB}{(1+r)^i} \right)$$

Where ATB refers to annual total benefits resulting from the fishery in year *I*, and r is the discount rate applied in year *i*.

To account for potential variation in future landings, present value will be calculated under three scenarios: 100%, 50%, and 25% of estimated average annual landings. Landings could vary due to factors such as climate change impacts or changes in consumer demand, market prices, resource distribution, or labour market competition / scarcity. Table 4.6 below outlines the present value of the Barbados flyingfish fishery under these scenarios:

Table 4.6: Present value of the Barbados Flyingfish Fishery under three scenarios (100%, 50% & 25%)

	Scenario 1 (100%)	**Scenario 2 (50%)**	**Scenario 3 (25%)**
	$BBD		
Average annual landed value	3,440,372	1,720,186	860,093
Average annual value added	25,548,676	12,774,338	6,387,169
Average annual harvesting income	52,500,000	26,250,000	13,125,000
Average annual market income	5,500,000	2,750,000	1,375,000
Total estimated annual value	**86,989,048**	**43,494,524**	**21,747,262**
Present value (7%)	**921,563,214**	**460,781,607**	**230,390,804**

Taking into account the methodology, limitations, and assumptions laid out in this report, the Barbados flyingfish fishery has an estimated annual value ranging from BBD$22 million to $BBD87 million. Should these benefit streams remain stable for a 20-year period, the present value of total future benefits (i.e. discounted to 2017) would range from BBD$230 million to BBD$921 million for the entire 20-year period.

Gender Considerations

Because no sex-disaggregated data was available to determine what percentage of the above benefits accrued to females versus males, no gender-sensitive analysis was possible given the limitations on project scope and budget. Further research is required to develop that analysis.

4.4 IMPLICATIONS FOR SUSTAINABLE LIVELIHOODS

4.4.1 Introduction

Oftentimes, gender-based valuation and analysis of fisheries predominately focuses on the role of women, rather than the roles of both men and women within the economic performance of the industry. This is prevalent due to the historical role of men in the fishery and the recent global efforts to change the roles of women in society. Women's roles within these industry sectors, including fisheries, has largely been de-emphasized or discounted as they are not perceived to be significant contributors to the economics of the fishery because they are customarily involved in only some aspects of the fishery. As a result, the role women have played and continue to play in fisheries around the world is largely not understood due to a lack of effort to collect the necessary data. "Unfortunately, the lack of data only perpetuates the assumption that women's participation is either non-existent or unworthy of research notice" (Jentoft *et al*., 2017, 753). Although the issue of the exclusion of women has been identified, little has been done to change it, therefore, it continues to be a problem in many regions of the world, including in the Caribbean. The limited research that has been conducted has the tendency of being descriptive and overly abstract, resulting in its limited utility in conducting gender valuation assessments (Williams, 1990). However, for the purposes of this report it is important that reverse biases (focusing only on the role of women) are not implemented to ensure an unbiased evaluation of gender segregated roles within the fishery.

The purpose of this report is to evaluate whether the flyingfish fishery and associated management programs address the different priorities and needs of both men and women. This is used to assess if it has an impact on gender relations and to determine if there are specific gender equality or equity objectives and indicators that can be used to strengthen the accountability of the fishery and its management measures in terms of gender equality and equity issues

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Based on the literature review undertaken for this report there is a general lack of readily available sex-disaggregated data pertaining to Caribbean fisheries, including flyingfish. Research that has been conducted is not easily accessible to the public. As a result, this project included the design and delivery of a survey to attempt to offset some of these limitations.

There are additional restrictions facing this gender valuation that will impact the robustness of this report. In order to complete a thorough gender sensitive valuation of the fishery regularly collected sex disaggregated data needs to be analyzed. Unfortunately, this type of data is generally not available, which inevitably leads to generalizations in the assessment of gender roles within the fishery. Thus, it is important to stress the need to regularly collect sex disaggregated data to ensure future gender research does not face the same limitations. This report provides a preliminary assessment and overview of some of the underlying issues that are facing the fishery in terms of gender participation in the economic performance in the flyingfish fishery, with a focus on gender equality and equity, with recommendations on how best to monitor and evaluate gender roles and participation in the flyingfish fishery economy.

4.4.2 Methods

The objective of this gender analysis is to better understand gender barriers in the fishery and how to de-segregate the relative gender roles in the fishery. This involves assessing the gender segregated roles in the fishery and analyzing the social and economic responsibilities and duties both within and outside the family of men and women.

4.4.2.1 Literature Review

A scan of readily available literature was conducted for this report. This included researching the following general themes:

- Gender & Fisheries;
- Gender Sensitive Indicators;
- Income and Employment;
- Export Value;
- Wage Structures and Standards;
- National Economic Performance;
- Women in Fisheries; and,
- Women in Fisheries in the Caribbean.

The intention is to provide a clearer understanding of the general economic condition of the flyingfish fishery and the relative economic roles of men and women.

4.4.2.2 Survey & Interview

Understanding the limitations and availability of fisheries gender research in the Caribbean a survey was developed to be released to the Fisheries Division in each of the targeted Member States (Barbados, Grenada and Trinidad and Tobago). The survey was designed to be conducted in accordance with the specific circumstances in the participating Member States. It is understood that traditional attitudes and habits, as well as existing economic and social structures may vary from country to country. Thus, the survey is designed to be able to identify these differences, if any, and to include this in the analysis portion of this report.

The following provides the list of questions that were shared with the Fisheries Divisions in the Member States. The Project Team worked closely with each of the Fisheries Divisions in the execution and collection of feedback to the survey.

4.4.2.3 Gender Analysis Questions

- ✓ What are the traditional male roles in the fishery?
- ✓ What are the traditional female roles in the fishery?
- ✓ How are male youth involved in the fishery?
- ✓ How are female youth involved in the fishery?
- ✓ What do men own related to the fishery?
- ✓ What do women own related to the fishery?
- ✓ Who makes the decisions?
- ✓ How are most of the decisions made?
- ✓ Who are the primary beneficiaries of these decisions?
- ✓ In your opinion, are current fishery policies/ regulations gender blind, gender aware, gender neutral or unsure?
- ✓ Do you think gender roles in the fishery are changing, staying constant but need to change or staying constant and don't need to change?
- ✓ What barriers do you think there are preventing gender diversity in the fishery?
- ✓ What opportunities are there to increase gender equity in the fishery?

- ✓ What should we do to make sure everyone is able to benefit from the fishery?

4.4.3 Literature Overview

The following section provides an overview of the readily available literature that was reviewed in support of conducting a gender valuation of the flyingfish fishery.

4.4.3.1 Overview of Gender Sensitive Indicators

The terminology used and how they are defined is an important aspect when discussing gender. March *et al.* (1999) provides a useful interpretation of the terminology, which offers clarification on the distinctions between the meanings of sex and gender. The definitions provided by March et al. (1999) are as follows:

"**Sex** is the biological difference between men and women. Sex differences are concerned with men's and women's bodies. Men produce sperm; women bear and breastfeed children. Sexual differences are the same throughout the human race" (17).

"**Gender**: Sex is a fact of human biology; gender is not. The experience of being male or female differs dramatically from culture to culture. The concept of gender is used by sociologists to describe all the socially given attributes, roles, activities and responsibilities connected to being a male or a female in a given society. Our gender identity determines how we are perceived, and how we are expected to think and act as women and men, because of the way society is organized" (18).

"**Gender Relations** are concerned with how power is distributed between the sexes. They define the way in which responsibilities and claims are allocated and the way in which each is given a value" (18).

When assessing gender issues in the flyingfish fishery indicators are used as means of evaluating key aspects of the fishery (gender roles, employment, involvement in fishery, etc.) to determine its state or condition. The following provides a more detailed descriptions of an indicator as well as other types of indicators that are used in a gender sensitive valuation and why they are useful.

What is an indicator?

"An indicator is a pointer. It can be a measurement, a number, a fact, an opinion or a perception that points at a specific condition or situation, and measures changes in that condition or situation over time. In other words, indicators provide a close look at the results of initiatives and actions. For this reason, they are front-line instruments in monitoring and evaluating development work" (CIDA, 1997, 5).

What is a gender-sensitive indicator?

"Gender-sensitive indicators have the special function of pointing out gender-related changes in society over time. Their usefulness lies in their ability to point to changes in the status and roles of women and men over time, and therefore to measure whether gender equity is being achieved" (CIDA, 1997, 5).

What are quantitative and qualitative indicators?

"Quantitative indicators can be defined as measures of quantity, such as the number of people who own sewing machines in a village.

Qualitative indicators can be defined as people's judgements and perceptions about a subject, such as the confidence those people have in sewing machines as instruments of financial independence" (CIDA, 1997, 9).

4.4.3.2 Gender Equality vs. Gender Equity

There are important distinctions between gender equality and gender equity that need to be considered and understood when conducting a gender valuation assessment. Although they are related terms, they have distinct meaning and practical usage.

Figure 4.1 illustrates the differences between equality, equity and social justice. These principles can be applied to discussions surround gender equality and equity.

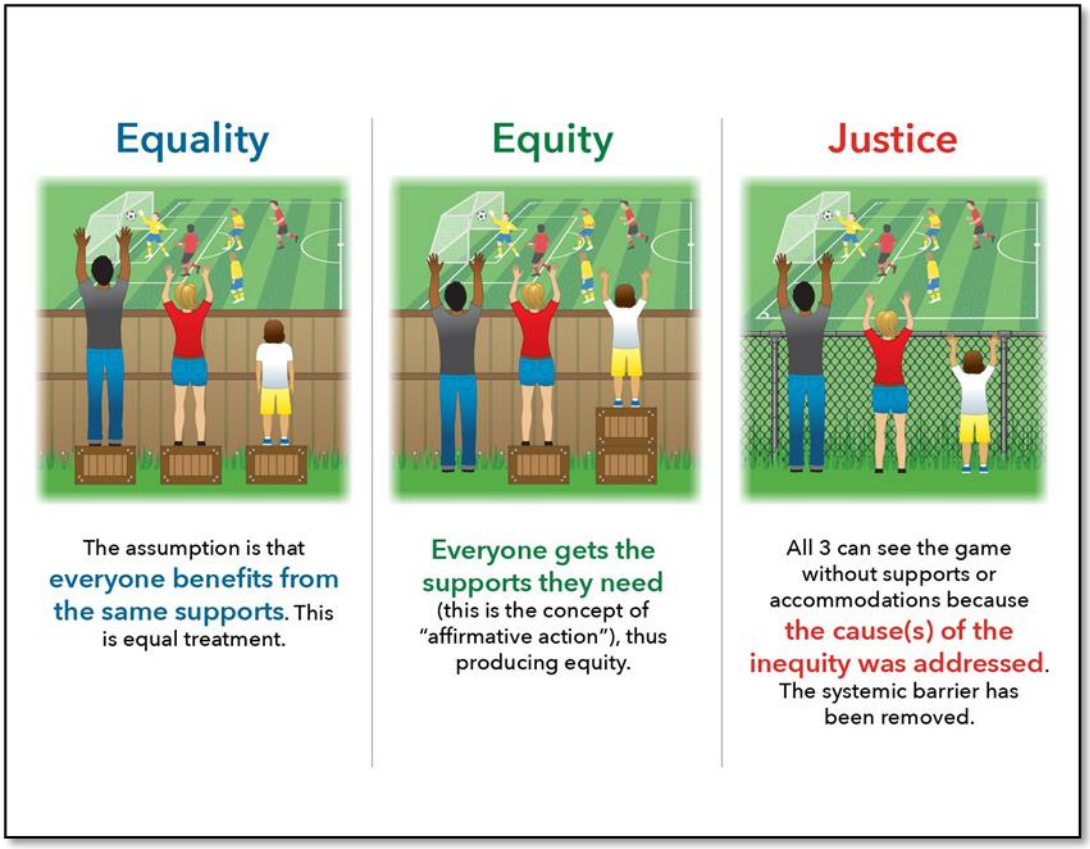


Figure 4.1: Differences between Equality, Equity and Justice

The fundamental objective of gender valuations is to identify existing barriers in order to assess how these barriers can be overcome to promote equality and fairness within the fishery. The illustration above demonstrates the fundamental differences between these categories (gender equality, gender equity and social justice), although gender equality is an important first step, it does not always mean that fairness is achieved in reality. This is compared to gender equity, which understands that some instances, there need to be more supports in place to ensure both equality and fairness. However, it is important to understand that although there are benefits to both gender equality and gender equity, the ultimate objective would be to remove the existing barrier (as depicted in the social justice category).

According to UNESCO, gender equality in the workplace means that women and men have equal opportunities for advancement, for realizing their full human rights and for contributing to, and benefiting from, economic, social, cultural and political development (Bird, 2015, 21). In fisheries, this would translate to ensuring there are equal opportunities for men and women to participate in all aspects of the fishery, from harvest to processing to managing to govern.

There is nowhere in the world that gender equality has been fully achieved (Bird, 2015). This is evident by current discussions that are taking place in countries that rank highest in the world, such as the United States, where the gender gap in areas such as economic outcomes (unequal pay) and political empowerments (discrimination over maternity leave or leadership positions remaining occupied by men) remains substantial. Internationally, gender equality has been accepted as a human right which is addressed in a number of international conventions and declarations, such as the Convention on the Elimination of All Forms of Discrimination against Women adopted by the UN General Assembly in 1979 (Bird, 2015).

4.4.3.3 Gender-Sensitive Indicators of Flyingfish Fishery

The following are examples of gender-sensitive indicators to be considered when evaluating the flyingfish fishery:

- Sex- disaggregated data on employment
- Men/Women ratio of employment in the fishery.
- Harvesters
- Processers
- Sellers
- Marketers
- Number of women in supervisory and management positions in fishery departments.
- Number of women involved in decision making regarding the fishery.
- Household decision making power
- Women's autonomy and empowerment
- Economic Empowerment
- Involvement in fishery
- Gender equity, stigma and discrimination
- Women participating in fisheries training events
- The level of participation of women in Fishery Associations or Groups

4.4.3.4 Overview of Available Research on Gender in Fisheries

In recent years, research on gender has been focused on gender equality and gender equity. Although the terms are often used interchangeably there is a significant difference in emphasis. Gender equity is the process by which equality can be achieved (Jentoft *et al*., 2017). In the context of small-scale fisheries, gender equality could mean amending existing policies that may exclude one gender, such as women, from equal access to fisheries jobs, markets or management positions. While gender equity could mean supporting capacity building that focuses on one specific gender, such as women, in the fishery through programs.

As previously discussed, many existing gender studies focus only on the role of women within a particular sector. Although the research and information that is conducted is important, it creates a reverse bias and does not adequately evaluate gender equity and equality. The research found that it is typical for the role of women in fisheries to be viewed through one particular lens. This lens focuses on women acting in supportive roles to the fishery, which is often influenced by historical, cultural, social and economic factors. As a result of this women are viewed as fish processors, whereas men are seen to be engaged as fishers and managers of the resource (FAO, 2013). This to some extent has excluded women from easily participating in the mainstream planning, management and governance of the industry.

Table 4.7 summarizes the barriers to gender equity and equality that is highlighted in Jentoft *et a*l.'s 2017 Small-Scale Fisheries Guidelines. Many of these barriers exist within the flyingfish fishery, which will be further discussed in the analysis section of this report.

Table 4.7: Barriers to Gender Equity and Equality in Small-Scale Fisheries

Barriers	Categories	Major Gender Issues
Small-scale Fisheries Value Chain	Tenure Rights	Fishing policy is gender biased and may deny equal tenure rights.
		Fishing policy can displace women fishers.
		Women may be less likely to be granted lease or tenure over fishing resources compared to men.
		Women may be denied membership to fisher groups that are given tenure rights.
	Access to Fishing Resources	Women may not, or are less likely to own fishing gear.
		Household owned fishing gear might not be available to women.
	Access to Markets and Marketing Resources	Fish markets may exclude men or be dominated by women.
		Women may have access to inferior products than men.
		Women may have less access to credit or financial resources than men.
		Women that can access credit may not have decision-making power over it.
	Recognition of and Opportunity for Fisheries Labour	"Gender Neutral" policies that do not take unequal gender roles into account may give women fewer opportunities than men.
	Equal Pay for Fisheries Labour	Women's fisheries labour is often unpaid, or paid less.
Human Well-being	Education	Differences in access to education can impact women and men's fisheries labour.
	Food Security	Women's fishing is often focused on small but reliable subsistence catch.
		Women may have less access to food within households.
	Occupational Health and Safety	Men and women are often exposed to different risks due to different roles in the fisheries value chain.
	Violence	Shifting gender roles in fisheries related to changes in resource availability can also lead to increases in gender based domestic violence.
Governance	Policy Coherence	Major barriers may be in the will and capacity to implement existing policy.
	Capacity Development	Lack of technical and formal fisheries training programs that are targeted to or include women.
		Women are often not recognized as stakeholders and must contend with cultural barriers to their full participation in decision-making.
		Capacity development should include increase

Barriers	Categories	Major Gender Issues
		training for gender work in fisheries institutions.
	Research and Monitoring	Lack of sex-disaggregated data collection.
		Lack of prioritization, money, and training for gender research and gender researchers.

Table 4.8 illustrates the level of involvement women have in the four major sectors within Caribbean fisheries. This does not directly demonstrate the level of involvement in the flyingfish fishery; however, correlations can be made and only minor variances may exist. It is important to note that there may be additional involvement of women that is largely undocumented. This may include women directly or indirectly supporting men's fishing activities, both from a business and household perspective (Williams, 1990).

Table 4.8: Perceived ranked order of female involvement in fishing economies (Grant, 2004)

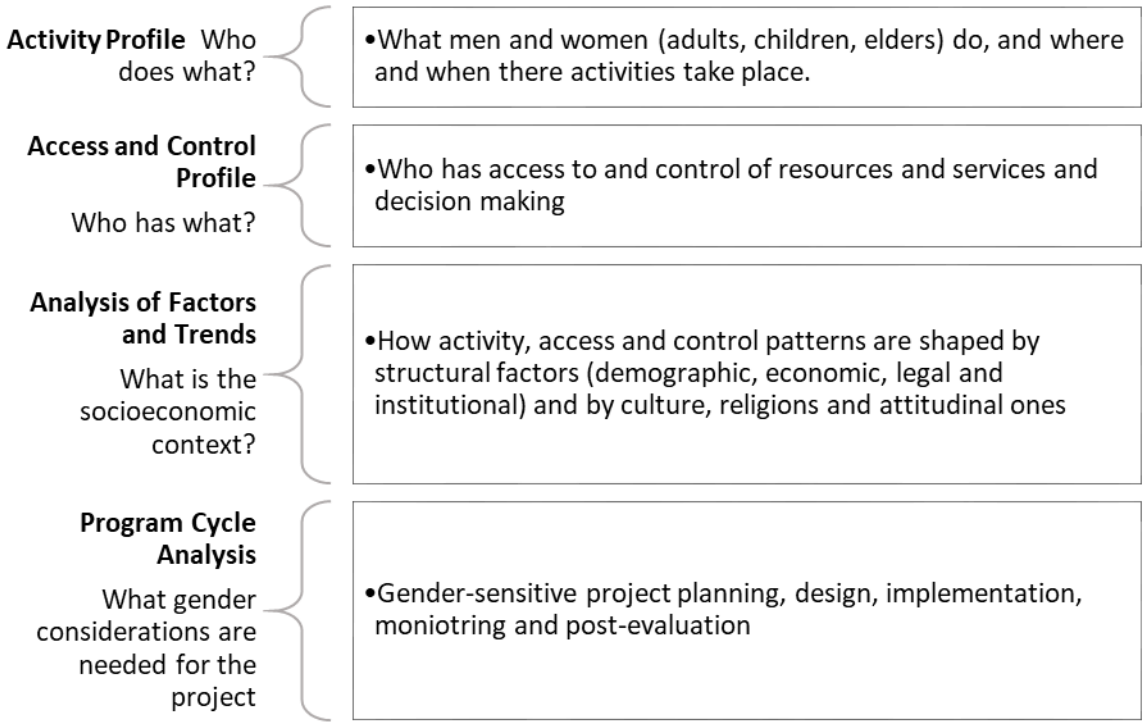
Activities	Barbados	Grenada	Trinidad	Tobago	Mean Rank
Marketing & Distribution	1	1	2	3	1.75
Processing	2	2	1	1	1.5
Investing	3	3	3	2	2.75
Fishing	4	4	4	4	4

(1-high involvement to 4-low involvement)

Local culture and social norms within a particular country largely impact how men and women are involved in the fishery. These gender roles can shape how, where, when and what women and men fish, or what part of the value chain they predominately occupy (Jentoft *et al*., 2017). As evident in the in the table above women are mostly involved in the buying, selling and processing of fish. It is important to note the limitations of the table above, although it ranks female involvement in fishing as the lowest, it does not depict the level of involvement, if any. It simply demonstrates that the category of fishing ranks last.

4.4.4 Gender Analysis Framework

Gender analysis framework involves the following four key steps:



4.4.4.1 Country Profiles

The United Nations Development Programme created the Gender Development Index (GDI) which measures differences between male and female achievements based on three key characteristics: health (measured by life expectancy); education (measured by years of schooling), and equitable command over economic resources (measured by earned income). Table 4.9 provides information of how each of the targeted project countries (Barbados, Grenada, and Trinidad & Tobago) compare using GDI. As it stands, Barbados ranked 54th, Trinidad & Tobago ranked 65th and Grenada ranked 79th in the overall Human Development Index (United Nations Development Programme, 2018).

Table 4.9: Gender Development Index Country Profiles

Country	**GDI**		**HDI**		**LEB**		**EYS**		**MYS**		**EGNI**	
Name	*Value*	*Group*	*F*	*M*	*F*	*M*	*F*	*M*	*F*	*M*	*F*	*M*
Data from 2015												
Barbados	1.006	1	.795	.791	78.1	73.3	16.7	13.9	10.6	10.3	11,801	18,377
Trinidad & Tobago	1.004	1	.786	.783	74.2	67.1	14.3	12.3	10.8	11.0	21,104	35,179
Grenada	..	..	..	..	76.0	71.1	16.2	15.3	..	..	..	..

Table 4.9 Terminology

GDI – Gender Development Index
HDI – Human Development Index
LEB – Life Expectancy at Birth
EYS – Expected Years of Schooling
MYS – Mean Years of Schooling
EGNI – Estimated Gross National Income (per capita)

It is interesting to note that in all three countries the expected years of school is higher among females than males. In the future, this may result in women playing a more significant roles in government, management positions and/or businesses as a result of their educational experience. However, when you compare that to the estimated gross national income women are significantly lower than men in terms of what they earn.

4.4.4.2 Fishery Activity Profile

Table 4.10 provides an overview of the levels of involvement women, girls, men and boys have in the value chain in the flyingfish fishery. The results of this table are based on literature review and analysis of survey responses.

Table 4.10: Involvement at Various Levels of the Value Chain in the Flyingfish Fishery

Activities	Women	Girls	Men	Boys
Fishing Gear (nets, buoys, fishing line, bait, etc.)	O	o	X	x
Boats/ Vessels (captaining)	o	o	X	0
Fishing/ Harvesting	O	o	X	x
Brokerage of Fish (export)	x	o	X	o
Preparing Fish for Sale	X	x	X	x
Selling fish (for processing, resale, personal use)	X	x	X	x
Buying fish (for processing, resale, personal use)	X	x	X	x
Processing Fish (boning, scaling, filleting	X	x	x	x
Selling Processed Fish	X	o	x	O
Marketing	X	O	x	O
Managing Fish	X	o	X	o
Legislation, Policies and Regulation Development	X	o	X	o
Decision Making Process	X	o	X	o
Food Preparation	X	x	x	O
Data Collection	X	o	X	o
Management Coordination	X	o	X	o
Research and Analysis	X	o	X	o

X – High Level of Involvement
x – Medium to Low Level of Involvement
O –Minimal Involvement
o – No Involvement or no known involvement

4.4.4.3 Access & Control Profile

Access to and control over a resource are important factors to consider when evaluating the gender equality and equity within a fishery. The way in which resources are allocated between women and men in terms of access and control provides valuable insight that is useful when undertaking a gender-sensitive valuation. For the purposes of this exercise the following definitions are offered to describe access and control.

Access – the opportunity to make use of a resource.

Control – this is the power to decide how a resource is used, and who has access to it.

Many studies have shown that within fisheries women often have access but do not have control (i.e. decision-making power related to management and governance) over the resource (March *et al*., 1999). Table 4.11 provides a profile of the flyingfish fishery categorizing men and women's access and control in terms of high (green), medium (yellow) and low (red).

Table 4.11: Access and Control Profile of Flyingfish Fishery

Access (A) and Control (C) Profiles					
Resources			**Benefits**		
	Women	**Men**		**Women**	**Men**
Vessels/Boats	A	A/C	Asset Ownership	A	A/C
Fishing Gear	A	A/C	Basic Needs	A	A
Labour	A	A	Political Power	A	A/C
Cash	A/C	A	Education	A	A/C
Training	A	A/C	Incentives	A	A/C

There are certain constraints that have been known to restrict women's access to resources and the benefits of the sector. These constraints may include lack of education and leadership capacity, high demands on time for domestic tasks and family care, restrictions of mobility outside their home domains and norms and values embedded in the culture regarding women's roles and position in society (FAO, 2013). Additionally, for international organizations, such as the FAO, gender still does not rank high in their projects even though attention on the topic is increasing. This may be due to a lack of capacity, systematic procedures (tools/guidelines) and/or budget allocation (2013).

4.4.5 Survey Findings and Analysis

In August 2018, the Project Team visited the targeted Member States to deliver the gender survey to obtain feedback from the perspective of Fisheries Division staff (managers), fishers/ harvesters, vendors, buyers, processors and sellers. Based on the time and fiscal restraints facing this project the survey was designed in a manner to confirm desktop research. Thus, it is important to note the limitations of the figures and charts provided below as it represents a small sample size of the stakeholder groups and only demonstrates broad perspectives about men and women's roles within the fishery. It is also important to note that the survey questions were based on traditional sex-based gender specifications (male/female) and not on widely accepted global definition of gender to include transgender, genderqueer, bigender, non-binary, androgynous, or cisgender.

Based on desktop research and the information gathered through the survey it is generally understood that apart from the role of women as wife, mother, and homemaker, women working in the fishery sector also have the responsibility of buying catch from harvesters, processing fish at local markets or in processing plants, selling fish as a vendor and at times supporting their husband's harvesting activities (i.e. fixing gear, preparing for trips, etc.). While the role of men in the fishery sector is predominately linked to harvesting and the associated jobs/activities (i.e. suppling/fixing fishing gear, transportation, boat building, etc.).

Figure 4.2 demonstrates known perceptions of the roles men and women have within the fishery. As illustrated, men have a much stronger presence in harvesting and maintenance while women are more heavily involved in the sale, processing and marketing of fish. Although there are women who participate as harvesters within the fishery, their representation of the population within that stakeholder group is quite small.

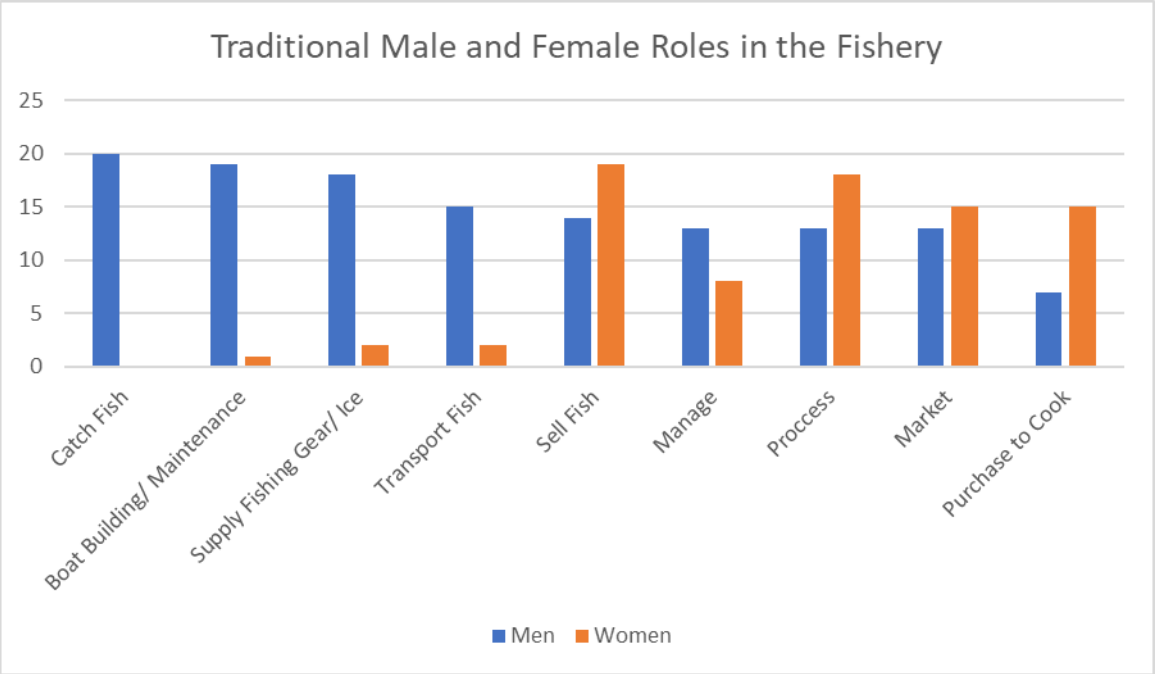


Figure 4.2: Traditional Male and Female Roles in the Fishery

Youth involvement in the fishery appears to mirror that of the traditional roles of males and females (Figure 4.3). That is to say, that in general male youth are more inclined to participate in activities related to the harvest while female youth are more inclined to participate in the processing and sale side of the fishery. It is important to note an observation that was identified during our discussions with representatives of the fishing industry. Most stakeholders noted a general lack of participation of youth in the fishery. Reasons that were discussed ranged from the increase use and dependence on technologies (i.e. cell phones, computers, etc.) or general lack of interest in the industry or regulatory barriers (i.e. policies that prevent children from coming to the wharf where the fishermen land their catch). Although there is no known statistic of how the involvement of children in the fishery has changed over the years it can be argued that even a slight decrease will impact the future growth and sustainability of the industry in the future.

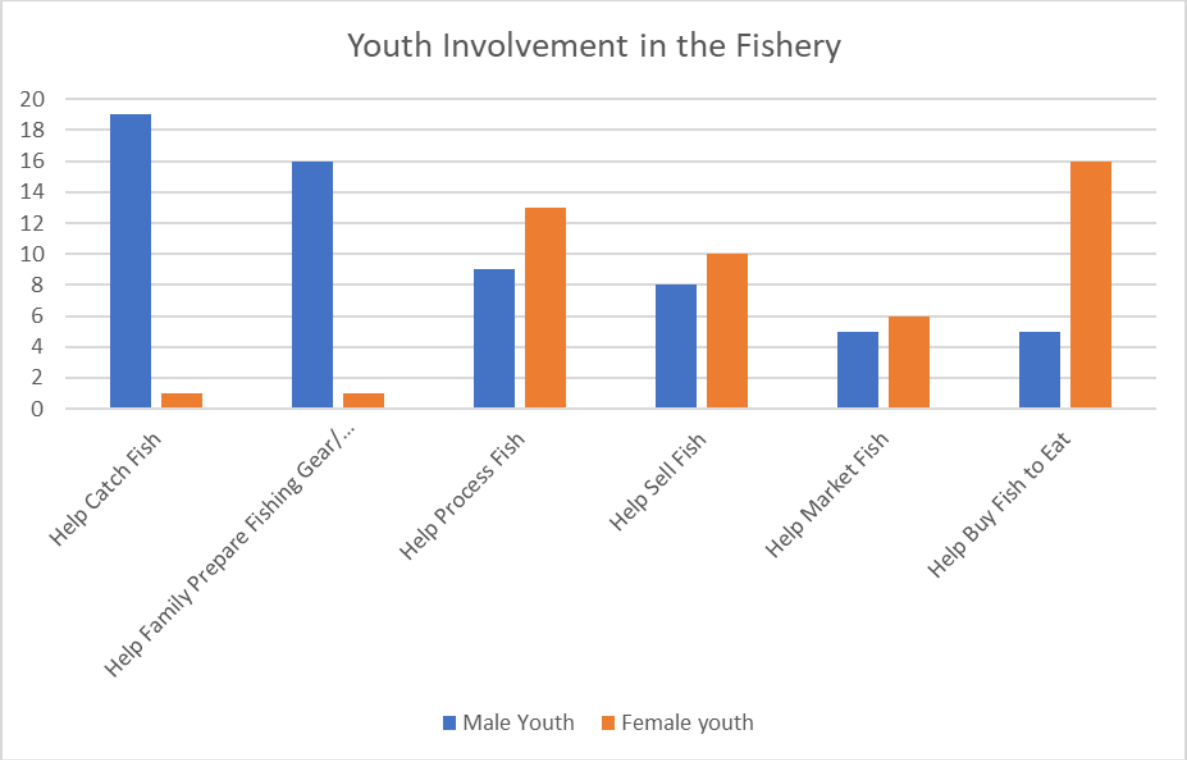


Figure 4.3: Youth Involvement in the Fishery

Figure 4.4 illustrates participants' perceptions about assets men and women own within the fishery. There is a higher emphasis given to male ownership of assets in the fishery. For example, since the fishery has been in the past dominated by men, it is logical that they own the gear and vessels involved with their work. Similarly, due to their lack of participation in the fishery labour market and the wage differential between men and women, women are less likely to secure bank loans to purchase the gear and equipment necessary to participate in the fishery. A number of participants noted the difficulty and further requirements that are placed on women by banks before they are approved for loans. According to these participants, these requirements are often extravagant and unrealistic, which further limits the opportunity for women to get involved in the ownership of assets in the fishery.

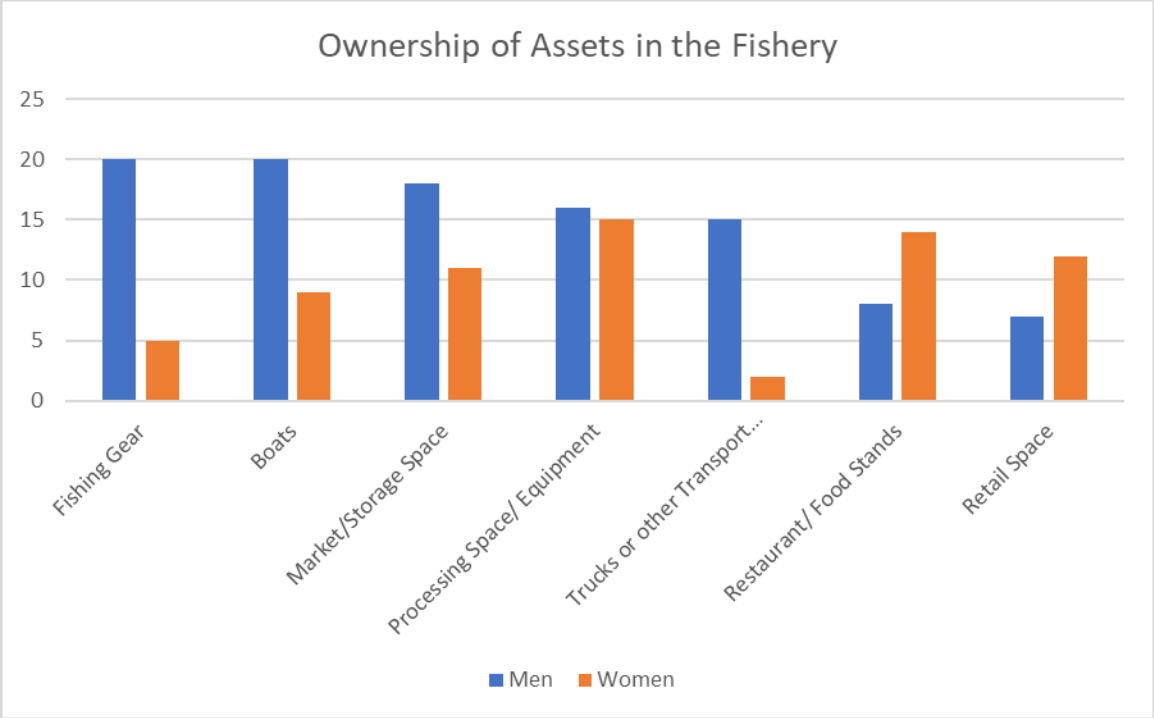


Figure 4.4: Ownership of Assets in the Fishery

When it comes to decision-making about extracting the best value for the fishery there is relatively equal involvement of both men and women. This is indicated in Figure 4.5, where in the first 3 rows (i.e. marketing the fish, processing the fish and selling the fish), participants noted that it is both men and women that make these decisions. In some cases, it may be a matter that decisions are made at the family level, involving both men and women.

Survey results also demonstrate that decisions about the activity of harvesting (i.e. where and when to fish) remain consistent with traditional gender biases. Meaning that harvesting is still a fishing activity that is heavily dominated by men; thus, it is men that make the majority of decisions regarding where and when to fish. Finally, when it comes to the broader issue of business and regulatory management the survey mirrors recent increases of women in government and corporate business sectors.

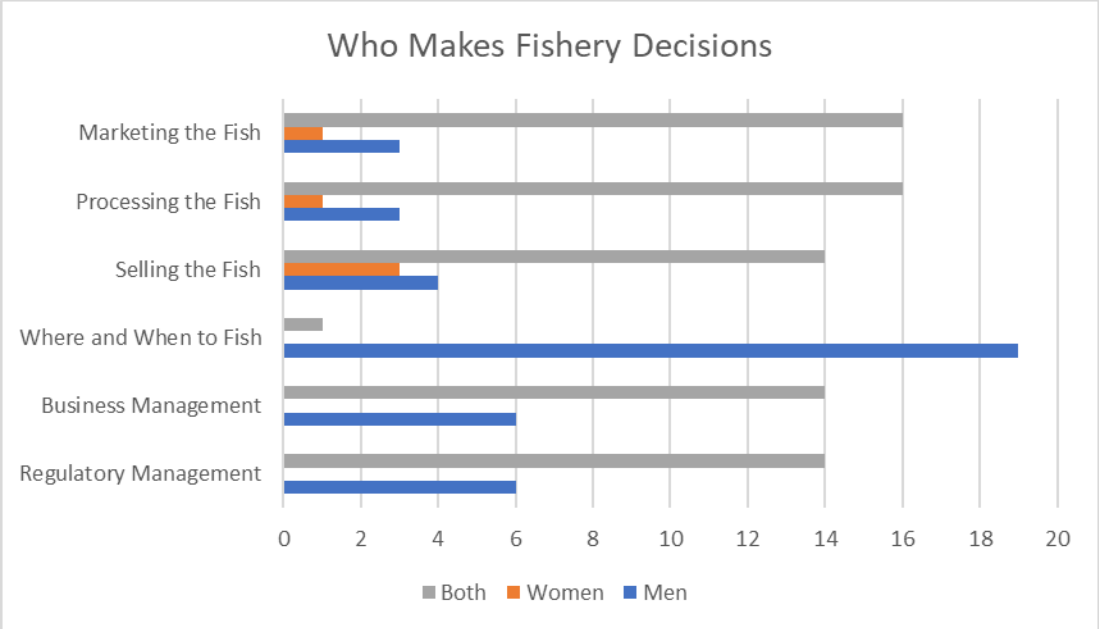


Figure 4.2: Comparison of Who Makes the Decisions in Fisheries

Figure 4.6 illustrates that the benefits of the fishery are societal and thus are shared by all genders. This suggests that family and community are seen as the focus for the benefits of a viable fishery.

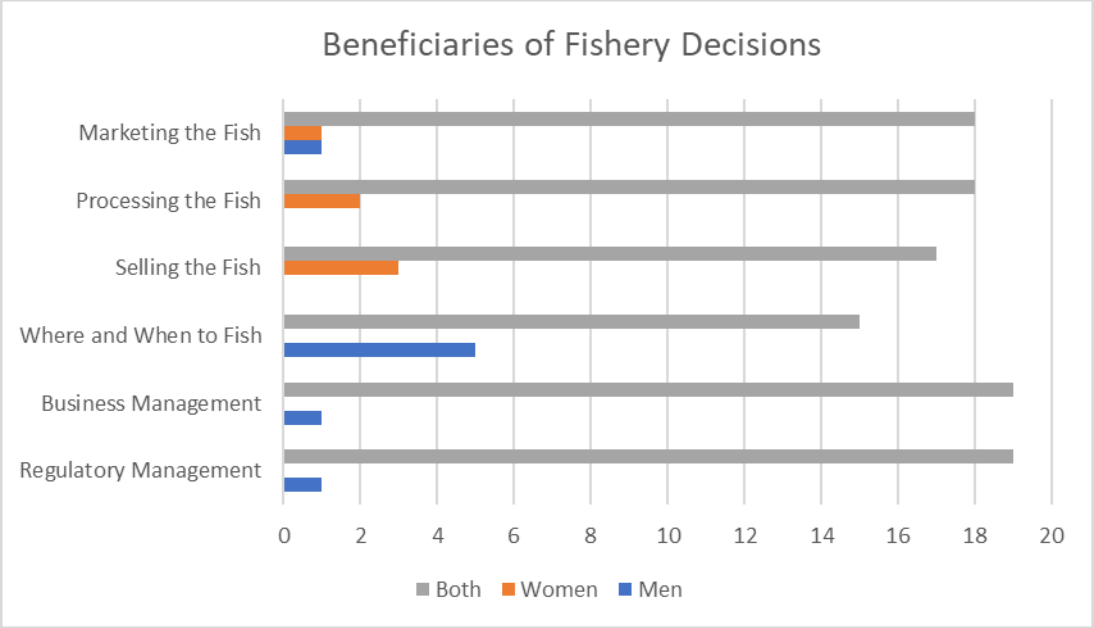


Figure 4.3: Who Benefits from the Fishery?

4.4.5.1 Identified Barriers

There is a number of barriers that have been identified that impact both the role of men and women in the fishery. These barriers include working conditions, lack of training, social stereotypes and financial restrictions. Each of these are described in Table 4.12.

Table 4.12: Barriers impacting the roles of men and women in the fishery.

Identified Barrier	Facilities onboard Vessels	Financial	Social	Training/ Education
Issue	Fishing vessels are not designed for women working onboard for weeks at a time (i.e. lack of privacy/ bathrooms)	Difficulty for men and women to get bank loans, although perceived to be more difficult for women	Stereotypes of the roles of men and women in the fishery.	Lack of Training
Gender Bias	Harvesting has predominately been done by men, thus how a vessel is equipped has not been a focal point for discussion.	The application process for women is a lot more difficult than for men (i.e. more questions and hoops to jump through)	Socially it is accepted that men participate in the harvest, while women participate in the processing and sale.	Men often do not have time to participate in training but could use it, while women have time to participate but aren't able to easily use the skills they just learned.
Solution	Develop accepted industry guidelines that vessels have to have certain standards for their facilities (i.e. bathroom with door on it)	Develop incentive programs working closely with fisher organizations and financial institutions to help grow industry in a sustainable manner	Develop more programs to promote gender diversity in the fishery. Educational campaigns that promote gender equity and education surrounding the fishing industry.	Develop programs that promote equal participation for men and women to participate in non-traditional roles in fishery (i.e. women in harvesting, men in sale, etc.). Suggest to have both male and female trainers involved.

4.4.5.2 Identified Opportunities

A number of important opportunities were identified through the survey that could support the further enhancement of gender equity in the fishery. In addition to the opportunities that were identified in the table above (i.e. solutions row) the following specific opportunities have been suggested:

4.4.5.3 Training and Education

- Develop training and educational programs that enhance the participation for both men and women in the fishery.
- Training and education materials should be gender unbiased and focus on navigation, safety at sea, fish handling, fishing gear technology as well as business management.
- Gender Unbiased Business Management Training Program that promote full participation of men and women.

- Program should focus on business fundamentals (i.e. financial management, marketability, overhead costs, etc.)
- Help fishers develop good business plans and educate them on how to approach financial institutions when seeking loans.
- Promote the participation of men and women in this training program.

4.4.5.4 Youth (Girls & Boys) Development

- Offer mentorship programs and training for youth to encourage their involvement in the fishery.
- Seek government funding to support paid internships to provide opportunity for local students to work in fisheries divisions or at local markets to learn more about each sector of the fishery.

4.4.5.5 Fisheries Associations & Co-ops

- Develop policy to promote the registration of all active fishers.
- Develop gender equity policies for employment within Fisheries Associations and Co-ops.
- Provide Fisheries Associations within information tools that can be disseminated amongst membership, which promotes gender equity.

4.4.6 Monitoring and Evaluation Framework

The following monitoring and evaluation (M&E) framework template is provided to help CRFM and Member States accurately monitor and evaluate their goals, outcomes and outputs as it relates to gender equity, equality and fairness within the flyingfish fishery and fishing sector in general.

The following provides a description of the columns in the M&E Framework Table:
Indicator – What is being monitored and evaluated?
Definition – How is it calculated?
Baseline – What is the current value?
Target – What is the target value?
Data Source – How will it be measured?
Frequency – How often will it be measured?
Responsible – Who will measure it?
Reporting – Where will it be reported?

Table 4.13 provides a hypothetical example of the type of information that could be collected using the topic of children and education as an example. Again, it is important to note that the information[6] inputted below is hypothetical.

[6] Source of information: Tools4dev and Creative Commons Attribution – ShareAlike 3.0 Unported License - http://www.tools4dev.org/resources/me-framework-template/

Table 4.13: Monitoring and Evaluation Framework Template

	Indicator	Definition	Baseline	Target	Data Source	Frequency	Responsible	Reporting
Goal – 10% increase in the number of Grade 6 primary students continuing on to high school within 3 years	*Percentage of Grades 6 primary students continuing on to high school*	*Number of students who start the first day of Grade 7 divided by the total number of Grade 6 students in the previous year, multiplied by 100*	*50%*	*60%*	*Primary and high school enrolment records*	*Annual*	*Program Manager*	*Annual enrolment report*
Outcome – Improve reading proficiency among children in Grade 5-6 by 20% within 3 years	*Reading proficiency among children in Grade 6*	*Sum of all reading proficiency test scores for all students in Grade 6 divided by the total number of students in Grade 6*	*Average score: 47*	*Average score: 57*	*Reading proficiency tests using the national assessment tool*	*Every 6 months*	*Teachers*	*6 Monthly Teacher Reports*
Outputs – 500 Grade 5-6 students with low reading proficiency complete a reading summer camp	*Number of students who completed a summer reading camp*	*Total number of students who were present on both the first and last day of the summer reading camp*	*0*	*500*	*Summer camp attendance records*	*End of every camp*	*Teachers*	*Camp Review Report*

4.4.7 Reporting and Utilization

Based on the desktop research and results of the gender survey it is clear that a greater effort needs to be placed on understanding and promoting equal opportunity and equity within Caribbean fishery sectors. A characteristic of current fishery policies and legislation is that they are gender blind, meaning they adhere to not distinguishing people by gender. This has both positive and negative impacts as it does not obviously discriminate from one gender participating in various sectors of the fishery, however, it also does not promote participation.

The FAO 2013 Report highlights a number of possible solutions to enhance women's participation as equal and productive partners in the fisheries sector. These solutions include the following (FAO, 2013):

- Data Solutions
- Qualitative and Quantitative Gender-Sensitive Indicators
- Sex-disaggregated Data
- Policy Solutions
- Equitable Resource Access Rights
- Resource Control and Access
- Control over access to aquatic resources
- Development Arena Solutions
- Programs to obtain sex-disaggregated data
- Conduct gender analysis in programs and projects
- Strengthen the participatory and organizational capacity of stakeholders at various levels

Many of the solutions listed in FAO's 2013 Report are closely tied to the needs identified throughout the research conducted for this project. However, it is important to recognize the fiscal limitations and human resource restrictions that are facing Member States that would make the solutions offered by FAO unrealistic at this time. Based on this we offer the following recommendations for consideration.

Collection of Sex-Disaggregated Data

There is often a mistaken understanding that the goal of collecting sex-disaggregated data is to understand the role and situation of women in the fishery. Simply put, this is half the story, as men are also involved in the industry and it is equally as valuable to collect information on the role of men in the fishery. Thus, it is necessary to understand both the roles and responsibilities of men and women and how these may change in the context of new policies, markets and technologies. Sex-disaggregated data provides a more complete understanding of livelihoods in the fishery sector, which provides decision makers with the necessary information to develop better policies and programs.

Training & Education Program

The importance of adequate and regular fishery training programs for men, women and youth (girls and boys) cannot be overstated. It is through education that fishery stakeholders are given the opportunity to expand their knowledge of the fishery, develop usable and transferable skills and learn about existing or new technologies that will enable them to make the greatest possible contribution to the economic, social and cultural wellbeing of their community, and in turn, the country as a whole. Furthermore, training programs contribute to professionalization, which can significantly enhance the overall social and economic benefits of the fishery for all gender groups.

Legislation Review – Gender Neutral or Gender Aware

Fisheries legislation is the foundation upon which change in full gender participation in the fishery can be achieved. It is important that the legislative instruments (Fisheries Act and Fisheries Regulations) be examined to determine if they are biasing gender participation in the fishery, either in language or in

focus. Promoting gender awareness in legislation can change the ability of society to understand respective gender roles and how this has affected women's needs in comparison to the needs of men.

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5. CATCH DOCUMENTATION SCHEME

5.1 OVERVIEW

A Catch Documentation Scheme (CDS) has no internationally accepted formal definition, however, for the purposes of this report the definition provided by FAO in their 2016 Technical Paper is used.

"A CDS is a system of certification that provides a framework to trace fish and fisheries products from harvesting, unloading and through international trade to the end market. A CDS establishes the legality of fish or fishery products harvested and unloaded from a fishing vessel, on the basis of a catch certificate validated by an appropriate and accredited competent authority. When any portion of certified fish or fishery product enters international trade, trade certificates are issued and validated by appropriate and accredited authorities along the supply chain, linking traded fish or fishery products to their original catch certificate(s) – limiting trade to certified products only."[7]

Implementing a Catch Documentation Scheme (CDS) for the flyingfish fishery has some inherent difficulties. These difficulties include:

- Size of Fishery
- Scale of the flyingfish fishery is small, therefore the costs associated with a CDS can be prohibitive
- Export Market
- Lack of international market/demand for flyingfish products limiting the need for export certification
- Local Market
- Primary local market in the region for flyingfish products
- Fiscal Constraints
- Limited fiscal resources of regional Fisheries Divisions to establish and enforce a CDS

Therefore, efforts to establish and implement a CDS for the flyingfish fishery should employ existing management tools wherever possible and build on government-industry collaboration.

Currently, the flyingfish fishery lacks robust or aggressive management controls in the fishery to address illegal, unreported, and unregulated (IUU) fishing activities, whether they be intentional or unintentional. Thus, it may be difficult to get fishers to understand that their activities which have only required limited reporting at landing sites, can perceived as IUU fishing, and that greater reporting requirements are needed to ensure the necessary information is collected for management enhancement.

There are 3 issues in the flyingfish fishery that may contribute to the occurrence of IUU fishing in the Eastern Caribbean. These are:

1. When a fisher is fishing in the waters of an adjacent Member State, without the permission of that Member State, it may be deemed as IUU fishing. When this happens, there is no formal process to capture information regarding where the fish are caught.
2. There are no regulatory requirements for reporting catch by pleasure craft or recreational vessels (i.e. sport fishermen). These vessels have the potential to catch flyingfish, which is both unregulated and unreported.
3. There is no reporting of flyingfish catch at sea and used as bait.

[7] FAO (2016) Design options for the development of tuna catch documentation schemes. *FAO Fisheries and Aquaculture Technical Paper 596.* Source: http://www.fao.org/3/i5684e/I5684E.pdf

In order to address these issues, it will be useful for Member States to collaboration and negotiate a common process to authorize fishers based on common fishers' registration schemes, common vessel systems and requirement for the use of a common logbook to record catch and landings information across Member States.

The collection of information through a common log sheet, logbook or other technologically appropriate catch tracking tool will facilitate Member State Fisheries Divisions and regional organisations collaboration necessary to promote effective fisheries management decisions for the long-term sustainability of the resource and enhance the livelihoods of those that depend on it.

5.2 GAPS IN EXISTING DATA

Based on structured interviews and in-country visits the following gaps have been identified within existing data collection systems. These gaps illustrate the need to enhance the CDS so that Member States can access trusted, regularly recorded information.

As noted in Section 4 (above) EAF Management requires multiple types of social, economic and biophysical information. Therefore, it is advisable to collect as much of this information as possible through the catch and landings documentation scheme. Additionally, it is important to reference the importance of accessing local traditional knowledge to obtain new and verify existing social, economic and biophysical information of the flyingfish fishery. Some of these gaps can be filled by accessing traditional knowledge through formal and informal interviews and surveys with local fisheries stakeholders.

Currently, there is no formal data collection process to collect information on:

Catch - Currently, in the sub-regional flyingfish fishery there is no direct capture of catch data, therefore, it is difficult to determine if there is IUU fishing. In the commercial flyingfish fishery landings data is collected only at designated landing sites and it is assumed that all catch is landed. This may not be the case. In fisheries where flyingfish is used as bait, there is no collection of catch or landings data.

Fisher Effort - Fishing effort is another indicator in which data is not collected. Currently, effort is determined by boat-day. It is assumed that each day a vessel is at sea it is fishing. Again, this may not be the case. Currently there is no means to record the location and duration of how many days a vessel is spent fishing while at sea.

Export Certification - Fisheries Divisions do not collect value chain information, such as export weight and value and enterprise counts. This may be due, in part, to the fact that the flyingfish is primarily not an export product, since it is largely consumed locally. However, with the recent attention on the Blue Economy there may be an incentive for Member States to promote export. Accordingly, the CDS should include export certificates to be completed before product is shipped to foreign markets. Certificates should track:

- Source (i.e. location of purchase of fish, name of processing/packaging facility)
- Name of Exporter
- Processed Weight
- Form (i.e. frozen fillets, whole fish, etc.)
- Destination
- Value in local currency

Authorized Personnel **-** Currently, there is no mechanism to ensure that only authorized persons catch, buy, process and export flyingfish in the Member States. Similarly, information on employment in the fishing sector is not regularly documented. Thus, it is difficult to analyze the number of individuals directly and indirectly employed through the fishing industry.

CDS Fits with Value Chain **-** Finally, there is a lack of information on market indicators, such as market price of flyingfish. It is noted, however, that fishery stakeholders have anecdotally indicated that prices fluctuate throughout the season due to demand and what consumers are willing to pay. However, there is no mechanism in place to capture information about these fluctuations or what is driving these changes.

5.3 SUMMARY AND RECOMMENDATIONS

A fundamental first step in enhancing the capture documentation scheme is to determine appropriate performance indicators so that Member States can assess the level of implementation of enhancements to their data collection system and a CDS necessary to improve management of the flyingfish fishery. These performance indicators must be specific to the types of flyingfish activities in the various Member State, including commercial harvesting, harvesting for bait, and mixed-use harvesting.

The following elements should be considered through the course of developing and implementing an enhanced catch documentation scheme for the Eastern Caribbean flyingfish fishery. These considerations include:

5.3.1 Introduction of Mandatory Recordkeeping

The introduction of harvester log sheets. Log sheets, Logbooks or other technologically appropriate catch recording tool enables Fisheries Divisions to collect important *catch* data from each vessel participating in the fishery. To ensure compliance and reduce information gaps recordkeeping must be made mandatory through legislative measures. Depending on the content of information collected in the recordkeeping tool, they can serve two main functions:

1. used as a tool to monitor compliance of individual fishers with regulations; and
2. provide primary fishery statistics as well information on fishing inputs and outputs.

Fisheries Divisions can expect some resistance from fishers to the implementation of mandatory recordkeeping, therefore, it is important to ensure Fishers' Organizations are actively engaged and involved in the implementation process to ensure acceptance by the industry. Additionally, there are other measures that can be implemented to make the introduction of mandatory recordkeeping more appealing to industry stakeholders. For example, Member States may wish to consider exempting fishers from landing fees when competed Records are presented at the landing site, or exempt fishers from registration fees when they have completed Records for the preceding year.

Information to be collected through recordkeeping tools should include, but are not limited to:

Vessel Name
Vessel Registration Number
Vessel Owner Name
Vessel Captain Name
Date
Day of Week
Country of Origin
Time Started/ Time Finished
Location
Type of Gear
Gear Specifications
Bait Type
Species Caught
Length
Weight
Number
Port of Landing
Date of Landing

5.3.2 Introduction of Electronic Monitoring

Electronic monitoring uses cameras, GPS trackers, recording scales and other sensors to collect as well as verify data from onboard fishing vessels or at landings sites. The integration of electronic monitoring is an emerging industry that is advancing the collection and storage of data. A CDS would be further enhanced with the introduction of electronic monitoring.

Specifically, it can be used to augment the information being collected from Field Data Collectors. This alleviates the current pressures and demands facing Field Data Collectors and enables them to operate as spot checkers instead of being the sole means of information gathering.

Additionally, electronic monitoring has the added benefit of being tailored to the needs of its users. For example, one form of electronic monitoring incorporates cameras, sensors and tags (hydraulic, rotation, RFID tags, etc.) to collect or verify data on catch of target and bycatch species and Endangered, Threatened, and Protected (ETP) species interactions.

It is therefore recommended that Fisheries Divisions undertake a feasibility assessment of available and cost-effective electronic monitoring systems to determine best means to acquire and deploy electronic monitoring within local fisheries, which can further support the implementation of a CDS. It may important for Fisheries Divisions to include fishers' organizations in the evaluation of electronic monitoring measures to ensure fishers are actively engaged in the decision-making process. Although start-up costs may be high, in the long-term use of appropriate electronic monitoring systems can be much more cost effective compared to other monitoring programs.

5.3.3 Establish Data Co-management Systems involving Fishers Organizations

It has been recommended[8] that the fishers' organizations be the focus and foundation of national catch and landings data collection activities. This means efforts must be made to enhance the relationship between fishers' organizations and government that have responsibilities for collecting value chain information (i.e. Fisheries Division, Department of Agriculture, Statistical Office, etc.).

Thus, it is recommended that a data co-management system be established involving both Fisheries Divisions and fishers' organizations. This will support the development and implementation of a CDS as well as other data collection activities.

The involvement of fishers' organizations in the collection of data will promote compliance in the collection of data regarding catch and landings, fishing/landing location, and fishing times is collected. Thus, it is recommended that efforts be made to facilitate the participation of fishers' organizations in collecting and compiling fisheries data and in training fishers in recordkeeping and use of appropriate data collection technologies.

5.3.4 Build Capacity through Training and Education

It is important to ensure the necessary training and education is made accessible to Fisheries Division Staff and fishers' organizations, including harvesters and marketers, in the implementation of an improved CDS. The training and education programs should be designed to facilitate implementation of all CDS related recommendations. Therefore, training should build capacity within fisher organizations and teach fishers how to use recordkeeping as well as explain how best to use electronic monitoring tools.

[8] Recommendations for Enhanced Data Collection Systems Report to CRFM, Blue Earth Consultants 2019

5.3.5 Administrative Structure of Catch Documentation Scheme

A CDS for the flyingfish fishery must have a clear administrative structure for how information is collected and verified to reduce the impermeability of the scheme. Thus, there are three essential attributes that a CDS should have to be effective:

Inclusivity: Fisher organizations should be included in the development and implementation of a CDS for maximum effectiveness. Without the support of fisher organizations, and therefore fisher compliance, it is unlikely that the CDS can properly address IUU fishing.

Impermeability: A CDS' impermeability determines its effectiveness to combat IUU fishing and monitoring compliance. This can be achieved through the access to reliable, trusted data (i.e. common fisher recordkeeping tools) and multilateral engagement of Member States in the implementation of an agreed CDS at the regional level.

Verifiability: Ensure there are measures in place to have a CDS audited by a third party who is not directly responsible for completing and validating forms. As well, these third parties can analyze data to detect IUU patterns leading to action based on this intelligence.

As with any data collection system it is important to have a defined hierarchy of how information is collected and shared. Accordingly, the hierarchy shown in Figure 5.1 is proposed for the CDS.

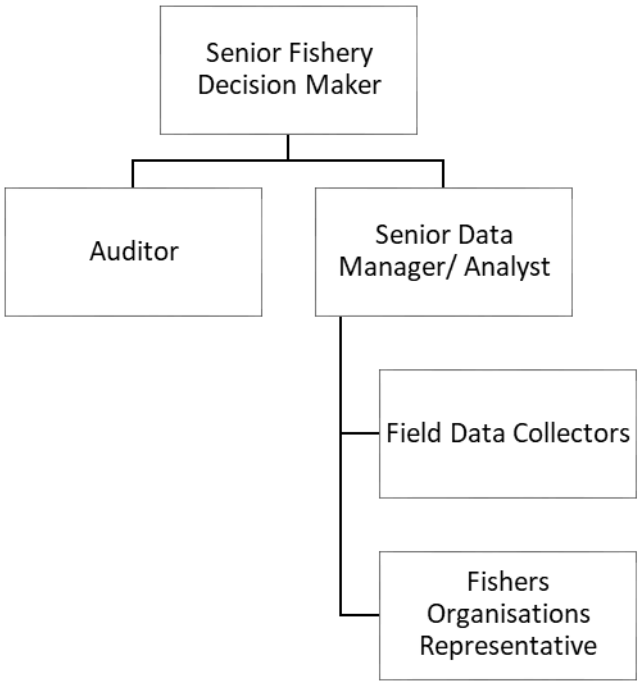

Figure 5.1: Proposed hierarchy of CDS information management flow

The Field Data Collectors and Fishers Organizations Data Representative should be responsible for collecting data and verifying completion of catch/landing records and landings purchase slips[9]. Fishers' organizations should have the additional role of collecting and sharing traditional knowledge[10]. It is understood that financial limitations exist within Member States, and within fishers' organizations which can preclude hiring of individual employees dedicated to performing the responsibilities set out in the above schematic. Accordingly, to ensure improved data collection and management the functional roles and responsibilities set out in the hierarchy should be assigned within the job descriptions of existing staff. It is understood that assignment of additional responsibilities to existing staff may require reprioritizing duties so that multiple job responsibilities do not create conditions of overwork for existing staff, thus undermining overall management performance.

5.3.6 Registration of Vessels and Fishers

Knowing who is fishing and how many vessels are actively participating in the fishery can help address IUU fishing. Including information about vessel types and locations strengthens a CDS and identifies where additional management measures may be needed.

It is recommended that Member States establish mandatory vessel and fisher registration systems. This will require all vessels participating in the fishery be registered and inspected annually or bi-annually, ensuring only authorized vessels can land fish. There should be a similar requirement for fishers (fishing captains) to be registered. A condition of registration should be the requirement to maintain up-to-date fishery records.

To summarize, table 5.1 lists the types of data that should be considered for an enhanced data collection system, which would support the implementation of an effective CDS.

Table 5.1: Data Requirements & Responsible Agent

Flyingfish Data Required	Responsible Organization/Agency
Harvesters	
Fishing Effort (days)	Fisheries Division – Records filled out by harvesters
Catch (number of species)	Fisheries Division – Records filled out by harvesters
Location of Fishing Activity	Fisheries Division – Records filled out by harvesters
Landed weight	Fisheries Division – Purchased slips filled out by data collectors at landings sites
Landed value	Fisheries Division – Purchased slips filled out by data collectors at landings sites
Number of harvesters/employees	Fisheries Division/ Statistical Office – Through harvester registration systems
Number of vessels by type	Fisheries Division/ Statistical Office – Through vessel registration systems and national vessel census
Harvester income	Government Department responsible for employment, income and revenue

[9] Landing purchase slips would be provided by Field Data Collectors or Fisher Organisations representatives based on the accurate completion of fishery logbooks. These purchase slips would act as the catch certificate that the fish associated with the slip were legally caught and follow any fishery management controls.

[10] Based on the approval of the traditional knowledge holder.

Flyingfish Data Required	Responsible Organization/Agency
Hourly wages	Government Department responsible for employment, income and revenue
Vessel earning (per trip, season, year)	Fisheries Divisions – Records and Landing Slips
Market prices – purchases from harvesters	Government Departments responsible for fish markets
Who buys fish – all buyer types	Government Departments responsible for fish markets - Survey
Vessel operating cost – all types **Fuel** **Equipment** **Labour** **Food**	Fisher Organizations – Surveys; Statistical Office; Fisheries Division
Investment cost to enter fishery **Boats** **Equipment**	Fisher Organizations – Surveys; Statistical Office; Fisheries Division
Percentage of harvester income earned from flyingfish	Fisheries Division – Landing and purchase slips
Other sources of income / livelihood outside fishery	Fisheries Division and Statistical Office - Survey
Markets	
Employment at markets	Government Departments responsible for fish markets
Occupations at markets	Government Departments responsible for fish markets
Wages / salaries for market workers	Government Departments responsible for fish markets; Statistical Office
Operating / maintenance costs - markets	Government Departments responsible for fish markets
Processing at markets **Kilos** **Value**	Government Departments responsible for fish markets
Price sold at markets	Government Departments responsible for fish markets
Distribution	
How is flyingfish transported from markets / landing sites?	Government Departments responsible for fish markets - Surveys
Where does it go?	Government Departments responsible for fish markets - Surveys
Cost of transportation / storage (per kilo, per kilometer)	Government Departments responsible for fish markets - Surveys
Processing	
Processing jobs (e.g. cutting, filleting, packaging, etc.)	Government Departments responsible for fish markets – Surveys; Departments responsible for employment
Number of processors	Government Departments responsible for fish markets – Surveys; Departments responsible for

Flyingfish Data Required	Responsible Organization/Agency
	employment
Number processing workers / employment	Government Departments responsible for fish markets – Surveys; Departments responsible for employment
Processing worker earnings / hourly wages	Government Departments responsible for fish markets – Surveys; Departments responsible for employment
Number of days / weeks / months in operation per year	Government Departments responsible for fish markets – Surveys; Departments responsible for employment
Total processing throughput (weight / value) **All species** **Flyingfish**	Government Departments responsible for fish markets – Surveys
Processing revenue / production per year	Government Departments responsible for fish markets – Surveys
Cost of operations / gross margin on revenue	Government Departments responsible for fish markets – Surveys
Price per kilo bought from market	Government Departments responsible for fish markets – Surveys
Flyingfish product forms (e.g. frozen fillets, breaded, etc.)	Fisheries Division and Government Departments responsible for fish markets – Surveys
Cost of production by flyingfish product	Government Departments responsible for fish markets – Surveys
Destination of final products – local (e.g. grocery, hotels, restaurants, etc.) **Percent of sales to each**	Government Departments responsible for fish markets – Surveys
Destination of final products – export (e.g. grocery, hotels, restaurants, etc.) **Countries** **Percent of sales to each**	Government Departments responsible for fish markets – Surveys
Total value local sales	Government Departments responsible for fish markets; Survey of Retail Marketers and Restaurants
Total value export sales	Government Departments responsible for fish markets; Departments responsible for international trade; Statistical Office
Cost of transportation **By method** **Local** **Export**	Government Departments responsible for fish markets – Surveys
Retail locations / destinations final product	Government Departments responsible for fish markets - Retail Marketers and Restaurants Survey
Total annual retail sales	Statistical Office
Other Industries	
Employment **Boatbuilding**	Statistical Office and Departments responsible for employment

Flyingfish Data Required	Responsible Organization/Agency
Equipment manufacture / sales	

The following section provides an overview of a simple Catch Documentation Scheme for Barbados based on the above recommendations. This proposed CDS is based on current fiscal and administrative conditions and can be easily mirrored in other Member States.

5.4 DRAFT CATCH DOCUMENTATION SCHEME - BARBADOS

5.4.1 Principles & Objectives

The following principles were considered in the development of a Model Catch Documentation Scheme (CDS) for Barbados.

- Based on the FAO "Voluntary Guidelines for Catch Documentation Scheme", a CDS should:
- Be in conformity with the provisions of relevant international law;
- Not create unnecessary barriers to trade;
- Recognize equivalence;
- Be risk-based;
- Be reliable, simple, clear and transparent; and,
- Be electronic, if possible.
- The following are of particular relevance to the development of a CDS for Barbados:
- Be in conformity with the provisions of relevant national and international laws. This will facilitate harmonization within the region in accordance with the Sub-Regional Fisheries Management Plan and facilitate sharing of the model CDS with other Member States;
- Not create unnecessary barriers to regional and international trade, which is in keeping with trade agreements within the region; and,
- Be reliable, simple, clear and transparent for all stakeholders involved, which enables easy adoption within a diverse fleet of small vessel operators.

Based on these principles, the objectives for a Barbados model CDS includes the following:

Cost Effective
The CDS should have low operating costs and not create a burden on the Fisheries Division or on fishers.

Expandable
The CDS should be designed to so that it can be expanded to include other species.

Simple
The CDS should use simple technology that will require little training. A CDS that is easily adopted by the fishery will facilitate the development of regulatory measures and promote compliance with these regulations.

Upwardly Scalable
The CDS should be designed to be easily convertible to electronic monitoring. Paper forms should be designed for easy conversion for use in digital platforms, such as cell phones or tablets.

All Levels of Value Chain
The CDS should apply across the value chain, from harvester to buyer.
It should be noted that Electronic Catch Documentation Schemes (E-CDS), also referred to as Electronic Monitoring Systems, are increasingly being employed internationally in small scale fisheries. Simple E-

CDS are becoming more cost effective and reliable and provide a simple tool for fishers to enter species-specific catch, landings, location and other relevant data. However, introduction of electronic monitoring does require an initial investment, and works best when replacing more time consuming and cumbersome document recording systems. As a result, it is understood that E-CDS maybe difficult to introduce to the Barbados fishery considering the state of catch reporting and the current fiscal conditions within the fishery and with the Fisheries Administration.

Tracking Documentation
In meeting the objectives above, the following forms are provided for consideration by the Barbados Fisheries Division.

In consideration of the current state of fisheries reporting and lack of available funds to introduce complex CDS the use of simple logsheets is recommended. Logsheets provide a cost-effective tool to introduce self-reporting to fishers and to establish a culture of data collection across the fishery value-chain. Logsheets can be easily expanded to collect additional data and can be scaled up into E-CDS since digital interfaces can mirror logsheets.

A catch logsheet (i.e. Catch Landings Form) will be provided to fishers by the Fisheries Division. Ideally these will be provided through fishers' organizations. Fisheries Divisions can expect some resistance from fishers to the implementation of mandatory logsheets, therefore, it is important to ensure Fishers' Organizations are actively engaged and involved in the implementation process to ensure acceptance by the industry.

The following provides an overview of the paper trail that would take place along the flyingfish value chain in Barbados.

Catch Landings Form
Each harvester would be responsible for completing Government regulated Catch Landings Forms (logsheets). The logsheets would document the following information:

Catch Landings Form Number: _____

Vessel Name: _____

Vessel Registration #: _____

Fishing License #: _____

Fishing Location	Bait Used	Gear Used	Unit** of Catch	Amount of Catch	Unit of Landing	Amount of Landings

* Form number consists of Country Code-Harvester Initials-Home Port Code-year month day
ie. BD-JJS-O-190625 for John Joseph Smith fishing from Oistens Barbado on 2019 August 25th
** Specify the units used to measure the amount of fish, ie Lbs, Kg totes, boxes etc

Purchase Slip

The purchase slip would be completed by Market Buyers and/or Processors who are buying directly from fishers. A prerequisite to buying a fishers' catch is that the Buyer has to see the Catch Landings Form and record the fishers' form number on their purchase slip. This ensures the Buyers are purchasing non-IUU fish.

The following is an example of a purchase slip and the type of information that would be recorded.

Purchase Slip Number*: _____

Catch Landings Form Number: _____

Vessel Registration #: _____

Species Purchased	Number of Units Landed**	Unit Price	Price Paid

* Purchase Slip number consists of Country Code-Buyer Identification-Location-Date (Year Month Day)
ie. BD-2717-O-190826 for Barbados Buyer Number 2717 in Oistins on August 26th 2019
** Specify the units used to measure the amount of fish, ie Lbs, Kg totes, boxes etc

Processor Certificate

A Processor Certificate would be completed for processing companies that buy directly from buyers. The purpose of this form is to accurately track what comes in and out of the fish plant. It is important to record the inputs and outputs of the processing facility to determine losses in the fishery between production and consumption as well as determine economic performance of the fish plant.

The following is an example of a Processor Certificate form and the type of information that will be recorded.

Processor Certificate Number*:

Product/Batch Number: _____

INPUT TRACKING				
Inventory Identifier Number***	**Species Purchased**	**Unit Type****	**Number of Units Purchased**	**Purchase Cost**

OUTPUT TRACKING				
Number of Units Processed	**Type of Product Produced**	**Sale Cost**	**Number of Units Sold**	**Location of Sale (Domestic or Export)**

* Processor Certificate number consists of Country Code-Processor Company Name-Date (Year Month Day)
ie. BD-ABC Co-190826 for Barbados Buyer ABC Company on August 26th 2019

** It is either the catch landings form number (if bought directly from fishers) or the buyers identification number (if purchased from a market)

*** Specify the units used to measure the amount of fish, ie Lbs, Kg totes, boxes etc

Fisheries Export Slip

A Fisheries Export Slip would be completed for companies that are exporting fish products to regional or international markets. The purpose of this form is to accurately track what is leaving the country and ensuring that it is not an IUU fish product. Thus, the Fisheries Export Slip will require a purchase slip and/or a processing certificate in order for the product the be validated and shipped.

The following is an example of a Fisheries Export Slip and the type of information that will be recorded.

Fisheries Export Slip Number*: _____

Export License #: _____

Purchase Slip # or Processor Certificate #: _____

Species Exported	Quantity Exported**	Export Destination	Export Value

* Fisheries Export Slip number consists of Country Code-Exporter Identification-Departure Location-Date (Year Month Day)
ie.BD-XYZ Co-GAIA-190829 for Barbados XYZ Company, Shipping via Grantley Adams Airport- August 29th 2019

** Specify the unit used to measure the amount of fish, ie Lbs, Kg totes, boxes etc

5.4.2 Implementation Procedures

The implementation of a CDS relies heavily on traceability mechanisms in order to exclude illegally sourced (IUU) fish from the supply chain from harvester to markets to trade, thus reducing the potential for IUU fishing. To achieve this, legally caught fish must be properly certified and documented at the earliest stage of the supply chain (see Figure 5.2) through a Catch Landing Form. The traceability aspects of the CDS is designed to reduce the opportunity for illegally caught fish to enter to the supply chain. Thus, the CDS enables IUU fish to be detected, the perpetrators to be identified, so that sanctions to be applied as appropriate.

The basic operation of the CDS through catch landing forms, purchase slips, processing certificates and fisheries export slips, as shown below, illustrates the various points in the supply chain where the documents are issued and validated by the appropriate authorities.

At the national level, the different stakeholders along the supply chain should require appropriate licenses, authorizations and reporting obligations within a CDS. This may include, but is not limited to, vessel registration and licenses, vessel monitoring systems, logsheets, dockside monitoring, processing slips, sales and distribution and exportation. Each of these elements generate different types of information which are recorded and logged by different authorities. For a CDS to work most effectively, this information should be generated in a standardized format among the various supply chain stakeholders to avoid difficulties in compiling and analyzing data. This can be achieved through the development and adoption of legislation and/or regulations that require standardized data collection, implementation of licensing regimes and support for fisher organizations to be recognized agents that support Fisheries Divisions in the collection and compilation of CDS forms.

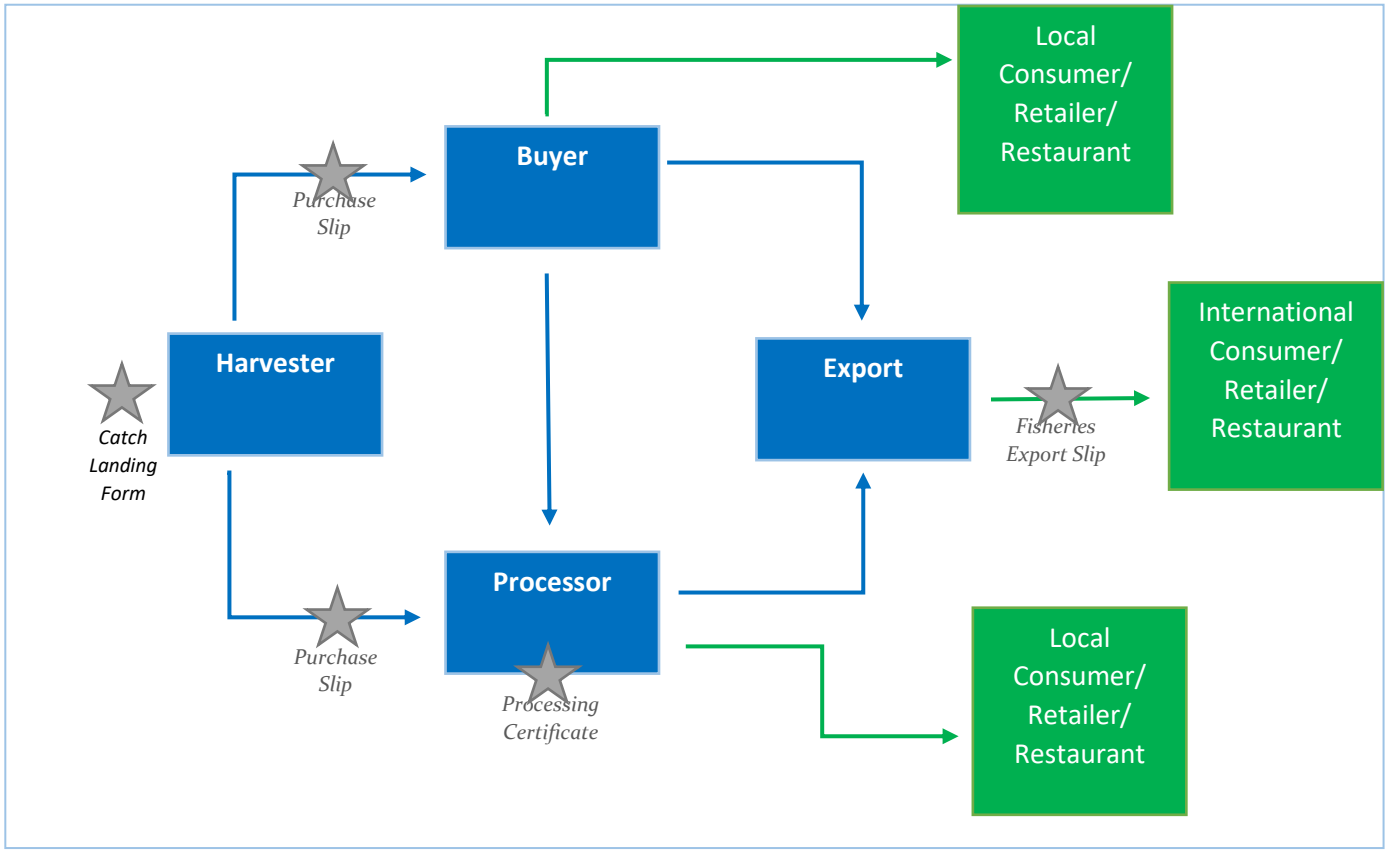

Figure 5.2. Generic fish supply chain

An example of an increasingly used system for traceability within a CDS is the implementation of an online (electronic) platform. The function of this online platform has been:

- To identify and log CDS fish as soon as it enters the supply chain (i.e. when the harvester lands at the wharf/dock/beach);
- To identify and log all supply chain transactions (i.e. from harvester to processor to vendor to buyer to exporter); and,
- To identify and log all supply chain transactions that are leaving the national supply chain and are entering the international supply chain.

It is understood that the implementation of an online national platform to trace fish products along the supply chain may be currently cost prohibitive due to fiscal and staff limitations in Barbados.

5.4.3 Summary & Conclusion

The objective of a CDS is to prevent IUU fishing and deny market entry to its products. The implementation of a CDS in Barbados will cover harvesting, landing, distribution, processing and export trading operations. It is essential that traceability mechanisms are implemented throughout the entire supply chain to ensure IUU fish do not enter the market.

The following considerations should be addressed in order to successfully implement the proposed CDS that involves fisher logsheets, catch landing forms, purchase slips, processing certificate and fisheries export slips. These considerations are:

- Fisheries Divisions need to establish regulatory requirements that support the implementation of a CDS through mandatory registration, logsheets, observer programs, etc.
- Ensure supply chain stakeholders are formally trained and committed to supporting the operations of CDS and understand its benefit.
- Fisheries Division must designate competent agents (such as Fisher Organization representatives) with the necessary authorization to check and validate the various forms/certificates along the supply chain. This augments the capacity of the Fisheries Divisions to monitor and enforce the CDS and creates stakeholder buy-in for the protection of their livelihoods.
- There must be clear coordination between the relevant governmental departments involved with different aspects of the fisheries value chain to ensure all the relevant data is accessible for decision-making and to ensure full implementation of the CDS to promote compliance.
- Finally, the Barbados Government should give due consideration to implementing an E-CDS once the CDS is well established.

6. MULTI-OBJECTIVE ASSESSMENT

6.1 OVERVIEW

This section consists of a summary of findings from a comprehensive review of national flyingfish fishery management objectives (i.e. the policy priorities for the fishery), industry objectives for flyingfish harvesting and priorities determined from international discourse on sustainable fisheries management. Analysis of these findings was conducted for various sector disciplines (i.e. biophysical/ ecosystem, socio-economic and socio-political).

While assessment of national priorities and objectives have been conducted separately, findings have been incorporated into a single report to highlight some of the potential synergies and discords created by differing priorities.

As in any management plan the principles, goals and objectives define the values upon which the fishery is being managed, the specific intent of the management, and the steps to be taken to meet those goals. For the flyingfish fishery in the Eastern Caribbean the principles are laid out in the Sub- Regional Fisheries Management Plan (FMP) 2014; shown below:

This flyingfish management plan is guided by:

- The Ecosystem Approach to Fisheries Management as defined by the FAO Guidelines (2003) "strives to balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries".
- The principles as set out in the 1995 FAO Code of Conduct for Responsible Fisheries (CCRF), and particularly Article 6 of the Code on Fisheries Management.
- The fundamental principles of the Draft Caribbean Community Common Fisheries Policy (CCCFP), as outlined in Article 5 of the Agreement establishing the CCCFP, which include many that have been adopted from the CCRF:
- Use of the best available scientific information in fisheries management decision-making, taking into consideration traditional knowledge concerning the resources and their habitats as well as environmental, economic and social factors;
- Application of internationally-recognized standards and approaches, in particular the precautionary approach to fisheries management;
- The principle that the level of fishing effort should not exceed that commensurate with the sustainable use of fisheries resources;
- The participatory approach, including consideration of the particular rights and special needs of traditional, subsistence, artisanal and small-scale fishers;
- Principles of good governance, accountability and transparency, including the equitable allocation of rights, obligations, responsibilities and benefits; and
- The principle of subsidiarity, in particular, that the Competent Agency will only perform those tasks which cannot be more effectively achieved by individual Participating Parties.
- Recognition that National Authorities responsible for fisheries management in the participating states carry the main responsibility for implementing this sub-regional management plan within their national jurisdictions and for monitoring and evaluating the status of implementation against the objectives and indicators agreed upon.
- The vision for the flyingfish fisheries is an effective cooperation and collaboration among participating Member States in the conservation, management and sustainable utilization of the flyingfish resource and related ecosystem in the Eastern Caribbean region in order to secure the

optimal benefits from those resources for the people and for the Caribbean region as a whole. This vision is consistent with that of the Caribbean Community Common Fisheries Policy and the [draft] cooperation agreement between the CRFM and the Government of France.

6.2 INVENTORY OF THE STATE OF FLYINGFISH FISHERIES MANAGEMENT OBJECTIVES

6.2.1 Sub-regional Fisheries Management Plan

This assessment of the Sub-regional Flyingfish Fisheries Management Plan (FMP) is based on the revised plan that is currently being prepared by Blue Earth Consulting for CRFM. The previous version of the sub-regional FMP is from 2014. Therefore, to provide an accurate and up-to-date assessment of the FMP objectives, soon to be implemented, this assessment focuses on the revised version.

The revised FMP lists the following four goals that are further subdivided into 10 general objectives (as of October 2018):

Management Goal 1. Sustained fishery resource

In order to ensure that the flyingfish resource is sustained for future generations, the following two general objectives will be addressed.

General Objective 1.1. Sustained resource: Prevent overfishing to maintain a healthy stock and ensure that there are flyingfish available for future generations.

General Objective 1.2. Accurate information: Ensure that an effective data collection system is in place to provide accurate information and knowledge about the state of the fishery.

Management Goal 2: Effective fisheries management

In order to ensure that the flyingfish fishery is effectively managed to achieve its stated objectives, the following general objective will be addressed.

General Objective 2.1. Effective management: Ensure that there is an effective system for adaptive and responsive management and enforcement, utilizing a participatory approach.

Management Goal 3: Optimal use of fishery for long-term benefit

In order to ensure that stakeholders in the flyingfish fishery continue to benefit from the resource, the following general objectives will be addressed.

General Objective 3.1. Social benefits and economic/financial returns: Ensure 0ptimal social, economic and financial benefits for all involved in the fishery.

General Objective 3.2. Affordable food source: Ensure that flyingfish remains an affordable and available source of food for the future.

General Objective 3.3. Fair access to fishing grounds: Ensure fair access to fishing grounds and minimize conflict/competition with other resource sectors/users.

General Objective 3.4. Optimal utilization/processing for domestic and export markets: Promote fish quality and safety for consumers and develop value addition for the post-harvest sector for domestic and export markets.

Management Goal 4: Sustained ecosystem health

In order to ensure that the health of the marine ecosystem on which flyingfish depend is sustained, the following general objectives will be addressed.

General Objective 4.1. Healthy habitat: Ensure healthy habitat with minimal degradation and minimal cumulative impacts from pollution, seismic oil and gas exploration, climate change and other negative effects.

General Objective 4.2. Healthy and resilient ecosystem: Maintain marine biodiversity and balanced trophic levels in the marine ecosystem.

Table 6.1 is taken from the revised sub-regional FMP (the Eastern Caribbean Flyingfish Fisheries Management Plan 2020-2025) and provides a detailed summary of the operational objectives, actions, indicators, and milestones for each of the objectives listed above. For some objectives, the authorities or agencies that will be responsible for monitoring and execution are listed as well.

Table 6.1: Updated Management Objectives, General Objectives, Operational Objectives, Indicators and Reference Points from FMP

General objectives (subcategory)	Operational Objectives	Actions	Indicators	Responsibility	Milestones
Management Goal (Category) 1. Sustained fishery resource – ecosystem well-being					
1.1 Sustained resource Ensuring that there are flyingfish available for future generations. Preventing overfishing to maintain a healthy stock	Current average catch rates sustained over the long-term and throughout the area of distribution Stock biomass is maintained at or above MSY level	Adoption of a precautionary sub-regional total annual catch trigger point of 5000 tons, at which point further action shall be taken to ensure the stock does not become overfished Conduct an assessment to estimate stock abundance of flyingfish, such as a regional synoptic survey, prior to any significant development in the fishery;	Average CPUE Total landings Stock abundance	Fisheries Divisions	Catch trigger point in place by 2019/2020
1.2 Accurate information Ensuring that an effective data collection system is in place to provide accurate information and knowledge about the state of the fishery	National data collection improved, and gaps filled	Strengthen current national data collection systems to facilitate: assessment of the resource status and establishment of improved management target and reference points; estimation of existing levels of fishing effort and fishing capacity Monitoring and evaluation of the status of implementation of the national and sub-regional fisheries management plans against the objectives and indicators agreed upon.	Sampling coverage Sampling design	Fisheries Divisions in collaboration with universities, consultants, NGOs	New data collection systems in place 2019/2020
Management Goal (Category) 2. Effective fisheries management – ability to achieve					
2.1 Effective management Ensuring that there is an effective system for adaptive and responsive management and enforcement	Data are seamlessly shared between countries.	Establish a harmonized sub-regional database	Sub-regional database operational		Harmonized regional database in place 2019/2020
	Timely submission of data and information to CRFM	Annual reporting, by States with a real interest in the flyingfish fishery to the CRFM and, similarly, non-CRFM Member States to the WECAFC, on progress made in development and implementation of national fisheries management plans (including associated proposed management measures) and submission of catch and effort data for	Annual submission of data		First annual report uploaded to database 2020

General objectives (subcategory)	Operational Objectives	Actions	Indicators	Responsibility	Milestones
		flyingfish fisheries in an agreed, standardized format, to the respective Secretariats			
	Establish authorized access to fishery	Establishment of an authorized national entry (license/permit) system for flyingfish fisheries	License/permit system operational	Fisheries Divisions	All fleets licenses by 2020
	Establish precautionary measures as required	Implementation of a precautionary sub-regional freeze on expansion of flyingfish fishing effort and/or fishing capacity applied to all authorized vessel types, should the agreed catch trigger point be realized, and timely reassessment of the resource status and identification of any required changes to the management measures	Variety of indicators as required (e.g. fleet size)	Fisheries Divisions	Freeze in place by 2019
	Ensure ability to make and enforce management decisions.	Develop a protocol to improve and harmonize fisheries management legislation, to address specifically flyingfish vessel licensing and registration systems in the sub-region.	Legislation and regulations in place and enforced Number of infractions	National governments	Legislation and regulations in place by 2019/2020
	Ensure ability to collaborate effectively with stakeholders and other countries and organizations both vertically and horizontally	Create stakeholder networks to encourage engagement. Hold regular stakeholder consultation meetings.	Number of stakeholders engaged in consultation and feedback		
	Adaptation to external drivers/ perturbations	Conduct research on the impacts of global warming and ocean acidification, invasive species, FADs	Ocean pH and temperature, Presence of invasive species (Sargassum)	Environmental Ministries	

General objectives (subcategory)	Operational Objectives	Actions	Indicators	Responsibility	Milestones
Management Goal (Category) 3. Optimal use of fishery for long-term benefit – human well-being					
3.1 Social benefits and economic/ financial returns Optimal social, economic and financial benefits for all involved in the fishery	Optimize social, economic and financial benefits derived from the fishery	Conduct socio economic assessment of fishery and post-harvest industry. Identify methods for adding value to the flyingfish products and building capacity along the value chain.	Percent population employed in the fishery Average household income Return on investment Credit access Value of flyingfish products	Labour Ministries	
3.2 Affordable food source	Ensure that flyingfish remains an affordable and available source of food for the future	Implement market adjustments to maintain demand and affordability	Per capita fish consumption Percentage of population consuming flyingfish Market price of flyingfish Average market price		
3.3 Fair access to fishing grounds	Ensure fair access to fishing grounds Minimize conflict/competition with other resource sectors/users.	Create or support the creation of marine spatial plan to mitigate potential conflicts between resource user groups.	Number of vessels and fishers licensed, Bilateral/multilateral access agreements in place Number of conflicts with other resource users	Fisheries Divisions, energy sector, tourism sector	Spatial plan completed by 2020

General objectives (subcategory)	Operational Objectives	Actions	Indicators	Responsibility	Milestones
3.4 Optimal utilization/ processing for domestic and export markets	Promote fish quality and safety for consumers Develop value addition for the post-harvest sector for domestic and export markets	Improve access to and safety of landing site facilities, and repair damaged infrastructure Install ice machines at landing sites Implement Health and Food Safety quality standards for all landing and processing facilities.	Fish and fishery products related SPS standards (e.g. HACCP) Value of post-harvest production Export value	Fisheries Divisions in collaboration with fishing community	All landing and processing facilities meet HACCP standards by 2021
Management Goal (Category) 4. Sustained ecosystem health – ecosystem well-being					
4.1 Healthy habitat Healthy habitat with minimal degradation and minimal impact from pollution or other negative effects	Maintain off-shore pelagic habitat health Minimize habitat degradation	Create harmonized regional coastal water quality standards for the protection of aquatic life, measured in the receiving environment, especially near areas of oil exploration.	Water quality (e.g. adapted from Environment Canada Guidelines for the Protection of Aquatic Life Marine debris/pollution occurrence	Environmental Ministries	Water quality guidelines implemented and enforced by 2020.
4.2 Healthy and resilient ecosystem (with balanced trophic levels)	Maintain aquatic biodiversity and balanced ecosystem Adaptation to climate change and weather extremes	Establish catch size limits for pelagic fishes trophically linked to flyingfish to encourage natural species and size compositions and trophic levels in the pelagic fishery.	Species composition of catches (including size) Trophic levels (predator –prey composition) Adaptation and vulnerability indicators	Fisheries Divisions	100% mature fish catch in the pelagic fishery by 2021

6.2.2 National Fishery Management Plans

In addition to objectives defined in the Sub-regional Fisheries Management Plan, Member States also have independent Fisheries Management Plans which include nation-specific fisheries management objectives. It is also important to consider these objectives in the analysis of complementarity/confliction of fisheries management objectives that can impact management performance of the Eastern Caribbean flyingfish fishery. While several Member States are involved with the harvest of flyingfish, the following provides a review of the management objectives of only the three Member States selected for the Project, namely; Barbados, Grenada, and Trinidad and Tobago.

6.2.2.1 Barbados

Barbados is located on the eastern extent of the Caribbean Sea. It has a continental shelf area of 320 km^2 and shares neighbouring waters on its northern, western, and southern sides with Saint Lucia, St. Vincent and the Grenadines, Grenada, and Trinidad and Tobago. On its Eastern side, Barbados holds a marine exclusive economic zone (EEZ) that is 177 346 km^2. While the fishing industry only contributes about 0.1% of the GDP, it is important for both job and food security for its population of approximately 284,000 people (as of 2015). Local fisheries provide employment for approximately 6,000 people in the harvesting and post-harvesting sectors, and almost half of the nations' consumption of fish are from domestic landings. The flyingfish fishery is the most important fishery in terms of landings, although the increased presence of the seaweed Sargassum in recent years has led to reduced catches.[11]

The most recent available FMP document for Barbados is a generalized plan for the years 2004 to 2006. This FMP is not specific to a certain fishery and it does not explicitly state any management objectives. Rather, it outlines visions identified by stakeholders for the harvest or post-harvest sectors, as well as for the main fisheries of Barbados. In this assessment, the vision statements are interpreted as goals, and the strategies outlined for each goal are treated as objectives since they are measurable actions. Additionally, the guiding principles for fisheries management in Barbados are taken directly from Article 6 of the International Code of Conduct for Responsible Fisheries adopted by the FAO in 1995.

Guiding principles for fisheries management in Barbados, adopted from the International Code of Conduct for Responsible Fisheries:

- Maintain biodiversity and use ecosystem approaches to management;
- Manage fishing capacity and fishing methods to facilitate resource sustainability;
- Use precautionary approaches to sustainable use, management and exploitation;
- Protect and rehabilitate critical fisheries habitats and the environment generally;
- Use post-harvest practices that maintain nutritional value and quality of products;
- Include fisheries interests in all aspects of management planning and development;
- Establish effective mechanisms for monitoring, control and surveillance;
- Collect and provide data including sharing, pooling and information exchange;
- Ensure that fisheries decision-making processes are transparent and that all stakeholders have the opportunity to participate;
- Conduct trade in fish and fishery products according to applicable agreements;
- Cooperate with States in order to prevent disputes or resolve them in a peaceful manner;
- Promote awareness of responsible fishing through education and training;
- Ensure safe, healthy and fair working and living conditions for fishery workers;
- Recognize the contribution of small-scale fisheries to employment, income and food security;
- Promote aquaculture as a means for diversification of income and diet.
- Encourage aquaculture as a means to promote diversification of income and diet.

[11] http://www.fao.org/fishery/facp/BRB/en

- Integrate fisheries into coastal area management to ensure that the needs of coastal communities are met without harming fragile coastal ecosystems.

The following are the goals and associated objectives for the harvest sector outlined in the 2004-2006 Barbados FMP:

Trained and well-informed fishers and fisherfolk organizations playing an active and vital role in the sustainable management of the fisheries resources and in quality assurance of seafood.

- Prepare a compendium of existing information/data on each of the local fisheries.
- Work with fishers to transform existing fisheries data into user-friendly information in the form of videos, posters, brochure, and newsletters.
- Distribute information via radio, television, seminars, training courses, exhibitions and extension.
- Investigate why existing fisherfolk organizations are not functioning effectively.
- Work with stakeholders to strengthen fisherfolk organizations and foster wider cooperation in the harvest sector.
- Work with stakeholders to implement, monitor and review the agreed strategies for enhancing stakeholders' participation.
- Hold seminars, workshops and site meetings on regional and international issues impacting on local fisheries.
- Strengthen harvest sector legislation by amendment and re-drafting.
- Develop compliance guidelines.
- Develop public awareness programmes for legislation.
- Sensitize the enforcement agencies on the importance of enforcing fisheries management regulations.
- Strengthen the monitoring and surveillance capabilities of appropriate enforcement agencies.
- Involve fishers in monitoring and enforcement programmes.
- Source Government and non-Government funding and assistance for major projects.
- Build trust between fishers and Government by working closely with fishers on major fisheries issues.
- Assess the harvest sector training needs of fishers.
- Collaborate with other local training institutions and fishers to develop training courses to meet the harvest sector's needs.
- Have courses certified and recognized at the national level.
- Sensitize fishers to the benefits of training.
- Institute mandatory training for boat captains in safety at sea, navigation and fish handling.

Well-maintained and designed vessels complying with national legislation and standards for design, construction, safety at sea and hygienic storage and handling of fish.

- Finalize the draft legislation safety and fish handling.
- Prepare guidelines on compliance with legislation.
- Work with fishers in implementing and enforcing standards.
- Mandatory training of fishers in vessel maintenance, basis engine care, fishing vessel management, safety at sea.
- Provide user-friendly information, extension and training materials.
- Promote the use of maintenance plans by boat owners and captains.
- Conduct frequent spot inspections of vessels by Authorized Officers.
- Improve the Government hurricane preparedness plans and include mitigation measures, recovery and rehabilitation.
- Encourage boat owners to prepare hurricane preparedness plans.

- Conduct disaster management workshops for stakeholders.
- Provide training in boat design, construction, inspection, certification and safety at sea.
- Work with existing boat builders to improve design, construction and methods.
- Encourage experienced and approved boat builders to offer apprenticeships in boat building.
- Develop strategies to recruit young people to careers boat building.
- Ensure that onboard fish storage facilities are appropriately designed and properly maintained.
- Provide mandatory training in handling of catch at sea and offloading at landing sites.
- Work with fishers to improve their fish handling techniques.

Fishers using responsible fishing practices and not engaged in activities that undermine the effectiveness of any accepted national, regional or international fisheries management measures.

- Identify existing irresponsible fishing practices.
- Educate fishers about the dangers of irresponsible fishing practices through promotion of the Code of Conduct for Responsible Fisheries.
- Update existing legislation and develop new legislation from time to time to counteract existing and new in irresponsible fishing practices.
- Put systems in place to monitor fishing and enforce legislation.
- Work with regional counterparts to promote the use of responsible fishing practices throughout the region.
- Acquire journals, literature and videos of new fishing technology and techniques for the Fisheries Division library.
- Make the material accessible to stakeholders through the Fisheries Division's library and via the internet.
- Where necessary convert material into user-friendly information for dissemination to stakeholders.
- Use the Fisheries Division's vessel to demonstrate the use and advantages of the new fishing technology and techniques.
- Conduct cost benefit analyses to demonstrate the effectiveness of the new fishing technology and techniques.
- Promote beneficial new fishing technology and techniques.
- Evaluate local fishing capacity.
- Develop an action plan for managing local fishing capacity.

Modern and appropriate infrastructure that supports the loading of supplies, sanitary offloading of catch, and construction or repair of vessels.

- Continue to work with stakeholders to assess the existing loading and offloading facilities and identify the needs.
- Review the management and operation of landing facilities and upgrade as necessary.
- Put measures in place to ensure the proper maintenance of fish landing facilities and delivery of services to the stakeholders.
- Peruse the construction of boatyards facilities in Bridgetown and the north of the island.
- Remove derelict and unused vessels from active boatyard areas.
- Ensure the proper management and upkeep of existing and new boatyards.

Fishers supporting and benefiting from social services which contribute to their well-being in times of need.

- Sensitize fisherfolk on the benefits of contributing to the National Insurance Scheme, pension plans and other personal insurance schemes.

- Work with National Insurance Scheme, insurance companies and fishers to develop strategies to that will enable fishers to contribute to and benefit from social programmes.

Local and regional fisheries stakeholders working together to manage national and shared fisheries resources.

- Assist local fishers in seeking funding for projects that will bring regional fishers together to discuss their common interests and set up channels of communication to facilitate ongoing discussion.
- Support regional initiatives to set up regional fisherfolk organization.
- Work with other countries to develop and strengthen the Caribbean Regional Fisheries Mechanism.
- Promote the need for a regional fisheries policy.
- Work with local and regional fisheries stakeholders to draft a regional fisheries policy and identify the necessary mechanisms and resources to put such a policy in place.
- Support regional efforts to set up better linkages among regional fisheries institutions.
- Goals and associated objectives for the post-harvest sector in the 2004-2006 FMP:

Trained fishers, informed fisherfolk organizations and other stakeholders playing an active role in fish quality assurance, food safety and small business enterprises.

- Assess the post-harvest stakeholders training needs.
- Collaborate with other local training institutions and stakeholders to develop training courses and extension programmes to meet the post-harvest needs.
- Have courses certified and recognized at the national level.
- Institute mandatory training for primary post-harvest stakeholders.
- Provide signage on fishing handling at the markets.
- Build the institutional capacity necessary to deliver the training courses and extension programmes.
- Source Government and non-Government funding and assistance in local and overseas training of government and non-government stakeholders.
- Work with stakeholder to develop user-friendly information on the handling of fish and the operation of small business enterprises, in the form of videos, posters, brochures, newsletters.
- Institute mandatory training in fish handling for primary post- harvest stakeholders.
- Investigate why existing fisherfolk organizations are not functioning.
- Work with fisherfolk to strengthen their organizations.
- Seek international assistance in the fisherfolk organizations.
- Work closely with stakeholders in decision-making on post- harvest issues.
- Involve stakeholders in implementation, monitoring of post- harvest standards.
- Source suitable training for fisheries and market staff.
- Develop and disseminate user-friendly material to sensitize the public on fish quality issues.
- Place appropriate quality assurance signage at strategic locations in the market place.

Adequate National seafood legislation and standards with systems and procedures in place to ensure compliance.

- Finalize fish quality and inspection legislation and standards.
- Prepare compliance information.
- Work with stakeholders to implement, enforce and monitor compliance.
- Set up an enforcement unit with trained inspectors.
- Develop clear enforcement and monitoring procedures and guidelines.
- Provide local and overseas training for inspectors.

- Develop stakeholder and public awareness programmed.
- Conduct training workshops for stakeholders.
- Post appropriate signage at strategic location.

Individuals and agencies producing and marketing quality value-added seafood products.

- Seek technical assistance to identify economically viable valued-added products using local fish.
- Prepare technical information package on the production of valued-added items.
- Put systems in place to encourage investment in the production of valued-added items (including incentive and financial support).
- Provide technical and training assistance to stakeholders.
- Promote the production of valued-added production.
- Strengthen the Fisheries Division's capability to conduct extension and technical training in the production of value- added products.
- The flyingfish fishery falls within the pelagic fisheries of Barbados and has one goal associated with it:

Regional cooperation in the management and sustainable utilization of these shared resources

- Promote and collaborate in the development and implementation of a harmonized regional data collection and recording programmed.
- Collaborate with fishers and students in fisheries research.
- Engage in joint regional fisheries research especially stock assessments for example the CRFM working groups on large pelagics and the FAO ad hoc flyingfish working group.
- Increase participation in ICCAT data collection and assessments.
- Promote the concept of a common regional fishing zone.
- Where necessary, negotiate fishing access agreements with neighbouring states.
- Develop mechanisms to facilitate local stakeholder inputs into regional and international management decisions.
- Assist in the formation and work of viable regional decision-making and management mechanisms for regionally shared fishery resources such as flyingfish and dolphinfish.
- Play a more active role in formulation of policies and management measures for internationally shared large pelagic stocks at appropriate international forums such as ICCAT.
- Implement the provisions of regional and international agreements that facilitate management of shared stocks.
- The 2004-2006 FMP also lists possible additional management measures to be considered for the flyingfish fishery. These management measures take the form of general objectives that either complement or reiterate the goal and objectives listed above:
- Promote the establishment of a regional organization or arrangement for making management decisions concerning shared resources.
- Cooperate and collaborate with Caribbean states to assess and manage the resources.
- Promote collaboration and cooperation between government and the fishing industry in the management of this resource.
- Possibly control increases in fishing effort by adopting a precautionary approach to licensing new vessels.

6.2.2.2 Grenada

The state of Grenada consists of three islands, the largest being Grenada itself. The two smaller islands are Carriacou and Petite Martinique. The Nation of Grenada has a coastline of 121 km and an EEZ of 25 670 km^2. The annual landed catch for the nation is around 2800 tonnes, with the main commercial species being yellowfin and blackfin tuna, Atlantic sailfish, dolphinfish, red hind, and parrotfishes. While the

fishing industry has been historically artisanal, the past several decades has seen the development of a commercial fishing industry focusing on large pelagic fisheries. The growing number of longline boats and expanding commercial fishing operations have increased the importance of Grenada's fisheries due to the jobs and increased food security it creates. The fishing industry currently contributes 1.5% of Grenada's GDP. Owing to the important economic and food security benefits created by the nation's fisheries, the Government of Grenada is trying to increase the contribution of fisheries to income and employment. They are also actively promoting the FAO code of conduct for responsible fisheries.[12]

The Study Team was unable to acquire an FMP for Grenada through either desktop research or contact with the Fisheries Division[13]. Draft FMPs from 1996 and 2002 are referenced in a CRFM document, which lists the objectives that were included in these draft plans. Because the 1996 draft plan was superseded by the 2002 draft plan, this analysis will focus on the objectives of the 2002 draft plan.

The draft FMP from 2002 outlines the following general strategic objectives for fisheries management and development in Grenada:

- Sustain and increase yields from fisheries resources for the purpose of satisfying and enhancing human food consumption and in general contributing to the socio-economic options available to the Grenada community.
- Provide for recognition of the fishing industry as a key factor of production within an integrated national economy.
- Highlight Traditional Fisheries-based Knowledge as a contributor to both fishing community and national development
- Apply the concept of maximum sustainable yield in the management of specific stocks and habitat and use as reference point in conservation and management programmes.
- Highlight and promote the approach of gear selectivity as a point of reference for managing the application of appropriate technology in targeting species and stocks within the fisheries.
- Ensure that fisheries waters, fish stocks, habitat and sea space are protected from misuse by either local or foreign fishers.
- Ensure that various fisheries sector services providers are controlled and facilitated for the socio-economic development of the Grenada community as a whole.
- Ensure that all fish trade and fish production utilization activities are consistent with the UNFAO Code of Conduct for responsible fisheries and with international agreements such as CITES.
- Promote the Eco-systems Approach to a management of stocks and habitat in the fishery waters of Grenada.
- Apply the Co-management Approach to all the fisheries management and development programmes.
- Establish and maintain a data and information system so as to facilitate management and development within the fisheries sector.
- Promote an integrated, appropriately-scaled and cost-effective physical fisheries infrastructure and also provide for human resource development within the sector.
- Ensure the security of the fishing fleet by facilitating Safety at Sea, ship to shore communications support and with demarcation of marine boundaries defining the fishing zone.
- Establish and maintain human resource capabilities for conducting or facilitating needs-research with respect to fisheries management and development.
- Cooperate with other nation states in the management of shared, straddling and highly migratory fish stocks.

[12] http://www.fao.org/fishery/facp/GRD/en

[13] Efforts to obtain updated management plans by the Study Team were inhibited by administrative changes within the Fisheries Division. This is symptomatic of the impacts of economic constraints on Fisheries Divisions within the Eastern Caribbean.

6.2.2.3 Trinidad & Tobago

Trinidad and Tobago are the southernmost islands of the Caribbean region. This small island nation has 470 kilometers of coastline and an EEZ of 76 866 km^2. Owing to its location on the South American Shelf, Trinidad is home to a diverse range of demersal and pelagic species. The predominately oceanic conditions of the waters surrounding Tobago have resulted in it playing host to predominantly small coastal pelagic and highly migratory pelagic species. The conditions of Tobago more closely resemble those found in more northerly Caribbean island nations, while those of Trinidad resemble those of Venezuela. With an annual landed catch in the region of 13 000 tonnes, fisheries represent just 0.6% of the GDP. While this means that the fisheries sector has little economic importance (as reflected by governmental budgets), its social importance is high. This is owing to the fact that 71%-77% of the total commercial fishing fleet are made up of inshore artisanal fishers. The main reported commercial species are Spanish mackerel, sharks, croakers, tuna, and shrimp. With the exception of yellowfin tuna, all of the previously listed commercial species are currently over exploited. While not a main commercial species due to it only being in the waters of Tobago, Flyingfish are currently fully exploited and are expected to be over exploited in the future.[14]

A Fisheries Management Bill was drafted in 2011, however, it does not appear to have been adopted. Part V of the Bill calls for the development of an FMP and outlines in article 41 the management objectives that should be included:

- In setting management objectives for each fishery, priority shall be given to long-term sustainability of resources, as qualified by relevant environmental and socio-economic factors.
- Secondary management objectives may be established to provide inter alia that:
- the economic conditions under which the fishing industry operate promote responsible fisheries;
- the interests of fishers, including those engaged in artisanal fisheries, are taken into account;
- biodiversity of aquatic habitats and ecosystems is conserved, and endangered species are protected;
- depleted stocks are allowed to recover or, where appropriate, are actively restored;
- adverse environmental impacts on the resources from fishing, including pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, and impacts on associated or dependent species, are minimized.

6.2.3 Undocumented Objectives

There are important social priorities and values that are often not addressed in the objectives of an FMP. These fundamental objectives tend to be overlooked when preparing an FMP, as they are so engrained in public perception and everyday life that their importance in the fishery is discounted. The following is a list of undocumented flyingfish fisheries objectives within the selected Member State FMPs (Barbados, Grenada, and Trinidad and Tobago) that were identified during meetings and interactions with fisheries officers, government personnel, fishery stakeholders or academics in the Eastern Caribbean.

In Barbados, Grenada, and Trinidad & Tobago, it is important that public sector employment is maintained.

In Barbados, it was made evident that an underlying objective is the support and maintenance of cultural ties to the flyingfish fisheries.

The local academic institutions in Barbados depend on the flyingfish fisheries for their research.

In Grenada, the flyingfish fishery is important source of bait for other fisheries.

[14] http://www.fao.org/fishery/facp/TTO/en

6.3 FLYINGFISH FISHERIES MANAGEMENT OBJECTIVE CATEGORIZATION

In the following sub-sections, the objectives identified above are categorized into three different perspectives: Ecosystem (Biophysical), Socioeconomic, and Sociopolitical. Within each category, objectives are organized by source. There were few objectives that focused on the biophysical perspective (Table 6.2), whereas the socio-political perspective (Table 6.4) had the largest number of objectives, followed closely by the socio-economic perspective (Table 6.3).

6.3.1 Ecosystem (Biophysical) Perspective

Table 6.1: Overview of Ecosystem-based Objectives

Source	Objective
Sub-regional FMP	**Goal 1. Sustained fishery resource** General Objective 1.1. Sustained resource: Prevent overfishing to maintain a healthy stock and ensure that there are flyingfish available for future generations. General Objective 1.2. Accurate information: Ensure that an effective data collection system is in place to provide accurate information and knowledge about the state of the fishery.
Sub-regional FMP	**Goal 4: Sustained ecosystem health** General Objective 4.1. Healthy habitat: Ensure healthy habitat with minimal degradation and minimal cumulative impacts from pollution, seismic oil and gas exploration, climate change and other negative effects. General Objective 4.2. Healthy and resilient ecosystem: Maintain marine biodiversity and balanced trophic levels in the marine ecosystem.
Grenada 2002 draft FMP	#9 Promote the Eco-systems Approach to a management of stocks and habitat in the fishery waters of Grenada.
Trinidad & Tobago draft fisheries management bill	biodiversity of aquatic habitats and ecosystems is conserved, and endangered species are protected; depleted stocks are allowed to recover or, where appropriate, are actively restored; adverse environmental impacts on the resources from fishing, including pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, and impacts on associated or dependent species, are minimized.
Barbados 2004-2006 FMP	**Flyingfish goals and objectives** c. Engage in joint regional fisheries research especially stock assessments for example the CRFM working groups on large pelagics and the FAO ad hoc flyingfish working group.

6.3.2 Socio-Economic Perspective

Table 6.2: Overview of Socio-Economic Objectives

Source	Objectives
Sub-regional FMP	**Goal 3: Optimal use of fishery for long-term benefit** General Objective 3.1. Social benefits and economic/financial returns: Ensure 0ptimal social, economic and financial benefits for all involved in the fishery. General Objective 3.2. Affordable food source: Ensure that flyingfish remains an affordable and available source of food for the future. General Objective 3.3. Fair access to fishing grounds: Ensure fair access to fishing grounds and minimize conflict/competition with other resource sectors/users. General Objective 3.4. Optimal utilization/processing for domestic and export markets: Promote fish quality and safety for consumers and develop value addition for the post-harvest sector for domestic and export markets.
Sub-regional FMP	**Goal 1. Sustained fishery resource** General Objective 1.1. Sustained resource: Prevent overfishing to maintain a healthy stock and ensure that there are flyingfish available for future generations. General Objective 1.2. Accurate information: Ensure that an effective data collection system is in place to provide accurate information and knowledge about the state of the fishery.
Grenada 2002 draft FMP	#1 Sustain and increase yields from fisheries resources for the purpose of satisfying and enhancing human food consumption and in general contributing to the socio-economic options available to the Grenada community. #2 Provide for recognition of the fishing industry as a key factor of production within an integrated national economy. #3 Highlight Traditional Fisheries-based Knowledge as a contributor to both fishing community and national development #4 Apply the concept of maximum sustainable yield in the management of specific stocks and habitat and use as reference point in conservation and management programmes. #5 Highlight and promote the approach of gear selectivity as a point of reference for managing the application of appropriate technology in targeting species and stocks within the fisheries. #7 Ensure that various fisheries sector services providers are controlled and facilitated for the socio-economic development of the Grenada community as a whole. #8 Ensure that all fish trade and fish production utilization activities are consistent with the UNFAO Code of Conduct for responsible fisheries and with international agreements such as CITES. #9 Promote the Eco-systems Approach to a management of stocks and habitat in the fishery waters of Grenada. #12 Promote an integrated, appropriately-scaled and cost-effective physical

Source	Objectives
	fisheries infrastructure and also provide for human resource development within the sector. #13 Ensure the security of the fishing fleet by facilitating Safety at Sea, ship to shore communications support and with demarcation of marine boundaries defining the fishing zone.
Trinidad & Tobago draft fisheries management bill	The economic conditions under which the fishing industry operate promote responsible fisheries; The interests of fishers, including those engaged in artisanal fisheries, are taken into account;
Undocumented	Employment in the public sector is maintained. (Barbados, Grenada, Trinidad & Tobago) The flyingfish fishery continues to be a source of bait for other fisheries. (Grenada)
Barbados 2004-2006 FMP	**Goals and objectives for the harvest sector:** **Goal #1** Trained and well-informed fishers and fisherfolk organizations playing an active and vital role in the sustainable management of the fisheries resources and in quality assurance of seafood. **Objective a**. Prepare a compendium of existing information/data on each of the local fisheries **Objective e.** Work with stakeholders to strengthen fisherfolk organizations and foster wider cooperation in the harvest sector **Objective p.** Assess the harvest sector training needs of fishers **Objective q.** Collaborate with other local training institutions and fishers to develop training courses to meet the harvest sector's needs **Objective s**. Sensitise fishers to the benefits of training **Objective t.** Institute mandatory training for boat captains in safety at sea, navigation and fish handling. **Goal #2.** Well-maintained and designed vessels complying with national legislation and standards for design, construction, safety at sea and hygienic storage and handling of fish. **Objective d**. Mandatory training of fishers in vessel maintenance, basis engine care, fishing vessel management, safety at sea **Objective e**. Provide user-friendly information, extension and training materials. **Objective k**. Provide training in boat design, construction, inspection, certification and safety at sea. **Objective l.** Work with existing boat builders to improve design, construction and methods. **Objective o.** Ensure that onboard fish storage facilities are appropriately designed and properly maintained. **Objective p**. Provide mandatory training in handling of catch at sea and offloading at landing sites. **Objective q.** Work with fishers to improve their fish handling techniques. **Goal #3.** Fishers using responsible fishing practices and not engaged in activities that undermine the effectiveness of any accepted national, regional or international fisheries management measures. **Objective a**. Identify existing irresponsible fishing practices.

Source	Objectives
	Objective j. Conduct cost benefit analyses to demonstrate the effectiveness of the new fishing technology and techniques. **Objective k.** Promote beneficial new fishing technology and techniques. **Objective l**. Evaluate local fishing capacity. **Goal #4.** Modern and appropriate infrastructure that supports the loading of supplies, sanitary offloading of catch, and construction or repair of vessels. **Objective a.** Continue to work with stakeholders to assess the existing loading and offloading facilities and identify the needs. **Objective b**. Review the management and operation of landing facilities and upgrade as necessary. **Objective c.** Put measures in place to ensure the proper maintenance of fish landing facilities and delivery of services to the stakeholders. **Objective e.** Remove derelict and unused vessels from active boatyard areas. **Objective f.** Ensure the proper management and upkeep of existing and new boatyards. **Goal #5.** Fishers supporting and benefiting from social services which contribute to their well-being in times of need. **Objective a.** Sensitize fisherfolk on the benefits of contributing to the National Insurance Scheme, pension plans and other personal insurance schemes. Goal #6. Local and regional fisheries stakeholders working together to manage national and shared fisheries resources.
Barbados 2004-2006 FMP	**Goals and objectives for the post-harvest sector:** **Goal #1.** Trained fishers, informed fisherfolk organizations and other stakeholders playing an active role in fish quality assurance, food safety and small business enterprises. **Objective a.** Assess the post-harvest stakeholders training needs. **Objective b.** Collaborate with other local training institutions and stakeholders to develop training courses and extension programmes to meet the post-harvest needs. **Objective d**. Institute mandatory training for primary post-harvest stakeholders. **Objective e**. Provide signage on fishing handling at the markets. **Objective h.** Work with stakeholder to develop user-friendly information on the handling of fish and the operation of small business enterprises, in the form of videos, posters, brochures, newsletters. **Objective I.** Institute mandatory training in fish handling for primary post-harvest stakeholders. **Objective j.** Investigate why existing fisherfolk organizations are not functioning. **Objective k.** Work with fisherfolk to strengthen their organizations. **Objective o.** Source suitable training for fisheries and market staff. **Objective q.** Place appropriate quality assurance signage at strategic locations in the market place. **Goal #3.** Individuals and agencies producing and marketing quality value-

Source	Objectives
	added seafood products. **Objective a.** Seek technical assistance to identify economically viable valued-added products using local fish. **Objective b.** Prepare technical information package on the production of valued-added items. **Objective c.** Put systems in place to encourage investment in the production of valued-added items (including incentive and financial support). **Objective d.** Provide technical and training assistance to stakeholders. **Objective e.** Promote the production of valued-added production. **Objective f.** Strengthen the Fisheries Division's capability to conduct extension and technical training in the production of value- added products.

6.3.3 Socio-Political Perspective

Table 6.4: Overview of Socio-Political Objectives

Source	Objectives
Sub-regional FMP	**Goal 3: Optimal use of fishery for long-term benefit** General Objective 3.3. Fair access to fishing grounds: Ensure fair access to fishing grounds and minimize conflict/competition with other resource sectors/users.
Sub-regional FMP	**Goal 2: Effective fisheries management** General Objective 2.1. Effective management: Ensure that there is an effective system for adaptive and responsive management and enforcement, utilizing a participatory approach.
Barbados 2004-2006 FMP	"Regional cooperation in the management and sustainable utilization of these shared resources."
Grenada 2002 draft FMP	#6 Ensure that fisheries waters, fish stocks, habitat and sea space are protected from misuse by either local or foreign fishers. #8 Ensure that all fish trade and fish production utilization activities are consistent with the UNFAO Code of Conduct for responsible fisheries and with international agreements such as CITES. #10 Apply the Co-management Approach to all the fisheries management and development programmes. #11 Establish and maintain a data and information system so as to facilitate management and development within the fisheries sector. #14 Establish and maintain human resource capabilities for conducting or facilitating needs-research with respect to fisheries management and development. #15 Cooperate with other nation states in the management of shared, straddling and highly migratory fish stocks.
Undocumented	The flyingfish fisheries support and maintain cultural traditions. (Barbados) Local academic institutions in Barbados can continue to depend on the flyingfish fisheries for their research.
Barbados 2004-2006 FMP	**Goals and objectives for the harvest sector:** **Objective 1.b.** Work with fishers to transform existing fisheries data into user-friendly information in the form of videos, posters, brochure, and newsletters.

Source	Objectives
	Objective 1.c. Distribute information via radio, television, seminars, training courses, exhibitions and extension. **Objective 1.d.** Investigate why existing fisherfolk organizations are not functioning effectively. **Objective 1.e.** Work with stakeholders to strengthen fisherfolk organizations and foster wider cooperation in the harvest sector. **Objective 1.f.** Work with stakeholders to implement, monitor and review the agreed strategies for enhancing stakeholders' participation. **Objective 1.g.** Hold seminars, workshops and site meetings on regional and international issues impacting on local fisheries. **Objective 1.h.** Strengthen harvest sector legislation by amendment and re-drafting. **Objective 1.i.** Develop compliance guidelines. **Objective 1.j.** Develop public awareness programmes for legislation. **Objective 1.k.** Sensitize the enforcement agencies on the importance of enforcing fisheries management regulations. **Objective 1.l.** Strengthen the monitoring and surveillance capabilities of appropriate enforcement agencies. **Objective 1.m.** Involve fishers in monitoring and enforcement programmes. **Objective 1.n.** Source Government and non-Government funding and assistance for major projects. **Objective 1.o.** Build trust between fishers and Government by working closely with fishers on major fisheries issues. **Objective 1.q.** Collaborate with other local training institutions and fishers to develop training courses to meet the harvest sector's needs. **Objective 1.r.** Have courses certified and recognized at the national level. **Goal #2.** Well-maintained and designed vessels complying with national legislation and standards for design, construction, safety at sea and hygienic storage and handling of fish. **Objective a.** Finalize the draft legislation safety and fish handling. **Objective b.** Prepare guidelines on compliance with legislation. **Objective c.** Work with fishers in implementing and enforcing standards. **Objective f.** Promote the use of maintenance plans by boat owners and captains. **Objective g.** Conduct frequent spot inspections of vessels by Authorized Officers. **Objective h.** Improve the Government hurricane preparedness plans and include mitigation measures, recovery and rehabilitation. **Objective i.** Encourage boat owners to prepare hurricane preparedness plans. **Objective j.** Conduct disaster management workshops for stakeholders. **Objective k.** Provide training in boat design, construction, inspection, certification and safety at sea. **Objective l.** Work with existing boat builders to improve design, construction and methods. **Objective m.** Encourage experienced and approved boat builders to offer apprenticeships in boat building. **Objective o.** Develop strategies to recruit young people to careers boat building.

Source	Objectives
	Goal #3. Fishers using responsible fishing practices and not engaged in activities that undermine the effectiveness of any accepted national, regional or international fisheries management measures. **Objective b.** Educate fishers about the dangers of irresponsible fishing practices through promotion of the Code of Conduct for Responsible Fisheries. **Objective c.** Update existing legislation and develop new legislation from time to time to counteract existing and new in irresponsible fishing practices. **Objective d.** Put systems in place to monitor fishing and enforce legislation. **Objective e.** Work with regional counterparts to promote the use of responsible fishing practices throughout the region. **Objective f.** Acquire journals, literature and videos of new fishing technology and techniques for the Fisheries Division library. **Objective g.** Make the material accessible to stakeholders through the Fisheries Division's library and via the internet. **Objective h.** Where necessary convert material into user-friendly information for dissemination to stakeholders. **Objective i.** Use the Fisheries Division's vessel to demonstrate the use and advantages of the new fishing technology and techniques. **Objective m.** Develop an action plan for managing local fishing capacity. **Objective 4.d.** Peruse the construction of boatyards facilities in Bridgetown and the north of the island. **Objective 5.b.** Work with National Insurance Scheme, insurance companies and fishers to develop strategies to that will enable fishers to contribute to and benefit from social programmes. **Goal #6** Local and regional fisheries stakeholders working together to manage national and shared fisheries resources. **Objective a.** Assist local fishers in seeking funding for projects that will bring regional fishers together to discuss their common interests and set up channels of communication to facilitate ongoing discussion. **Objective b.** Support regional initiatives to set up regional fisherfolk organisation. **Objective c.** Work with other countries to develop and strengthen the Caribbean Regional Fisheries Mechanism. **Objective d.** Promote the need for a regional fisheries policy. **Objective e.** Work with local and regional fisheries stakeholders to draft a regional fisheries policy and identify the necessary mechanisms and resources to put such a policy in place. **Objective f.** Support regional efforts to set up better linkages among regional fisheries institutions.
Barbados 2004-2006 FMP	**Goals and objectives for the post-harvest sector:** **Objective 1.b.** Collaborate with other local training institutions and stakeholders to develop training courses and extension programmes to meet the post-harvest needs. **Objective 1.c.** Have courses certified and recognized at the national level. **Objective 1.g.** Source Government and non-Government funding and

Source	Objectives
	assistance in local and overseas training of government and non-government stakeholders. **Objective 1.l.** Seek international assistance in the fisherfolk organizations. **Objective 1.m.** Work closely with stakeholders in decision-making on post-harvest issues. **Objective 1.n.** Involve stakeholders in implementation, monitoring of post-harvest standards. **Objective 1.p.** Develop and disseminate user-friendly material to sensitize the public on fish quality issues. **Goal #2.** Adequate National seafood legislation and standards with systems and procedures in place to ensure compliance. **Objective a.** Finalize fish quality and inspection legislation and standards. **Objective b.** Prepare compliance information. **Objective c.** Work with stakeholders to implement, enforce and monitor compliance. **Objective d.** Set up an enforcement unit with trained inspectors. **Objective e.** Develop clear enforcement and monitoring procedures and guidelines. **Objective f.** Provide local and overseas training for inspectors. **Objective g.** Develop stakeholder and public awareness programme. **Objective h.** Conduct training workshops for stakeholders. **Objective i.** Post appropriate signage at strategic location. **Objective 3.f.** Strengthen the Fisheries Division's capability to conduct extension and technical training in the production of value- added products.
Barbados 2004-2006 FMP	**Flyingfish goals and objectives** **Goal #1.** Regional cooperation in the management and sustainable utilization of these shared resources. **Objective a.** Promote and collaborate in the development and implementation of a harmonized regional data collection and recording programme. **Objective b.** Collaborate with fishers and students in fisheries research. **Objective d.** Increase participation in ICCAT data collection and assessments. **Objective e.** Promote the concept of a common regional fishing zone. **Objective f.** Where necessary, negotiate fishing access agreements with neighbouring states. **Objective g.** Develop mechanisms to facilitate local stakeholder inputs into regional and international management decisions. **Objective h.** Assist in the formation and work of viable regional decision-making and management mechanisms for regionally shared fishery resources such as flyingfish and dolphinfish. **Objective i.** Play a more active role in formulation of policies and management measures for internationally shared large pelagic stocks at appropriate international forums such as ICCAT. **Objective j.** Implement the provisions of regional and international agreements that facilitate management of shared stocks.

6.4 OBJECTIVE ANALYSIS AND DISCUSSION

An analysis of the goals and objectives of the sub-regional FMP and of the Member States was conducted by the Study Team in a round table discussion. Each objective was assessed and issues pertaining to wording, degree of detail, application, and potential conflicts were noted. The results on this round table analysis are summarized and discussed below. Each goal of the sub-regional FMP is discussed in its own sub-section, and the identified issues of the goals and objectives of the Member States are summarized and discussed in the following section. The most common issue that was highlighted throughout the assessment was that there is a general lack of specificity in the wording of the goals and objectives, and the use of vague or undefined terminology made for unclear and unmeasurable objectives.

6.4.1 Sub-regional FMP

6.4.1.1 Goal 1

The first management goal of the 2020-2014 sub-regional FMP is to ensure that flyingfish remain a sustainable resource for future generations. Objective 1.1 focuses on the sustainability of the resource through the prevention of overfishing, but it fails to define the measures necessary to monitor for overfishing. Furthermore, it does not address the regulatory instruments necessary to prevent overfishing from occurring. Monitoring and enforcement capacity are essential for a fishery resource to be sustainably managed and should not be overlooked in the development of national and sub-regional FMPs.

Another important aspect of sustainable fishery management is effective collection of fishery data, which is the focus of Objective 1.2. It is recommended that a great degree of attention is given to this objective as the data collected will largely affect how various aspects of this fishery is managed. The implementation of a good data collection system is needed, and policy can support this through the application of a regulatory obligation of fishers and fisher organizations to provide accurate data. It should also be noted that Objectives 1.1 and 1.2 are inherently linked. Accurate information is the fundamental basis of a reliable stock assessments, without which monitoring of overfishing cannot easily be achieved.

6.4.1.2 Goal 2

The second goal of the 2020-2014 sub-regional FMP focuses on the need for effective fisheries management. This goal only lists one objective, which calls for the implementation of a responsive and adaptive management and enforcement system but does not reference the limitations that currently impede this from happening or the measures that should be taken to address the limitations. Of note, the funding and personnel needed to carry out the necessary data collection and enforcement for an effectively managed fishery are limited. This issue could be addressed with the use of fisher's organizations. By strengthening the role of fisher's organizations in the management of the fishery, not only would there be an increase in the efficiency of time and personnel involved, but there would also be a reduction in management costs as a consequence of these efficiencies. Furthermore, the participatory approach that this objective calls for can be incorporated into the management of this fishery through the adoption of a co-management system between the fisher's organizations and the Fisheries Division. However, it should be noted that while the use of a participatory approach is specified in this objective, the incorporation of local or traditional knowledge is not explicitly stated. Rather than integrating traditional knowledge into science, or verifying traditional knowledge with science, traditional knowledge and science-based knowledge should be equally involved in the management decision making process. It is recommended that additional objectives be added to the second goal to address these concerns, and that a plan of action is developed detailing the practical steps that can be taken to achieve the goal. These additional objectives may include:

- Fisher's organizations are used to increase fishers' participation in the management of the fishery through data collection and the enforcement of regulations.
- A co-management system is used to allow for full participation in the management of the fishery.

- Both traditional knowledge and science-based knowledge are given equal importance and consideration in decision making processes.

6.4.1.3 Goal 3

The third goal is the optimal use of the fishery for long-term benefits. The main issue with this goal is that it is vague; the use of the term "optimal" without providing a definition of what optimal is makes it immeasurable. This is also the issue with the first objective of this goal, although in this case the term should be defined within the context of each of the categories mentioned (social, economic, and financial). It is recommended that to achieve these "optimal" benefits, there should be continued used of multi-species harvesting as well as the continuation of multi-sector employment. Furthermore, the fishery should focus on benefits to livelihoods and step away from profit maximization[15].

This shift away from a focus on profit maximization also applies to the second objective of keeping flyingfish available and affordable as a food source, which therefore implies that there should be less emphasis on capitalization and efficiency in the fishery. With the development of a distribution network within the country or region, there would still be expansion of the market but in a way that can support the objective of providing a locally available and affordable food source. As such, there would be less emphasis on value-adding and processing of the resource, and more on the distribution of the resource to local populations that need it.

The third objective is to maintain fair access to fishing grounds and reduce conflict over the resource. This will largely depend on responsible negotiations between Member States to ensure that fishers in each State are protected and that each State is managing their waters. Once again, the use of fisher's organizations would be beneficial to ensure that the communities with neighbouring fishing grounds have priority access. However, while historic access to fishing grounds is important, access for new fishers must also be considered if there is to be growth of the fishery at both a national and regional level.

Lastly, objective 3.4 may conflict with objectives:
3.1 – Ensure optimal social, economic and financial benefits for all involved in the fishery.
3.2 – Ensure that flyingfish remains an affordable and available source of food for the future.
3.3 –Ensure fair access to fishing grounds and minimize conflict/competition with other resource sectors/users.
1.1 – Prevent overfishing to maintain a healthy stock and ensure that there are flyingfish available for future generations.)

It is widely seen in global fisheries that profit maximization poses a threat to local food production. In this case, in the eastern Caribbean aggressive focus on harvesting of profitable species increases the competition for access to the resource and puts at risk the sustainability of the fishery. Utilization of the flyingfish fishery for processing and export brings in additional stakeholders outside of the local fishery, which could impact local livelihoods. This objective should focus on a sustainable export market that is based solely on the surplus of the fishery, rather than creating a target export market for the resource. Furthermore, shifting away from a bait fishery (the most common use of flyingfish in the Eastern Caribbean) to a food fishery would provide an available and affordable food source for local and regional populations (objective 3.2), as well as optimize domestic markets through the development of local and regional distribution networks.

[15] The United Nations has adopted the definitions of livelihoods as: *"A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term."* Knutson, P. (2006). Sustainable Livelihoods Approach: A Framework for Knowledge Integration Assessment. Human Ecology Review. Vol 13. No. 1

6.4.1.4 Goal 4

The last goal of the sub-regional FMP focuses on the sustained health of the marine ecosystem. It is recommended that the wording of this goal be changed from "In order to ensure that the health of the marine ecosystem on which flyingfish depend is sustained…" to "To sustain the health of the marine ecosystem upon which the flyingfish is dependent…" because it makes it an actionable goal.

With respect to objective 4.1 on maintaining healthy habitats, the Fisheries Division knowledge and experience should be used to ensure habitat is protected across ocean-use sectors, and as a result, Fishery Divisions should be involved as a regulator in offshore oil and gas exploration and development and should be actively involved in climate change research and development of adaptation strategies. Keeping fishers involved aligns with the principle and goal of participatory management. Furthermore, to ensure that each of the fisheries are given due attention, the Environmental Assessment (EA) approaches and methodologies in each Member State may need to be revisited and Fisheries Divisions may need to take part in national EA processes. Where there is a lack of regulatory instruments in place, the Fisheries Division should work with environmental counterparts to ensure that appropriate regulatory instruments are in place so that the impact of other resource development projects don't compromise the sustainability of the fishery. While economic growth is most commonly dependent on new or expanded resource industries, economic development should not undermine existing culturally relevant and historically important resource sectors that provide livelihoods in the country, such as the flyingfish fishery. As a result, it is important that the Fisheries Division works closely with other resource regulatory departments to ensure that economic growth through resource use is sustainable. Lastly, EA processes should also be considered on a regional level since fishery resources have large home ranges and can be migratory; they do not follow national boundaries and therefore EAs should not either.

The last objective of the FMP (4.2) is to maintain a healthy and resilient marine ecosystem, and its main issue is that there is no discernable metric to determine how the Fisheries Division can meet this objective. Moreover, it would require the integration of fisheries objectives with the national environmental strategies and associated regulations for each Member State, as well as integration with objectives from other sectors. This is especially important when considering sectors that can heavily impact one another, such as the case of tourism and fisheries.

6.4.2 Member States

The goals and objectives of Barbados, Grenada, and Trinidad & Tobago were assessed in a round table discussion and relevant comments and feedback for each of the objectives were recorded in the table below (Table 5). There were, however, two general trends among all three of the Member States assessed that are important to note for consideration by all Member States:

- The lack of a current FMP, and
- The implied use of a co-management system for management of the fishery.

An important commonality between all three of the Member States in this analysis is that none have an up-to-date FMP. The most recent FMP from Barbados is from 2004, Grenada only has a draft FMP from 2002, and the FMP that was called for in the 2011 Fisheries Management Bill for Trinidad and Tobago has yet to be drafted. The sub-regional FMP has been revised on several occasions and copies can be obtained online, which indicates that at a sub-regional level there is interest to implement an effective fishery management plan. However, at a national level, steps have not been taken to draft, update, or implement FMPs, largely due to a lack of capacity, financial support, time, and political interest.

Another important subject that is either implied or explicitly referenced in the three sets of objectives is co-management. Objective 10 in Grenada's draft FMP specifically calls for the application of a co-management approach in the management of the nation's fisheries. Objective 2b of Trinidad & Tobago's draft fisheries management bill ("the interests of fishers, including those engaged in artisanal fisheries, are

taken into account") implies participation but does not specify to what extent this participation will play in decision making. And in the Barbados draft FMP, co-management is implied in several objectives but not stated as a specific objective. Goal 1 (Trained and well-informed fishers and fisherfolk organizations playing an active and vital role in the sustainable management of the fisheries resources and in quality assurance of seafood.), Goal 5 (Fishers supporting and benefiting from social services which contribute to their well-being in time of need.), Goal 6 (Local and regional fisheries stakeholders working together to manage national and shared fisheries resources.) and Goal 7 (Trained fishers, informed fisherfolk organizations and other stakeholders playing an active role in fish quality assurance, food safety and small business enterprises.) all suggest that a greater emphasis should be placed on the development of a co-management system. On a sub-regional level, the FMP calls for the use of a participatory approach (sub-regional objective 2.1), which could be achieved through the implementation of a co-management system that would allow for fishers to be not just consulted in the management of the resource, but also be a part of the decision-making processes.

6.4.2.1 Barbados

The most recent FMP for Barbados is from 2004, and this wouldn't be an issue if there was continuous monitoring and implementation of that plan. However, monitoring through accurate and consistent data collection is not currently done in Barbados. Fisheries in Barbados are not given the attention and effort that they should considering how important they are for the nation. As mentioned above, about half of the nation's consumption of fish come from national fisheries, and about 6,000 individuals are employed in fishery related sectors.[16] Capacity and funding is given to development of other resources and sectors, like tourism, rather than to the management of the fisheries. It's easy to focus on other sectors for development moving into the future, but healthy and well managed fisheries not only provide employment, but also food security for a vast portion of the population, and these factors are of fundamental importance to the sustainable development of a nation.

For the implementation of Goal 5 (Fishers supporting and benefiting from social services which contribute to their well-being in time of need.), it would be beneficial to introduce a mandatory insurance system that can provide essential social services to fishers in need. And lastly, Goals 6 and 7 focus on the collaboration between stakeholders in the management of the fishery, in both harvest and post-harvest sectors. But it recommended that caution is given to ensure proper communication between fishers and fish processors, as their collaboration will lead to efficient and effect management of the fishery.

6.4.2.2 Grenada

Grenada's FMP could not be obtained online and efforts to obtain it directly from the Fisheries Division were impeded by internal changes in the department. The objectives used for this evaluation were obtained from the 2002 draft FMP, however the objectives set out in the document are more commonly referred to as "*goals"* and not "*objectives*" since they are not measurable, and they are not specific to flyingfish. The fact that it has been many years since the FMP was last updated can be perceived as a lack of concern for the importance of an approved national FMP to guide and control the management of the fishery.

The objectives of the draft FMP for Grenada present a heavy emphasis on getting fishers involved in the management of the fishery. Moreover, this draft FMP goes as far as to call for the use of traditional fisheries knowledge (Objective 3), which is not addressed in either of the other Member States nor the sub-regional FMP. The benefits and application of traditional knowledge in fishery management are discussed in detail in Chapter 5 of Work Package 2. In highlighting the importance of including traditional knowledge in the management of the fishery, decision-making can be more time efficient and more inclusive.

[16] http://www.fao.org/fishery/facp/BRB/en

Goal 4 of Grenada's draft FMP focuses on the application of the principle of maximum sustainable yield for the management and conservation of fishery resources, but there is currently no monitoring or stock assessment in place to allow for a valid estimation of the maximum sustainable yield. Not only is accurate data collection imperative for this goal to be achieved nationally, but sharing this data on a sub-regional scale will enable collaborative management between member states. After all, flyingfish do not know national boundaries; they migrate throughout the region and therefore should be managed on a regional level.

Goal 5 promotes the use of gear selectivity. This is not necessarily a goal that is applicable to the flyingfish fishery at the moment, since current fishing practices here currently target a group of fish within a target habitat (e.g. reef fishes, pelagic fishes, etc.) rather that targeting a species. However, is it still important to caution that an increase in the efficiency of technology to target species can lead to over-fishing. It may be more effective for the management of the flyingfish fishery to instead promote the development of fishing strategies that optimize harvest while minimizing trophic level ecosystem changes by harvesting equally at each trophic level within target habitats.

Goal 6 (Ensure that fisheries waters, fish stocks, habitat and sea space are protected from misuse by either local or foreign fishers.) is actually about enforcement. To properly protect the fishery resource and habitat, there needs to be adequate monitoring and enforcement of regulations. Regulations specifically designed to provide environmental protection are necessary and all sectors should be involved in their development since separate regulations for each sector would not only be inefficient, but also ineffective if interests conflict. The main issue with this goal in particular is that the term "misuse" must be defined, both nationally and sub-regionally so that neighbouring states that are collaboratively managing the shared resource can provide consistent enforcement.

Lastly, it should be noted that Goal 15 is directly related to the implementation of the sub-regional FMP, since it calls for the cooperation between neighbouring states in managing shared fishery resources. This demonstrates Grenada's willingness to collaborate with their neighbours.

6.4.2.3 Trinidad & Tobago

Trinidad & Tobago's objectives are not objectives since they are not measurable steps. The first is more of a principle, and the others are goals rather than objectives. This may be attributed to the fact that these are objectives presented in a draft fisheries management Bill that calls for the development of an FMP that will include these. As such, these are principles and goals that the Bill would like an FMP to address but does not offer the degree of detail that an FMP should have in the form of objectives and strategic actions. Additionally, these general "objectives" do not make any reference to working collaboratively with other nations within the region. This could potentially conflict with all four goals of the sub-regional FMP and their respective objectives because the point of a sub-regional FMP is to promote collaborative management of the shared flyingfish resource in this region.

6.4.2.4 Assessment of Selected Member State Fishery Management Principles, Goals and Objectives

The following table (Table 6.5) summarizes the assessment of the principles, goals and objectives found in the draft FMPs/Bills available for Grenada, Barbados and Trinidad & Tobago.

Table 6.5: Assessment of Principles, Goals and Objectives

Member State	Principle, Goal, or Objective	Comments	Link to Sub-Regional FMP
Grenada	Goal 1		Goals 1 and 3
	Goal 3	Emphasizes the importance in using traditional knowledge in the management of the fishery.	2.1
	Goal 4	There is currently no monitoring or stock assessments. An assessment of flyingfish must be done regionally. Each state should share their data and work collaboratively with other states.	1.2, 2.1
	Goal 5	This goal does not apply to flyingfish due to current fishing practices focusing on habitat type rather than target species. Cautionary note on gear selectivity: increasing the efficiency of the technology can promote over-fishing. Tailor goal to be applicable to flyingfish: promote fishing strategies that harvest each trophic level equally within targeted habitats.	1.1, Goal 4
	Goal 6	"Misuse" should be defined. This is an enforcement issue. Environmental protection is needed, and all sectors should be included. Regulation by individual sectors would be ineffective and inefficient.	1.1, 2.1, 4.1
	Goal 7		3.1
	Goal 9		Goal 4
	Goal 10		2.1
	Goal 11		1.2
	Goal 14		1.2
	Goal 15	This goal is directly related to the implementation of the sub-regional FMP.	
Trinidad & Tobago	1	This is a principle, not an objective.	
	2 a	This is a goal, not an objective.	3.1
	2b		2.1
	2c	This is a goal, not an objective.	Goal 4
	2d	This is a goal, not an objective.	Goal 4

Member State	Principle, Goal, or Objective	Comments	Link to Sub-Regional FMP
	2e	This is a goal, not an objective.	Goal 4
Barbados	Goal 1		1.1, 1.2
	Goal 2		
	Goal 3		
	Goal 4		
	Goal 5	- This objective would benefit from the introduction of a mandatory insurance scheme.	3.1
	Goal 6	- Consideration should be given to make sure that fishers and fish processors are working together.	2.1
	Goal 7	- Consideration should be given to make sure that fishers and fish processors are working together.	2.1
	Goal 8		3.4
	Goal 9		3.4
	Goal 10		

6.5 CONSISTENCY BETWEEN OBJECTIVES

As summarized in the matrix analysis tables (Tables 6.6, 6.7, and 6.8), there was a high degree of consistency between the goals of the sub-regional FMP and the goals of the Member States, as well as a high degree of internal consistency within each of the documents. Consistency means that the goals do not interfere. However, there were a few instances worth noting where goals were not only consistent, but also complemented or supported each other.

Goal 1 of the 2004 Barbados FMP (Trained and well-informed fishers and fisherfolk organizations playing an active and vital role in the sustainable management of the fisheries resources and in quality assurance of seafood.) and Goal 10 (Regional cooperation in the management and sustainable utilization of these shared resources.) are two such goals that may complement each other through the implementation of national programs for fisher participation that are regionally regulated so as to provide regional consistency across fishing practices.

Goal 6 (Local and regional fisheries stakeholders working together to manage national and shared fisheries resources.) would be strengthened by Goal 1 and Goal 7 (Trained fishers, informed fisherfolk organizations and other stakeholders playing an active role in fish quality assurance, food safety and small business enterprises.). Increasing capacity of fishers' organizations through training programs particularly if the training involves business administration, financial literacy and communications can enhance the involvement of the fishers and their organizations with government in the management of the shared fisheries resource.

6.5.1 Objective Conflicts & Potential Conflicts

The matrix analysis revealed no direct conflicts between the goals of the sub-regional FMP and the goals of the Member States. This was largely due to the general use of vague terminology and the lack of specificity in the phrasing of the goals and their objectives of the sub-regional FMP and of the Member States. Moreover, the terminology used is the reason that Goal 3 of the sub-regional FMP does not conflict with itself. The use of the term "optimal" allows for objectives that are often conflicting in nature to coexist under the same overarching goal. For example, ensuring that the fishery remains an affordable food source for local populations (objective 3.2) would normally be considered a conflict with the expansion of a fishery for export markets (objective 3.4). However, the focus is placed on the "optimal use" of the resource to attain both of these objectives, thereby removing the risk of conflict that a focus on the *maximization* of either of these benefits would typically have. This focus on "optimal use" of the fishery resource is also why Goal 3 does not technically conflict with the goal of ensuring a sustained fishery resource (Goal 1).

6.5.1.1 Barbados

While there are no explicit conflicts between the goals outlined in the 2004-2006 FMP for Barbados and the goals outlined in the sub-regional FMP, there are, however, five potential conflicts that have been identified. The first goal of the sub-regional FMP, which focuses on the sustained fishery resource through the maintenance of a healthy stock and through accurate and effective data collection, may potentially conflict with three different goals in the 2004-2006 Barbados FMP.

Both Goal 4 (Modern and appropriate infrastructure that supports the loading of supplies, sanitary offloading of catch, and construction or repair of vessels.) and Goal 9 (Individuals and agencies producing and marketing quality value-added seafood products.) may conflict with FMP Goal 1 due to the risk that new technologies may potentially promote more aggressive fishing pressures that can lead to over harvesting the fishery resource. An increase in efficiency through technology can result in harvesting marginal stock.

Goal 2 (Well-maintained and designed vessels complying with national legislation and standards for design, construction, safety-at-sea and hygienic storage and handling of fish) can potentially create conflict with FMP Goal 1 if investment in vessel design enhances harvest efficiency to the point where total effort in the fleet exceed the ability of the stock to sustain harvest levels. Increased efficiency because of investment in technology can result in creep in harvest capacity that results in stock stress before it is observed.

Goal 9 in the Barbados FMP may also potentially conflict with Goal 3 of the sub-regional FMP (Optimal use of the fishery for long-term benefits), particularly objective (e) of Goal 9, which aims to "promote the production of valued-added production". This objective could potentially create a conflict with Goal 3 because trying to promote value-added production through increased export can undermine the objective of maintaining a local affordable food source (due to greater harvest of the resource for export than for domestic consumption), and because sharing access to fishing grounds with corporations focused on export may lead to loss of access for local traditional fishers. Objective (e) of Goal 9 could also potentially conflict with Goal 4 of the sub-regional FMP (sustained ecosystem health) due to the negative impacts that seafood processing can have on the local environment. Any processing developments should be done in a way that is environmentally sound, keeping in accordance with goal 4 of sub-regional FMP.

6.5.1.2 Grenada

Goal 1 of the 2002 draft FMP for Grenada (Sustain and increase yields from fisheries resources for the purpose of satisfying and enhancing human food consumption and in general contributing to the socioeconomic options available to the Grenada community.) possibly conflicts with FMP Goals 1 (a

sustained fishery resource for future generations) and Goal 4 (the sustained health of the marine ecosystem), and with itself. This is due to the goal terminology sustain and increase the yields of the fishery, which are contradictory terms. It also potentially conflicts with Goal 5 of the draft FMP (Highlight and promote the approach of gear selectivity as a point of reference for managing the application of appropriate technology in targeting species and stocks within the fisheries) because the introduction of new fishing technologies to target species through gear selectivity can lead to increased catches, which conflicts with the goal to sustain the yields of the fishery.

Goal 4 of Grenada's draft FMP (Apply the concept of maximum sustainable yield in the management of specific stocks and habitat and use as reference point in conservation and management programmes) relies heavily on the application of Goal 1 of the sub-regional FMP, particularly objective 1.2, which calls for accurate information through the development of an effective data collection system. This is because inaccurate data can result in an incorrect estimate of the maximum sustainable yield of a fishery, leading to overfishing.

Goal 12 of Grenada's draft FMP (Promote an integrated, appropriately-scaled and cost-effective physical fisheries infrastructure and also provide for human resource development within the sector.) may potentially conflict with the sub-regional FMP Goal 4 of maintaining marine ecosystem health if measures aren't taken to ensure that the environmental impacts are minimized. Any and all fisheries infrastructure developments should be done in accordance with environmental protection standards to ensure that the integrity of the marine ecosystem is not compromised.

Goal 15 (Cooperate with other nation states in the management of shared, straddling and highly migratory fish stocks.) has a potential for conflict with Goal 6 (Ensure that fisheries waters, fish stocks, habitat and sea space are protected from misuse by either local or foreign fishers.) because what is considered "misuse" of the marine space may be different in the other States of the region. This has the potential to promote conflict between neighbouring States, which would compromise cooperative efforts to jointly manage shared or migratory fish stocks.

Goal 7 (Ensure that various fisheries sector services providers are controlled and facilitated for the socio-economic development of the Grenada community as a whole.) might also pose a conflict with Goal 15 because what it needed to regulate the various fishery sectors for the benefit of Grenada's socioeconomic development may not align with what neighbouring States deem necessary for their own development, creating a barrier to cooperative management between states.

6.5.1.3 Trinidad & Tobago

Goal 3 (the interests of fishers, including those engaged in artisanal fisheries, are taken into account) has the potential to conflict with itself because commercial fishers and artisanal fishers may have incompatible interests.

Goal 3 might also conflict with Goal 5 (depleted stocks are allowed to recover or, where appropriate, are actively restored) and 6 (adverse environmental impacts on the resources from fishing, including pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, and impacts on associated or dependent species, are minimized) because fisheries and environmental management regulations do not always align with the wants of the fishers. Artisanal fishers use non-target species for their own consumption, and if limitations on non-target species are implemented, artisanal fishers' interests could be undermined. Conversely, the interests of industrial scale fishers could undermine the goals pertaining to stock and environmental management.

Matrix Analysis

Table 3.6: Barbados and 2010-2014 Sub-Regional Fisheries Management Goals Matrix (orange cells highlight areas of potential conflict)

Sub-Regional Fisheries Management and Barbados Fisheries Management Goals	FMP Goal 1	FMP Goal 2	FMP Goal 3	FMP Goal 4	Barbados Goal 1	Barbados Goal 2	Barbados Goal 3	Barbados Goal 4	Barbados Goal 5	Barbados Goal 6	Barbados Goal 7	Barbados Goal 8	Barbados Goal 9	Barbados Goal 10
FMP Goal 1														
FMP Goal 2														
FMP Goal 3														
FMP Goal 4														
Barbados Goal 1														
Barbados Goal 2														
Barbados Goal 3														
Barbados Goal 4														
Barbados Goal 5														
Barbados Goal 6														
Barbados Goal 7														
Barbados Goal 8														
Barbados Goal 9														
Barbados Goal 10														

Table 6.4: Grenada and Sub-Regional Fisheries Management Goals Matrix (orange cells highlight areas of potential conflict)

Sub-Regional Fisheries Management and Grenada Fisheries Management Goals	FMP Goal 1	FMP Goal 2	FMP Goal 3	FMP Goal 4	Grenada Goal 1	Grenada Goal 2	Grenada Goal 3	Grenada Goal 4	Grenada Goal 5	Grenada Goal 6	Grenada Goal 7	Grenada Goal 8	Grenada Goal 9	Grenada Goal 10	Grenada Goal 11	Grenada Goal 12	Grenada Goal 13	Grenada Goal 14	Grenada Goal 15
FMP Goal 1																			
FMP Goal 2																			
FMP Goal 3																			
FMP Goal 4																			
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Grenada Goal 11																			
Grenada Goal 12																			
Grenada Goal 13																			
Grenada Goal 14																			
Grenada Goal 15																			

Table 6.5: Trinidad & Tobago and Sub-Regional Fisheries Management Goals Matrix (orange cells highlight areas of potential conflict)

Sub-Regional Fisheries Management and Trinidad & Tobago Fisheries Management Goals	FMP Goal 1	FMP Goal 2	FMP Goal 3	FMP Goal 4	Trinidad & Tobago Goal 1	Trinidad & Tobago Goal 2	Trinidad & Tobago Goal 3	Trinidad & Tobago Goal 4	Trinidad & Tobago Goal 5	Trinidad & Tobago Goal 6
FMP Goal 1										
FMP Goal 2										
FMP Goal 3										
FMP Goal 4										
Trinidad & Tobago Goal 1										
Trinidad & Tobago Goal 2										
Trinidad & Tobago Goal 3										
Trinidad & Tobago Goal 4										
Trinidad & Tobago Goal 5										
Trinidad & Tobago Goal 6										

6.6 RECOMMENDATIONS

In light of all that was discussed in the round table discussions and matrix analyses, the following list of recommendations have been put forth to support in the development of effective objectives for the management of the flyingfish fishery:

Member State FMPs
All Member States should prepare updated FMPs that build upon the goals and objectives of the sub-regional FMP 2020-2024. This will allow for consistency on a sub-regional level and will promote greater ease of collaboration between Member States. It is also important that Member State specific objectives be included in their specific FMPs, however, care should be taken to ensure that national objectives do not conflict with sub-regional FMP objectives or undermine the ability to meet all objectives.

The objectives within each of the Member State's FMPs should be clearly understood and measurable. That is, goals should be well-defined, broad, and aspirational principles while objectives are measurable targets which contribute to the achievement of the goals. Goals should be not be unrealistic or vague. If a goal is set, it should have measurable objectives, actionable strategies, and reasonable indicators to help achieve it.

Use of Local Traditional Knowledge
In the face of all the uncertainty, Fisheries Managers should not wait to make decisions that are based on certainty. In other words, when fishers identify that there are changes in the state of the fishery, it need not be verified through time consuming research and analysis based primarily on biophysical science. As a result, it is very important that the objective to encourage participatory management be taken as a priority and that the effort be made to ensure appropriate fishers' organizational structures are in place to mobilize the local knowledge needed to make timely decisions.

Traditional knowledge should be considered of equal value to science-based knowledge in decision making processes.

Precautionary Approach
While the precautionary approach is often perceived as a goal within fisheries management it is an operational principle upon which decisions should be made. As a result, the precautionary principle should be used by all Member States to guide decisions and management activities in achieving their defined objectives and goals. Accordingly, the precautionary approach should be a foundational principle upon which goals and objectives within national FMPs are drafted.

Establishment of Fisher Organizations
Fisher's organizations should be encouraged, and their role should include the collection of data and enforcement of regulations. A co-management system between the fisher's organizations and the Fisheries Divisions would allow for equal participation and the use of the fisher's organizations to enhance capacity for management. Furthermore, fisher's organizations can help to ensure that communities with historical access to fishing grounds maintain priority access.

Monitoring and Enforcement
Monitoring and enforcement should be given a high degree of attention in the development of the national and sub-regional FMPs because the information that is collected will form the basis for how the fishery is managed.

Therefore, the development and implementation of an effective data collection system is essential. Regulatory obligations for accurate data collection by fishers and fisher organizations can provide the

capacity that is needed. Fisheries data that is collected should be shared on a sub-regional scale so that there can be effective collaborative management between member states. This is especially important considering that flyingfish do not adhere to national boundaries, and therefore a shared fish stock should equal shared data. All relevant sectors should be involved in the design and implementation of environmental protection regulations so that all are on the same page when it comes to monitoring and enforcement of the regulations.

Focus on Livelihoods
The focus of the fishery should be the provision of benefits to livelihoods rather than focusing on profit maximization.

The development of national and regional distribution network would support the expansion of the domestic market while simultaneously providing locally sourced and affordable food to local and regional populations. A sustainable export market should be based solely on the surplus of the fishery, rather than creating a target export market for the resource.

The bait fishery for flyingfish should be turned into a food fishery to provide an available and affordable food source for local and regional populations, and to optimize domestic markets through the development of local and regional distribution networks.

Environmentally Friendly Infrastructure
Advances in fishing and processing infrastructure should be environmentally friendly, keeping in accordance with goal 4 of sub-regional FMP and any environmental protection standards that are in place.

Effective Channels for Communication
Steps should be taken to ensure that there is effective communication between fishers and fish processors so as to allow for their collaboration in the management of the fishery.

Multi-Species Harvesting
It is recommended that there be continued use of multi-species harvesting, as well as the continuation of multi-sector employment. Allowing multi-species harvesting practices helps prevent the overfishing of one species, while multi-sector employment supports livelihood diversity.

Fishing Strategies
Promote the use of fishing strategies that harvest equally at each trophic level to minimize trophic level ecosystem changes.

Inclusion of Fisheries Divisions in other Sector Development & Research
The Fisheries Division should be a part of the regulation of offshore oil and gas exploration and development. Furthermore, environmental assessments for resource development projects should be done on a regional level since fishery resources do not adhere to national boundaries.

The Fisheries Division play an active role in climate change research and development of adaptation strategies.

7. RECOMMENDATIONS FOR ENHANCED DATA COLLECTION SYSTEMS

7.1 DOCUMENT OVERVIEW

The purpose of this document is to provide recommendations to CRFM Member States to advance and enhance fishery data collection regarding the understanding and management of the Eastern Caribbean flyingfish fishery. The focus of these recommendations is on improvement of general systems through which data is collected and the content of the data collected.

7.2 DATA POLICY CONSIDERATIONS

The process of collecting, processing and analyzing data can be costly in terms of financial resources, human resources and administrative systems. Therefore, data should not be collected for the sake of compiling information that may not have a specific purpose, but should be tied to general policy objectives for fisheries management. This means that data should be collected to directly support decision making related to fisheries management activities.

The general policy to promote participatory management within Caribbean Community Common Fisheries Policy provides useful insight on who should collect data and how they should collect and share them. Involving fishers, market staff, and consumers in data collection enhances the opportunity to promote these groups in the participatory management of the Eastern Caribbean flyingfish fishery.

Enhanced participation of fishers in the collection of data can also advance co-management systems in the overall fishery in the Eastern Caribbean. However, co-management systems require effective organizational structures that represent fishers and other industry groups. In the absence of these organizations, providing a regulatory foundation and capacity building support could be considered to develop them.

The global economic condition has led to current fiscal constraints within national governments in the Eastern Caribbean. As a result, Fisheries Divisions have been tasked with their ongoing responsibilities as well as new initiatives with increasingly limited budgets. Enhancing data management systems is more difficult in these economic conditions and as a result, new approaches to offset some of the fiscal burden of data collection must be considered an. Involving fishers through new organizational structures that are financed to a large extent through fishery revenues, and ultimately by the consumer, is one way of adding capacity to data collection systems without public sector financing. Market driven financing to institutes of public governance, such as fishers' organizations, ensures that those who benefit from a well-managed fishery are also providing financial support for management of that fishery. In essence, this is the foundation for successful co-management. Involving fishers' organizations and markets can also facilitate the collection of social, economic and biophysical data.

Fisher organizations exist within some locations of the Member States involved in the Eastern Caribbean flyingfish fishery. However, fishers' organizations across the region to not provide representation of all fishers. Where these organizations do not exist, systems will need to be established to promote organizational development that meets the needs of local fishers in a manner that also meets the data collection needs of the government. Furthermore, where organizations already exist, there are gaps in their capacity to collect, compile and store data. This capacity may be a function of organizational governance or possibly technical skills. Therefore, organizational development support must also be provided to these organizations in governance training, data collection, data compilation and use of technologies.

The Eastern Caribbean flyingfish fishery involves multiple types of vessels, which do not lend themselves to one specific data collection tool. Therefore, a variety of approaches and technologies must be considered so the tools used to collect data function within each fleet while ensuring consistency and compatibility of data collected across fleets. This includes the use of simple logsheets, logbooks, cellphone apps, tablet apps and electronic monitoring systems. In an age of shrinking budgets and cost inflation, governments and industry sectors alike search for efficiencies, including cost savings, while striving to meet their respective public and private objectives. To balance economic realities and the need for increasing fisheries monitoring, electronic video monitoring (EVM) offers a cost-competitive alternative to human at-sea observing (as noted by the National Oceanic and Atmospheric Administration in the United States). In many global case reports, proponents have demonstrated the cost-effectiveness of EVM in the Canadian Pacific, the US Mid-Atlantic, and the North Sea (to name but a few).

One of the problems in current data collection systems in the Eastern Caribbean flyingfish fishery is that there are significant gaps in the temporal and geographical information collected. Furthermore, within each Member State there are varying interannual gaps in the data. Shortcomings in capturing data relate to incomplete coverage of data collectors at landing sites, lack of capturing catch data versus landing data, and lack of capture of data of flyingfish being used as bait. Use of fishers as data collectors will ensure broader coverage of the data collection system (all fishing areas) and ensure collection of catch as well as landings data. Use of markets in the data collection system will ensure capture of economic data that will help understand the general performance of the fishery as an economic activity. Using appropriate technology to support the data collection system also provides an opportunity to gather information on the environmental conditions in which the fishery is being executed (e.g., presence of sargassum, sea-state, weather, etc.), which will help determine factors that may impact the general fishery performance.

Consistency among Member State data collection systems will facilitate data sharing and sub-regional analysis of the fishery. While it is unlikely that a single technology will be used across fleet sectors and among Member States, it is essential that the types of data collected be the same. Therefore, there should be a policy to harmonize the type of data collected and their units of measure.

Considering international efforts to protect the privacy of individuals, the Eastern Caribbean flyingfish data collection systems must respect the privacy of individual fishers. As a result, the data collection system should ensure that only aggregated information is publicly available and that the information on individual fishers remains private. The use of fishers' organizations, therefore, must involve confidentiality agreements between the fishers and the data collection system. This may increase confidence amongst fishers and facilitate their willingness to provide data.

This confidentiality must carry through from the individual harvester to the aggregating organization to the end user, such as the Fisheries Division or an academic researcher. As a result, storage systems must only be accessed by those with the appropriate authority in accordance with clear guidelines on the access to and use of this data. This will include confidentiality requirements on data users that restrict their ability to share the data without authorization.

7.3 RECOMMENDATIONS FOR DATA COLLECTION SYSTEMS

The following general recommendations are provided for consideration by Member States involved with the Eastern Caribbean Flyingfish fishery. The purpose and intent of these recommendations is to ensure that a robust and effective data management system is established across the sub-region.

It is understood that each Member State has specific informational needs and data collection capacities that reflect national priorities. Furthermore, each Member State fishery has organizational systems within the fishery that reflect local tradition and experience. As a result, the following recommendations may require greater attention in some Member States, and less in others.

7.3.1 Capacity Building

Government

It is recommended that a review of each Member State Fisheries Division be completed to examine sufficiency of the technical and human capacity to undertake data collection on a regular basis and manage data in an organized system. Each Fisheries Division should include a dedicated Data Manager who has proficiency in statistical analysis, as well as support staff with the prerequisite knowledge and experience to assume responsibilities, thus ensuring a transitional plan for consistent data management.

Industry

It is recommended that fishers be the fundamental unit for data collection, and as such, efforts should be made to train fishers in record keeping and use of appropriate technologies. It is further recommended that efforts be made to facilitate participation of fishers' organizations in collecting and compiling fisheries data and in training fishers in record keeping and use of appropriate technologies.

7.3.2 Technology

Logbooks

As a foundational system for record keeping, it is recommended that Member States enact legislation requiring all fishers to keep detailed logbooks of their catch and landings, as well as other relevant information.

Member States should consider exempting fishers from landing fees when completed logbooks are presented at the landing site, or exempt fishers from registration fees when they have completed logbooks for the preceding year.

Electronic Monitoring (vessel/dockside)

Exploring the integration of new technologies is key to ensure that fisher organizations and Fisheries Divisions have access to accurate and reliable information for the basis of their decisions. Fishers or fishery managers can organize electronic monitoring programs in direct collaboration with a service provider; or fishers and managers can work together to collaborate with a service provider.

The integration of electronic video monitoring, both on vessels and dockside, is an example of an emerging industry that is advancing the collection and storage of data. It is therefore recommended that Fisheries Divisions undertake an assessment of available and cost-effective electronic monitoring systems for use within their fishery. It is further recommended that this evaluation be undertaken in consultation with representative fishers' organizations. Subject to the results of the assessment, the Fisheries Divisions should determine best means to acquire and deploy electronic monitoring, including the use of private sector companies.

One form of electronic monitoring incorporates cameras, sensors and tags (hydraulic, rotation, RFID tags, etc.,) to monitor and collect data on fisheries. It can be used to collect or verify data on catch of target and bycatch species and Endangered, Threatened, and Protected (ETP) species interactions. These tools can also determine the length, size and sex of certain species. Electronic video monitoring can also be used as a tool for compliance and enforcement of fisheries regulations as well as to collect various types of oceanographic data, including pH, temperature, salinity, etc.

Purchase slips

Buyers should be responsible for providing fishers with purchase slips that clearly indicate the date, time and quantity of fish purchased. Copies of these purchase slips should be submitted to the Member State Fisheries Division for use in cross referencing.

7.3.3 Data Content

Types of data

The collection of data should be focused specifically on the accumulation of information necessary for decision making. Overburdening fishers with data forms that are complex can undermine the efficient use of logbooks and electronic monitoring systems. Consistency in the units of measure will also facilitate analysis at the national as well as regional level. Therefore, it is recommended that data collected for the Eastern Caribbean flyingfish fishery include, at a minimum, the data provided in Table 7.1.

Table 7.6: Fishery Data Requirements

Record Type	Data Recorded									
Logsheet	Date	Fisher Name	Vessel Name	Duration of Fishing (days)	Fishing location	Species Caught	Catch Weight	Landing location	Number of totes	Amount fish discarded
Logbook	Date	Fisher Name	Vessel Name	Duration of Fishing (days)	Fishing location	Species Caught	Catch Weight (kg)	Landing location	Number of totes	Amount fish discarded
Electronic Logbook/App	Date	Fisher Name	Vessel Name	Duration of Fishing (days)	Fishing coordinates	Species Caught	Catch Weight (kg)	Landing Location	Number of totes	Amount fish discarded
Purchase Slip	Date	Buyer Name	Fisher Name	Vessel Name	Number of fish Purchase	Species landed	Weight of fish purchased (kg)	Condition of fish	Unit Price	Price paid

Format

Regardless of the systems used to collect data at the fisher level (i.e. logbooks, mobile apps, or electronic monitoring systems) data must be compiled in a standardized format. It is recommended that the all data be compiled and stored in Microsoft Access. This software is commonly available and updated, relatively inexpensive, and training is readily available where needed. Use of a common data storage platform will ensure consistency across Member States' systems.

Compilation

Wherever possible, fisher organizations can greatly enhance the efficiency and cost-effectiveness of data compilation. Therefore, it is recommended that fishers' organizations compile fishers' data wherever possible. This will reduce the administrative burden on Fisheries Divisions, which is particularly important where fiscal resources are limited. Accordingly, it is recommended that appropriate training be provided to fishers' organizations.

Storage, Access & Sharing

Raw data should be stored by Fishers' organizations or Fisheries Divisions within secure computer systems that can only be accessed by authorize staff members (Data Managers and technicians). Individual fishers' data should be treated as confidential and only shared with the individual harvester and in aggregated in units of no less than five fishers' information.

Hard copy (paper) data collection sheets/logbooks should be stored in a secure file storage area for no less than five years.

Compiled and aggregated data can be provided to third party users (academia, other users) in accordance national data sharing protocols.

8. FLYINGFISH FISHERY VESSEL CENSUS

8.1 INTRODUCTION

The original objective of the consultancy scope was to complete a vessel census; however, CRFM budgetary constraint resulted in a revisiting of the consultancy scope and methodology. It was determined that there were insufficient resources to conduct the surveys directly by the consultant, but that there was enough financial resource to provide Member States with the census tools for use by fisheries division staff while conducting in-country census surveys.

This report provides an overview of the rationale and approaches to a vessel census for the flyingfish fishery within participating Member States in the Eastern Caribbean. A census is the procedure of systematically acquiring and recording information about the members of a given population, in this case the owners and operators of fishing vessels.

The United Nations defines the essential elements of a census as having universality and periodicity, as such a census includes all the populations and is repeated within a defined schedule. Censuses are commonly repeated periodically, every five or ten years, to provide a time series of trends and conditions. A census can be contrasted with sampling in which information is obtained only from a subset of a population. A sample survey of fishers was also conducted and reported within other CLME+ supported flyingfish fishery projects.

A vessel census is an important element of the overall data acquisition and analysis process. Vessel data compiled during regular censuses provides information on fishing effort and socio-economic condition within the flyingfish fishery that is needed for effective management planning.

8.2 EASTERN CARIBBEAN FLYINGFISH FISHERY

It is important that the data collection system be affordable, so that changes in national fiscal condition do not undermine the integrity of the data collection systems. This data should include catch, landings, distribution and effort data. Effort has historically been calculated by days-fished which is determined by boat-day (the number of days boats are used for flyingfish fishing). Throughout the region there has been a change in the composition of the fishing fleet. Advances in boat technology and use of larger boats that carry ice for catch preservation and can fish for multiple days have increased the efficiency of the overall fleet. Many fishers use vessels that can fish further, faster, and longer than traditionally used pirogues or launches. As a result of this increase in the "effort" efficiency, it is important that each Member State's Fishery Division undertake a complete assessment of their fleet to better understand and manage harvesting capacity.

8.3 VESSEL TYPES

There are currently several vessel types used in the commercial and subsistence fishery in the region. Most vessels are used for multi-species fishing activities. Some vessels are used to target larger pelagic species, with incidental catches of flyingfish for bait, while other smaller vessels are primarily used for harvesting flyingfish and other small pelagic fishes for commercial sale.

8.3.1 Small Pelagic (Flyingfish) Fisheries Vessels

Day use vessels (Figure 8.1), primarily pirogues or launches, are the most common type of vessel used for the commercial harvest of flyingfish. As the name suggests, these vessels are used by fishermen for day trips to fishing grounds. These vessels are not equipped with ice-holds and thus cannot stay out on the

fishing grounds for extended periods of time. These vessels are generally equipped with hand and trolling lines, gill nets and hoop nets to harvest flyingfish as well as large pelagic species where opportune.

Figure 8.1: Grenada Day Use Vessels (©Bugsy Delesalle)

8.3.2 Large Pelagic Fisheries Vessels

Multi-day use vessels, also referred to as ice boats in some regions, are the most common type of vessel used in large pelagic fisheries. In general, these vessels are equipped with longline gear (Figure 8.2) to target species such as tuna, dolphinfish (Mahi Mahi), and swordfish, among others.

Longline fishers often carry nets to harvest flyingfish opportunistically to use as bait for large pelagics. However, this practice is not as common as it once was due to the inaccessibility of flyingfish. Thus, the majority of fishermen purchase enough bait for their fishing trip prior to leaving the dock.

Figure 8.2: Longline Gear onboard Grenada Multi-Day Use Vessel (© Bugsy Delesalle)

8.4 FLEET STATUS

8.4.1 Census Approach

NEXUS designed the census so that Fisheries Division staff could capture information from vessel owners/operators at all landing locations including beaches, wharves, and moorings. This information will provide a full and complete standardized dataset so that the Fisheries Divisions can compile the

information needed to understand the state of the fishing fleet. We anticipate that this will be a very time consuming and labour intensive endeavour.

While it is intended that a census be undertaken in which all vessel owners/operators complete the survey forms either individually, or with assistance from Fishery Division staff, we understand that there is no regulatory process by which all parties must complete the survey tools. Therefore, it is likely that there will be gaps due to the inability for all vessel owners/operators to be reached, and some vessel owners/operators may be unwilling to complete the forms.

Survey tools were provided to each Member State Fisheries Division by Blue Earth and NEXUS (Figures 8.3 to 8.5). These were intended to be used to conduct national vessel census along with other flyingfish surveys. Information collected by Fisheries Divisions would be cross referenced with most up-to-date vessel registries compiled for the Vessel Registry Report.

Blue Earth and NEXUS did not intend to directly conduct the census. Providing the census forms to Member States so that they conduct the field survey of vessel owners and operators at landing sites, ports, and marinas was the only means to conduct the census under a limited consultancy budget. Furthermore, direct implementation of the survey would enhance the direct involvement of fishery staff in the implementation of the project and facilitate communication between Fisheries Divisions and vessel owners/operators.

Member State Fisheries Divisions, except for Trinidad and Tobago, maintain national registries of fishing vessels. These registries contain information on vessel type, size, construction material, owner, and principle landing site). However, the registries have not been verified to determine redundancies (vessels no longer active in the fishery, or vessels that may have been entered more than once in the system due to changes in name or ownership). Additionally, the registries do not provide any information on recreational vessels which may be incidentally involved with fish harvesting. As a result, it is recommended that Member State Fisheries Divisions consider conducting periodic censuses to augment and verify data in their registries. Based on the number of vessels in the current national vessel registries census in which 86% of the vessel owners/operators complete census forms would be sufficient to provide results that have a high degree of accuracy (within 95%). A census covering 86% of the fleets would be sufficiently comprehensive to confidently evaluate the completeness and status of the national vessel registries and provide insight into the state of the fleet.

8.4.2 Census Questionnaire

Blue Earth and NEXUS provided census survey forms to each of the Member States for their use in conducting national fishing licensing and vessel registration surveys, which could be conducted using smart phones or tablets. Use of electronic census tools would enable fishery staff to efficiently conduct the census without adding too much additional effort to their day-to-day work. The use of apps that interface with commonly used database software (such as Microsoft Access) will ensure compiled survey results can be easily manipulated to meet the needs of Member State Fisheries Divisions in the continued advancement of vessel registration, vessels surveys and fishers licensing.

Template census survey forms are provided below. These forms, which can be used in standard data management software on tablets, are separated into the following categories:

Opinion survey for fishing licenses. This survey is to be administered to fishers, fishing crew, buyers, processors, exporters, as well as the wider public. A broad public survey will provide senior decision-makers with information needed to assist in determining the socio-political perspective of the use of licenses as a fishery management tool. Furthermore, understanding the attitude of stakeholders toward licensing will help define systems that promote compliance.

Vessel Information. This small survey tool (Figure 8.3) will be useful in building an up-to-date database on the current state of the fishing fleet and contribute to a vessel census.

Vessel Ownership Information. This tool (Figure 8.4) will provide contact information on the ownership and operation of fishing vessels and contribute to a vessel census.

Vessel Use Information. This tool (Figure 8.5) will provide useful information on the socio-economic aspects of the fleet and information linking the fleet and sustainable livelihoods.

The survey tools are simple and easy to use. This will avoid lengthy time-consuming processes which can limit public willingness for participation in the survey. Furthermore, using four separate survey tools (different aspects of the study) provides the opportunity for different Fishery Divisions staff to use the individual tools in accordance with their routine work activities.

Vessel Information

Vessel Name	**Identification Number**	
	Registration Number (if any)	
Overall Length	**Net Tonnage/Weight**	**Gross Tonnage/Weight**
Year Built	**Year of Last Hull Maintence**	
Hull Material	**Engine Make**	**Engine Type**
		Gas
		Diesel
	Horsepower	

Figure 8.3: Vessel Information Census Form

Vessel Ownership

Vessel Owner's Name	First	Middle	Last
Owner Date of Birth			
Owner's Address			
	Street		
	Community		
	Phone		
Vessel Operator Name	First	Middle	Last
Operator's Date of Birth			
Operators Address			
	Street		
	Community		
	Phone		

Figure 8.4: Vessel Ownership Census Form

Vessel Use		
Primary Use:	Fishing	
	Recreation	
	Tourism	
	Transportation	
	Cargo	
Species Fished:		
Average # days used per month		
	Jan	
	Feb	
	Mar	
	Apr	
	May	
	Jun	
	Jul	
	Aug	
	Sep	
	Oct	
	Nov	
	Dec	

Figure 8.5: Vessel Use Census Form

To date, there have been no reported results from Member State Fisheries Divisions for census surveys. This is likely due to the fact that Fisheries Divisions have not been able to deploy staff to conduct surveys due to competing priorities with limited resources. If the latter reason is true, regional efforts should be made to support national censuses though the hiring of temporary staff (students, casual workers) to cost effectively conduct the censuses.

8.5 VESSEL REGISTRY

Each Member State, with the exception of Trinidad and Tobago, maintains a national registry of fishing vessels. These registries are intended to compile information on the ownership, location, and type of fishing vessel, as well as other information deemed necessary by the Fisheries Division. The format and structures of the databases and the registration processes vary between Member States, thus making regional comparisons and analysis of overall fishing effort difficult.

8.5.1 Barbados

Barbados maintains a registry for fishers and vessels. It is expected that fishers register annually. Similarly, it is expected that vessel owners register vessels annually; however, it is understood that some fishers and boats are not currently registered. Registration is conducted at the Fishery Division offices. Based on the review of the Barbados registry there are currently 839 Moses (smaller open boats constructed of wood or glass reinforced plastic and in some places referred to as dories), 300 Launches (decked wood boats approximately 6 to 12 meters in length that day fish without ice), and 250 Iceboats (offshore fishing >25 metre vessels that are equipped with insulated ice-holds for multi-day fishing trips).

8.5.2 Grenada

Grenada maintains a registry for vessels. It is expected that vessel owners register vessels annually; however, it is understood that some boats are not currently registered. Registration is conducted at the Fishery Division offices.

Based on the review of the Grenada registry there are currently 484 longliners (offshore fishing vessels that are equipped with insulated ice-holds for multi-day fishing trips) and 484 pirogues (wooden or fiberglass boats 6 to 12 meters in length that day fish with or without ice).

8.5.3 Enhancement of Vessel Registries

The census documents were provided to each of the participating Member States but no forms were completed, and the consultancy budget could not support the direct implementation by consultants, therefore efforts have been channeled to provide recommendations and advice on how future censuses can be planned and implemented.

Ideally, the vessel registry should provide the same data compiled in a vessel census; however, this assumption is based on full compliance with vessel registration requirements. As noted above, NEXUS conducted a review of data available from the vessel registries in Barbados and Grenada. This review illustrated the need to:

- Enhance vessel registration systems to collect and compile broader types of data,
- Introduce regulatory measures to promote compliance with the vessel registration system, and
- Undertake periodic sampling to determine the levels of compliance and determine margins of 0error in the vessel dataset.

Considering that fishers from all Member States harvest a shared flyingfish stock, Member States should harmonize vessel registries. This will enable national fleet census data to be annually collected, which will facilitate regional analysis of fleet structures and fishing effort. Enhancing the vessel registration system to collect broader information will reduce the need for a separate and costly vessel censuses to be conducted every five to ten years. This can benefit Fisheries Divisions by providing them with a cost-efficient means to collect and compile technological, social and economic data on the fleet.

8.6 DISCUSSION AND RECOMMENDATIONS

8.6.1 Discussion

In addition to providing the vessel census forms, the consultants made efforts to facilitate in country surveys though advice and discussion during other consultancy related travel to the region (October 2017, April 2018, August 2018, and September 2018). During these trips, the consultants discussed the need for the census, the nature and purpose of the survey tools, and the barriers that fisheries staff might encounter when conducting the surveys.

It was clear from the feedback that was provided to the consultants that Member State Fishery Divisions are understaffed and have limited financial resources to engage additional workers to conduct surveys. Furthermore, it was implied that some social groups would be reluctant to provide information willingly, such as third-party investors in fishing vessels and the social elite. It was implied that a social/political barrier between Fishery Division staff and some of the wealthier vessel owners, who own luxury pleasure craft, exists. These vessel owners incidentally harvest flying fish for personal consumption, an activity which inhibits staff members' willingness to conduct the census with more affluent vessel owners. However, regardless of the reasons, it was clear that the Fishery Divisions were unable to complete a vessel census in each country and without change in the financial situation, it is unlikely that member states fisheries divisions will be able to do so in the immediate future.

8.6.2 Recommendations

Considering the barriers facing Member State Fishery Divisions, the following recommendations are offered as a means to improve Member State information on their fishing fleets:

The attached census survey forms should be incorporated into a common registration form used by all member states. Using a common registration form will significantly facilitate harmonisation of the vessel registration systems amongst member states.

The vessel registry should be maintained by the Department of Transportation (or equivalent) with appropriate legislative instruments being prepared to require vessel owners to register annually.

All vessels should be included in the Vessel Registry. Fishing vessels, recreational vessels, pleasure craft, tenders, and commercial transportation vessels should be required to register annually and should be subject to the same inspection criteria.

Member States should harmonise the terminology used to describe fishing vessels within their vessel registration systems. This will enhance the overall ability for member states to share data and to determine levels of effort at the sub-regional level. Common terminology should be adopted for:

- primary use/purpose of the vessel
- classifications based on size
- construction material
- types of fishing gear used

National Fisheries Divisions should conduct a vessel census every 5 years to verify the Registry data. By staggering the timing of national censuses, Member States can share the services of a single service provider to cost effectively complete censuses. This service could be provided by the CRFM, subject to the availability of funding.

The following section provides brief descriptions of fishing vessels, and a list of all known registered vessels in Barbados and Grenada. It is important to note that each country uses different classification systems, and in order to harmonize the information on a sub-regional basis we have adopted a three-tier system. The three-tier system classifies vessels as either multi-day use vessels (>25ft), single day use vessels (<25ft) or other (small vessels used along coastal reefs).

8.7 FISHING VESSELS AND REGISTRATION

8.7.1 Introduction

Information was compiled from existing vessel registries, vessel census surveys and interviews with Fisheries Staff regarding vessels involved with incidental catches of flyingfish (such as research projects). Information include the vessel registration number, Vessel name and the location of the principle port/beach for the vessel, but not personal or specific information on the vessel operator since this may infringe on personal privacy or corporate confidentiality.

The information will be useful to inform the development of vessel registration regulations and permitting systems.

8.7.2 Information Sources

The content of the report is based on information provided from Fisheries Division Vessel Registries and does not include information compiled from census surveys conducted by Member State Fishery Divisions[17].

Nexus compiled the most up-to-date registry information from Barbados and Grenada. Tobago had opted to not provide information at the time. It was noted that there were a few duplications and some outdated records may be still included in the registry, such as vessels that are no longer active in the fishery. This error can best be addressed when Fisheries Divisions conduct the vessel census.

Little or no data has been collected on the specific use of vessels in the flyingfish fishery for incidental harvesting of flyingfish as bait, therefore it is assumed that all fishing vessels, regardless of size or gear type used, can be involved in the harvest of flyingfish.

It was also noted that in each Member State, there is a requirement for all fishing vessels to be registered, however, it is assumed that some vessels may be fishing without registering. In Grenada fishers can only get a government gas rebate if the vessel is registered, so it is likely that all commercial fishers have their vessels registered. In all Member states, some larger pleasure craft are assumed to be used for recreational fishing and fishing for personal consumption. These vessels are not registered with the Fisheries Divisions.

8.7.3 Fleet Sectors

The following section provides information on the various types and uses of vessels involved with flyingfish harvesting, transportation and/or research.

8.7.4 Multi-Day Use Vessels

Multi-day use vessels, such as ice boats (Figure 8.6) in Barbados or longliners in Grenada (Figure 8.7), are offshore fishing vessels that are equipped with insulated ice-holds for multi-day fishing trips. Many of these vessels following the same configuration and design as single day-boats, only larger (>25ft). The ice-holds allow these vessels to preserve fish caught further from shore and stay out at sea for several days, thus enabling fishers to target resources over greater distances.

[17] Vessel census survey forms have been provided to Member State Fisheries Divisions by Nexus. Due to current limitations on staff resources within the Fishery Divisions, census surveys have not yet been conducted.

Figure 5.6: Retired Barbados Ice Boat (©Bugsy Photography)

Longline vessels but are used primarily for fishing tuna, swordfish and other large pelagics. Longline fishermen often carry nets to opportunistically harvest flyingfish for use as bait for the large pelagic species.

Figure 8.7: Grenada Longliner (©Bugsy Photography)

8.7.5 Day Use Vessels

Day use vessels, including pirogues or launches (Figure 8.8), are used by fishermen for day trips to fishing areas. They are not equipped with ice-holds and thus cannot preserve catch while fishing for longer periods further from port. Day boats, or launches as they are classified in Barbados, are decked wood boats approximately 6 to 12 meters in length. These vessels land their catch daily and largely target flyingfish and large pelagics. Day boats are normally equipped with navigation, communication and safety equipment and commonly use hand and trolling lines, gill nets and hoop nets as their fishing gear.

Figure 8.8: Grenada Day Boat

8.7.6 Other Vessels

Other registered fishing vessels include smaller boats such as moses, canoes, skiffs, or dories fall into this category.

In Barbados, there is a classification of smaller fishing vessels known as "Moses" (Figure 8.9). These vessels are open boats (dinghies) approximately 3 to 6 meters in length and are constructed of wood or glass reinforced plastic. They are powered by a small (10-40hp) outboard motor or by oars. Fishing gear that is commonly used onboard these vessels include hand and trolling lines, fish traps and cast nets.

Figure 8.96: Barbados Moses Vessel (©Bugsy Photography)

8.7.7 Lists of multi-day use fishing vessels, day-use fishing vessels, and other fishing vessels provided by Barbados and Grenada

Table 1 provides a list of all known registered vessels in Barbados and Grenada.

Table 1. List of registered fishing vessels

Barbados Registered Multi-Day Use Vessels

Vessel Name	*Registration Number*	Location
LEGEND OF THE SEA	*E001*	Bridgetown Complex
CONQUEROR	*E002*	Six Men's

Vessel Name	*Registration Number*	Location
LADY MURIEL	*E010*	Bridgetown Complex
AMANI ALEXANDER	*E018*	Bridgetown Complex
PEARLEITA #2	*E021*	Bridgetown Complex
PEDCO	*E036*	Six Men's
CARVIN	*E038*	Bridgetown Complex
FISH TAIL	*E043*	Bridgetown Complex
SEPERATED BUT EQUAL	*E048*	Bridgetown Complex
ALICO	*E049*	Bridgetown Complex
NORTHERN STAR	*E051*	Bridgetown Complex
DEMICHA	*E052*	Bridgetown Complex
FOUR SISTERS	*Eo53*	Half Moon Fort
JTK	*E056*	Bridgetown Complex
ANGELINA	*E059*	Bridgetown Complex
KIRK MATTHEWS	*E074*	Bridgetown Complex
J ALEXANDER	*E076*	Bridgetown Complex
KAMS	*E080*	Bridgetown Complex
SHIN BET	*E105*	Bridgetown Complex
BRENDUNG	*E109*	Bridgetown Complex
GOD'S GIFT	*E113*	Six Men's
AGRADECIDO	*E125*	Bridgetown Complex
IT IS WHAT IT IS	*E152*	Weston
STAR 2	*J002*	Bridgetown Complex
ANTOINE	*J011*	Bridgetown Complex
JAZZA BOY	*J022*	Bridgetown Complex
RUNAWAY II	*J023*	Bridgetown Complex
XAKYAH	*J029*	Bridgetown Complex
RUNAWAY IV	*J030*	Bridgetown Complex
TRIPPLE STAR	*J033*	Bridgetown Complex
LADY DI	*J044*	Bridgetown Complex
DOVE I	*J048*	Bridgetown Complex
RUNAWAY	*J050*	Bridgetown Complex
LADY A. KASHA	*J054*	Bridgetown Complex
RUNAWAY V	*J061*	Bridgetown Complex
CALYPSO MAE	*J062*	Bridgetown Complex
DE LEDA BACK	*J064*	Bridgetown Complex
INVADER	*J065*	Bridgetown Complex
COME AGAINE	*J079*	Bridgetown Complex
DOVE IV	*J086*	Bridgetown Complex
RUNAWAY VI	*J093*	Bridgetown Complex
ITS MINE	*J094*	Bridgetown Complex
RUNAWAY III	*J096*	Bridgetown Complex
REBEL GIRL	*J098*	Bridgetown Complex
SALACIA	*J115*	Bridgetown Complex
TUBIE II	*L001*	Bridgetown Complex
O'SHURTAL	*L006*	Bridgetown Complex

Vessel Name	*Registration Number*	Location
OCEAN PRINCESS II	*L009*	Half Moon Fort
TYRA	*L015*	Oistins
DE JESTINA 1	*L022*	Bridgetown Complex
LADY MAR	*L025*	Half Moon Fort
TUBIE I	*L035*	Bridgetown Complex
OCEAN PRINCESS II	*L044*	Bridgetown Complex
PETTIT	*L045*	Six Men's
OMAR	*L048*	Bridgetown Complex
JUDY	*L049*	Bridgetown Complex
PHOENIX	*L051*	Six Men'
MISS D	*L083*	Oistins
OCEAN PRINCESSS III	*L086*	Bridgetown Complex
TABS UNITY 2	*L096*	Bridgetown Complex
BRUTOS 1	*M007*	Bridgetown Complex
MOLLY	*M012*	Bridgetown Complex
ON TRACK II	*M013*	Bridgetown Complex
KNIGHT LEGEND	*M015*	Bridgetown Complex
ALPHA	*M017*	Bridgetown Complex
MARGRACE	*M031*	Bridgetown Complex
NEPTUNE GODDESS	*M036*	Bridgetown Complex
BLUE FIN	*M039*	Bridgetown Complex
SHINGING LIGHT	*M042*	Oistins
CAPTAIN JERRY	*M047*	Bridgetown Complex
DONLEI	*M067*	Bridgetown Complex
ALINDA	*M071*	Bridgetown Complex
JAMBAR	*M088*	Bridgetown Complex
LUCKY LADY II	*Mo92*	Bridgetown Complex
LADY CARMEN	*M117*	Bridgetown Complex
SI-HOR 1	*M125*	Bridgetown Complex
DIONE-C	*M130*	Bridgetown Complex
INVESTIGATOR 2	*M132*	Bridgetown Complex
IONE	*M135*	Shallow Draught/ Sand Pitt
THE LAST ONE	*M138*	Bridgetown Complex
BASKIE TOO	*M169*	Bridgetown Complex
CINDY-H	*M170*	Bridgetown Complex
CARLA	*M173*	Bridgetown Complex
ENDEAVOR	*M177*	Bridgetown Complex
TIA RAQUEL	*M180*	Bridgetown Complex
THORNESS	*M192*	Bridgetown Complex
PAPA LOUI	*M201*	Bridgetown Complex
TERRUCA	*M211*	Bridgetown Complex
ZELWOOD II	*M216*	Bridgetown Complex
MORE THAN ONCE	*M239*	Bridgetown Complex
JEHOVAH JIREH 2	*M251*	Bridgetown Complex
CYNTHIA 2	*M257*	Bridgetown Complex

Vessel Name	*Registration Number*	Location
NANDI	*M266*	Bridgetown Complex
PRUDENT LADY	*M271*	Bridgetown Complex
PREVAILING J	*M273*	Bridgetown Complex
T.B.C.	*M298*	Bridgetown Complex
HAPPY HUNTER	*M299*	Bridgetown Complex
SEA GYPSY IV	*M301*	Bridgetown Complex
KEVYNS	*M302*	Bridgetown Complex
D'ANDRE	*M306*	Bridgetown Complex
WIND DANCER	*M310*	Bridgetown Complex
HANA	*M316*	Bridgetown Complex
SHANE + SHEENA	*M332*	Bridgetown Complex
HAPPY HOOKER	*M338*	Bridgetown Complex
OZARA	*M371*	Bridgetown Complex
E'SHE 1	*M374*	Bridgetown Complex
CARLTRICK	*M381*	Bridgetown Complex
Midnite Blue	*M407*	Bridgetown Complex
JACK SPARROW	*M415*	Bridgetown Complex
EXTRA MILE	*M419*	Bridgetown Complex
JAYBEE	*M420*	Bridgetown Complex
BIG RED ON SEA	*M428*	Bridgetown Complex
ABYZZ	*M438*	Bridgetown Complex
EUREKA	*M441*	Bridgetown Complex
J-JAY	*M448*	Bridgetown Complex
BRITISH EXPERIENCE	*M450*	Bridgetown Complex
DAYANNA STAR	*M459*	Bridgetown Complex
MOONTOWN BETTY	*M474*	Bridgetown Complex
LUCKY MOUSE	*M475*	Oistins
JADON	*M481*	Bridgetown Complex
4 REASONS	*NR*	Bridgetown Complex
KAMICKE	*NR*	Bridgetown Complex
MARTINA	*NR*	Bridgetown Complex
HAPPY HUNTER 2	*NR*	Bridgetown Complex
JOYCE	*O003*	Bridgetown Complex
MICHELLE II	*O007*	Bridgetown Complex
DERECK-2	*O008*	Bridgetown Complex
SEA CRYSTAL	*O021*	Bridgetown Complex
RODNEY J	*O023*	Bridgetown Complex
LADY CARMEN	*O046*	Bridgetown Complex
DERECK III	*O067*	Bridgetown Complex
MORNING STAR	*O070*	Tent Bay
DOS AMIGOS	*O072*	Bridgetown Complex
OCEAN SPRAY	*O073*	Bridgetown Complex
SEA HAWK	*P001*	Bridgetown Complex
FLORIDA GIRL II	*P004*	Bridgetown Complex
DE BOY'S	*P016*	Bridgetown Complex

Vessel Name	*Registration Number*	Location
ALIVA 1	*P018*	Bridgetown Complex
BOMBER	*P025*	Bridgetown Complex
EL-RETES	*Po28*	Bridgetown Complex
THRISHAN	*P033*	Bridgetown Complex
MIDNITE COOL	*P035*	Bridgetown Complex
WHITE LOTUS	*P037*	Consett Bay
SAM G	*P039*	Bridgetown Complex
SEA ANN	*P043*	Bridgetown Complex
LISA	*P044*	Bridgetown Complex
WATCH ME	*P047*	Bridgetown Complex
SANTA MARIA	*P050*	Bridgetown Complex
FI FI #2	*P051*	Bridgetown Complex
NIC-ANNE	*P053*	Bridgetown Complex
SACRIFICE	*P054*	Bridgetown Complex
THUNDER GULCH	*P056*	Oistins
SUZETTE	*P064*	Bridgetown Complex
OSGLO	*Po65*	Bridgetown Complex
ENID 1	*P066*	Bridgetown Complex
RELIVE	*P067*	Bridgetown Complex
G-FORCE	*Po68*	Consett Bay
CHRIS-DEE	*P073*	Oistins
PROVIDENCE	*P076*	Bridgetown Complex
LATANYA	*P078*	Bridgetown Complex
DIXIE DRIFTER	*P079*	Bridgetown Complex
ALPHA	*P081*	Barbados Yacht Club
KERA LEE	*P082*	Bridgetown Complex
EMILY ANN	*P098*	Bridgetown Complex
MAKEA-H	*P100*	Bridgetown Complex
DREAM	*P101*	Bridgetown Complex
ADVENTURE	*P102*	Oistins
ENID 11	*P106*	Bridgetown Complex
RICHIE	*P111*	Oistins
MERRT-TOO	*P114*	Oistins
PROVIDENCE	*P117*	Oistins
LADY C	*P125*	Oistins
D-A-K. MAR MAR	*P126*	Bridgetown Complex
WAR CRY	*P138*	Oistins
NATALIE	*P139*	Bridgetown Complex
MORNING GLORY	*P140*	Bridgetown Complex
KOOL RUNINGZ	*P144*	Bridgetown Complex
MAKEA-H #11	*P146*	Bridgetown Complex
SARA ANN	*P148*	Bridgetown Complex
DE BENDER	*P171*	Bridgetown Complex
GOD SPEED	*P175*	Bridgetown Complex
DREAM LOVER	*P177*	Oistins

Vessel Name	***Registration Number***	**Location**
ELSIE STAR	*P178*	Oistins
ADELA 1	*P179*	Bridgetown Complex
CASCO BAY	*S002*	Read's Bay
MYRTLE	*S011*	Bridgetown Complex
EKIUWA	*S022*	Bridgetown Complex
POUCH P	*S032*	Half Moon Fort
KIM	*S039*	Bridgetown Complex
POUCH II	*S062*	Bridgetown Complex
REJOICE	*S072*	Bridgetown Complex
OLIVE	*S099*	Bridgetown Complex
ARTHUR B	*S114*	Weston
LADY VENETTA	*S128*	Bridgetown Complex
SPARE TIME	*S132*	Bridgetown Complex
TESCO 1	*S146*	Bridgetown Complex
JEM	*S161*	Bridgetown Complex
POUCH III	*S162*	Bridgetown Complex
POUCH V	*S172*	Bridgetown Complex
FINISHED FINALLY	*S234*	Bridgetown Complex
OCEAN VIBE	*S238*	Bridgetown Complex
RUTHIE	*UC*	Bridgetown Complex
JULIE-D	*UC*	Oistins
ABEL	*UC*	Bridgetown Complex
LOVE KISSES	*UC*	Oistins
DMAGI	*UC*	Oistins
VALENCIA & OCEAN	*UC*	Oistins
TIA/ KIARA	*UC*	Bridgetown Complex
MY DREAM	*UC*	Bridgetown Complex
MICHELE 2	*UC*	Bridgetown Complex
TRY-A-TING	*UC*	Bridgetown Complex
HADWEN	*UC*	Bridgetown Complex
SUNLINE	*UC*	Bridgetown Complex
KEVYN 2	*UC*	Bridgetown Complex
REE CARA II	*UC*	Oistins
SHEA	*UC*	Bridgetown Complex
MY THREE	*UC*	Oistins
CUPSWILL CARE	*UC*	Bridgetown Complex
IMPACK	*UC*	Bridgetown Complex
NIKKI	*UC*	Bridgetown Complex
BIG JONES	*UC*	Bridgetown Complex
HAWK	*X007*	Oistins
MILLIE-B	*X015*	Bridgetown Complex
SEA LIFE	*X017*	Bridgetown Complex
FREEDOM II	*X018*	Bridgetown Complex
SUN SEA II	*X024*	Oistins
OCEAN RUNNER	*X038*	Bridgetown Complex

Vessel Name	***Registration Number***	**Location**
DE SNAKE	*X040*	Oistins
THE KEN	*X042*	Oistins
GOODWILL	*X064*	Oistins
CHARLENE	*X066*	Oistins
RAMBO II	*X068*	Oistins
VIBERT III	*X073*	Oistins
VIBERT II	*X074*	Bridgetown Complex
ELROST	*X075*	Oistins
BE MY GUEST!	*X076*	Bridgetown Complex
GRACIAS PAPA	*X077*	Bridgetown Complex
ADMIRAL	*X079*	Bridgetown Complex
DE HUNTER	*X083*	Bridgetown Complex
VOOM VOOM	*X092*	Oistins
NORTH WIND	*X093*	Oistins
UNITY	*X124*	Bridgetown Complex
LADY JOY	*X132*	Oistins
BLUE LIGHTNING	*X134*	Oistins
BALLY MOSS II	*X135*	Oistins
RODERICK	*X138*	Oistins
TRIPLE A	*X145*	Bridgetown Complex
SEA ME NOW	*X147*	Bridgetown Complex
SEA PASSION	*X149*	Bridgetown Complex
AGAINST THE ODDS	*X163*	Bridgetown Complex
ROYAL STAR	*X168*	Oistins
ALBERTHA	*X171*	Oistins
FLIPPER G	*X175*	Bridgetown Complex
NEW HORIZON	*X176*	Oistins
NEW HORIZON II	*X177*	Oistins
LADY ZAMIA	*X183*	Oistins
SWEET KISSES	*X186*	Oistins
SUN FISH	*X194*	Oistins
J-R	*X198*	Oistins
CONCORDE 2	*X206*	Bridgetown Complex
BARRACUDA TOO	*X207*	Oistins
LABOUR OF LOVE	*X213*	Bridgetown Complex
PRESS 4 TIME	*X221*	Bridgetown Complex
CONCORED 1	*X225*	Consett Bay
CAREFUL	*X237*	Oistins
MEURICE A	*X258*	Oistins
MIDWAY 1	*X259*	Bridgetown Complex
HUSTLER II	*X273*	Bridgetown Complex
SUREE PAYEE	*X293*	Bridgetown Complex
GOIN HOOKIN	*X295*	Oistins
COUNT THE COST	*X303*	Bridgetown Complex
REE CARA	*X316*	Oistins

Vessel Name	*Registration Number*	Location
NITA	*X317*	Bridgetown Complex
PRIDE & JOY	*X320*	Bridgetown Complex
SUNFISH I	*X345*	Bridgetown Complex
CHERDEMAR	*X348*	Bridgetown Complex
BARRY AND NIECEY	*X415*	Bridgetown Complex
NEW CREATION	*X423*	Oistins
TURF	*X426*	Oistins
UNCLE DOC	*X435*	Oistins
THE MC	*X446*	Oistins
DEEP IMACT	*X456*	Bridgetown Complex
ARROGATE	*X457*	Bridgetown Complex

Grenada Registered Multi-Day Use Vessels

Vessel Name	Registration Number	Location
FAITH LEWIS	1586	Carenage
NIA	966	Carenage
CINDY LYNN	1585	Carenage
BETTY BOOP	2112	Grand Mal
CAPELLA	1139	Windward
LADY BENJI	1944	Petite Martinique
UNITED R	1751	Petite Martinique
SILVER BELLE	2044	Carenage
FORWARD EVER	951	Carenage
CONTENT 3	1721	Petite Martinique
MINERVA II	2139	Windward
PHOENIX	1900	Petite Martinique
TUNA STAR	1752	Carenage
SUN STAR	1157	Carenage
RAINBOW CHASER	930	Grenada Yacht S
JAWS III	1885	Gouyave
ROXANNE	1292	Harvey Vale
GUARD	1265	Carenage
RAYHANNAH	1777	Carenage
GLORIOUS	1538	Belmont
MISS TRUDY	1683	Carenage
STARRY NIGHTS	2010	Carenage
SERENITY	1827	Carenage
VISION 2020	1556	Gouyave
SANCHEZ	1546	Petite Martinique
GUYSER	1154	Carenage
SEA ANGEL	907	Carenage
VAETA	900	Lagoon Road
M.V. STYLE	860	Grand Mal
GARRET & ERROL	795	Carenage

Vessel Name	Registration Number	Location
LEONORA-S	740	Hillsborough
M.V. CHRISTINA	670	Lagoon Road
DIVENTURE	1990	Hillsborough
NUFF RESPECT III	887	Petite Martinique
RISING STAR	1764	Petite Martinique
REALITY	1635	Petite Martinique
CONTENT 2	390	Petite Martinique
CHARISMA	1044	Windward
BLACK JUSTICE	616	Belmont
QUEEN MARY	2005	Petite Martinique
K.C. & SONGS	1937	Gouyave
AGATHA D	918	Carenage
OCEAN DREAM	2085	Petite Martinique
JUST J	2076	Carenage
MIND YOUR BUSINESS II	1766	Grand Mal
BIG DREAMS	1765	Carenage
OH CECILIA	1749	Carenage
RORO	1457	Carenage
BULOOSE	939	Carenage
FIRST STEP	447	Carenage
DIELLA	356	Petite Martinique
FALCON	336	Carenage
LADY RINA	255	Windward
JAMIE II	877	Carenage
LADY AYANA	672	Windward
VIKING B	1656	Petite Martinique
RACHEE BEE	2131	Petite Martinique
MY VICTORIA	2071	Bogles
ADVANCE	1879	Windward
SIMPLE STAR	1770	Carenage
REGGAE MUSIC	1536	Lagoon Road
BLUE PRINT	1970	Dover
SEA STAR	1045	Petite Bacaye
PUSS IN BOOTS	1736	Grenada Yacht Club
SCRAPE UP II	1980	Beasejour
GUARD II	1906	Petite Martinique
NATURAL MYSTIC	1768	Petite Martinique
LADY CATHY	1623	Petite Martinique
ARIA B	1531	Petite Martinique
MAD MAX IV	1513	Grenville
FAITH	1387	Harvey Vale
NO FEAR	1354	Carenage
LEGS	1018	Carenage
LADY CYNTHY	990	Petite Martinique
D'ANOINTED	982	Grenada Yacht S

Vessel Name	Registration Number	Location
TRINITY	955	
HERO II	892	Petite Martinique
LADY B	809	Carenage
COUNTRY BOY	802	Fontenoy
UNDEFEATED III	712	Harvey Vale
ABILITY II	701	Petite Martinique
TRENDSETTER	677	Carenage
LENA C	51	Victoria
LADY MYOWN	6	Lagoon Road
CLARIANN III	1942	Petite Martinique
RENEWAL GLORY	1912	Windward
NJORD	2126	Carenage
JAHMIAH	1991	Gouyave
GABRIELLA	1968	Grenville
SWEET DREAMS	1812	Grenville
BIG BEAR	1706	Carenage
LADY D	1696	Petite Martinique
BRIANA	1646	Carenage
GINGER	1589	Windward
MARGETA-O II	1550	Windward
GINGER	1442	Windward
MONALISSA	1197	Carenage
MARSEA	1008	Gouyave
JINKAI	1002	Petite Martinique
STUDY ME	702	Petite Martinique
SHADENESS	668	Petite Martinique
MINERVA	662	Windward
LUCINDA	880	Carenage
TOPAZ	1881	Woburn
SEA WOLF	2060	Grand Mal
OCEAN REAPER	1902	Petite Martinique
LADY CYNTHY II	1760	Petite Martinique
RESOLUTION	834	Windward
DELIVEROUS	705	Petite Martinique
JOHN O POINT	1953	Windward
SURF N TURF	1621	Grenada Yacht C
PHILL CAT III	2025	Mt. Pleasant Bay
BLACK CHILD II	2013	Grenada Yacht Club
SEA WASP	1938	Petite Martinique
FALCON	1922	Windward
VIRGINA STORM	1909	Harvey Vale
HUNTER II	1836	Petite Martinique
BIG DREAM	1772	Petite Martinique
SUN RISE	1761	Petite Martinique
BRILLIANT STAR	1691	Carenage

Vessel Name	Registration Number	Location
BLISS	803	Petite Martinique
JAH BLESS	270	Carenage
ELLA C	16	Petite Martinique
BENJI	615	Carenage
GAMBLER'S LUCK	1799	Carenage
ALBERTINA RAMSEY	2061	Gouyave
JACKIE BOY	1993	Windward
WARRIOR	1894	Carenage
DECISION	1494	Melville Street
DECISION	1482	Grand Mal
STABILITY	969	Carenage
TACKLE IT II	898	Grand Mal
VIRTUE	622	Petite Martinique
KAHLEB C.	225	Windward
PERSISTENT	2092	Carenage
COURAGE II	1936	Lagoon Road
ENDURANCE	1924	Petite Martinique
PRUDENCE	1880	Carenage
IRISH CREAM II	1875	Grenada Yacht Club
MNET	1851	Windward
NUFF RESPECT	1848	Petite Martinique
AMENTI	1790	Carenage
MIRACLE	1758	Grand Mal
OCEAN MAX	1616	Bogles
LADY VIRGINIA	1532	Bogles
TRIUMPH	1429	Grenville
M.V. SUNSHINE	1060	Grand Mal
SEA QUEEN	1038	
LADY VERO	949	Harvey Vale
MARUAN LINKS	626	Petite Martinique
THEON	625	Carenage
FLAMINGO 2	624	Carenage
FIRST BORN J	621	L'Esterre
ELLIE M III	620	Grand Mal
GRAND BAY	511	Grand Mal
IRVINGS Bay	481	Grand Mal
UP RISING	273	Petite Martinique
JOHN T II	2064	Grand Mal
LYNA	2120	Carenage
LEONA A	2070	Windward
BRIGHTER DAYS	2031	Petite Martinique
PAUL	1935	Gouyave
MORNING MIST	1796	Petite Martinique
THREE T'S	1756	Grand Mal
MISS TIDA	1557	Grenville

Vessel Name	Registration Number	Location
LIVE UP	1415	Petite Martinique
MIYAGI	1066	Grenada Yacht S
DECKIE DEE	816	Petite Martinique
VICTORY	541	Grenada Yacht C
THE CHOSEN ONE	327	Gouyave
OCEAN BREEZE	2082	Petite Martinique
BRIANA II	2069	Carenage
KENDA	1969	Gouyave
OCEANUS	1926	Grenada Yacht Club
MINOR CHANGES	1887	Gouyave
EAGLE II	1732	Grand Mal
MILLICENT	1367	Hillsborough
SPLASH	1327	Grenada Yacht S
C & K	1042	Gouyave
SWEET WATERS	1000	Prickley Bay
HILDA D	681	Petite Martinique
TUNA KID	2037	Grand Mal
GENESIS	1899	Grenville
MILKY WAY	1123	Grand Mal
CAROLINE	587	Calivigny
ALTON B	478	Carenage
MARLIN MASTER	2042	Grenada Yacht Club
SHAKA	2039	Grenville
JULIETTE	1859	Lagoon Road
BLACK DOG	1845	Carenage
BIG TUNE	1838	Carenage
MY GIRL	1837	Carenage
LADY K	1746	Grand Mal
MAYBE KNOT	1719	Sauteurs
UNITED BROTHERS	1686	Molinerre
SEA STAR	1630	Grand Anse
KADAMIT	1549	Grenville
HARMONY	1540	Petite Martinique
C WORLD	1352	Grand Anse
BUDDA	1229	Fort Jeudy
MARIE STELLA	1205	Windward
LADY BURKE	1202	Carenage
PERSEVERE	1189	Calliste
SEA ARK	1144	Grand Anse
CHARMER	1076	Gouyave
CHANCES	1026	Gouyave
BEATRICE	1024	Gouyave
THE BOYS OWN	856	Gouyave
ONE LOVE	854	Gouyave
ULTIMATE PLEASURE	814	Carenage

Vessel Name	Registration Number	Location
MOSO	792	Grand Mal
FISHING MACHINE 6	726	Grenville
OMEGA II	612	Grenada Yacht S
OMEGA I	611	Grenada Yacht S
SEA ANGEL	608	Grand Roy
ABIGALE	546	Lagoon Road
STURGEON BLUES	526	Calliste
BLACK PRINCE	510	Grenada Yacht S
BLUE MARLIN	474	Grand Mal
SIR VAUGHN	460	Woburn
TOLERANCE	432	Carenage
LEON C	404	Gouyave
GRACE	397	Gouyave
SURVINOR	271	Melville Street
IF	257	Gouyave
BLACK JACK	237	Lagoon Road
BRANDON I	235	Sauteurs
CATCH THE SPIRIT	215	Carenage
SUNSHINE	20	Grand Anse
SISTER J- HIGHLY FAVOURED	946	Gouyave
PATIENCE	2117	Windward
KING FISH	1858	Lagoon Road
WAYWARD WIND	1682	Grenada Yacht Club
D LEGEND	1496	Carenage
LITTLE SHANIQUE	1392	Grenville
FLYING DOVE	865	Grand Mal
OCEAN QUEEN	844	Carenage
LESDEN IV	788	Grenville
JOHN WAYNE	694	L'Esterre
UNITY 4	573	Gouyave
PATRIOT	517	Grand Mal
NY-KIM	500	L'Esterre
OCEAN QUEST	480	Carenage
JOY	459	Gouyave
FREE ROOTS	2123	Grand Mal
TAKE A MARK	2083	Harvey Vale
D BEAST	2022	Gouyave
WALRUS	1929	Petite Martinique
INSPIRATION	1884	Lance Aux Epines
GREAT STORY	1883	Gouyave
VITAMIN SEA	1679	Grenada Yacht C
M.V. CHRISAN	1435	Melville Street
ELIZABETH	1325	Carenage
CALIBAN	1164	Harvey Vale
BECCA	1080	Grenada Yacht Club

Vessel Name	Registration Number	Location
B ROSE	772	Victoria
ADIANA	744	Windward
RED HIND	680	Calliste
HELEN C	666	Petite Martinique
SEA HAWK	576	Cherry Hill
PROVIDENCE	552	Carenage
LADY MILINA	544	Belmont
MORNING GLORY	503	Carenage
LADY D	486	Harvey Vale
FAYOLA AMBE	441	Fort Jeudy
SUMOSAN	420	Grand Mal
DENLES	319	Grenville
PLAY IT COOL	173	Grenville
LITTLE MELLIE 2	76	Westerhall
AVA	39	Carenage
SPICE GIRL	647	True Blue
TRIM	1982	Petite Martinique
WIND JAMMER	755	Lagoon Road
HEAT WAVE	1916	Grenada Yacht Club
REVIVAL	191	Sauteurs
TWO DAYS	144	Lagoon Road
YES AYE	732	True Blue
PANI KASHA	2046	True Blue
RADIANCE	1961	Petite Martinique
AH HEAR THAT ALREADY	1934	Gouyave
PROGRESS	1830	Gouyave
MORNING GLORY	1734	Victoria
TEMPTATION	1720	Waltham
KINGDOM	1643	Waltham
SURVIVAL	1628	River Sallee Bay
TARGET	1317	Marigot
GOOD AMBITION	1214	Victoria
ROSELINA	1111	Windward
RIGHT TIME	866	Gouyave
DOLPHIN	836	Carenage
PROGRESS I	738	Waltham
NISHTELL	699	Gouyave
THE ISLANDER	583	Carenage
THE LAURRIEL	521	Waltham
SARAH-C	443	Grenada Yacht S
LADY KAI	429	Beausejour
DELTA II	321	Gouyave
DELTA I	320	Gouyave
B CONCIOUS	304	Victoria
FLIPPER I	256	Gouyave

Vessel Name	Registration Number	Location
ZUZU II	115	Grenville
D ALLIEN	65	Grand Mal
HABBIBI	450	Carenage
LADY ANNA	507	Melville Street
CYBU G.	49	Du Quesne
AH DEY STILL	1971	Woburn
MARINE ONE	1861	Gouyave
SEA MASTER	1857	Grand Mal
TIBURON	1833	Gouyave
RRR	1817	Gouyave
THE TRINITY	1775	Gouyave
CLASSIC	1753	Carenage
SIMPLICITY	1717	Waltham
SOULMATE	1699	Carenage
HORIZON	1685	Waltham
RIGHTEOUSNESS	1676	Waltham
SEA MASTER	1563	Sauteurs
FIDALETY	1467	Melville Street
ZEBEY	1454	Waltham
JEEZEE	1448	Petite Martinique
MIND YOUR BUSINESS	1439	Grand Mal
FAITH & GLORY	1437	Grand Mal
VIKING	1426	Lagoon Road
JEHOVAH JIREH	1412	Gouyave
UNIQUE PASSION	1335	Gouyave
DANIEL	1275	Duquesne
VULTURE	1174	Woburn
VICAS I	1173	Waltham
LADY DIANA	1170	Windward
LADY RANGER	1142	Victoria
ALLAHU AKBAR	1058	Lagoon Road
D'MATRIX II	1020	Calliste
COUNTRY MAN	970	Calliste
CONTACT	959	Gouyave
IMAGE	958	Grenada Yacht S
CONQUEST	948	Hillsborough
KATHLYN A	923	Harvey Vale
STINGING BEE	818	Grand Mal
SEALASI	784	Harvey Vale
SEA WITCH	773	Grand Mal
IN GOD WE TRUST	710	Grenville
CASSIE	634	Calliste
CONQUEST	948	Hillsborough
ABIGAIL	618	Belmont
LUCINDA II	595	Calliste

Vessel Name	Registration Number	Location
CHANCES	578	Hillsborough
STAR II	558	Woburn
BLUE BIRD	554	L'Esterre
MR. SLIM 2	470	Grand Mal
LUCINDA	468	True Blue
SM 3	458	Grand Mal
LUCINDA III	453	L'Anse Aux Epin
JOSAN	445	Grand Mal
FLASH BACK	435	Fontenoy
LYDIA JANE	418	Hillsborough
MID WEST	399	Grand Mal
HENSLEY ADAM	395	Grand Roy
CHARLIE I	392	Grand Mal
UNITY 2	385	Gouyave
PEA-ON-YOU II	384	Gouyave
ENDEAVOUR VI	374	Gouyave
NITTY GRITTY	362	Gouyave
UNITY 1	354	Gouyave
CEBERT 2	316	Gouyave
ROSLYN B 2	315	Gouyave
TWENS STAR	310	Mahot
4 A'S & C	303	Gouyave
CHARTER P	302	Carenage
RED LIGHT	281	Harvey Vale
VEL-KEN-D	265	Grand Mal
SEA FOX	260	Belmont
TAKE IT EASY	259	Gouyave
CHARLOTTE TP	216	Grand Mal
I BELIEVE IN GOD	193	Grenville
SALASI	146	Harvey Vale
KING DAVID	74	Waltham
LYDIA JANE III	45	Hillsborough
CANE POLE	2038	Grand Mal
PUMPKIN	1956	Gouyave
BLUE DOLPHIN	1882	Windward
RISE AND SHINE	1874	Victoria
UNICON	1742	Windward
OUI BON DIEU	1724	Carenage
TWIN II	1625	Gouyave
STEALTH	1598	Gouyave
ROSE OF CHARMAINE	1305	Waltham
LADY SHERRIE	1293	Woburn
DOLTAN	1239	Gouyave
CECILIA	954	Marigot
VICTORY 6	944	Waltham

Vessel Name	Registration Number	Location
ANGEL	833	Gouyave
DADRIE	704	Calliste
SEA TREK	530	Carenage
KHAF J	508	Woburn
NINJA TWO	484	Carenage
DOVE & LITTLE	440	Grenada Yacht C
IN GOD WE TRUST	412	Grand Roy
ENDEAVOR V	251	Gouyave
SUPER FLY	234	Grand Mal
BOUCOS	220	Victoria
BAD MINDED II	172	Grenada Yacht S
A FEW GOOD MEN	50	Waltham
POTENTIAL	28	Du Quesne
MR. QUALITY	23	Hillsborough
DENNAR 2	2	Lagoon Road
B NICE B GOOD	1326	Gouyave
BLUE BIRD	548	L'Esterre
SILLOX	2059	Grenada Yacht Club
LITTLE AJACK	2078	Beasejour
SEX 2	1763	Dover
PETER PAN	1690	Duquesne
SHACK Beausejour	1620	Corinth
CLOUDE'S PRIDE	1464	Grand Anse
IF	1407	Gouyave
LAZY BONES	1401	Grenville
NO EASE UP	1213	Calliste
OAKS	1140	Grenville
LADY JOY	1109	Windward
PIROVETTE	1065	Grand Anse
NICO	1037	Grand Anse
FOX TROT	746	Gouyave
NICO J	646	L'Esterre
HAY LA QUA	610	Harvey Vale
PIRANHA	559	Carenage
IN GOD WE TRUST	557	Calliste
FIRST RUNNER S	483	Carenage
ETIERON	406	Gouyave
KENWIN	405	Brizan
REFORMER II	396	Gouyave
BAD MINDED PEOPLE	351	Gouyave
DEVINE GRACE	339	Gouyave
RED LIGHT II	333	Harvey Vale
JAMIE	323	Petite Martinique
EXPERIMENT	314	Marigot
ASSESS II	308	Gouyave

Vessel Name	Registration Number	Location
BROTHER MAN	306	Victoria
JESSY JOE	253	L'Esterre
RAISE IT GOOD SHEPHERD	35	Waltham
TRAIN	24	Calliste
UNIQUE FORCE 1	2129	Carenage
RISING STAR	2110	Gouyave
LITTLE TEHILA	1958	Lagoon Road
BANANA JO	1927	L'Esterre
SEA STAR	1920	Petite Martinique
RAGE	1816	L'Esterre
QUEEN ALMA	1639	Lagoon Road
ADVENTURE I	1382	Grenville
MISTY	1377	Melville Street
RED ANTS	1338	Gouyave
TAK Brian	1318	Waltham
PRINCE OF THE SEA	1313	Sauteurs
AJACK II	1300	Duquesne
MO FIRE	1298	Grenada Yacht C
NEVER SACRED	1222	Gouyave
YOLO	1200	Grenada Yacht C
HIGHGRADE	1193	Victoria
M.V. CHRISAN	1166	Fort Jeudy
R J	1138	Calliste
GUNSHOT	1124	Gouyave
HELP YOUR SELF II	1092	Melville Street
LAZROUS RICHARDSON	1072	Grenville
SEA FLEX	1041	Morne Rouge
STABLASH	984	Requin
DANI	905	Woburn
UPLIFT	879	L'Esterre
DAILY BREAD	843	Carenage
EVER BLESS	840	Calliste
HIS GRACE	837	Calliste
RAMA	796	Petite Martinique
PAGE 5	724	L'Esterre
GOOD WILL	655	Petite Bacaye
EL NATHAN	636	Carenage
FLIPPER	633	Woburn
OSPREY	588	Calivigny
GE Cali Vigny	547	Lagoon Road
JENNY – V	538	Carenage
JAH LOVE	518	Melville Street
PLAY MATE	288	Lagoon Road
BOSSE	250	Gouyave
R.J.	231	Calliste

Vessel Name	Registration Number	Location
BABEASS	192	Grand Mal
CHRISTINER	114	Hillsborough
SHANI	108	Grenville
KARATIE	31	Sauteurs

Barbados Registered Day Use Vessels

Vessel Name	Registration Number	Location
NUBIAN R	E005	Weston
E-PAX	E030	Shermans
ELEANOR	E034	Six Men's
ELEANOR	E034	Six Men's
MISS CAINES	E037	Shermans
MISS CAINES	E037	Shermans
BIG JOE	E039	Six Men's
JADE	E062	Read's Bay
TRIAL	E079	Six Men's
KEI - KEI	E096	Cobbler's Cove
DE TIMOTHY	E108	Six Men's
OCEAN JAMS	E116	Six Men's
SAPPHIRE	E119	Shallow Draught / Sand Pitt
OCEAN JADE	E123	Six Men's
DUST TO DAWN	E124	Half Moon Fort
WORK AND PRAT 2	E143	Bridgetown Complex (BFC)
CARICOM	IM	Six Men's
SKR	J004	Consett Bay
SHACOLROM	J005	Consett Bay
ON TRACK	J016	Bridgetown Complex (BFC)
TRIDENT	J019	Consett Bay
SEA PRINCE	J024	Consett Bay
SEA PITT 2	J032	Consett Bay
QUEEN OF THE PARK	J036	Bridgetown Complex (BFC)
OCEAN WATER	J040	Bridgetown Complex (BFC)
IBIS	J043	Consett Bay
IBIS	J043	Consett Bay
PRINCESS MAUREEN	J045	Bridgetown Complex (BFC)
FLAG SHIP	J046	Consett Bay
FLAG SHIP	J046	Consett Bay
SURVIVER SERIES	J051	Consett Bay
SEA SWAN 1	J053	Consett Bay
MY TIME	J059	Consett Bay
AMERICAN GIRL	J069	Consett Bay
OCEAN MELODY	J072	Consett Bay
FIERENZA	J073	Consett Bay
DOVE II	J074	Bridgetown Complex (BFC)
ON TRACK III	J078	Bridgetown Complex (BFC)

Vessel Name	Registration Number	Location
DE ZOOMERS	J081	Consett Bay
WINE DOWN	J097	Consett Bay
LUCKY VIC	L002	Half Moon Fort
LUCKY VIC	L002	Half Moon Fort
SUCCESS	L005	Six Men's
NIKITA	L012	Half Moon Fort
TAMARA	L017	Bridgetown Complex (BFC)
JESTINA 2	L018	Half Moon Fort
TORNADO	L031	Six Men's
MISS SHARIE	L037	Half Moon Fort
SUN FLOWER	L046	Half Moon Fort
SUN FLOWER	L046	Half Moon Fort
SEA SNAKE	L054	Half Moon Fort
SIR DINO	L063	Half Moon Fort
SHARIKA	L065	Half Moon Fort
DE ALANDALE	L073	Half Moon Fort
REVERANCE	L080	Half Moon Fort
MAJESTIC	L085	Half Moon Fort
MAJESTIC	L085	Half Moon Fort
FAMILY AFFAIR	L088	Half Moon Fort
BIG REDS	L097	Half Moon Fort
BIG REDS	L097	Half Moon Fort
BIG EYE DOLPHFIN	L100	Six Men's
SOLID ROCK	L103	Half Moon Fort
PLAEKEGG	M002	Bridgetown Complex (BFC)
SPECTACULAR II	M004	Shallow Draught / Sand Pitt
SPECTACULAR II	M004	Shallow Draught / Sand Pitt
BOSTON	M005	Shallow Draught / Sand Pitt
MARCIA	M008	Bridgetown Complex (BFC)
BLESSED	M010	Pile Bay
CALYPSO	M019	Carlisle Bay
SHAY FYAH	M020	Oistins
LADY BARBARA	M021	Burke's Beach
LADY BARBARA	M021	Burke's Beach
DARIO	M027	Shallow Draught / Sand Pitt
SUNDOWN	M028	Pile Bay
ROBERT-B	M033	Bridgetown Complex (BFC)
LUCY	M043	Bridgetown Complex (BFC)
RICK JEAN	M044	Bridgetown Complex (BFC)
LADY VELDA	M048	Bridgetown Complex (BFC)
SEA WAVE	M049	Bridgetown Complex (BFC)
SHANA B	M050	Bridgetown Complex (BFC)
SURVIVAL II	M052	Bridgetown Complex (BFC)
PISCES	M053	Shallow Draught / Sand Pitt
DE WITNESS	M054	Pile Bay

Vessel Name	Registration Number	Location
LITTLE LADY	M055	Carlisle Bay
IN GOD I TRUST	M058	Bridgetown Complex (BFC)
CLEO	M068	Bridgetown Complex (BFC)
HARMONY	M079	Shallow Draught / Sand Pitt
TARIA	M084	Payne's Bay
LAY ALY	M091	Bridgetown Complex (BFC)
TO Sherman's	M099	Bridgetown Complex (BFC)
PHAROAH	M100	Bridgetown Complex (BFC)
SONIA	M105	Bridgetown Complex (BFC)
KIZZY 2	M113	Bridgetown Complex (BFC)
KIZZY 2	M113	Bridgetown Complex (BFC)
KIZZY 2	M113	Bridgetown Complex (BFC)
VALIANT	M114	Read's Bay
CHRIS-ANN	M119	Bridgetown Complex (BFC)
T-BOY	M120	Bridgetown Complex (BFC)
TAMIESHA J	M122	Bridgetown Complex (BFC)
CUT THE KEEL	M123	Bridgetown Complex (BFC)
NATASHA GLYNNE	M127	Bridgetown Complex (BFC)
BLESS ME	M133	Shallow Draught / Sand Pitt
JEDEDIAH	M137	Brandons
SANTANA	M143	Bridgetown Complex (BFC)
VISION	M144	Oistins
VISION	M144	Oistins
CMB ENT	M145	Bridgetown Complex (BFC)
FRESH PRINCE	M147	Bridgetown Complex (BFC)
FRESH PRINCE	M147	Bridgetown Complex (BFC)
WARIKA HILL'S	M149	Bridgetown Complex (BFC)
STEP BY STEP	M161	Shallow Draught / Sand Pitt
PATRICIA	M163	Shallow Draught / Sand Pitt
REPENT	M172	Shallow Draught / Sand Pitt
FUNDAMENTAL FORCES	M181	Bridgetown Complex (BFC)
SEA FALCON	M193	Shallow Draught / Sand Pitt
JASON	M200	Careenage
SEA FOX	M213	Brandons
SEA FOX	M213	Brandons
READY DUN	M219	Pile Bay
READY OR NOT	M222	Bridgetown Complex (BFC)
READY OR NOT	M222	Bridgetown Complex (BFC)
UP FRONT	M224	Bridgetown Complex (BFC)
BLUE BRISTLE	M226	Bridgetown Complex (BFC)
BLUE BRISTLE	M226	Bridgetown Complex (BFC)
OCEAN KING	M232	Bridgetown Complex (BFC)
MANDELAY	M240	Bridgetown Complex (BFC)
LATE SHOW 2	M242	Pile Bay
SONIE	M245	Shallow Draught / Sand Pitt

Vessel Name	Registration Number	Location
TIGER SHARK	M248	Fitts Village
SABRINA	M250	Pile Bay
KEZZIE	M258	Bridgetown Complex (BFC)
SIANA	M262	Oistins
HONEY 2	M269	Bridgetown Complex (BFC)
FDR	M295	Oistins
ALBERTHA 2	M305	Bridgetown Complex (BFC)
WINNIE S	M309	Half Moon Fort
JULIE - E	M319	Shallow Draught / Sand Pitt
ELIJAH	M324	Bridgetown Complex (BFC)
LUSTY	M327	Shallow Draught / Sand Pitt
POND FLY	M331	Shallow Draught / Sand Pitt
TROPHY HUNTER	M344	Bridgetown Complex (BFC)
BLESS	M349	Brandons
PHANTOM	M352	Pile Bay
NAOMI	M356	Oistins
FIONA ROSE	M363	Bridgetown Complex (BFC)
LADY DIANA	M373	Bridgetown Complex (BFC)
COVENANT	M388	
REGI-SHAQ	M392	Bridgetown Complex (BFC)
REMEMBER ME	M394	Bridgetown Complex (BFC)
JAMALY TWO	M395	Oistins
BELLA DANTE	M401	Bridgetown Complex (BFC)
ALIAH	M403	Bridgetown Complex (BFC)
WICKED TUNA	M409	St. Lawrence
LITTLE SEASTER	M410	Browne's Beach / Bay Street
PONFLY 2	M422	Shallow Draught / Sand Pitt
PONFLY 2	M422	Shallow Draught / Sand Pitt
NEW LIFE	M436	Bridgetown Complex (BFC)
NEW LIFE	M436	Bridgetown Complex (BFC)
WAVE DANCER	M469	Bridgetown Complex (BFC)
WAVE DANCER	M469	Bridgetown Complex (BFC)
HONEY 2	NR	Bridgetown Complex (BFC)
LADY DINA	NR	Bridgetown Complex (BFC)
ISLAND TIME	NR	Six Men's
SPLASH	NR	Oistins
FARE THREE WELL	NR	Weston
ABSOLUTE	NR	Weston
SULTAAN	NR	Bridgetown Complex (BFC)
ROSE AND R	NR	
IMPULSE II	NR	Shallow Draught / Sand Pitt
CARMIE J	NR	Six Men's
SIERRA SYMPHONY	NR	Weston
THE PROVIDER	NR	
SPLASH	NR	Oistins

Vessel Name	Registration Number	Location
JULIE	NR	Shallow Draught / Sand Pitt
LADY JULIA	O004	Bridgetown Complex (BFC)
BACHELOR	O011	Tent Bay
TOLRICA	O012	Bridgetown Complex (BFC)
PILGRIM	O014	Tent Bay
KITTY CAT	O017	Tent Bay
LINDA	O031	Bridgetown Complex (BFC)
AMALIE	O034	Tent Bay
HARMONY	O049	Bridgetown Complex (BFC)
LADY ANDREA	O060	Bridgetown Complex (BFC)
BET-ANN	O061	Bathsheba
POUGHSCANDLER	O071	Tent Bay
MYSTIC BLUE	O074	Tent Bay
M.B	P014	Skeete's Bay
SALLY ANNE	P017	Skeete's Bay
PEPPER HILL	P019	Skeete's Bay
MARY ANN II	P023	Bridgetown Complex (BFC)
D BOYS II	P027	Skeete's Bay
FLYING SAUCER	P045	Skeete's Bay
ELIAS ESS	P063	Oistins
ELIAS ESS	P063	Oistins
DAD'S THERAPHY	P074	Consett Bay
GINGA	P088	Oistins
IAN JOSH	P113	Bridgetown Complex (BFC)
LATE NEWS	P120	Bridgetown Complex (BFC)
JENDURA	P136	Bridgetown Complex (BFC)
NOSKIE	P145	Oistins
LURENNIA	P151	Oistins
JUST ROLL'N	P155	Oistins
JUST ROLL'N	P155	Oistins
TUNA.COM	P158	Consett Bay
OFF DAY	P164	Skeete's Bay
COMMANDANT	S013	Bridgetown Complex (BFC)
KATRINA	S026	Fitts Village
WESTON GIRL	S031	Read's Bay
LADY ANN	S034	Payne's Bay
SCIENTIST	S051	Six Men's
BAJAN GIRL	S056	Weston
YA NEVER KNOW	S071	Mount Stanfast
KELLY ANN 2	S083	Read's Bay
TESCO	S086	Six Men's
WATER BIRD	S087	Read's Bay
ANIKA	S107	Payne's Bay
PET-NE 1	S111	Shallow Draught / Sand Pitt
THE SURPRISE	S117	Weston

Vessel Name	Registration Number	Location
CAT FISH 2	S121	Half Moon Fort
LARRY PAUL	S126	Brooklyn
GOLDEN EAGLE	S144	Mount Stanfast
GOLDEN EAGLE	S144	Mount Stanfast
SPARROW	S145	Bridgetown Complex (BFC)
DIEN BIEN-PHU	S152	Payne's Bay
HOOK DEM	S191	Oistins
GLORIA	S198	Read's Bay
GAMMERA	S207	Payne's Bay
LARK TOO	S217	Bridgetown Complex (BFC)
SIERRA SYMPHONY	S225	Weston
J.J. EXPRESS	S237	Weston
HOLY TRAIN	S241	Bridgetown Complex (BFC)
THE DUKE	S251	Holetown
MAY Stan fast	S253	Weston
NICK AND I	S258	Payne's Bay
SLICE OF LIFE	S282	Weston
FORTUNA	UC	Unknow
THE A'S	UC	Weston
SASHA TWO	UC	
AFT	UC	Oistins
HORSE	UC	
LADY ROSETTA	UC	Oistins
GABRIEL	UC	Six Men's
ON LINE	UC	Bridgetown Complex (BFC)
ELDIKA II	UC	Weston
SYLVESTER	UC	Queen Street
DE FISHING CHICKEN	UC	Speightstown
LITTLE DIPPER	UC	Bridgetown Complex (BFC)
SKIPPY	UC	Shallow Draught / Sand Pitt
LORRAINE	X004	Oistins
EMMA T	X031	St. Lawrence
JAY-JAY	X039	Oistins
SURF SONG	X049	Oistins
MOSE ARK	X050	Oistins
VOO DOO	X052	Bridgetown Complex (BFC)
PEILIESJE	X055	Bridgetown Complex (BFC)
ILLEST	X081	Bridgetown Complex (BFC)
ANTONIA NO.1	X087	Oistins
BLESS BLESS	X095	Oistins
TROPHY HUNTER	X096	Bridgetown Complex (BFC)
SEA DANCER	X098	Oistins
ELIXIR	X102	Bridgetown Complex (BFC)
Y-WORRY	X110	Oistins
LADY PATRICIA	X113	Bridgetown Complex (BFC)

Vessel Name	Registration Number	Location
LORENZA	X115	Oistins
TOTAL PACKAGE	X116	Oistins
MENTONE	X118	Oistins
T.BIRD	X131	Oistins
ANDAMI	X142	Oistins
BARNICLE	X160	Oistins
HAPPY JACK	X187	Oistins
HAPPY JACK	X187	Oistins
K.B. ONE	X192	Careenage
BULL PUPPY	X195	Browne's Beach / Bay Street
BOUT TIME	X220	St. Lawrence
RAD CLIFFE	X236	Pile Bay
LISA	X265	Oistins
SYLVANUS	X266	Oistins
TWO-C-S'	X282	Shallow Draught / Sand Pitt
JAKE	X283	Oistins
YOU HU	X284	Browne's Beach / Bay Street
PENNY HOLE	X329	Oistins
STAN BY ME BRO	X333	Worthings / Sandy Beach
MALEIGHSIA	X346	Oistins
BLUE SAIL	X352	Bridgetown Complex (BFC)
SHARK ATTACK	X356	Oistins
ON TIME	X361	Oistins
FISH BOY	X364	Oistins
SALTAIR	X370	Carlisle Bay
LUKEE B	X376	Bridgetown Complex (BFC)
LUKEE B	X376	Bridgetown Complex (BFC)
HIGH HOPES	X380	St. Lawrence
DE WIZARD	X387	Worthings / Sandy Beach
EVE MARIE	X390	Oistins
PLAYSTATION	X408	
OCEAN BREZZE	X411	Oistins
CHIZZAR	X416	Oistins
CHIZZAR	X416	Oistins
JULISSA	X424	Oistins
REEL CRAZY	X429	Oistins
SUE	X448	Worthings / Sandy Beach

Grenada Registered Day Use Vessels

Vessel Name	Registration Number	Location
ONE GOD	2001	Victoria
MR. SLIM	1783	Grand Mal
SECRET WEAPON	1654	Mt. Pleasant
REWARD	1359	Gouyave
DYNASTICS	1242	Sauteurs

Vessel Name	Registration Number	Location
CREEPER	1191	Grenada Yacht Club
GAIL SEA	1104	Grenada Yacht C
THE LORD WILL PROVIDE	985	Gouyave
LOVE POWER	881	Carenage
WENDY-ANN	873	Carenage
GRUDGEFUL 1	848	Grenville
MARANDA E	805	Grenville
ITS-UP-2U	783	Calliste
DAILY BREAD	779	Windward
STEFON F	695	Grenville
FOUNDATION	643	Grand Mal
TEST ME	642	Bogles
BACK LASH	638	Fontenoy
IN GOD WE TRUST	635	Melville Street
LYDIA	607	Carenage
ROUND ROBIN	604	Isle De Rhonde
ON-ES-T	556	Grenville
TOTAL FREEDOM	506	Lagoon Road
BLUE HEAVEN	496	Grand Anse
PREDATOR	491	Woburn
SEA ANGEL	471	Lagoon Road
ALFA BRAVO	329	Gouyave
FINGERS	280	Gouyave
EAGLE	276	Gouyave
M.V. MARIUS	264	Melville Street
SUN SPLASH	258	Grand Mal
LAUGH AND TALK	208	Grenville
NO QUESTION	156	Grenville
FRANSISCO	127	Grenville
LYNDONNA	120	Soubise
GENISIS I	98	Petite Martinique
ZION HIGH	84	Sauteurs
SCORPION	73	Du Quesne
EFFORT	61	Gouyave
AMARGIDEON	27	Sauteurs
RED LOBSTER	3	Calliste
TEMPO	168	Soubise
DAPHNE	2067	Carenage
PUSSY BUM	1112	Harvey Vale
BET ON ME	2035	Grand Anse
R & R	2084	Sauteurs
JUMPING TUNA	1893	Grand Mal
SEA GULL	1774	Petite Martinique
KOJACK	1689	Harvey Vale
POINT LIFE	1493	Grand Mal

Vessel Name	Registration Number	Location
DIAMOND OF THE SEAS	1474	Grand Mal
DESTINY	1447	Waltham
LEVANA	1430	Petite Martinique
JEHOVAH JIREH II	1416	Gouyave
D LION PAW	1371	True Blue
MIDNIGHT MAGIC	1357	Grenville
BLESS	1334	Melville Street
GOD IS LOVE	1149	Grand Mal
GOLDEN EAGLE	1128	Carenage
ST. BERNARD	1055	Gouyave
JAH LOVE	1014	Carenage
D. YYY'SS	960	Grenville
IN GOD WE TRUST	921	Melville Street
WHITE WAVE	895	Grenville
RAHEEM	842	Grenville
MESSES 2	817	Waltham
LABRO'S	801	Carenage
FACILITLY	711	Petite Martinique
SEA CAT	706	Grand Mal
SHIRLYN	687	Windward
LOVE ME	614	Grenville
VERNA VERNEL GUIDANCE	590	Grenville
F.V. CALYPSO	589	Lagoon Road
SHEENA II	451	Grenville
XPHAIS ZEEKEN II	444	L'Anse Aux Epin
WONDER WALKER	425	Petite Martinique
SHANNON	400	Gouyave
SPICE ISLE	350	Harvey Vale
VIGILANT	301	Petite Martinique
LOUIE	291	Gouyave
GENESIS 2	274	Petite Martinique
RONA A.	232	Harvey Vale
BIG BIRD	211	Sauteurs
AAK-FIRE POWER	209	Grenville
WENG WENG	196	Grenville
ENDURANCE I	181	Westerhall
SILVER LINE	161	Grenville
MAD MAX II	148	Grenville
CHANCES ALL	142	Grenville
MIG	130	Grenville
ANOTHER LIFE	122	Grenville
MR. WOODS	119	Grenville
KETCH YOURSELF II	104	Grand Mal
NET CO III	90	Sauteurs
NET CO II	89	Sauteurs

Vessel Name	Registration Number	Location
MY DESIRE	71	Grand Mal
FAMILY FOX – NIGHT RID	52	Du Quesne
ACCOMPLISH	44	Victoria
VIKING I	13	Grand Mal
SAUCY GIRL I	11	Du Quesne
SHANE-E	4	Grand Roy
LITTLE VAL	841	Grenville
THUNDER	221	Grenville
HUSTLER	778	Hillsborough
COUNTRY GIRL	743	Grenville
LIVE & LET LIVE	207	Grenville
JAH BLESSING	2116	Dover
SPICE BOY BORN TO FISH	2062	Grenville
HUSTLERS	1943	Duquesne
LION HEART	1878	Harvey Vale
TEMPTED	1755	Petite Martinique
TRIBECA	1716	Lagoon Road
RAS EYE	1650	L'Esterre
SHANIA B	1640	Petite Martinique
GLORIFY HIM	1633	Melville Street
FAITH	1609	Melville Street
MUST EAT	1584	Grand Mal
FAITHFULL	1577	Grenville
GOD IS GOOD	1523	Lagoon Road
BLUE ALI	1491	Melville Street
EAST WEST	1484	Waltham
PRINCESS I	1425	Grand Mal
STAR BOY	1385	Grenville
CROSS EYE	1384	Calliste
OLINKA	1370	Woburn
GOD ANGEL	1343	Grenville
SEA EAGLE	1332	Carenage
NUFF GOSSIP	1295	Grenville
SIMPLE EYE	1282	Lagoon Road
REFORMER I	1274	Duquesne
YOU NEVER KNOW	1262	Windward
CATHY II	1221	Gouyave
RUN AWAY	1216	Windward
DAMALI	1196	Grenville
GRACE BAYE' LAFWA	1195	Soubise
NITRO	1187	Grenville
RAZOR BLADE	1184	Grenville
PRECIOUS	1151	Gouyave
LOVELY	1113	Belmont
SHARI J	1102	Grenville

Vessel Name	Registration Number	Location
TOPS	1074	Grenville
SUPER	1027	Melville St.
HONOUR	1017	Gouyave
JUSTICE	989	Grenville
E-ZEE	942	Grand Mal
THE NET	925	Calliste
GRUDGE FUL 2	896	Grenville
HIGH TIDE	893	Grenville
PINK PANTER	883	Carenage
LITTLE MOO	847	Sauteurs
BLESSED	839	Carenage
FISH HOOK	838	Melville Street
LOVELY	798	Belmont
FAITH C	766	Grenville
RISING SUN	763	Grand Anse
LISBERT WALTRIS	751	Du Quesne
ADVANCE	731	Windward
LAVON D	728	Petite Martinique
RISING STAR	708	Grenville
NUFF RESPECT	676	Petite Martinique
PUMPKIN HEAD	650	Calliste
AH COME BACK	572	Calliste
PINTOE	568	Grand Mal
CHALLENGER	565	Sauteurs
PABLO	539	Grenville
IN GOD WE TRUST	524	L'Anse Aux Epin
ABILITY	505	Carenage
SIMON COUTAIN	493	Woburn
LEGEND (CHARITY)	488	Grenville
STUPI-DEE	477	Lagoon Road
PROGRESS	467	Cherry Hill
TORNAK	464	Petite Martinique
LAVON D	462	Petite Martinique
MR. SLIM #3	449	Grand Mal
NO QUESTION	437	Lagoon Road
LITTLE PRINCESS	426	Calliste
FORCE	394	Petite Martinique
SAMANTHA	331	Gouyave
JAH SON	330	Grenville
VERITAS	318	Windward
GOD IS LOVE	317	Mt. Pleasant
EARNEST	299	Gouyave
THE FLAG	275	Grand Roy
GOING PLACES	267	Woburn
TRY STAR	275	Grand Roy

Vessel Name	Registration Number	Location
ARCHIE	247	Grenville
BE HAPPY	242	Grenville
WHITE HORSE	239	Grenville
FUNNY MAN	224	Grenville
LET ME LIVE	213	Sauteurs
ANIKI-K	212	Grenville
FRIENDSHIP	203	Grenville
RED LEG	197	Grenville
GIGA	195	Grenville
GIFT K.	179	Carenage
D'ARK	170	Soubise
OCEAN HAWK	158	Grenville
NUF RESPECT	145	Grenville
RAINBOW CITY RUNNER	134	Grenville
SAMANTHIA	131	Grenville
COMPARE C	123	Grenville
DETERMINATION	121	Grenville
SUPER DAD	111	Grenville
FROM A DISTANCE	106	Grenville
CARGEL	83	Petite Martinique
I DETERMINE	54	Grenville
KAREM-G	7	Grenville
J C DISCOVERY	1185	Grenville
OUT OF TOWN	1167	Grenville
GROUND ZERO	1156	Grenville
KEVAN	992	Waltham
EL TIBURON	645	Grenville
SPOT LIGHT	358	Petite Martinique
BRING NEWS	182	Grenville
BETTINA B	147	Grenville
BE PREPARED	901	Grenville
MARVLIN	157	Grenville
NEVER GIVE UP 2	2138	Gouyave
VISION	2040	Gouyave
ROMARIO	2034	Gouyave
GOD IS ABLE	2023	Soubise
REMEDY	2003	Grenville
OUT BREAK	1988	True Blue
SHAMZ	1987	Carenage
LADY T	1981	Grenville
THE NINJA	1933	Gouyave
LAVA	1905	Hillsborough
NATURE	1903	L'Esterre
DIVE MASTER	1870	Calliste
DEEP SECRET	1868	Gouyave

Vessel Name	Registration Number	Location
GIVE THANKS	1863	Gouyave
GOLD TEETH & DIO	1828	Grenville
WHITE DIAMOND	1785	Belmont
SOLOMAN I	1778	Soubise
NORDIA	1658	Harvey Vale
FIESTA CARIBE	1631	L'Esterre
SEA GRAPES	1627	Grenville
GOD GIFT	1525	Melville Street
MICHEL	1463	Grenville
PHYLLIS	1453	Beausejour
STREAKER	1431	Grenada Yacht C
KAUTION	1421	Harvey Vale
GOOD WAYS	1410	Grand Anse
BLACK EAGLE	1402	Grenville
FULL VOLTAGE	1388	Petite Martinique
SOCIALITE	1351	Grenada Yacht C
SEA ANGEL II	1349	Lagoon Road
QUEEN JESSIE	1342	Sauteurs
IN GOD WE TRUST	1319	LaTante
MAFF	1294	Melville Street
BRENDA	1276	Duquesne
SURVIVAL	1268	Grenville
SHENIMA	1254	L'Esterre
BLACK DIAMOND	1220	Carenage
WAVES	1208	Westerhall
RED EYES	1201	Grenville
ANITHA	1180	Grenville
JET LEE	1175	Carenage
HEADS	1165	Grenville
FLOATED AXE	1147	Carenage
WET N WILD	1130	Melville Street
CINDY	1125	Grenville
ZAKAMAN	1122	Grenville
NIGHTS	1121	Grenville
FIRST STEP	1120	Grenville
J EXPRESS	1118	Grenville
WANGA	1108	Grenville
VICTORIA	1075	Grenville
JOANNA	1061	Corinth
VANESSA G	1054	Grenville
MR. COOL	973	Grenville
F.V. TONAK	941	Calliste
HAND GRENADE	929	Hillsborough
PROVIDER J	914	Grenville
JAH LIVE	911	Grenville

Vessel Name	Registration Number	Location
SABRINA	849	Grenville
DADA	765	Grenville
HENRY II	756	Grenville
CARIB	754	Grenville
THUNDER	739	Petite Martinique
THANK YOU LORD	717	Grenville
WENG WENG 1 1	685	Grenville
PYRAMID II	682	Melville Street
EXCELL	679	Petite Martinique
O.K.	674	Hillsborough
NO WONDERING	653	Grenville
WAIT A MINUTE	617	L'Anse Aux Epin
SURPRISE	599	Grenville
ME AGAIN	596	Grenville
SEA BIRD	592	Grand Mal
VICTORY I	584	Grenville
MAD MAX III	537	Grenville
FAYOLA AMBE I	504	Petite Bacaye
WE III	502	Cherry Hill
SAMANTHA	489	Grenville
JOYLE TAYLOR	466	Grenville
RISE AND SHINE	439	Grenville
B DUNDER	428	Woburn
GIVE THANKS	388	Grand Anse
DONT ENVY D'BIRD	366	Grenville
LITTLE JOE	309	Grenville
COMFORT	244	Petite Martinique
ORIG	240	Petite Martinique
WENDY	222	Grenville
BABY EDNA	199	Grenville
SETTY	198	Grenville
MARVLIN II	160	Grenville
KATO K	159	Marquis
ANGEL	143	Grenville
HESALL	141	Grenville
GOLDEN FAITH	124	Grenville
RAQUEL/ RAMBO	117	Grenville
LUTHER L	110	Grenville
RING THE BELL	63	Isle De Rhonde
RESPECT T	59	Petite Martinique
DANNY BOY	58	Waltham
DESTINY	811	Grenville
I'LL B THERE	1172	Grenville
MONICA G	1362	HarveyVale
THUNDER BOLT II	1533	Grand Mal

Vessel Name	Registration Number	Location
DRAGON BLOWS	983	Grenville
EYES	2096	Grenville
GRUMPY	2090	Grenville
RESPECT	2081	Petite Martinique
SELASSIE	2079	Harvey Vale
UNSTOPPABLE	2052	Grand Mal
BULL	2030	Soubise
TWIN	1974	Gouyave
BORDER LINE	1930	Mt. Pleasant Bay
HUNTER	1896	Grenville
DOH FORCE ME	1891	Gouyave
SURVIVAL II	1877	Grenville
RAINBOW	1850	Corinth
EAGLE II	1805	Lagoon Road
MINE THE BIRD	1793	Palmiste
OCEAN STAR	1729	LaTante
FISHING SEINE "SCRAPE UP"	1705	Beasejour
NO SYMPATHY	1701	Sauteurs
Y ME	1694	Calliste
THINGS CHANGE	1644	Gouyave
BLOSSOM	1612	Windward
BRAVEHEART	1601	Carenage
GIVE PRAISE	1590	Grenville
BLISTER	1562	Hillsborough
MR. PRUT	1543	Grenville
LIGHT HOUSE	1519	Carenage
STRONG FAITH	1514	Grenville
GIVE THANKS	1499	Grenville
MY YOUTH	1481	Marlmount
COURAGE	1462	Lagoon road
VICTORY 7	1459	Waltham
JAH LOVE	1452	Grenville
KENZI II	1433	Grenville
STING	1432	Grenville
MORE	1427	Grenville
TEMPO II	1419	Grenville
MAJESTIC	1413	Grenville
WET WILLY	1409	Lagoon Road
MR. KIM	1408	Hillsborough
BALANCE	1390	Grenada Yacht C
SEA DART	1353	Grand Mal
MUST GET THAT	1333	Grand Mal
DRAGON BLOWS II	1324	Grenville
NATESY	1321	Grenville
LADY MAUREEN	1302	Requin

Vessel Name	Registration Number	Location
AYANNA	1263	Grenville
POSITIVE	1244	Melville Street
FAITH	1238	Grenville
SAND BLAST	1223	Calliste
MEIA	1217	Duquesne
JUSTICE	1182	Grenville
ST. THERESA	1146	Carenage
REAL FOUNDATION	1099	Grand Roy
MIND YOUR BUSINESS	1073	Grand Mal
BLEST	1063	Fort Jeudy
SEA LINING	1019	Melville Street
EBERNEZZER	965	Sauteurs
GOD IS LOVE	964	Carenage
DESTINY	940	Victoria
LOUISA (B)	935	Grenville
TENDER LOVE	919	Belmont
ONE PEOPLE	897	Grenville
BAY LINER	891	Sauteurs
SPREAD OUT	846	Grenville
MELON	794	Grand Anse
CLASH	781	Windward
JUSTICE	727	Grenville
ELMA D	723	Melville Street
MR. KELLON	686	L'Esterre
GOVERNOR MOTA	675	Millsborough
TROUBLE	577	Hillsborough
SHARK HUNTER	575	Happy Hill
DOCTOR BIRD	532	L'Esterre
TRAIN	523	Calliste
LOYALTY	499	Grenville
FAITH	487	Grand Mal
ORION	482	Woburn
GOD'S GRACE	430	Woburn
MR. PITIFUL	427	Woburn
CALLIN	370	Grenville
MANDESSE S	334	Belmont
DANDY BOY	266	Grand Anse
SHELLA DAVID	263	L'Esterre
LITTLE DAVID I	218	Grenville
BRITNEY	201	Grenville
THANK GOD	180	Grenville
HENDRIA	178	Grenville
DISCOVERY GEM	176	Marquis
TOP GUN	149	L'Esterre
MAF	139	Grenville

Vessel Name	Registration Number	Location
REVIVAL	133	Grenville
GERENIMO	126	Grenville
WATCH OUT	118	Westerhall
D EAGLE	116	Grenville
THE SKY	93	Sauteurs
GRASS ROOTS	85	Sauteurs
DON'T COME EASY	55	Calliste
TENSION	34	Petite Martinique
UDELL	33	Sauteurs
GREEN LIGHT	30	Harvey Vale
SARA	2095	Soubise
HUNTER	1984	Gouyave
RAY RAY	1939	L'Esterre
MELTERS	1826	Soubise
PROGRESS	1545	Grenville
NEVER GIVE UP	1995	La Sagesse
SOULANGE	1517	Grenville
CHELSEA	1947	Duquesne
FIVE STAR	2124	Westerhall
NORMAL	2114	L'Esterre
MIND OVER MATTER	2111	Gouyave
RELEIF	2107	Gouyave
FAITH	2103	Grenville
SHOWERS	2102	Grenville
SURVIVOR	2101	Waltham
ROMO	2100	Waltham
EXPRESS 2	2087	Gouyave
BAD INJECTION IV	2077	Gouyave
EMPIRE I	2072	Grenville
DIMPLES II	2032	Grenville
VERONICA	2008	Grenville
ONE CHAMPTER A DAY	1985	Waltham
AGAPE 1	1966	Victoria
PUSH OFF	1960	Grenville
X CALIBUR #473	1955	Victoria
UPFULLNESS	1954	Waltham
OCEAN CHILL	1946	Waltham
BIRD MAN	1919	La Sagesse
ADJUSTMENT II	1914	Gouyave
NO WONDERING II	1890	Grenville
SEA J	1872	Gouyave
SHIQUANA	1847	Gouyave
JORDEN	1842	Hope Bay
YAWEH H'ANAN/ THE LORD'S FAVOUR	1841	Grenville

Vessel Name	Registration Number	Location
BLUE OCEAN MARINE	1835	Grenville
GOOD HOPE	1834	Waltham
JAIME II	1820	Grenville
LITTLE D II	1803	Soubise
DEBBIE – M	1795	Marquis
THE MANDRIN	1794	Victoria
ANY ANGLE	1780	Grenville
PYNTERS I	1769	Woburn
SUNSHINE	1762	Marquis
TALL BOY	1737	Grenville
ONE PURPOSE	1622	Gouyave
ST. PETER	1611	Hillsborough
NORTH WESTERN	1600	Melville Street
CCC	1570	Grenville
VICAS II	1534	Victoria
GOD'S BLESSING	1530	Corinth
THE MIG	1509	Grenville
ELLIE	1505	Grenville
DANIELLA	1504	Grenville
SARAH III	1500	Melville Street
GOD IS LOVE II	1485	Carenage
REAL LIFE	1468	Melville Street
L & J	1466	Grenville
HOT LINE	1460	Grand Mal
LION PAW	1444	Gouyave
MANATEE	1411	Beasejour
SIR LOWE.COM	1406	Mt. Pleasant Bay
SWITCH BLADE	1403	Brizan
MR. WOODY	1398	Grenville
L.T.T.	1395	Melville Street
FIRST RUNNER	1393	Carenage
THREE STRIKES	1391	Gouyave
AMAZING GRACE	1331	Waltham
FRENCHY	1330	Melville Street
X-AMOUNT/ IMPROVISE	1311	Carenage
SHADOW	1299	Grenville
GOOD MAN	1284	Grenville
JUST IN TIME	1266	Petite Bacaye
HARD TARGET	1248	L'Esterre
D IPA	1230	Victoria
DRY CRY	1226	Halifax Harbour
SEA FOX	1225	Melville Street
I SURVIVE	1203	Duquesne
NO ENEMY	1194	Waltham
LITTLE G	1183	Grenville

Vessel Name	Registration Number	Location
ANOINTING	1176	Sauteurs
SEA BRIGHT	1171	Calivigny
ZION TRAIN 2	1137	River Sallee Bay
LITTLE SISTER	1133	Grand Roy
QUEEN D	1106	Waltham
BALL GAME	1087	Duquesne
VICTORY 5	1082	Victoria
ARTHUR POOR	1081	Victoria
FAITH	1034	Grenville
GOD IS REAL	1032	Grenville
IMAGINE	1015	Gouyave
OUT OF CONTROL	1007	Gouyave
CARLEX	1001	Melville Street
UP TO D TIME	999	Gouyave
D GREAT ONE	998	Gouyave
WHAT GOD BLESS NO	997	Gouyave
TRUST NO FRIEND	996	Carenage
ONE LOVE (4)IV	993	Gouyave
U CALL I HAUL II	987	Belmont
MORNING STAR	945	Grenville
LITTLE EMMA	937	Harvey Vale
TOAD	933	Sauteurs
PRINCESS	913	Melville Street
DADY BULL	886	La Sagesse
THE PRIDE	884	Grenville
C.C.C.	870	Grenville
LADY MARIANNE	852	
SURVIVAL	825	Grenville
BIG DADDY L	768	Hillsborough
SEA HUNTER	748	Grenville
MORE TIME	692	Sauteurs
ESCAPE	689	Sauteurs
PENGUIN	688	Windward
NEW BEGINNING	652	Sauteurs
DESTINY	649	Grenville
PRESTO	641	Windward
AH COMING	639	Petite Martinique
SCAPAR	631	Carenage
GOD BLESS	533	L'Esterre
SHORT GIRL	519	Lagoon Road
PRUT PRUT	516	Grenville
BONITO HUNTER	448	Grenville
DESTINY	417	Grenville
LYDIA JANE DS	279	Hillsborough
BLACK EGIL 4	249	Bogles

Vessel Name	Registration Number	Location
NEW GIANA	228	Hillsborough
TURTLE DOVE	219	Harvey Vale
BUTCHER	200	Grenville
STYLE	190	Petite Martinique
GOD WE TRUST	188	Grenville
SHIFT	88	Sauteurs
D TWIN 2	2029	Soubise
MR. LEGS	1945	Grenville
FULL THROTTLE	1309	Soubise
BUDDY LOVE	780	Windward
KELLO II	2097	Hillsborough
GOOD OVER EVIL	2073	L'Esterre
FIRST THINGS FIRST	2065	Sauteurs
RENIAH	1822	L'Esterre
EAST SIDE	1337	Grenville
MEDITATION	1160	Grenville
LOBO 3	922	Victoria
ROLL OUT 75	2122	Marquis
LADY J	1256	Lagoon Road
BETTER THAN THAT	1253	Sauteurs
SPEAR PARTS	899	Lagoon Road
HERO	409	Petite Martinique
LAURICK	70	Grenville
YOURS IS YOURS	1096	Gouyave
PAUL	1091	Gouyave
CYRIL	1005	Gouyave
SARAH II	1697	Melville Street
HEAVENLY SUNSHINE	1802	Soubise
SCABLAY	1624	Grenville
PEACE IN CHRIST	1350	Petite Bacaye
REFLECTIONS	1547	Windward
NO LIMIT	1434	Grenville
ONE FAMILY	2137	Victoria
RIGHTEOUS 3	2130	Waltham
PATIENT	2109	Grenville
CECELIA	2091	Beausejour
RESOLUTION	2089	Gouyave
E & Z TOGETHERNESS	2074	Gouyave
ADVANTAGE II	2066	Victoria
FAITH SEA	2056	Crochu Bay
MOBILE	2053	Woburn
BLACKA	2051	Melville Street
ANGEL	2047	Petite Martinique
BRIGHTER DAYS MOVE	2043	Petite Martinique
NEVER GIVE UP	2026	Harvey Vale

Vessel Name	Registration Number	Location
DR. RAT	2012	Grand Mal
LARO	2011	Grenville
PITCH OUT 2	2009	Waltham
THAT IS IT LET THEM TALK	2007	Harvey Vale
THANK YOU JESUS	2006	Grenville
FAITH	1998	Grenville
LITTLE L	1996	Grenville
SHATONYA	1994	Gouyave
UP RISING	1979	Sauteurs
UNDEFEATED	1976	Hillsborough
UNIQUE	1973	Petite Martinique
CLOUD 9	1967	Waltham
ERICA	1959	Petite Martinique
ASHANA K	1957	Fontenoy
PERFECT STRANGER	1951	Petite Martinique
THE EAGLE	1949	Gouyave
FRESH	1921	Melville Street
BLESSING	1915	Victoria
GENESIS	1913	Grenville
RAMPLE DAZZLE	1910	Windward
JUST US	1901	Hillsborough
EASY LIKE SUNDAY MORNING I	1895	Gouyave
SEA PEARL	1889	Melville Street
ALIER I	1867	Petite Martinique
CADE	1865	Melville Street
BORN BRAVE	1864	Gouyave
G.G.G.	1862	Sauteurs
JUS NOW	1860	Harvey Vale
JACK	1854	Waltham
SEA DOVE	1849	Sauteurs
MAUNCHED	1840	Grenville
PETTY CASH	1825	Du Quesne
ANGEL	1821	Soubise
ANTS	1810	Duquesne
SILVER FOX	1806	Woburn
ALEX	1804	Grenville
PLIERS	1797	Mollinerre
COURAGE 2	1786	Victoria
NIKISHA	1784	Victoria
VINCE	1781	Soubise
GOD FEARING II	1779	L'Esterre
GUIDANCE	1776	Victoria
ADVANTAGE	1771	Victoria
BLUE FISH	1757	Sauteurs

Vessel Name	Registration Number	Location
SAM	1754	Gouyave
CASINO	1739	Sauteurs
A A LAND EXPRESS	1735	Gouyave
RANSOM	1733	Calliste
VITAL	1731	Belmont
SEA CAPTAIN	1730	Victoria
JAH FIRE	1727	Hillsborough
NICE ONE	1722	Gouyave
EZE	1718	Waltham
PSALM 23	1713	Mahot Bay
JAIME	1708	Telescope
STRUGGLER	1707	La Sagesse
CLEAN FACE	1703	Victoria
TIFFANY	1700	Grenville
LADY SILVIA	1688	Harvey Vale
WISDOM	1677	Grenville
MEGA	1642	Grenville
JAH LIVE	1637	River Sallee
DON SAMILUS	1619	Grand Mal
BUTTERS	1618	Grenville
SEA VIEW	1617	Grenville
HATERZ	1608	Gouyave
SYLVIA II/ THINK ABOUT ME	1606	Gouyave
MEN OF RESPECT	1583	Carenage
STILL NO ILLUSION	1582	Grand Anse
NOEL	1578	Gouyave
RECOVERY	1575	Lagoon Road
BLACK SWAN	1573	Grenville
LEGEND OF THE SEAS	1560	Melville Street
PAPER DOLL	1559	Grenville
WANGA	1558	Grenville
AIJAY	1542	Harvey Vale
CACADA	1528	Melville Street
HUSTLER	1527	Belmont
JACK SPARROW	1520	Gouyave
FREE WILLY	1511	Westerhall
NEVER DESPAIR	1502	Gouyave
GOD SHINE	1501	Grand Mal
DESTINY 2	1492	Victoria
GOD BLESS	1489	Grenville
J-BOY	1487	Grenville
NEVER GIVE UP	1479	Gouyave
AM BLESS	1469	Gouyave
AS UR SEE IT	1455	Carenage
TAVERI	1449	Gouyave

Vessel Name	Registration Number	Location
SOLDIER 2	1446	Grenville
PRINCESS ATYIAH	1440	Melville Street
DETERMINED	1438	Melville Street
KENZI	1422	Grenville
DETERMINATION	1397	Gouyave
HIGH FLY	1380	Woburn
MY PRINCIPLE	1379	Bogles
ALLAN	1375	Melville Street
FIRST GRADE	1374	Gouyave
COJACK	1373	Grand Mal
SEA QUEST	1368	Melville Street
ORION	1365	Woburn
DON RUBY	1361	Grenville
SURPRISE	1358	Soubise
THREE T'S	1345	Windward
GOING PLACES	1344	Martin's Bay
HUNTER II	1323	Victoria
MITCH- 1	1322	Soubise
D MAGISTRATE	1310	Gouyave
MANAGER	1278	Lance Aux Epines
MY YOUTH	1277	Grand Mal
GOD WILL PROVIDE	1273	Gouyave
BY FAITH	1272	Petite Bacaye
LITTLE BOY	1259	Sauteurs
UPRIGHT	1249	Petite Martinique
SMALL PIN	1245	Sauteurs
CAN DO	1241	Belmont
RAINBOW 1	1236	Grenville
NAH FIVE UP	1233	Grenville
BLESSING	1215	Grenville
HIS MAJESTY	1211	Gouyave
SAM	1188	Grand Anse
MARVELOUS	1186	Grenville
THINK ABOUT IT	1169	Sauteurs
DASH OUT	1163	Grenville
TIKIS	1161	Windward
JESUS SAVES	1155	Gouyave
LITTLE D	1152	Grenville
CO-ORDINANCE	1145	Grand Anse
COPY CAT	1134	Melville Street
ROCK VISION	1119	Melville Street
SEA PRICK	1114	Woburn
STEP UP	1110	Victoria
FEAR NO EVIL	1107	Gouyave
ANOTHER GUN	1098	Gouyave

Vessel Name	Registration Number	Location
AH LIKE HOW AH LIVING	1097	Gouyave
PSALM 1	1095	Gouyave
MELINA	1090	Gouyave
TRIPLE C	1085	Gouyave
HIGHLY FAVOURED	1084	Gouyave
CHARLLISS I	1079	Melville St.
ANOTHER STEP	1077	Gouyave
OCEAN KING	1067	Waltham
MISTY BLUE	1052	Victoria
THE HARDER THEY COME	1049	Gouyave
WE WILL SURVIVE	1047	Gouyave
MICKEY	1025	Gouyave
NEXT STEP	1023	Gouyave
CLASS FIRE	1012	Victoria
FREEDOM FIGHTER	1010	Waltham
SAMUEL	1003	Westerhall
PUBLIC ENEMY	994	Gouyave
UNCLE FISH	991	Waltham
MISS K	986	Gouyave
OUT-LAW	981	Belmont
IN-LAW	980	Belmont
DO OR DIE	956	Windward
MAD MAX 2	950	Windward
LADY NICKY II	912	Windward
DOLLARS	904	Petite Martinique
JAH CHILDREN	894	Grenville
FRESH	885	Soubise
DESTINI	882	Windward
BIRD	864	Mt. Pleasant
LOUISOR C.	863	Hillsborough
RIGHT LIFE	853	L'Esterre
CHIRST ONE	851	Harvey Vale
STILTA	845	Sauteurs
JUSTICE	835	Grenville
BOUNCE IN LOW II	821	L'Esterre
LERO STRIKER	815	Bogles
SEA ANGEL/ ONE LOVE 5	812	Grenville
JERRY	808	Gouyave
O.KAY	797	Windward
IN YOU FACE	787	Sauteurs
ARIS MERISTELA	782	Grand Anse
GENESIS	760	Grenville
HUSH	741	Gouyave
EXCUSE	730	Petite Martinique
UZZ OWN	700	Petite Martinique

Vessel Name	Registration Number	Location
7 THUNDER	693	Victoria
SHANNON	691	Grenville
CONCEPT	690	Petite Martinique
RAGE	684	Gouyave
I & I	609	Sauteurs
ALEX C	605	L'Esterre
YARENA	585	Harvey Vale
RAW DEAL	582	Hillsborough
GOLDEN	579	Gouyave
LEO ST. JOHN	574	Happy Hill
YELLOW BIRD	549	L'Esterre
JESSIE	540	Hillsborough
SPICY	528	L'Anse Aux Epin
GROUND DOVE	512	Grand Mal
DINNER FISH	485	Carenage
SEA LIFE	454	True Blue
OCEAN TREK	442	Grenada Yacht Club
MOVE I	403	Petite Martinique
TIME PASS	386	Gouyave
BOLD FACE	361	Sauteurs
ROSTERS	353	L'Esterre
JOHN 3:16/ LADY MARY	344	Gouyave
CINDY II	287	Du Quesne
TRIGGER- MR. BIGS – DOH DOUBT DAT	286	Gouyave
KENDRA	246	Lagoon Road
MIGHTY	243	Sauteurs
FREEDOM #2	230	Carenage
COURAGE	206	Westerhall
RUSH	194	Petite Martinique
GOD I TRUST	185	Grenville
PA-J	102	Du Quesne
MESSES I	68	Waltham
MY LITTLE MULE	22	Sauteurs
YOU TOO FAST	19	Sauteurs
LET THEM TALK	17	Victoria
THINK OF ME	15	Victoria
RUSSIAN	1843	River Sallee Bay
MR. BIGGS	1726	Sauteurs
DADDY BOB	1518	Grenville
SIMPLE	283	Gouyave
JAH BLESS	1068	Melville St.
DRAGON FLY	166	Grenville
MACONAR MAGIC	2027	L'Esterre
LAMBI QUEEN	1911	Harvey Vale

Vessel Name	Registration Number	Location
PLAY OFF	1904	Lauriston
ROUGH FINISH III	1892	Sauteurs
FIRE TRAIN	1692	La Porterie
THE ALTERNATIVE	1405	Victoria
RUSH II	793	Petite Martinique
VEXX NAH	2021	Fort Jeudy
TRI STAR FISHING	1873	Melville Street
LEISH	1684	Gouyave
LEGEND VI (CHARITY II)	1541	Grenville
HUNTER	1471	Darvey
LADY ANGELLA	1240	Windward
WHIP	660	Petite Martinique
HIS MAJESTY	365	Gouyave
CARIB STAR	62	Sauteurs
LET THEM TALK	1257	Windward
SPRAT	1040	Westerhall
NINJA KID 5	2045	Petite Martinique
MADALUMA	1977	Mt. Pleasant Bay
ENERGIZER	1657	Windward
EL SHADDI	1645	Windward
ACTION PACK	2127	Grand Mal
PROGRESS	2121	Harvey Vale
D'TWIN 3	2105	Grenville
LIVE BY THE SEA	2093	Melville Street
WAY MAKER	2080	Grenada Yacht Club
NORTH STAR	2075	Sauteurs
AQUARIUS	2057	Gouyave
BEAUTY	2024	Grenville
D'BLADE	2019	Melville Street
GET HOOKED	2015	Melville Street
JAH BLESSING	1989	Woburn
CATHERINA J	1972	L'Esterre
JUST IN TIME AGAIN	1963	Petite Bacaye
TONIA	1952	Gouyave
LITTLE DONNIE	1940	Telescope
WISDOM II	1925	Windward
HUNTER	1918	Petite Martinique
BRIGHT	1917	Content Bay
JONAH	1898	Marquis
PHELADELPHIA	1888	Belmont
DEEP RISING	1886	Hillsborough
DUCK EGGS	1855	Beasejour
DRED LION	1801	Mt. Pleasant Bay
TARPON	1792	Grenada Yacht Club
THREE BELLS	1745	Woburn

Vessel Name	Registration Number	Location
BLESSINGS II	1738	Hope Bay
PRESIDENT	1725	Melville Street
REFORMER	1687	Gouyave
PACIFIC STAR	1678	Gouyave
DOG FISH	1672	Grenville
SEA DIVE	1641	Woburn
ZACH I	1599	Duquesne
PERFORMANCE	1596	Marigot
THE LORDS	1592	Grenville
RED BEAST	1591	Woburn
ABIJAH	1576	Requin
BERGER	1569	Grand Mal
WHO GOD BLESS NO MAN CURSE	1539	Harvey Vale
NEXT REVOLUTION	1510	Sauteurs
SHINING LIGHT	1507	Fontenoy
BACK OFF	1465	Grand Mal
SUN RISE II	1458	Beausejour
NO QUESTION	1396	Fontenoy
GAGAMEL	1372	Marigot
BOOCOO	1363	Woburn
STAR FISH	1360	Grand Mal
ABBA	1320	Gouyave
D'LEGEND	1315	Gouyave
DIVINE DESTINY	1279	L'Esterre
KEM	1247	Gouyave
SUN J	1235	Petite Martinique
RED SONIA	1234	Petite Bacaye
RISING SUN	1228	Petite Bacaye
RED LIGHT	1210	Harvey Vale
TRUST AND OBEY	1199	Melville Street
FAITH	1198	Grenville
ISRAEL ROOTS	1179	Duquesne
LITTLE REX	1103	Grenville
RESPECT	1093	Gouyave
DROP IT	1078	Victoria
UPGRADER II	1053	Duquesne
SEA HAWK	1048	Gouyave
COUNTRY MAN	1016	Gouyave
MARIE J	1011	Fontenoy
CHINUH	978	Grenville
BABY LOVE	961	Cherry Hill
NOT SO AH WAS	874	Gouyave
AH EAT THAT	800	Belmont
IROY	791	Calivigny

Vessel Name	Registration Number	Location
BLACK PANTHER	785	L'Esterre
CRISCO KID II	767	L'Esterre
SIMPLE FAITH	758	Grand Mal
BURN THEM	729	Sauteurs
SEA SLAVE	703	Petite Martinique
HUNTER	697	Seaview
TOLERANCE G	673	Petite Martinique
SEA HUNTER	661	Melville Street
BLUE GUM	593	Woburn
RAKE & SCRAPE	501	Woburn
RAY	476	Calliste
LIMIT	469	Petite Martinique
ASSESS III	463	Gouyave
NEW CHANGE	245	L'Esterre
EXCUSE ME	184	Grenville
FARRAH	125	Grenville
ST. JOHN LEWIS	43	Victoria
REDEMPTION SONG	1807	Waltham
PECKER	1516	Bogles
ZACH	972	Du Quesne
F.V. WALLBERT	934	Fontenoy
TOONKAY	233	Petite Bacaye
JAH II	5	Woburn
DEY TO FASS	1418	Gouyave
PATRICK VEE'S	1204	Melville Street
EACH ONE TEACH ONE	1117	L'Esterre
TRANSPERANCY	823	Gouyave
MY OWN	1823	Windward
GO RACHAEL	1782	Melville Street
STRESS FREE	2086	Sauteurs
JAH WORKS	2128	Westerhall
CASH	2125	Petite Martinique
GBS10	2119	L'Esterre
THIS IS MY PRINCIPAL	2115	Bogles
WAVE RIDER	2108	Fort Jeudy
RENA	2094	Woodford Bay
NO REASON	2028	Windward
GHOST	2020	Windward
SERENITY	2018	Woburn
ATM OVER FLOW	1992	Mt. Pleasant Bay
SELF MADE II	1986	Happy Hill
LOUISA	1950	L'Esterre
BLESSED	1931	Petite Martinique
BLACK BOY I	1856	Happy Hill
IT'S AH PITY	1852	Levera

Vessel Name	Registration Number	Location
FAITH	1809	Woburn
LADY CHERYL	1789	Happy Hill
FISH HOOK	1759	Carenage
ADJUSTMENT	1741	Gouyave
NO PROBLEM	1728	Gouyave
THE GOOSE	1710	Windward
SMOKEYLUS I	1702	Sauteurs
SMALLIES	1673	Windward
PETER BLESS	1648	Sauteurs
DEEZEE	1626	Woburn
RAS DOG	1603	Sauteurs
LASH A LINE 3	1587	Grand Roy
GOD SON	1572	Grenville
SEA LIFE	1568	Beasejour
SEA LION	1564	Grand Mal
SWEET HEART	1555	Hillsborough
BUTTER FISH	1537	Corinth
DESTINY	1497	Gouyave
GOD IS GOOD`	1495	Gouyave
BREAK & RUN	1478	Lagoon Road
GOD VEX	1475	Gouyave
LONGEVITY	1473	Lagoon Road
KINGFISH	1445	Woburn
HELPER	1424	Carenage
DEBBIE	1417	Petite Bacaye
RIVERS	1414	Gouyave
ARREN	1404	Grand Anse
FOUR STARS	1378	Melville Street
BLACK JOE	1356	Melville Street
A & M FISHING SERVICES	1355	Duquesne
RAZOR	1346	Melville Street
CRACK A JACK	1316	Melville Street
AMAZING GRACE	1307	Beausejour
GOD IS LOVE	1306	Grand Roy
SAFE II	1303	Beausejour
BLESSING	1297	Melville Street
CONGO I	1290	Duquesne
J.R.2	1288	Lagoon Road
ME LION	1285	Sauteurs
TABY	1283	Gouyave
DEEZEE	1280	Grand Anse
ZION TRAIN	1270	La Potrie
CHELSEA 1	1267	Melville Street
CAPTAIN KID	1250	Sauteurs
JOSEPH	1219	Sauteurs

Vessel Name	Registration Number	Location
DELORES	1218	Fort Jeudy
NEW LIFE IN CHRIST	1159	Fort Jeudy
EASY LIKE SUNDAY MORNING II	1141	Gouyave
FOXULUS	1135	Cherry Hill
YES I SCHOOL GIRL	1132	Sauteurs
WAVE RIDER	1127	Fort Jeudy
U CALL I HAUL II	1126	Victoria
SOLDIER	1115	Grenville
ORIENT	1089	Victoria
DOH KILL GOD	1050	Grand Roy
IN GOD I TRUST	1031	Duquesne
ANOTHER WAR	1030	Victoria
THE ARC	979	Victoria
AQUA TOOTS	977	Gouyave
UPSET	967	Windward
THE WORDS	947	Carenage
SHOOT UP	924	Hillsborough
JOSH IN	920	Belmont
SCRAPE UP	906	Beausejour
MAD COW I	875	Gouyave
CARLINA	872	Gouyave
FLAMES	858	Lagoon Road
SEA SERPENT	790	Petite Bacaye
TTMM	777	Lagoon Road
LADY RANGER	761	Victoria
ANOTHER GUN	720	Gouyave
BRAVE	716	Gouyave
I AND I	669	Sauteurs
R & R	665	Sauteurs
EASE UP	640	L'Esterre
LADY GAY	632	Woburn
D. BOSS	606	Cherry Hill
ONE TIME	586	Calliste
SCRATCH	545	Hillsborough
KB 1	525	L'Anse Aux Epin
TRAWLER	515	Windward
ENDEAVORLINDA	455	Windward
CORRCOUS	393	Petite Martinique
F.V. Royalty	379	Waltham
THE TROLLER	372	Windward
SAFE 2	368	Beausejour
ADISA	357	Belmont
GOD FEARING	345	L'Esterre
MASSIVE	342	Petite Martinique

Vessel Name	Registration Number	Location
EDDIE	341	Westerhall
VANDA H	340	Windward
ANNA S	338	Gouyave
NEL-FIL	313	Gouyave
PIXIE	307	Gouyave
DORRIL SAMPSON	300	Gouyave
T-LINCH I	261	Gouyave
ANTHONIA P.	248	Hillsborough
JAW	223	La Sagesse
ENDURANCE II	189	Westerhall
SHENA/GHOST	175	Gouyave
DESTINY	174	Grenville
WENDY-ANN	140	Westerhall
ATTEMPTED COUP	97	Sauteurs
ZION TRAIN	60	Victoria
VICTORY	12	Hillsborough
TRIBUTE	285	L'Esterre
RUDE BOY	862	Gouyave
JAH BLESS	1551	Carenage
CALALOO	995	Gouyave
SALINE	2118	Harvey Vale
DECISION	1655	Sabazan
KAYSHON	2088	Gouyave
UNCLE B	2036	Sauteurs
DESTINY C	2016	Carenage
PATSY	2004	Requin Bay
Dealian	2002	L'Esterre
RAW	1846	Happy Hill
KINGO	1839	Melville Street
TREASURE	1824	Gouyave
RANKING	1819	Grand Anse
SURF MARINE	1818	Gouyave
IT'S ME AGAIN	1811	Gouyave
ELDICA M	1808	Grand Roy
BLESSINGS II	1744	Carenage
SPEAK THE TRUTH	1712	Levera
PIXIE	1711	Grenville
FIRE	1681	Duquesne
BLESS UP	1649	Hillsborough
STRAIGHT UP	1632	Gouyave
UNCLE	1607	Gouyave
ADVENTURE	1605	Grenville
PERFECT EXAMPLE	1580	Happy Hill
C YO	1508	Gouyave
HUNTER II	1506	Gouyave

Vessel Name	Registration Number	Location
M.V. Chrisan	1436	Melville Street
VEROCOU DK	1420	Woburn
SEA PRINCESS	1386	Grand Anse
WEST	1376	Grand Mal
SELASSSIE FOR LIFE	1364	Grand Roy
HUMBLE PEOPLE	1348	Sauteurs
BLACK ANGEL	1341	Grenville
ORCA	1336	True Blue
PITCH OUT	1328	Duquesne
ROSIE	1314	Levera
STRUGGLER	1301	Corinth
SURVIVAL	1291	Grand Anse
I 4 GOT	1255	Lagoon Road
STEPHEN	1237	Gouyave
ST. DAVID'S	1158	Requin
POKEMON	1088	Gouyave
SWORD FISH	1083	Grand Roy
FISH HUNTER	1006	Waltham
TO BE	938	Melville Street
ZEE-PE-WASH	857	Gouyave
SEA BIRD	822	Woburn
BADA	804	Calivigny
CHANGE	771	Grand Anse
DAVID ALEXIS	762	Sauteurs
LITTLE PINKEY	721	Grenville
I & I	657	Levera
UPRISING	654	Sauteurs
DRAGON RETURN	644	Petite Martinique
REPENT	569	Westerhall
ABC	531	True Blue
SERIOUS BUSINESS	527	Gouyave
FAITH II	522	Levera
STRUGGLE	498	Woburn
FAITHFUL	490	Molinerre
STING	433	Gouyave
GALAXY 205	419	Lagoon Road
WISKER'S	363	Petite Martinique
E BURN YOU III	322	Gouyave
LADY JENA	290	Gouyave
KOJACK	236	Mollinerre
JOB	56	Waltham
NET CO I	32	Sauteurs
ANGELLA	352	L'Esterre
BLESSED	1264	Melville Street
LADY J	968	Fontenoy

Vessel Name	Registration Number	Location
MR. FOX	707	Gouyave
BLUE MOON	1832	Carenage
VEROCOU DK II	2054	Lagoon Road
LYLAC	2099	Harvey Vale
LITTLE LEO	2050	Melville Street
JUST ONE LOVE	2041	Sauteurs
GRAVY FOR LIFE	2033	Grand Roy
KAUTION	1983	Harvey Vale
WIFI	1908	Windward
AM BLESS	1897	Gouyave
BLESSED ASSURANCE	1853	Melville Street
DEAN II	1831	Lance Aux Epines
THE ARK	1815	Lagoon Road
DOGGY STYLE	1800	Melville Street
IS MINE	1788	Grand Mal
IN GOD WE TRUST	1773	Petite Bacaye
AGNES Q	1748	Carenage
NAKED CHECKS	1709	Bogles
CINDY III	1674	Duquesne
BELLA D	1651	Gouyave
GOL-O	1614	Marigot
FEARLESS CHILD	1604	L'Esterre
ONE BITE CONTACT SON	1588	Melville Street
RISING SUN	1561	Melville Street
BACKLASH	1548	Bogles
D GOLDEN EAGLE	1535	Melville Street
JAH LOVE 2	1524	Grenville
RANGER	1472	Cherry Hill
STILL RISE	1461	Grand Mal
BRITNEY	1443	Sautaurs
NICKY	1383	Fort Jeudy
INDIAN	1366	Marigot
IS THAT SO?	1339	Gouyave
SMALL RED	1281	Gouyave
PRINCE 2	1260	Gouyave
GOD IS LOVE	1231	Gouyave
SEA HAWK	1178	Lagoon Road
GOD IS STANDING BY	1150	Victoria
ZIPPY	1100	Gouyave
WORK FOR IT	1051	Belmont
YOU AND WHO	1051	Gouyave
S&S	976	Beausejour
TWINS	943	Gouyave
FIRE	928	Beausejour
BLACK BIRD	927	Grand Mal

Vessel Name	Registration Number	Location
AFTER DARK	916	Belmont
F.V. DAN II	903	L'Esterre
ONE GOD	867	Gouyave
RENNIE	861	Beausejour
SANTA II	859	Gouyave
ZICKIE	831	Gouyave
WHISKY	769	Gouyave
PREG	742	Gouyave
ALIVE	736	Westerhall
ZIG ZAG	658	Petite Martinique
THE BEAST	637	Cherry Hill
SILVER QUEEN	629	Fontenoy
VIPER	601	Gouyave
MOVE UP	580	Hillsborough
CRISCO KID 1	571	L'Esterre
LITTLE PIECE	570	Fontenoy
KETCH YOURSELF	514	Grand Mal
MAY FLOWER	472	Calliste
BULL END	431	Windward
ATLAS	411	Woodfood Bay
JUSTICE C	401	Petite Martinique
CHEERFUL	387	Sauteurs
D BROTHERS	369	Grenville
DR. NASHE	349	Gouyave
BAD COMPANY	335	Gouyave
GOD IS LOVE II	328	Mt. Pleasant
THE SEA GAUL	326	Belmont
TOSH	295	Gouyave
DE ARK	272	Lagoon Road
BLESS UP	77	Sauteurs
AMIE	2098	Hillsborough
LADY KATHY	1999	Melville Street
LITTLE B	1153	Harvey Vale
JAH LOVE	709	Grenville
ACE OF SPADES	2104	Gouyave
COURAGE	2048	Beasejour
GOD SENT	2000	Gouyave
MAGIC WATER	1997	Gouyave
ONLINE	1978	L'Esterre
JUST FOR FUN	1965	Gouyave
HEAD AH REST	1941	Beasejour
GOOD QUESTION	1928	L'Esterre
SPREEMAN	1923	Gouyave
BLACK BOY I	1856	Happy Hill
SPICE	1791	Soubise

Vessel Name	Registration Number	Location
RISE UP	1624	Melville Street
FIRST TOUCH	1610	Mt. Pleasant Bay
GOD SENT	1312	Gouyave
EAGLE	1289	Gouyave
BLOSSOM	1232	Sauteurs
FIVE FISH	1168	Point Salines
HARD TARGET	1148	Windward
LUCKY STRIKE	1064	Gouyave
CHEERFUL	813	Sauteurs
ITS NOT AN EASY RD	807	Gouyave
DEMYAN	799	Grenville
ALI	735	Carenage
DAILY BREAD	371	Windward
CATHLYN B	305	Belmont
CHANGES	297	Hillsborough
GRENADA SPECIAL	252	Levera
TWINKLE	128	Grenville
JUICE	2106	Gouyave
UPSET	1287	Gouyave
YOUNG BOY	1629	Gouyave
JUST 1	1423	True Blue
D KING SON	2136	Victoria
SWEET THERESA ST.	2068	True Blue
WORLD BOSS	2063	Grand Mal
FABULOUS	2014	Melville Street
FIDO 2	1975	Gouyave
NO COCKERY EYE	1948	Melville Street
TUBSY	1907	Mt. Pleasant Bay
CHE	1871	Gouyave
TOR'S BRAIN	1869	Gouyave
ISLAND STAR	1866	Levera
PRODIGAL SON	1829	Grand Roy
BRITTLE STAR	1798	Hillsborough
JET GREEN	1723	Happy Hill
RELOAD	1715	Sabazan
ALICIA	1714	Belmont
VEXX NAH	1554	Carenage
ANTONIE	1451	Lagoon Road
FRESH KID	1450	Sauteurs
GERTHENESS	1441	Beausejour
SPICE RIFT	1428	Crochu Bay
POSITIVE	1304	Gouyave
BABS	1271	Morne Rouge
LIFE	1258	Grand Mal
HIGHGRADE	1209	Gouyave

Vessel Name	Registration Number	Location
GREY EAGLE	1070	Melville Street
HIS MAJESTY	974	La Sagesse
BLUE BIRD	830	Fort Jeudy
MY LIGHT	789	Fontenoy
LEMONADE S	698	Windward
FAMOUS II	402	Melville Street
KATHLEEN	325	Hillsborough
GLORIA	278	Hillsborough
SHAWKEL J	9	Grand Bay
ZACK II	1129	Duquesne
ZION TRAIN 3	1704	River Sallee Bay
UP D ALLEY	1574	Melville Street
SAUCY GIRL III	94	Du Quesne
NOT AH BWOY	2113	L'Esterre
BREAD	2055	Happy Hill
HARMONY	2017	Lagoon Road
WHY ME	1647	Fort Jeudy
ROSE BOWL	1329	Grenville
DETERMINATION	1286	Dragon Bay
SEA LEVEL	594	Cherry Hill
JEMENILE	560	Bogles
SEA WOLF	1964	Gouyave
MAY MEN WISH DEATH ON YOU	1400	Lagoon Road
PEACE	876	Petite Bacaye
SKILLINGER	819	Cherry Hill
FLIPPER	167	Westerhall
CAT EYE	410	Gouyave
VENUS	422	Petite Martinique
TISHA J 2	786	Belmont
RENEGADE	757	Sauteurs
FRANK SEE MAN	737	Lagoon Road
COSTA NORTE	1747	Porlamar, Margarita
MUSTANG	492	Carenage
MIGHT WARRIORS	382	Waltham
REACH OUT 1	598	Carenage
ROUND ROBIN	868	Lagoon Road
COLD WAR 4	957	Victoria
WE TOO	1013	Gouyave
GOD SHARE BREAD	1029	Gouyave
CRY BABY	1035	Gouyave
BUTTERFLY	1046	Levera
R.C.I (WONDER)	1086	Gouyave
DEVINE	1308	Grenville
JOSIE	1340	Mt. Pleasant

Vessel Name	Registration Number	Location
BOO	1476	Hillsborough
DIMPLES	1526	Grenville
D UNCLES	1544	Belmont
IMMORTAL	1565	True Blue
YARDY	1638	Gouyave
ESMIE 1	1659	Hillsborough
ESMIE 2	1670	Hillsborough
CRAB I	1675	Sauteurs
GIVE PRAISE	1680	Waltham
STEPPING RAZOR	1693	Woburn
BLACK CAT	1698	Petite Martinique
PIPE DREAM	1932	Grenada Yacht Club
LITTLE SURVIVOR	2058	Melville Street

Barbados Registered Other Vessels

Vessel Name	Registration Number	Location
F.B.A	E003	Six Men's
PEPS	E008	Speightstown
MY GIRL	E009	Six Men's
REEF CHIEF	E011	Cobbler's Cove
LEOKA-C	E015	Road View
PURPLE RAIN	E016	Cholera Bay
IRON HEART	E020	Six Men's
BARKER	E022	Cobbler's Cove
KING FISH II	E025	Skeete's Bay
RAW DEAL	E026	Speightstown
JUS ENUFF	E027	Unknown
S.S.S	E028	White Head Trees
DE-VEL	E032	Six Men's
KING EDD	E033	Road View
MIYKA	E035	Speightstown
SEEK	E040	Six Men's
SIR AARIES	E042	Speightstown
CHICK	E044	Read's Bay
PHOEBE	E045	Speightstown
J ANITA	E046	Six Men's
FONDUE II	E047	Speightstown
RED ROOSTER	E050	Read's Bay
FREEDOM	E057	Six Men's
OWL CRAFT	E061	Six Men's
OBSESSION	E063	Six Men's
SEA PAA	E066	Read's Bay
MARLEEN	E068	Six Men's
SYLVERS	E069	Speightstown
JUS DE BEGINNING	E071	Speightstown

Vessel Name	Registration Number	Location
MIA	E072	Six Men's
AH OOU WEE	E078	Six Men's
ARRIA'S BEAUTY	E081	Weston
KING EDD 2	E082	Payne's Bay
BANKS	E083	Road View
LIL JOE	E085	Oistins
SHORT CHANGE	E086	Weston
BLUE MOON	E087	Speightstown
BLACK DOVE	E088	Six Men's
FA FA 4	E089	Speightstown
CASH MONEY 2	E090	Six Men's
CHELSIE-B	E092	Speightstown
CHELSIE-B	E092	Speightstown
HOT ROD	E093	Speightstown
VICTORY	E094	Speightstown
DE GWEN	E097	Speightstown
LAUGHING WATERS	E099	Six Men's
DE CHAMP	E100	Six Men's
DE CHAMP	E100	Six Men's
BLESS CHILD	E101	
DYLANO ONE	E102	Six Men's
TWO FOXES	E103	Six Men's
MALISA	E104	Speightstown
MICAH	E107	Six Men's
HOT TUNA	E112	Six Men's
YARD FOWL	E114	Six Men's
ROCKEY 2	E115	Six Men's
ZIPPORAH	E118	Six Men's
REEF TRAIL	E121	Read's Bay
OCEAN JEM	E122	Six Men's
CHEALSE B 2	E126	Speightstown
D-MAC	E127	Unknow
DOUBBLE R 2	E128	Six Men's
LIL DAN	E129	Six Men's
WINDY 1	E130	Speightstown
DE - SKULPIN	E132	Six Men's
HOT FOR SO	E133	Speightstown
SERVIVOR	E134	Holetown
RELAXIN	E135	Six Men's
AFTER ALL	E136	Six Men's
KYLESHA	E138	Six Men's
FELIC - ALEA II	E139	Weston
EMME	E140	Six Men's
JENNY D	E141	Six Men's
THE BIRD	E142	Speightstown

Vessel Name	Registration Number	Location
PHOENIX II	E145	Six Men's
T.J	E146	Six Men's
CAREN	E147	Unknown
BROV	E148	Queen Street
SOUL 2 SOUL	E149	Queen Street
TAKE IT EASY 2	E150	Unknown
NICOLA	E151	Speightstown
FAMILY TREE	E153	Six Men's
ATTALA	E154	Six Men's
BILLY WHISTLE	E155	Weston
AKIOMARESA	IM	
MYSTIC MAN	IM	Oistins
ALL AWEE	J006	Consett Bay
PERSEVERENCE	J007	Consett Bay
KIM	J008	Consett Bay
BANZAI	J009	Consett Bay
LADY CHARMAINE	J010	Martin's Bay
B.A.M	J014	Martin's Bay
D.M.R	J017	Consett Bay
YORKEY	J020	Consett Bay
PAT.RON 2	J021	Martin's Bay
JESIN TIME	J025	Consett Bay
WIDE AWAKE	J038	Consett Bay
ANGEL DE LA MER	J039	Consett Bay
FREE FLOW	J056	Consett Bay
KOBE	J063	Consett Bay
KAYLA	J066	Bridgetown Complex (BFC)
KAYLA	J066	Bridgetown Complex (BFC)
ADI-CAT-TOO	J067	Consett Bay
BOTH WORLDS	J082	Consett Bay
D MONEY BIRD	J083	Payne's Bay
ANGELLECO	J084	Martin's Bay
WILDEST	J085	Payne's Bay
ANGELLECO 2	J089	Consett Bay
TRIAD	J091	Consett Bay
D`MAR-RU	J092	Consett Bay
ANBUE	J66	Bridgetown Complex (BFC)
ANBUE	J66	Bridgetown Complex (BFC)
PAN	L004	Unknow
IMPACT	L007	Half Moon Fort
COVE CREST	L008	Half Moon Fort
BLUE FIN	L010	Stroud Bay
BIMBO	L013	Half Moon Fort
LADY GAIL	L014	Six Men's
A.M	L021	Shermans

Vessel Name	Registration Number	Location
TONY	L023	Half Moon Fort
THE HAILEY REEMA	L024	Six Men's
BENITA	L026	Half Moon Fort
TIME OUT	L027	Six Men's
COOL CHANGE	L028	Half Moon Fort
GOTCHA	L029	Half Moon Fort
PARKER	L030	Half Moon Fort
WHY WOPPY	L032	Six Men's
DE OLIVIA	L038	Clinketts
BIKO	L039	Half Moon Fort
ANWE	L041	Speightstown
SONIA	L042	Half Moon Fort
GOOD TO GO	L050	Stroud Bay
SIMONE DANIELLE	L053	Six Men's
LUCKY LUCK	L056	Six Men's
DIANNE	L058	Six Men's
STAR FISH	L062	Six Men's
DUBIE	L064	Worthings / Sandy Beach
PROVIDER	L068	Six Men's
CHANCES ARE	L069	Half Moon Fort
CAT FISH	L070	Half Moon Fort
DE-EAGLE	L071	Six Men's
NICROY	L072	Six Men's
PRENCESS HINDS	L074	Half Moon Fort
NATHAN SASKIA	L075	Stroud Bay
TUSKIE 2	L077	Half Moon Fort
LIL BOOGIE	L078	Six Men's
CASANDRA	L079	Six Men's
DRES	L081	Half Moon Fort
ABIGAIL	L082	Six Men's
KILLER SWITCH	L087	Half Moon Fort
G LIME	L091	Half Moon Fort
CAIRO	L092	Half Moon Fort
SAVIM	L101	Six Men's
SAVIM	L101	Six Men's
MAJESTIC TWO	L102	Half Moon Fort
BABY K	L104	Half Moon Fort
DE CATCHER	L105	Shallow Draught / Sand Pitt
DORY 1	L108	Six Men's
THIRD TIME	L109	Half Moon Fort
BLUE SKIES	L110	
DE REAL CAGE	L111	Half Moon Fort
SHALYA	L112	Half Moon Fort
PHOENIX	L113	Half Moon Fort
LION FISHER	M001	Browne's Beach / Bay Street

Vessel Name	Registration Number	Location
STARTER #1	M003	Pile Bay
DANIELLE	M006	Burke's Beach
CHRYSTAL	M018	Bridgetown Complex (BFC)
MARGUERITE	M025	Pile Bay
DE CAT	M026	Brandons
BROTHERS	M030	Pile Bay
WORK AND PRAY	M034	Bridgetown Complex (BFC)
IRIS	M037	Bridgetown Complex (BFC)
THE KWIP'S	M038	Browne's Beach / Bay Street
BULL DOLPHIN	M040	Consett Bay
CRESTLINER	M059	Browne's Beach / Bay Street
MONA	M063	Shallow Draught / Sand Pitt
EMMANUEL	M064	Brandons
LUSIE	M069	Weston
NOAH - 2	M072	Bridgetown Complex (BFC)
BEER SPORT	M074	St. Lawrence
COOL'N' EASY TOO	M075	Burke's Beach
BALLYHOO	M076	Bridgetown Complex (BFC)
JANE	M077	Pile Bay
DRAGON FLY	M080	Burke's Beach
SEA LOVER	M081	Oistins
LOVE	M083	Shallow Draught / Sand Pitt
DUPA	M089	Bridgetown Complex (BFC)
IKE	M090	Bridgetown Complex (BFC)
COREY RYAN	M094	Brandons
CARLYN	M097	Pile Bay
BLESSINGS	M098	Payne's Bay
REELACTION	M106	Bridgetown Complex (BFC)
TOPPER	M108	Hastings
CAROLYN	M109	Bridgetown Complex (BFC)
DON RAY	M110	Burke's Beach
MELKERRY	M111	Bridgetown Complex (BFC)
SAINT ANTHONY	M112	Shallow Draught / Sand Pitt
MITRE	M116	Speightstown
GUMS	M121	Pile Bay
HERE COMES THE BOOM	M126	Bridgetown Complex (BFC)
GLEN	M128	Brandons
DIADEMA	M131	Bridgetown Complex (BFC)
BIG DADDY	M134	Careenage
THUNDER POWER	M139	Shallow Draught / Sand Pitt
HERE FISHY	M141	Carlisle Bay
DE SHVIOUR	M146	Bridgetown Complex (BFC)
KNOTTY GIRL	M150	Bridgetown Complex (BFC)
BIGUP S.S	M151	Burke's Beach
RAZOR	M154	Browne's Beach / Bay Street

Vessel Name	Registration Number	Location
SEA WOLF	M155	Brandons
D WAYNEY	M160	Pile Bay
QUEEN-B	M164	Burke's Beach
CAPTAIN D	M165	Careenage
SEA ALICE	M166	Carlisle Bay
ROSONIA	M167	Pile Bay
ASHLEY	M171	Burke's Beach
FOUR STAR	M176	Bridgetown Complex (BFC)
100% BAGAN	M183	Bridgetown Complex (BFC)
AKITA	M184	Pile Bay
ANNETTE	M185	Burke's Beach
DOO-DOO	M186	Brandons
JERONE	M188	Burke's Beach
STAR	M191	Bridgetown Complex (BFC)
HERO III	M196	Brandons
FAITH II	M197	Shallow Draught / Sand Pitt
SATERA	M203	Brandons
PEACE OF MINE 2	M204	Bridgetown Complex (BFC)
LIEANNE	M205	Unknow
LUCKY	M207	Burke's Beach
TIFF	M208	Pile Bay
LIFE	M212	Shallow Draught / Sand Pitt
JANSI	M217	Browne's Beach / Bay Street
LU LU	M220	Pile Bay
LADY INGRAM	M221	Burke's Beach
SURPRISE	M223	Burke's Beach
PAULETTE	M225	Brandons
SEA RUNNER	M227	Bridgetown Complex (BFC)
PAUL	M229	Bridgetown Complex (BFC)
SURVIOUR	M230	Shallow Draught / Sand Pitt
SHANICE	M231	Brandons
KEEP THE FAITH	M234	Bridgetown Complex (BFC)
ESPERANZA	M236	Brandons
MATTATHIAS	M237	Shallow Draught / Sand Pitt
ARCHIMEDES	M238	Burke's Beach
A.P.T	M243	Pile Bay
AT LAST	M247	Bridgetown Complex (BFC)
DAVIN	M252	Bridgetown Complex (BFC)
DON GORGON	M254	Payne's Bay
ZOELA	M256	Browne's Beach / Bay Street
THE 3 JAYS	M261	Tent Bay
WE THREE	M263	Payne's Bay
FA FUN	M264	Burke's Beach
IMP	M265	Fitts Village
MARIA	M268	Browne's Beach / Bay Street

Vessel Name	Registration Number	Location
TRIAL	M270	Brighton Beach
GI GI	M272	Browne's Beach / Bay Street
RYAD	M275	Payne's Bay
CRACKER	M278	Pile Bay
RA9	M279	Bridgetown Complex (BFC)
REEL MADNESS	M280	Pile Bay
VIOLET	M307	Bridgetown Complex (BFC)
BISON	M308	Bridgetown Complex (BFC)
PINKY	M311	Payne's Bay
LIZANN	M312	Browne's Beach / Bay Street
EXODUS	M313	Pile Bay
RAINBOW RUNNER	M315	Payne's Bay
OCEAN IS MY DESTINY	M317	Pile Bay
ZIPPER II	M318	Brandons
FRANCIS	M321	Prospect
ADESTINY	M325	Pile Bay
GLAD-LEE	M334	Weston
LIL CUP CAKE	M335	Shallow Draught / Sand Pitt
ADDVENT	M336	Bridgetown Complex (BFC)
SYLVEE	M337	Pile Bay
EVA	M339	Pile Bay
SOFEE	M341	Oistins
REELY	M342	Carlisle Bay
JA JA	M343	Bridgetown Complex (BFC)
IMPULSE	M345	Worthings / Sandy Beach
HOPE FOUR	M347	Bridgetown Complex (BFC)
LIFE SAVER	M348	Payne's Bay
UPRISING	M350	Brandons
SIMON PETER	M351	Pile Bay
LYLE	M354	Browne's Beach / Bay Street
STAND BY ONE	M355	Bridgetown Complex (BFC)
PATIENCE	M357	Brandons
SURF DINGHY	M358	Browne's Beach / Bay Street
FRIENDS	M361	Browne's Beach / Bay Street
FINALLY	M366	Pile Bay
NANA	M367	Pile Bay
D BOSON 1	M368	Brooklyn
CINDY	M369	Burke's Beach
DANIELLE	M370	Pile Bay
LIL KAI	M372	Bridgetown Complex (BFC)
NEW BEGINNINGS	M375	Bridgetown Complex (BFC)
E FAMILY	M376	Bridgetown Complex (BFC)
SEA WEED	M377	Pile Bay
HOPE	M378	Brandons
KIRK	M380	Pile Bay

Vessel Name	Registration Number	Location
SCALES	M382	Bridgetown Complex (BFC)
MIRGO	M387	Bridgetown Complex (BFC)
NABOCY	M390	Bridgetown Complex (BFC)
Z-BRINKS	M391	
MORE BAD	M393	Bridgetown Complex (BFC)
PREDATOR	M396	
TAPPA-T11	M398	Bridgetown Complex (BFC)
DE FOREMAN	M399	Carlisle Bay
TARA TOO	M400	Bridgetown Complex (BFC)
MORE LIFE	M402	Bridgetown Complex (BFC)
BITE IT	M405	Carlisle Bay
SUN GIRL	M406	Browne's Beach / Bay Street
OCEAN SAILOR	M408	Bridgetown Complex (BFC)
ARAMINTA	M411	Bridgetown Complex (BFC)
SCALLY WAG	M412	Bridgetown Complex (BFC)
UITVLUGT	M414	Bridgetown Complex (BFC)
MADELINE	M416	Bridgetown Complex (BFC)
AARON	M417	Pile Bay
EDDIE	M418	Browne's Beach / Bay Street
ROUND 2	M421	Pile Bay
MARILYN	M424	Oistins
ALWAYS A JOY	M425	Bridgetown Complex (BFC)
REEL ACTION	M426	Bridgetown Complex (BFC)
HUSTLE HARD	M427	Pile Bay
FINALLY FINISHED II	M429	Oistins
SALT WATER	M430	Pebbles Beach
BILL.2	M431	Pile Bay
REPHIL	M432	Shallow Draught / Sand Pitt
PROSPERITY	M434	Brandons
RIHANNA	M439	Payne's Bay
PEACE TIME	M443	Fitts Village
ROYAL	M444	Pile Bay
MELCHIZEDEK	M445	Shallow Draught / Sand Pitt
GAFFA	M446	Sam Lords Beach
TIA	M447	St. Lawrence
JERRY BOY	M449	Browne's Beach / Bay Street
LUCKY FYNN	M451	Bridgetown Complex (BFC)
SMALL ISSUE	M452	Tent Bay
PURE JOY	M453	Bridgetown Complex (BFC)
HOT TOOL	M455	Bridgetown Complex (BFC)
HATSHEPSUT	M456	Bridgetown Complex (BFC)
SUNRISE	M457	Bridgetown Complex (BFC)
KAYA	M458	Bridgetown Complex (BFC)
NAUTINESS	M460	Browne's Beach / Bay Street
LUCESS	M461	Bridgetown Complex (BFC)

Vessel Name	Registration Number	Location
S. S TWO	M462	Browne's Beach / Bay Street
THE EMMANUEL	M463	Weston
SUPA-Z	M464	Shallow Draught / Sand Pitt
EMPIRE	M465	Brandons
ALL GLORY TO GOD	M468	Bridgetown Complex (BFC)
COMMANDER-O	M471	Shallow Draught / Sand Pitt
EAGLE	M472	Bridgetown Complex (BFC)
KEZIAH	M473	Fitts Village
GOOD DEEDS	M477	Pile Bay
STRIKAZ	M478	Bridgetown Complex (BFC)
MINT	M480	Barbados Yatch Club
KIARA	M482	Pile Bay
BETSY	M483	Bridgetown Complex (BFC)
STRIKAZ PTZ	M484	Bridgetown Complex (BFC)
GETEZ	M485	Brighton Beach
DANNY BOY	M486	Browne's Beach / Bay Street
FAMILY	M487	Bridgetown Complex (BFC)
FAYRE	M488	Fitts Village
HELTASKELTA	NR	Browne's Beach / Bay Street
KNOT ME	NR	Bridgetown Complex (BFC)
UNITY IS STRENGTH	NR	St. Lawrence
CINDY	NR	Brandons
SPOITT CHILD	NR	Payne's Bay
FREEDOM	NR	
THE BLOOD OF JESUS	NR	Pile Bay
VIKING	NR	Silver Sands
DIDCATION	NR	Payne's Bay
DUN WID DAT	NR	
CAESAR 2	NR	Brandons
R + R	NR	Six Men's
BOUT TIME	NR	Worthings / Sandy Beach
DE ROSE	NR	
LUNELLA	NR	
JEMRON	NR	Fitts Village
STRIKAZ	NR	Bridgetown Complex (BFC)
ALL ALONE	NR	Payne's Bay
PASTSY	NR	Oistins
IASSA	NR	Oistins
SS CATEYES	NR	Browne's Beach / Bay Street
KNOTTY GIRL	NR	Worthings / Sandy Beach
TARA TOO	NR	Bridgetown Complex (BFC)
KAIT	NR	Oistins
SALTY MASTER	NR	Road View
SURVIVOR	O005	Tent Bay
BIANCA	O015	Oistins

Vessel Name	Registration Number	Location
ROSELLE	O020	Tent Bay
FOO FOO'S	O022	Oistins
NIGLO	O068	Tent Bay
JUST DO IT	O075	Tent Bay
4 BOYS	O076	Tent Bay
SEA REINA	O077	Oistins
KELL TRACE	P003	Foul Bay
MAX G	P008	Oistins
VENUS	P009	Foul Bay
EXIT	P012	Long Bay
SAGA BOYZ	P021	Foul Bay
DE BOSS	P024	Crane Beach
MARY JANE	P032	Crane Beach
VENUS SIX	P034	Foul Bay
TIZON	P036	Sam Lords Beach
RED TING	P040	Oistins
GOLDEN VOICES	P048	Foul Bay
CASSI	P049	Oistins
SEA WOLFEY WOLF	P052	Carlisle Bay
KENTWAN	P055	Skeete's Bay
ALICIA	P058	Oistins
NICOLE	P060	Foul Bay
NAVIJEB	P061	Foul Bay
HARD TIMES	P071	Consett Bay
SHARI	P072	Oistins
RAY PEARL	P080	Skeete's Bay
JEROLENA	P084	Foul Bay
TAKE IT EASY	P090	Speightstown
P.DAWG	P107	Oistins
2 BAD	P116	Worthings / Sandy Beach
BELAIR	P118	Foul Bay
DE FIVE ELEMENTS	P119	Consett Bay
DE BOSS II	P124	Foul Bay
ATOMKAT	P127	Oistins
EILEEN	P135	Oistins
Rose	P137	Oistins
NO BIG TING	P141	Oistins
LONG STORY	P143	Oistins
BLACK STAR LINER	P149	Oistins
RED FISHER	P152	Bridgetown Complex (BFC)
ROLL'N HIGH	P153	Consett Bay
LEILANI	P154	Skeete's Bay
PUSSUM	P162	Oistins
SEA SPIRIT	P163	Consett Bay
RELIABLE	P165	Bridgetown Complex (BFC)

Vessel Name	Registration Number	Location
OZWALD	P166	Consett Bay
JAG II	P167	Long Bay
LUCKY JO	P168	Bridgetown Complex (BFC)
P-DAWG	P169	Worthings / Sandy Beach
JAMISHO	P170	Oistins
KNOT OUT	P173	Barbados Yacht Club
FISH ON	P174	Oistins
SOCA	P176	Foul Bay
LADY TULL	S001	Fitts Village
BEQUIA	S003	Mount Stanfast
THE ARK	S005	Fitts Village
ANTONI	S006	Payne's Bay
ROCKY 2	S007	Fitts Village
TUBIE	S008	Oistins
NAN	S009	Mount Stanfast
APRIL	S010	Fitts Village
ELAINE	S014	Payne's Bay
SARA-B	S015	Fitts Village
TOP GUN	S016	Prospect
WILMA	S017	Fitts Village
JAZZ	S019	Read's Bay
MOON-BEAM	S020	Payne's Bay
TROY ANN	S021	Pile Bay
LIBERTY	S023	Holetown
EQUAL RIGHTS	S024	Holetown
WAVE RIDER	S025	Bridgetown Complex (BFC)
UNITY	S028	Weston
ALL NEW	S029	Mount Stanfast
FLYING FOX	S035	Read's Bay
KATHLEEN	S036	Read's Bay
SEA HAGG	S038	Read's Bay
TRY YA LUCK	S040	Mount Stanfast
GRACE	S041	Weston
LENA	S042	Fitts Village
I IN DAT	S043	Bridgetown Complex (BFC)
VEGAS GIRL	S044	Fitts Village
ELAINE	S045	Fitts Village
DANEA	S048	Mount Stanfast
BELL GATES	S049	Weston
ROSEMARY	S050	Fitts Village
EMERA	S052	Payne's Bay
ALBERT	S053	Payne's Bay
OTTY	S054	Holetown
THE MAFLOWER	S057	Read's Bay
CAGIVA	S058	Holetown

Vessel Name	Registration Number	Location
REEL TIME	S059	Payne's Bay
POPE	S061	Read's Bay
BRAD	S064	Pile Bay
ON LINE	S065	Mount Stanfast
WITNESS	S067	Prospect
TARO	S069	Fitts Village
SYSTEM	S073	Payne's Bay
KEESHAR	S075	Fitts Village
SEA CLOUD	S076	Read's Bay
PRINCESS-R	S079	Read's Bay
JANSTELISA	S080	Read's Bay
BLUE REEF WS	S081	Mount Stanfast
JODE LOU	S084	Read's Bay
IKKIBIT	S085	Read's Bay
DI WONG	S089	Weston
HIGHEST PRAISE	S090	Lower Carlton
DORTHY	S092	Fitts Village
JAMAL	S093	Payne's Bay
SPRHA	S094	Pile Bay
DUSHI	S100	Read's Bay
ROSHIDA	S101	Six Men's
AKYRAH	S103	Fitts Village
PAT PAT	S104	Payne's Bay
FRANCO 1	S105	Holetown
BO DIDDLEY	S106	Mount Stanfast
BRUCE	S108	Payne's Bay
KEIMAR	S109	Lower Carlton
SOLLIE	S110	Payne's Bay
ALICIA	S118	Payne's Bay
ICH DIEN	S119	Brooklyn
BILLY BOY	S123	Mount Stanfast
KENTUCKY	S125	Mount Stanfast
SPLASH 2	S129	Fitts Village
HOT SHOT	S131	Fitts Village
SANDI	S133	Prospect
IN TIME	S134	Prospect
LIFE LINE	S135	Prospect
D'MERTANEL	S136	Holetown
HARD GRADE	S137	Holetown
KIZZY	S138	Mount Stanfast
DOUBLE SIX	S141	Holetown
CANARY	S142	Six Men's
THE FOX	S143	Weston
DIJA	S144	Lower Carlton
SHANIA	S147	Read's Bay

Vessel Name	Registration Number	Location
SUMMER SEAS	S148	Bridgetown Complex (BFC)
SWAN	S149	Fitts Village
GONZO	S154	Speightstown
SEA FOX 2	S155	Holetown
MERV	S160	Shallow Draught / Sand Pitt
VOR	S163	Brandons
MONCINI	S164	Payne's Bay
DE CUZ	S165	Holetown
CHALLENGER	S166	Weston
BROTHERS	S167	Lower Carlton
TOMA HAWK	S169	Holetown
IN GOD WE TRUST	S174	Prospect
TOGETHER	S176	Brandons
BEE KAY	S177	Holetown
SEA FEVER	S179	Worthings / Sandy Beach
LITTLE JOHN	S182	Mount Stanfast
DE MARGO	S183	Holetown
JAYCEE	S184	Worthings / Sandy Beach
QUEEN CLARA	S185	Mount Stanfast
FRENCH CONNECTION	S186	Mount Stanfast
TIGHT LINES 111	S187	Payne's Bay
TIME ALONE	S188	Weston
D'AMAL	S189	Bridgetown Complex (BFC)
GRACE	S190	Lower Carlton
JU - JU	S192	Holetown
NICQUILLE	S193	Bridgetown Complex (BFC)
DE CONTENT	S195	Payne's Bay
LADY VERA	S196	Payne's Bay
FIRST LIGHT	S197	Shallow Draught / Sand Pitt
FATHERS	S199	Payne's Bay
D' EEL	S200	Holetown
JAYDA	S201	Payne's Bay
SAND CRAB	S203	Shallow Draught / Sand Pitt
TAITT	S204	Payne's Bay
DIAMOND D	S205	Weston
SLACK BACK	S206	Bridgetown Complex (BFC)
KING FOR EVER	S209	Bridgetown Complex (BFC)
FISH SEEKER	S210	Holetown
HOT SHOT 2	S211	Fitts Village
BAJAN ROSE II	S215	Mount Stanfast
MAGGIE-G	S216	Shallow Draught / Sand Pitt
SUG'S	S218	Weston
AKYRAH	S219	Bridgetown Complex (BFC)
BABY ON BOARD	S220	Payne's Bay
MARINE BOY	S223	Fitts Village

Vessel Name	Registration Number	Location
EMERA 2	S227	Payne's Bay
TIGHT LINES 2	S228	Payne's Bay
RUDEAN	S229	Fitts Village
BLUE BIRD	S230	Payne's Bay
ALBERT TOO	S231	Payne's Bay
MORE	S232	Fitts Village
GUIDE-O-US	S236	Payne's Bay
QUEEN C	S239	Bridgetown Complex (BFC)
BLUE PLANET	S240	Fitts Village
DUN WUK	S242	Six Men's
TRY YA LUCK TOO	S243	Mount Stanfast
SPORT 'N UP	S244	Payne's Bay
PSALMS 27	S245	Payne's Bay
MACS	S246	Lower Carlton
JUS AWESOME	S247	Mount Stanfast
ELDIKA	S248	Weston
IGZIBEHER	S249	Bridgetown Complex (BFC)
JUS ME	S252	Payne's Bay
SPARKEY	S254	Weston
TRUST	S257	Lower Carlton
LUBALEE	S260	Shallow Draught / Sand Pitt
SLY FOX	S262	Mount Stanfast
PUMPKIN	S263	Martin's Bay
REVELATION: 14	S264	Pile Bay
CRUISER	S265	Weston
MYA	S266	Lower Carlton
JOSIAH	S267	Pile Bay
JUS AWESOME 11	S268	Mount Stanfast
BOB CAT	S270	Fitts Village
YISRAEL	S271	Bridgetown Complex (BFC)
HUSKY	S272	Weston
BLK BEARD	S273	Holetown
MAN-O-MAN	S274	Weston
SELAH 2	S276	Pile Bay
UP TOWN GIRL	S277	Weston
SALTY DAZE	S278	Holetown
BLUBEL	S279	Holetown
THE AGNES ELEANOR	S280	Payne's Bay
THERE FOR YOU	S281	Payne's Bay
REEF REBEL	S381	Pile Bay
TABIO	UC	Bridgetown Complex (BFC)
KONG	UC	Payne's Bay
MAR I	UC	Oistins
DOMINOE	UC	
8TH PHANTOM	UC	Oistins

Vessel Name	Registration Number	Location
C'EST LA VIE	UC	Oistins
KENEAL	UC	Payne's Bay
K. KAD	UC	Long Bay
JAMILAH	UC	Crane Beach
JAMILAH	UC	Browne's Beach / Bay Street
IRON MAN	UC	Oistins
BROWN BOY	UC	Oistins
ASHSUM	UC	Consett Bay
SHADOW PRINCESS	UC	Browne's Beach / Bay Street
PROYGE	UC	Oistins
AUDREY . MATES	UC	Bridgetown Complex (BFC)
NO FEAR 2	UC	Bridgetown Complex (BFC)
J-MATES	UC	Bridgetown Complex (BFC)
U.O.M.E	UC	Skeete's Bay
KYLE	UC	
TO GOD BE THE GLORY	UC	Oistins
SEA CAT	UC	Shermans
RHTSMA	UC	Consett Bay
SKIPY 2	UC	Brandons
LIQUID ASSETS	X005	Browne's Beach / Bay Street
VASCO	X006	Oistins
MOCK SPORT	X009	Oistins
TABIO	X010	Oistins
THE PHANTOM	X012	Oistins
HOT STUFF	X013	Worthings / Sandy Beach
BELIEVER	X016	Fitts Village
MARANT	X020	Oistins
IN GOD WE TRUST	X021	Oistins
UNITY 2	X022	Silver Sands
SHEKIRA	X025	Oistins
DETERMINED	X026	Oistins
UNITY IS STRENGTH	X030	St. Lawrence
HAWK EYE	X033	St. Lawrence
MALLY	X036	Oistins
LORD SANDY	X041	Oistins
SEA PERL	X047	Oistins
BILLY JAY	X048	Bridgetown Complex (BFC)
REEL-ISTIC	X051	Browne's Beach / Bay Street
BOUNCING RED	X053	Oistins
PACER	X054	Oistins
PEACE RIVER	X057	Oistins
MY TWO BUOYS	X058	Worthings / Sandy Beach
THE PATRICIA	X059	Payne's Bay
ANTHONY	X061	Pile Bay
LUCKY	X062	Oistins

Vessel Name	Registration Number	Location
BAD HABBITS	X063	St. Lawrence
BE BEE	X065	Oistins
XAVIER	X067	Oistins
MAKING A LIVING	X069	Browne's Beach / Bay Street
THREE SISTER II	X070	Oistins
WILL	X071	Oistins
FISH POT	X072	Burke's Beach
MARDRESACH	X080	Shallow Draught / Sand Pitt
COOL'N'EASY	X085	St. Lawrence
SHARKY	X086	Oistins
DE RIPPER	X090	St. Lawrence
LEGACY	X091	Worthings / Sandy Beach
JACK	X103	Worthings / Sandy Beach
GI GI	X107	Oistins
TRUK	X108	Consett Bay
LAKE	X117	Oistins
BLUE BOY	X119	Oistins
JAIME	X122	St. Lawrence
BOGARR	X130	Oistins
TOMORROW	X133	Oistins
DE CHASE	X141	Oistins
FUH REEL	X143	Holetown
BLUE TANG	X144	Oistins
DINGLER	X148	Oistins
TIME SERVED	X151	Oistins
ANNA	X152	Oistins
KETURAH	X153	Oistins
SAMMY DAVE 2	X155	Oistins
ROWELDO	X157	St. Lawrence
JANIRO	X158	Unknow
BRAVE HEART	X159	Oistins
LU LU	X161	St. Lawrence
TZAR 2	X162	Bridgetown Complex (BFC)
A WEAPON 2	X164	Shallow Draught / Sand Pitt
FREEDOM	X165	Bridgetown Complex (BFC)
DOLPHIN	X167	Oistins
FATHER / FATHER	X169	Burke's Beach
BETTY	X172	Oistins
IANTHE	X180	Oistins
EVER GREEN	X181	Oistins
SEA - GAL	X185	Worthings / Sandy Beach
REEL TIME	X188	Pile Bay
A.C	X189	St. Lawrence
DREAM BIG	X190	Brighton Beach
ROLLING DEEP	X193	Oistins

Vessel Name	Registration Number	Location
CHANCES ARE	X197	Oistins
LORENZA	X199	Oistins
VITA	X201	Silver Sands
MISS MUFFET	X203	Bridgetown Complex (BFC)
TEDDY BEAR	X222	Oistins
FAITH	X254	Oistins
ISLAND SURFER	X268	Oistins
NAUTICA	X269	Oistins
MAY	X271	Oistins
MYSTIC WIND	X274	Oistins
WILL II	X275	Oistins
BLACK PEARL	X276	Oistins
LUCKY DIP	X279	Consett Bay
LADY SHARON	X280	Oistins
DARKEY	X281	Oistins
MASTER CRAFT	X285	Oistins
LIL SHAVION	X286	Oistins
GLORIA	X289	Oistins
OWIN	X290	Oistins
BOXER	X291	Burke's Beach
KAJOSH	X299	Oistins
A GO GO	X300	Bridgetown Complex (BFC)
JEHOVAHGUIDE ME	X301	St. Lawrence
GRACIAS	X306	Oistins
PRICKER	X308	Browne's Beach / Bay Street
BLUE JADE	X309	Worthings / Sandy Beach
BILLFISH	X311	Pile Bay
TREMAR	X312	
BLUE DIAMOMD	X313	Oistins
TUMBLEWEED	X315	Oistins
SUNDANCER	X318	Bridgetown Complex (BFC)
FIRST CLASS	X319	Crane Beach
ANDEREA	X321	Oistins
FREEDOM	X322	Oistins
DANCING QUEEN	X323	Bridgetown Complex (BFC)
AZEVI	X324	Oistins
RIPTIDE	X328	Oistins
DE VINDECATOR	X330	Worthings / Sandy Beach
NBA DREAMS	X331	Worthings / Sandy Beach
REEL KNOTTY	X332	Shallow Draught / Sand Pitt
JARTICA	X334	Worthings / Sandy Beach
DIONTE	X336	Oistins
OCEAN SARJ	X337	Oistins
REEF RASCAL	X338	Burke's Beach
BOBBIN	X341	Worthings / Sandy Beach

Vessel Name	Registration Number	Location
ALIYA	X342	Oistins
HANGOVER II	X347	Worthings / Sandy Beach
ROLLING DEEPER	X349	Oistins
LIL NICK	X350	Oistins
SHAMEISHA	X353	Browne's Beach / Bay Street
GIVING THANKS	X354	Oistins
2 TIGHT	X358	Bridgetown Complex (BFC)
VITAMIN SEA	X363	Worthings / Sandy Beach
SANTA RITA	X368	Barbados Yacht Club
SPOT ON	X369	Oistins
De ACTION	X372	Silver Sands
BLESS	X373	Bridgetown Complex (BFC)
UNITY	X375	Oistins
SUN FISH III	X378	Bridgetown Complex (BFC)
SEA SQUIRT (CARIBE)	X379	Carlisle Bay
D DREAM	X382	Oistins
EMMA	X388	Oistins
DEMARCO	X389	Oistins
SFC BONE	X391	Oistins
ABBIE	X392	Worthings / Sandy Beach
TEF NUT	X395	Payne's Bay
PRETTY GIRL II	X396	St. Lawrence
CAIRO	X397	Oistins
BUBBLES	X398	St. Lawrence
BALLBOUY	X409	Oistins
THE BOY 11	X410	Oistins
DE WOLF	X412	Oistins
SHINES	X413	Oistins
SUZANNE	X414	Oistins
PSALMS 121	X417	Oistins
CHELSIANN	X419	Oistins
YELLOW BIRD	X420	Shallow Draught / Sand Pitt
RELENTLESS	X421	Worthings / Sandy Beach
ALLAH-JAA	X425	Pile Bay
AMOR	X427	Browne's Beach / Bay Street
WET SPOT	X428	St. Lawrence
BUMBAS TRIBUTE #2	X431	Oistins
FLASH	X433	Oistins
BAZINGA	X434	Burke's Beach
TUMAKA	X437	
ROBIN	X438	St. Lawrence
SHAKORAY	X440	Oistins
SURVIVAL	X441	Pile Bay
KATANA	X442	Oistins
SHEKIRA 111	X443	Oistins

Vessel Name	Registration Number	Location
SSS	X444	Oistins
THANK U LORD	X447	Oistins
MY TWO GIRLS II	X449	Oistins
BLUE LAGOON	X450	Oistins
JUN DOU	X451	Oistins
RISEING SUN	X452	Oistins
EVERYTHING NICE	X453	Oistins
PRAISES 1	X454	Oistins
SAMBA	X455	Oistins
MANFRED	X458	Oistins
FISH ON	X459	Worthings / Sandy Beach
SAIL AWAY	X460	Oistins

8.7.8 Discussion and Special Considerations

Harmonization of regional fishery data for the purpose of resource assessment and management planning would greatly benefit from harmonized vessel registration systems within the region. Use of local terminology as a classification may be useful for local decision-making and facilitate compliance with registration requirements, but it can complicate general assessment of effort and capacity across the region.

Efforts should be made amongst member states to harmonize data structures within the vessel registry so that data aggregation and cross comparisons can be meaningful. As a result, it is recommended that useful indicators of the fleet capacity be easily extracted from the national registries, and should include:

- Vessel identifier number (identifying country and unique number)
- Length
- Beam
- Engine horsepower
- Ice hold capacity
- Fish hold capacity
- Hull material
- Date of construction
- Port of Operation

This will enable easy segregation of the fleet into various effort classes.

The vessel registry should be updated annually, flagging vessels that have not been reregistered. Vessels that have not been reregistered after one year should be removed from the registry. Penalties should be aggressively imposed on the use of unregistered vessels involved with fishing.

Information on the use of vessels may be difficult to be effectively included in the vessel registry, and could make the registry cumbersome, and easily outdated. This information may be more effectively obtained through periodic census surveys to determine if there is a shift in the use of differing size classes of vessels within the flyingfish and other fish fisheries. Censuses should be conducted every five to ten years.

Since Member States have a requirement for fishing vessels to be registered efforts should be made to harmonizes the registration regulations. This will facilitate cross boundary enforcement on vessels that may be fishing without registering. As noted previously some larger pleasure craft are assumed to be used for recreational fishing and fishing for personal consumption. These vessels should be included in the vessel register or be subject to the same penalties as fishers using unregistered vessels.

9. FISHERY ASSESSMENT REPORT OF THE EASTERN CARIBBEAN STOCK OF FOUR-WING FLYINGFISH – 2018

9.1 ABSTRACT

Recent flyingfish landings in the Eastern Caribbean include some of the lowest on record. Beverton-Holt and Ricker stock-recruitment models are used to assess population dynamics over the 1950-2016 period. Production modelling procedures developed by Martell and Froese (2012) are used to further examine population dynamics and estimate key indicators for consideration as fishery reference points. The analysis indicates the stock biomass has declined over the period, maximum sustainable yield (2,744 mt) is lower than previously assessed, and the overfishing limit should be low (600 mt) until there is evidence of a return to higher biomass levels. Sources of uncertainty are discussed and initiatives are encouraged to address data gaps and support more reliable assessments, especially if the flyingfish stock is under increased pressure.

Introduction

The CRFM 2014 "Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean" is the latest source for comprehensive information on flyingfish and it refers to previous assessments completed in 2008 (FAO), and 2011 (CRFM). Key fishery and biological information from the 2014 CRFM management plan is summarized here for context to the analysis.

This report represents an update of previous stock assessment work, in particular the Fisheries and Resources Monitoring System (FIRMS) Report on Status of Stocks and Resources 2008 for four-wing flyingfish – Eastern Caribbean. This Report does not present an inventory of Flyingfish in the Eastern Caribbean due, in part, to the lack of available historic data, and insufficient resources to collect up-to-date data. This FIRMS report is based on the Food and Agriculture Organisation (FAO) Western Central Atlantic Fishery Commission (WECAFC) Report of the Third Meeting of the WECAFC Ad Hoc Flyingfish Working Group of the Eastern Caribbean. Mount Irvine, Tobago, 21–25 July 2008.

The methodology for assessment is the same as in 2008 since challenges with modelling the flyingfish stock still persist for two principal reasons: the key factors driving this highly variable annual species are still elusive, and the need to gather regular, reliable and consistent fisheries data remains. With advances on these fronts there is an opportunity to build on previous research that examines: ecosystem-based modelling of predator-prey dynamics (Mohammed *et al*., 2008), flyingfish correlation with environmental variables (Boyce *et al*., 2007), and bio-economic models (CRFM, 2011) recognizing that flyingfish are part of a multi-target fishery. Statistical tools for fisheries analytics continue to advance rapidly and would be highly informative for future flyingfish management decisions.

9.2 THE FISHERY

9.2.1 Geographic Distribution

The four-wing flyingfish (*Hirundichthys affinis*) in the Eastern Caribbean is considered one of three genetically distinct sub-regional stock units along with a southern Netherlands Antilles unit and northeast Brazil unit. There is extensive movement of adult flyingfish within the Eastern Caribbean and beyond the EEZs of the CRFM Member States included in this assessment, specifically: Trinidad and Tobago, Grenada, St Vincent and the Grenadines, St Lucia, Martinique, Dominica, and Barbados. The following map (Figure 9.1), modified from the CRFM Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean (2014), show the EEZs of the countries that are part of this assessment.

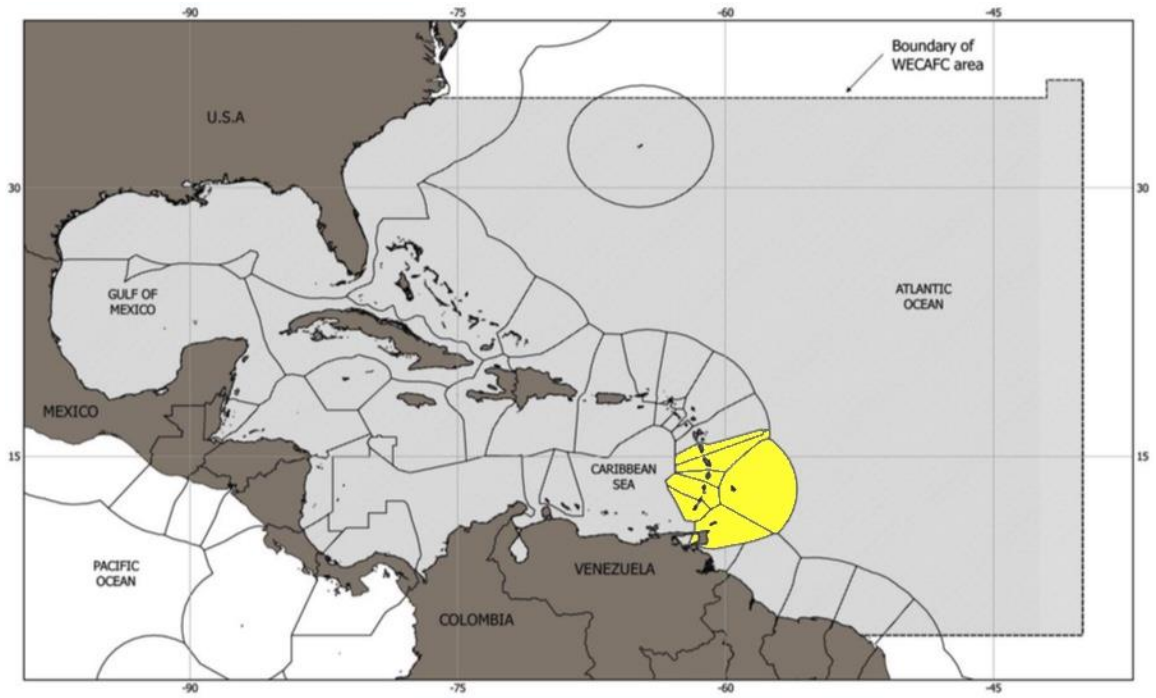


Figure 9.1: Eastern Caribbean Exclusive Economic Zones (EEZs in yellow) for countries in this assessment including: Trinidad and Tobago, Grenada, St Vincent and the Grenadines, St Lucia, Martinique, Dominica, and Barbados. The Western Central Atlantic Fishery Commission (WECAFC) area is shown in grey.

H. affinis is distributed in patchy patterns across all parts of the Eastern Caribbean Sea, and is considered likely to exist in commercially viable quantities beyond the current range of the fishing fleet (CRFM, 2014).

9.2.2 Historical Overview of the Flyingfish Fishery

The following historical information is drawn from Biology and Management of Eastern Caribbean Flyingfish (Oxenford *et al*., 2007), the FAO 2002 report by the Western Central Atlantic Fishery Commission, and Developments in the Flyingfish fisheries in Barbados (Parker, 2002).

There is little historical information on the fishery prior to the establishment of the Barbados Fisheries Division in 1944. In the fifteen years that followed, government loans to build and repair boats helped to expand and improve the efficiency of fishing effort.

The 1950s mark the beginning of the modern fishery when small open sailboats were being replaced by small motorized boats known as “day boats” (a.k.a. “launches”). This changed four key aspects of the fishery:

1. the range of vessels increased from 4-5 miles offshore to at least 12 miles,
2. the time spent fishing increased for each trip,
3. the quantity of fish each boat could carry increased, and
4. it was possible to reduce crew sizes from 3 to 2.

As a result, the overall efficiency of boats increased by 2-2.5 times.

In the late 1970s “ice boats” were introduced with more powerful engines to extend their range and undertake multi-day trips with ice holds (4-12mt capacity) for preserving the catch. A profile of the fishery in each country is briefly outlined below.

Barbados – About 275 motorized launches and 75 larger ice-boats are involved in the flyingfish fishery. Historical peak landings were above 4,000 mt and are primarily caught between 8 and 46 km from shore, although ice boats may go as far as 300 km. There are three primary landing sites, eight secondary sites, and about sixteen tertiary sites around the country. Between 1,500 and 2,000 full-time and another 200 part-time fishers have been engaged in the fishery over peak periods (Oxenford *et al*., 2007).

Dominica – Over 300 boats or about 40% of the fishing fleet actively target flyingfish. These boats vary including open wooden keel boats, canoes, and pirogues. It represents the most significant fishery according to volume. Fish are landed at 12 of the country's 42 landing sites. Historical landings have been up to 150 – 200 mt per year and are mainly caught 5 – 24 km from shore (Oxenford *et al*., 2007).

Grenada – Small 6-8.5m sailboats were initially used, then larger boats with inboard and outboard engines were adopted in the early 1960s. Flyingfish are caught primarily as bait for large pelagic fisheries off the west coast of the island. There are five main landings sites, but there are only small landings since bait catches are not recorded.

Landings have declined steadily since the late 1970s due to the switch in effort to large ocean pelagics. The peak landings were nearly 800 mt in the late 1970s (Oxenford *et al*., 2007).

Martinique – Small boats with outboard engines target flyingfish on day-trips primarily to the west of the island. There are three primary landing sites and numerous other basic landing sites around the island. Historical peak catch is estimated at over 300 mt per year, but most years the catch is about 100 mt or less (Oxenford *et. al*., 2007).

Saint Lucia – There have been about 400 boats including canoes, pirogues, and wooden transom boats with outboard motors. Flyingfish are mostly caught 18 to 24 km offshore on the northwest and southwest sides of the island. There are about 16 landings sites and about one-third of boats use three main sites. Historical peak landings were over 300 mt in 2001, and most years are 50 to 250 mt (Oxenford *et al*., 2007).

St Vincent and the Grenadines – "Logwood" and "bow and stern" boats are used in the flyingfish fishery in waters very close to shore (2-5 km). There are few historical records of landings and only a small number of fishers depend on flying fish for most of their income. Flyingfish are usually caught opportunistically on fishing trips for other pelagics, or at times when other pelagics are not available (Oxenford *et al*., 2007).

Trinidad and Tobago – About 75 outboard engine powered pirogues are involved in the flyingfish fishery. These boats travel about 8 to 12 km off the northwest shore of Tobago and land their catch at three main sites. Over 300 mt was caught in some years during the 1980, but in recent years 20 to 50 mt is common. The fishery represents an important portion of the overall fishery (up to 83% on the northeast coast of the island) and employs up to 125 fishermen (Oxenford *et al*., 2007).

In the early 1950s the use of gillnets was introduced and by the 1952-53 season these were adopted by the entire Barbados fleet and many boats in other countries as a replacement for traditional handlines and dipnets (i.e. "brailling"). The size of nets grew over time to range between 6m and 24m long by 2m to 4m deep by the 1980s. The smaller nets were carried on dayboats and the larger nets were carried on iceboats (Oxenford *et al*., 2007).

The Fisheries Division in Barbados also developed the fishery by investing in landing sites. Three main sites were developed at Bridgetown, Oistins and Speightstown, along with a network of secondary landing sites with basic shelters, and tertiary sites with little or no infrastructure. An important parallel

development was the investment in ice-making facilities near the main landing sites, therefore iceboats tend to land their catch at these locations. Fish processing companies also grew over the years and became a reliable source for local consumers.

9.2.3 Management

The CRFM 2014 Sub-Regional Fisheries Management Plan (FMP) for Flyingfish in the Eastern Caribbean articulated three broad objectives for the management of this fishery:

1) Sustaining the biological fishery resource,
2) Optimizing the fishery for long-term socio-economic benefits, and
3) Sustaining ecosystem health.

To support these goals, the FMP aims to establish and strengthen:

- multi-species management objectives.
- national landings and Catch per Unit of Effort (CPUE) data,
- coordinated information databases with annual input requirements,
- fishery reference points,
- legislation and enforcement,
- a flyingfish licensing system,
- safety,
- invasive species management,
- stakeholder engagement,
- fair access to the fishery,
- reduced conflicts amongst resource users,
- optimal employment, income, and return on investment,
- flyingfish affordability and consumption,
- product quality,
- optimal export value,
- water quality, and
- pollution control.
- Landings

In order to maintain previous decisions regarding the use of landings data for stock assessment, the timeseries used previously (Medley *et al*., 2010) is the starting point for this analysis. The previous series from 1955 to 2007 includes landings for Barbados, Trinidad and Tobago, Saint Lucia, Grenada, St Vincent and the Grenadines, Dominica, and Martinique. It is important to note that this analysis preserves the revision for the unusually high 1988 catch of about 6,000 mt reported in the FAO data (revised to 4,700 mt for this analysis).

Landings data from 1950 to 2016 are available from Food and Agriculture Organization of the United Nations (FAO, 2018) through the FishStatJ software. Only Barbados, Grenada, Saint Lucia, and Martinique have reported landings in FishStatJ so it does reflect all of the countries in scope.

The FishStatJ are used to extend the Medley data using a linear model of the data for years where both datasets overlap. The FAO data before 1955 and after 2007 is used to predict the Medley values for those years. Figure 9.2 illustrates the two time series, and where the Medley time series is estimated before 1955 and after 2007 (dashed lines).

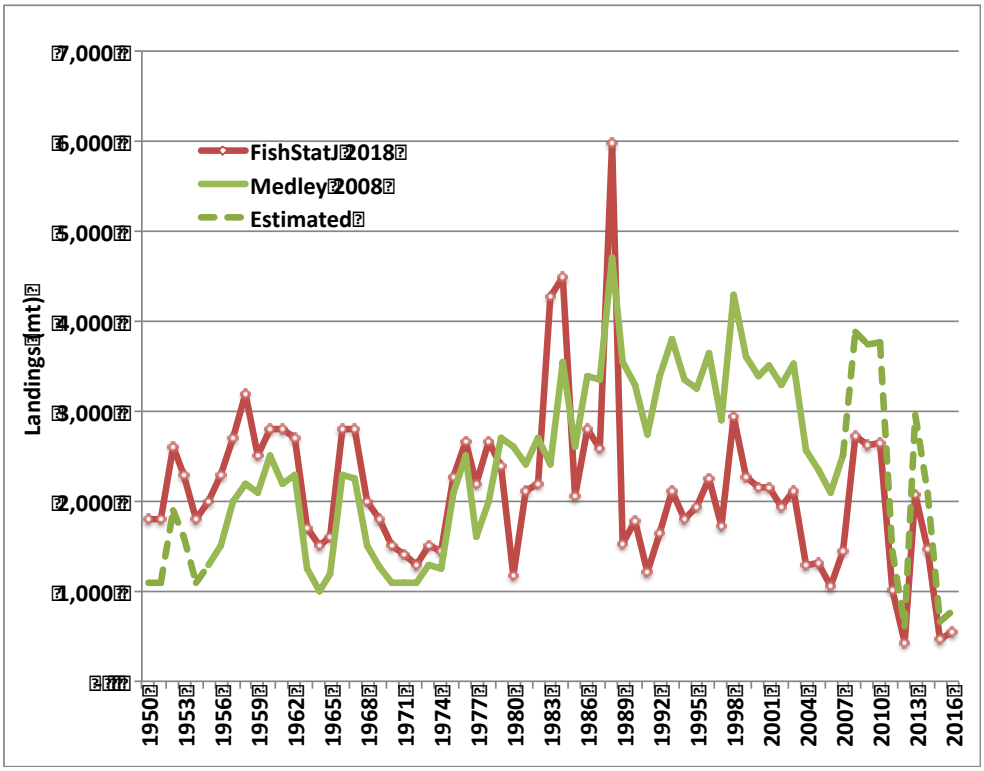


Figure 9.2: A linear model of the relationship between the FishStatJ (red) and Medley (green) flyingfish landings series is used to extend the Medley series for years before 1955 and after 2007 (dashed green).

The flyingfish landings should interpreted as part of a multi-target fishery. Rapid development of other pelagic fisheries since the mid-1980s, particularly tuna species, has shifted some of the focus away from flyingfish as a species for consumption in favour of using flyingfish as bait (CRFM, 2014). To illustrate the rising importance of other target species, the combined FAO reported landings in the Eastern Caribbean countries of Barbados, Grenada, Martinique, Saint Lucia, Dominica, and Saint Vincent and the Grenadines are shown for tuna species (including Albacore, Bigeye, Blackfin, Bullet, Frigate, Skipjack, Wahoo, Yellowfin, and other n.e.s.), are shown alongside common dolphinfish and flyingfish landings below (Figure 9.3).

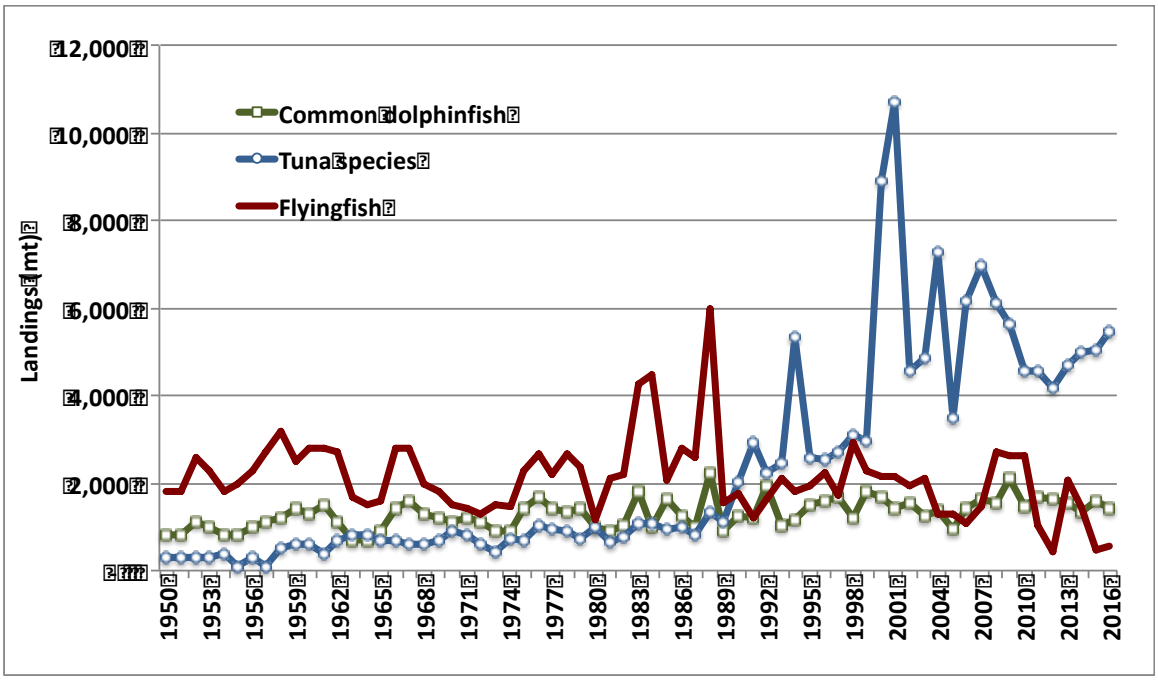


Figure 9.3: Landings (mt) of flyingfish, common dolphinfish, and tuna species (incl. Albacore, Bigeye, Blackfin, Bullet, Frigate, Skipjack, Wahoo, Yellowfin, and other n.e.s.) in Barbados, Grenada, Martinique, Saint Lucia, Dominica, and Saint Vincent and the Grenadines (FishStatJ, 1950 - 2016).

Flyingfish landings increased in the early eighties, then the tuna fishery developed rapidly starting in the mid-1980s, while dolphinfish landings remained relatively steady. Fisheries monitoring and record-keeping could be a factor in some changes over this period, and sargassum levels have influenced landings of flyingfish in the latter years. Other sources of uncertainty in the data are discussed below and have bearing on the reliability and interpretation of landings data.

Effort

Medley *et al*. (2010) derived a standardized CPUE index for Barbados, Saint Lucia and Tobago for the period 1988 to 2008. One unit of effort represents a Barbados day boat trip in January. Barbados is the largest participant in the fishery in terms of effort and landings, CPUE for other countries is considered similar, and the flyingfish stock is considered one unit in the eastern Caribbean so the Barbados CPUE series is an index for the eastern Caribbean fishery. Refer to the source (Medley *et al*., 2010) for an explanation of the derivation and decision to adopt the index.

For this analysis the CPUE time-series (Figure 9.4) is extended to the same period as the landings data (1955-2016). A linear model for the relationship between flyingfish landings (FishStatJ as presented above) and the CPUE index during years with data for both variables is used to estimate CPUE values for years before 1988 and after 2008. This assumes that CPUE did not change from the period with the index to the years without the index. It is recognized that potential sargassum effects on the fishery are not accounted for, and that CPUE climbed in the early period as boats became motorized and capacity increased. No data or research were available to assess these or other factors.

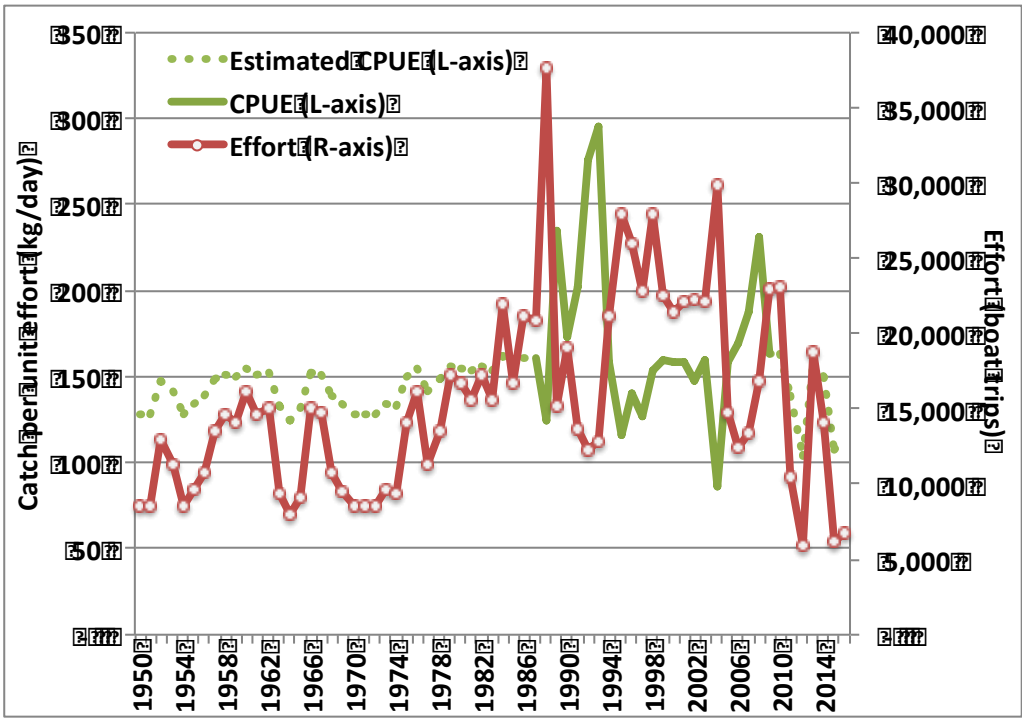


Figure 9.4: The catch per unit effort (CPUE) index from 1988 to 2008 (Medley et al., 2010) is estimated for prior years 1955 to 1988, and after 2008 based on the linear relationship between the index and flyingfish landings (FishStatJ) assuming that this relationship is consistent over the time period (1955 – 2016).

The landings and CPUE time-series are constructed for the full 1955 to 2016 period in order to explore modelling options that include different subsets of the data (below).
Biology and Ecology

The information in this section is drawn from the 2014 Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean, and from the Biology and Management of Eastern Caribbean Flyingfish (Oxenford *et al*., 2007). The following focuses on the key aspects that are important for the approach and interpretation of the stock assessment.

9.2.4 Growth and Maturity

H. affinis is a short-lived species with a maximum age of approximately 18 months and is therefore considered an essentially annual species (Campana *et al*. 1993). *H. affinis*, grows quickly to around 19 cm fork length (FL) in the first six months, then more slowly to about 22cm by one year and to a maximum of 24cm at 18 months (Oxenford *et al*. 1994). Once the fishery begins in December females caught are consistently larger averaging 21.5cm to 22cm in length compared to males averaging 21cm to 21.5cm. Flyingfish reaches maturity at about 18cm fork length so the majority are mature for the fishing season. Females lay eggs in several batches over the season from November to July, with about 7,000 eggs in each batch. Flyingfish exhibit two peaks of spawning activity including a smaller peak from November to January and a larger one in April and May (Hunte *et al.*, 2007). This suggests overfishing risks are not related to growth overfishing, where fish are caught before they can grow to their full size and there are concerns of genetic pressure selecting for smaller fish. The prime risk is recruitment overfishing, where fishing during spawning stages may reduce the number eggs supporting the next generation.

9.2.5 Recruitment

Flyingfish eggs are not buoyant and are deposited on floating materials such as natural flotsam, FADs, and gillnets. There have been concerns associated with all three of these since natural flotsam varies greatly

from season to season, while FADs and gillnets may inadvertently remove eggs if they are brought back to shore after fishing trips. However, there are large annual fluctuations in flyingfish abundance of +/- 60%, and this is believed to be strongly influenced by the physical environment, predation, and food supply (Mahon, 1989). The concern is that fishing potentially removes a large quantity in a year with low abundance and this may critically affect recruitment to the following year's stock. Early stock recruitment analysis by Mahon (1989) addressed this question with simulations using catch and effort data from Barbados. Using these data was considered acceptable on the basis of flyingfish being essentially an annual species, and the Barbados data is considered representative of the Eastern Caribbean stock as a whole. The analysis suggested that flyingfish fishery exploitation rates above 60% could lead to near zero or zero average catches over the long term, and the variability in catch increases with the exploitation rate, while average CPUE declines with increasing exploitation rates (to CPUE of zero after 60% exploitation).

9.2.6 Mortality

The average lifespan for flyingfish is about 1 year, with a maximum of 18 months (CRFM, 2014). The latest estimates of instantaneous mortality (M) from Oxenford *et al*., (2007) are between 1.8 and 3.1 suggesting about 94% to 99% of fish die naturally within 12 months.

9.2.7 Carrying Capacity

Carrying capacity (k) estimates from the 2011 bioeconomic assessment (CRFM, 2011) indicated 44,302 mt with an average fluctuation of 4,276 tonnes. This estimate is derived from modelling based on fishery characteristics including maximum standardized catch per unit effort, maximum daily catchability, historical year to year variation in landings, and confirmation that carrying capacity is not constant for this fishery. For further explanation refer to the source (CRFM, 2011).

Given the short lifespan of flyingfish, research has been directed to the factors affecting spawning success (Oxenford *et al*, 2007). The aim of this research has been to better understand what influences year to year variability in abundance and what factors limit stock size. The findings indicate there is clear flyingfish preference for spawning on surface substrata, although spawning can take place down to 20m depths. The amount of substrata in the Eastern Caribbean, particularly sargassum, can vary according to flows from source rivers and prevailing ocean currents, and the depth of substrata may vary according to ocean salinity levels. The abundance of predators and the relative availability of other predator food sources can affect spawning success. Key predators include bigeye tuna, dolphinfishes, billfishes, blackfin tuna as well as squids (CRFM, 2014). The carrying-capacity over time will likely be the product of multiple factors that are not yet fully understood.

9.2.8 Analysis

There are two parts to the analysis, the first is an update of stock recruitment modelling from previous assessments, and the second is a current assessment of reference points for the fishery. The stock recruitment modelling is updated by using the full time series of data available as well as subsets of the time series reflecting the period where data are more reliable (1988-2008), and the period where the fishery shifted towards targeting larger pelagic fish (1985-2016). There are uncertainties associated with the data used, the effects of environmental factors on the fishery (e.g. sargassum), and changes in fishery monitoring and reporting, so it is critical to review the sources of uncertainty section that follows this section.

9.3 STOCK- RECRUITMENT MODELS

Beverton-Holt and Ricker models are used to examine stock recruitment data, which is the CPUE time-series for abundance and the same time series offset by one year for recruits. This is considered acceptable given the essentially annual life cycle of *H. affinis*.

The Beverton-Holt model is expressed as:

$$R = \frac{aS}{1 + bS}$$

where:
R is the number of recruits,
S is the spawning stock,
a is the number of eggs surviving to recruitment (i.e. the product of fecundity and the probability of survival from an egg to the time of recruitment), and
b is the proportion of density-dependence (i.e. proportional to both fecundity and density-dependent mortality, and b is zero when there is no density-dependence or b is 1 when there is full density-dependence).

The Ricker model is expressed as:

$$R = aSe^{-a*S/(R_p e)}$$

where:
R is the number of recruits,
S is the spawning stock,
a is the number of eggs surviving to recruitment (i.e. the product of fecundity and the probability of survival from an egg to the time of recruitment), and
R_p is the peak recruitment = a/b*e*, where b is the proportion of density dependence as shown for the Beverton-Holt model. Peak recruitment occurs at a spawning stock biomass of 1/b.

Both models incorporate density-dependence, although this is one of the parameters solved for in the analysis. Akaike's information criterion (AIC) is calculated for each model to determine the favourability between comparable models (i.e. those with the same time series) and results are shown in Table 9.1.

Table 9.1. Beverton-Holt and Ricker stock-recruitment density-dependent models for three time periods

Period	Model	a (p-value)	b (p-value)	AIC*
1951-2016	Beverton-Holt	2.146(0.0002)	0.008(0.0381)	-36.24
	Ricker	1.564(<0.0001)	<0.001(<0.0001)	-34.43
1988-2008	Beverton-Holt	2.921(0.1450)	0.011(0.3360)	9.86
	Ricker	1.780(0.0003)	<0.001 (<0.0001)	10.63
1985-2016	Beverton-Holt	2.598(0.0411)	0.010(0.1975)	6.07
	Ricker	1.680(<0.0001)	<0.001 (<0.0001)	7.23

*Akaike's information criterion (AIC) is only comparable between the two models in each period, and lower values indicate a better fit. Parameter "a" is the number of eggs surviving to recruitment, and "b" is the proportion of density-dependence (0=none, 1=full).

The following observations from the table are subject to the analysis of bias in parameter estimates later.

Time periods – The full dataset from 1951 to 2016 produced significant values for parameters a and b in both models. The other two time periods did not produce significant values for all a and b parameters in the Beverton-Holt model.

Model selection – Ricker models produced significant values for a and b parameters for all three time periods, while Beverton Holt models did not for the shorter time periods (i.e. not less than p=0.01). Beverton-Holt performed better according to the lower AIC results for each time period.

Parameter a – values over 2 indicate replacement level recruitment and the Beverton-Holt models has one significant value 2.146 (replacement level), while the Ricker models have significant values from 1.564 to 1.780 (not replacement levels).

Parameter b – values of zero represent no density-dependence and values of 1 represent full density-dependence. The significant values for Ricker models were very low indicating weak density-dependence.

The following six plots (Figure 9.5) correspond to the models presented in Table 9.1, where recruits (y-axis) are plotted versus stocks (x-axis), keeping in mind these are based on a CPUE index (units are kg per day). The blue line in each plot indicates replacement levels where stocks produce equivalent recruits, and the red line represents the density-dependent relationship according to each model. The number of points is the same in each row of plots (Beverton-Holt and Ricker for a given time period).

Some data points to the right side of each plot (x-axis CPUE representing stock in one year) produce low recruits (y-axis CPUE representing recruits for the next year). Although there are some points where the opposite is true (low stocks produced high recruits), the red line flattening/levelling as it moves to the right means the model is shaped by years where stocks have not produced enough recruits to replace themselves.

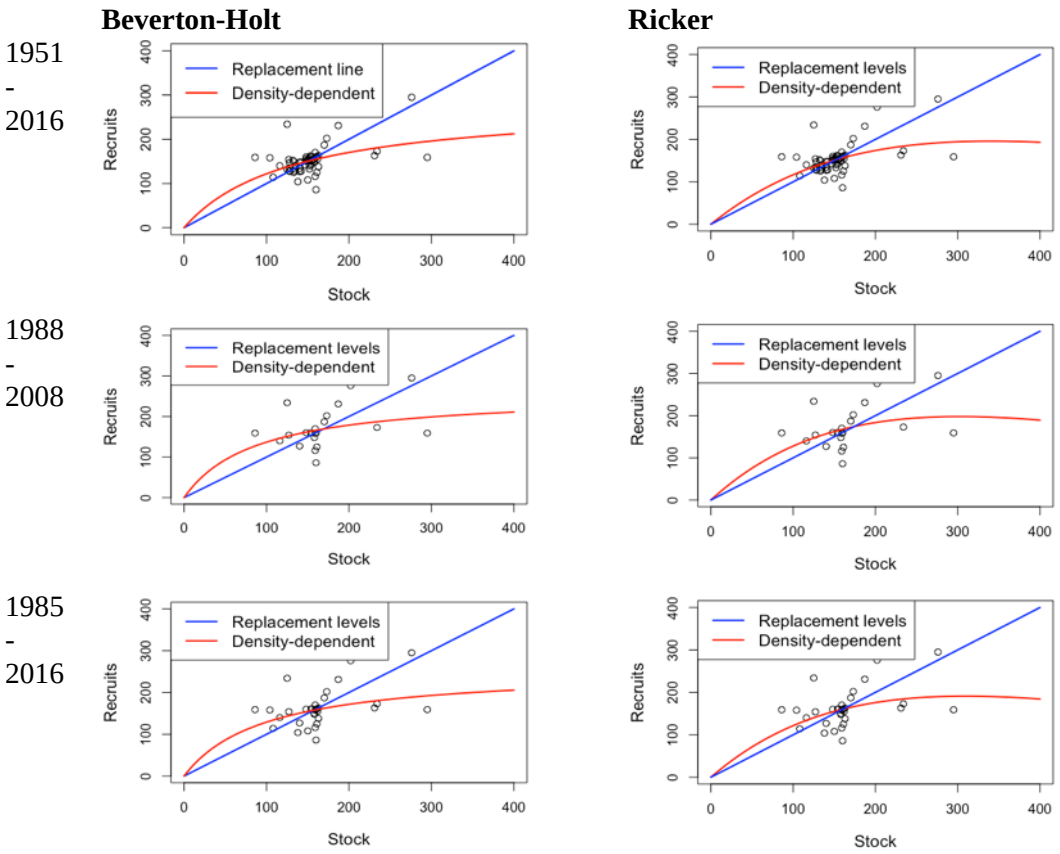


Figure 9.5. Plots of stock-recruitment curves (density-dependent red lines, and density-independent blue lines) using Beverton-Holt and Ricker models for three time periods: 1) 1951-2016 full timeseries, 2) 1988-2008 period of actual CPUE, and 3) 1985-2016 period of large pelagic fishery expansion. Stocks (x-axis) are the CPUE values in one year (kg per day), and recruits (y-axis) are the CPUE values for the next year.

Before concluding which model is best, the reliability of the parameter estimates is examined in the next set of plots (Figure 9.6). The six models discussed in Table 9.1 and Figure 9.5 are each evaluated according to two parameters (a and b for Beverton-Holt, and a and Rp for Ricker). Each parameter is assessed by sampling a portion of the data (bootstrapping) and producing new model estimates for each parameter. When this is repeated for hundreds of iterations, a distribution of estimates for each parameter is obtained. The number of times a parameter estimate is obtained is represented by the histogram bars in each plot. There should be a normal "bell-curve" appearance to the plots, and plots that are skewed to the right or left indicate bias in the estimates of these parameters.

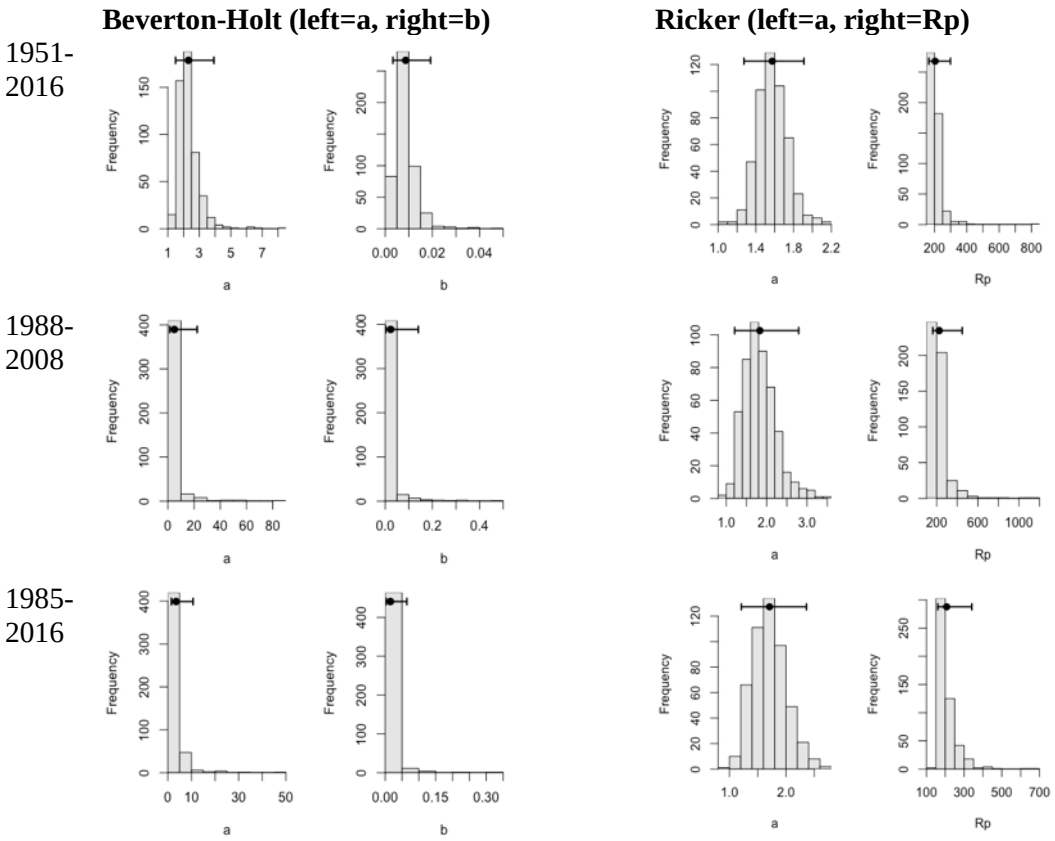


Figure 9.6: Histogram plots of bootstrapped estimates of parameters a and b from Beverton-Holt models, and parameters a and Rp from Ricker models for three time periods: 1) 1951-2016 full timeseries, 2) 1988-2008 period of actual CPUE, and 3) 1985-2016 period of large pelagic fishery expansion. The parameter values are shown on each x-axis and frequencies are shown on the y-axis. The horizontal bars extending from the black point indicate 95% confidence intervals about the mean.

The Beverton-Holt histograms for both parameters and all time periods appear to be skewed to the right (tail of distributions stretch out to the right), although the full dataset (top) appears to be the best. The Ricker model estimates for parameter a in all time periods have relatively balanced right and left tail distributions. The Ricker model estimates for Rp in all time periods are skewed to the right. Keep in mind Rp is the peak recruitment level and is related to whether or not there is density dependence (i.e. parameter b).

Overall, there is convincing evidence that density-dependence is very low to negligible. The Beverton-Holt model using the full time series could indicate parameter 'a' estimates are just over replacement levels (2.146 eggs surviving to recruitment), but there is evidence of bias in the estimate. The Ricker models appear to have reliable estimates of parameter a, and the means obtained from the models for all three time periods are below replacement levels (from 1.574 to 1.780 eggs surviving to recruitment).

9.4 PRODUCTION MODELING

Martell and Froese (2012) developed a simple model for data-limited fisheries analysis that builds on the Schaefer model (1954) and takes the following form:

Model form:

$$B_{(t+1)} = B_t + r * B_t * \frac{1 - B_t}{k} - catch_t$$

where:

B = Biomass
T = time
r = intrinsic growth rate
k = carrying capacity

The model is implemented in R using the "fishmethods" package and the "catchmsy" function. Modelling only requires: a time series of catch, prior ranges of "r" and "k", ranges for "M" (mortality), and estimates of relative stock sizes in the first and final years of the time series (relative to "k"). Table 9.2 shows the values in the model specified for this analysis, with uniform distributions for "k", "r", and "M", and no process error included for the base model.

Table 9.2: Production model inputs (catch msy in R)

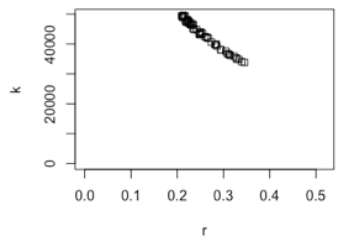
Parameter	Description	Low	High	Source
lo	starting biomass relative to k	0.70	0.90	FMP, 2014
lt	depletion level for a low year	0.10	0.30	Estimated for 2016*
k	carrying capacity (mt)	30,000	50,000	FMP, 2014
r	intrinsic growth rate	0.20	0.35	FMP, 2014
M	natural mortality	1.0	4.0	FMP, 2014

Source: FMP, 2014 refers to the flyingfish fishery management plan of that year.
**The landings in 2016 are about 7% of the unrevised landings in 1988 and are 16% of the revised landings so the range of 10% to 30% for depletion level is used in the analysis.*

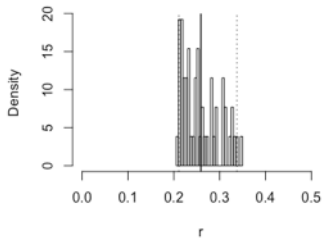
The analysis uses the above values as starting points and produces estimates of each parameter in the table as well as the following indicators:
MSY=r*k/4, the maximum sustainable yield
Bmsy=k/2, the biomass at maximum sustainable yield
Fmsy=r/2, the fishery mortality at maximum sustainable yield
Umsy=(Fmsy/(Fmsy+M))*(1-exp(-Fmsy-M)), is the exploitation rate at MSY
OFL=B[last year +1]*Umsy, the overfishing limit for the year following the time-series

This method uses the Schaefer production model to calculate annual biomass with randomly selected r and k values from the range supplied to the function. This is repeated for 2000 iterations and biomass calculations that either exceed the carrying capacity or lead to stock collapse are rejected and remaining results are accepted. The parameter estimates produced by the function are the geometric mean of "accepted" values. Histograms of model parameter estimates are shown in Figure 9.7.

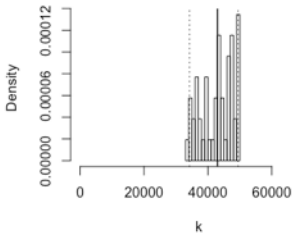
1. k (y-axis) vs. r (x-axis)



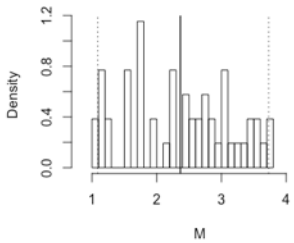
2. r histogram



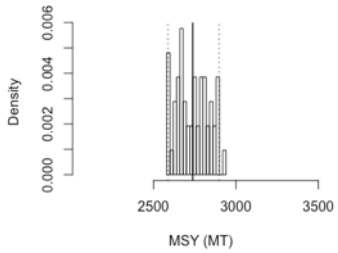
3. k histogram



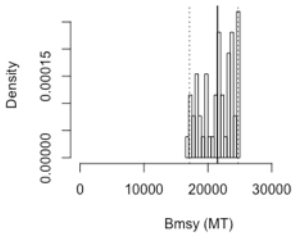
4. M histogram



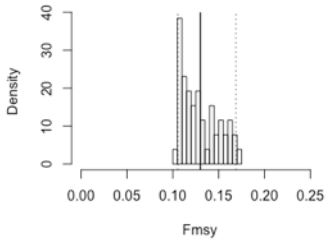
5. MSY histogram



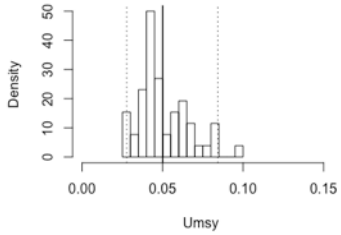
6. Bmsy histogram



7. Fmsy histogram



8. Umsy histogram



9. OFL histogram

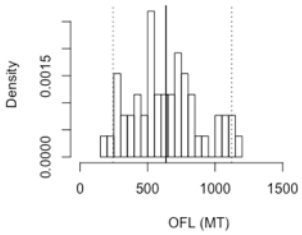
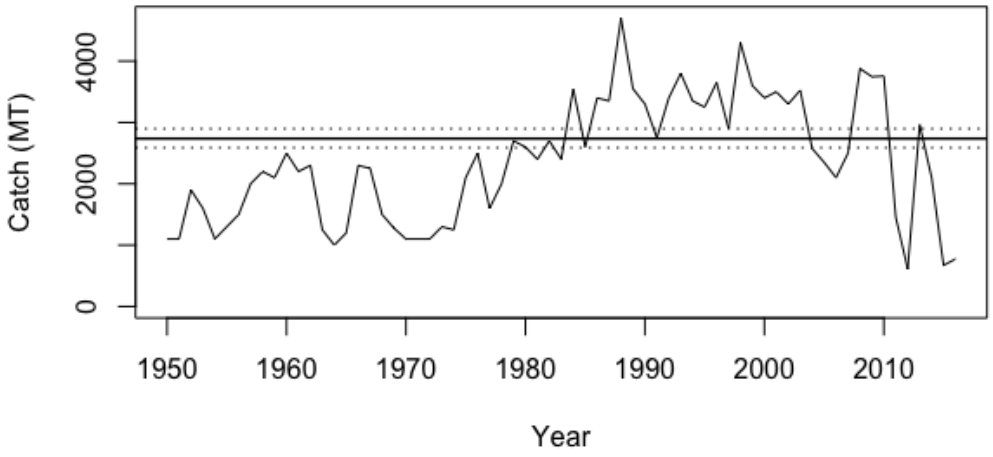


Figure 9.7: Histogram plots of production modelling parameter estimates: 1 = plot of plausible k versus r values, 2 = plausible r values, 3 = plausible k values, 4 = M values, 5 = MSY from plausible values of I0,k,r, and Bmsy/k, 6 = Bmsy from plausible values of I0,k,r, and Bmsy/k, 7 = Fmsy from plausible values of I0,k,r, and Bmsy/k, 8 = Umsy values from Fmsy and M, 9 = overfishing limit (OFL) in 2017. Dark vertical lines in plots 2 to 9 indicate mean values.

The plots in Figure 9.8 show the range of values simulated in the modelling for average catch and estimated biomass. The biomass plot suggests a potential steep decline in biomass from about 35,000 mt from 1950 to 1980 then a decline to about 15,000 by 2010.

Observed catch over time, 1950-2016



Accepted and rejected biomass trajectory estimates (1950-2016).

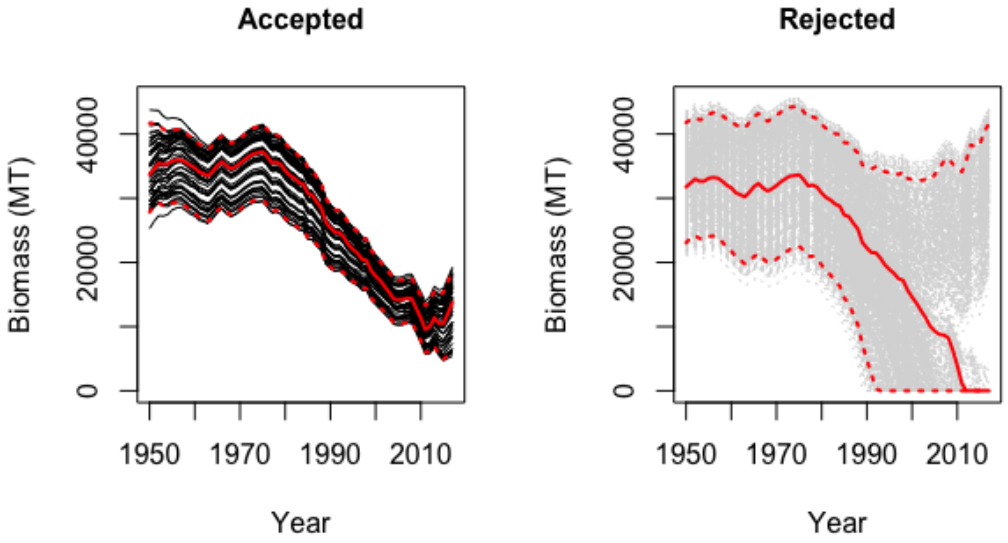


Figure 9.8: Production model average catch and biomass estimates over time, with 95% confidence intervals (dotted lines), 1950-2016. Accepted trajectories do not exceed the carrying capacity or lead to stock collapse. Rejected trajectories exceed carrying capacity or lead to zero biomass during the simulation.

9.5 STOCK STATUS INDICATORS

The stock-recruitment modelling suggests lower than replacement level reproduction over the period, and the production model indicates a biomass reduction since the early 1980s. The production model also provides stock status indicators for consideration in the establishment of fishery reference points (Table 9.3). The average MSY over the period is estimated at 2,744, which was exceeded in a number of years starting in 1984. The overfishing limit (OFL) for 2017 was estimated at just 590 mt, which is just below the 2016 catch of 774 mt.

Table 9.3. Stock status indicators from production model (1950 – 2016)

Indicator	Mean	Median	2.5%	97.5%
MSY	2,744	2,742	2,603	2,879
BMSY	21,313	21,066	17,162	24,879
FMSY	0.131	0.131	0.106	0.167
Umsy	0.047	0.047	0.027	0.077
OFL	590	552	192	1,113

The methods were applied to the other time periods used in the Beverton-Holt and Ricker model analysis (1988-2008 and 1985-2016). The 1988-2008 time-series yields a lower MSY (2,625 mt) and a higher OFL for 2017 (672 mt). The 1985-2016 time-series also produces a lower MSY (2,652 mt) and a higher OFL for 2017 (603 mt). Data for all three time periods yield results within a close range, and suggest that the MSY is under 3,000 mt and the OFL has likely been exceeded in recent years.

9.6 SOURCES OF UNCERTAINITY

The landings data are subject to uncertainty; the primary concerns are undocumented volumes of flyingfish used for bait, changing levels of reporting over time and lack of consistent reporting from all fishing sites across all countries, and the influence of FAD usage on landings.

In the multi-objective assessment for the *CLME/SP3; EAF for the Eastern Caribbean Flyingfish; Technical Support to Enhance Data and Information Management for Decision-Support* project it was noted that there is a disconnect between the stated objectives and intent to collect and compile catch and effort data on a regular basis. However, it was evident during the implementation of the project that regular data collection at all landings sites was not being effectively undertaken. As result, there are gaps in the datasets that create uncertainty for stock assessment analysis.

Reliable estimates of fishing effort are still elusive since consistent and standardized measures of effort are needed for the region. An additional challenge is the multi-species nature of the fishery and distinguishing the effort for flyingfish from effort targeting other species.

9.7 CONCLUSIONS

The total annual catch trigger point of 5,000 mt proposed in the 2014 fisheries Management Plan should be revisited in the context of recent low catches and new information from this stock assessment. A renewed effort to collect more data is increasingly important given the challenges of managing a fishery that may be under more pressure than previously thought.

Overall, the analysis errs on the side of caution since the uncertainties discussed mean landings could be higher, while effort may be lower in recent years. This means the data and analysis may overstate the pressure on the fishery. However, in the absence of better evidence a precautionary approach is prudent.

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