



ISSN: 1995 – 1132

**CRFM Technical & Advisory Document Series  
Number 2016 / 01**

---

# **IMPLEMENTATION REPORT (2014-2015): Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean**

February 2016  
CRFM Secretariat  
Belize

# **CRFM Technical & Advisory Document - Number 2016 / 01**

**Implementation Report (2014-2015): Sub-regional Fisheries  
Management Plan for Flyingfish in the Eastern Caribbean**

February 2016  
CRFM Secretariat  
Belize

## CRFM TECHNICAL & ADVISORY DOCUMENT – Number 2016 / 01

### Implementation Report (2014-2015): Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean

@ CRFM 2016 by Caribbean Regional Fisheries Mechanism (CRFM)

All rights reserved.

Reproduction, dissemination and use of material in this publication for educational or non-commercial purposes are authorized without prior written permission of the CRFM, provided the source is fully acknowledged. No part of this publication may be reproduced, disseminated or used for any commercial purposes or resold without the prior written permission of the CRFM.

Correct Citation:

Mohammed, E. 2016. Implementation Report (2014-2015): Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean. *CRFM Technical & Advisory Document*, No. 2016/01. 29 pp + 6 Appendices.

**ISSN: 1995-1132**

**ISBN: 978-976-8257-24-6**

Published by the Caribbean Regional Fisheries Mechanism Secretariat,  
Belize and St. Vincent and the Grenadines.

*DISCLAIMER:* The author makes no warranties, either expressed or implied, concerning the accuracy, completeness or reliability of the information pertaining to national level activities aimed at implementation of the Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean. Such information was provided through a survey completed by staff of the departments with responsibility for fisheries in Barbados, Dominica, Grenada, Saint Lucia, St Vincent and the Grenadines, Trinidad and Tobago. Any queries or clarifications should be directed at the respective departments.

## ACRONYMS AND ABBREVIATIONS

<b>BFTC</b>	Basic Fishermen Training Course
<b>CANARI</b>	Caribbean Natural Resources Institute
<b>CARICOM</b>	Caribbean Community
<b>CARIFICO</b>	Caribbean Fisheries Co-management project
<b>CARIFIS</b>	Caribbean Fisheries Information System
<b>CARIFORUM</b>	Caribbean Forum of African, Caribbean and Pacific (ACP) States
<b>CC4FISH</b>	Climate Change Adaptation in the Eastern Caribbean Fisheries Sector
<b>CCCFP</b>	Caribbean Community Common Fisheries Policy
<b>CEDP</b>	Comprehensive Economic Development Plan
<b>CFF</b>	Caribbean Fisheries Forum
<b>CFO</b>	Chief Fisheries Officer
<b>CLME</b>	Caribbean Large Marine Ecosystem
<b>CNFO</b>	Caribbean Network of Fisherfolk Organizations
<b>COTED</b>	Council for Trade and Economic Development
<b>CPUE</b>	Catch per Unit Effort
<b>CRFM</b>	Caribbean Regional Fisheries Mechanism
<b>DMRF</b>	Department of Marine Resources and Fisheries
<b>DMTWG</b>	Data Methods and Training Working Group
<b>DoF</b>	Director of Fisheries
<b>DOM</b>	Départements Outre-Mer
<b>EAF</b>	Ecosystem Approach to Fisheries
<b>EC</b>	Executive Committee (of the Caribbean Fisheries Forum)
<b>ECFF-FMP</b>	Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean
<b>EEZ</b>	Exclusive Economic Zone
<b>EU</b>	European Union
<b>FAC</b>	Fisheries Advisory Committee
<b>FAD</b>	Fish Aggregating Device
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FF</b>	Flyingfish
<b>FIRMS</b>	Fishery Resources Monitoring System
<b>FMP</b>	Fisheries Management Plan
<b>HACCP</b>	Hazard Analysis and Critical Control Points
<b>ICCAT</b>	International Commission for the Conservation of Atlantic Tunas
<b>ICFC</b>	France-CARICOM Cooperation Institute
<b>Ifremer</b>	L'Institut Français de Recherche pour l'Exploitation de la Mer (French Research Institute for Exploitation of the Sea)
<b>IUU fishing</b>	Illegal, Unreported and Unregulated fishing
<b>MALF</b>	Ministry of Agriculture, Lands and Fisheries
<b>MC</b>	Ministerial Council
<b>MCS</b>	Monitoring, Control and Surveillance
<b>MoU</b>	Memorandum of Understanding
<b>MSY</b>	Maximum Sustainable Yield
<b>OECS</b>	Organization of Eastern Caribbean States
<b>OSPESCA</b>	Organización del Sector Pesquero y Acuícola de Centroamerica (Organization of Fishing and Aquaculture in Central America)
<b>PPCR</b>	Pilot Program for Climate Resilience

<b>PWG</b>	Pelagic Fisheries Working Group
<b>PY</b>	Programme Year
<b>SPS</b>	Sanitary and Phyto-Sanitary
<b>THA</b>	Tobago House of Assembly
<b>TIP</b>	Trip Interview Program
<b>UWI-CERMES</b>	University of the West Indies – Centre for Resource Management and Environmental Studies
<b>VMS</b>	Vessel Monitoring System
<b>WECAFC</b>	Western Central Atlantic Fishery Commission

## FOREWORD

The Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean (ECFF-FMP) was endorsed by the Ministerial Council, through Resolution, at its 8<sup>th</sup> Meeting on 23 May 2014 in the Commonwealth of Dominica. At that meeting the Ministerial Council *called upon CRFM Member States participating in the flyingfish fisheries to take all necessary action to adopt the Sub-regional Management Plan for Flyingfish in the Eastern Caribbean and to proactively pursue its implementation*. The responsibility for monitoring and evaluation of implementation of the ECFF-FMP rests with the CRFM-WECAFC Working Group on Flyingfish in the Eastern Caribbean, the CRFM being represented by its Pelagic Fisheries Working Group at both the technical/scientific and management levels. This Working Group is mandated to report annually to the Caribbean Fisheries Forum, CRFM Ministerial Council and WECAFC respectively on the progress of implementation of the FMP and the respective management measures agreed upon.

This report focuses on progress in implementation of the ECFF-FMP within the year immediately following its endorsement by the Ministerial Council (June 2014 to May 2015), at both the national and regional levels. Its content is based on: (a) responses of the six CRFM Member States with a real interest in the flyingfish fishery (Barbados, Trinidad and Tobago, Grenada, Saint Lucia, Dominica and St Vincent and the Grenadines) to a survey administered by the CRFM Secretariat; and (b) reporting on regional projects and initiatives which have been or would contribute to overall improvement in governance and management of, as well as research on, flyingfish fisheries. This report also highlights the challenges experienced by CRFM Member States in implementing the ECFF-FMP and proposes specific recommendations for addressing these challenges. It is expected that this report would be used by the Caribbean Fisheries Forum (including the technical and management levels of the Pelagic Fisheries Working Group), the CRFM Ministerial Sub-Committee on Flyingfish and Ministerial Council as well as the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean and Western Central Atlantic Fishery Commission (WECAFC) to improve implementation of the ECFF-FMP at the national, sub-regional and regional levels.

## **ACKNOWLEDGEMENTS**

The author wishes to acknowledge the assistance of Dr Susan Singh-Renton, Deputy Executive Director and Ms Pamela Gibson, Administrative Secretary, of the CRFM Secretariat. Dr Singh-Renton undertook the major technical review of the report and Ms Gibson assisted with proof reading and formatting of the document. Gratitude is also extended to the CRFM's Pelagic Fisheries Working Group for review of the first draft of the survey questionnaire and first draft of this report. The inputs of the six relevant CRFM Member States: Barbados, Dominica, Grenada, Saint Lucia, St Vincent and the Grenadines and Trinidad and Tobago through completion of the survey questionnaire and review of the first draft of this report are also acknowledged.

## EXECUTIVE SUMMARY

The 8<sup>th</sup> Meeting of the CRFM Ministerial Council (MC), by Resolution, endorsed the Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean (ECFF-FMP) for regional implementation on 23 May 2014. The MC also urged Member States to adopt the ECFF-FMP and to proactively pursue its implementation. It gave a specific mandate to Fisheries Divisions to build awareness among national stakeholders concerning the Resolution and implications of the ECFF-FMP and to the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean (on which the CRFM is represented by its Pelagic Fisheries Working Group – PWG) to monitor progress in implementation of the ECFF-FMP and performance of the associated management measures, and to report accordingly to the Caribbean Fisheries Forum (CFF), the MC and the WECAFC on an annual basis.

To assist with the monitoring and reporting mandate, in PY 2015-2016 a survey was conducted in the six relevant CRFM Member States (Barbados, Dominica, Grenada, Saint Lucia, St Vincent and the Grenadines and Trinidad and Tobago) to evaluate the status of implementation of the ECFF-FMP at the national level during the first year following its endorsement (June 2014 to May 2015). The survey focused on the seven management measures agreed upon. Succinctly put, these management measures pertain to: (1) development and implementation of national FMPs for flyingfish fisheries; (2) annual reporting on the progress in development and implementation of such FMPs as well as flyingfish catch and effort data; (3) establishment of authorized national entry systems for flyingfish fisheries; (4) conduct of an assessment to estimate stock abundance of flyingfish; (5) adoption of a precautionary sub-regional total annual catch trigger point of 5,000 tonnes; (6) implementation of a precautionary sub-regional freeze on flyingfish fishing effort and/or fishing capacity should the agreed trigger point be realized and timely reassessment of the resource status and update of management measures; and (7) strengthen national data collection systems. The survey also sought to ascertain the existence and level of functionality of some key systems required to give full effect to the ECFF-FMP such as: the legislative framework, licensing systems, monitoring, control and surveillance systems, data collection and associated reporting systems, mechanisms for stakeholder awareness-building and strengthening of their role, participation and inputs to the management process. Regional activities and initiatives towards improving the overall management of the flyingfish fisheries and conduct of the requisite research were also reported to facilitate a comprehensive evaluation of implementation of the ECFF-FMP.

This report outlines the methodology for conduct of the evaluation and presents the findings in distinct sections addressing the national (Section 3) and regional (Section 4) levels respectively. The findings are summarized, discussed and specific recommendations provided on the way forward in Section 5.

Based on the results of the evaluation the national commitment to implement the ECFF-FMP was not apparent. During the period evaluated, and up until February 2016 when this report was finalized, none of the six Member States had adopted the ECFF-FMP at the highest level of national governance. However, both Barbados and Grenada reported relevant action being taken towards national adoption. Development of the ECFF-FMP began since 2001, with several opportunities for Member States to review and contribute to various drafts of the document and to engage stakeholders in this process, leading to its finalization and endorsement in 2014. Greater expediency is necessary in its adoption at the national level to facilitate progress in management of flyingfish fisheries in the eastern Caribbean and to demonstrate the CRFM's commitment in implementing its conservation and management measures agreed upon.

Appreciable sub-regional advancement in implementation of the ECFF-FMP can only be achieved with the full and active support of Barbados, Trinidad and Tobago and Grenada because of the relative importance and historical magnitude of the flyingfish fishery in these countries compared to the other Member States (Dominica, Saint Lucia and St Vincent and the Grenadines). Consequently these countries

should be accorded high priority in access to regional resources for management of the eastern Caribbean flyingfish fisheries.

Generally, national efforts to implement the management measures agreed upon in the ECFF-FMP as well as other directives of the associated Ministerial Resolution were negligible based on the survey responses:

- (a) None of the six Member States developed national FMPs, which were approved for execution at an appropriate level of governance, and could facilitate full implementation of the ECFF-FMP. This situation remained unchanged by the time of completion of this report in February 2016. However, both Barbados and Grenada reported relevant action being taken towards development of national FMPs. All Member States identified challenges to full implementation of the ECFF-FMP, but only Grenada, Saint Lucia and Trinidad and Tobago identified possible solutions, and only Grenada committed to addressing the challenges in a specific time period (5 years).
- (b) There was negligible official reporting to the CRFM on the status of development and implementation of national FMPs consistent with the ECFF-FMP (only Barbados reported) and no Member State officially reported estimates of total catch and fishing effort for the flyingfish fishery (Barbados and Saint Lucia reported total landings for 2014).
- (c) Although a 5,000-tonne trigger point was agreed upon, the CRFM is unable to monitor total catches relative to this trigger point or to undertake a regional stock assessment to inform the appropriate management action (e.g. whether or not a precautionary sub-regional freeze on expansion of the flyingfish fishing effort and/or fishing capacity is necessary or whether the trigger point should be adjusted). This situation is due mainly to the lack of reporting on total catches and fishing effort as well as catch per unit effort and difficulties in recording flyingfish fishing effort in a multi-species, multi-fleet scenario. The lack of technical capacity in Tobago to estimate the required parameters from recorded data is also worth noting.
- (d) Current Fisheries Acts in all Member States, except Trinidad and Tobago, make it mandatory to license fishing vessels (authorized national entry systems). However, it was uncertain whether licenses were issued specifically for exploitation of the flyingfish fishery and whether they were being used to actively control fishing (as may be required if a precautionary sub-regional freeze in expansion of the flyingfish fishing effort is necessary). It was also not apparent that current Fisheries Acts of Member States fully supported the precautionary approach to fisheries management, a key tenet of the ECFF-FMP.
- (e) The CRFM is unable to monitor and evaluate the ECFF-FMP, and any future national flyingfish FMPs, against the objectives and indicators agreed upon, or to monitor management target and reference points in the context of the Ecosystem Approach to Fisheries. As well, it is unable to monitor trends in fishing effort and fishing capacity associated with the flyingfish fishery. There were no appreciable improvements in the national data collection systems to routinely record the range of data (social, economic, ecological, catch and effort) required for application of the EAF. Improvements in the data collection coverage (number of landing sites and fishing trips) in Tobago should be noted. It was also not apparent that current Fisheries Acts of Member States fully supported the EAF, a key tenet of the ECFF-FMP. All Member States, except Trinidad and Tobago, identified challenges in the collection of data. These challenges included resource limitations, limitations in the data collection systems and difficulties in getting the cooperation of fishers. Of these Member States, all except St Vincent and the Grenadines identified possible solutions, but only Grenada committed to addressing the challenges in a specific time period (2 years).

- (f) There was little communication of the agreed ECFF-FMP and associated Ministerial Resolution to stakeholders in the flyingfish fishery. Dominica reported some action but provided no feedback on the views of stakeholders that could be considered in future amendments of the ECFF-FMP. None of the six Member States implemented specific national training programmes to strengthen the participation of stakeholders in the management process.

At least four management systems are critical for implementation of the ECFF-FMP, and specifically the seven management measures agreed upon: data collection; vessel licensing; monitoring, control and surveillance; and stakeholder engagement. Current Fisheries Acts make provisions, either wholly or in part, for these systems, although it was uncertain whether the enabling regulations were in place. However, they also make provisions for development and implementation of FMPs, establishment of Fisheries Advisory Committees and designation of conservation and management measures. While some changes in fisheries policy, legislative frameworks and management systems may be required to fully implement the ECFF-FMP, it was not apparent that effective and innovative use of existing national instruments and mechanisms were being fully explored to this effect. It should also be noted that Trinidad and Tobago is the only Member State for which the current Fisheries Act does not include the majority of the above-mentioned provisions, although such provisions are incorporated in its proposed new legislation, which is not yet enacted. As well, at the time of this evaluation Barbados was in the process of updating its Fisheries Act and related management regulations. The continuing lack of attention to limitations in the data collection systems and respective data analyses are of concern. Many of these limitations were identified since 1999, and have been prioritized for action by both the respective WECAFC and CRFM Working Groups with negligible management response. Flyingfish catch data, in particular, is linked to at least five of the seven agreed management measures.

At the regional level little was achieved to advance the political arrangements between the CRFM and France for collaboration in the sustainable use, conservation and management of shared fisheries resources. The 5<sup>th</sup> Special Meeting of the Ministerial Council on 9 October 2014 considered a brief on the issues and approaches towards the respective political collaboration and provided specific recommendations on the way forward, noting efforts at a higher political level for a general cooperation framework between CARICOM and France. The decisions of the 5th Special Meeting of the MC were considered and endorsed by the 51<sup>st</sup> Special Meeting of the COTED. Since then the CRFM Secretariat has written to the CARICOM Secretariat seeking an update on the matter and it is currently awaiting a response. An arrangement for technical cooperation between the CRFM and Ifremer in fisheries (and aquaculture) research and related capacity-building was formalized in January 2015. Proposals were developed for two regional projects that are expected to contribute to improvement in the overall governance and management of the flyingfish fisheries and conduct of the requisite research. These projects were approved by the respective funding agencies for implementation between 2015 and 2020. One of these projects, the CLME+ Project (Sub-project #3), focuses specifically on application of the EAF for the Eastern Caribbean Flyingfish.

Based on national responses to the survey and general findings of the evaluation, specific recommendations were provided for improving implementation of the ECFF-FMP. These specific recommendations are summarized in the following general recommendations:

- (1) Barbados, Trinidad and Tobago and Grenada should accord high priority to official adoption of the ECFF-FMP by the respective governments and to development and implementation of national flyingfish fisheries management plans (FMPs) that are consistent with the ECFF-FMP;
- (2) Member States that have not already done so; should communicate the Resolution and discuss the implications of the ECFF-FMP with all relevant stakeholders as directed by the 8<sup>th</sup> Meeting of the

Ministerial Council. All Member States should provide feedback on stakeholder consultations to inform future updates of the ECFF-FMP;

- (3) In accordance with the agreed ECFF-FMP and already established procedures for reporting on national fisheries development, Member States should report annually to the CRFM on national adoption of the ECFF-FMP and development and implementation of national FMPs for flyingfish fisheries and submit annual estimates of flyingfish catch and fishing effort;
- (4) Conduct a solution-oriented review of national fisheries policy, legislative frameworks and management systems to identify existing provisions and flexibilities that allow for innovative and effective use of these instruments and systems for implementation of the ECFF-FMP and to identify any limitations to be addressed in future;
- (5) Encourage Member States that are currently amending current, or developing new, fisheries policies and legislation to take all necessary action to ensure that such instruments facilitate full implementation of the ECFF-FMP and to enact such legislation expeditiously;
- (6) Provide the necessary resources and capacity-building to facilitate implementation of the ECFF-FMP, including the requisite data collection and MCS systems, and to continue activities initiated under regional projects that contribute to achieving the agreed management actions and research;
- (7) To the extent possible, coordinate and integrate regional projects and initiatives with overlapping scope so as to maximize the use of available resources and optimize the benefits to Member States;
- (8) Actively pursue broader regional endorsement and implementation of the ECFF-FMP through: (a) formal arrangements for political cooperation between CRFM and France in accordance with decisions of the 5<sup>th</sup> Special Meeting of the CRFM Ministerial Council; (b) submission of the ECFF-FMP to the 16<sup>th</sup> Session of WECAFC for consideration and endorsement; and (c) active implementation of the sub-regional and regional MoUs for technical cooperation in the sustainable use, conservation and management of shared fisheries; and
- (9) Improve national fisheries data collection systems in accordance with the requirements of the ECFF-FMP; giving consideration to strengthening institutional linkages among agencies for the capture of the range of data necessary for application of the EAF, building stakeholder awareness of and support for data collection, standardizing the units of fishing effort, and building staff capacity in current and historical data analysis.

It should be noted that many of the challenges identified by the Fisheries Divisions/Departments of Member States to fully implement the ECFF-FMP were not new, nor the majority of recommendations proposed by this study. Consequently, the political will to bring about the necessary changes, and the expedient and innovative action of the national fisheries authorities, would be critical in moving forward and in demonstrating the region's commitment to application of the EAF to management of the eastern Caribbean flyingfish fishery in the long term. Such changes will also inevitably contribute to overall improvement in management of national fisheries in general and are consequently worth the long-term investment so as to fully realize the socio-economic benefits. The Ministerial Council issued a policy statement at its 7<sup>th</sup> Meeting, in May 2013, in support of implementation of the EAF. It called upon all CRFM Member States to strengthen their commitment to, and implementation of, the ecosystem approach to fisheries and aquaculture through fisheries legislation, policies, plans and management arrangements at the national and local levels. The time is opportune for the provision of the respective resources to be able to do so.

## TABLE OF CONTENTS

<b>1.0</b>	<b>BACKGROUND AND RATIONALE</b> .....	<b>1</b>
<b>2.0</b>	<b>METHODOLOGY</b> .....	<b>2</b>
2.1	NATIONAL IMPLEMENTATION OF THE ECFF-FMP .....	2
2.2	REGIONAL IMPLEMENTATION OF THE ECFF-FMP.....	4
<b>3.0</b>	<b>RESULTS - NATIONAL INITIATIVES</b> .....	<b>4</b>
3.1	BARBADOS.....	4
3.2	DOMINICA .....	6
3.3	GRENADA .....	7
3.4	SAINT LUCIA.....	9
3.5	ST VINCENT AND THE GRENADINES.....	11
3.6	TRINIDAD AND TOBAGO .....	12
<b>4.0</b>	<b>RESULTS - REGIONAL INITIATIVES</b> .....	<b>13</b>
4.1	GOVERNANCE AND MANAGEMENT OF FLYINGFISH FISHERIES.....	13
4.2	RESEARCH.....	16
<b>5.0</b>	<b>SUMMARY FINDINGS, DISCUSSION AND RECOMMENDATIONS</b> .....	<b>17</b>
5.1	ADOPTION OF THE ECFF-FMP, DEVELOPMENT AND IMPLEMENTATION OF NATIONAL FMPs FOR MANAGEMENT OF FLYINGFISH FISHERIES .....	17
5.2	ANNUAL REPORTING ON IMPLEMENTATION OF THE ECFF-FMP AND ASSOCIATED CATCH AND EFFORT DATA .....	19
5.3	AUTHORIZED NATIONAL ENTRY (PERMIT/LICENSE) SYSTEM.....	20
5.4	CONDUCT OF A STOCK ASSESSMENT .....	20
5.5	ADOPTION OF A PRECAUTIONARY SUB-REGIONAL TOTAL ANNUAL CATCH TRIGGER POINT OF 5,000 TONNES.....	21
5.6	IMPLEMENTATION OF A PRECAUTIONARY SUB-REGIONAL FREEZE ON EXPANSION OF THE FLYINGFISH FISHING EFFORT AND/OR FISHING CAPACITY SHOULD THE AGREED CATCH TRIGGER POINT BE REALIZED.....	21
5.7	STRENGTHEN CURRENT NATIONAL DATA COLLECTION SYSTEMS .....	22
5.8	STAKEHOLDER AWARENESS AND ENGAGEMENT IN THE MANAGEMENT PROCESS .....	24
5.9	OTHER ACTIONS FOR IMPROVING OVERALL MANAGEMENT OF FLYINGFISH FISHERIES.....	24
<b>6.0</b>	<b>CONSIDERATIONS FOR FUTURE EVALUATIONS</b> .....	<b>25</b>
<b>7.0</b>	<b>STUDY LIMITATIONS</b> .....	<b>25</b>
<b>8.0</b>	<b>CONCLUSIONS</b> .....	<b>26</b>
<b>9.0</b>	<b>REFERENCES</b> .....	<b>28</b>

## 1.0 BACKGROUND AND RATIONALE

The 8<sup>th</sup> Meeting of the CRFM Ministerial Council endorsed the Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean (ECFF-FMP) on 23 May 2014 for implementation (see associated Resolution of the Ministerial Council at Appendix 1 and CRFM, 2014). The regional management measures which were incorporated into the agreed plan are listed below:

1. *Development and implementation of national management plans for flyingfish fisheries, consistent with the sub-regional fisheries management plan, by the 2015/2016 flyingfish season, or as soon as is practically possible;*
2. *Annual reporting, by CRFM Member States with a real interest in the flyingfish fishery to the CRFM and, similarly, by 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;*
3. *Establishment of an authorized national entry (license/permit) system for flyingfish fisheries, which enters into force for the flyingfish fisheries season 2015/2016, or as soon as is practically possible. Such a system would facilitate an estimation of existing fishing effort and/or fishing capacity and provide a mechanism for controlling fishing effort and/or fishing capacity should the need arise in future;*
4. *Conduct of an assessment to estimate stock abundance of flyingfish, such as a regional synoptic survey, prior to any significant development in the fishery;*
5. *Adoption of a precautionary sub-regional total annual catch trigger point of 5000 tonnes, at which point further action shall be taken to ensure the stock does not become overfished;*
6. *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;*
7. *Strengthen current national data collection systems to facilitate:*
  - a. *assessment of the resource status and establishment of improved management target and reference points;*
  - b. *estimation of existing levels of fishing effort and fishing capacity; and*
  - c. *monitoring and evaluation of the status of implementation of the national and sub-regional fisheries management plans against the objectives and indicators agreed upon.*

In addition to agreement on the above management measures, the Ministerial Council also called upon Member States participating in the flyingfish fisheries to take all necessary action to adopt the ECFF-FMP and to proactively pursue its implementation. The Ministerial Council directed that the respective Fisheries Departments communicate the Resolution and discuss the implications of the ECFF-FMP with all relevant stakeholders. It also directed the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean to report annually to the Caribbean Fisheries Forum, the Ministerial Council and the WECAFC on the progress made in implementation of the ECFF-FMP and the performance of the associated fisheries management measures.

The 24<sup>th</sup> Meeting of the Executive Committee (EC) of the Caribbean Fisheries Forum (CFF), which was held in St Vincent and the Grenadines on 19 and 20 February 2015, recalled the provisions for monitoring and evaluation of the implementation of the ECFF-FMP that incorporated agreed management measures and its accompanying Resolution and approved implementation of a survey in PY 2015-16 for this purpose (CRFM, 2015). The EC also called on Member States to participate in the survey and to provide their responses and any other additional information required to facilitate timely completion of the

respective report. The 13<sup>th</sup> Meeting of the CFF, which was convened from 30 to 31 March 2015 in Grenada, endorsed the respective conclusions, recommendations and decisions of the 24<sup>th</sup> Meeting of the EC (CRFM, 2015a).

## **2.0 METHODOLOGY**

### **2.1 National Implementation of the ECFF-FMP**

In accordance with the decision of the 24<sup>th</sup> Meeting of the Executive Committee (EC), the CRFM Secretariat designed a survey questionnaire to assess implementation of the ECFF-FMP at the national level. The survey questionnaire sought to ascertain the existence and level of functionality of some key systems required to give full effect to the ECFF-FMP such as: the legislative framework, licensing systems, monitoring, control and surveillance systems, data collection and associated reporting systems, mechanisms for stakeholder awareness-building and strengthening of their role, participation and inputs to the management process. The survey questionnaire was reviewed by the technical component of the CRFM's Pelagic Fisheries Working Group (PWG) at an e-meeting on 04 May 2015 and was subsequently amended by the CRFM Secretariat based on the PWG's suggestions. The survey questionnaire (Appendix 2) was circulated on 16 June 2015 to gather the respective information by 31 July 2015 from the Fisheries Divisions/Departments of Barbados, Dominica, Grenada, Saint Lucia, St Vincent and the Grenadines and Trinidad and Tobago. Country submissions were required to be endorsed by the respective Director of Fisheries or Chief Fisheries Officer.

The questionnaire was organized into seven sections as follows:

- A. *Adoption of the ECFF-FMP*: This section sought to determine whether the ECFF-FMP was adopted nationally through the recognized official channels and if not, to ascertain whether the process towards adoption had been initiated, to identify the major challenges to adoption of the ECFF-FMP and to ascertain when these challenges would be addressed.
- B. *Development and Implementation of National FMP for Management of Flyingfish Fisheries*: This section addressed management measures (1) and (2) noted in section 1. It sought to ascertain whether there was a national fisheries management plan or a specific management plan that addressed the management of flyingfish fisheries and whether such plans, if they existed, could facilitate full implementation of the ECFF-FMP. If there were no such management plans the section sought to determine when such a plan would be developed. It also sought to identify whether any current national fisheries management plans addressed issues of registration and licensing of fishing vessels; data collection, computerization and analysis; monitoring, control and surveillance as well as stakeholder participation in the decision-making processes. These requirements were critical to successful implementation of the ECFF-FMP and were identified in the agreed document. Where insufficient progress was reported, the section also sought to identify the main challenges in developing a national FF FMP that would give full effect to the ECFF-FMP and when such challenges would be addressed. It also attempted to ascertain whether the respective Member States had reported officially to the CRFM on development and implementation of national management plans (other than through the questionnaire administered in the present study) as required under management measure (2).
- C. *Legislation and Monitoring, Control and Surveillance in support of Management of Flyingfish Fisheries*: This section was also associated with management measure (1). It recognized that whether or not a national plan existed for the management of flyingfish fisheries, an appropriate

legislative framework was necessary for implementation of the ECFF-FMP, as it was for management of all fisheries, and that monitoring, control and surveillance systems were critical to facilitate compliance with the respective legislation/laws. Consequently this section sought to ascertain whether existing national management plans, which may in-part address some of the issues in the ECFF-FMP, were fully supported by legislation and if not, when such legislation might be expected to be promulgated to give full effect to the ECFF-FMP. In addition, the section sought to determine whether any existing fisheries legislation required provision of data by the industry; collection, analysis and reporting of flyingfish data to inform management; consultation with flyingfish stakeholders on management issues; designation of specific management and conservation measures and whether it supported the ecosystem and precautionary approaches to fisheries management. The section also sought to identify any national changes in monitoring, surveillance and enforcement systems required to give full effect to the ECFF-FMP.

- D. Data Collection & Reporting in support of Research and Informed Decision-Making:* This section addressed several management measures pertaining to reporting of catch and effort data (2); stock assessment (4); ability to keep track of catch levels to ascertain proximity to the trigger point (5 and 6); and strengthening of national data collection systems to facilitate resource assessment and improved estimates of target and reference points, as well as monitoring and evaluation of the status of the ECFF-FMP against the objectives and indicators agreed upon (7). The availability and quality of data were major challenges noted in the sub-regional assessment of the flyingfish stock in 2008 (FAO/WECAFC, 2010). In some instances recorded and sampled data were not raised to estimate total catches, and catches of flyingfish for use as bait were not recorded. Consequently this section also sought to identify any improvements in the national data collection system to address these limitations and to ascertain whether catch and effort data were submitted to the CRFM. It also sought to identify the types of data collected as may be required for application of the EAF (catch, landings, fishing effort, length, maturity, economic and social), whether or not these data were computerized and the software used, as well as whether the computerized data can be easily queried and extracted for reporting purposes. The section also sought to ascertain whether sampled data were raised to account for total catch, landings and fishing effort, to identify challenges in data collection and to ascertain how and when these challenges would be addressed.
- E. Authorized National Entry (License/Permit) System for Flyingfish Fisheries:* This section addressed management measures that pertained to the ability to identify those fishing vessels that caught flyingfish, to estimate existing fishing effort and/or fishing capacity and to be able to control fishing effort should the stock become overfished or the catch trigger point is reached (measures 3 and 7b) as well as monitoring and evaluation of the status of implementation of the ECFF-FMP against the objectives and indicators agreed upon. It sought to ascertain whether a national licensing or permit system was in place, whether it was supported by legislation, and whether it was applicable to the flyingfish fishery. If applicable to the flyingfish fishery, information was sought on the system's capacity to facilitate identification of those vessels that target flyingfish, catch the species commercially, incidentally or for use as bait, and whether the respective data were computerized. It also sought to ascertain any change in the number of iceboats (semi-industrial) and dayboats (artisanal) that was involved in the flyingfish fishery from June 2014 to May 2015.
- F. Awareness-building of Stakeholders on the ECFF-FMP and their Engagement in the Management Process:* This section addressed the mechanisms to facilitate a participatory approach to fisheries management, mainly through building stakeholder capacity and awareness to participate in the management decision-making process. The Ministerial Council directed that

following from the 2012 to 2014 consultations, the Resolution should be communicated to stakeholders and the implications of the agreed ECFF-FMP be discussed with them. Consequently the section sought to ascertain whether such consultations had occurred since regional endorsement of the ECFF-FMP and whether specific matters had been raised that required update of the ECFF-FMP. It also sought to ascertain what training or awareness-building efforts were undertaken to better prepare stakeholders for participation in the management process.

*G. General:* This section sought to acquire any additional information pertaining to implementation of the ECFF-FMP which Member States wished to report.

The six relevant Member States submitted their responses to the survey questionnaire at varying times between August and September 2015 (Barbados – 25 September; Dominica – 27 September; Grenada – 05 August; Saint Lucia – 19 August, St Vincent and the Grenadines – 03 August and Trinidad and Tobago – 18 September). These responses were either received directly from the Director of Fisheries (DoF) or Chief Fisheries Officer (CFO) as was the case for Barbados and Grenada or from a member of staff of the respective Fisheries Division/Department and copied to the DoF or CFO as was the case for the other four Member States. The list of national respondents is provided in Appendix 3. Several attempts were made to clarify unclear responses through emails and telephone discussions with the respective DoF or CFO, with follow-up emails to document and confirm any changes made by Member States to their original submissions. The national reports submitted by Barbados, Grenada and Saint Lucia to the 13<sup>th</sup> Meeting of the CFF (CRFM, 2015a) were reviewed and pertinent information also considered in this report. The first draft of the report was reviewed by the PWG and Fisheries Departments of the respective Member States between January and February 2016. The report was amended accordingly, based on the feedback received.

## **2.2 Regional Implementation of the ECFF-FMP**

Review of progress on implementation of ECFF-FMP at the regional level focused on regional activities and initiatives towards improving the overall management of the flyingfish fisheries and conduct of the requisite research.

## **3.0 RESULTS - NATIONAL INITIATIVES**

The summarized survey responses provided by the national respondents are given below. In cases where there were two national respondents, unless specifically identified as the secondary respondent, all responses were provided by the primary respondent.

### **3.1 Barbados**

#### **3.1.1 Adoption of the ECFF-FMP, Development and Implementation of National FMP for Management of Flyingfish Fisheries**

Barbados did not officially adopt the ECFF-FMP however the process for its adoption was initiated. At the time of submission of its response (25 September 2015) it was reported that a Cabinet paper recommending approval was being prepared and that this paper would also recommend that the ECFF-FMP be adopted as the local plan for flyingfish. Similar action was previously reported at the 13<sup>th</sup> Meeting of the Caribbean Fisheries Forum, in March 2015, however at that time the ECFF-FMP was being recommended for approval or adoption as a basis for the national plan (CRFM, 2015a). Barbados also reported that its Fisheries Act and associated regulations were being amended. There was an

approved policy document, as well as a draft Strategic Action Plan for the Fisheries Sector that recommends the development of specific or individual fisheries management plans. However, a specific FMP had not yet been developed for the flyingfish fishery.

The current draft Strategic Action Plan did not facilitate full implementation of the ECFF-FMP and the national respondent was uncertain as to when the respective document would be amended accordingly. The policy document and draft Strategic Action Plan address matters pertaining to the registration and licensing of fishing vessels, data collection, computerization and analysis and stakeholder participation in the decision-making process. However, the draft Strategic Action Plan was not being implemented in its entirety, as aspects pertaining to monitoring, control and surveillance were still to be effected. The main challenges to full implementation of the ECFF-FMP included limited funding, staff training and human resources. The national respondent was, however, uncertain as to how or when these challenges would be addressed. The national respondent was also uncertain as to when a National FMP that addresses flyingfish fisheries would be developed. However, as noted above, Barbados was seeking to have the ECFF-FMP adopted as the local plan for flyingfish.

### 3.1.2 Legislation and Monitoring, Control and Surveillance in support of Management of Flyingfish Fisheries

The national respondent was uncertain as to when existing legislation would be updated to give full effect to the ECFF-FMP. Under current legislation the provision of the data by the fishing industry, collection of data by the fisheries authority and consultation with stakeholders on management issues were mandatory for all fisheries, in accordance with the respective Fisheries Policy. Introduction of a vessel monitoring system, appropriate legislation and human resources were specific changes identified for improvement of the existing monitoring, surveillance and enforcement systems, in order to give full effect to the ECFF-FMP.

### 3.1.3 Data Collection and Reporting in support of Research and informed Decision-Making

There were no improvements in data collection since May 2014. Barbados did not submit catch and effort data on the flyingfish fishery for the period June 2014 to May 2015 to the CRFM because the analyses were not yet completed. However, at the 13<sup>th</sup> Meeting of the Caribbean Fisheries Forum Barbados reported a provisional total catch estimate of 2,153 t for 2014, of which flyingfish accounted for 62 % (i.e. 1,337 t), (CRFM, 2015a).

Data on flyingfish landings and fishing effort were collected and computerized, and the data could be easily queried and extracted for analysis and reporting purposes. Prior to January 2015 the CARIFIS database was being used but the system crashed in January 2015 and since April 2015 MS Excel was being used for data entry. Sample catch and effort data were raised to estimate total landings and fishing effort. However, the main challenge to data collection was the incomplete coverage of landing sites (not all sites were sampled), the expansion of data collection coverage being impacted by limitations in human resources. Although some measures were proposed to address the data collection challenges (random sampling and spot checks, introduction of a logbook system) the national respondent was not certain when the challenges would be addressed.

### 3.1.4 Authorized National Entry (License/Permit) System for Flyingfish Fisheries

Barbados implements a licensing system to control fishing and this system is applicable to the flyingfish fishery. The system is computerized, thereby facilitating the extraction of details of fishing vessels which caught flyingfish, in particular those that targeted flyingfish and caught the species commercially. In June 2014 175 iceboats and 230 dayboats targeted flyingfish for commercial purposes and the respective fleet sizes remained unchanged by May 2015.

### 3.1.5 Awareness-building of Stakeholders on the ECFF-FMP and their Engagement in the Management Process

The respective Resolution of the Ministerial Council as well as the ECFF-FMP and associated management measures to be implemented and the related legislation and enforcement measures were not communicated to stakeholders. It was reported in mid-October 2015 that the ECFF-FMP would be tabled at the next meeting of the Fisheries Advisory Committee (Stephen Willoughby, personal communication, 12 October 2015). No national training or public awareness programmes were implemented to strengthen the participation of flyingfish fishers in the management process.

## **3.2 Dominica**

### 3.2.1 Adoption of the ECFF-FMP, Development and Implementation of National FMP for Management of Flyingfish Fisheries

Dominica did not officially adopt the ECFF-FMP for national implementation and the process towards national adoption had not been initiated. There were also no plans at the time to directly address the ECFF-FMP nationally. There was no national FMP that incorporates flyingfish. The current national FMP -did not facilitate full implementation of the ECFF-FMP, it did not address flyingfish specifically, and the primary national respondent was uncertain when the national FMP would be amended to facilitate this. No definite responses were provided as to whether the current national FMP addressed the issues of registration and licensing of fishing vessels; data collection computerization and analysis; monitoring, control and surveillance or stakeholder participation in the decision-making process – since it did not incorporate flyingfish. The main challenges experienced in national adoption of the ECFF-FMP as well as its full implementation were limited industry and political support, a limited policy framework, limited funding and other priorities in fisheries. The primary national respondent indicated that there were no current plans to address the challenges directly, and he was uncertain as to when these challenges would be addressed or when a national FMP that allowed for full implementation of the ECFF-FMP would be developed. Consequently, Dominica did not officially report to the CRFM on the development and implementation of a national management plan for its flyingfish fisheries.

### 3.2.2 Legislation and Monitoring, Control and Surveillance in support of Management of Flyingfish Fisheries

Since there was no national FMP for the flyingfish many of questions were not applicable. The primary national respondent was uncertain as to when legislation would be updated to give full effect to the ECFF-FMP. He indicated that under existing fisheries legislation the following were mandatory: provision of data; collection and analysis of data by the flyingfish fisheries authority; reporting on flyingfish fisheries data analyses to inform management (currently done on an ad-hoc basis); consultation with flyingfish fisheries stakeholders on management issues; support for the ecosystem and precautionary approaches to fisheries management and designation of specific management and conservation measures. However, the secondary respondent indicated that provision of data was mandatory, but this provision was not specific to flyingfish, and it was not mandatory for fishers to provide catch and effort data. As well, the secondary respondent indicated that stakeholder consultations were not mandatory in legislation. No changes to the existing monitoring, surveillance and enforcement system were identified in order to give full effect to the ECFF-FMP.

### 3.2.3 Data Collection and Reporting in support of Research and informed Decision-Making

Improvements in the national data collection system focused mainly on reducing errors in recording through the use of coded (preset) responses from August 2014. The respective catch and effort data on flyingfish fisheries for the period June 2014 to May 2015 were not submitted to the CRFM and no reasons were provided to explain the situation. Landings, fishing effort, economic (unit prices and fishing costs) and social (household and demographic) data were collected. The secondary respondent indicated

that the social data were obtained from the fisher registration process and from ad-hoc fisheries census, the last of which was conducted in 2011, but another may be conducted in 2016. All data were computerized in MS Access and the database could be easily queried and data extracted for reporting purposes. In addition, sampled recorded data were raised to estimate total landings and fishing effort but these data were not available specifically for flyingfish (flyingfish landings were usually reported in an aggregate category). The primary respondent indicated that the main challenges to data collection pertained to the fisher's willingness to provide information on their fishing operations and landings. These challenges would be addressed through improved dialogue with fishers, building their awareness on the importance of collection of good quality data for fisheries management and encouraging their cooperation with the Fisheries Division. However, the primary respondent was uncertain as to when the challenges would be addressed although there was ongoing progress through the Basic Fishermen Training Course (BFTC) and other awareness-building initiatives.

#### 3.2.4 Authorized National Entry (License/Permit) System for Flyingfish Fisheries

Dominica implemented a license or permit system to control fishing, and this system was computerized, but it did not apply specifically to the flyingfish fishery. The secondary respondent indicated that a permit system was used to control participation in the moored FAD fishery. Identification of those fishing vessels which target flyingfish was possible through review of the landings records. However, no information was provided on the respective number of fishing vessels in June 2014 or May 2015. It was not certain whether the number of vessels that caught flyingfish over the last year had changed.

#### 3.2.5 Awareness-building of Stakeholders on the ECFF-FMP and their Engagement in the Management Process

The respective Resolution of the Ministerial Council was communicated to some fisheries cooperatives, the general public and some fishers through meetings and radio programmes. The ECFF-FMP and associated management measures, as well as related legislation and enforcement measures were also communicated to stakeholders and the implications discussed with fishers, vendors, boat owners, fisher organizations and the general public. The primary respondent indicated that some feedback was received from these stakeholders but the details for consideration in amendment of the ECFF-FMP were not provided. No specific national training programmes were implemented to strengthen the participation of flyingfish fishers in the management process; however, some level of public awareness-building through a radio programme was conducted.

### **3.3 Grenada**

#### 3.3.1 Adoption of the ECFF-FMP, Development and Implementation of National FMP for Management of Flyingfish Fisheries

Grenada adopted the ECFF-FMP for national implementation at the management level within the Ministry with responsibility for fisheries but not at the level of Cabinet. However, it was reported in mid-October 2015 that the ECFF-FMP would be submitted for the Cabinet's approval in October 2015, with a decision expected by November 2015 (Justin Rennie, personal communication, 9 October 2015). The country has a National FMP that incorporates flyingfish generally under pelagic fisheries, however, this FMP does not facilitate full implementation of the ECFF-FMP. The current FMP for pelagic species addresses issues related to registration and licensing of fishing vessels; data collection, computerization and analysis; monitoring, control and surveillance (MCS); stakeholder participation in the decision-making process and regional cooperation, sustainability of the resources, sustainable development, co-management and the Ecosystem Approach to Fisheries (EAF). The FMP was not being implemented in its entirety, aspects related to MCS and EAF were still to be effected. The main challenges to implementation of the ECFF-FMP were limited funding, capacity and human resources. The challenges were expected to be addressed through recruitment of appropriate and adequate human resources within

the next five years. However, financial and material resources critical to implementing the ECFF-FMP were dependent on external factors. A FMP that allowed for full implementation of the ECFF-FMP was expected to be developed within the next five years. The secondary respondent advised in February 2016 that development of a national flyingfish FMP was prioritized for 2016 and the new FMP was expected to incorporate the EAF, MCS and precautionary approaches, as well as record keeping and reporting. Grenada did not officially report to the CRFM on the development and implementation of a national management plan for its flyingfish fisheries that was consistent with the ECFF-FMP, other than through the questionnaire administered in this study.

### 3.3.2 Legislation and Monitoring, Control and Surveillance in support of Management of Flyingfish Fisheries

The current national FMP was fully supported by existing legislation. However, only the designation of specific management and conservation measures was mandatory. Other critical measures in support of implementation of the ECFF-FMP such as the provision of data by the flyingfish industry, collection and analysis of data by the fisheries authority, reporting on data analyses to inform management, consultation with stakeholders on management issues, support for the EAF and precautionary approaches to fisheries management were not mandatory. However, the secondary respondent noted that the legislation provided scope for stakeholder consultations through the establishment of a Fisheries Advisory Committee. Specific changes required in the existing MCS system to give full effect to the ECFF-FMP included: a protocol for monitoring fishing (effort) and catches of flyingfish (even when not landed); an effective mechanism for information-sharing with fishers; effective data management and the commitment of resources.

### 3.3.3 Data Collection and Reporting in support of Research and informed Decision-Making

There were no improvements in the national fisheries data collection system since May 2014. Catch and effort data on flyingfish fisheries for the period June 2014 to May 2015 were not submitted to the CRFM. The explanation provided suggested that the requisite systems were not in place to capture data on flyingfish caught as bait. *Flyingfish has been increasingly targeted as bait to support the rapid development of the longline fishery for large oceanic pelagic species over the last fifteen years. Consequently, a significant proportion of the catch (as bait) was not landed. A logbook system for larger vessels and interviews for smaller vessels would serve to improve the data collection on flyingfish fisheries, as part of the general implementation of the ECFF-FMP.* Data were however, collected on the landings and ex-vessel value of flyingfish. These data were computerized in MS Excel and could be easily queried and extracted for analysis and reporting purposes. The recorded data were raised to estimate total landings, but not total catches (bait was not recorded), nor total fishing effort. Recording of fishing effort did not fully reflect the fact that the length of a fishing trip varied among different vessel types.

The main challenges to collection of data on flyingfish fisheries to address the respective management measures under the ECFF-FMP were that fishers did not keep records (logbooks) of catches that were not landed (sold or used as bait); data were not recorded at secondary landing sites (only at markets that are considered primary landing sites); there was need for a more accurate measure of effort as a fishing trip may last one day or up to 12 days depending on the vessel type; and there was need to collect basic biological data such as length frequency and maturity. These challenges would be addressed within 2 years through introduction of logbooks for large longliners that catch flyingfish as bait and strengthening the interview system to capture catch and effort data at fish markets. It should be noted that in February 2016 the secondary respondent advised of a training workshop that was convened for data collectors in January 2016 and that a trial logbook programme was being implemented which, once fully operational, should allow collection of data on flyingfish caught by longliners (and used as bait).

### 3.3.4 Authorized National Entry (License/Permit) System for Flyingfish Fisheries

Grenada implemented a licensing system to control fishing and this system incorporated vessels in the flyingfish fishery. The system was computerized and details of the fishing vessels which caught flyingfish could be easily extracted. Consequently Grenada was able to identify those vessels which targeted flyingfish or caught the species incidentally as well as vessels which caught flyingfish for commercial and bait purposes. In June 2014 there were 70 iceboats and 200 dayboats which targeted flyingfish and the same number of each type of vessel also caught flyingfish as bait. By May 2015 the respective number of vessels increased to 75 iceboats and 220 dayboats.

### 3.3.5 Awareness-building of Stakeholders on the ECFF-FMP and their Engagement in the Management Process

The respective Resolution of the Ministerial Council as well as the ECFF-FMP and associated management measures to be implemented, and the related legislation and enforcement measures, were not communicated to stakeholders. It should be noted that in February 2016 the secondary respondent advised that stakeholders would be made aware of all aspects of the ECFF-FMP at national stakeholder consultations associated with the planned development of a national FMP in 2016. No national training or public awareness programmes have been implemented to strengthen the participation of flyingfish fishers in the management process.

## **3.4 Saint Lucia**

### 3.4.1 Adoption of the ECFF-FMP, Development and Implementation of National FMP for Management of Flyingfish Fisheries

Saint Lucia did not officially adopt the ECFF-FMP and the national process towards its adoption had not yet been initiated. This was due to other priorities in fisheries and limited funding. The proposed solutions for overcoming these challenges were to consult with stakeholders on the ECFF-FMP and to identify and take advantage of funding opportunities. The country currently had in place a national FMP that incorporates flyingfish fisheries specifically but this FMP had not yet been officially adopted or approved. Nevertheless, the national FMP was recognized as a working document in the management of the sector and the role of the Department of Fisheries in its implementation was also recognized. The current national FMP did not facilitate full implementation of the ECFF-FMP and the national respondent was uncertain as to when it would be amended accordingly. The current national FMP addressed the registration and licensing of fishing vessels; data collection, computerization and analysis; monitoring, control and surveillance; and stakeholder participation in the decision-making process. However, it was not being implemented in its entirety. An effective and formal mechanism for meaningful engagement of the full range of stakeholders in the management process that also used their knowledge and information was not yet established. The national respondent was of the view that the current ad-hoc approach to communications internally, across institutions and with third parties should be formalized and a communications strategy developed that provides for structured liaison between the various stakeholders involved in implementation of the ECFF-FMP.

The main challenges to full implementation of the ECFF-FMP pertained to limited funding, other priorities in fisheries and the relative lower importance of the flyingfish fishery compared to the large pelagic fishery. The high catches and associated revenue were seasonal in the flyingfish fishery and there were fewer persons involved compared to the pelagic fishery. Only a small number of persons from three communities targeted flyingfish, otherwise the fishery was opportunistic. The proposed solutions for overcoming these challenges were to consult with stakeholders on the ECFF-FMP and to identify and take advantage of funding opportunities. However, the national respondent was uncertain as to when these challenges would be addressed or when a national FMP that allowed for full implementation of the ECFF-FMP would be developed. Saint Lucia did not report officially to the CRFM on the development

and implementation of a national management plan for its flyingfish fisheries that was consistent with the ECFF-FMP, other than through the questionnaire administered in this study.

#### 3.4.2 Legislation and Monitoring, Control and Surveillance in support of Management of Flyingfish Fisheries

The current national FMP was not fully supported by existing legislation and the national respondent was uncertain as to when it would be updated accordingly. Under current legislation the registration of fishers and licensing of artisanal, commercial fishing vessels, as well as the regulation of gear sizes and ensuring the sustainability of the flyingfish fishery were mandatory. However, the provision of data by the industry; data collection, analysis and reporting to managers by the Department of Fisheries; consultation with stakeholders on management issues; support for the ecosystem and precautionary approaches to fisheries management and the designation of specific management and conservation measures were not mandatory. The existing MCS system would require more human and financial resources and dedicated staffing for enforcement in order to give full effect to implementation of the ECFF-FMP.

#### 3.4.3 Data Collection and Reporting in support of Research and informed Decision-Making

There were no improvements in the national data collection system since May 2014. Saint Lucia did not submit catch and effort data for the period June 2014 to May 2015 to the CRFM as the landings for 2015 had not yet been analyzed. Annual landings for 2014 were submitted to the CRFM, including the respective flyingfish landings and value. At the 13<sup>th</sup> Meeting of the Caribbean Fisheries Forum, Saint Lucia reported estimated total landings of 85 t of flyingfish in 2014, which represented only 5% of total landings and an observed 20% decrease in flyingfish landings from the previous year.

The Fisheries Department collected data on landings, fishing effort, the ex-vessel price of fish and the cost of fuel. These data were computerized using the Trip Interview Program and the data could be easily queried and extracted for analysis and reporting purposes. As well, the data recorded were raised to estimate total landings, fishing effort and ex-vessel value. However, the main challenges to collection of data on flyingfish fisheries to facilitate management that was consistent with the EAF pertained to financial constraints for biological and ecological data collection. To address these challenges the Department of Fisheries proposed to collaborate with other countries, agencies and organizations to better manage the fisheries and to seek alternative ways of collecting biological information that did not require additional funds. However, the national respondent was uncertain as to when these measures would be implemented.

#### 3.4.4 Authorized National Entry (License/Permit) System for Flyingfish Fisheries

Saint Lucia implements a national licensing system to control fishing, which includes vessels in the flyingfish fishery. This system is computerized and details concerning fishing vessels which caught flyingfish could be extracted. The system allows for identification of fishing vessels that caught flyingfish commercially but not those that caught flyingfish incidentally or for use as bait. In June 2014, 736 dayboats operated but only one caught flyingfish commercially. However, all fishing vessels could catch flyingfish during the respective season.

#### 3.4.5 Awareness-building of Stakeholders on the ECFF-FMP and their Engagement in the Management Process

The respective Resolution of the Ministerial Council as well as the ECFF-FMP and associated management measures to be implemented, and the related legislation and enforcement measures, were not communicated to stakeholders. No national training or public awareness programmes were implemented to strengthen the participation of flyingfish fishers in the management process.

### **3.5 St Vincent and the Grenadines**

#### **3.5.1 Adoption of the ECFF-FMP, Development and Implementation of National FMP for Management of Flyingfish Fisheries**

St Vincent and the Grenadines did not officially adopt the ECFF-FMP and the national process towards its adoption had not been initiated due to other priorities in fisheries. There was limited interest in the flyingfish fishery and consequently most resources were used for other fisheries which were considered more significant. A more thorough investigation into the flyingfish fishery was needed. The country also did not have a national FMP that incorporated flyingfish fisheries. The national respondent was uncertain as to when a national FMP that addressed issues in this fishery would be developed. The main challenges to full implementation of the ECFF-FMP were limited funding and other priorities in fisheries. No solutions were proposed for addressing these challenges as the national respondent was uncertain as to when they would be addressed. He was also uncertain as to when a national FMP that allowed for full implementation of the ECFF-FMP would be developed. Consequently St Vincent and the Grenadines did not report to the CRFM on development and implementation of a national management plan for its flyingfish fisheries that was consistent with the ECFF-FMP, other than through the questionnaire administered in this study.

#### **3.5.2 Legislation and Monitoring, Control and Surveillance in support of Management of Flyingfish Fisheries**

Under existing fisheries legislation the ecosystem approach to fisheries management and designation of specific management and conservation measures were mandatory. However, the provision of data by the industry; data collection, analysis and reporting to managers by the Department of Fisheries; consultation with stakeholders on management issues; and support for the precautionary approach to fisheries management were not mandatory. Update of current legislation, purchase of new equipment and staff capacity-building were specific changes identified for improvement of the existing monitoring, surveillance and enforcement systems, in order to give full effect to the ECFF-FMP.

#### **3.5.3 Data Collection and Reporting in support of Research and informed Decision-Making**

There were no improvements in the national data collection system since May 2014. The Fisheries Division did not submit catch and effort data on flyingfish fisheries for the period June 2014 to May 2015 to the CRFM since such data were not collected. However, the Division collected data on flyingfish landings. These data were computerized using MS Excel and CARIFIS and could therefore be easily queried and extracted for analysis and reporting purposes. The sample data were however, not raised to estimate total catches and landings because very little data on flyingfish was collected. No solutions for improving the collection of flyingfish fisheries data were proposed and the national respondent was uncertain as to when the matter would be addressed.

#### **3.5.4 Authorized National Entry (License/Permit) System for Flyingfish Fisheries**

St Vincent and the Grenadines did not implement a license or permit system to control fishing, but the current system allowed for keeping a record of fishing vessels. No further information was provided as to whether or not details concerning fishing vessels which catch flyingfish could be identified from the existing system. As well, no data were provided on the number of fishing vessels targeting or catching flyingfish in June 2014 or May 2015.

#### **3.5.5 Awareness-building of Stakeholders on the ECFF-FMP and their Engagement in the Management Process**

The respective Resolution of the Ministerial Council as well as the ECFF-FMP and associated management measures to be implemented and the related legislation and enforcement measures were not

communicated to stakeholders. No national training or public awareness programmes were implemented to strengthen the participation of flyingfish fishers in the management process.

### **3.6 Trinidad and Tobago**

#### **3.6.1 Adoption of the ECFF-FMP, Development and Implementation of National FMP for Management of Flyingfish Fisheries**

Trinidad and Tobago did not officially adopt the ECFF-FMP at the level of the Tobago House of Assembly (THA) or at the level of central government (Cabinet). Although the Department of Marine Resources and Fisheries in Tobago supported the ECFF-FMP, at the technical level, the ECFF-FMP was not yet being implemented. There was also no national FMP that incorporated flyingfish fisheries and the Tobago respondent was uncertain as to when a national FMP would be developed and approved to facilitate full implementation of the ECFF-FMP. However, a new Strategic Plan was being developed for the fisheries sector in Tobago (responsibility of the DMRF), consistent with the Comprehensive Economic Development Plan 2.0 (CEDP 2.0) and the Strategic Plan of the Division of Agriculture, Marine Affairs, Marketing and the Environment of the THA. This Strategic Plan would give consideration to management of the flyingfish fishery in the context of the Draft Marine Fisheries Policy, the proposed new fisheries legislation and the ECFF-FMP. However, the Tobago respondent was uncertain as to when this Strategic Plan would be finalized and approved. A limited appropriate policy framework and other priorities in fisheries were the main challenges experienced, but no national plans for addressing these challenges were indicated, and the Tobago respondent was uncertain as to when these challenges would be addressed. Trinidad and Tobago did not report officially to the CRFM on the development and implementation of a national management plan for its flyingfish fisheries that was consistent with the ECFF-FMP, other than through the questionnaire administered in this study.

#### **3.6.2 Legislation and Monitoring, Control and Surveillance in support of Management of Flyingfish Fisheries**

Since there was no national FMP for flyingfish fisheries no responses were provided for this sub-section of the questionnaire. Current legislation did not provide for data collection, analysis and reporting, stakeholder consultation, application of the precautionary and ecosystem approaches to fisheries management and designation of specific management and conservation measures. There was limited capability under current legislation to regulate fishing gear and the sizes of fish caught, as well as other measures that were not applicable to the flyingfish fishery, but the legislation was not flexible in allowing designation of other specific conservation or management measures. Any changes to existing monitoring, surveillance and enforcement systems required to give full effect to the ECFF-FMP were also not reported.

#### **3.6.3 Data Collection and Reporting in support of Research and informed Decision-Making**

In July 2014 the data collection system was expanded to cover the majority of landings sites throughout Tobago (except sites at Parlatuvier and Charlotteville). The current data collection system was intended to take a full census of the landings and associated fishing effort. However, catch and effort data on flyingfish fisheries for the period June 2014 to May 2015 were not reported to the CRFM and no reasons were provided for the non-reporting. The data collected included flyingfish caught for sale as well as for bait. These data were computerized using MS Access and could be easily queried and extracted for analysis and reporting purposes. The support of fishers was the main challenge identified in data collection. However, there was a critical need to build capacity within the Department of Marine Resources and Fisheries in Tobago to analyze the data collected.

### 3.6.4 Authorized National Entry (License/Permit) System for Flyingfish Fisheries

Trinidad and Tobago did not currently implement a license system to control fishing. Consequently, responses to questions pertaining to the ability to identify those vessels that catch flyingfish were indicated as “not applicable”. No data were provided on the number of fishing vessels in June 2014 and May 2015 that were targeting the flyingfish, catching the species incidentally, catching the species commercially or for use as bait. Consequently, it was uncertain whether the number of vessels that caught flyingfish had changed between June 2014 and May 2015. The Tobago respondent indicated however, that it was possible to identify those fishing vessels that caught flyingfish from analysis of the catch data collected.

### 3.6.5 Awareness-building of Stakeholders on the ECFF-FMP and their Engagement in the Management Process

The respective Resolution of the Ministerial Council as well as the ECFF-FMP and associated management measures to be implemented and the related legislation and enforcement measures were not communicated to stakeholders. No national training or public awareness programmes were implemented to strengthen the participation of flyingfish fishers in the management process.

## **4.0 RESULTS – REGIONAL INITIATIVES**

### **4.1 Governance and Management of Flyingfish Fisheries**

In addition to the seven agreed management measures the ECFF-FMP lists a number of actions which would improve the overall management of flyingfish fisheries (see page 35 of the ECFF-FMP) and which are also reflected in the Ministerial Resolution (Appendix 1). Some of these actions are best accomplished at the sub-regional or regional level. They include, *inter alia*:

1. improving and harmonizing data collection and analysis in the sub-region;
2. prioritising the development of a protocol on improving and harmonizing fisheries management legislation, to address specifically flyingfish vessel licensing and registration systems in the sub-region;
3. establishment of a sub-regional flyingfish catch and effort database to be managed by the CRFM Secretariat;
4. establishment of a sub-regional flyingfish vessel registry database to be managed by the CRFM Secretariat;
5. prioritising the development of a protocol on data and information sharing;
6. formalizing the relationship between the CRFM and France to ensure France’s involvement in the management process;
7. improved monitoring, control, surveillance and enforcement mechanisms for flyingfish fisheries and ending IUU fishing; and
8. promotion of the principles and provisions enshrined in fisheries and related regional and international agreements to which countries are signatory.

The Ministerial Resolution (Appendix 1) also directed the Caribbean Fisheries Forum and the CRFM Secretariat to initiate work to prepare a legally binding regional agreement for the conservation, management and sustainable use of the flyingfish resources in the Eastern Caribbean.

Between June 2014 and May 2015 the Secretariat’s efforts were focused on development of: (1) the Annex 5 (Subproject #3) to the CLME+ Project Document (2015 to 2020) – which addresses specifically EAF for the Eastern Caribbean Flyingfish; and (2) the Marine Component of the Investment Proposal for the Regional Track of the Pilot Programme for Climate Resilience (PPCR) (2015 to 2020) – which addresses specifically improving the information base on the impacts of climate change to inform climate

change adaptation and disaster risk management planning in fisheries. These two projects, which will be implemented between 2015 and 2020, are expected to contribute to a number of regional requirements for governance and management of the flyingfish fishery, including actions listed at 4.1 above, (see Appendix 4 for details). Progress on the respective activities will be reported in subsequent evaluations.

The status of regional activities between June 2014 and May 2015 is reported below against the actions listed above.

#### 4.1.1 Harmonizing Data Collection and Analysis in the Sub-region

Development of a model logbook for the moored FAD fishery was initiated over the period evaluated and the model logbook was published and circulated in the 2015 – 2016 evaluation period (CRFM, 2015b). The model logbook could be modified for the flyingfish fishery however, since it was developed under the CARIFICO Project it was only introduced to the respective participating countries, which excludes Barbados and Trinidad and Tobago. However, the respective documents are available on the CRFM's website. Planned activities under the CLME+ Project – Subproject #3, the PPCR as well as the WECAFC-FIRMS<sup>1</sup> regional database project are expected to contribute to harmonizing data collection and analysis in the region (See Appendix 4). Progress on the respective activities will be reported in subsequent evaluations.

#### 4.1.2 Improving and harmonizing fisheries management legislation – flyingfish vessel registration and licensing systems

Planned activities under the CLME+ Project – Subproject #3 are expected to contribute to this initiative (See Appendix 4). Progress on the respective activities will be reported in subsequent evaluations.

#### 4.1.3 Sub-regional databases – catch, effort, fishing vessel registry

Currently the ECFE-FMP confers responsibility on six CRFM Member States to submit annual catch and effort data on flyingfish fisheries to the CRFM and mandates that the CRFM Secretariat manages the respective sub-regional flyingfish databases (for catch and effort data as well as a vessel registry). At the technical level, a regional commitment was made since 2008 at the third meeting of the WECAFC Ad Hoc Flyingfish Working Group of the Eastern Caribbean (FAO/WECAFC, 2010) to maintain the electronic database that was assembled at the meeting and used for the 2008 sub-regional stock assessment, and to ensure that it was updated with the best estimates of flyingfish catch and effort to support future assessments. Consequently the responsibility for development of the respective databases is a collective or shared one, among the CRFM Member States and the Secretariat. The lack of a sub-regional data policy and framework within the CRFM to guide the provision, collection, storage, security and management of, as well as access to, and analysis of regional fisheries data continues to be a major challenge in efforts to develop the respective sub-regional databases. Although several CRFM Member States already share data with the FAO and ICCAT, such data are not sufficiently disaggregated (FAO) or pertinent (e.g. ICCAT manages large, highly migratory pelagic species) to facilitate detailed analyses or stock assessment of the flyingfish fishery and respective resources. Activities under the CLME+ Project, the PPCR and the WECAFC-FIRMS regional database project are expected to address some of the policy requirements for data sharing and establishment of sub-regional databases (See Appendix 4). Progress on the respective activities will be reported in subsequent evaluations.

#### 4.1.4 Data and information sharing

The absence of a sub-regional policy to facilitate data and information sharing continues to be a challenge. However, activities under the CLME+ Project, the PPCR and the WECAFC-FIRMS regional

---

<sup>1</sup> <http://firms.fao.org/firms/en>

database project are expected to address some of the requirements in future (See Appendix 4). Progress on the respective activities will be reported in subsequent evaluations.

#### 4.1.5 Formalizing the relationship between CRFM and France

Since 2011 the Ministerial Council initiated discussions on improved cooperation between the French Islands, specifically in the context of strengthening management and conservation of the Eastern Caribbean Flyingfish fishery and combating IUU fishing in the region. At its 5<sup>th</sup> Special Meeting, convened in Suriname on 9 October 2014, the Ministerial Council revisited the issue. It reviewed a brief/aide memoire, which was developed in 2013, and which identified the relevant issues to be taken into consideration in establishing formal relations with Martinique and Guadeloupe. The 2013 brief also made recommendations regarding the appropriate approach for policy level/political engagement of France in respect of the two French Départements Outre-Mer (DOMs). The Ministerial Council agreed *inter alia* that: (1) a small CARICOM-wide Committee be established to engage the Regional Council of the DOMs in the Caribbean (Martinique and Guadeloupe) and the France-Caribbean Cooperation Institute (ICFC) in policy dialogue to further explore the modalities for technical and political cooperation regarding fisheries (CRFM, 2014c); (2) a proposed Cooperation Agreement (MoU) be drafted for the consideration of Guadeloupe and Martinique; (3) a small Committee be established to oversee and liaise with point persons in the DOMs; (4) that regular follow-up meetings be convened to advance the cooperative arrangements; and (5) that options for financial and administrative resources to implement the MoU should be explored by the Parties and a plan of action be developed prior to signing of the Agreement.

The Ministerial Council also recommended that the CARICOM Secretary General considers a formal mission to the French DOMs to meet with the Prefect and President of the Regional Councils of Martinique and Guadeloupe and that simultaneously in the margins other meetings or consultations should be held between representatives of the CRFM and the Director of Maritime Affairs and the Ministry of Agriculture. As there are already higher level political processes aimed at a general cooperation framework between the CARICOM and France, it is imperative that the recommendations of the Ministerial Council be implemented within this general framework.

The 51<sup>st</sup> Special Meeting of the Council for Trade and Economic Development (COTED), which was convened in Suriname on 10 October 2014, considered the decisions of the 5<sup>th</sup> Special Meeting of the MC and endorsed its proposed approach to strengthen cooperation in fisheries between the CARICOM/CRFM States and the French DOMs in the Caribbean. Since then the CRFM Secretariat has written to the CARICOM Secretariat seeking an update on the matter and the CRFM Secretariat is awaiting a response.

#### 4.1.6 Improved MCS and ending Illegal Unreported and Unregulated (IUU) fishing

Prior to the period under evaluation, a Regional Strategy on Monitoring, Control and Surveillance to Combat IUU Fishing in the CARICOM/CARIFORUM Region was developed (CRFM, 2013). The Strategy was preceded by the Castries Declaration on IUU Fishing in 2010. Both of these instruments support development of a Regional Working Group on IUU Fishing, which was established at the 15<sup>th</sup> Session of WECAFC. Since then efforts have focused on sourcing funds to convene an inaugural meeting of the Working Group and to conduct a study to determine cost-effective measures to combat IUU fishing in the short-term. The CRFM's Biennial Work Plan for 2016 to 2018 outlines the following specific activities for the IUU Working Group: studies on collaborative policing and reporting approaches, a protocol for transmitting information on IUU fishing to flag states, review of methods and arrangements for data and information management related to IUU fishing and assessment of the viability of adopting modern technologies and methodologies to increase data capture, coverage and reliability (CRFM, 2016). As well, planned activities under the CLME+ Project – Subproject #3 are expected to partly contribute to

this initiative (See Appendix 4). Progress on the respective activities will be reported in subsequent evaluations.

#### 4.1.7 Preparation of a legally-binding regional agreement for the conservation, management and sustainable use of the flyingfish resources in the Eastern Caribbean – responsibility of CFF and Secretariat

There was no progress on this activity between June 2014 and May 2015. The support and commitment of the range of stakeholders at the national level as well as the Member States for implementation of the ECFF-FMP would be critical in moving forward on this mandate.

## **4.2 Research**

The ECFF-FMP also outlines critical research required in the following areas:

- (a) Costs and earnings study to compare the economic and financial performance of flyingfish fisheries and flyingfish value-addition;
- (b) Socio-economic study of flyingfish fishers (including an examination of their conditions of work) and processors;
- (c) Assessment of the impact of sea and land-based activities on the habitat, life cycles and food webs of flyingfish and the productivity of the related marine ecosystem;
- (d) Assessment of the risks associated with climate change, extreme weather events and other aspects of global environmental change;
- (e) Bio-economic analysis of the flyingfish – considering the long-term fluctuations associated with changes in abundance of predators (i.e. dolphinfish and other large pelagics) and competitors targeted by other fleets;
- (f) Bio-economic analysis of the flyingfish fishery – considering the cycle of long-term fluctuating stocks within a changing environment and the associated adequate vessel capacity;
- (g) Identification (and quantification) of refined operational objectives, indicators and reference points for agreed management priorities under the ECFF-FMP through a participatory approach.

During the period May 2014 to June 2015 no specific regional research on the flyingfish was undertaken by the CRFM. However all activities from (a) to (g) listed above are expected to be addressed either wholly or partly under the CLME+ Project (Sub-Project #3) and the PPCR (Marine Sub-component). Additionally, activities under the regional project *Climate Change Adaptation in the Eastern Caribbean Fisheries Sector* are expected to address (c) and (d). Progress on the respective activities will be reported in subsequent evaluations. Further details are available in Appendix 5.

Technical collaboration between the CRFM and Ifremer was formalized in January 2015, through a Memorandum of Understanding aimed at fostering closer collaboration to: (i) promote sustainable aquaculture development; (ii) improve scientific understanding and assessment of fisheries and marine ecosystems as a basis for effective management and sustainable use of marine living resources; (iii) build capacity in the respective areas; and (iv) improve mutual understanding at the technical level of the role and usage of marine research in sustainable fisheries management. In January 2016, a Memorandum of Understanding among the WECAFC (of which France is a Member), CRFM and OSPESCA was signed. This arrangement was facilitated under the CLME+ Project and offers a temporary mechanism to facilitate support and to strengthen the coordination of actions among the organizations for sustainable fisheries in the Western Central Atlantic region, the flyingfish fishery being one such fishery.

## **5.0 SUMMARY FINDINGS, DISCUSSION AND RECOMMENDATIONS**

### **5.1 Adoption of the ECFF-FMP, Development and Implementation of National FMPs for Management of Flyingfish Fisheries**

#### 5.1.1 Adoption of the ECFF-FMP

None of the six CRFM Member States adopted the ECFF-FMP at the level of governance that confirms national commitment towards its implementation. However, both Barbados and Grenada reported action being taken in the next evaluation period (June 2015 to May 2016). Limited resources (funding, human resources), limited staff capacity and training, other priorities in fisheries, limited industry and political support and lack of a supporting policy and legislative framework were the main challenges identified in implementation of the ECFF-FMP nationally. While respondents from Grenada, Saint Lucia and Trinidad and Tobago provided options for addressing these challenges, only the respondent from Grenada identified a specific time when the challenges may be addressed (5 years).

Development of the ECFF-FMP began since 2001, with several opportunities for Member States to review and contribute to various drafts of the document and to engage stakeholders in this process, leading to its finalization and endorsement in 2014. Greater expediency is therefore necessary in its adoption at the national level to facilitate progress in management of flyingfish fisheries in the eastern Caribbean and to demonstrate the CRFM's commitment in implementing its conservation and management measures agreed upon.

It should be noted that generally current fisheries legislation does not appear to specifically support the ecosystem approach to fisheries management, a central tenet of the ECFF-FMP (based on a cursory review of the legislation, not on national responses to the survey). Sub-regionally, the Ministerial Council, at its 7<sup>th</sup> meeting on May 2013, confirmed its support for implementation of the EAF, through a policy statement. It called upon all CRFM Member States to strengthen their commitment to, and implementation of, the ecosystem approach to fisheries and aquaculture through fisheries legislation, policies, plans and management arrangements at the national and local levels.

Based on the responses to the survey questionnaire it is reasonable to conclude that the flyingfish fishery is not of tremendous national importance in Dominica, Saint Lucia and St Vincent and the Grenadines and as a consequence these Member States accorded low priority to adoption and implementation of the ECFF-FMP. However, the flyingfish fishery is socio-economically important to Barbados and Trinidad and Tobago and is also an important source of bait for the developing offshore pelagic fishery in Grenada. Consequently, there can be no appreciable advancement in regional efforts to manage the flyingfish fishery without the formal support of these three Member States. Specifically, the Barbados respondent indicated limitations in funding, training and human resource as the main challenges to implementation of the ECFF-FMP while the Tobago respondent identified a limited policy framework and other priorities in fisheries as the main challenges.

Since the French Overseas Departments (Départements Outre-Mer - DOMs) of Martinique and Guadeloupe also exploit the flyingfish resources their support and collaboration in management of the flyingfish fishery are also critical. Action was initiated since 2013 towards a formal political arrangement between the CRFM and France for collaboration in the sustainable use, conservation and management of shared fisheries resources and further initiatives are dependent on negotiation of a broader CARICOM-France collaborative framework. At the technical level, a Memorandum of Understanding between the CRFM and the French Research Institute for Exploitation of the Sea (Ifremer) for collaboration in research was signed in January 2015 and in January 2016 a similar arrangement was put in place for

collaboration among the WECAFC, CRFM and OSPESCA for interim coordination in sustainable fisheries.

*In light of the above situation, the following are recommended:*

- (a) Official adoption of the ECFF-FMP should be accorded high priority in Barbados, Trinidad and Tobago and Grenada for PY 2016-2017;*
- (b) Solicit technical support of the DOMs through the recently signed Memorandum of Understanding (MoU) between the WECAFC, CRFM and OSPESCA for interim coordination in sustainable fisheries and the MoU between the CRFM and the French Research Institute for Exploitation of the Sea (Ifremer) for collaboration in research;*
- (c) Actively pursue initiatives since 2013 that are intended to formalize arrangements at the political level for collaboration between the CRFM and France in the sustainable use, conservation and management of shared fisheries resources mindful of the need to proceed in accordance with a broader CARICOM-France political collaborative framework;*
- (d) Seek adoption of the ECFF-FMP at the level of WECAFC;*
- (e) Provide the necessary resources to facilitate full implementation of the ECFF-FMP; and*
- (f) Conduct a solution-oriented review of national fisheries policy, legislative frameworks and management systems to identify existing provisions and flexibilities that allow for innovative and effective use of these instruments and systems to implement the ECFF-FMP at the national level and to identify any limitations to be addressed in future (building upon previous initiatives by Berry and Teitze, 2012).*

#### 5.1.2 Development and implementation of National FMPs for Management of Flyingfish Fisheries

None of the six Member States are guided by approved national FMPs that address issues in the flyingfish fishery specifically. Although Saint Lucia has a specific FMP for flyingfish and Grenada has an FMP for pelagic species (which incorporates flyingfish), these FMPs were not approved nationally and do not make full provisions for implementation of the ECFF-FMP. Grenada reported action to be initiated in the 2015 – 2016 evaluation period for development of a national FMP that would facilitate full implementation of the ECFF-FMP. However, neither respondent from Barbados nor Tobago could confirm when a corresponding national FMP that allows for full implementation of the ECFF-FMP would be developed.

Current legislation in Saint Lucia and Trinidad and Tobago does not provide a series of steps or a process for developing, organizing and implementing fishery management regulations and fishery management plans (George *et al.*, 2015; Chan A Shing and Maharaj, 2015). Furthermore, of the six Member States Trinidad and Tobago is the only country in which current fisheries legislation does not mandate the development of fisheries management plans. The enactment of proposed new legislation designed to modernize fisheries management, consistent with several regional and international fisheries management and conservation initiatives, appears to be a crucial step if Trinidad and Tobago is to make progress towards proactive and successful management (Chan A Shing and Maharaj, 2015). Barbados reported to the 13<sup>th</sup> meeting of the CFF that its Fisheries Act and associated regulations were being amended. (CRFM, 2015a). Harmonized fisheries legislation in the OECS Member States (Dominica, Grenada, Saint Lucia and St Vincent and the Grenadines) as well as current legislation in Barbados mandates that the Chief Fisheries Officer prepares/develops and keep updated a plan/schemes for the management and development of fisheries in the respective waters (based on a cursory review of the Fisheries Acts, not on national responses to the survey). However, some investigation is necessary to identify the reasons why most national FMPs remain in draft form without approval from the respective authorities and presumably provision of the respective resources for implementation. *The following are recommended:*

- (a) Barbados, Trinidad and Tobago and Grenada should accord high priority to development and implementation of national flyingfish FMPs that are consistent with the ECFF-FMP;*

- (b) *Conduct a solution-oriented review of national fisheries policy, legislative frameworks and management systems to identify existing provisions and flexibilities that allow for innovative and effective use of these instruments and systems to implement the ECFF-FMP at the national level and to identify any limitations to be addressed in future (building upon previous initiatives by Berry and Teitze, 2012);*
- (c) *Provide the necessary resources to facilitate full implementation of the ECFF-FMP;*
- (d) *Encourage Trinidad and Tobago to review its proposed new fisheries legislation with a view to ensuring that it facilitates full implementation of the ECFF-FMP, to make the necessary amendments if it does not, and to enact such legislation at the soonest possible time; and*
- (e) *Encourage Barbados to make provisions for full implementation of the ECFF-FMP in its amendments to the current Fisheries Act and regulations and to enact such amendments at the soonest possible time.*

In the case of Trinidad and Tobago management of fisheries occurs at two levels of governance. While the Ministry of Agriculture, Lands and Fisheries (MALF) has overall responsibility for national fisheries management, the Tobago House of Assembly Act (Chapter 25:03, last amended in 2006), confers authority for management of the fisheries resources within six (6) nautical miles off the coast of Tobago to the Tobago House of Assembly. Due to the distribution of the flyingfish resource, both the THA and MALF share responsibility for management of the fishery. This governance arrangement poses an additional challenge in the timely adoption of the ECFF-FMP and the respective policy and legislative changes as well as management systems required to facilitate its full implementation. It should be noted however, that flyingfish is caught exclusively off Tobago and consequently the social and economic costs and benefits are linked directly to the fishing sector on that island.

*Since the governance of the flyingfish fishery in Trinidad and Tobago occurs at two levels it is highly recommended that the fisheries authorities of both islands be actively engaged in regional discussions on the governance and management of the eastern Caribbean flyingfish fishery.*

## **5.2 Annual reporting on implementation of the ECFF-FMP and associated catch and effort data**

Only Barbados reported on national efforts to adopt the ECFF-FMP to the 13<sup>th</sup> Meeting of the CFF (CRFM, 2015a). None of the six Member States reported formally to the CRFM on the status of development of national management plans that are consistent with the ECFF-FMP, other than through the survey administered in this study. *It is recommended that the Directors of Fisheries and Chief Fisheries Officers report on the status of national adoption and implementation of the agreed ECFF-FMP to the meetings of the Forum, in accordance with the existing procedures for Member State reporting on national developments.*

Barbados and Saint Lucia reported on the estimated total landings of flyingfish for 2014 at the 13<sup>th</sup> Meeting of the Caribbean Fisheries Forum (CRFM, 2015a). However, none of the six Member States officially reported estimates of total catch and fishing effort for the flyingfish fishery to the CRFM. While an agreed standardized format for reporting catch and effort data was not made available over the June 2014 to May 2015 period, all the respective Member States participated in the 2008 stock assessment of the flyingfish which developed a simple sub-regional database (FAO/WECAFC, 2010) and have had the benefit of participation in the CRFM's Scientific Meetings and so are aware of the format of data required for stock assessment. *However, since none of the six Member States have voluntarily submitted the required data, it is recommended that the CRFM Secretariat formally requests the respective data on an annual basis and either reminds Member States of the already established formats for data submission or, in light of recent developments under the WECAFC-FIRMS regional database project, undertake further discussions and agree on a data sharing arrangement for implementation from the 2016-2017 period.*

### **5.3 Authorized National Entry (Permit/License) System**

An authorized national entry system is required to ascertain the details of those vessels that participate in a fishery and to control fishing should the level of exploitation be deemed unsustainable. Based on responses to the survey, four Member States (Barbados, Dominica, Grenada and Saint Lucia) have in place a licensing or permitting system for the purpose of controlling fishing, which was supported by the requisite legislation. However the primary national respondent indicated that the system in Dominica was not applicable to the flyingfish fishery and the national respondent of St Vincent and the Grenadines indicated that the country kept instead, a record of fishing vessels. The licensing of fishing vessels was mandatory in current legislation of all Member States except Trinidad and Tobago (based on a cursory review of the respective Fisheries Acts, not national responses to the survey). Since some Member States were able to regulate specific fisheries (e.g. the secondary respondent in Dominica advised of a permit system for access to FAD fisheries) this suggested that the existing framework could also be used to regulate the flyingfish fishery.

Only Saint Lucia, Grenada and Barbados provided statistics on the number of fishing vessels that caught flyingfish based on computerized data for their licensing systems. Presumably St Vincent and the Grenadines should be able to provide same from its record of fishing vessels, and based on further discussions it was found that Trinidad and Tobago (from Tobago respondent) and Dominica (from secondary respondent) could also provide such information from their catch and effort data collection systems.

In light of the above situation the following are recommended:

- (a) Conduct a solution-oriented review of national fisheries policy, legislative frameworks and management systems to identify existing provisions and flexibilities that allow for innovative and effective use of these instruments and systems to implement the ECFE-FMP at the national level and to identify any limitations to be addressed in future (building upon previous initiatives by Berry and Teitze, 2012). This activity should contribute to improving and harmonizing fisheries management legislation specifically to address licensing and registration systems in the region as outlined in the ECFE-FMP;*
- (b) Encourage Trinidad and Tobago to review its proposed new fisheries legislation with a view to ensuring that it facilitates full implementation of the ECFE-FMP, to make the necessary amendments if it does not, and to enact such legislation at the soonest possible time; and*
- (c) Assess the number and identity of fishing vessels catching flyingfish in Dominica, St Vincent and the Grenadines and Trinidad and Tobago and implement systems (as an interim measure until licensing systems are in place), if none already exist, to ensure that reporting on such information is possible in future.*

### **5.4 Conduct of a stock assessment**

In accordance with the ECFE-FMP, a stock assessment should be conducted prior to significant development in the fishery or if the 5,000-tonne trigger point is realized. There being no advice from Member States on planned significant development of the fishery, nor stakeholder reports of higher than normal catches (in the absence of official reporting on total catches), such an assessment was not warranted. However, should the need arise for such an assessment the existing data quality is not likely to facilitate any improvement in the assessment conducted since 2008 (FAO/WEC AFC, 2010), nor improvement of the reliability of the resulting management advice. Five of the Member States did not report any improvements in data collection systems and data quality and none of the six Member States shared the respective estimates of total catch and fishing effort for their flyingfish fishery with the CRFM. The recording of fishing effort poses a challenge in some Member States (Grenada, Trinidad and Tobago

and St Vincent and the Grenadines), mainly because the fishery operates in a multi-species, multi-fleet scenario. This situation compromises the region's ability to monitor trends in flyingfish abundance and to attribute flyingfish stock levels to a specific fishing effort and level of exploitation. In Tobago specifically there is no technical capacity to estimate total catch and fishing effort from recorded, sample data and to conduct basic fisheries analyses.

While the agreed ECFF-FMP specifically mandates the provision of data on total catch and fishing effort annually from the time of its adoption, there is also need to focus on improving the quality of the respective historical time series data. These data are used to estimate past stock sizes, to monitor trends in abundance (catch per unit effort being one indicator of abundance) and exploitation rates and to make predictions on stock size associated with varying degrees of fishing effort and exploitation rates. Consequently, longer and more accurate time series of data reduces the uncertainty in the results of the assessment and increases the reliability of the associated management advice. Improved catch and effort data would also contribute to better monitoring of the performance of management measures.

*In light of the current situation the following are recommended:*

- (a) Improve existing data collection systems for effective recording of flyingfish catches and fishing effort;*
- (b) Review the operations of the range of flyingfish fleets in the region and identify feasible measures of fishing effort which could be standardized across all relevant Member States, for integration into existing data collection programmes/sampling plans; and*
- (c) Provide technical assistance or training to national fisheries staff, where required, to facilitate estimation of total catch and fishing effort from recorded, sample data (both current and historical) and to conduct basic fisheries analyses to inform fisheries management decision-making.*

## **5.5 Adoption of a precautionary sub-regional total annual catch trigger point of 5,000 tonnes**

As explained previously, annual reporting of estimates of total catch and fishing effort for the flyingfish fishery by CRFM Member States has not yet commenced. Consequently the CRFM is unable to estimate total regional catches of flyingfish as a basis for ascertaining the current situation relative to the agreed trigger point and consequently, to be able to inform the appropriate management action. It is also interesting to note that based on a cursory review of current Fisheries Acts in the respective Member States there does not appear to be legislative support for the precautionary approach to fisheries management, a central tenet of the ECFF-FMP.

## **5.6 Implementation of a precautionary sub-regional freeze on expansion of the flyingfish fishing effort and/or fishing capacity should the agreed catch trigger point be realized**

Implementation of this management measure presumes that systems exist for timely estimation and reporting of total regional catches of flyingfish, for directing that such management action be taken at the national level (e.g., through a national FMP) and for controlling fishing effort and/or fishing capacity at the national level. Consequently the discussions at 5.1.2, 5.3 and 5.5 are also relevant here. Although current legislation systems in Barbados, Grenada and Saint Lucia give support to a licensing and registration system, such systems are not currently informed by approved national management plans and it is not apparent that they are actively being used as a management tool to control fishing. Consequently, if a situation arises which requires a freeze in the flyingfish fishing effort it is not apparent that the national mechanisms and systems exist to facilitate practical and timely implementation of such a management measure. As well, Trinidad and Tobago, Dominica and St Vincent and the Grenadines would be unable to control fishing effort or fishing capacity in their flyingfish fisheries for reasons

explained at (5.3) above. The challenges in estimating fishing effort on flyingfish specifically, in a multi-species, multi-fleet scenario must also be addressed to facilitate practical implementation of this management measure. *For the reasons explained above, the recommendations at (5.3) and (5.4) are also relevant here.*

With respect to MCS systems, Barbados, Grenada, Saint Lucia and St Vincent and the Grenadines identified specific changes required to existing systems to give full effect to the ECFF-FMP. Based on the feedback of these Member States *it is recommended that:*

- (a) Provide resources (financial, human, equipment, etc.) to facilitate improved MCS required for effective management of the flyingfish fishery;*
- (b) Train staff to conduct MCS activities; and*
- (c) Provide legislative support and systems to facilitate effective MCS.*

## **5.7 Strengthen current national data collection systems**

The ECFF-FMP specifies strengthening of current national data collection systems for three purposes: (1) for assessment of resource status and establishment of improved management target and reference points; (2) for estimating levels of existing fishing effort and fishing capacity; and (3) for monitoring and evaluation of the status of implementation of management plans against the objectives and indicators agreed upon.

No improvements in the national data collection systems were reported to have occurred between June 2014 and May 2015, except in Trinidad and Tobago (Tobago specifically). The improvements in Tobago were associated with implementation of the Comprehensive Economic Development Plan 2.0, which identified development of statistical databases to inform planning and decision-making as a priority area (Kairi Consultants Ltd, 2012). The baseline for improving flyingfish fisheries data collection and analysis pre-dates sub-regional endorsement of the ECFF-FMP. Since 1999 such deficiencies were identified and appear to have persisted over the years. Many of these deficiencies were prioritized for action by both the respective WECAFC and CRFM Working Groups with negligible management response (FAO/WECAFC, 1999; 2002; 2010). At the first sub-regional stock assessment of the eastern Caribbean flyingfish data quality was the main source of uncertainty in the assessment (FAO/WECAFC, 2010). As at May 2015, there was little evidence that these limitations, or improvements in data quality, were addressed. In some Member States not all landing sites of importance to the flyingfish fishery were included in the data collection programme, flyingfish caught as bait were still not recorded and there were challenges in recording appropriate measures of fishing effort across different fleet types. However, in all six Member States the data collected were computerized using one or more types of software (TIP, CARIFIS, MS Excel, MS Access) and the respective national databases could be easily queried and the requisite data extracted.

Recorded sample landings data were raised to estimate total landings in all Member States except Trinidad and Tobago (Tobago specifically), but only Barbados and Saint Lucia estimated total fishing effort for the flyingfish fishery. In Grenada in particular the recording of fishing effort proved to be a problem across different vessel types, and the quantity of flyingfish caught as bait in the longline fishery was not recorded. Tobago remains the only island without the technical capacity to analyze the data collected and to derive estimates of total catch and fishing effort from recorded data, even though it expanded its data collection system and it is the only island that records the quantity of flyingfish caught as bait.

Current fisheries data collection systems do not support application of the EAF and by extension, do not allow for assessing the performance of the operational objectives or monitoring the indicators agreed

upon in the ECFF-FMP (Appendix 6.). Saint Lucia, Grenada and Dominica collect some economic data (ex-vessel price, cost of fuel, cost of fishing) but among the six Member States there is generally no routine collection of biological, social, economic or ecological data. Although the respondents of Dominica and St Vincent and the Grenadines indicated that current legislation supports the EAF approach this was not evident from a cursory review of the respective Fisheries Acts. It is also interesting to note based on national responses to the survey that although current national legislation in Grenada and St Vincent and the Grenadines makes provisions for designation of specific management and conservation measures, provisions are not made for submission of data by the industry, nor the analysis and reporting of such data to inform the respective management measures or evaluate their performance.

The main challenges to data collection experienced by all Member States, except Trinidad and Tobago which did not respond, pertained to resource limitations (presumably of the respective Fisheries Departments/Divisions), limitations in the data collection systems and difficulties in getting the cooperation of fishers to provide the required data. Of these, Barbados, Dominica, Grenada and Saint Lucia provided possible solutions to the challenges identified, but only Grenada committed to addressing the challenges in a specific time period (within two years). The national respondents of other Member States were uncertain as to when the challenges will be addressed. Grenada indicated the need for protocols for monitoring fishing effort and fish catches, effective liaison with fishers to facilitate the sharing of data and effective data management, including resources, as necessary requirements for improving monitoring of the fishery. Of the six Member States the provision of fisheries data and information by the industry to the fisheries authority seemed only mandatory (in law) in Barbados. As well, it is worth noting that the CRFM Data Methods and Training Working Group (DMTWG) in 2014 committed to the development of new, or updating of existing, national sampling plans in its biennial work plan for the period 2014 to 2016 (CRFM, 2014a). Since then only Saint Lucia developed a draft revised sampling plan while Dominica signaled its intention to begin the activity soon and Trinidad and Tobago (Trinidad) deferred the activity to the second quarter of 2016.

*In light of the challenges experienced in implementing data collection systems that satisfy the requirements for management of the flyingfish fisheries in the context of EAF, the following are recommended:*

- (a) Improve existing data collection systems for effective recording of flyingfish caught as bait and as food;*
- (b) Review the operations of the range of flyingfish fleets in the region and identify feasible measures of fishing effort which could be standardized across all relevant Member States, for integration into existing data collection programmes/sampling plans. Provide technical assistance or training to national fisheries staff, where required, to facilitate estimation of total catch and fishing effort from recorded, sample data (both current and historical time series) and to conduct basic fisheries analyses to inform fisheries management decision-making;*
- (c) Invest in, and implement, appropriate extension services to build stakeholders' awareness on the importance of data for personal business planning and fisheries management;*
- (d) Modify national data collection strategies and strengthen institutional linkages to facilitate efficient use of existing resources and improvement in the range and quality of data collected to enable application of an ecosystem approach to management of flyingfish fisheries; and*
- (e) Review, amend and enact fisheries legislation to make the following mandatory: (1) provision of data by the industry to the national fisheries authority; (2) collection and analysis of data by the national fisheries authority; and (3) reporting of the national fishery authority to decision-makers and other direct stakeholders on the findings of fisheries data analyses to inform management decision-making.*

## 5.8 Stakeholder Awareness and Engagement in the Management Process

Between June 2014 and May 2015 only Dominica communicated the details of the Resolution and the ECFF-FMP to stakeholders, as well as to the general public. However, details concerning the feedback from stakeholders were not provided to the Secretariat or respective CRFM Working Group. Such feedback is necessary to ensure that the views, opinions and recommendations of stakeholders are considered in future amendments to the ECFF-FMP. Based on survey responses, it is mandatory in law to consult with stakeholders in Barbados only. However, the secondary respondent from Grenada advised of the scope for stakeholder consultations through establishment of a Fisheries Advisory Committee (FAC). It should be noted that current Fisheries Acts of all Member States but Trinidad and Tobago make provisions for establishment of FACs, which provides for stakeholder consultation albeit, perhaps not at the grassroots or civil society levels. None of the six Member States conducted any training programmes to strengthen the participation of fishers in the management process. However, an EU-funded regional project entitled “Enhancing food security from the fisheries sector in the Caribbean: Building the capacity of regional and national fisherfolk organization networks to participate in fisheries governance and management” is being executed by the CANARI, in collaboration with several regional partners including the CRFM, between 2013 and 2016 in all 17 CRFM Member States. The CLME+ Project (Subproject on EAF for the Eastern Caribbean Flyingfish) will also play a role in strengthening stakeholder participation in the management process, with focus at the level of the Ministerial Sub-Committee on Flyingfish, National Inter-sectoral Committees and Fisheries Advisory Committees (See Appendix 4). *In light of the above situation the following are recommended:*

- (a) *Member States should give priority to building awareness of stakeholders concerning the agreed ECFF-FMP and to discussing the respective implications and obligations as directed by the Ministerial Council. Member States should also provide feedback on consultations to inform any future modifications to the ECFF-FMP;*
- (b) *Member States should provide resources to continue implementation of activities initiated under regional projects to strengthen stakeholder participation in the management process and to expand such activities where necessary; and*
- (c) *Review, amend and enact fisheries legislation to make consultation with stakeholders a mandatory component of fisheries management decision-making.*

## 5.9 Other Actions for Improving Overall Management of Flyingfish Fisheries

Specific achievements at the regional level were aimed at formalizing political and technical cooperation between the CRFM and France and development of proposals for regional projects to improve the governance and management of flyingfish fisheries, and to facilitate conduct of the requisite research, as outlined in the ECFF-FMP.

The 5<sup>th</sup> Special Meeting of the Ministerial Council on 9 October 2014 considered a brief on the issues and approaches towards the respective political collaboration and provided specific recommendations on the way forward, noting efforts at a higher political level for a general cooperation framework between CARICOM and France. The decisions of the 5<sup>th</sup> Special Meeting of the MC were considered and endorsed by the 51<sup>st</sup> Special Meeting of the COTED. Since then the CRFM Secretariat has written to the CARICOM Secretariat seeking an update on the matter and it is currently awaiting a response. *The recommendations of the 5<sup>th</sup> Special Meeting of the Ministerial Council for formalizing political arrangements collaboration between the CRFM and France in the sustainable use, conservation and management of shared fisheries resources should be implemented within the broader context of a collaborative framework between CARICOM and France.* Sub-regional and regional technical collaborative arrangements were formalized through Memoranda of Understanding between the CRFM

and Ifremer and among WECAFC, CRFM and OSPESCA, in January 2015 and January 2016, respectively.

Two proposals were developed for regional projects: the CLME+ Project – Sub-project on EAF for the eastern Caribbean flyingfish and the Pilot Programme for Climate Resilience (Marine Sub-component). This CLME+ Sub-project will, *inter alia*, implement a full policy cycle of the ECFF-FMP, and focus on strengthening the governance frameworks, as well as stakeholder awareness and participation in the management process, formalizing arrangements for data and information sharing, improving the information base for EAF management, improving management systems (licensing of fishing vessels, fisheries data collection), enhancing livelihoods and reviewing management performance and adaptation strategies. These two projects have been approved by the respective funding agencies and are to be implemented between 2015 and 2020. Other regional initiatives which will contribute to improving the overall management of the flyingfish fisheries and conduct of the requisite research include the WECAFC-FIRMS Regional Database Project, the Climate Change Adaptation in the Eastern Caribbean Project and the Project on Enhancing Food Security from the Fisheries Sector in the Caribbean: Building the Capacity of Regional and National Fisherfolk Organization Networks to Participate in Fisheries Governance and Management. As well, planned activities of the WECAFC Regional Working Group on IUU Fishing and activities incorporated under the CRFM's Biennial Work Plan for 2016 to 2018 are expected to improve overall MCS systems. Regarding initiatives aimed at improving data collection and analysis, data and information sharing and sub-regional/regional databases, along with the respective frameworks, there appears to be some overlap among the CLME+ Sub-Project, PPCR Project and WECAC- FIRMS Regional Database Project. *Consequently, it is recommended that these efforts be coordinated and integrated where possible, so as to maximize the use of the resources and optimize the respective benefits in terms of the availability of data to inform management decision-making.*

## **6.0 CONSIDERATIONS FOR FUTURE EVALUATIONS**

This being the first evaluation of the status of implementation of the ECFF-FMP a simple survey was designed to collect basic information concerning activities at the national level. It may be necessary to refine the survey in future to focus more closely on specific areas based on the findings of, and gaps in, this first evaluation and to consider whether or not a quantitative evaluation is necessary. Although there is an obligation under the ECFF-FMP for the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean to report on its status of implementation annually, due to the time taken by Member States to provide the necessary feedback and the timing of the CFF and MC meetings, such reports are likely to lag by an entire year. However, Member states have opportunity to report on any significant achievements in implementation of the ECFF-FMP in their national reports to the CFF. It should be noted that during the course of this evaluation some Member States stated their intentions to take specific actions, and provided timelines, for addressing some of the national challenges identified for full implementation of the ECFF-FMP. These intentions are reflected in the respective sub-sections under Section 3 of this report and progress on the respective activities should be considered in future evaluations.

## **7.0 STUDY LIMITATIONS**

The most critical limitation in this study was the apparent low priority assigned to the evaluation exercise by some Member States, which ultimately impacted the quality of the survey responses and uncertainty as to whether they were endorsed at the fisheries directorate's level before submission to the Secretariat. Since the CRFM does not have a history of evaluating its performance in implementing sub-regional

fisheries conservation and management instruments, the majority of these instruments being approved only within the last 5 years, and this being the first such evaluation, may explain the apparent low priority assigned to the activity at the national level. At times the responses for this evaluation exercise were ambiguous, conflicting, gave the impression that the respondent was uncertain, or were not provided for all questions. Endorsement of the survey responses at the fisheries directorate's level was critical as many of the survey questions required comprehensive knowledge of national fisheries policy and legislation as well as authority to advise on how and when specific challenges will be addressed. Other limitations pertain to the untimely delivery of completed surveys by Member States, general unresponsiveness to queries or requests for clarification on survey submissions as well as requests to review the draft evaluation report.

## **8.0 CONCLUSIONS**

Based on the results of the evaluation the national commitment to implement the ECFF-FMP was not apparent. During the period evaluated, and up until February 2016 when this report was finalized, none of the six Member States had adopted the ECFF-FMP at the highest level of national governance. However, both Barbados and Grenada reported relevant action being taken towards national adoption. Development of the ECFF-FMP began since 2001, with several opportunities for Member States to review and contribute to various drafts of the document and to engage stakeholders in this process, leading to its finalization and endorsement in 2014. Greater expediency is therefore necessary in its adoption at the national level to facilitate progress in management of flyingfish fisheries in the eastern Caribbean and to demonstrate the CRFM's commitment in implementing its conservation and management measures agreed upon.

Appreciable sub-regional advancement in implementation of the ECFF-FMP can only be achieved with the full and active support of Barbados, Trinidad and Tobago and Grenada because of the relative importance and historical magnitude of the flyingfish fishery in these countries compared to the other Member States (Dominica, Saint Lucia and St Vincent and the Grenadines). Consequently these countries should be accorded high priority in access to regional resources for management of the eastern Caribbean flyingfish fisheries.

Generally, national efforts to implement the management measures agreed upon in the ECFF-FMP as well as other directives of the associated Ministerial Resolution were negligible based on the survey responses. Only Barbados reported on the status of adoption of the ECFF-FMP and status of development of a national FMP. None of the six Member States had approved national FMPs that were consistent with the ECFF-FMP and none had reported on estimates of total catch and fishing effort in their flyingfish fisheries. There were no real improvements in the national data collections systems, except in Trinidad and Tobago (Tobago). Consequently, existing national data collection systems do not allow for monitoring and evaluating the ECFF-FMP against the objectives and indicators agreed upon, or for monitoring management target and reference points in the context of the EAF. The situation poses a challenge for monitoring total regional catches against the agreed 5,000-tonne trigger point and for advising on whether conduct of a stock assessment is warranted or whether a sub-regional freeze in expansion of flyingfish fishing effort or fishing capacity should be put into effect. It was also not apparent that current Fisheries Acts supported the precautionary and ecosystem approaches to fisheries management, two key tenets of the ECFF-FMP. Although most Member States (except Trinidad and Tobago and St Vincent and the Grenadines) had licensing or permit systems (authorized national entry systems) it was uncertain whether these systems were being used to actively control fishing. Only Dominica communicated the details of the agreed ECFF-FMP and associated Ministerial Resolution to its stakeholders. While most countries identified challenges to achieving full implementation of the ECFF-

FMP at the national level as well as possible solutions, only the respondent from Grenada committed to addressing the challenges within a specific time period.

At least four management systems are critical for implementation of the ECFF-FMP, and specifically the seven management measures agreed upon: data collection; vessel licensing; monitoring, control and surveillance; and stakeholder engagement. Current Fisheries Acts make provisions, either wholly or in-part, for these systems, although it was uncertain whether the enabling regulations were in place. However, they also make provisions for development and implementation of FMPs, establishment of Fisheries Advisory Committees and designation of conservation and management measures. While some changes in fisheries policy, legislative frameworks and management systems may be required to fully implement the ECFF-FMP, it was not apparent that effective and innovative use of existing national instruments and mechanisms were being fully explored to this effect. It should also be noted that Trinidad and Tobago is the only Member State for which the current Fisheries Act does not include the majority of the above-mentioned provisions, although such provisions are incorporated in its proposed new legislation, which is not yet enacted. As well, at the time of this evaluation Barbados was in the process of updating its Fisheries Act and related management regulations. The continuing lack of attention to limitations in the data collection systems and respective data analyses are of concern. Many of these limitations were identified since 1999, and have been prioritized for action by both the respective WECAFC and CRFM Working Groups with negligible management response. Flyingfish catch data, in particular, is linked to at least five of the seven agreed management measures.

At the regional level little was achieved to advance the political arrangements between the CRFM and France for collaboration in the sustainable use, conservation and management of shared fisheries resources. The 5<sup>th</sup> Special Meeting of the Ministerial Council on 9 October 2014 considered a brief on the issues and approaches towards the respective political collaboration and provided specific recommendations on the way forward, noting efforts at a higher political level for a general cooperation framework between CARICOM and France. The decisions of the 5th Special Meeting of the MC were considered and endorsed by the 51<sup>st</sup> Special Meeting of the COTED. Since then the CRFM Secretariat has written to the CARICOM Secretariat seeking an update on the matter and it is currently awaiting a response. An arrangement for technical cooperation between the CRFM and Ifremer in fisheries (and aquaculture) research and related capacity-building was formalized in January 2015. Proposals were developed for two regional projects that are expected to contribute to improvement in the overall governance and management of the flyingfish fisheries and conduct of the requisite research. These projects were approved by the respective funding agencies for implementation between 2015 and 2020. One of these projects, the CLME+ Project (Sub-project #3), focuses specifically on application of the EAF for the Eastern Caribbean Flyingfish.

It should be noted that many of the challenges identified by the Fisheries Divisions/Departments of Member States to fully implement the ECFF-FMP were not new, nor the majority of recommendations proposed by this study. Consequently, the political will to bring about the necessary changes, and the expedient and innovative action of the national fisheries authorities, would be critical in moving forward and in demonstrating the region's commitment to application of the EAF to management of the eastern Caribbean flyingfish fishery in the long term. Such changes will also inevitably contribute to overall improvement in management of national fisheries in general and are consequently worth the long-term investment so as to fully realize the socio-economic benefits. The Ministerial Council issued a policy statement at its 7<sup>th</sup> Meeting, in May 2013, in support of implementation of the EAF. It called upon all CRFM Member States to strengthen their commitment to, and implementation of, the ecosystem approach to fisheries and aquaculture through fisheries legislation, policies, plans and management arrangements at the national and local levels. The time is opportune for the provision of the respective resources to be able to do so.

## 9.0 REFERENCES

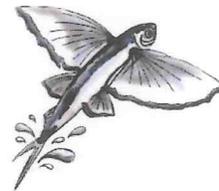
- Berry, David S., Tietze, Uwe. 2012. CRFM Consultancy Report on Review of Existing Policy, Legal and Institutional Arrangements for Governance and Management of Flyingfish Fisheries in the Caribbean Large Marine Ecosystem. *CRFM Technical & Advisory Document* – Number 2012 / 6. 99 pp.
- Chan A Shing, C. and Maharaj, S. 2015. Country Review – Trinidad and Tobago. pp 259 to 274 *In: Singh-Renton, S. and McIvor, I. 2015. Review of current fisheries management performance and conservation measures in the WECAFC area. FAO Fisheries and Aquaculture Technical Paper No. 587*, Bridgetown, Barbados, FAO. 293 pp.
- CRFM, 2013. Regional Strategy on Monitoring, Control and Surveillance to Combat Illegal, Unreported and Unregulated Fishing in the CARICOM / CARIFORUM Region. *CRFM Technical & Advisory Document*, No. 2013 / 11. 79 pp.
- CRFM 2013a. Report and Proceedings of the Seventh Meeting of the Ministerial Council of the Caribbean Regional Fisheries Mechanism, Accra Beach Hotel and Spa, Christ Church, Barbados, 31 May 2013. Volume 2. *CRFM Management Report* – PY 2013 / 14. 86 pp.
- CRFM, 2014. Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean. *CRFM Special Publication No. 2*. 42 pp. + annexes.
- CRFM 2014a. Report of Tenth Annual CRFM Scientific Meeting – Kingstown, St. Vincent and the Grenadines, 10-17 June 2014. *CRFM Fishery Report* - 2014. Volume 1. 179 pp.
- CRFM, 2014b. Report of Workshop to Develop Strategy to Strengthen Capacity in CRFM States in the Area of Fisheries Statistics and Information, 10 - 12 February 2014, St. Vincent and the Grenadines. *CRFM Technical & Advisory Document*, No. 2014 / 1. 138 pp.
- CRFM 2014c. Report and Proceedings of the Fifth Special Meeting of the Ministerial Council of the Caribbean Regional Fisheries Mechanism, Paramaribo, Suriname, 09 October 2014. Volume 2 – Supplement 1. *CRFM Management Report* – PY 2014 / 15. 73 pp.
- CRFM 2015. Report and Proceedings of the Twenty-fourth Meeting of the Executive Committee of the Caribbean Fisheries Forum. Kingstown, St. Vincent and the Grenadines, 19 – 20 February, 2015. Volume 1 – Supplement 2. *CRFM Management Report* – PY 2014 / 15. 73 pp.
- CRFM 2015a. Report and Proceedings of the Thirteenth Meeting of the Caribbean Fisheries Forum – National Report, St. George's, Grenada, 30 – 31 March 2015. Volume 1 – Supplement 1. *CRFM Management Report* – PY 2015 / 16. 75 pp.
- CRFM. 2015b. FAD Fishery Model Logbook. *CRFM Special Publication No. 4*. 23 pp.
- CRFM. 2016. CRFM Biennial Work Plan and Budget, 1 April 2016 to 31 March 2018. *CRFM Administrative Report*. (in prep.)
- FAO/WECAFC. 1999. Report of the First Meeting of the WECAFC Ad Hoc Flyingfish Working Group of the Eastern Caribbean. Bridgetown, Barbados, 22-24 September 1999. *FAO Fisheries Report*. No. 613. Port of Spain, FAO. 1999. 45 pp.
- FAO/WECAFC. 2002. Report of the Second Meeting of the WECAFC Ad Hoc Flyingfish Working Group of the Eastern Caribbean. Bridgetown, Barbados, 8-12 January 2001. *FAO Fisheries Report*. No. 670. Rome, FAO. 2002. 156 pp.
- FAO/WECAFC. 2010. Report of the Third Meeting of the WECAFC Ad Hoc Flyingfish Working Group of the Eastern Caribbean. Mount Irvine, Tobago, 21–25 July 2008. *FAO Fisheries and Aquaculture Report*, No. 929. Rome, FAO. 2010. 88p.
- Fisheries Act No. 39 of 1916 (last amended by Act No 23 of 1975). (Trinidad and Tobago) (11th December 1916). An act to regulate fishing in the waters of Trinidad and Tobago.*
- Fisheries Act No. 10 of 1984. (Saint Lucia) (18th July 1984). An act to make provision for the promotion and regulation of fishing and fisheries in the fishery waters of Saint Lucia and for matters incidental thereto and connected therewith. 27 pp.*

- Fisheries Act No. 15 of 1986. (Grenada) (11<sup>th</sup> April 1986). An act to provide for the promotion and management of fisheries in the fishery waters of Grenada and for matters incidental thereto and connected therewith. 29 pp.*
- Fisheries Act No.8 of 1986. (last amended by Act No. 25 of 1989).(St Vincent and the Grenadines)(4<sup>th</sup> March 1986). An Act for the promotion and management of fisheries and matters incidental thereto and connected therewith. 23 pp.*
- Fisheries Act No. 11 of 1987. (Dominica)(2<sup>nd</sup> July 1987). An Act to make provision for the promotion and regulation of fishing in the fishery waters of Dominica and for matters incidental thereto and connected therewith. 24 pp.*
- Fisheries Act No. 6 of 1993. (last Amended by Act No. 8 of 2000). (Barbados) (1993) An Act to provide for the management and development of fisheries in Barbados.*
- George, S.N., Peter, S., and Nelson, T. 2015. Country Review – Saint Lucia. Pp 233 to 248 In: Singh-Renton, S. and McIvor, I. 2015. *Review of current fisheries management performance and conservation measures in the WECAFC area. FAO Fisheries and Aquaculture Technical Paper No. 587*, Bridgetown, Barbados, FAO. 293 pp.
- Kairi Consultants Ltd. 2012. The Comprehensive Economic Development Plan, 2013-2017. CEDP 2.0: Redoubling the Effort. Division of Finance and Enterprise Development, Tobago House of Assembly. 130 pp.
- Tobago House of Assembly Act No. 40 of 1986 (last amended by Act No 17 of 1986). (Trinidad and Tobago) (9th December 1996). An act to repeal and replace the former Tobago House of Assembly Act, and to provide for the membership, powers and functions of the Tobago House of Assembly and its Executive Council and matters incidental thereto.*

CRFM Ministerial Council

**Resolution on the  
Sub-regional  
Fisheries  
Management Plan  
for Flyingfish in  
the Eastern  
Caribbean**

Roseau,  
Commonwealth of Dominica  
23 May 2014



## CRFM Ministerial Council

### Resolution on the Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean

The Ministerial Council,

**Mindful** of the social and economic importance of flyingfish fisheries to the Eastern Caribbean states, and particularly of the role of flyingfish in local fish consumption traditions, as provider of coastal livelihoods and for tourism purposes;

**Recognizing** that recent regionally coordinated 2008 evaluations using data, expertise and inputs from the Fisheries Divisions in Barbados, Dominica, Grenada, Martinique (France), Saint Lucia, Saint Vincent and the Grenadines and Trinidad and Tobago, as presented to Caribbean Regional Fisheries Mechanism (CRFM), Western Central Atlantic Fishery Commission (WECAFC) and to the Caribbean Large Marine Ecosystem (CLME) Project, indicate that the stock of flyingfish in the Eastern Caribbean is not experiencing overfishing, that catch rates have remained fairly stable even with increased overall catches, and that it is unlikely that catches have exceeded Maximum Sustainable Yield (MSY) for this stock;

**Noting** the limitations in the data and information available to inform management decision-making and that such a situation requires application of a precautionary approach to fisheries management;

**Committed** to individually and collectively taking measures and actions to implement the Agreement on the Establishment of the Caribbean Community Common Fisheries Policy (CCCFP) in terms of managing the shared flyingfish resources in the Eastern Caribbean;

**Recalling** the relevance of the CRFM<sub>2010</sub> Castries (St. Lucia) Declaration on Illegal, Unreported and Unregulated Fishing and the 2012 Resolution of the members of the WECAFC on strengthening the implementation of international fisheries instruments for flyingfish fisheries in the Eastern Caribbean;

**Supporting** all efforts to implement an ecosystem approach to fisheries management with stakeholders, which contributes to efficient fishing activities of the flyingfish resource within an economically viable and competitive small-scale fisheries sector, providing a fair standard of living for those who depend on fishing flyingfish and taking the interests of consumers into account.

**Accepting** the need to implement the Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean, including the following sub-regional flyingfish management measures:

1. Development and implementation of national management plans for flyingfish fisheries, consistent with the sub-regional fisheries management plan, by the 2015/2016 flyingfish season, or as soon as is practically possible;
2. Annual reporting, by CRFM Member 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;

3. Establishment of an authorized national entry (license/permit) system for flyingfish fisheries, which enters into force for the flyingfish fisheries season 2015/2016, or as soon as is practically possible. Such a system would facilitate an estimation of existing fishing effort<sup>1</sup> and/or fishing capacity<sup>2</sup> and provide a mechanism for controlling fishing effort and/or fishing capacity should the need arise in future;
4. Conduct of an assessment to estimate stock abundance of flyingfish, such as a regional synoptic survey, prior to any significant development in the fishery;
5. Adoption of a precautionary sub-regional total annual catch trigger point of 5000 tonnes, at which point further action shall be taken to ensure the stock does not become overfished;
6. 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;
7. Strengthen current national data collection systems to facilitate:
  - a. assessment of the resource status and establishment of improved management target and reference points;
  - b. estimation of existing levels of fishing effort and fishing capacity; and
  - c. monitoring and evaluation of the status of implementation of the national and sub-regional fisheries management plans against the objectives and indicators agreed upon.

**Acknowledges** that the overall management of the flyingfish fisheries needs to be improved by taking the following actions:

1. improving and harmonizing data collection and analysis in the sub-region;
2. prioritising the development of a protocol on improving and harmonizing fisheries management legislation, to address specifically flyingfish vessel licensing and registration systems in the sub-region;
3. establishment of a sub-regional flyingfish catch and effort database<sup>3</sup> to be managed by the CRFM Secretariat;
4. establishment of a sub-regional flyingfish vessel registry database<sup>4</sup> to be managed by the CRFM Secretariat;
5. prioritising the development of a protocol on data and information sharing;
6. national monitoring of catch levels in real time, and timely reporting to the CRFM Secretariat which will keep check on overall catches in relation to the agreed trigger point, and advise accordingly;
7. formalizing the relationship between the CRFM and France to ensure France's involvement in the management process as far as the flyingfish fishery in the EEZs of its Departments in the region are concerned;
8. improved monitoring, control, surveillance and enforcement mechanisms for flyingfish fisheries and ending IUU fishing;

---

<sup>1</sup>Fishing effort is the level of fishing, as may be defined, *inter alia*, by the number of fishing vessels, the number of fishers, the amount of fishing gear and technology that may enhance catchability and the time spent on fishing or searching for fish (Source: Caribbean Community Common Fisheries Policy)

<sup>2</sup> Fishing capacity is the ability to take the maximum amount of fish over a period of time (year, season) by a fishing fleet that is fully utilized, given the biomass and age structure of the fish stock and the present state of the technology (Source: FAO Glossary of Terms - online)

<sup>3</sup>This database is envisioned as a component of a broader regional database pertaining to shared fisheries resources in the region.

<sup>4</sup>This database is envisioned along similar lines as above.

9. implementing national programmes to build stakeholder awareness on the management measures to be implemented and related legislation and enforcement measures;
10. institution of national training and public awareness programmes to strengthen fishers' participation in the management process;
11. national reporting to the CRFM or WECAFC, whichever is relevant, on any intended increases in fishing effort and/or fishing capacity, or any development likely to impact on fishing effort and/or fishing capacity, so as to inform updates to resource assessments, proposed management measures and amendment of the sub-regional FMP, as well as to allow a determination as to whether or not another form of stock assessment or a synoptic survey should be conducted;
12. promotion of the principles and provisions enshrined in fisheries and related regional and international agreements to which countries are signatory.

**Directs** the Fisheries Divisions/Departments of CRFM Member States, following up from the 2012 to 2014 national consultations (in each of the participating countries), to communicate this resolution and discuss the implications of this Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean with all relevant stakeholders;

**Also Directs** the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean to report annually to the CRFM Caribbean Fisheries Forum and Ministerial Council, and the WECAFC, on the regional progress made in the implementation of the sub-regional fisheries management plan and performance of the associated fisheries management measures;

**Further Directs** the CRFM Caribbean Fisheries Forum and Secretariat to initiate work to prepare a legally binding regional agreement for the conservation, management and sustainable use of the flyingfish resources in the Eastern Caribbean; and

**Calls upon** CRFM Member States, participating in the flyingfish fisheries, to take all necessary action to adopt the Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean and proactively pursue its implementation.

Endorsed by the Eighth Meeting of the CRFM Ministerial Council,

Roseau, Commonwealth of Dominica, 23 May 2014

Signed by:

 23/5/14

Honourable Dr Kenneth Darroux  
Chairman  
CRFM Ministerial Council

## **APPENDIX 2: QUESTIONNAIRE – MONITORING AND EVALUATION OF NATIONAL IMPLEMENTATION OF THE SUB-REGIONAL FISHERIES MANAGEMENT PLAN FOR FLYINGFISH IN THE EASTERN CARIBBEAN**

### **CRFM Survey to Monitor & Evaluate progress on**

### **Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean**

The Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean (Sub-regional FF FMP) was endorsed by the Ministerial Council, through Resolution (attached), at its Eighth Meeting on 23 May 2014 in the Commonwealth of Dominica. At that meeting the Ministerial Council *called upon CRFM Member States participating in the flyingfish fisheries to take all necessary action to adopt the Sub-regional Management Plan for Flyingfish in the Eastern Caribbean and to proactively pursue its implementation*. The responsibility for monitoring and evaluation of implementation of the Sub-regional FF FMP rests with the CRFM-WECAFC Working Group on Flyingfish in the Eastern Caribbean, the CRFM being represented by its Pelagic Fisheries Working Group (PWG - both technical/scientific and management levels). The CRFM-WECAFC Working Group on Flyingfish in the Eastern Caribbean and by extension the PWG are required to report annually to the WECAFC as well as the Caribbean Fisheries Forum and Ministerial Council respectively.

Regarding national implementation of those management measures outlined in the Resolution, the approach for conducting the monitoring and evaluation exercise through electronic survey, administered by the CRFM Secretariat to relevant Member States, in collaboration with both Working Groups, was endorsed by the 13<sup>th</sup> Meeting of the Caribbean Fisheries Forum in Grenada in March.

The full report of the monitoring and evaluation exercise over the period June 2014 to May 2015 will include details of national progress (as obtained from this survey) as well as regional level activities in support of flyingfish fisheries management in accordance with the Sub-regional FF FMP. It will also identify areas of success to be shared regionally and areas or critical gaps requiring priority attention for the management of the flyingfish fisheries in the eastern Caribbean. This report will be presented to the CRFM Executive Committee, the WECAFC 16, the Caribbean Fisheries Forum and the Ministerial Council at the respective meetings in 2016. As a consequence your timely completion of the attached questionnaire and submission to the CRFM Secretariat by **31 July 2015** would be greatly appreciated. **ALL submissions must be endorsed by the respective Director of Fisheries or Chief Fisheries Officer.**

## Questionnaire

### A. Adoption of the Sub-Regional Flyingfish (FF) FMP<sup>1</sup>

1. Has your country/territory officially adopted the Sub-regional FF FMP? (*Official adoption means that the plan has been approved by the respective designated authority for national implementation to the extent possible*) (tick or embolden appropriate response)
  - a. Yes
  - b. No
2. If you answered “no” to question (1), has the national process towards adoption of the Sub-regional FF FMP been initiated? (tick or embolden appropriate response)
  - a. Yes
  - b. No
3. If the Sub-regional FF FMP has not been adopted, please indicate why: (tick or embolden all that apply)
  - a. Limited industry support
  - b. Limited political support
  - c. Limited appropriate policy framework
  - d. Limited funding
  - e. Other priorities in fisheries
  - f. Other (please specify)
4. Indicate your Country’s/Territory’s plans (if any) for overcoming the challenges identified at question (3). (insert response here)

### B. Development & Implementation of National FMP for Management of Flyingfish Fisheries<sup>2</sup>

1. Does your country have a National FMP that incorporates flyingfish fisheries?: (tick or embolden appropriate response)
  - a. No
  - b. Yes, but not yet officially adopted
  - c. Yes, and it is officially adopted
2. Indicate which features apply to the National FMP that incorporates flyingfish fisheries: (tick or embolden appropriate response)
  - a. Not applicable (there is no FMP that incorporates flyingfish)

---

<sup>1</sup> The Ministerial Council in the respective Resolution of 23 May 2014 *Called Upon CRFM Member States, participating in the flyingfish fisheries, to take all necessary action to adopt the Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean and proactively pursue its implementation.*

<sup>2</sup> This section addresses management measures (1) and (2) on page 1 of the Resolution.

- b. The FMP is specific to flyingfish
  - c. The FMP incorporates flyingfish generally under pelagic species
  - d. The FMP incorporates flyingfish generally under all commercial species
  - e. Other (please specify)
3. Does the National FMP facilitate full implementation of the Sub-regional FF FMP? (tick or embolden appropriate response)
- a. Yes
  - b. No
4. If the National FMP does not allow for full implementation of the Sub-regional FF FMP, when is it expected that the FMP will be amended to facilitate this? (tick or embolden appropriate response)
- a. Not applicable (the National FMP already facilitates full implementation of the Sub-regional FF FMP)
  - b. Within the year;
  - c. Within 2 years
  - d. Within 5 years
  - e. More than 5 years
  - f. Uncertain
5. Which of the following does the current National FMP address?: (tick or embolden all that apply)
- a. Not applicable (there is no national FMP that incorporates flyingfish)
  - b. Registration and licensing of fishing vessels;
  - c. Data collection, computerisation and analysis;
  - d. Monitoring, control and surveillance;
  - e. Stakeholder participation in the decision-making process.
  - f. Other aspects of the management plan: (insert response here)
6. Is the National FMP being implemented in its entirety?: (tick or embolden appropriate response)
- a. Not applicable (there is no national FMP that incorporates flyingfish)
  - b. Yes
  - c. No
7. If you answered “no” to question (6) which aspects of the plan are not being implemented? (insert response here)
8. What are the main challenges to full implementation of the Sub-regional FF FMP?: (tick or embolden all that apply)
- a. Limited industry support
  - b. Limited political support
  - c. Limited appropriate policy framework
  - d. Limited funding
  - e. Other priorities in fisheries

- f. Other (please specify here)
9. How does your country/territory propose to address the challenges identified under question (8)? (insert response here)
10. When does your country/territory propose to address the challenges identified under question (8)?: (tick or embolden appropriate response)
- a. Within the year
  - b. Within 2 years
  - c. Within 5 years
  - d. More than 5 years
  - e. Uncertain
11. If your country/territory does not have a National FMP that incorporates flyingfish fisheries when is it expected that such a plan, that allows for full implementation of the Sub-regional FF FMP, will be developed?: (tick or embolden appropriate response)
- a. Not applicable (a National FMP already exists and it facilitates full implementation of the Sub-regional FF FMP)
  - b. Within the year;
  - c. Within 2 years
  - d. Within 5 years
  - e. More than 5 years
  - f. Uncertain
12. Other than completion of this questionnaire, has your country officially reported to the CRFM on development and implementation of national management plans for flyingfish fisheries, consistent with the Sub-regional FF FMP? (tick or embolden appropriate response)
- a. Yes, in written form to the Secretariat
  - b. Yes, in written form to the Caribbean Fisheries Forum
  - c. Yes, in verbal form to the Caribbean Fisheries Forum
  - d. No

### **C. Legislation and Monitoring, Control and Surveillance in support of Management of Flyingfish Fisheries<sup>3</sup>**

1. Is the National FMP fully supported by existing legislation?: (tick or embolden appropriate response)
- a. Not applicable (there is no FMP that incorporates flyingfish)
  - b. Yes
  - c. No

---

<sup>3</sup> This section addresses mainly management measure (1) on page 1 of the Resolution.

2. If you answered “no” to question (1) when is it expected that legislation would be updated to give full effect to the Sub-regional FF FMP? (tick or embolden appropriate response)
  - a. Not applicable (the regional FMP already has legislation giving full effect)
  - b. Within the year
  - c. Within 2 years
  - d. Within 5 years
  - e. More than 5 years
  - f. Uncertain
  
3. Which of the following are **mandatory** under existing fisheries legislation?: (tick or embolden all that apply)
  - a. Provision of data by the flyingfish industry
  - b. Collection of data by the flyingfish fisheries authority
  - c. Analysis of data by the flyingfish fisheries authority
  - d. Reporting on flyingfish fisheries data analyses to inform management
  - e. Consultation with flyingfish fisheries stakeholders on management issues
  - f. Support for the ecosystem approach to fisheries management;
  - g. Support for the precautionary approach to fisheries management;
  - h. Designation of specific management and conservation measures;
  - i. Other measures of relevance to management of flyingfish fisheries (please specify here briefly)
  
4. Describe the changes required in existing monitoring, surveillance and enforcement systems that will be required to give full effect to the Sub-regional FF FMP. (insert response here)

#### **D. Data Collection & Reporting in support of Research and informed Decision-Making<sup>4</sup>**

1. Have there been any improvements in national data collection systems since May 2014? (tick or embolden appropriate response)
  - a. Yes (please specify here briefly)
  - b. No
  
2. Has your Division submitted catch and effort data on flyingfish fisheries for the period June 2014 to May 2015 to the CRFM? (tick or embolden appropriate response)
  - a. Yes
  - b. No

---

<sup>4</sup> This section addresses mainly management measures (2) on page 1 of the Resolution and management measures (4), (5), (6) and (7) on page 2 of the Resolution.

3. If you answered “no” to question (2), indicate the reason(s) for non-submission of catch and effort data on flyingfish fisheries. (insert response here)
4. What data does your Division/Department collect on the flyingfish fisheries? Is the data computerized and can it be easily queried and extracted for reporting purposes?: (tick below all that apply - unlisted data types can be added to the table)

Data type/Truth statement	Data is collected (tick below if applicable)	Data is computerized (tick below if applicable)	Data can be easily queried and extracted (tick below if applicable)
Catch (includes all flyingfish caught, including for use as bait, whether or not it is landed)			
Landings			
Effort			
Length			
Maturity			
Economic (please specify)			
Social (please specify)			
Ecological (please specify)			
Other (please specify)			

5. What software/application is used in each case for data entry?: (tick below all that apply - unlisted data types can be added to the table)

Data Type/Software	MS Excel (tick below if applicable)	MS Access (tick below if applicable)	CARIFIS (tick below if applicable)	Oracle (tick below if applicable)	Other (specify)
Catch (includes all flyingfish caught, including for use as bait, whether or not it is landed)					
Landings					
Effort					
Length					
Maturity					
Economic					
Social					
Ecological					
Other					

6. If fisheries catch or landings or effort data are collected, are the sample data raised to estimate total catch, landings and effort?: (tick or embolden appropriate response)
  - a. Yes
  - b. No
7. What are the main challenges to collection of data on flyingfish fisheries to address the respective management measures under the Sub-regional FF FMP? (insert response here)
8. How does your Department propose to address the challenges to data collection identified under question (7)? (insert response here)
9. When is it anticipated that data collection challenges identified under question (7) will be addressed?: (tick or embolden appropriate response)
  - a. Within the year
  - b. Within 2 years
  - c. Within 5 years
  - d. More than 5 years
  - e. Uncertain

#### **E. Authorized National Entry (Licence/Permit) System for Flyingfish Fisheries<sup>5</sup>**

1. Does your country implement a license or permit system to control fishing?: (tick or embolden appropriate response)
  - a. Yes
  - b. No
  - c. No, but the current system allows for keeping a record of fishing vessels
2. Is the licencing or permit system also applicable to the flyingfish fishery?: (tick or embolden appropriate response)
  - a. Not applicable (no license or permit system exists)
  - b. Yes
  - c. No
3. Is the licencing or permit system computerized?: (tick or embolden appropriate response)
  - a. Not applicable (no license or permit system exists)
  - b. Yes
  - c. No

---

<sup>5</sup> This section addresses mainly management measure 3 on page 1 of the Resolution and management measure 7 on page 2 of the Resolution.

4. Are you able to extract details of the fishing vessels which catch flyingfish?: (tick or embolden appropriate response)

- a. Not applicable (no license or permit system exists)
- b. Yes
- c. No

5. Are you able to identify those vessels which: (tick or embolden all that apply)

- a. Not applicable (no license or permit system exists)
- b. Target flyingfish,
- c. Catch flyingfish incidentally;
- d. Catch flyingfish commercially;
- e. Catch flyingfish as bait?

6. If you ticked or emboldened any response between (b) and (e) of question (5), indicate the number of vessels operating in June 2014 accordingly in the table below.

<i>Category/Response</i>	<i>Number of Ice-boats</i>	<i>Number of Day-boats</i>	<i>Number of Other boats (please specify)</i>
Target flyingfish			
Catch flyingfish incidentally			
Catch flyingfish commercially			
Catch flyingfish as bait			

7. Has the number of fishing vessels operating in any of the categories outlined in question (6) **changed** since June 2014?: (tick or embolden appropriate response)

- a. Yes
- b. No
- c. Unsure

8. If you answered “yes” to question (7), indicate the number of vessels operating in May 2015 accordingly in the table below.

<i>Category/Response</i>	<i>Number of Ice-boats</i>	<i>Number of Day-boats</i>	<i>Number of Other boats (please specify)</i>
Target flyingfish			
Catch flyingfish incidentally			
Catch flyingfish commercially			
Catch flyingfish as bait			

**F. Awareness-building of Stakeholders on the ECFF-FMP and their Engagement in the Management Process<sup>6</sup>**

1. Has the Resolution been communicated to stakeholders? (tick or embolden appropriate response)
  - a. Yes
  - b. No
  
2. Has the Sub-regional FF FMP and associated management measures to be implemented as well as related legislation and enforcement measures been communicated to stakeholders and the implications discussed with them? (tick or embolden appropriate response)
  - a. Yes
  - b. No
  - c. In-part (please specify here briefly)
  
3. If you answered “yes” or “in-part” to question (2), who are the **stakeholders** with which the Sub-regional FF FMP has been communicated? (tick appropriate response in the table below) For each of those stakeholders, indicate the feedback received and any proposed amendments to the Sub-regional FF FMP. (Please enter information into the table below. Unlisted or specific items can be added to the table)

<i>Stakeholders</i>	<i>Plan shared with them? (Yes/No)</i>	<i>What feedback was received?</i>	<i>What amendments were proposed by them?</i>
Fishers			
Processors			
Vendors			
Boat owners			
<i>Other government agencies (specify)</i>			
Fisher Organizations			
Environmental NGOs			
<i>Other stakeholders (specify)</i>			

<sup>6</sup> The Ministerial Council in the respective Resolution of 23 May 2014 *Directed the Fisheries Divisions/Departments of CRFM Member States, following up from the 2012 to 2014 national consultations (in each of the participating countries), to communicate this Resolution and discuss the implications of the Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean with all relevant stakeholders.* This section also addresses additional actions outlined in the Resolution at points (9) and (10) on page 3.

4. Have any specific national training programmes been implemented to strengthen the participation of flyingfish fishers in the management process? (tick or embolden appropriate response)
  - a. Yes (describe briefly here)
  - b. No
  
5. Have any public awareness programme been implemented to strengthen the participation of flyingfish fishers in the management process? (tick or embolden appropriate response)
  - a. Yes (describe briefly here)
  - b. No

### **G. General**

Please indicate any additional information of pertinence to the monitoring and evaluation exercise which you feel were not covered in the questions above but which are of particular significance to your country. (insert response here and in additional pages if necessary)

**APPENDIX 3: NATIONAL RESPONDENTS TO THE SURVEY QUESTIONNAIRE**

<b>COUNTRY</b>	<b>DIRECTOR OF FISHERIES/CHIEF FISHERIES OFFICER</b>	<b>RESPONDENTS</b>	<b>POST OF RESPONDENT</b>
Barbados	Stephen Willoughby	Stephen Willoughby	Chief Fisheries Officer
Dominica	Riviere Sebastien	Norman Norris (primary) Derrick Theophile (secondary)	Senior Fisheries Officer Fisheries Officer
Grenada	Justine Rennie	Justin Rennie (primary) Crafton Isaac (secondary)	Chief Fisheries Officer Fisheries Officer
Saint Lucia	Sarita Williams-Peter Thomas Nelson (Ag.)	Thomas Nelson	Deputy Chief Fisheries Officer
St Vincent and the Grenadines	Jennifer Cruickshank-Howard	Kris Isaac	Senior Fisheries Officer
Trinidad and Tobago	Garth Ottley (Tobago) Christine Chan A Shing (Trinidad)	Ruth Redman (*DMRF – primary respondent) Louanna Martin (+FD - submitted official response)	Fishery Development Officer Fisheries Officer
*DMRF – Department of Marine Resources and Fisheries, Tobago +FD – Fisheries Division, Trinidad			

**APPENDIX 4. REGIONAL PROJECTS WHICH WILL CONTRIBUTE TO IMPROVED GOVERNANCE OF THE FLYINGFISH FISHERY**

<b>Action to improve overall management of the flyingfish fishery</b>	<b>CLME+ Project (Sub-project on EAF for the Eastern Caribbean Flyingfish)</b>	<b>PPCR – Marine Sub-component</b>	<b>WECAFC-FIRMS Database Project</b>
Harmonizing data collection and analysis in the Sub-region	Review of fisheries data collection systems and broader national data collection systems; Recommendations for improvement in national data collection systems		Identify weaknesses and recommend support for national data collection and data management
Improving and harmonizing fisheries management legislation – flyingfish vessel registration and licensing systems	Assess samples of fisheries legislation in respect of licensing arrangements; Develop model regulations consistent with management recommendations in ECFE-FMP		
Sub-regional databases – catch, effort, vessel registry	Establish a CRFM data and information repository; Develop a bibliographic database; Support for FIRMS resource and fisheries inventories; Develop proposal to inform development of a decision support system; Conduct national census of flyingfish fishing vessels	Develop a Fisheries and Environment Database to facilitate analysis of the ecological and socio-economic impacts of climate change on fisheries	Strengthen reporting capacities among regional and national experts on the status of stocks and fisheries under regional FMPs; Develop a regional database for data sharing and fisheries assessments
Data and Information Sharing	Formulate and finalize a CRFM sub-regional data policy	Develop a CRFM data policy	Strengthen reporting capacities among regional and national experts on the status of stocks and fisheries under regional FMPs; Develop a regional database for data sharing and fisheries assessments;
Formalizing relationship between CRFM and France	Support for continued development of management partnership/cooperation agreement between CRFM and France		
MCS	Conduct of national census; Awareness-building of the National Inter-Sectoral and Fisheries Advisory Committees; Recommendations for improvement in national data collection systems		

## APPENDIX 5. REGIONAL PROJECTS IN SUPPORT OF FLYINGFISH RESEARCH

Research Recommendation	CLME+ Project (Sub-project on EAF for the Eastern Caribbean Flyingfish)	PPCR – Marine Sub-component	CC4FISH Project
<p><b>Economic and Social Evaluations</b>            Sub-regional costs and earnings study and comparison of the economic and financial performance of flyingfish fisheries and flyingfish value addition            Socio-economic study of flyingfish fishers (including examination of their conditions of work) and processors</p>	<p>Value chain analysis;            Socio-economic valuation of the contribution of flyingfish and associated large pelagic species to food security, income and employment as well as ecosystem goods and services</p>		
<p><b>Studies on Ecosystems and Trophic Interactions</b></p> <p>Impact assessment of sea and land based human activities on habitats, life cycles and food webs of flyingfish and productivity of the related marine ecosystems</p> <p>Studies to improve understanding and estimation of the risks associated with climate change, extreme weather events, and other aspects of global environmental change</p>		<p>Ecological and socio-economic assessments of the impacts of climate change and variability on fisheries in the pelagic ecosystem;            Fisheries and ecosystem analyses and assessments (modeling) to predict impacts of climate change and variability on pelagic fish production, catches, post-harvest and marketing systems.</p>	<p>Climate vulnerability assessments;            Development of a model to assess sargassum impacts on dolphinfish and flyingfish fisheries;            Risk assessment modeling for pelagic (and demersal) fisheries with climate change and variability</p>
<p><b>Bio-economic research</b>            Bio-economic analysis of the flyingfish – considering: (a) the long-term fluctuations associated with changes in abundance of predators (i.e. dolphinfish and other large pelagics) and competitors targeted by other fleets; (b) the cycle of long-term fluctuating stocks within a changing environment and the associated adequate vessel capacity;</p>	<p>Determine the bio-economic and ecological status of the stock</p>		
<p><b>Governance research</b></p> <p>Identification (and quantification) of refined operational objectives, indicators and reference points for agreed management priorities under the ECFF-FMP through a participatory approach.</p>	<p>Quantify baseline estimates of indicators and derive estimates for management reference points</p>		

**APPENDIX 6. UPDATED MANAGEMENT OBJECTIVES, GENERAL OBJECTIVES, OPERATIONAL OBJECTIVES, INDICATORS AND REFERENCE POINTS. (EXCERPT FROM CRFM, 2014)**

<b>Management Goals (category)</b>	<b>General objectives (sub category)</b>	<b>Operational Objectives</b>	<b>Indicators</b>	<b>Suggested reference points</b>
<b>1.Sustained fishery resource - biological</b>	<b>1.1 Sustained resource</b>  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	National CPUEs (spatial)	Long-term average catch rate
		Stock biomass is maintained at or above MSY level	Total national landings	Total sub-regional annual landings (catch trigger point of 5000 tonnes)
	<b>1.2 Accurate information</b>  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	Sampling coverage Sampling design	Adequate coverage of landing sites  Adequate sampling design
	<b>1.3 Effective management</b>  Ensuring that there is an effective system for adaptive and responsive management and enforcement	Establish a harmonized sub-regional database	Sub-regional database operational	Harmonized sub-regional database established and maintained
		Timely submission of data and information to CRFM	Annual submission of data	Current data in database
		Establish authorized access to fishery	License/permit system specifically for flyingfish	All sub-regional flyingfish fleets licensed
		Establish precautionary measures as required	Variety of indicators as required (e.g. fleet size)	Adjustment of related reference points
		Ensure ability to make and enforce management decisions.	Legislation and regulations in place  Compliance levels	Laws and regulations in place and enforced

Management Goals (category)	General objectives (sub category)	Operational Objectives	Indicators	Suggested reference points
				Established level of compliance
		Ensure ability to collaborate effectively with stakeholders and other countries and organizations both vertically and horizontally	Level of stakeholder engagement (consultation and feedback) Stakeholder network indicators	Adequate level of stakeholder engagement
		Adaptation to external drivers/ perturbations	Invasive species (Sargassum)	
<b>2. Optimal use of fishery for long-term benefit - socio-economic</b>	<b>2.1 Social benefits and economic/ financial returns</b>  Optimal social, economic and financial benefits for all involved in the fishery	Optimize social, economic and financial benefits derived from the fishery	Employment level  Income level  Return on investment  Credit access	Adequate levels of: Employment Income  Return on investment  Credit access
	<b>2.2 Affordable food source</b>	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 flying fish  Relative market price	Preferred levels of consumption (health, dietary aspects)  Average market prices of flying fish
	<b>2.3 Fair access to fishing grounds</b>	Ensure fair access to fishing grounds  Minimize conflict/competition with other resource sectors/users.	Access indicators (e.g. number of vessels, fishers and licenses/permits)  Bilateral/multilateral access agreements  Number of conflicts with other resource users	Degree of fair access to fishing grounds  Degree of competition from other resource sectors.  Resource sharing between countries.
	<b>2.4 Optimal utilization/ processing for domestic</b>	Promote fish quality and safety for consumers	Fish and fishery products related SPS	Quality and safety standards

<b>Management Goals (category)</b>	<b>General objectives (sub category)</b>	<b>Operational Objectives</b>	<b>Indicators</b>	<b>Suggested reference points</b>
	<b>and export markets</b>	Develop value addition for the post-harvest sector for domestic and export markets	standards (e.g. HACCP)  Value of post-harvest production  Export value	and requirements met  Adequate level of post harvest processing  Fish and fishery products trade balance
<b>3. Sustained ecosystem health – ecological</b>	<b>3.1 Healthy habitat</b> Healthy habitat with minimal degradation and minimal impact from pollution or other negative effects	Maintain off-shore pelagic habitat health  Minimize habitat degradation	Water quality parameters  Marine debris/pollution occurrence	
	<b>3.2 Healthy and resilient ecosystem</b> (with balanced trophic levels)	Maintain aquatic biodiversity and balanced ecosystem  Adaptation to climate change and weather extremes	Species composition of catches (including size)  Trophic levels (predator –prey composition)  Adaptation and vulnerability indicators	



The CRFM is an inter-governmental organization whose mission is to “Promote and facilitate the responsible utilization of the region’s fisheries and other aquatic resources for the economic and social benefits of the current and future population of the region”. The CRFM consists of three bodies – the Ministerial Council, the Caribbean Fisheries Forum and the CRFM Secretariat. CRFM members are Anguilla, Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago and the Turks and Caicos Islands.

## **CRFM**

### **Headquarters**

[secretariat@crfm.int](mailto:secretariat@crfm.int)

Tel: (501) 223-4443 - Fax: (501) 223-4446

Belize City - Belize

### **Eastern Caribbean Office**

[crfmsvg@crfm.int](mailto:crfmsvg@crfm.int)

Tel: (784) 457-3474 - Fax: (784) 457-3475

Kingstown - St. Vincent & the Grenadines

[www.crfm.int](http://www.crfm.int)

[www.youtube.com/TheCRFM](http://www.youtube.com/TheCRFM)

[www.facebook.com/CarFisheries](https://www.facebook.com/CarFisheries)

[www.twitter.com/CaribFisheries](https://www.twitter.com/CaribFisheries)



[www.crfm.int](http://www.crfm.int)