

**CRFM Fishery Report - 2014**

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**VOLUME 1, Suppl. 2-**

**Report of the Third Joint Meeting of the CRFM Small Coastal Pelagic  
Fish Resource Working Group (SCPWG) and the CRFM/WECAFC  
Working Group on Flyingfish in the Eastern Caribbean**

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**Report of Tenth Annual CRFM Scientific Meeting -  
Kingstown, St. Vincent and the Grenadines  
10-17 June 2014**

CRFM Secretariat  
Belize

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## FOREWORD

The Tenth Annual CRFM Scientific Meeting took place during 10 to 17 June 2014 in Kingstown, St. Vincent and the Grenadines. During this Meeting, the reconstituted Pelagic Fisheries Working Group (PWG), Reef and Slope Fisheries Working Group (RSWG), Continental Shelf Fisheries Working Group (CSWG) and Data, Methods and Training Working Group (DMTWG) met. CRFM Member States represented at this meeting included Anguilla, Belize, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, The Bahamas, Trinidad and Tobago and the Turks and Caicos Islands. The meeting also benefitted from technical support of Professor John Hoenig, Consultant based at the Virginia Institute of Marine Science as well as the assistance of Ms. Nancie Cummings, Fisheries Expert, US National Marine Fisheries Service and Professor Hazel Oxenford from the Centre for Resource Management and Environmental Studies, UWI, Cave Hill campus; and Dr. Paul Medley, International Fisheries Consultant from the UK, facilitated through electronic means.

Each Working Group reviewed the respective new Terms of Reference and provided recommendations to inform amendments in future. Changes in the meeting format focused on basic statistical training, conduct of simple fisheries or species analyses, development of biennial work plans with assigned responsibilities and timelines and mandatory submission of all powerpoint presentations, cleaned data sets and annotated spreadsheets for future reference.

The PWG conducted species/fisheries analyses for the scad fishery in Dominica, the dolphinfish fishery in St. Lucia, the large pelagic fishery in St. Vincent and the Grenadines, the pelagic fishery in St. Kitts and Nevis and the non-artisanal longline fishery in Trinidad and Tobago and provided recommendations for fisheries management, statistics and research to the extent possible. Data collection, quality control, data preparation for analysis and analytical methods were general areas highlighted for attention during the inter-sessional period. Specific priority areas include: improving the quality of regional data for the blackfin tuna in support of the CRFM's contribution to the 2015 stock assessment to be conducted by the International Commission for the Conservation of Atlantic Tunas; improving data collection systems to facilitate implementation of the Sub-regional Fisheries Management Plan for the Eastern Caribbean Flyingfish endorsed by the CRFM Ministerial Council on 23 May 2014 and development of a data collection and information system for fisheries that use fish aggregating devices.

The RSWG developed specific weight conversion factors for the Queen Conch in The Bahamas and Belize to fulfill trade requirements under the Convention on International Trade in Endangered Species of Wild Fauna and Flora and intends to conduct further analyses in the inter-sessional period. It also reviewed and endorsed the 2013 assessment of the Pedro Bank (Jamaica) Queen Conch fishery and the respective, estimated total allowable catch and provided scientific inputs to a proposed draft regional declaration for management, conservation and sustainable use of the spiny lobster. The RSWG also conducted species/fisheries analyses for the reef fishery in Anguilla, the mutton snapper fishery in Belize and the Queen Conch fishery in the Turks and Caicos Islands and provided recommendations for fisheries management, statistics and research to the extent possible. Data collection on the lionfish to facilitate analysis at the 2015 Scientific Meeting was considered high priority.

The CSWG, in support of Guyana's attempts to boost trade through 'sustainable fishery certification' by the Marine Stewardship Council, through e-meeting reviewed and endorsed the Harvest Control Rules developed for management of the Guyana seabob fishery. The Group considered specific measures to improve data collection and monitoring of the fishery as well as addressing issues of by-catch in trawl gear.

A two-day training workshop in statistical and basic analysis using the R- software was convened under the DMTWG. As part of its biennial work plan the DMTWG also committed to updating existing, or developing new, national sampling plans, to improve the quality of data available for fisheries analyses and stock assessments in the coming years; training of data collectors and identifying the ten most important commercial target fisheries stocks in the region for regular assessment, analysis and monitoring. In addition, the DMTWG is to assume responsibility for pre-screening and approval of data sets for analysis at the annual scientific meetings with the respective protocol to be developed during the inter-sessional period. The DMTWG provided recommendations for further R-training, formal recognition of the R-statistical software as a tool for fisheries data analysis by the CRFM and use of available ICT tools to share information on best practices in the use of statistical software for fisheries analyses.

The Report of the Tenth Annual CRFM Scientific Meeting is published in one volume instead of the usual two volumes published for such meetings. This volume (Volume 1) contains the report of the plenary sessions and the full reports of the CRFM Data Methods and Training Working Group, the Pelagic Fisheries Working Group, the Reef and Slope Fisheries Working Group and the Continental Shelf Fisheries Working Group for 2014. Nine national reports were submitted and these are published as Supplement 1 to Volume 1. The report of the combined meeting of the previous Small Coastal Pelagic Fisheries Resource Working Group and the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean which was convened via GoToMeeting between March and April 2014 is published as Supplement 2 to Volume 1. Volume 2 usually contains part A (Overview), and the fishery management advisory summaries of individual fishery reports comprising part B of each Working Group report. However, only basic fisheries analyses were conducted in 2014, and hence there was insufficient material to warrant publication of a separate Volume 2.

The covers for this volume were designed and prepared by Mr. Shaun Young, while the photographs were provided by the CRFM Secretariat. These contributions are gratefully acknowledged.

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## ACRONYMS AND ABBREVIATIONS

<b>CARICOM</b>	Caribbean Community
<b>CARICOM-IMPACS</b>	Caribbean Community - Implementation Agency for Crime and Security
<b>CCCFP</b>	Caribbean Community Common Fisheries Policy
<b>CCJ</b>	Caribbean Court of Justice
<b>CERMES</b>	Centre for Resource Management and Environmental Studies
<b>CFF</b>	Caribbean Fisheries Forum
<b>CLME</b>	Caribbean Large Marine Ecosystem
<b>CRFM</b>	Caribbean Regional Fisheries Mechanism
<b>DED</b>	Deputy Executive Director
<b>EAF</b>	Ecosystem Approach to Fisheries
<b>EC</b>	Eastern Caribbean
<b>ED</b>	Executive Director
<b>EEZ</b>	Exclusive Economic Zone
<b>FAC</b>	Fishery Advisory Committee
<b>FAD</b>	Fish Aggregating Device
<b>FAO</b>	Food and Agriculture Organisation of the United Nations
<b>FMP</b>	Fisheries Management Plan
<b>GDP</b>	Gross Domestic Product
<b>ICT</b>	Information Communication Technology
<b>ICZM</b>	Integrated Coastal Zone Management
<b>ILO</b>	International Labour Organisation
<b>IUU</b>	Illegal, Unreported and Unregulated fishing
<b>MCS</b>	Monitoring, Control and Surveillance
<b>MoU</b>	Memorandum of Understanding
<b>MSY</b>	Maximum Sustainable Yield
<b>OECS</b>	Organisation of Eastern Caribbean States
<b>RSS</b>	Regional Security System
<b>SAG</b>	Scientific Advisory Group
<b>SAP</b>	Strategic Action Programme
<b>SCPWG</b>	Small Coastal Pelagic Fish Resource Working Group
<b>ToR</b>	Terms of Reference
<b>UNCLOS</b>	United Nations Convention on the Law of the Sea
<b>UWI</b>	University of the West Indies
<b>WECAFC</b>	Western Central Atlantic Fishery Commission
<b>WG</b>	Working Group
<b>WTO</b>	World Trade Organisation

## **1. CALL TO ORDER**

The Meeting was convened electronically using the Google GoToMeeting facility and was completed in five (5) sessions on 05, 07, 11 and 20 March and 09 April, 2014. The sessions were called to order at 10:02 a.m., 10:05 a.m., 10:16 a.m., 10:46 a.m. and 10:40 a.m. Eastern Caribbean Time on the respective days and each session lasted between 1.5 and 2 hours.

## **2. REGISTRATION OF ATTENDANCE/PARTICIPATION**

The Chair, Ms. Elizabeth Mohammed, Programme Manager, Research and Resource Assessment, CRFM Secretariat, greeted the participants, noting that invitation to the meeting was sent to the CRFM Member States with real interest in the fishery (Barbados, Trinidad and Tobago, Grenada, St Vincent and the Grenadines, Saint Lucia and Dominica) as well as the FAO-WECAFC, CERMES (UWI), and Martinique (Direction de la Mer de la Martinique). In addition, participation of fisher representatives from the two main countries exploiting the resource, Barbados and Trinidad and Tobago, was invited. The CRFM Secretariat was represented by the Executive Director (ED); Deputy Executive Director (DED); Programme Manager, Fisheries Management and Development; Programme Manager, Research and Resource Assessment (who Chaired the meeting) and CRFM Administrative Secretary who served as rapporteur. The full list of participants at each session is provided in Appendix 1.

Due to pressing demands the ED and DED were unable to participate in all sessions of the meeting while the WECAFC Secretary, being involved in preparations for the 15<sup>th</sup> Session of WECAFC, and the CERMES representative, due to teaching commitments, both participated in the first session only, but provided feedback via email during the course of the meeting. Attempts to contact the representative of Martinique, Mr Thomas Rostaing (Chef du service du développement des activités maritimes) proved unsuccessful throughout the entire course of the meeting. His out of office reply mail indicated that he would be unavailable throughout the entire month of March, that he would be unable to access emails and provided alternative contacts. Attempts to email the alternative contacts were also unsuccessful.

## **3. REVIEW AND ADOPTION OF AGENDA**

The Draft Agenda given in Appendix 2 was adopted without amendments. Agenda Items 1 to 6 were completed during the first session of the meeting, while Agenda Items 7 and 8 were covered in subsequent sessions.

Some meeting participants experienced technical difficulties in signing on to the CRFM SCPWG DGroup and to the GoToMeeting sessions however these issues were resolved during the course of the meeting. Several reference documents were uploaded to the DGroup to inform the meeting. These reference documents are:

1. Report of the First Joint Meeting of the CRFM SCPWG and CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean;
2. Report of the Second Joint Meeting of the CRFM SCPWG and CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean;
3. Draft 2012 Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean;
4. Draft Resolution on the Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean;
5. The Caribbean Community Common Fisheries Policy (as approved at the fourth meeting of the Ministerial Council);



6. The Terms of Reference of the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean (as agreed at the 14<sup>th</sup> Session of WECAFC); and
7. Reports of national stakeholder consultations on documents listed at 3. and 4. from Barbados, Grenada, Saint Lucia and Trinidad and Tobago.

In addition, there were five working documents, which were posted on the DGroup and updated and shared accordingly during the course of the meeting. These working documents are:

1. Proposed revised Terms of Reference for the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean (to be presented at the 15<sup>th</sup> Session of WECAFC);
2. Draft Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean (2014 Version as amended);
3. Draft Resolution on the Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean (2014 version as amended);
4. Template for recording discussions and amendments agreed by the Working Group on the Draft 2012 Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean; and
5. Draft report of the current meeting - Third Joint Meeting of the CRFM SCPWG and CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean.

#### **4. DECISION OF THE 22<sup>nd</sup> MEETING OF THE EXECUTIVE COMMITTEE OF THE CARIBBEAN FISHERIES FORUM, 13-14 FEBRUARY 2014, ST.VINCENT AND THE GRENADINES**

Participants were informed that the Executive Committee of the Caribbean Fisheries Forum (CFF), at its 22<sup>nd</sup> Meeting which was held in St. Vincent on 13 and 14 February 2014, directed that the joint Working Group make the necessary amendments to the Draft 2012 Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean and the associated Draft Resolution of the respective Ministerial Sub-Committee, based on the reports received from Barbados, Grenada, Saint Lucia and Trinidad and Tobago on the national stakeholder consultations convened to discuss the documents. At the Executive Committee meeting, the representative of Dominica advised that the Fisheries Division expected to convene their national consultation in March and undertook to provide comments by mid-March. The Chair noted that if these comments are received by mid-March they would have to be considered in amending the plan. Further feedback from Dominica will determine if another meeting of the joint Working Group would have to be convened. Martinique had also indicated that they were in the process of organizing a national consultation, but was unable to give a definite time when their comments would be available. The amended Draft Sub-Regional FMP for flyingfish and associated amended Draft Resolution are to be presented for the consideration of the 12<sup>th</sup> Meeting of the CFF scheduled for late April 2014 in Dominica. There was no discussion on this Agenda Item following the Chair's presentation.

#### **5. REVIEW OF PROPOSED AMENDMENTS TO WG TORS**

The original Terms of Reference (ToRs) for the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean, which was adopted at the 14<sup>th</sup> Session of WECAFC, was made available to meeting participants (Appendix 3). The Chair informed that the Sixth Session of the WECAFC Scientific Advisory Group (SAG), which was convened in Texas in November 2013, after considering all the Terms of Reference for various joint regional Working Groups established at the 14<sup>th</sup> Session, advised that these ToRs be standardized and make reference to the Ecosystem Approach to Fisheries (EAF) and precautionary approach. In this regard, it was suggested that the ToRs for the FAD Working Group be used as a guide as it provided more detail. In keeping with the preceding, the ToRs for the CRFM-WECAFC Working Group on Flyingfish in the Eastern Caribbean have been amended to include the

respective details and to outline what may realistically be achieved in the two-year WECAFC inter-sessional period.

Participants at the meeting were informed that the proposed ToRs, following amendment by the joint Working Group, are to be presented at the 15<sup>th</sup> Session of WECAFC, scheduled for 26 to 28 March 2014, in Trinidad and Tobago. Noting that the next meeting of the Caribbean Fisheries Forum (CFF) is scheduled for late April 2014, the Chair advised that to facilitate the CFF's consideration and inputs to the proposed ToRs prior to the 15<sup>th</sup> Session of the WECAFC, the document would be shared inter-sessionally and immediately following discussion and amendments made by the joint Working Group.

The Chair presented the details of the proposed revised ToRs. She noted that a background and rationale had been included which provided general background information about the importance of the fishery; results of the 2008 and 2011 stock assessments; the achievements under the CLME Project in relation to flyingfish; the WG's establishment at the 14<sup>th</sup> Session of WECAFC; and the rationale for re-drafting the ToRs. The Working Group is to function in a technical and advisory capacity over the 2-year period April 2014 to March 2016.

Before opening the floor for discussions and amendments, the Chair suggested that in addition to the items included, participants may wish to also consider the following: Membership of the Working Group, and Chair of the Working Group. Participants were invited to provide their inputs on the various sections. The revised Terms of Reference following the discussions is provided in Appendix 4.

Following is a summary of the discussions on the various headings and sub-headings of the proposed revised ToRs and the decisions/agreed changes.

## 1. Background and rationale

There was no discussion on this section and no suggested amendments to the text.

## 2. Role of Working Group

### 2.1 Scope

The meeting was in agreement with this text and there were no suggested amendments.

### 2.2 Specific Terms of Reference for the period 2014 to 2016

It was suggested that in this revision of the ToRs there could have been a greater linkage made with the CLME+, as it may be possible to access funding for implementation of Working Group activities. This was implied, but it may be useful to highlight particular areas for CLME support to the Working Group. It was noted that CLME+ had convened a meeting to develop its project document, and a query was raised regarding the flyingfish component in this document. It was suggested that 5A of the SAP could be referred in this regard. Following further discussions on this issue, including the wording of text to be inserted, a separate bullet point was added reading as follows:

*f. Support the regional and national level implementation of activities outlined under the CLME+ (Implementation of Strategic Action Programme) that are aligned with the above Terms of Reference;*

This bullet was also repeated under the role of Member States with 'regional and' removed.

## 2.3 Mode of Operation

### 2.3.1 Membership of the Working Group

The Chair noted that membership of the Working Group was not defined, but suggested that it should be included, and sought the advice of previous WG members as to whether the membership had been for all CRFM Member States. It was noted that this Working Group had always met jointly with the CRFM SCPWG and the SCPWG included all CRFM Member States. Participation of flyingfish harvesting states was promoted under the CLME Project but the membership had not been clearly defined for the Working Group.

The membership of the Ministerial Council Sub-committee on Flyingfish was brought to the meeting's attention and efforts to align the membership of the Working Group with this was made, while taking on-board other suggestions regarding inclusion of the private sector and regional organisations. The following statement was proposed:

“Membership shall consist of Member States with a real interest in the flyingfish fishery. Membership shall also include the public and private sectors of the respective countries and relevant regional organisation and experts”

The proposed text prompted further discussion and a query was raised about what is meant by ‘real interest’, it was felt that this term should be defined in the ToRs. The view was also expressed that the phrase could be seen as excluding some states. It was pointed out that ‘real interest’ had to be proven and that the term had an internationally accepted definition and consequently was being used in this context. It was further clarified that States may not presently have a fishery for flyingfish but may be interested in exploring the potential for development of such a fishery, and these could be included.

The proposed text went through several iterations, which took into account comments/queries regarding the likely size of Working Group membership if opened to the public and private sector in the respective countries; whether all CRFM member states were also members of WECAFC, or whether it was necessary to distinguish between CRFM Member States and WECAFC; and whether it was necessary to retain the function that spoke to ‘*to continue efforts to formalize the relationship between France and the CRFM to facilitate involvement of Guadeloupe and Martinique in the management process*’, given that France was a member of WECAFC and by extension so were its Overseas Departments, Martinique and Guadeloupe. It was pointed out that it was still important especially if some of the technical activities of the Working Group are being implemented using CRFM resources and processes (Scientific Meeting, Ministerial Council Sub-committee). There was need to respect the fact that CRFM, in its own right, is nurturing a relationship with France. It was noted that this was critical in moving forward and should be maintained. It was also agreed to change ‘Membership shall’ in the second sentence to read “Membership may”.

The following is the agreed statement on Membership of the Working Group.

*Membership shall consist of all Member States of CRFM and WECAFC, including Overseas Territories and Departments, with a real interest in the flyingfish fishery. Membership may also include representatives of key flyingfish stakeholders of Member States as well as relevant regional organizations and experts.*

### 2.3.2 Election of Chair of the Working Group

(see 3.4 below)

### 2.3.3 The role of Member States and Collaborating Countries

There was no discussion on this section.

### 2.3.4 Role of the CRFM Secretariat

There was no discussion on this section.

### 2.3.5 Role of the WECAFC Secretariat

It was suggested that the two functions shown as:

- d. To facilitate training in assessment methodologies and other relevant areas of interest identified; and*
- e. To provide technical assistance and support to research and resource assessment through collaboration with regional and international research partners;*

could probably better be handled by the CRFM Secretariat, since CRFM is to take the lead in implementing the related activities under the CLME Strategic Action Programme. However, it was pointed out that since it was a joint Working Group these roles should probably appear under both Secretariats. This was agreed.

The meeting was reminded that the Working Group had specific terms of reference for a 2-year period, while the CLME+ was a 5-year project, and it was prudent to include activities that could be reasonably completed in 2 years. It was further pointed out that the 2 roles could be retained under both Secretariats but it was important to determine what the WG's focus would be – is it training, implementation of a plan, monitoring, reporting?

It was suggested that perhaps 'facilitate' (d.) and 'provide'(e.) could be replaced with 'promote' under the Secretariats, or alternatively it could be placed under the general terms of reference for the Working Group. Either way it was important to recognize the need for training and technical support in the ToRs.

Following additional discussions, it was suggested that the 2 points should be retained under both Secretariats. It was further pointed out that the state of flyingfish data in countries was uncertain. In fact, the 2008 assessment recognized that data was poor, a situation that was not markedly improved by 2010. Based on this understanding of the data situation, the ToRs were developed with the intention to put measures in place to improve data. However, until the Management Plan is approved there would be little support to undertake data improvements or assessments. The key thing in moving forward is to have the Management Plan approved and commence implementation, including activities related to data improvement.

It was pointed out that most of the work would have to be conducted at the national level, so the involvement of the Secretariats would depend very much on how active the stakeholders in countries were. The Secretariats would respond to requests from the countries.

## 2.4 Communication

Reference was made to the text under this section which spoke to 'Chair of the Working Group' and a query was raised about the appointment of a Chair. It was agreed that a Chair should be designated. Guidance was then sort from the meeting on how the text in relation to Election of a Chair for the Working Group should be worded. There were several suggestions including:

The Chair should be taken from among those countries for which the fishery is important; or

The Chair should be from among FORUM members in respect of countries for which the fishery is important; or

The Chair should be either from Trinidad or Barbados; or

While ideally the Chair should come from a country with a real interest in the fishery, it may be prudent to allow some flexibility for the Working Group to select its Chair, noting that the CRFM Ministerial Council leaves this matter open.

It was generally agreed that the WG will select a Chair from among its members. Following some discussion on where this text would be best placed in the document, it was agreed that a separate sub-heading would be inserted under Mode of Operation as follows:

### *2.3.2 Election of a Chair of the Working Group*

*The Working Group shall elect a Chair from among its Members States to serve over the two-year period.*

### 2.5 Working Group Meetings

There was one suggested text amendment to this section. The following sentence was added to the end of the paragraph.

*Meetings shall be chaired by the Chair of the Working Group.*

### 2.6 Amendments to the Terms of Reference

There were no suggested amendments to this item during the meeting sessions. However, during the inter-sessional period of the meeting the WECAFC Secretary advised via email that the square brackets in the section on Amendments to the Terms of Reference be removed and the Chair suggested inclusion of the following point under the Specific Terms of Reference for the Period 2014 to 2016 since it gives some flexibility if a matter was to arise for consideration of the Working Group and resources are available:

*Take other necessary actions on emerging issues pertaining to the sustainable use of Eastern Caribbean flyingfish.*

There being no objection to the proposed insertion the revised ToRs were circulated to the Forum for consideration. Participants were allowed the opportunity to provide their comments or suggested amendments throughout the course of the meeting; however, there were no subsequent changes to the document.

## **6. REVIEW OF THE REPORT OF THE 2<sup>nd</sup> JOINT MEETING OF THE CRFM SMALL COASTAL PELAGIC FISH RESOURCE WORKING GROUP AND CRFM/WECAFC WORKING GROUP ON FLYINGFISH IN THE EASTERN CARIBBEAN**

The Report of the 2<sup>nd</sup> Joint Meeting of the CRFM Small Coastal Pelagic Fish Resource Working Group and CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean was shared on the DGroup with participants of the Meeting. A brief overview of the report was given by Dr. Susan Singh-Renton, Deputy Executive Director of the CRFM Secretariat.

The 2<sup>nd</sup> Meeting of the Joint Working Group took place during the Ninth Annual CRFM Scientific Meeting in June 2013. WECAFC was not represented at the meeting. It was a short meeting in which the progress made in the inter-sessional period was reviewed. It was noted that only two countries – Grenada and Trinidad and Tobago had held national consultations and provided comments on the draft FMP at that time. The Group was advised that CRFM Ministerial Sub-committee on Flyingfish had held two meetings and had finalised its ToRs and the next meeting of the Sub-committee will be convened to discuss the

draft Management Plan once the Group had finalised it. The Group was also advised of the new deadline and schedule for submission of national consultation reports with a view to finalising the Plan by September 2013, but this did not happen. Member States had expressed concerns regarding the rationale for some of the management measures proposed under the Resolution. The justification for a freeze on fishing capacity was discussed and the Group agreed that the timeline for implementing this freeze was inappropriate as there was no scientific justification for limiting capacity since catches were not at the trigger point of 5000t and catch rates were showing as stable, notwithstanding questions regarding data quality. Mention was made of the relations with France and what was occurring at the Ministerial and technical level. The Group also discussed central data sharing and access levels; status of licensing in countries; and options for expansion of the flyingfish fishery with it being acknowledged that expansion, particularly in relation to developing an export market, was limited by the nature of the fishery. The Group made several recommendations based on its deliberations, but those of particular relevance to this Meeting are the ones in relation to amending the Resolution, specifically (i) to remove the measure on the freeze on fishing capacity; and to include an additional point (ii) the need to conduct a synoptic survey prior to any significant developments within the fishery.

The Chair thanked the presenter and opened the floor for discussion. There was no discussion following the presentation. The Chair advised that the recommendations of the second Joint Meeting of the CRFM Small Coastal Pelagic Fish Resource Working Group and CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean would be considered, in addition to reports from national stakeholder consultations held in the four countries previously identified, in amending or updating the Draft 2012 Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean and the associated Draft Resolution to be addressed at Agenda Items 7 and 8 respectively.

## **7. PREPARATION OF FINAL DRAFT OF SUB-REGIONAL FISHERIES MANAGEMENT PLAN (FMP) FOR FLYINGFISH IN THE EASTERN CARIBBEAN**

Cognizant that the Preface of the Draft 2012 Sub-regional FMP makes reference to the fact that the respective FMP was the first management plan prepared under the Agreement on the Establishment of the Caribbean Community Common Fisheries Policy (CCCFP), the Chair brought to the attention of the meeting that the 25<sup>th</sup> inter-sessional meeting of the CARICOM Heads of Government would be convened in SVG during 10 to 11 March 2014, and that the CCCFP was on the agenda. However, by the fourth session of the meeting it was noted that the CCCFP was not opened for signature at the inter-sessional meeting as countries had not yet obtained the endorsement of the document by their respective Cabinets. Based on further discussions, the Working Group agreed that it was not necessary for the Draft Sub-regional FMP to be linked to the CCCFP, particularly since any further delays in endorsement of the CCCFP are likely to impact negatively on efforts to have the Draft Sub-regional FMP endorsed and cleared for regional, voluntary implementation. In addition, it was noted that the political reach of the CCCFP did not include other states in the region which exploit the flyingfish resources (e.g., Martinique and Guadeloupe). It was suggested that the Preface of the Draft Sub-regional FMP be re-worded to reflect the consistency of the FMP with the draft CCCFP rather than making a direct linkage between the two initiatives.

The Chair advised that in order to structure the discussions and expedite the process of amending the Draft 2012 Sub-Regional FMP, a template was prepared that lists all concerns, comments and suggestions arising from national stakeholder consultations and the second meeting of the joint Working Group, according to the respective headings, sub-headings, line numbers in the document, and provides a column to capture the main elements of the discussion and agreed changes to the text. In this way all concerns on a particular item would be considered comprehensively before moving on to another. Country participants were requested to review the template to ensure that the issues captured in their national stakeholder

consultations were accurately and completely represented in the template. Based on the Chair's discussion with one of the representatives from Saint Lucia it was agreed that since that country's report focused on details describing the fishery there were no matters concerning the Sub-regional FMP specifically, for inclusion in the template.

In addition, the Secretariat provided suggestions as to how the document may be amended to promote and guide discussions. The template was amended as discussions progressed and shared inter-sessionally to facilitate review and feedback of meeting participants.

Since most countries focused on Section 12.1 (Management Advice) of the Draft Sub-regional FMP, and this Section is also linked directly to the associated Draft Resolution, the discussion focused first on addressing the issues related to this section. Consequently, the Draft Resolution was amended simultaneously. Following which, other sections of the Draft Sub-regional FMP, pertaining mainly to comments received from Trinidad and Tobago, and to a lesser extent Grenada, were considered and amended accordingly. The main points of discussion and the agreed changes to the Draft Sub-regional FMP are recorded in the template at Appendix 5.

Country representatives were required to update the information contained in tables 2 (demographic and other country information), 3 (membership in regional and international organizations) and 4 (membership to international and regional conventions and treaties of relevance to fisheries as of March 2014) in the Draft Sub-Regional FMP by 19 March 2014. Updates, including the respective source information, were provided by Barbados and Trinidad and Tobago, and partly by Dominica, as at 09 April 2014. Subsequently the CRFM Secretariat undertook to update the respective information for the remaining countries.

At the fourth session, the Chair requested an update from the representative of Dominica on that country's planned national stakeholder consultation in March 2014. The representative indicated that a staff consultation to discuss the draft Sub-regional FMP was planned for 21 March 2014. Also, a radio programme to increase public awareness on the Draft Sub-regional FMP and consultations with cooperatives were scheduled for 27 March and 04 April 2014 respectively. The participant agreed to update the Chair on the issues arising from the consultations so as to inform any further amendments to the document prior to the 12<sup>th</sup> meeting of the Forum, scheduled for 23 to 25 April 2014. The Chair noted that the representative was now in a position to address concerns in Dominica which may have already arisen at consultations in other countries and to put forward the Working Group's suggestions as to how these may be addressed. Matters of concern from the Dominica Fisheries Division's staff consultation on the draft Sub-Regional FMP were forwarded to the Chair on 03 April, following which it was decided to reconvene the meeting, for a fifth session, to address specifically these matters and matters arising from discussions with co-operatives in Dominica, as well as feedback received from the representatives of CERMES and the Barbados Fisheries Division on the revised document. Unfortunately the representative of Dominica was unable to participate in this session. Since there was not much time remaining prior to the 12<sup>th</sup> meeting of the Forum, the Chair opted to discuss the matters directly with the representative of Dominica via skype meeting.

The Chair advised that St. Vincent and the Grenadines, not represented at this session, had informally indicated that the flyingfish fishery was not a fishery of high commercial importance in that country, and as such there was little need for a national consultation on the Draft Sub-regional FMP. The CRFM Secretariat subsequently requested of the Fisheries Division, St Vincent and the Grenadines that the situation be formally documented so as to inform the 12<sup>th</sup> meeting of the Forum, when the matter of the Draft Sub-regional FMP came up for discussion.

The updated Draft (2014) Sub-regional Fisheries Management Plan is given in Appendix 6. Taking into consideration shortcomings in data collection and analysis, following the precautionary approach to fisheries management, and with the ultimate view to safeguard the socio-economic well-being of the flyingfish industry in the sub-region and the health of the ecosystem that sustains the flyingfish fishery, the updated sub-regional management plan proposes the following 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 (or any other appropriate trigger point), 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 authorised vessel types, should the agreed catch trigger point be realized, and timely reassessment of the resource status and identification of any required changes to the management measures;
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.

The overall management of the flyingfish fisheries needs to be improved by taking the following actions:

- improving and harmonizing data collection and analysis in the sub-region;
- 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;
- establishment of a sub-regional flyingfish catch and effort database to be managed by the CRFM Secretariat;
- establishment of a sub-regional flyingfish vessel registry database to be managed by the CRFM Secretariat;

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<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)



- prioritising the development of a protocol on data and information sharing;
- 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;
- 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;
- improved monitoring, control, surveillance and enforcement mechanisms for flyingfish fisheries and ending IUU fishing;
- implementing national programmes to build stakeholder awareness on the management measures to be implemented and related legislation and enforcement measures;
- institution of national training and public awareness programmes to strengthen fishers' participation in the management process;
- 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;
- promotion of the principles and provisions enshrined in fisheries and related regional and international agreements to which countries are signatory.

It was agreed that the following specific issues related to the Sub-Regional FMP would be directed for consideration of the Caribbean Fisheries Forum to inform any further updates to the document and associated Draft Resolution as well as preparations for implementation of the FMP:

1. Definitions of small-scale fisheries and industrial fisheries – given the likely implications of such definitions for CRFM Member States at international fora;
2. Clarification on the role of Ministerial Sub-Committee in respect of making decisions regarding management of the fishery – Trinidad and Tobago noted that the Ministers of the respective Ministerial Sub-Committee strongly disagreed with the Committee making decisions in respect of management of the fishery but instead proposed to make recommendations for the consideration of the wider Ministerial Council.
3. Proposed regional binding legal agreement for implementation of the Sub-regional FMP.

The Working Group considered that it had comprehensively addressed the issues arising from stakeholder consultations in the four CRFM Member States and amended the Draft Sub-regional FMP accordingly. Consequently, the Working Group recommended that the Caribbean Fisheries Forum endorse the Draft 2014 Sub-regional FMP and the associated Draft Resolution. The Working Group requested that the Forum give consideration to the following matters in its deliberations:

1. In light of the number and depth of issues arising from stakeholder consultations in the four CRFM Member States it is unlikely that any new issues may arise, which have not already been considered, at consultations in the remaining two CRFM Member States, given that the flyingfish fishery is not of considerable commercial importance in these states;
2. Since initiation of development of the Sub-Regional FMP at the second meeting of the WECAFC Ad Hoc Flyingfish Working Group of the Eastern Caribbean and the subsequent adoption of a leading role by the CRFM in 2008, under the CLME Project, towards finalisation and adoption of the FMP, more than ten years have elapsed;

3. The second phase of the CLME Project is predicated on endorsement of the Sub-Regional FMP by the Ministerial Council and adoption for voluntary implementation by CRFM Member States – this phase focuses on regional implementation of the FMP (as noted under Agenda Item 8.6);
4. The participatory approach is an integral and critical component to implementation of the FMP and to its further updates in the application of an adaptive management approach. Consequently, following endorsement by the Ministerial Council, stakeholder awareness on the revised content of the plan (based on their inputs) should be afforded high priority by Member States. The FMP makes provisions for engagement of stakeholders in all stages of implementation of the FMP;
5. Given that the CRFM is “charting new ground” in its development and implementation of a sub-regional FMP for collaboration in the sustainable use, management and conservation of the shared flyingfish resource, and that there is likely to be some level of apprehension by stakeholders at the start, preference should be given to voluntary implementation rather than a legally-binding agreement at this time. This does not preclude establishment of a legally-binding agreement in future to address those management issues on which Member State commitment is required;
6. The need to address as high priority matters related to improvement in data collection and analysis, harmonisation of legislation, development of a regional data and information policy, development of regional databases and improvements in monitoring, control and surveillance systems so as to facilitate implementation of the FMP.

The Chair indicated that the above matters would be brought to the attention of the Forum and urged members of the Working Group to ensure that their respective Directors of Fisheries were well briefed on the key issues considered by the Working Group and the rationale for the respective changes to the Draft Sub-regional FMP, prior to the 12<sup>th</sup> meeting of the Forum.

## **8. PREPARATION OF FINAL DRAFT RESOLUTION OF THE RESPECTIVE SUB-MINISTERIAL COMMITTEE**

This Agenda Item was addressed simultaneously with Agenda Item 7. The 2012 Draft Resolution is given at Appendix 7 and the updated Draft 2014 Resolution at Appendix 8.

## **9. WORKING GROUP REPORT TO THE 15<sup>th</sup> SESSION OF WECAFC**

The WECAFC Secretary advised, following the third session, that the CRFM-WECAFC Working Group on Flyingfish in the Eastern Caribbean (joint Working Group) was not required to present a report to the 15<sup>th</sup> Session of WECAFC and consequently this agenda item was not discussed. Instead reports of the meetings of the Working Group would be made available at the WECAFC Session.

## **10. ANY OTHER BUSINESS**


















It was noted that generally there appeared to be some problems with accessing the DGroup. Participants were urged to share the difficulties encountered with the Secretariat, so that they could be resolved in the interest of continued effective use of these remote collaborative tools (GoToMeeting, etc.).

## **11. ADJOURNMENT**

The meeting adjourned at 12:18 p.m. on 09 April 2014.

## Appendix 1: List of Participants

Country	Representative	Contact Details	Sessions attended				
			05.03.14	07.03.14	11.03.14	20.03.14	09.04.19
Barbados	Christopher PARKER Fisheries Biologist	Fisheries Division Princess Alice Highway Bridgetown, St. Michael Barbados Tel. (246) 426-3745 Email: <a href="mailto:fishbarbadosfb@caribsurf.com">fishbarbadosfb@caribsurf.com</a>					
	Vernel NICHOLS President	BARNUFO c/o Fisheries Division Princess Alice Highway St. Michael, Bridgetown Barbados Tel.: (246) 426-5189/268-7168/499-9194 Email: <a href="mailto:vernel.nicholls@gmail.com">vernel.nicholls@gmail.com</a>					
Dominica	Derrick THEOPHILLE Fisheries Liaison Officer	Fisheries Division Roseau Fisheries Complex Bayfront, Roseau Dominica Tel.: (767) 446-4421 Email: <a href="mailto:derkjt@gmail.com">derkjt@gmail.com</a>					
Grenada	Francis CALLISTE Fisheries Officer	Fisheries Division Ministry of Agriculture, Lands, Forestry, Fisheries and the Environment Ministerial Complex, St. George's Grenada Tel: (473) 440-2708 Email: <a href="mailto:tobex00@hotmail.com">tobex00@hotmail.com</a>					
	Crafton ISAAC Fisheries Officer-II, Asst. Biologist	Fisheries Division Ministry of Agriculture, Lands, Forestry, Fisheries and the Environment Ministerial Complex, St. George's Grenada Tel.: (473) 440-3814 Email: <a href="mailto:crafton.isaac@gmail.com">crafton.isaac@gmail.com</a>					
St. Lucia	Patricia HUBERT-MEDAR Fisheries Assistant	Department of Fisheries Ministry of Agriculture, Rural Development,					

Country	Representative	Contact Details	Sessions attended				
			05.03.14	07.03.14	11.03.14	20.03.14	09.04.19
		Food Production, and Fisheries Pointe Seraphine, Castries St. Lucia Tel: (758) 468-4143 E-mail: <a href="mailto:hubert.patricia@hotmail.com">hubert.patricia@hotmail.com</a>					
	Thomas NELSON Fisheries Biologist	Department of Fisheries Ministry of Agriculture, Rural Development, Food Production, and Fisheries Pointe Seraphine, Castries Tel: (758) 468-4143 E-mail: <a href="mailto:thomas.nelson@govt.lc">thomas.nelson@govt.lc</a>					
St. Vincent & the Grenadines	Kris ISAACS Fisheries Officer	Fisheries Division Bay Street, Kingstown St. Vincent and the Grenadines Tel.: (784) 456-2738 Email: <a href="mailto:kris.isaacs@yahoo.com">kris.isaacs@yahoo.com</a>					
Trinidad & Tobago	Ruth REDMAN Fisheries Development Officer	Tobago House of Assembly 53 Guy Street, Canaan, Tobago Trinidad and Tobago Tel: (868) 639-4354 Email: <a href="mailto:emlyn24@hotmail.com">emlyn24@hotmail.com</a>					
	Lara FERREIRA Fisheries Officer	Fisheries Division 35 Cipriani Boulevard, Port-of-Spain Trinidad and Tobago Tel: (868) 634-4504/5 Email: <a href="mailto:lferreira@fp.gov.tt">lferreira@fp.gov.tt</a>					
	Louanna MARTIN Fisheries Officer	Fisheries Division 35 Cipriani Blvd. St. Clair Circle, St. Clair Port of Spain Trinidad and Tobago Tel.: (868) 623-8525 Email: <a href="mailto:lmartin@fp.gov.tt">lmartin@fp.gov.tt</a>					
UWI-CERMES	Hazel OXFORD Professor	Centre for Resource Management and Environmental Studies (CERMES) Cave Hill Campus University of the West Indies					

Country	Representative	Contact Details	Sessions attended					
			05.03.14	07.03.14	11.03.14	20.03.14	09.04.19	
		Barbados Tel: (246) 417-4571 Email: <a href="mailto:hazel.oxenford@cavehill.uwi.edu">hazel.oxenford@cavehill.uwi.edu</a>						
FAO/WECAFC	Raymon Van ANROOY Fishery and Aquaculture Officer/Secretary of WECAFC	Food and Agriculture Organization Sub-Regional Office for the Caribbean 2 <sup>nd</sup> Floor, United Nations House Marine Gardens, Hastings, Christ Church Barbados BB11000 Tel. : (246) 426-7110/11 Ext. 249 /230-1741 Email : <a href="mailto:Raymon.vanAnrooy@fao.org">Raymon.vanAnrooy@fao.org</a>	✓					
CRFM Secretariat	Milton HAUGHTON Executive Director	CRFM Secretariat Princess Margaret Drive, Belize City Belize Tel.: (501) 223-4443 Email: <a href="mailto:milton.haughton@crfm.int">milton.haughton@crfm.int</a>	✓					
	Susan SINGH-RENTON Deputy Executive Director	CRFM Secretariat 3 <sup>rd</sup> Floor Corea's Bldg., Halifax Street St. Vincent and the Grenadines Tel: (784) 457-3474 E-mail: <a href="mailto:susan.singhrenton@crfm.int">susan.singhrenton@crfm.int</a>	✓					
	Peter A. MURRAY Programme Manager Fisheries Management and Development	CRFM Secretariat Princess Margaret Drive, Belize City Belize Tel.: (501) 223-4443 Email: <a href="mailto:Peter.a.murray@crfm.int">Peter.a.murray@crfm.int</a>	✓	✓	✓	✓	✓	✓
	Elizabeth MOHAMMED Programme Manager, Research and Resource Assessment	CRFM Secretariat 3 <sup>rd</sup> Floor Corea's Bldg., Halifax Street St. Vincent and the Grenadines Tel: (784) 457-3474 E-mail: <a href="mailto:elizabeth.mohammed@crfm.int">elizabeth.mohammed@crfm.int</a>	✓	✓	✓	✓	✓	✓
	Pamela GIBSON Administrative Secretary	CRFM Secretariat 3 <sup>rd</sup> Floor Corea's Bldg., Halifax Street St. Vincent and the Grenadines Tel: (784) 457-3474 E-mail: <a href="mailto:crfmsvg@crfm.int">crfmsvg@crfm.int</a>	✓	✓	✓	✓	✓	✓

## **Appendix 2: Draft Agenda**

### **Third Joint Meeting of the CRFM Small Coastal Pelagic Fish Resource Working Group and the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean Draft Meeting Agenda**

#### **9. Call to order**

*The call to order will effectively inform all participants that the meeting has commenced, and the action is particularly important if an electronic meeting is being held.*

#### **10. Registration of attendance/ participation**

*This agenda item is expected to serve as the electronic parallel to participants' introductions, and serves to confirm who are the national and regional representatives expected to contribute for the duration of the electronic meeting.*

#### **11. Review and adoption of agenda**

*This agenda item is intended to facilitate any required amendments to the proposed agenda prior to its formal adoption. Since the electronic meeting is not likely to be completed in one day agreement will be sought on the days and times of the meeting in order to facilitate completion of the assigned tasks by the respective deadlines.*

#### **12. Decision of the 22<sup>nd</sup> Meeting of the Executive Committee of the Caribbean Fisheries Forum, held on 13-14 February 2014 in St Vincent and the Grenadines**

*This agenda item is intended to inform of the recent decision of the Executive Committee that the Joint Working Group proceeds to amend the draft 2012 Sub-Regional Fisheries Management Plan and Draft Resolution on the FMP by the respective Ministerial Sub-Committee, based on deliberations at its 22<sup>nd</sup> meeting and country feedback thus far from national consultations. The final draft is to be submitted for the consideration of the Forum at its 12<sup>th</sup> Meeting scheduled for 23 to 25 April 2014 in Dominica.*

#### **13. Review of Proposed Amendments to WG ToRs**

*This agenda item is intended to facilitate review of and feedback on the proposed amendments to the ToRs for CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean over the period 2014 to 2016. The revised ToRs will subsequently be reviewed by the Forum inter-sessionally and presented for consideration at the 15<sup>th</sup> Session of WECAFC.*

#### **14. Review of Report of the Second Joint Meeting of the Working Groups**

*This agenda item is intended to facilitate update on the activities of the CRFM/WECAFC Working Group and planned activities for the inter-sessional period, which will inform the 2014 CRFM Scientific Meeting as well as proposed revisions to the respective Terms of Reference (ToRs).*

#### **15. Preparation of Final Draft of Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean**

*This agenda item is intended to take the form of working sessions to facilitate finalization of the respective document for consideration of the 12<sup>th</sup> meeting of the Caribbean Fisheries Forum.*

**16. Preparation of Final Draft Resolution of the respective Sub-Ministerial Committee**

*This agenda item is intended to take the form of working sessions to facilitate finalization of the respective document for consideration of the 12<sup>th</sup> meeting of the Caribbean Fisheries Forum.*

**17. Working Group Report to the 15<sup>th</sup> Session of WECAFC**

*This agenda item is intended to facilitate review of the proposed Draft Report of the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean to the 15<sup>th</sup> Session of WECAFC, scheduled for 26 to 28 March 2014 in Trinidad and Tobago. The report is to be reviewed by the Forum inter-sessionally prior to presentation to WECAFC.*

**18. Any other business**

*This agenda item is intended to facilitate discussion of any other issues that need to be addressed.*

**19. Adjournment**

The meeting will be adjourned following completion of the agenda of activities.

### **Appendix 3: Terms of Reference for the WG (adopted at 14th Session of WECAFC)**

#### **CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean**

Conveners: CRFM/WECAFC

##### **Terms of Reference**

- Update and finalize the draft Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean, taking into account the need to develop an ecosystem approach to fisheries (EAF) management and climate change issues.
- Establish and commence improved monitoring of fishery performance trends, consistent with agreed management objectives for the operation of the Eastern Caribbean flyingfish fishery.
- Monitor and advise on the implementation of the agreed Fisheries Management Plan.
- Provide advice on the status of the fishery and its management to the CRFM Ministerial Sub-Committee on Eastern Caribbean Flyingfish and to WECAFC.
- Take other necessary actions on emerging issues pertaining to the sustainable use of Eastern Caribbean flyingfish.



## Appendix 4: Revised TORs for Working Group based on WG meeting suggestions

### CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean

Conveners: CRFM/WECAFC

#### TERMS OF REFERENCE

##### 1. BACKGROUND AND RATIONALE<sup>3</sup>

The four-wing flyingfish supports important small-scale fisheries in the region in terms of employment generation, food security and supply of bait for fisheries targeting large pelagic fish species. Like other small-scale fishers in the Caribbean, fishers involved in flyingfish fisheries often belong to the lower socio-economic strata of society.

Flyingfish fisheries are concentrated in the southern end of the Lesser Antilles chain. Barbados, Tobago, Martinique and Saint Lucia all have large flyingfish fisheries and to a lesser extent Dominica and Grenada. Barbados accounts for about two thirds of the regional catch. In 2009 the total annual recorded catch in Barbados was 2292 tonnes. There were about 167 ice boats, which account for more than 90% of the catch, and 242 registered day boats in 2007. Compared to other countries in the region, Barbados also adds more value to flyingfish catches through processing and sale to the tourism sector. The annual value of the flyingfish catch in Barbados alone is estimated at USD 15 million. The flyingfish fishery is the most important fishery in Barbados employing 2000 fishers, 500 vendors as well as 325 persons employed as de-boners or workers in fish processing plants.

Other countries in the area also have important flyingfish fisheries. In Trinidad and Tobago, the flyingfish fishery is located on the Caribbean Sea coast of the island of Tobago. The number of boats involved in the fishery between 1988 and 2008 averaged 50 boats per season while in Saint Lucia, 331 vessels were engaged in the flyingfish fishery in 2007. According to figures provided by the department of fisheries, the total flyingfish catch of Saint Lucia was 109.35 tonnes in 2010. The total annual catch of flyingfish in Martinique was 47.6 tonnes in 2009 and 64.6 mt in 2010. There are no targeted flyingfish fisheries in Saint Vincent and the Grenadines. In the case of Dominica there has been a shift from the flyingfish fishery to the large pelagic fishery within the last eight years due to the increased use of FADs. The annual flyingfish landings in Dominica were reported to be 54.22 tonnes in 2011.

Unlike many other commercial species in the region the flyingfish, and in particular the four-wing flyingfish, *Hirudichthys affinis*, which comprises the majority of the flyingfish catch, has been extensively studied. There is a rich information-base on its stock delineation, distribution and biology. Less has been documented however, on the socio-economic, bio-economic and, ecological aspects of the fishery and resource, including the impacts on the population and risks associated with climate change, extreme weather events, and other aspects of global environmental change. Although the stock has been assessed in 2008, the capacity in terms of the maximum number of fishing vessels that should be allowed in the fishery without jeopardizing its long term sustainability has not yet been estimated.

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<sup>3</sup> Information taken from the 2012 Draft Sub-Regional Management Plan for Flyingfish in the Eastern Caribbean which should be consulted for the references to information sources.

Results of the 2008 stock assessment suggested 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 it is unlikely that catches have ever exceeded MSY for this stock. The study identified an annual catch trigger reference point of 5,000 t at which further management action should be taken to ensure the stock does not become overfished, since development beyond this level would have unpredictable consequences. The maximum recorded annual catch to date is 4,700 t. A 2011 preliminary assessment explored the bio-economic dynamic impacts of managing the multi-fleet and multispecies flyingfish fishery and undertook risk analysis of alternative fishery management decisions. Results indicated that, among other things, under open access, harvest rates in the neighbourhood of 5000 ton /year could result in collapse of this pelagic fishery but that this could be averted with catch quotas, or effort controls to reduce exploitation rates by 30% to allow the resource to recover its natural fluctuations over time. The most significant uncertainty in the 2008 and 2011 assessments stem from the poor data available on catches and effort. Improved data collection and monitoring is required to ensure sustainable use of this and other fishery resources.

Under the CLME Project a Flyingfish Case Study was completed by the CRFM. The study included a bio-economic assessment of the fishery (mentioned above); a Multi-Criteria Analysis; a Stakeholder Analysis; a review of existing policies and legislation and establishment of a CRFM Ministerial Sub-Committee on flyingfish.

At the Fourteenth Session of WECAFC, convened in Panama City, Panama from 06 to 09 February 2012, the Commission agreed to *continue all Working Groups (Spiny Lobster, Flying Fish, FADs, Queen Conch, Nassau Grouper/Spawning Aggregations) as joint working groups of WECAFC with partner organizations. It was considered that a leading role could be played by these partners as well.* The Terms of Reference for the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean, among other joint regional Working Groups, was also agreed upon. Between March 2013 and February 2014 two joint meetings of the CRFM Small Coastal Pelagic Fish Resource Working Group and the CRFM-WECAFC Working Group on Flyingfish in the Eastern Caribbean were convened. The joint meetings focused on review of the Draft Sub-Regional Fisheries Management Plan (FMP) for Flyingfish in the Eastern Caribbean, initially drafted in 2002 by Dr Hazel Oxenford and updated in 2008 by Dr Paul Medley (WECAFC Consultants) under the previous WECAFC Ad-Hoc Working Group on Flyingfish, and subsequently updated again in 2012 by Dr Uwe Tietze (CRFM Consultant) under the Caribbean Large Marine Ecosystem Project (CLME Project). The joint meetings also gave direction in respect of national consultations to review the Draft Sub-Regional FMP and associated Draft Resolution of the respective CRFM Ministerial Sub-Committee. As at February 2014, national consultations were convened in four CRFM Member States and the reports made available to the Working Group to continue its work.

The Sixth Session of the WECAFC Scientific Advisory Group, which was convened in Corpus Christi, Texas on 03 November 2013, discussed the TORs of the various Working Groups and made recommendations for their improvement and harmonization. This revised version of the Terms of Reference for the Working Group on Flyingfish in the Eastern Caribbean gives consideration to the SAG recommendations and supports the Caribbean Community Common Fisheries Policy (awaiting endorsement of Heads of Government), the Draft Sub-Regional Fisheries Management Plan for the Eastern Caribbean Flyingfish (to be amended following Member State review and feedback and endorsed by the Caribbean Fisheries Forum and CRFM Ministerial Council Ministerial Sub-Committee on Flyingfish) while giving due cognisance for maintaining transparency and accountability in the operations of the Working Group.

## **2. ROLE OF THE WORKING GROUP**

### ***2.1 Scope***

The scope of the Working Group is to facilitate the achievement of management objectives as outlined in the respective sub-regional management plan for flyingfish in the Eastern Caribbean, through the application of international best practices consistent with the precautionary, ecosystem and participatory approaches to fisheries management. These management objectives are: a) sustained flyingfish resources (biological objective), b) optimal use of the flyingfish resource for long-term benefit (socio- economic objective) and c) sustained ecosystem health (ecological objective). The Working Group is to function in a technical and advisory capacity over the period April 2014 to March 2016.

### ***2.2 Specific Terms of Reference for the period 2014 to 2016***

- a. Finalize and implement the [ 2012] Sub-Regional Management Plan for Flying Fish in the Eastern Caribbean;
- b. Finalize and seek adoption by CRFM and WECAFC of a Management Resolution on Eastern Caribbean Flyingfish based on the best available scientific information;
- c. Monitor and evaluate implementation of the [2012] Sub-Regional Management Plan for Flying Fish in the Eastern Caribbean;
- d. Provide advice on the status of the fishery and its management to the CRFM Ministerial Sub-Committee on Eastern Caribbean Flyingfish and to WECAFC;
- e. Consider options for integrating environmental variables in assessment of the status of the resource;
- f. Support the regional and national level implementation of activities outlined under the CLME + (Implementation of Strategic Action Programme) that are aligned with the above Terms of Reference; and
- g. [Take other necessary actions on emerging issues pertaining to the sustainable use of Eastern Caribbean flyingfish.]

### ***2.3 Mode of Operation***

#### **2.3.1 Membership of the Working Group**

Membership shall consist of all Member States of CRFM and WECAFC, including Overseas Territories and Departments, with a real interest in the flyingfish fishery. Membership may also include representatives of key flyingfish stakeholders of Member States as well as relevant regional organizations and experts.

#### **2.3.2 Election of Chair of the Working Group**

The Working Group shall elect a Chair from among its Members States to serve over the two-year period.

#### **2.3.3 Role of Member States and other Collaborating Countries**

- a. To develop or update national fisheries management plans, based on the agreed Sub-Regional Fisheries Management Plan (FMP) for Flyingfish in the Eastern Caribbean;
- b. To implement national fisheries management plans;
- c. To monitor and evaluate implementation of the FMP at the national level;
- d. To report annually to the CRFM/WECAFC Working Group on the progress made in implementation of national FMPs;
- f. To improve the coverage and quality of data nationally to facilitate assessment of the fishery and associated stock as well as monitoring and evaluation of the FMP at the regional level; and

To support the national level implementation of activities outlined under the CLME + (Implementation of Strategic Action Programme) that are aligned with the specific Terms of Reference.

#### 2.3.4 Role of the CRFM Secretariat

- a. To assist with coordination of activities of the Working Group, at the regional level;
- b. To assist with procurement of funds for the activities of the Working Group;
- c. To assist with convening of meetings of the Working Group;
- d. To continue efforts to formalize the relationship between France and the CRFM to facilitate involvement of Guadeloupe and Martinique in the management process;
- e. To promote training in assessment methodologies and other relevant areas of interest identified;
- f. To promote technical assistance and support to research and resource assessment through collaboration with regional and international research partners; and
- g. To coordinate the formulation and adoption of recommendations by the Working Group so as to facilitate the decision-making process at the sub-regional level.

#### 2.3.5 Role of WECAFC Secretariat

- a. To coordinate activities of the Working Group, among CRFM and Non-CRFM Members, at the wider regional level;
- b. To assist with procurement of funds for the activities of the Working Group;
- c. To assist with convening of meetings of the Working Group;
- d. To promote training in assessment methodologies and other relevant areas of interest identified; and
- e. To promote technical assistance and support to research and resource assessment through collaboration with regional and international research partners;
- f. To coordinate the formulation and adoption of recommendations by the Working Group so as to facilitate the decision-making process at the level of WECAFC Area 31.

#### 2.3.6 Communication

Communication is critical to the efficient execution of the work programme of the Working Group, particularly during the inter-sessional periods so as to maximize the quality of outputs. Consequently, each country should designate a National Focal Point for this purpose. The National Focal Point is to liaise with the Convener/ Chair of the Working Group as well as the CRFM and WECAFC Secretariats to facilitate effective implementation of the Terms of Reference and communication among all entities. Available ICT tools, such as the CRFM DGroup and GoToMeeting, should be utilized for this purpose as far as possible. The outputs of the Working Group will be communicated through the CRFM and WECAFC Secretariats to the respective Member States.

#### 2.3.7 Working Group Meetings

Face-to-face meetings of the Working Group should be convened at least once every two years, or as required, if resources are available. Where possible the use of available ICT tools to facilitate electronic meetings should be maximized. Meetings shall be chaired by the Chair of the Working Group.

### **3. AMENDMENTS TO THE TERMS OF REFERENCE**

The Terms of Reference may be amended as required by Member States at the level of CRFM and WECAFC, following each two-year period coinciding with meetings of the WECAFC.

**Appendix 5: Matrix for recording discussions and agreed amendments to Draft 2012 Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean**

<b>Amendment of the Draft 2012 Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean – Responders (1) Second Joint Meeting of CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean; (2) Barbados Fisheries Division; (3) Trinidad and Tobago Fisheries Division; and 4) Grenada Fisheries Division.</b>					
<b>Section (page)</b>	<b>Para; sentence (line #)</b>	<b>Responder</b>	<b>Original text (underlined)/Responder’s Comments/Suggestions</b>	<b>WG Discussions &amp; Agreed Action</b>	<b>Matters to be Referred to Forum</b>
General comment		1	The IFREMER representative raised the point that the documents regarding Eastern Caribbean Management Plan were circulated in English and this was problematic as most members of the staff were French.  The group noted that at the diplomatic levels, additional species would be considered and therefore there may be a greater need for translation of documents.	[Consider translation of the Sub-Regional FMP to French] – Role for WECAFC Secretariat	
		4	Stakeholders endorsed the activities presented on the way forward to enhance regional management.	Noted	
Beginning		3	Include a list of acronyms and meaning at the beginning	Noted – list to be included	
Executive summary (1)	1 <sup>st</sup> para; 2 <sup>nd</sup> sentence (line 8)	3	<u>These include the adoption of a Common Fisheries Policy for CARICOM states...</u>  Endorsement by the Ministerial Council should not be interpreted as adoption by the respective countries; the body with this authority is the Cabinet. What is the status re: endorsement by Head of Government?	Executive Summary to be updated accordingly based on agreed changes.  The endorsement of the CCCFP may be addressed at 25 <sup>th</sup> Inter-sessional Conference of Head of Government (10-11 March 2014, SVG) – Note that CCCFP was not opened for signature at this meeting as Member States had not yet received the endorsement of their respective Cabinets.  It was noted that the original Preface makes mention that this is the first FMP prepared under the CCCFP.  Concerns were expressed regarding the direct linkage between the Draft Sub-regional FMP and the CCCFP. In such a situation could the FMP be endorsed in the absence of endorsement of the CCCFP? Also, would endorsement of the Sub-regional FMP require simply endorsement of the Ministerial Council or would the Cabinets of the respective	

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Section (page)	Para; sentence (line #)	Responder	Original text (underlined)/Responder's Comments/Suggestions	WG Discussions & Agreed Action	Matters to be Referred to Forum
				<p>countries have to endorse?</p> <p>See TT comment for lines 225 to 229. As well, in respect of the management advice at section 12.1 discussions focused on whether or not mention of the CCCFP should be made in respect of prioritizing specific protocols. It was noted that not all states with a real interest in the flyingfish fishery are members of the CRFM and that such protocols may be developed in the absence of the CCCFP.</p> <p>Representatives of Grenada expressed concern that stakeholders were not yet made aware of the CCCFP in their country. It was noted however, that the Ministerial Council had already endorsed the CCCFP at its 4<sup>th</sup> Meeting and that the CCCFP ought to be considered as a statement of intent.</p> <p>It was also felt that there was no need to make a direct link between the CCCFP and the Draft Sub-regional FMP, since delays in endorsement of the CCCFP could impact endorsement and implementation of the Sub-regional FMP. It was agreed that, however, that it be explicitly stated that the Sub-regional FMP is consistent with the CCCFP.</p> <p>It was agreed that the respective protocols would not be linked with the CCCFP. As well, since the CCCFP is not yet endorsed by Heads of Government it is to be referred to as a Draft document throughout the FMP.</p>	
Executive summary (1)	3 <sup>rd</sup> para; end of sentence (20-21)	3	<u>...the update of the sub-regional management plan proposes a 2-year sub-regional freeze on any expansion of the flyingfish fleet...</u>	Noted. Management advice amended – now gives some flexibility in respect of implementation time – also propose	

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Section (page)	Para; sentence (line #)	Responder	Original text (underlined)/Responder's Comments/Suggestions	WG Discussions & Agreed Action	Matters to be Referred to Forum
			<p>Effective from? It is noted that this FMP is not a legally binding instrument (p.10), consequently one may question its effectiveness. Nevertheless countries can agree to do all that is reasonably practical to realize the general management objectives. Was consideration given however to the multi-species impacts of such a moratorium? Also, while the number of vessels is restricted there are no measures to address issues of conversion of vessels e.g. from dayboats to iceboats or the use of technology to increase fishing efficiency and consequent impacts on the resource.</p> <p>Further, what if this proposal is not in keeping with the national fisheries development plans of the respective countries?</p>	<p>precautionary implementation of sub-regional freeze in fishing capacity/effort of all authorised vessel types should the 5000t catch trigger point be realised. There is also a new provision that requires countries to report any intended increases in fishing effort and/or fishing capacity, or development likely to impact on fishing effort and/or fishing capacity to WECAFC and CRFM, 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.</p>	
Executive summary(1)	4 <sup>th</sup> para; 1 <sup>st</sup> sentence (22-23)	3 <sup>rd</sup> WG Mtg	<p><u>During this freeze of flyingfish fishing capacity in the sub-region, the monitoring, control and surveillance and hence the overall management of the fishery will be greatly improved by:</u></p> <p>[list of measures follow]</p>	<p>It was agreed that many of the measures proposed such as harmonization of data collection and analysis, legislation, establishment of databases, improved MCS etc., were critical for effective management and should not be linked to the proposed freeze.</p> <p>The WG suggested that the Caribbean Fisheries Forum initiates dialogue on high priority matters related to improvement in data collection and analysis, harmonisation of legislation, development of a regional data and information policy, development of regional databases and improvements in monitoring, control and surveillance systems so as to facilitate implementation of the FMP. It was further noted that these matters are cross-cutting in that they pertain to effective fisheries management in general.</p>	

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Section (page)	Para; sentence (line #)	Responder	Original text (underlined)/Responder's Comments/Suggestions	WG Discussions & Agreed Action	Matters to be Referred to Forum
Executive summary(1)	4 <sup>th</sup> para; last bullet point (35)	3	<p><u>...promotion of fishing access agreements between and among states.</u></p> <p>How does this improve MCS? This recommendation may be interpreted as irresponsible on the part of fishery managers given the uncertainties in the 2008 assessment; the fact that there were no accompanying sensitivity analyses to inform management and although the results suggested that the stock in general was not being overfished the assessment did not examine possibilities of local depletion so there is uncertainty as regards how to achieve the biological objective above. Therefore on what basis are fishing access agreements being promoted? i.e. has a surplus been identified within the EEZs of any of the respective countries?</p>	The phrase "promotion of fishing access agreements between and among states" as a measure to improve overall management of the fishery was deleted – it is noted that countries are free to negotiate such access agreements between or among themselves consistent with the relevant provisions under UNCLOS	
Executive summary (1-2)	5 <sup>th</sup> para (37-40)	3	<p><u>This management approach shows that the CRFM and the Eastern Caribbean sub-region are taking meaningful steps towards the conservation of the shared fisheries resources and ecosystems and are acting as competent and responsible regional fisheries management and conservation stewards to conserve and sustainably manage flyingfish resources and their ecosystem.</u></p> <p>Reword to: This management approach demonstrates the commitment of CRFM Member States and the Eastern Caribbean sub-region towards the conservation of their common or shared fisheries resources and related ecosystem for the long term sustainability of the resources and socio-economic benefit of the people of the region.</p>	Accepted suggested amended text.	
Executive summary (2)	7 <sup>th</sup> para (48-50)	3	<p><u>On adoption of the final amended 2012 sub-regional flyingfish management plan, similar consultative processes will be used to facilitate participation of stakeholders in the implementation of the management plan</u></p> <p>Need to be transparent in explanation of process... review by stakeholders and FACs, then amendment (by whom?) before adoption by whom? on behalf of the respective countries.</p>	<p>Noted.</p> <p>The need for clarification as to exactly when the Draft Sub-Regional FMP may be considered as adopted given the various levels of endorsement required.</p> <p>It was noted that the Draft Sub-Regional FMP is to be endorsed by the Caribbean Fisheries</p>	



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Section (page)	Para; sentence (line #)	Responder	Original text (underlined)/Responder's Comments/Suggestions	WG Discussions & Agreed Action	Matters to be Referred to Forum
				<p>Forum then the Ministerial Sub-Committee, followed by endorsement of the Ministerial Council. Once endorsed by the Ministerial Council the FMP is cleared for regional voluntary implementation by CRFM Member States.</p> <p>Endorsement at the level of WECAFC is required for involvement of other States that are not members of the CRFM (e.g., Martinique and Guadeloupe) in the management process. The agreed text was as follows:</p> <p><i>“The amended draft will be submitted for consideration and endorsement of the Caribbean Fisheries Forum in April 2014 and the CRFM Ministerial Council and related Sub-Ministerial Committee in May 2014. Once endorsed by the Ministerial Council, the Sub-Regional FMP is considered cleared for voluntary regional implementation by CRFM Member States. A consultative process will facilitate stakeholder involvement in all stages of implementation in CRFM Member States. Subsequent to the Ministerial Council’s endorsement the amended draft will be submitted for endorsement at the level of WECAFC.”</i></p>	
1. Preface (1)	2 <sup>nd</sup> para; 2 <sup>nd</sup> sentence 143-145	3	<p><u>The CCCFP seeks, as one of its objectives to develop harmonized measures and operating procedures for sustainable fisheries management, post-harvest practices, fisheries research, fisheries trade and the administration of the fishing industry.</u></p>	<p>Wording is consistent with that in the CCCFP – leave as it.</p>	

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			This phrase may be misinterpreted as stated i.e. is it the management that is sustainable or are we aiming for management to facilitate sustainability of the fisheries resources in the long term?		
Preface (1)	5 <sup>th</sup> para (169)	3	<p><u>For this purpose, the sub-regional plan should aim ... and competitive small-scale fisheries sector, providing a fair standard of living for those who depend on fishing four-wing flyingfish and ...</u></p> <p>Clarify what is meant by “a fair standard of living”</p>	<p>Should a fair standard of living be linked for example to the real GDP per capita? – perhaps at or above the national real GDP per capita? Need to explore international indicators of standard of living and amend accordingly. There is also the Human Development Index. Note that the Kingdom of Spain Project used the satisfaction of basic needs related to dwelling quality, access to services, education and economic capacity as a proxy for standard of living and for classifying communities as either poor or vulnerable. Suggest use similar measure of standard of living in FMP for consistency and for future comparison.</p>	
Preface (1)	6 <sup>th</sup> para (172-173)	3 <sup>rd</sup> WG Mtg	<p><u>This Sub-regional Management Plan is not a legally binding instrument, which can form the basis of a legal challenge.</u></p> <p>But see Section 10. Management Objectives – 2<sup>nd</sup> para which makes reference to legal obligation</p>	<p>It was pointed out that there appeared to be a discrepancy between these 2 statements. And they needed to be reconciled.</p> <p>It was noted that under UNCLOS there is a legal obligation, in cases where stocks are shared, for states to collaborate in management.</p> <p>It was agreed to amend Section 10 to reflect that the obligation is under UNCLOS and cite the respective Article. It was noted that the statement in respect of the FMP not being</p>	

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Section (page)	Para; sentence (line #)	Responder	Original text (underlined)/Responder's Comments/Suggestions	WG Discussions & Agreed Action	Matters to be Referred to Forum
				legally binding holds true.	
2. Mission (2)	1 <sup>st</sup> para (190)	3	<p><u>This Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean aims to assist the flyingfish stakeholders to implement an ecosystem approach to fisheries management, and to contribute 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.</u></p> <p>Define "small-scale fisheries sector"</p>	<p>According to FAO, artisanal refers to the level of technology while "small scale" refers to size of fishing unit. FAO's Definition: "artisanal, or small-scale fisheries, are traditional fisheries involving fishing households (as opposed to commercial companies), using relatively small amount of capital and energy, relatively small fishing vessels (if any), making short fishing trips, close to shore, and mainly for local consumption. They can be subsistence or commercial."</p> <p>It was pointed out that CARICOM had agreed on a definition of "small scale fisheries" developed in the context of WTO discussions and may be this should be used. There is need to confirm whether or not such a definition was agreed upon.</p> <p>After some further discussion it was agreed that 'artisanal' be removed and the CARICOM definition for small scale fisheries be used instead.</p> <p>Based on Houghton (2005) - for the purpose of WTO subsidy negotiations, a proposed working definition of "small-scale fisheries" is "fisheries involving individuals, households, small fishing companies, or fisherfolk organizations using relatively small, unsophisticated fishing vessels, if any, under 20 m LOA, powered by engines not exceeding 300 hp, operating relatively close to shore, and producing fish for local consumption and/or for export".</p> <p>Since the definition of "small scale fisheries" in the CRFM context is likely to have implications</p>	Forum to decide on appropriate definition of "small scale fisheries"

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Section (page)	Para; sentence (line #)	Responder	Original text (underlined)/Responder's Comments/Suggestions	WG Discussions & Agreed Action	Matters to be Referred to Forum
				in international fora, the Working Group considered that the selection of an appropriate definition should not be limited to technical considerations but should be based on a broader political view.	
3. Guiding Principles and Vision for the Future (2)	Section B (198)	3	<p><u>The fundamental principles of the Caribbean Community Common Fisheries Policy (CCCFP), as outlined in Article 5 of the Agreement establishing the CCCFP, which include many that have been adopted from the CCRF:</u></p> <p>This section should also consider the rights of fishers related to labour and the promotion of decent work</p>	Yes, but current wording is taken from CCCFP, in relation to Guiding Principles. Agreed that as well, reference be made to the ILO Work in Fishing Convention of 2007 under section 6.1 International Law and Agreements.	
Guiding Principles and Vision for the Future (3)	Last para (225-229)	3	<p><u>The vision for the flyingfish fisheries is, in line with the Caribbean Community Common Fisheries Policy, an effective cooperation and collaboration among participating countries in the conservation, management and sustainable utilization of the flyingfish resources and related ecosystems in the Eastern Caribbean region in order to secure the maximum benefits from those resources for the people and for the Caribbean region as a whole.</u></p> <p>Recommend this paragraph be reworded. The vision for the fisheries is effective cooperation and collaboration...as a whole. This vision is consistent with the Caribbean Common Fisheries Policy.</p> <p>It is to be recalled that the Ministers of the respective Ministerial Sub-Committee strongly disagreed with the Committee making decisions in respect of management of the fishery but instead proposed to make recommendations for the consideration of the wider Ministerial Council. This</p>	<p>Agreed to adjust text accordingly.</p> <p>Proposed new text agreed upon is as follows:</p> <p><i>"The vision for the flyingfish fisheries is an effective cooperation and collaboration among participating states in the conservation, management and sustainable utilization of the flyingfish resource and related ecosystem in the Eastern Caribbean region in order to secure the optimal benefits from those resources for the people and for the Caribbean region as a whole. This vision is consistent with that of the Draft Caribbean Community Common Fisheries Policy."</i></p> <p>Note "maximum benefits" changed to "optimal benefits".</p>	Issue of the role of Ministerial Sub-Committee in respect of making decisions in respect of management of the fishery deferred to Forum.

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			situation is highlighted to support the view that the CFP is not yet endorsed by the Heads of Government and consequently there is no justification for continuing to stress alignment with the CFP. Though however, we are mindful that this alignment will exist and has developed regardless of the status of the proposed CFP.		
4. Geography of the Region (7)	Figure 3.	WG	<u>Map of wider Caribbean showing potential EEZs (VLIZ, 2012)</u>	This map is usually included with a note that not all countries accept this. Should include this caveat. It was agreed that text be inserted to indicate that not all countries have accepted the proposed boundaries.	
Geography of the Region (57-60)	Table 2-	3	<u>Country profiles for the eastern Caribbean islands providing basic statistics for geography, governance, demography, and economy.</u>  Labour force & Unemployment rate Figures for 2011 available from Central Statistical Office	Relevant sections of Table to be updated by all countries. Barbados and Trinidad and Tobago updated their respective sections and the CRFM Secretariat updated information for other countries.	
5. Legal Context (66)	Entire Section	3	ILO Convention No. 188, Work in Fishing Convention, 2007 and Recommendation No. 199, Work in Fishing Recommendation, 2007 are also relevant	Reference included on ILO Work in Fishing Convention of 2007 and related recommendation under paragraph on other relevant international considerations.	
Legal Context (67)	Table 4-	3 <sup>rd</sup> WG Mtg	<u>Membership to international and regional convention and treaties of relevance to fisheries</u>	<b>Relevant sections of Table to be updated by all countries.</b>	
6.2 Regional and bilateral arrangements (67)	1 <sup>st</sup> para (501)	3	<u>Three regional agreements and arrangements govern and support flyingfish fisheries and management in the Eastern Caribbean...</u>  Reword as: "Four regional instruments (agreements, arrangements and declaration) govern support...Caribbean"  Include 2010 Castries (St Lucia ) Declaration on IUU in list between Agreement Establishing CCCFP and WECAFC (between lines 517 and 518)	It was agreed that the original text is adequate as is.	

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			Reword lines 544 to t49 accordingly – making reference only to 2012 Resolution of WECAFC.		
Regional and bilateral arrangements	1st para; bullet (1) 505-507	3	<p>The mission of this inter-governmental organization is <u>“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</u></p> <p>Reference to “other aquatic resources” as being under the mandate of the CRFM - Although this is articulated in the Agreement Establishing the CRFM – it should be noted that “other aquatic resources” could be interpreted as a much expanded mandate, beyond fisheries, to include non-living resources.</p>	Noted, to be considered should the Agreement Establishing the CRFM come up for amendment.	
Regional and bilateral arrangements (68)	2 <sup>nd</sup> para	3 <sup>rd</sup> Wg Mtg	<p>The members of CRFM and WECAFC have established the <u>CRFM/WECAFC Working Group on Flying Fish in the Eastern Caribbean through a decision by the 14th session of WECAFC (Panama, February 2012) with the specific tasks to:</u></p> <p><u>update and finalize the draft Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean, taking into account the need to develop an ecosystem approach to fisheries (EAF) management and climate change issues;</u></p> <p><u>establish and commence improved monitoring of fishery performance trends, consistent with agreed management objectives for the operation of the Eastern Caribbean flyingfish fishery;</u></p> <p><u>monitor and advise on the implementation of the agreed fisheries management plan;</u></p> <p><u>provide advice on the status of the fishery and its management to the CRFM Ministerial Sub-Committee on Eastern Caribbean Flyingfish and to WECAFC;</u></p> <p><u>take other necessary actions on emerging issues pertaining</u></p>	<p>It was agreed that the text pertaining to the tasks of the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean should perhaps be stated in terms of the general role of the Working Group as the information currently contained in the Draft FMP pertains to the ToRs of the Working Group arising out of the 14<sup>th</sup> Session of WECAFC, pertaining to the period 2012 to 2014.</p> <p>The following proposed revised text was agreed upon:</p> <p><i>“The members of CRFM and WECAFC have established the CRFM/WECAFC Working Group on Flying Fish in the Eastern Caribbean through a decision by the 14th session of WECAFC (Panama, February 2012). Initially the Working Group was charged with the responsibility of updating the proposed draft Sub-regional Fisheries Management Plan (FMP) for Flyingfish in the Eastern Caribbean and the Draft Resolution on the FMP. The scope of the</i></p>	

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			<u>to the sustainable use of Eastern Caribbean flyingfish.</u>	<i>Working Group is to facilitate the achievement of management objectives as outlined in this FMP, through the application of international best practices consistent with the precautionary, ecosystem and participatory approaches to fisheries management. Specifically, the Working Group is required to monitor, evaluate and advise on the status of implementation of the Sub-regional FMP, advise on the status of the fishery and provide technical support to national implementation of the management measures agreed under the Sub-regional FMP."</i>	
7. Management Unit (69-70)	Last sentence (581-583)	3	<u>This suggests that the minimum appropriate management unit for <i>H. affinis</i> should be the combined EEZs of the Eastern Caribbean countries, from Dominica south to Tobago (FAO 2010).</u>  Note that the resource may be distributed beyond the respective EEZs eastward and westward in particular	Appropriate text included.	
8.1 Ecosystem services of the pelagic ecosystem (70)	Entire para	3	Include references for this section.	Reference included - CRFM. 2012 b. 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. 92 pp.	
8.2 Flyingfish fisheries in the Eastern Caribbean (70)	1 <sup>st</sup> para; 1st sentence (602)	3	<u>In the central western Atlantic, the four-wing flyingfish supports commercially important fisheries in three geographically separate areas: the eastern Caribbean islands, the southern Netherlands Antilles and northeast Brazil.</u>  Consideration should be given as to whether we want to specify "Eastern Caribbean islands" or "Eastern Caribbean countries" throughout the document. For the purposes of governance "countries" would be more appropriate	It was suggested that the generic term 'states' be used instead of islands and countries. This change considers countries such as St Kitts and Nevis and Trinidad and Tobago whereby each state may have the legal authority to undertake fisheries management.  It was agreed that "island(s)" be changes to "state(s)" throughout the document when reference is made in the political context and	

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				where the reference is made in the geographical context (distribution, ocean currents etc), the term "island(s)" should be maintained.	
Flyingfish fisheries in the Eastern Caribbean (70)	2 <sup>nd</sup> para (610)	3	<p><u>...their variable abundance ... occurring over the summer months when adults are dead and juveniles have not yet grown into the fishery (recruited)</u></p> <p>Let us not subscribe to this, we do not have "summer" in the Caribbean, specify the respective months</p>	It was agreed that "summer" would be replaced with the words " between July and October"	
Flyingfish fisheries in the Eastern Caribbean (70)	3 <sup>rd</sup> para (614-617)	3	<p><u>The four-wing flyingfish supports important small-scale fisheries in the region in terms of employment generation, food security and supply of bait for fisheries targeting large pelagic fish species. Like other small-scale fishers in the Caribbean, fishers involved in flyingfish fisheries often belong to the lower socio-economic strata of society.</u></p> <p>Fishers in Barbados may be an exception, based on section 9.2; last sentence of 2<sup>nd</sup> para</p> <p>Reference?</p>	<p>Noted. The word "often" considers the situation in the general sense as this is the case in most countries examined.</p> <p>The following reference was inserted - CRFM, 2012. Diagnostic Study to Determine Poverty Levels in CARICOM Fisheries Communities – Technical Document. CRFM Technical &amp; Advisory Document – Number. 2012 / 3. Volume I, 398p.</p>	
Flyingfish fisheries in the Eastern Caribbean (71)	5 <sup>th</sup> para (628-629)	3	<p><u>The total annual recorded catch of flyingfish in Barbados was 2292 tonnes in 2009 (CRFM, 2012a)... as well as 325 persons employed as de-boners or workers in fish processing plants (FAO, 2012).</u></p> <p>The tremendous increase in fleet size since the 1970s should be documented in this paragraph to fully capture the historical expansion of this fishery in the region.</p>	<p>It was agreed that the historical development of the fishery in both Trinidad and Tobago and Barbados would be reflected in the respective paragraphs given the importance of the fishery to these two countries.</p> <p>Text and references appropriately included.</p>	



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Flyingfish fisheries in the Eastern Caribbean (73)	9 <sup>th</sup> para; 1 <sup>st</sup> sentence (680-690)	3	<p><u>The flyingfish fishery targets the four-wing flyingfish (<i>Hirundichthys affinis</i>) although small catches of other species are also reported.</u></p> <p>Not really, catches of other species e.g. dolphinfish may be quite substantial, even exceeding flyingfish catches because the large pelagic species fetch a higher price per unit weight</p>	<p>It was pointed out that fishers do not specifically target four-wing flyingfish but rather target flyingfish in general. Consequently “small” catches of other species refers to catches of other species of flyingfish besides the fourwing flyingfish.</p> <p>After further discussion the following was agreed.</p> <p>Reference to be made to other flyingfish species as well as large pelagic species reported in the catch.</p>	
8.3 Trophic interactions, food web and habitat (74)	1 <sup>st</sup> and 2 <sup>nd</sup> paras (710-714)	3	Reference?	Heliemen <i>et al.</i> , 2008 and Mohammed <i>et al.</i> , 2008 inserted as references in the relevant areas.	
Trophic interactions, food web and habitat (74)	3 <sup>rd</sup> para; 2 <sup>nd</sup> sentence (720-724)	3	<p><u>While critical habitat for adult four-wing flyingfish is the open ocean with availability of floating objects to use as substrate, spawning areas can be in coastal waters such as the shelf area off the northwest coast of Tobago, which are impacted by land based human activities.</u></p> <p>protection of critical habitats and addressing impacts of coastal development on flyingfish abundance through ICZM should be listed in the table on management objectives</p>	These are considered in the broader sense under “Sustained Ecosystem Health”- 3.1 Healthy Habitat – the need for ICZM is implicit in 3.1.	
9.2 Social status of fishers (75-76)	Section in general (770)	3	Management of the flyingfish fishery must also seek to ensure that fishers enjoy decent work according to the respective ILO Convention and Recommendations.	<p>Text included appropriately, mindful that one does not want to place an unnecessary burden on vessel owners, particularly owners of artisanal or small-scale fishing vessels.</p> <p>The following text was included:  <i>“Any approach to the management of flyingfish fisheries must, as far as is reasonably practicable, seek to ensure that fishers enjoy decent</i></p>	

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				<p><i>conditions of work” .</i></p> <p>Reference was also made to the ILO convention which specifies decent conditions of work on board fishing vessels in terms of meeting minimum requirements with regard to work on board, conditions of service, accommodation and food, occupational safety and health protection, medical care and social security.</p> <p>It was noted that while in the main these provisions pertain to industrial type levels, that the ILO process gives flexibility for countries to employ similar standards on small fishing vessels, only subsistence and recreational fishing are excluded from the Work in Fishing Convention.</p>	
Social status of fishers (76)	4 <sup>th</sup> para; 2 <sup>nd</sup> sentence 788-789	3	<p><u>This includes efforts to efficiently regulate industrial fishing fleets, efforts to end IUU fishing, the reduction and prevention of water pollution and coastal erosion caused by housing, quarries, removal of sand and industrial development, and the proper management of other factors, which have an impact of fisheries resources and aquatic habitat.</u></p> <p>Careful with the use of this term; “industrial fishing” by EC States is not at all on the same scale as industrial fishing by distant water fishing nations and other developed nations; perhaps it may be safer to say “non-artisanal” so as to avoid any misinterpretation; otherwise if the term is retained it should be defined.</p>	<p>The FAO Fisheries Management Performance Review defines industrial fishery as “<i>a fishery conducted for the purpose of wide marketing</i>” “<i>Capital-intensive fisheries using relatively large vessels with a high degree of mechanization and that normally have advanced fish finding and navigational equipment. Such fisheries have a high production capacity and the catch per unit effort is normally relatively high.</i>”</p> <p>Source: <a href="http://www.fao.org/fishery/topic/12306/en">http://www.fao.org/fishery/topic/12306/en</a></p>	Forum to decide on appropriate definition for “industrial fishing” or to consider replacing with “non-artisanal”

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9.3 Issues and constraints (76)	General	4	Accepted issues/constraints identified at the regional level.	Noted	
Issues and constraints (76)	General	3	In keeping with the EAF approach – these issues should at the very least be listed according to: (1) Ecological well-being; (2) Social and Economic well-being; (3) Governance – ability to achieve	List reorganized accordingly.  A query was raised regarding the use of 'decent working conditions' and it was suggested that a definition of this be provided.  After some further deliberations it was agreed that a reference would be made to the relevant ILO Convention article which specifies decent conditions of work on board fishing vessels in terms of meeting minimum requirements with regard to work on board, conditions of service, accommodation and food, occupational safety and health protection, medical care and social security. This reference was made under Section 9.2 Social Status of Fishers.	
Issues and constraints (76)	1 <sup>st</sup> para; 1 <sup>st</sup> bullet (point796)	4	<u>lack of a regional mechanism for managing shared resources</u>  The absence of a regional mechanism to manage the fishery can be addressed by a greater participatory approach through NFOs at the national level and the CANUFO at the regional level.	Noted – provisions are made for strengthening fishers' participation in the management process under Section 12.1 Management Advice.	
Issues and constraints (76)	1 <sup>st</sup> para; 5 <sup>th</sup> bullet (803-804)	4	<u>constrained access of far-ranging vessels (e.g. Barbadian ice-boat fleet) and other near-ranging fleets (e.g. French boats) to fishing areas occupied by the shared H. affinis stock;</u>  The issue of constrained access for far ranging vessels might be more the result of overcapitalization. It seems that some vessels targeting flying fish could not have been designed or	Noted. It was suggested that states could inform of any increases in fishing effort and/or fishing capacity, or any development that may impact on fishing effort and/or fishing capacity, so that consideration could be given to possible changes in management measures.	

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			equipped for confinement to national EEZs.		
Issues and constraints (77)	1 <sup>st</sup> para; 10 <sup>th</sup> bullet (811)	4	<p><u>inadequate post-harvest technology to ensure a good quality product and reduce fish wastage, i.e. poor quality of landed fish from improper bulk storage at sea and ashore;</u></p> <p>The development of the flying fish industry in terms of processing/value added is negatively affected by the high cost of energy (electricity).</p> <p>Without access to credit fishers cannot improve harvesting and post-harvest methods to enhance quality and improve market value.</p>	<p>High energy costs in the processing sub-sector was included under socio-economic issues</p> <p>Noted, lack of access to credit is already listed as a constraint.</p>	
Issues and constraints (77)	1 <sup>st</sup> para; 13 <sup>th</sup> bullet (818)	3	<p><u>vulnerability and poverty of fishers and their family and household members;</u></p> <p>Include decent working conditions for fishers in the list</p>	<p>This matter is already included explicitly in the following points:</p> <p><i>“vulnerability and poverty of fishers and their family and household members; lack of, or inadequate, safety equipment and navigational training of crew for some boat types; difficulties with accessing credit and insurance in the fisheries sector”</i></p>	
Issues and constraints (77)	1 <sup>st</sup> para; 13 <sup>th</sup> bullet (818)	4	<p><u>vulnerability and poverty of fishers and their family and household members;</u></p> <p>Poverty within the sector must be addressed.</p>	Noted	
Issues and constraints (77)	1 <sup>st</sup> para; 14 <sup>th</sup> bullet (819 – 820)	4	<p><u>negative impacts of sea and land based human activities such as oil and gas exploration, shipping, pollution, shoreline erosion, runoffs etc. on the marine ecosystems;</u></p>	Pollution issue is already included in the list. It was agreed to include “unsustainable fishing practices” as an ecological issue.	

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			Ecosystem health especially concerning land based sources of pollution and destructive fishing practices (nets) identified as issues.		
Issues and constraints (77)	1 <sup>st</sup> para; 15 <sup>th</sup> bullet (821)	4	<p><u>IUU fishing</u></p> <p>IUU fishing is exacerbated by poor enforcement - agreed that whereas intrusion of fishing vessels from neighbouring states constitutes a serious problem of IUU fishing, the local boats are also unregulated and do not report on fishing activities.</p> <p>The necessity to eradicate illegal foreign fishing targeting flying fishes especially in Grenada's eastern waters where reports indicate that flying fish are abundant. Stakeholders view this as a very serious issue and if not urgently addressed might later impede any amicable bilateral agreements that may be proposed.</p>	<p>Noted, IUU here refers to all vessels, whether local or foreign.</p> <p>Noted.</p>	
Issues and constraints (77)	1 <sup>st</sup> para; 17 <sup>th</sup> bullet (824)	3	<p><u>difficulties with accessing credit in the fisheries sector;</u></p> <p>Include "insurance"</p>	It was agreed that lack of insurance would be included in the list.	
Issues and constraints (77)	General	4	The weak data system, MCS and research are identified as critical constraints to the proper management of the fishery.	<p>Weak data systems are already captured in the point "inadequate fishery information and statistics for planning and decision-making"</p> <p>Weak MCS is already captured in the point on "lack of, or inadequate, monitoring, surveillance and enforcement"</p> <p>Notwithstanding that there has been considerable research on the biology and ecology of the flyingfish, the weak research capacity is already captured in the point on</p>	

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				"inadequate human capacity in fishery departments to conduct required level of research and data analysis"	
9.5 Opportunities (77)	General (832)	3	Perhaps include  (1) assistance to develop and strengthen fisherfolk cooperatives/associations/networks to facilitate improved collection and sharing of data and information and greater involvement in the fisheries management process.  (2) availability of international instrument to ensure that fishers enjoy decent working conditions onboard vessels and that their rights as workers are protected. The ILO Convention No. 188, Work in Fishing Convention, 2007, and its accompanying Recommendation No. 199 provide the necessary guidelines [although the Convention has not yet been ratified by Trinidad and Tobago or Eastern Caribbean States].	Agreed to include.  Agreed to include, but the question was raised as to whether the opportunity is the availability of the international instrument or whether the international instrument provides the opportunity. It was agreed that all references to availability of international instruments be excised and placed in the chapeau of the section with an indication that these instruments, among other factors, provide the respective opportunities.	
Opportunities (77)	1 <sup>st</sup> para; 6 <sup>th</sup> bullet (843)	3	<u>expanding frozen fish storage facilities to reduce seasonality of fish availability;</u>  Or do you mean "to meet market demands during the flyingfish off-season"?	Agreed to edit text accordingly	
Opportunities (78)	1 <sup>st</sup> para; 7 <sup>th</sup> bullet 844-845	1	<u>expanding range of current fishing fleets into geographic range of the eastern Caribbean H. affinis unit stock;</u>  The consultant indicated that the expansion of the flyingfish fishery could be considered as a fishery development project.	Noted – however, there is limited scope for the use of other technology for catching four-winged flyingfish and the targeted capture of other flyingfish species is not supported due to lack of information on these resources.	

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			<p>He explained that as flyingfish was considered an underutilized species, which occupied a low trophic level, if expansion was to occur it should be done in a wider fishing area so as to avoid local depletion and adverse effects on other species.</p> <p>In terms of fisheries expansion, the meeting noted that different fishing technology should be considered.</p>		
Opportunities (78)	1 <sup>st</sup> para; 8 <sup>th</sup> bullet (846)	1	<p><u>development of gear to target underutilized flyingfish species available in the region (e.g. <i>Parexocoetus brachypterus</i>);</u></p> <p>The Barbados representative expressed concern with a statement in the management plan which made reference to expansion of the fishery to species other than the four-wing flyingfish. He indicated that this was not advisable as no data were available for these species.</p>	Noted; the point “development of gear to target underutilized flyingfish species available in the region (e.g. <i>Parexocoetus brachypterus</i> )” was deleted	
Opportunities (78)	1 <sup>st</sup> para; 8 <sup>th</sup> bullet (846)	3	<p><u>development of gear to target underutilized flyingfish species available in the region (e.g. <i>Parexocoetus brachypterus</i>);</u></p> <p>Is there a market for this species? Also, are we promoting fishing a stock for which we do not know the biomass and implications regarding impacts on important predator species that may also be caught by commercial fisheries?</p>	<p>Noted; the point “development of gear to target underutilized flyingfish species available in the region (e.g. <i>Parexocoetus brachypterus</i>)” was deleted</p> <p>Should note that fishers are not ‘not trying to catch other flyingfish species’.</p>	
10. Management Objectives (78)	1 <sup>st</sup> para (859)	3	<p><u>The management objective is to ensure responsible and sustained fisheries, such that the <i>H. affinis</i> resource in the waters of the eastern Caribbean is optimally utilized for the</u></p>	<b>Agreed that text would be amended accordingly.</b>	

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			<p><u>long-term benefit of all people in the eastern Caribbean region. Responsible management in the face of uncertain information on the true status of the flyingfish stock requires a precautionary approach</u></p> <p>“responsible and sustained fisheries” - Explain...should be reworded to reflect long-term sustainability of the resources and implementation of best fishing practices in accordance with the FAO code of conduct for responsible fisheries?</p>		
Management Objectives (78)	2 <sup>nd</sup> para (868)	3	<p><u>...the eastern Caribbean islands and as such these islands are legally obligated to collaborate in its management</u></p> <p>“legally obligated” – under “UNCLOS”?</p>	The statement appears to contradict information in the Preface (“the Sub-regional management plan is not a legally binding agreement”). It was noted that under UNCLOS countries are legally obligated to collaborate in the management of shared stocks. Reference should be made to UNCLOS and the respective article in this regard.	
Management Objectives (78)	2 <sup>nd</sup> para 868-869	3	<p><u>An institutional arrangement allowing for sub-regional collaborative management is therefore critical</u></p> <p>What mechanism is there for conflict resolution in the absence of a fishing agreement between the respective countries? International Court of Justice, Caribbean Court of Justice</p>	Currently, the mechanism for conflict resolution as pertaining to matters under UNCLOS is the International Court of Justice. Matters related to IUU by foreign vessels in the waters under the jurisdiction of a particular state can be addressed by the respective national court. There is also likely a role for the CCJ at the regional level.	



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Management Objectives (79)	Table 5	3	<p><u>Updated Management objectives, general objectives, operational objectives, indicators and reference points</u></p> <p>This section is to be amended based on some fundamental comments below and resubmitted for review. The section is worthy of further explanation/development, beyond simply a table. The management goals should be linked to the issues outlined previously and specific research needs indicated.</p> <p>Operational objectives should be specific, measurable, accomplishment focused, realistic (achievable) and time bound.</p> <p>The suggested reference points should be linked to the indicators to allow any real assessment of whether or not a measure is achieving the intended (as outlined under operational objectives) effects.</p> <p><i>“Operational Objective: Stock biomass is maintained at or above MSY level”</i> - Note that the 2008 Assessment noted that a reference point based on MSY was considered highly uncertain at the time, hence use of the catch trigger point based on estimated landings.</p>	<p>Note that the Table is work in progress and was developed as an initial output under a CRFM Study – use of multi-criteria analysis as a tool for improving information in multi-objective decision-making. The objectives were identified in consultation with stakeholders and the indicators and reference points identified by the Working Group at its first meeting. Since the approach has only recently been introduced there is intention to improve on the objectives, indicators and reference points using a participatory approach. Specifically it was noted that under “operational objectives” there is no current estimate of MSY, and “fair access to fishing grounds “ was vague. Consideration should also be given to including “promotion of fish consumption locally” as an operational objective. Given that the respective Table was output from a consultative process however, the WG was not at liberty to change the text.</p> <p>It was agreed that text be included to capture future development of the approach etc. and that text be included under Section 11.3 Research Needs – with specific reference to governance. Text included appropriately. In respect of Section 11.3 the following was agreed upon:</p> <p><b>Governance research</b>  <i>“Monitoring and evaluation of implementation of the plan are critical in determining whether or not the plan is contributing to achievement of the general objectives for the fishery and to informing any adaptations to the management</i></p>	

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			<p><i>"Suggested Reference Points – adequate coverage of landing sites" - Explain</i></p> <p><i>"General Objectives – 1.2 Accurate information" - Or do we want to Reliably assess the status of the stock? This section should be further developed. It must make reference to other types of data required for an EAF approach to fisheries management and also be aligned to recommendations for improved assessment of the resources arising out of the 2008 assessment. The information is also relevant to 1.1 above.</i></p> <p><i>"Suggested reference points –Adequate sampling design" – Explain</i></p> <p><i>"Operational objectives – Establish precautionary measures as required" – vague</i></p> <p><i>"Indicators – Compliance levels" - Established formal linkages between the Fisheries Department, Coast Guard and Police of the respective countries to facilitate effective enforcement.</i></p> <p><i>"Suggested Reference Points – Established level of</i></p>	<p><i>measures if it is not. However, details of the operational objectives, indicators and reference points are not yet fully developed. Consequently it is proposed that priority be given to identifying with stakeholders, appropriate operational objectives, indicators and reference points to be applied in monitoring and evaluation of the performance of the agreed management priorities included for implementation under this management plan".</i></p>	

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			<p><i>compliance</i>" - MoUs established between Fisheries Departments and the respective law enforcement agencies</p> <p><i>"Indicators – Stakeholder network indicators"</i> – such as?</p> <p><i>"Indicators – Invasive species (sargassum)"</i> – presence or absence of? What is the associated reference point?</p> <p><i>"Operational objectives - Optimize social, economic and financial benefits derived from the fishery"</i> – careful here – optimizing social and economic benefits may be conflicting;</p> <p><i>"Suggested Reference Points – Adequate levels of Employment Income"</i> – Explain</p> <p><i>"Operational objectives – Ensure fair access to fishing grounds"</i> – Explain</p> <p><i>"Indicators – Water quality parameters – Marine debris/pollution occurrence"</i> - May require MoU with respective environmental agencies in-country and ICZM</p>		

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			<p>efforts.</p> <p><i>“General Objectives - 3.2 Healthy and resilient ecosystem (with balanced trophic levels)” - Explain</i></p>		
11. Data monitoring and research requirements (82-83)	General	4	<p>This was deemed a very critical deficiency in the context of fishery management in Grenada. This issue was discussed at length and great concern was expressed at the lack of any effort to invest in data collection, management and analysis. Monitoring is extremely poor and research (even basic) is virtually non-existent. Some reasons advanced for this state of affairs are:</p> <ol style="list-style-type: none"> <li>1. These requirements are not a priority at the policy level therefore there is no support to empower the Fisheries Division with the necessary resources (human and otherwise) to carry out these activities.</li> <li>2. The Fisheries Division has failed to impress their importance at the policy level .</li> <li>3. Lack of regular communication/rapport and networking between the Fisheries Division and other stakeholders has prevented the Division from benefiting from fishers’ Local and Traditional Ecological Knowledge which would help to complement a weak data system.</li> </ol> <p>Stakeholders were also very concerned that the weak data, monitoring and research systems are preventing the</p>	<p>It was agreed that the first paragraph of this section would be re-written as: <i>“The most important shortcoming is the incompleteness of statistics on flyingfish catch/landings in the region due to poor data collection systems and under-reporting.”</i></p> <p>It was agreed that there was no need to focus on the specific issue of lack of data on bait fisheries in the first paragraph given the more critical issue that some target fisheries are not covered in data collection systems. Albeit, the bait fishery issue is already listed as one of the bullet points for attention.</p> <p>Grenada’s comments are noted, many of the issues raised are to be addressed nationally.</p> <p>It was noted that many of the concerns were addressed in proposed changes to Section 12.1 Management Advice – re: inclusion of measures for strengthening of data collection systems, improvements in MCS, and programmes to strengthen fishers’ participation in the management process.</p>	

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			<p>acquisition of specific information that they wish to have such as:</p> <ol style="list-style-type: none"> <li>1. Whether, as they suspect, pollution (especially land-based) is negatively affecting flying fish stocks generally but especially in western coastal waters. They have observed a continuing decline of availability of flying fish in this area.</li> <li>2. Fishers also expressed a desire for specific information on the impacts of currents and sea temperatures on the availability of flying fish.</li> </ol> <p>However, most stakeholders are agreeable to the idea of co-operating with efforts at data collection if approached the "right" way i.e. they want to be treated with respect by the Fisheries Division and a commitment to respect the confidentiality of the information they may offer as well as providing timely feedback.</p>	<p>It was noted that Section 11.3 Research needs already makes provisions for addressing these concerns – Studies on Ecosystems and Trophic Interactions – makes provision for examining the impacts of sea and land-based human activities as well as environmental factors on the resource and ecosystem.</p>	
11.2 Economic, social and ecological information (84)	2 <sup>nd</sup> para; (958-959)	3	<p><u>...restoration of the health of the marine ecosystem...</u></p> <p>One would need to present evidence that the health of the ecosystem is compromised to make such a statement. Is there baseline information against which the success of restoration efforts can be assessed?</p>	<p>Agreed to replace with – "to facilitate application of the ecosystem approach to management of the flyingfish fishery"</p>	
11.3 Research needs (84)	2 <sup>nd</sup> bullet (967-968)	3	<p><u>Conduct of a socio-economic study of flyingfish fishers and processors in selected countries of the Eastern Caribbean.</u></p> <p>Insert "to include an examination of their conditions of work", between "flyingfish fishers" and "and processors..."</p>	<p>Agreed to proposed change</p>	

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12. 1 Management advice (85)	1 <sup>st</sup> para; 1 <sup>st</sup> bullet (992-993)		<b>"Per 1 June 2013, establishment of an authorized entry (license/permit) system for flying fish fisheries, which enters into force for the flyingfish fisheries season 2013/2014." -</b>		
		1	The issue of controlling the fishery by limiting licenses was also discussed and it was pointed out that the fishery was currently open access, so this may not be an option. The consultant indicated that island-based fisheries were by <i>de facto</i> considered limited access given their small populations.  [Noted]	Noted	
		2	Agree in principle to an authorized licence system – however, this will work only if all countries are fully onboard and mechanisms are in place to monitor, enforce and evaluate implementation. <i>[The Draft FMP is intended to bring all countries up to minimum standard in respect of management of the fishery. Consequently it is not expected that all countries will be at the same level at the start. The Sub-Regional FMP would have to be implemented nationally through the respective national FMPs]</i>	Suggest inclusion of the following management measures:  "Develop and implement national management plans, consistent with the sub-regional FMP, by 2015/2016 flyingfish season, or as soon as is practically possible." Text insertion accepted without discussion.  It was also noted that the Working Group at its 2 <sup>nd</sup> meeting, in reviewing the associated Draft Resolution, suggested provisions that: "If there is no improvement in flyingfish catch data collection then expansion of flyingfish fishing capacity would not be possible"; and "there was need to highlight the monitoring and reporting of total catches. The meeting also identified the need for countries to improve the collection of data for total catches and report to CRFM"  To address these recommendations, it was agreed to insert the following management measure, noting the need to address reporting by both CRFM and non-CRFM Member States	

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				<p>as well as an agreed, standardized format for reporting catch and effort data:  <i>“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”</i></p> <p>It was explained that the previous related measure required that countries report to the Working Group directly, however, it is preferred that countries report instead to the two organizations directly, since they are the WG Conveners and recognized advisory authorities.</p> <p>Line 1008 could be modified to read “improved monitoring, control, surveillance and enforcement mechanism of flyingfish fisheries...” - Accepted</p> <p>In respect of evaluating the performance of the management measure(s) – the issue of fisheries data collection is critical – consequently it is proposed that “data collection and analysis” be prioritised by including as a separate, distinct management measure. – The following text was agreed:</p> <p>“improve and expand current national data collection systems to facilitate:                      (a) estimation of biomass and catch target reference points, limit</p>	

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			<p>Fishers should be given adequate notice and information on the introduction of licences and license fees.</p> <p>Concerns over effective monitoring and enforcement across countries. All countries need to be at same level of capability. Implementation of a licence/permit system before all participating countries are at the same level of readiness will be disadvantageous to many fishers. <i>[It is impractical to expect all countries to be at the same level, the FMP is intended to guide all countries along a harmonized path, to delay action because all are not at the same level would not be in keeping with the objectives of the FMP]</i></p> <p>Clarification needed on:            who or what will be licensed – <i>vessel, fisher or both</i>;            license period (<i>seasonal or annual</i>);            cost of the licences/permit;            who will issue the licences and manage the process - <i>RFMO or State</i>;            penalties for noncompliance; and            benefits of the licence/permit .</p> <p><i>[In the first instance this depends on existing national legislation, until such time as the approach is harmonized. The FMP at the moment gives flexibility at the national level to consider how best implementation of the management measures may be achieved.]</i></p> <p>The timeline (2013/2014) set for the implementation of this management measure is unrealistic - taking into</p>	<p>reference points [assessment of the resource and establishment of management target and reference points];</p> <p>(b) estimation of existing levels of fishing effort and capacity; and</p> <p>(c) monitoring and evaluation of the status of implementation of the FMP against the objectives and indicators agreed upon”</p> <p>Suggested new bullet under the overall management section - “implement national programmes to build stakeholder awareness on the management measures to be implemented and related legislation and enforcement” - Agreed</p> <p>Suggested amendment of existing provision regarding improvement of the overall management of the flyingfish fisheries to read:</p> <p><i>“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”</i></p> <p>Proposed that the provision be reworded as:</p>	



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			<p>consideration that existing national legislation of countries concerned may need amending to facilitate an authorized entry system. It was also noted that many of the supporting systems required were not in place and the process of enacting legislation at the national levels (<i>consultation, formulation, cabinet approval, legal drafting, and parliamentary approval</i>) is usually lengthy. [Noted]</p> <p>Implementation should be made as simple as possible to allow easy and quick access to licences. Logistics should not be a hindrance to implementation. [Noted – to be addressed nationally]</p> <p>It would be contrary to the spirit of participatory management for the government, without prior in-depth consultation, to impose a regional fishing licensing/permit system on the local industry within the space of a few months. [Noted]</p>	<p>“establishment of an authorized entry (licence/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/capacity (to define both terms) and provide a mechanism for controlling effort should [the need arise in future][the fishery approach the catch trigger point]. ”</p> <p>There was some discussion about the ending of the sentence and it was suggested that [the need arise in future] be used as it allowed more flexibility, should one wish to implement the measure prior to attaining the 5000t trigger point. It was further noted that the 5000t trigger point was not definite, but was open to re-assessment as more or improved information became available. The reference to “national” entry system was agreed for consistency with the rest of the document which made specific reference to “national” and “regional” measures and because such a measure could only be effected through support of national legislation.</p>	
		3	<p>Consideration is to be given as to whether this can be achieved under current fisheries legislation in the respective countries. Such a process may require an entire reworking of current legislation. [Noted; proposed revised text considers this matter]</p>	<p>It was agreed that the proposed revised text now gives consideration to this concern.</p>	
		4	<p>Questioned the value of a license/permit system given the scarcity of flying fish in their area of operation. [from a</p>	<p>Suggest include in bullet points regarding improvement of the overall management of</p>	

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			<p><i>regional perspective there is need for harmonization in the approach to management]</i></p> <p>Given that longliners do not specifically target flying fish (except for bait) the question was asked why they should be registered as flying fish boats. The explanation that they do remove flying fish from the stock – even as bait and therefore information such as catch and effort were necessary for deciding management measures was accepted. <i>[Noted]</i></p> <p>Fishers also recommended that larger longliners be restricted in the number of flying fish nets they can carry because (some suspect) too many eggs are wasted as well as to prevent ghost-fishing by lost nets. With respect to destructive fishing some stakeholders suggested that the net do not allow successful deposition of eggs by flying fish and increased use of straw (even just to place in the ocean) be encouraged.</p> <p><i>[It would be difficult to be descriptive to this level of detail at this point, mindful however, that we are looking at harmonizing the licensing and registrations systems in the region. Perhaps a recommendation could be made to ascribe high priority to development of the respective protocol once the CCCFP is endorsed by the Heads. The respective countries however, are free to implement such measures in the interest of long-term sustainability of the fishery/resource.]</i></p>	<p>the flyingfish fisheries:</p> <p><i>“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”</i></p> <p>It is to be noted that this measures was initially linked to the CCCFP. However there was concern that this measure is too much in the context of the relatively limited membership of CCCFP. It was suggested that the prioritization should not be dependent on endorsement of the CCCFP, as it is something that should be done anyway. Further, consideration should be given to the broader WECAFC area, as all WECAFC members are not members of CARICOM. As such, the measure should not be linked with the CCCFP.</p>	
12.1 Management	1 <sup>st</sup> para; 2 <sup>nd</sup>		<b>“Adoption of a sub-regional total annual catch trigger point</b>		

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advice (85)	bullet (994-995)		<u>of 5000 tonnes, at which point action shall be taken to ensure the stock does not become overfished</u>		
		1	<p>? regarding the 5000 t management freeze - it was agreed that the timeline for implementing the freeze was not appropriate. Other parties, such as France, needed to be involved in the management decision. <i>[Noted]</i></p> <p>The consultant indicated that the driver for the model used during 2008 was data from Barbados. He indicated that a synoptic survey could be conducted if catches went over 5000t to estimate abundance. He further explained that surveys in non-fished areas could provide a rigorous estimate of biomass. The need to gather better information for the flyingfish fishery was also stressed. <i>[Noted]</i></p> <p>The point was also raised that it may not be necessary to invest resources in conducting a survey at the present time as expansion of the fishery above 5000 t was not expected. <i>[Noted]</i></p> <p>The Group agreed that more information to facilitate a more rigorous stock assessment was needed and this would likely require a fisheries independent survey. <i>[Noted]</i></p>	<p>It was noted that the comments were taken from the 2<sup>nd</sup> Joint WG Meeting report and clarification was sought from anyone who may have been part of that meeting regarding whether the point was really in regard to the 5000t catch trigger point or the freeze on expansion of fishing capacity.</p> <p>In respect of the involvement of France, this matter remains a high priority, the CRFM Secretariat is continuing its effort, under the guidance of the Forum and Ministerial Council, and in collaboration with the CARICOM Secretariat, to identify and pursue the best approach towards realizing a formal collaborative arrangement between the CRFM and France in the conservation, management and sustainable use of the flyingfish resources.</p> <p>By way of clarification one participant stated that the plan itself was not clear on this – it spoke of a 5000t trigger point where other action could be taken such as a freeze on capacity and it was also suggesting an immediate freeze on capacity although there was no indication that 5000t had been reached. It was agreed that the wording from the report was not very clear (and so the report is to be amended to reflect that the statement was in reference to the proposed freeze in fishing capacity). It was advised that the Consultant (P. Medley) had agreed that there was no need for an immediate freeze, but if 5000t trigger was reached, then the concept of a freeze could be entertained. Another option</p>	

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				<p>could be to undertake a more detailed biomass assessment of the status of the stock if the 5000t was attained. The capacity freeze could be entertained as a precautionary measure only after the trigger point was attained. It was therefore agreed that the management measure on the capacity freeze would be amended accordingly.</p> <p>It was queried whether the 'fisheries independent survey' was the same as the synoptic survey suggested before. It was confirmed that the synoptic survey was the more appropriate survey to undertake if/when the trigger point was reached. Notwithstanding that efforts to improve data collection should also be made, it was not intended that more assessments will be conducted on the information already collected. Any sort of survey would have to be predicated on improved data. The regional synoptic survey is an interesting idea and it should be explored before the attainment of the 5000t to confirm its feasibility given the required financial resources and the level of organization needed.</p> <p>Suggested inclusion of a new management measure which makes provision for an assessment to estimate stock abundance, but does not constrain to a synoptic survey which may be timely and costly. There should be some flexibility in the methodology used to estimate abundance. The agreed text was as follows:</p> <p><i>"Conduct of an assessment to estimate stock abundance of flyingfish, such as a regional</i></p>	

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				<p><i>synoptic survey, prior to any significant development in the fishery</i>” – this is consistent with the WG’s recommendation for amendment of the accompanying Ministerial Sub-Committee Resolution.</p> <p>Identification of the appropriate methodology and development of any survey plan as well as identification of funding will be the responsibility of the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean.</p> <p>Following from above it may be necessary to include as a management measure or under general section on overall management – that countries submit national development plans for the flyingfish fishery so as to inform any changes to management measures and update of the FMP (will also be useful for informing whether or not assessment of abundance is to be conducted)</p> <p>It was clarified that although not clearly stated in the report of the second meeting of the WG, the WG had considered that countries should provide information about plans to expand or even start a flyingfish fishery.</p> <p>It was further clarified that countries did not necessarily have to submit a development plan, the country(ries) just needed to inform the WG of its intentions so the likely impact on the catch trigger point could be assessed. It was suggested that countries could advise on intended significant increases in fishing effort and/or fishing capacity but the term “significant” was vague. As well, there is need to advise of any development that may impact</p>	

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				<p>on fishing effort/capacity in general e.g. developments in trade, as there are likely to be ecological, socio-economic and other consequences.</p> <p>The agreed text was as follows:</p> <p><i>“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”</i></p> <p>It was suggested that the words “or pending” be inserted after “intended” to take into consideration planned developments prior to endorsement of the FMP. However it was eventually agreed that “intended” would capture this situation in the general sense.</p>	
		2	<p>Agree to the concept of a trigger point to indicate when management action is required to ensure that the stock does not become overfished. However, need to justify the 5000t value. After much discussion the stakeholders accepted that the recommended precautionary sub-regional total annual catch trigger point of 5000t was based on best available data at the time and that it significantly exceeded the present average total annual sub-regional catch of approximately 3000t at the time. <i>[Noted]</i></p> <p>Suggested that data collection and analysis need urgent attention to provide the information necessary to evaluate</p>	<p>Noted</p> <p>Noted, proposed provision on data collection addresses this concern.</p>	

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			<p>and make decisions on the value of the trigger point. <i>[Noted]</i></p> <p>Suggested that the Plan should clearly identify and articulate the measures to be taken once the trigger point of 5000t is reached.<i>[Noted]</i></p>	<p>It was agreed that the proposed freeze in fishing capacity could be a possible management measure to be implemented should the catch trigger point be reached. It is critical that there be no further increases in fishing effort/capacity at this point because of uncertainty on the behaviour of and impacts on the stock. This matter was taken up in discussions on the proposed capacity freeze.</p> <p>However, it was reiterated that the 5,000 t was not based on scientific assessment but rather on the catches reported by countries at the time. The issues regarding the quality of the data were again noted and so adoption of the trigger point should be precautionary. Efforts should seek to improve the estimate of the trigger point in future, and consideration should also be given to other trigger points. In light of the discussions it was agreed to amend the text as follows:</p> <p><i>“Adoption of a precautionary sub-regional total annual catch trigger point of 5000 tonnes (or any other appropriate trigger point), at which point further action shall be taken to ensure the stock does not become overfished”</i></p>	
		3	<p>The mechanism for timely data collection and catch estimation to ascertain when the catch trigger point has been arrived at are unclear. It should be noted that such a management measure is only effective if action is taken in a timely manner and there is appropriate enforcement. At this time it is also uncertain as to whether the respective</p>	<p>Suggest inclusion under overall management section (note recommendation already made to improve data collection):</p> <p><i>“national monitoring of catch levels in real time, and timely reporting to the CRFM</i></p>	

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			countries have the capability to monitor catches with the level of accuracy required. <i>[Noted]</i>	<p><i>Secretariat which will keep check on overall catches in relation to the agreed trigger point, and advise accordingly"</i></p> <p>Agreed, although limitations in general collection of catch and effort data are noted. However, from a logical standpoint the measure is necessary for effective implementation of the respective measure.</p>	
		4	<p>Expressed an interest as to whether the Trigger Point implies a quota system in the future. <i>[The trigger point does not necessarily imply a quota – the trigger point is precautionary at the moment – implemented to ensure that measures are put in place to avoid overfishing – this matter may come up for discussion in harmonisation of licensing systems]</i> It was offered that consideration be given (under a quota system) for states to trade excess with states that have reached their quota limits. <i>[this is a decision to be taken between or among states]</i></p> <p>Regarding the trigger point of 5000T stakeholders wanted to know that, given the paucity of the data system, how can it be known when that level is reached and, just as importantly which state has benefitted most from the total catches as this has implications for deciding on quota allocation in future. <i>[This is a matter for negotiation at the regional level and cannot yet be prescribed in the FMP]</i></p> <p><b>This measure was not accepted.</b></p>	<p>See recommendations above in respect of real time monitoring of catches and improvements in data collection systems.</p> <p>It was noted that the Grenada stakeholders had indicated that the measure about the 5000t trigger point was not accepted. The key area of concern was equity, as fishers felt that the bulk of the 5000t will go to 1 or 2 countries.</p> <p>It was clarified that the 5000t triggerpoint was just a precautionary measure and was based on maximum catches reported by countries at the time of the 2008 assessment. In order to arrive at a more reliable triggerpoint, countries would have to improve their data and the assessment updated.</p> <p>The question arose as to whether or not the catches in Grenada are increasing because of the bait fishery. Apart from their general fishery statistics and data collection system in Grenada, certain proxies such as number of</p>	



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				<p>longliners, how much bait their normally needed, etc., could be used to estimate catches since it was a bait fishery until a more refined data system could be developed.</p> <p>With regard to 1 or 2 countries taking most of the catch, it was noted that countries have developed their fleets to increase catches for reasons of food security and other issues. If a quota system is to be implemented it would have to be informed by an updated assessment and the specifics agreed upon regionally.</p> <p>Given that the FMP has now been amended to include a provision that countries inform of any planned increases in fishing effort/capacity in the fishery so that the likely impacts on the stock could be assessed, inclusion of several measures for monitoring catch levels to determine if the trigger point is being reached; and provisions in relation to data collection and reporting, MCS etc. the Grenada participants were requested to consider whether they were now in a position to accept the 5,000t trigger point.</p> <p>The Grenada participants agreed to accept the measure with the new wording, but pointed out that in Grenada, the flyingfish was taken in the bait fishery and appropriate data was not collected, so there was no reasonable way to know when the triggerpoint was being reached. It was clarified that the Plan makes several provisions for the countries to improve their data collection. Also, the CRFM Secretariat is willing to provide assistance to help countries improve their data collection systems, as evidenced by the recently held Statistics and Information Workshop in February 2014, and other related activities.</p> <p>A concern was raised with regard to all</p>	

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				<p>countries respecting the management plan. Also, if the plan is accepted overall what about those countries which may be unwilling or unable to implement the plan, due maybe to a lack of staff or some deficiency within their system, how would this be dealt with?</p> <p>It was noted that the effectiveness of any plan really hinged on the country's commitment to fisheries management in general.</p> <p>Following from the various suggested changes to the management advice, participants of Grenada indicated that they were in a position to accept the 5000t trigger point.</p>	
12.1 Management advice (85)	1 <sup>st</sup> para; 3 <sup>rd</sup> bullet 996-997		<b>"Precautionary introduction of a 2-year sub-regional freeze on expansion of flyingfish fishing capacity"</b>		
		2	<p>Majority did not support the <b>immediate</b> introduction of this measure without evidence to suggest that the Eastern Caribbean flyingfish stock is either being overfished, in danger of being overfished or being threatened in any way at the present exploitation levels. Consequently, why then is this being introduced <b>at this stage</b>? Under these circumstances acceptance of the proposed capacity freeze implies <i>de facto</i> acceptance that the 5000t trigger point has been reached or that the stock is viewed as being in danger even before this trigger point has been reached. Recommended that the "freeze" should be considered in the event that regional catch reaches this trigger point of 5000t. <i>[Noted and considered in amendment of text on this management measure]</i></p> <p>Rejected the proposal that the capacity freeze is intended to facilitate the conduct of a specific set of activities during the period of the capacity freeze. It was argued that the activities such as data collection and licensing could be undertaken at</p>	<p>The discussions on the proposed 5,000 t catch trigger point, specifically regarding the need for the FMP to clearly articulate what measure(s) will be taken once the trigger point is reached, are relevant here.</p> <p>The Working Group suggested that implementation of a precautionary freeze in fishing effort/capacity is a possible measure to be taken at such a point. The WG also recalled discussions regarding the need to improve the estimate of the trigger point.</p> <p>The agreed amended text is as follows:</p> <p><i>"Implementation of a precautionary sub-regional freeze on expansion of flyingfish fishing effort and/or fishing capacity applied to</i></p>	

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Section (page)	Para; sentence (line #)	Responder	Original text (underlined)/Responder's Comments/Suggestions	WG Discussions & Agreed Action	Matters to be Referred to Forum
			<p>any time and do not require a capacity freeze to facilitate their execution. <i>[Agree fully]</i></p> <p>Difficulty in (i) interpreting the term “fishing capacity” which was not clearly defined in the Plan and (ii) identifying which vessels are being targeted for the “freeze”. This uncertainty also contributed to the disagreement on this measure. <i>[All vessels types should be equally targeted in the freeze, this will also address the issue of possible conversion of vessels from one type to another for the purpose of increasing efficiency]</i></p> <p>Questioned, in relation to “fishing capacity”, what parameter is being recommended - Is it: the total number of vessels taking flyingfish; the total number vessels that target flyingfish commercially; conversions of day boats to iceboats; size of the ice holds; or all the above? <i>[all of the above]</i></p> <p>Questioned which vessels were being targeted for the “freeze”? Is it the vessels that target flyingfish: commercially; for bait; opportunistically; or all the above? <i>[all of the above]</i></p> <p>Of the view that the flyingfish catches by all vessel types were important in determining the status and sustainability of the</p>	<p><i>all authorised vessel types, should the agreed catch trigger point be realized, and timely reassessment of the resource status and identification of any required changes to the management measures;</i></p> <p>It was pointed out that the revised text does not propose an immediate freeze, but a freeze if the trigger point is reached. Amended provisions also took into consideration the need for data collection systems including registration and licensing mechanism.</p> <p>FAO's Glossary defines fishing capacity as “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” – include definition?</p> <p>It was suggested that the text could read ‘fishing effort and/or capacity’.</p> <p>This was agreed as it was considered that this wording would give some flexibility and allow for a broader range of management measures to be used in the future. Consequently both fishing effort and fishing capacity would be defined.</p> <p>Noted that the operational details are to be agreed upon at the national and regional levels.</p> <p>Noted</p>	

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Section (page)	Para; sentence (line #)	Responder	Original text (underlined)/Responder's Comments/Suggestions	WG Discussions & Agreed Action	Matters to be Referred to Forum
			<p>stocks. Consequently, all vessels that take flyingfish should be considered in determining "fishing capacity". <i>[Agreed]</i></p> <p>Plan is silent on how the "freeze" will affect vessels under construction and persons who are at the advanced stage in acquiring vessels to harvest flyingfish. <i>[rewording to facilitate the freeze only if the catch trigger point is reached may address this, the mechanism whereby countries report planned development would allow the WG to examine possible impacts of such development and advise accordingly so as to avert any such negative socio-economic impacts]</i></p> <p>For the "freeze" to be effective, it has to be based on objective information that the flyingfish fishery is under threat and that the "freeze" is fully implemented and policed by stakeholder countries. <i>[Noted]</i></p> <p>Of the view that should the 5000t trigger point be reached and a "freeze" is necessary, all flyingfish stakeholder countries must first give binding assurances to the "freeze" so that no one country will take these actions to "freeze" their national fishing capacity while others expand theirs or ignore the "freeze". To this end there must be some level of a legally binding agreement for all the flyingfish countries in the region to "freeze" their capacity. <i>[To refer to Forum]</i></p> <p>Noted that the proposal for a freeze seems to be in contradiction to the suggestion later in the document that new export markets for flyingfish be developed. How, under the constraint of a capacity freeze, are fish to be sourced to supply this proposed developing export market? <i>[Noted, immediate freeze is contrary to proposal to develop new</i></p>	<p>Noted that rewording to facilitate the freeze only if the catch trigger point is reached may address this, the mechanism whereby countries report intended increases in fishing effort/capacity as well as development that may impact on fishing effort/capacity would allow the WG to examine possible impacts of such development and advise accordingly so as to avert any such negative socio-economic impacts.</p> <p>Noted, proposed measures for improvements in data collection systems, reporting, MCS will address this concern.</p> <p>It was clarified that the document commented on was proposing an immediate freeze, but this was now probably resolved based on the proposed changes in the plan that only if the 5000t was reached the freeze would be</p>	<p>Issue of binding legal agreement for implementation of the plan deferred to FORUM</p>

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Section (page)	Para; sentence (line #)	Responder	Original text (underlined)/Responder's Comments/Suggestions	WG Discussions & Agreed Action	Matters to be Referred to Forum
			<i>markets]</i>	considered.	
		3	<p>Effective from? It is noted that this FMP is not a legally binding instrument (p.10), consequently one may question its effectiveness. Nevertheless countries can agree to do all that is reasonably practical to realize the general management objectives. Was consideration given however to the multi-species impacts of such a moratorium? Also, while the number of vessels is restricted there are no measures to address issues of conversion of vessels e.g. from dayboats to iceboats or the use of technology to increase fishing efficiency and consequent impacts on the resource.</p> <p>Further, what if this proposal is not in keeping with the national fisheries development plans of the respective countries? <i>[Noted; suggested requirement to inform of updates to national fisheries development plans; and freeze applied to all vessel types may address this]</i></p>	Noted. Revised text now gives consideration to these concerns as mechanisms for data collection and reporting in relation to trigger point and in monitoring and evaluation of implementation of the plan, resource assessments are included. Also, the freeze in fishing effort and/or fishing capacity is to be applied to all authorised vessel types. There is also requirement for countries to report on any intended increases in fishing effort and/or fishing capacity so as to facilitate update of the resource assessment and adjustment of management measures accordingly.	
12.1 Management Advice (85)	2 <sup>nd</sup> para; 998	3	<p><u>The overall management of the flyingfish fisheries needs to be improved by taking the following actions:</u></p> <p><u>Include</u></p> <ol style="list-style-type: none"> <li>(1) promotion of the principles and provisions enshrined in fisheries and related regional and international agreements of which countries are signatory <i>[Agreed – in context of Castries Declaration, UNCLOS etc.]</i></li> <li>(2) Institution of training and public awareness programmes to strengthen fishers' participation in the management process <i>[Agreed]</i></li> </ol>	The proposed text was accepted.	

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12.1 Management Advice (85)	2 <sup>nd</sup> para (999 -1005)	1	<p><u>The overall management of the flyingfish fisheries needs to be improved by taking the following actions:</u></p> <p><u>Include</u></p> <p>Regarding the exchange of scientific information, the Group indicated that there was need to develop a protocol and mechanism for this. It was also stated that an agreement would need to exist between countries for central data sharing and access levels. The group recommended that CRFM's capacity in this area be strengthened. <i>[Noted]</i></p> <p>It was agreed that the level of data sharing would be similar to that required by FAO and ICCAT. The SCPWG was also reminded of the informal agreements which existed from past Working Groups regarding data sharing from assessments. The ICCAT process regarding an informal agreement to destroy data on completion of assessments was also referred to. The Group recognized that these types of arrangements were not binding and indicated that a formal agreement should be considered especially concerning shared resources. <i>[Noted]</i></p> <p>The SCPWG also recognized that a data sharing protocol was previously developed, however it was specified by the Caribbean Fisheries Forum that this should not be implemented until the Common Fisheries Policy was finalized.</p>	<p>Suggest include in bullet points regarding improvement of the overall management of the flyingfish fisheries:</p> <p>"Prioritizing the development of a protocol on data and information sharing <del>upon endorsement of the Caribbean Community Common Fisheries Policy by the Heads of Government.</del>"</p> <p>For reasons discussed previously the last section of the sentence was deleted.</p>	
12.1 Management	2 <sup>nd</sup> para; 1 <sup>st</sup>	2	<u>improving and harmonizing data collection and analysis in the</u>	Noted	

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Section (page)	Para; sentence (line #)	Responder	Original text (underlined)/Responder's Comments/Suggestions	WG Discussions & Agreed Action	Matters to be Referred to Forum
Advice (85)	bullet (999)		<p><u>sub-region</u></p> <p>Agree with this measure - feel that this will need equal commitment from all countries to improve their national data collecting systems for flyingfish. [Noted]</p>		
12.1 Management Advice (85)	2 <sup>nd</sup> para; 2 <sup>nd</sup> bullet (1000)	2	<p><u>improving and harmonizing flyingfish vessel licensing and registration in the sub-region</u></p> <p>Agree with this measure – feel that this was needed to facilitate monitoring, control, surveillance (MCS) and enforcement. [Noted]</p>	Noted	
12.1 Management Advice (85)	2 <sup>nd</sup> para; 3 <sup>rd</sup> bullet 1001-1005	2	<p><u>establishment of a sub-regional flyingfish catch and effort database to be managed by the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean in cooperation with the CRFM Secretariat; establishment of a sub-regional flyingfish vessel registry database to be managed by the CRFM/WECAFC Working Group of Flyingfish in the Eastern Caribbean in cooperation with the CRFM Secretariat;</u></p> <p>Agree with this measure - feel that this was needed to facilitate monitoring, control, surveillance (MCS) and enforcement. [Noted]</p>	Noted. However, this responsibility should rest with the CRFM Secretariat, in respect of its Member States, because of its standing – at the moment the joint Working Group ToRs is only effective over a two-year period. In addition, the development of these data bases is to be informed by CRFM Member States and the sharing of data and information governed by a regionally agreed data and information policy.	
12.1 Management	2 <sup>nd</sup> para; 3 <sup>rd</sup>	2	<u>managed by the CRFM/WECAFC Working Group of Flyingfish</u>		

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Section (page)	Para; sentence (line #)	Responder	Original text (underlined)/Responder's Comments/Suggestions	WG Discussions & Agreed Action	Matters to be Referred to Forum
Advice (85)	bullet 1001-1005		<p>in the Eastern Caribbean in cooperation with the CRFM <u>Secretariat;</u></p> <p>Agree to the involvement of the working group in relation to providing the necessary scientific analysis and information to monitor the fishery and provide the relevant management advice. <i>[Noted]</i></p> <p>Unclear which agency would be given the necessary legal power to enforce compliance with the management measures. <i>[The intended process is that national fisheries plans will be developed that are consistent with the sub-regional plan, national legislation will be updated accordingly to facilitate implementation of the plan. Consequently this responsibility for enforcement rests with the national law enforcement agencies]</i></p> <p>Call for an agreed mechanism and legal framework for implementing the plan – feel that mechanism and legal framework were a priority and necessary before governments can reasonably be asked to legislate the proposed measures as set out in the flyingfish management plan. <i>[Further discussion necessary, may have to put this matter to the Forum]</i></p>	<p>Noted</p> <p>This is a national responsibility, though there is some role for the Regional Security System at the regional level.</p>	Proposed legal framework for implementation of the Plan, deferred to FORUM.
12.1 Management Advice (85)	2 <sup>nd</sup> para; 4 <sup>th</sup> bullet 1006-1007	2	<p><u>formalizing the relationship with Martinique and Guadeloupe to ensure their involvement in the management process as far as the flyingfish fishery in its EEZ are concerned</u></p> <p>Agree with this measure. <i>[Noted, CRFM Sec. is continuing its efforts in this regard]</i></p>	<p>Noted</p> <p>In respect of the involvement of France, this matter remains a high priority, the CRFM Secretariat is continuing its effort, under the guidance of the Forum and Ministerial Council, and in collaboration with the CARICOM Secretariat, to identify and pursue the best approach towards realizing a formal collaborative arrangement between the CRFM</p>	



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Section (page)	Para; sentence (line #)	Responder	Original text (underlined)/Responder's Comments/Suggestions	WG Discussions & Agreed Action	Matters to be Referred to Forum
				and France in the conservation, management and sustainable use of the flyingfish resources.  It was agreed to amend the text to reflect formalizing the relationship between France and the CRFM – so as to take into consideration any other Departments of France, besides Martinique and Guadeloupe, which may also exploit the flyingfish fishery.	
12.1 Management Advice (85)	2 <sup>nd</sup> para; 5 <sup>th</sup> bullet 1008	2	<u>improved control and surveillance of flyingfish fisheries and ending IUU fishing</u>  Agree with this measure – feel that this will require substantial investments by governments in the region. <i>[Noted, such investment in general applies to overall fisheries management, not specific to flyingfish – depends on national commitments ]</i>	Noted	
12.1 Management Advice (85)	2 <sup>nd</sup> para; 7 <sup>th</sup> bullet (1009)	2	<u>promotion of fishing access agreements between and among states</u>  Agree that access agreements should be facilitated where necessary. <i>[Noted]</i>	See below for decision regarding reference to access agreements.	
12.1 Management Advice (85)	2 <sup>nd</sup> para; 7 <sup>th</sup> bullet (1009)	3	<u>promotion of fishing access agreements between and among states</u>  See previous comments on this. It is unclear how fishing access agreements could improve management. The issue of	It was noted that in cases of limiting resources (local depletion) that access agreements may serve to address the problem.  After some deliberation it was agreed that the clause should not be included in the regional management plan, given the concerns raised by Trinidad and Tobago regarding the critical	

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			management requires appropriate legislation and monitoring, surveillance and enforcement measures as well as systems for data collection and analysis to facilitate evaluation of success of the proposed management measures. In the absence of such mechanisms fishing access agreements are likely to have negative impacts on the flyingfish stock. It should be noted that although the 2008 assessment concluded, with several caveat, that the flyingfish stock was not being overfished, it did not investigate the possibility of local depletion which may be occurring at the individual country EEZ (Exclusive Economic Zone) level. Such local depletions will have implications for access agreements. Consequently, the emphasis should be on ensuring that national fisheries resources are well equipped in terms of resources to manage the fisheries in the waters under their jurisdiction <u>before</u> proceeding to allow access to these resources.	systems to be put in place to facilitate management and MCS, and the fact that the decision to enter into agreement to grant access rests with individual states and should be worked out between the states involved. Such authority of states is already granted under UNCLOS.	
12.2 Institutional and legal arrangements (86)	2 <sup>nd</sup> para	2	<u>...where present laws and regulations do not provide for limiting entry into a fishery, countries need to address this –</u> agree that limiting entry to a fishery should be used as a management measure, when necessary, to ensure sustainability of the fishery. <i>[Noted]</i>	Noted. Amended provisions give consideration to this concern.	
12.2 Institutional and legal arrangements (86)	2 <sup>nd</sup> para	2	<u>...or where no management plan is currently in force, legislation and regulations will need to be changed/implemented or management plans created and brought into force to allow for application of the proposed management measures.</u> If no management plan is currently in force, regulation will be needed to create and implement a plan	Noted. Amended provisions give consideration to this concern.	

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Section (page)	Para; sentence (line #)	Responder	Original text (underlined)/Responder's Comments/Suggestions	WG Discussions & Agreed Action	Matters to be Referred to Forum
			Agreed with this measure and consider it as a priority <i>[Noted]</i>		
12.2 Institutional and legal arrangements (86)	General	3	A section should be included on institutional strengthening re acquisition of the necessary resources for national fisheries management authorities to be able to implement the plan	Agreed to the following inclusion: <b><i>“12.3 Institutional Strengthening</i></b> <i>National fisheries authorities as well as national monitoring, control, surveillance and enforcement agencies will have to be provided with the requisite resources to facilitate effective implementation of the plan. At the regional level, the CRFM Secretariat is also to be provided with the requisite resources to facilitate establishment, management and reporting on the respective sub-regional flyingfish catch and effort and vessel registry databases.”</i>	
12.2 Institutional and legal arrangements (86)	1 <sup>st</sup> para (1016-1017)	3	<u>The management functions to be carried out by CRFM will be along the lines of the ones adopted by the recently established CRFM Ministerial Sub-committee on Flyingfish.</u>  Unclear; was this meant to be “Member States of the CRFM” – it is suggested that whenever CRFM is mentioned there should be specific reference to which component of the CRFM is responsible (Secretariat; Forum, Ministerial Council; Ministerial Sub-Committee; Members States) so that there is transparency; if the responsibility resides with all 3 then use “CRFM”	Agreed – suitable text change to be made.	
12.2 Institutional and legal arrangements	General	4	Accept the premise that improved management of the flying fish fishery demands new legislation (especially licensing and	Noted	

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Section (page)	Para; sentence (line #)	Responder	Original text (underlined)/Responder's Comments/Suggestions	WG Discussions & Agreed Action	Matters to be Referred to Forum
(86)			<p>registration, monitoring and data collection) and institutional arrangements in the near future. <i>[Noted]</i></p> <p>Questioned the notion of continued open access to this and other fisheries and viewed such practice as unsustainable. <i>[Noted]</i></p>		
12.2 Co-management – note should be 12.3 – numbering to be adjusted (87)	1 <sup>st</sup> para; 2 <sup>nd</sup> sentence (1037-1039)	3	<p><u>This could be facilitated through national inter-sectoral committees that are established under the CLME project for promoting the ecosystem approach to fisheries.</u></p> <p>This is a good idea but needs to be examined further depending on how the FACs are set up i.e. one FAC for all fisheries or separate FACs for each fishery. The responsibilities could become onerous on the NIC if there are several FACs. The NIC is envisioned as being a high level committee addressing issues mainly in respect of pollution, habitat destruction and modification as well as climate change issues while the FAC addresses matters that are specific to fisheries and their impacts on the ecosystem. <i>[Noted]</i></p>	Noted. This is a matter to be addressed at the national level.	
	Table 6 :	WG	<u>Implementation of the Sub-regional Management Plan in the Eastern Caribbean</u>	The Table was updated with new (indicative) dates for implementation of the FMP (endorsement at the May 2014 Ministerial Council Meeting). However, the previously intended dates were also retained to show the time taken process-wise.	

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Section (page)	Para; sentence (line #)	Responder	Original text (underlined)/Responder's Comments/Suggestions	WG Discussions & Agreed Action	Matters to be Referred to Forum
12.3 Control and surveillance (87-88)	1 <sup>st</sup> sentence (1050-1052)	3	<p><u>Control and surveillance of flyingfish fisheries will be carried out by the national fisheries authorities in close cooperation with the Caribbean Fisheries Forum, CRFM Ministerial Sub-committee on Flyingfish and the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean.</u></p> <p>Any role here for the Regional Security System; CARICOM National Security and Law Enforcement? What about national law enforcement agencies?</p>	<p>The Chair suggested that national law enforcement agencies be included and sought the meeting's agreement on this.</p> <p>It was pointed out that national law enforcement agencies should be included since in most instances they carry out the MCS activities in the insular Caribbean &amp; Lesser Antilles. They are usually the MCS arm of the National Fisheries Authorities. Should also take onboard the RSS; countries that are parties to the Treaty on RSS have a role to play. About a decade ago there was a directive from OECS countries about the number of surveillance per year at a minimum and the RSS was seen as taking on this role. Recent discussions in Grenada spoke of this.</p> <p>CARICOM National Security and Law Enforcement have expressed a willingness to support the activities in terms of MCS and so should also be included in the document.</p> <p>It was agreed that some text be developed about this.</p> <p>It was also pointed out that the Ministerial Sub-committee was not involved in surveillance.</p> <p>The agreed proposed text was as follows:  <b><i>"12.3 Monitoring, Control, Surveillance and Enforcement</i></b>  <i>Monitoring, control and surveillance of flyingfish fisheries will be carried out by the national law enforcement agencies, in close cooperation with the respective national fisheries authorities, as well as any specialized fisheries MCS entities established for this</i></p>	

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Section (page)	Para; sentence (line #)	Responder	Original text (underlined)/Responder's Comments/Suggestions	WG Discussions & Agreed Action	Matters to be Referred to Forum
				<p><i>purpose; and guided by the technical and policy directions provided by the Caribbean Fisheries Forum and the CRFM Ministerial Council as well as related Ministerial Sub-committee on Flyingfish. At the regional level, the Regional Security System and the CARICOM Implementation Agency for Crime and Security (CARICOM IMPACS) will play critical roles. The functions of CRFM will include the development of a harmonized control and inspection schemes to ensure compliance with management and conservation measures, to review compliance with adopted conservation and management measures and to implement adopted control, surveillance and enforcement measures."</i></p> <p>It was noted that the some of the headings were confusing.</p> <p>Suggested that the heading should be Monitoring, Control, Surveillance and Enforcement and each component dealt with in a separate paragraph. This was agreed.</p>	
12.3 Control and surveillance (87-88)	1 <sup>st</sup> sentence (1050-1052)	3	<p><u>functions of CRFM</u></p> <p>Be specific, "is it CRFM Members States with assistance from the CRFM Secretariat"?</p>	Noted	
12.3 Control and surveillance (87-88)	1053	3	<p><u>to ensure compliance</u> - Difficult to do although it is the ideal situation</p>	Given that it is a management plan, it was suggested that the 'to ensure compliance' should be retained as this is what should be planned. It was agreed to retain the initial text.	
12.3 Control and	General	4	Fishers proposed that the Fisheries Division's VHF 24- hour	Noted.	

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Section (page)	Para; sentence (line #)	Responder	Original text (underlined)/Responder's Comments/Suggestions	WG Discussions & Agreed Action	Matters to be Referred to Forum
surveillance (87-88)			monitoring station can be used to monitor fishing activity as well as data collection in real time. <i>[Noted, this is an existing national mechanism in Grenada which can assist in MCS, other countries with similar systems can consider]</i>		
12.4 Financing (88)	2 <sup>nd</sup> sentence 1059-1060	3	<u>...carrying our regional management functions in MCS nature..</u>  Who is doing this at the regional level?	Suggest that the proposed text insertion above also address this.	
12.4 Financing (88)	4 <sup>th</sup> sentence 1060	3	<u>This funding will be secured by CRFM and the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean with support of multi- and bilateral donor agencies and funds.</u> - Is this the CRFM Secretariat?	Yes, text amended accordingly.	
12.4 Financing (88)	4 <sup>th</sup> sentence 1060-1061	3	<u>This funding will be secured by CRFM and the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean with support of multi- and bilateral donor agencies and funds.</u>  "CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean" - Is it under the mandate of the WG to source funding?	WG can advise on sourcing of funds – it was agreed to amend text accordingly	

**Appendix 6: Updated Draft [2014] Sub-regional Fisheries Management Plan for Flyingfish  
in the Eastern Caribbean**



**Draft (2014) Sub-regional Management Plan  
for Flyingfish in the Eastern Caribbean**

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*26 April 2014*



## **Draft 2014 Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean**

### **Executive Summary**

The first draft of the Sub-regional fisheries management plan for flyingfish in the Eastern Caribbean (hereinafter referred to as the Draft Sub-regional FMP) was initiated in 2001 at the Second Meeting of the WECAFC Ad Hoc Working Group on Flyingfish in the Eastern Caribbean (FAO, 2002). Subsequently the WECAFC further developed and amended the plan in 2008 at the Third Meeting of the WECAFC Ad Hoc Flyingfish Working Group of the Eastern Caribbean (FAO, 2010). The 2008 version of the Sub-regional FMP has provided valuable guidance for the management and conservation of flyingfish resources in the Eastern Caribbean. Since 2008, a number of events have taken place that warrants an update of the 2008 management plan. These include the Ministerial Council's endorsement of a Common Fisheries Policy for CARICOM states, the establishment of a CRFM Ministerial Sub-committee on Flyingfish, the establishment of a joint CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean, along with scientific meetings and studies supported by the Caribbean Regional Fisheries Mechanism, WECAFC and the Global Environment Facility-funded Project on Sustainable Management of the Shared Living Marine Resources of the Caribbean Large Marine Ecosystem (CLME) and Adjacent Region.

Consequently, in 2012, the 2008 Draft Sub-regional FMP adopted at the Third Meeting of the WECAFC Ad Hoc Flyingfish Working Group of the Eastern Caribbean was amended at the First meeting of the CRFM/WECAFC Working Group on Flyingfish. The general management objectives underlying the update are: a) sustained flyingfish resources (biological objective), b) optimal use of the flyingfish resource for long-term benefits (socio-economic objective) and c) sustained ecosystem health (ecological objective).

Consistent with the participatory approach to fisheries management the Draft 2012 Sub-regional FMP was put forward for review by stakeholders at national and regional levels through consultative processes that included public hearings, public posting of management plans and comment periods in addition to reviews by national Fisheries Advisory Committees (FACs). Between August 2012 and March 2014 national stakeholder consultations were convened in Barbados, Grenada, St Lucia and Trinidad and Tobago. This recent 2014 update was informed by concerns and suggestions arising out of these consultations as well as further reviews of the 2012 version of the Sub-regional FMP by the CRFM/WECAFC Working Group at its Second and Third meetings held in June 2013 and March 2014 respectively.

Acknowledging the shortcomings in flyingfish data collection and analysis, as well as limitations in current national fisheries management frameworks and following the precautionary, ecosystem and participatory approaches to fisheries management, with the ultimate objective to safeguard the socio-economic well-being of the fishers, the flyingfish industry in the sub-region and the

ecosystem that sustains the flyingfish fishery, the Draft 2014 Sub-regional FMP proposes the following:

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 States on progress made in development and implementation of national fisheries management plans and submission of data 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;
4. Conduct of an assessment to estimate stock abundance of flyingfish prior to any significant development in the fishery;
5. Adoption of a precautionary sub-regional total annual catch trigger point of 5000 tonnes (or any other appropriate trigger point);
6. Implementation of a precautionary sub-regional freeze on expansion of flyingfish fishing effort and/or fishing capacity applied to all authorised vessel types, should the agreed catch trigger point be realized, to be followed by reassessment of resource status and adaptive management;
7. Strengthen current national data collection systems to facilitate improved assessment and management of the resource as well as monitoring and evaluation of implementation of national and sub-regional fisheries management plans.

The overall management of the flyingfish fisheries needs to be improved by taking the following actions:

- improving and harmonizing data collection and analysis in the sub-region;
- 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;
- establishment of a sub-regional flyingfish catch and effort database to be managed by the CRFM Secretariat;
- establishment of a sub-regional flyingfish vessel registry database to be managed by the CRFM Secretariat;
- prioritising the development of a protocol on data and information sharing;
- national monitoring of catch levels in real time and timely reporting to the CRFM Secretariat;
- 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;
- improved monitoring, control, surveillance and enforcement mechanisms for flyingfish fisheries and ending IUU fishing;
- implementing national programmes to build stakeholder awareness on the management measures to be implemented and related legislation and enforcement measures;
- institution of national training and public awareness programmes to strengthen fishers' participation in the management process;

- national reporting to the CRFM or WECAFC, whichever is relevant, so as to inform updates to resource assessments, proposed management measures and amendment of the sub-regional FMP;
- promotion of the principles and provisions enshrined in fisheries and related regional and international agreements to which countries are signatory.

This management approach demonstrates the commitment of the CRFM and the Eastern Caribbean sub-region towards the conservation of their common or shared fisheries resources and related ecosystems for the long term sustainability of the resources and socio-economic benefit of the people of the region.

This updated Sub-regional FMP further proposes a number of studies, which aim to: (i) generate information about the flyingfish industry that is needed to attract investments in sustainable harvesting and value-addition of flyingfish; (ii) further understand the health of the marine ecosystem, which supports the flyingfish fishery; and (iii) facilitate development of operational objectives, indicators and reference points, in consultation with stakeholders, so as to effectively monitor and evaluate implementation of the FMP at the national and regional levels, according to the agreed management priorities.

The amended draft will be submitted for consideration and endorsement of the Caribbean Fisheries Forum in April 2014 and the CRFM Ministerial Council and related Sub-Ministerial Committee in May 2014. Once endorsed by the Ministerial Council, the Sub-Regional FMP is considered cleared for voluntary regional implementation by CRFM Member States. A consultative process will facilitate stakeholder involvement in all stages of implementation in CRFM Member States. Subsequent to the Ministerial Council's endorsement the amended draft will be submitted for endorsement at the level of WECAFC. It is anticipated that feedback will be provided to stakeholders on progress with the implementation of the plan, including information on catch and effort trends, number of licenses issued/renewed, results of stock assessments, industry performance evaluations, etc. Thereafter the management plan will be renewed or updated biennially, or as required, and inputs from stakeholders will be encouraged and given due regard.

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## LIST OF ACRONYMS AND ABBREVIATIONS

<b>CARICOM</b>	Caribbean Community
<b>CARICOM-IMPACS</b>	Caribbean Community Implementation Agency for Crime and Security
<b>CBD</b>	Convention on Biological Diversity
<b>CCCFP</b>	Caribbean Community Common Fisheries Policy
<b>CCRF</b>	Code of Conduct for Responsible Fisheries
<b>CFRAMP</b>	CARICOM Fisheries Resource Assessment and Management Programme
<b>CIA</b>	Central Intelligence Agency
<b>CITES</b>	Convention on International Trade in Endangered Species of Wild Fauna and Flora
<b>CLME</b>	Caribbean Large Marine Ecosystem
<b>CPUE</b>	Catch Per Unit Effort
<b>CRFM</b>	Caribbean Regional Fisheries Mechanism
<b>ECFFP</b>	Eastern Caribbean Flying Fish Plan
<b>EEZ</b>	Exclusive Economic Zone
<b>FAC</b>	Fisheries Advisory Committee
<b>FAD</b>	Fish Aggregating Device
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FMP</b>	Fisheries Management Plan
<b>HACCP</b>	Hazard Analysis and Critical Control Points
<b>IDRC</b>	International Development Research Centre
<b>ILO</b>	International Labour Organization
<b>ITCZ</b>	Inter-tropical Convergence Zone
<b>IUU</b>	Illegal, Unreported and Unregulated fishing
<b>LAPE</b>	Lesser Antilles Pelagic Ecosystem
<b>LOA</b>	Letter of Agreement
<b>MARPOL</b>	International Convention on the Prevention of Marine Pollution from Ships
<b>MCS</b>	Monitoring, Control and Surveillance
<b>MSY</b>	Maximum Sustainable Yield
<b>OECS</b>	Organization of Eastern Caribbean States
<b>SIDS</b>	Small Islands Developing States
<b>SPAW</b>	Specially Protected Areas and Wildlife
<b>UBN</b>	Unsatisfied Basic Needs
<b>UN</b>	United Nations
<b>UNCED</b>	United Nations Conference on Environment and Development
<b>UNCLOS</b>	United Nations Convention on the Law of the Sea
<b>UNDP</b>	United Nations Development Programme

<b>USD</b>	United States Dollar
<b>UWI</b>	University of the West Indies
<b>WECAFC</b>	Western Central Atlantic Fishery Commission
<b>WSSD</b>	World Summit on Sustainable Development
<b>WTO</b>	World Trade Organization

## 1. PREFACE

This Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean represents the outcome of an extensive research process, which started in the late 1990s and involved numerous scientific studies, stock assessments, workshops and meetings.

The plan is the first management plan prepared that is consistent with the Draft Agreement on the Establishment of the Caribbean Community Common Fisheries Policy (CCCFP). The CCCFP has as one of its objectives to develop harmonized measures and operating procedures for sustainable fisheries management, post-harvest practices, fisheries research and fisheries trade and the administration of the fishing industry. The agreement is guided by the principle of applying internationally recognized standards and approaches, in particular the precautionary, ecosystem and participatory approaches to fisheries management.

The development and implementation of this sub-regional plan is among the agreed actions and measures to be taken by the members of the Western Central Atlantic Fishery Commission (WECAFC) under its 2012 “Resolution on strengthening the implementation of international fisheries instruments” and under its endorsed Programme of Work. Moreover, the plan addresses joint actions proposed in the 2010 Castries (St. Lucia) Declaration on Illegal, Unreported and Unregulated Fishing of the Caribbean Regional Fisheries Mechanism (CRFM).

A regionally coordinated scientific evaluation in 2008, 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 the WECAFC, CRFM and to the Caribbean Large Marine Ecosystem (CLME) Project, indicate that the stock of flyingfish in the Eastern Caribbean is not overfished with respect to the objective of maximum sustainable yield. However, in view of significant gaps in data and information, especially highlighted by stakeholders, a precautionary approach is warranted. It is therefore appropriate to establish a multi-annual sub-regional plan with the objective of ensuring that the stock will be exploited under sustainable biological, economic, environmental and social conditions.

For this purpose, the sub-regional plan should aim at progressive implementation of an ecosystem-based approach to management of the flyingfish resource, and should contribute to efficient fishing activities within an economically viable and competitive small-scale fisheries sector, providing a fair standard of living<sup>4</sup> for those who depend on fishing flyingfish and taking the interests of consumers into account.

This Sub-regional Management Plan is not a legally binding instrument, which can form the basis of a legal challenge. The Sub-regional plan can be modified at any time and does not restrict the national authorities’ discretionary powers set out in the national Fisheries Acts of the

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<sup>4</sup> A fair standard of living pertains to the satisfaction of basic needs related to dwelling quality, access to services, education and economic capacity (CRFM, 2012c)



participating states. The national authorities can, for reasons of conservation or for any other valid reasons, propose modifications to any provision of this plan.

In order to ensure compliance with this sub-regional management plan, the participating states are requested to adhere to (at least) the following articles of the CCCFP:

- Article 12: Conservation and Management of Fisheries Resources
- Article 13: Registration and Licensing
- Article 14: Inspection, Enforcement and Sanctions

## 2. MISSION

This Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean aims to assist the flyingfish stakeholders to implement an ecosystem approach to fisheries management, and to contribute to efficient fishing activities of the flyingfish resource within an economically viable and competitive [small-scale fisheries sector<sup>5</sup>], providing a fair standard of living for those who depend on fishing flyingfish and taking the interests of consumers into account.

## 3. GUIDING PRINCIPLES AND VISION FOR THE FUTURE

This flyingfish management plan is guided by:

- A. The principles as set out in the 1995 FAO Code of Conduct for Responsible Fisheries (CCRF), and particularly Article 6 of the Code on Fisheries Management.
- B. The fundamental principles of the Draft Caribbean Community Common Fisheries Policy (CCCFP), as outlined in Article 5 of the Agreement establishing the CCCFP, which include many that have been adopted from the CCRF:
  - (a) use of the best available scientific information in fisheries management decision-making, taking into consideration traditional knowledge concerning the resources and their habitats as well as environmental, economic and

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<sup>5</sup> According to the FAO Glossary of terms, “artisanal, or small-scale fisheries, are traditional fisheries involving fishing households (as opposed to commercial companies), using relatively small amount of capital and energy, relatively small fishing vessels (if any), making short fishing trips, close to shore, and mainly for local consumption. They can be subsistence or commercial.”

According to Haughton (2005), for the purpose of WTO subsidy negotiations, a proposed working definition of “small-scale fisheries” is “fisheries involving individuals, households, small fishing companies, or fisherfolk organizations using relatively small, unsophisticated fishing vessels, if any, under 20 m LOA, powered by engines not exceeding 300 hp, operating relatively close to shore, and producing fish for local consumption and/or for export”

- social factors;
- (b) application of internationally- recognized standards and approaches, in particular the precautionary approach to fisheries management and the ecosystem approach to fisheries management;
- (c) the principle that the level of fishing effort should not exceed that commensurate with the sustainable use of fisheries resources;
- (d) the participatory approach, including consideration of the particular rights and special needs of traditional, subsistence, artisanal and small-scale fishers;
- (e) principles of good governance, accountability and transparency, including the equitable allocation of rights, obligations, responsibilities and benefits; and
- (f) the principle of subsidiarity, in particular, that the Competent Agency will only perform those tasks which cannot be more effectively achieved by individual Participating Parties.

C. Recognition that National Authorities responsible for fisheries management in the participating states carry the main responsibility for implementing this sub-regional management plan within their national jurisdictions and for monitoring and evaluating the status of implementation against the objectives and indicators agreed upon.

The vision for the flyingfish fisheries is an effective cooperation and collaboration among participating states in the conservation, management and sustainable utilization of the flyingfish resource and related ecosystem in the Eastern Caribbean region in order to secure the optimal benefits from those resources for the people and for the Caribbean region as a whole. This vision is consistent with that of the Draft Caribbean Community Common Fisheries Policy.

## 4. GEOGRAPHY OF THE REGION

### 4.1 Physical Geography

#### *Hydrography, currents and bathymetry:*

The eastern Caribbean is characterised by a series of volcanic islands forming the Lesser Antilles island arc. This includes Grenada, St. Vincent and the Grenadines, St. Lucia, Martinique and Dominica. These islands typically have high relief and very limited island shelf area. There is a deep (6000 m) trough to the east of the islands, known as the Tobago Trough. Barbados, which is not volcanic, sits to the east of this trough on sedimentary material, has low relief, is capped by coral limestone and also has very limited shelf area. Trinidad and Tobago on the other hand is located on a relatively wide continental shelf associated with the South American mainland (see Table 1 for estimates of shelf area).

Circulation patterns in the Caribbean are complex and governed by fresh-water runoff, topography, sea-surface temperature, wind stress and primarily by the North Equatorial Current. Atlantic water enters the Caribbean through the passages between the eastern Caribbean islands, forming the westward flowing Caribbean Current (see Figure 1). Atlantic water also flows north westwards up the island chain, via the Antilles Current. These two currents ultimately converge to form the Gulf Stream. However, the relative strengths of the currents, and thus the water supplying the North Equatorial Current, vary seasonally, as a result of the annual displacement of the Inter-tropical Convergence Zone (ITCZ). The ITCZ moves northwards to about 10 °N by August-September and southwards to just south of the equator by January-March.

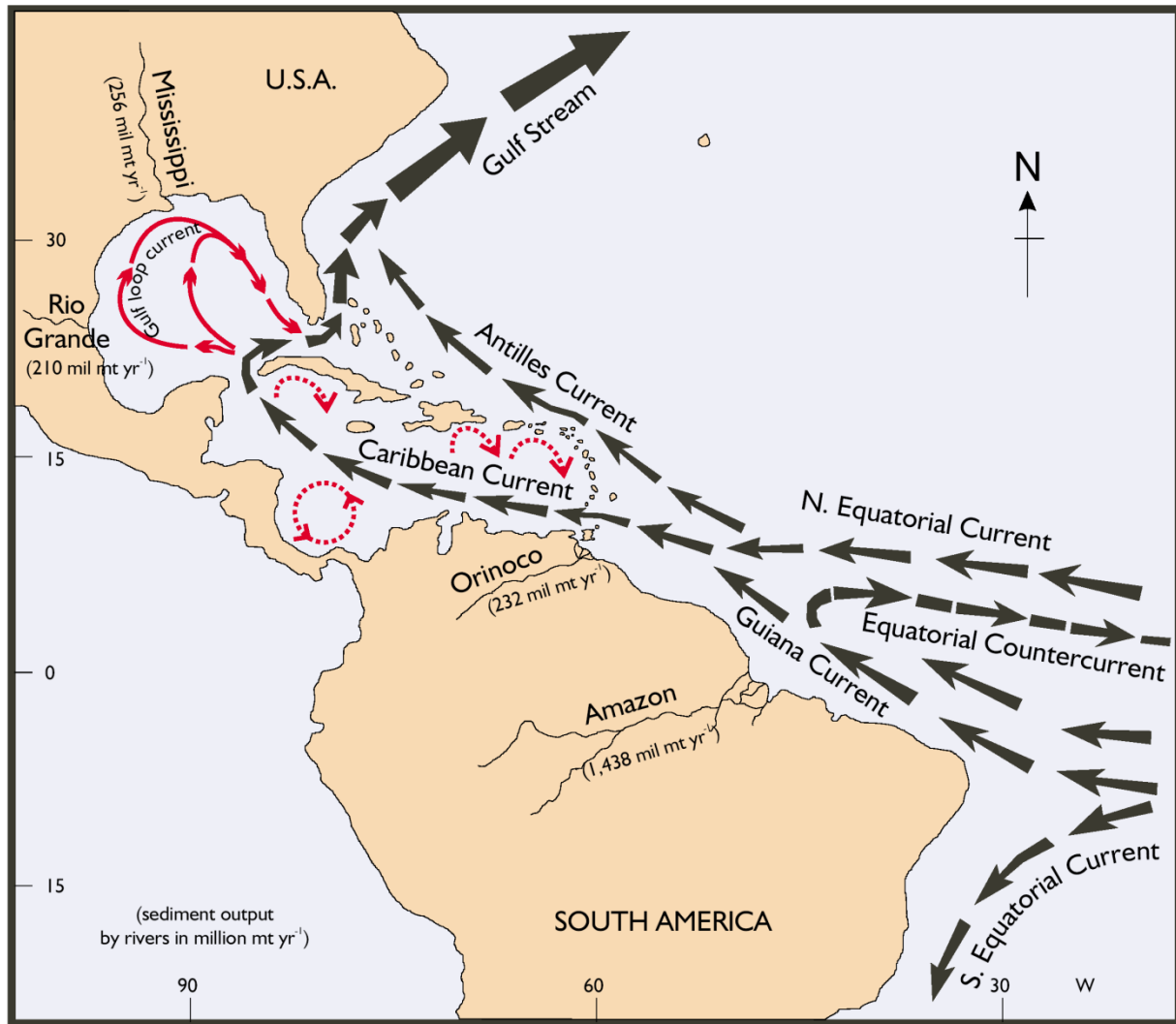
During summer through winter the North Equatorial Current is supplied by oligotrophic (low nutrient) oceanic waters of the North Atlantic. However from around February to June, when the North Equatorial Counter-current weakens, the Guiana Current, flowing north-westwards along the South American mainland and fed by the South Atlantic Equatorial Current, brings eutrophic (high nutrient) waters influenced by the outflow of the Amazon and Orinoco Rivers to join the North Equatorial Current and enter the Caribbean via the eastern Caribbean island passages. As such the source and the primary productivity of the waters around the eastern Caribbean are variable with season.

**Table 1. Country profiles for the eastern Caribbean providing basic statistics for geography, governance, demography, and economy. Primary data source: CIA (2009 & 2014) The World Factbook. Other data sources include: <sup>1</sup> Mahon (1993); <sup>2</sup> International Labour Organisation Caribbean Office (2009) @ [www.ilocarib.org.tt/portal/index.php](http://www.ilocarib.org.tt/portal/index.php); <sup>3</sup> FAO (1993) Status of Caribbean Aquaculture; <sup>4</sup> FAO (2008) Yearbook; <sup>5</sup> Barbados 2010 Population and Housing Census; <sup>6</sup> Barbados 2012 Social and Economic Report.**

Geography	Barbados	Dominica	Grenada	Martinique	St. Lucia	St. Vincent & Grenadines	Trinidad & Tobago
Location	13°10'N 59°35'W	15°25'N 61°20'W	12°07' N 61°40'W	14°30'N 61°00'W	13°53'N60°58'W	13°15'N 61°12'W	10°39'N 61°31'W
Land area (km <sup>2</sup> )	432	754 751	344	1,100	616	389	5,128
Coastline (km)	92	148	121	350	158	84	362
Shelf area (km <sup>2</sup> ) <sup>1</sup>	320	303	1,595	1,013	522	1,800	?
Approx. EEZ area (km <sup>2</sup> ) <sup>1</sup>	48,800	10,200	7,700	13,000	4,700	9,500	80,000
Maritime claims (nmi)	EEZ 200 Territorial sea 12	EEZ 200 Contig. zone 24 Territorial sea 12	EEZ 200 Territorial sea 12	EEZ 200 Territorial sea 12	EEZ 200 Contig. Zone 24 Territorial sea 12	EEZ 200 Contig. Zone 24 Territorial sea 12	EEZ 200 Contig. Zone 24 Territorial sea 12
Climate (rainy season)	Tropical (June-October)	Tropical (June-October)	Tropical (June-October)	Tropical (June-October)	Tropical (May-August)	Tropical (May-December)	Tropical (June-December)
Terrain	Coralline and relatively flat	Volcanic and mountainous	Volcanic and mountainous	Volcanic and mountainous	Volcanic and mountainous	Volcanic and mountainous	Plains and low mountains
Elevation (m)	337	1,447	840	1,397	950	1,234	940
<b>Governance</b>							
Type	Parliamentary democracy, Independent Sovereign State in Commonwealth	Parliamentary democracy, Republic in Commonwealth	Parliamentary democracy, Independent Sovereign State in Commonwealth	Parliamentary democracy Overseas department of France	Parliamentary democracy, Independent Sovereign State in Commonwealth	Parliamentary democracy, Independent Sovereign State in Commonwealth	Parliamentary democracy
Capital	Bridgetown	Roseau	St. George's	Fort de France	Castries	Kingstown	Port of Spain
Administrative divisions	11 parishes	10 parishes	6 parishes, 1 dependency	0	11 quarters	6 parishes	9 regions, 3 boroughs, 1 ward, 2 cities
Independence	30 Nov. 1966	3 Nov. 1978	7 Feb. 1974	None	22 Feb. 1979	27 Oct. 1979	31 Aug. 1962
Constitution	30 Nov. 1966	3 Nov. 1978	19 Dec. 1973	28 Sept. 1958	22 Feb. 1979	27 Oct. 1979	1 Aug. 1976
Legal system	English common law	English common law	English common law	French legal system	English common law	English common law	English common law
Demography	Barbados * 2010 Population and Housing census ** (2012 Social and Economic Report)	Dominica	Grenada	Martinique	St. Lucia	St. Vincent & Grenadines	Trinidad & Tobago
Population (year)	277,821 (2010 est.)*	73,449 (2014 est.)	110,152 (2014 est)	425,966 (2003 est.)	163,362 (2014 est.)	102,918 (2014 est.)	1,223,916 (2014 est.)

Geography	Barbados	Dominica	Grenada	Martinique	St. Lucia	St. Vincent & Grenadines	Trinidad & Tobago
Population growth (annual %)	+0.33 (2010 est)*	0.22 (2014 est.)	0.5 (2014 est)	0.85 (2003)	0.35 (2014 est.)	-0.29 (2014 est.)	-0.11 (2014 est.)
Language	English	English French patois	English	French Creole patois	English French patois	English	English Hindi, French, Spanish, Chinese
Literacy (% over 15 yr)	99.7	94	96	93	90.1	96	98.8
Ethnicity	black 92.4%** mixed 3.1% white 2.7% Asian and Middle Eastern 1.7%	black 86.8% mixed 8.9% Amerindian 2.9% white 0.8%	black 82% mixed 18% Amerindian (trace)	black/mixed 90% white 5% others <5%	black 85.3% mixed 10.9% East Indian 2.-2% other 1.7%	black 66% mixed 19% East Indian 6% Amerindian 2% European 4% other 3%	black 34.2% Indian 35.4% Mixed-other 15.3% other 1.3% mixed African/East Indian 7.7% unspecified 6.2%
Labour force <sup>2</sup>	141,700 (2012)**	33,420 (1997)	41,015 (1998)	126,900 (2008)	62,265 (2004)	58,000 (2008 est.)	621,000 (2013)
Male <sup>2</sup>	72,800**	18,120	23,171	62,500	34,838	35,000	
Female <sup>2</sup>	68,900**	15,300	17,844	64,400	27,428	24,000	
Fishers <sup>3</sup>	2,200	1,500 (1983)	1,500 (1991)	?	2,500 (1983)	2,000 (1983)	
Other fishery related <sup>3</sup>	3,800	?	120	?	?	2,500	
Unemployment rate <sup>2</sup> (%)	11.6 (2012)**	11.0 (2001)	?	21.5(2008)	21 (2004)	22 (1997)	5.9 (2013)
Males <sup>2</sup>	10.9**	11.9	?	19.0	17.5	?	
Females <sup>2</sup>	12.3**	9.5	?	23.8	25	?	
Annual per capita fish consumption (kg) <sup>4</sup> (Average 2003-2005)	36.5	30.2	38.1	15.4	36.3	15.0	16.9
<b>Economy</b>							
Currency (exchange US\$) (equivalency to 1 US\$)	Barbados dollar (2 fixed)	Eastern Caribbean dollar (2.7 fixed)	Eastern Caribbean dollar (2.7 fixed)	Euro (0.68 floating)	Eastern Caribbean dollar (2.7 fixed)	Eastern Caribbean dollar (2.7 fixed)	Trinidad & Tobago dollar (6.29 floating)
GDP (purchasing power parity in billions US \$)	7.056 (2012 est.)	1.015 (2013 est.)	1.458 (2013 est)	11.250 (2006) <sup>2</sup>	2.216 (2013 est.)	1.325 (2013 est.)	27.14 (2013 est.)
Per capita GDP (purchasing power parity in US \$)	19,100 (2008 est.)	14,300 (2013 est.)	13,800 (2013 est.)	28,014 (2006) <sup>2</sup>	13,100 (2013 est.)	12,100 (2013 est.)	20,300 (2013 est.)
External debt (millions US \$) <sup>2</sup>	4,490 (2013 est.)	274.9 (2010 est.)	538 (2010 est.)	?	446.4 (2013 est.)	255.3 (2013)	4,823 (2013 est.)

<b>Geography</b>	<b>Barbados</b>	<b>Dominica</b>	<b>Grenada</b>	<b>Martinique</b>	<b>St. Lucia</b>	<b>St. Vincent &amp; Grenadines</b>	<b>Trinidad &amp; Tobago</b>
Main sectors (% GDP)	Agriculture (including fish): 3.1 industry: 13.9% services: 83% (2013 est.)	agriculture/fish (15.7) ind./commerce (15.6) services (68.7) (2013 est.)	services/tourism (78.5) light industry (15.8) agriculture/fish (5.6) (2013 est.)	services/tourism (83) industry (11) agriculture/fish (5) (1997)	services (79.5) industry (17.4) agriculture/fish (3.1) (2013 est.)	services (74.4) agriculture/fish (5.4) industry (20.3) (2013 est.)	services (42) industry (57.7) agriculture/fish (0.3) (2013 est.)

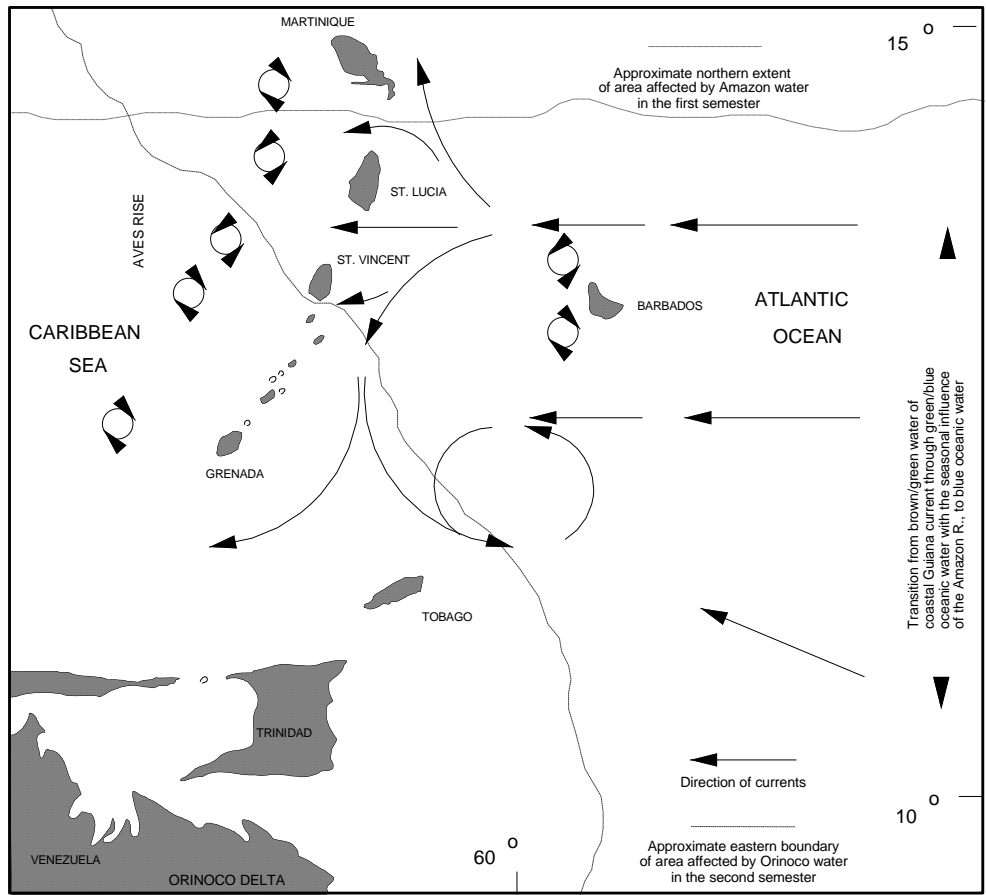


**Figure 1. Major surface currents and river outflows affecting the wider Caribbean. Adapted from Oxenford (1985)**

The influence of South American river outflow on the eastern Caribbean varies seasonally and among islands. Trinidad is heavily influenced by Orinoco outflow all year round. Tobago, Grenada and the Grenadine Islands are influenced by the Orinoco outflow to a lesser extent, and seasonally during the rainy period. The other eastern Caribbean islands are not usually affected by this water mass. However, Amazon water which sheds from the coast of Brazil in meso-scale eddies between October and March, is brought into the Caribbean via the Guiana Current, and tends to influence the eastern Caribbean islands as far north as St. Lucia. These approximate boundaries of influence are illustrated in the diagrammatic map (Mahon 1996; Figure 2).

Mesoscale current patterns in the eastern Caribbean are also extremely complex but not well documented. A series of mesoscale eddies, which eventually shed, are formed downstream of the

islands as the Caribbean Current flows westwards. There is also some evidence for periods of current reversal and larger scale eddies in the lee of Barbados and Tobago (Mahon 1996).



**Figure 2. A synthesis of physical oceanographic characteristics of possible significance to fisheries in the eastern Caribbean. From Mahon (1996)**

***Climate and weather:***

The eastern Caribbean has a typical tropical maritime climate with relatively constant air temperatures throughout the year, and a diurnal range of between 24 and 34 °C. The climate of the region does however have a seasonal cycle dominated by the displacement of the ITCZ. When the ITCZ is displaced to the south (December-April), the region is influenced by strong steady NE Trade winds, clear sky, low rainfall, high atmospheric pressure and strong surface water currents. When the ITCZ is displaced to the north (June-October) the region is influenced by low wind speed, high cloud cover, high rainfall, low atmospheric pressure and low current speeds. It is during this time that the region is also affected by tropical storms/hurricanes. Tropical storms generally follow the path of the major surface currents of the Caribbean and Gulf Stream System after spawning in the central Atlantic. Most tropical storms develop during the summer, when surface water temperatures are highest, with September being the month of greatest activity.

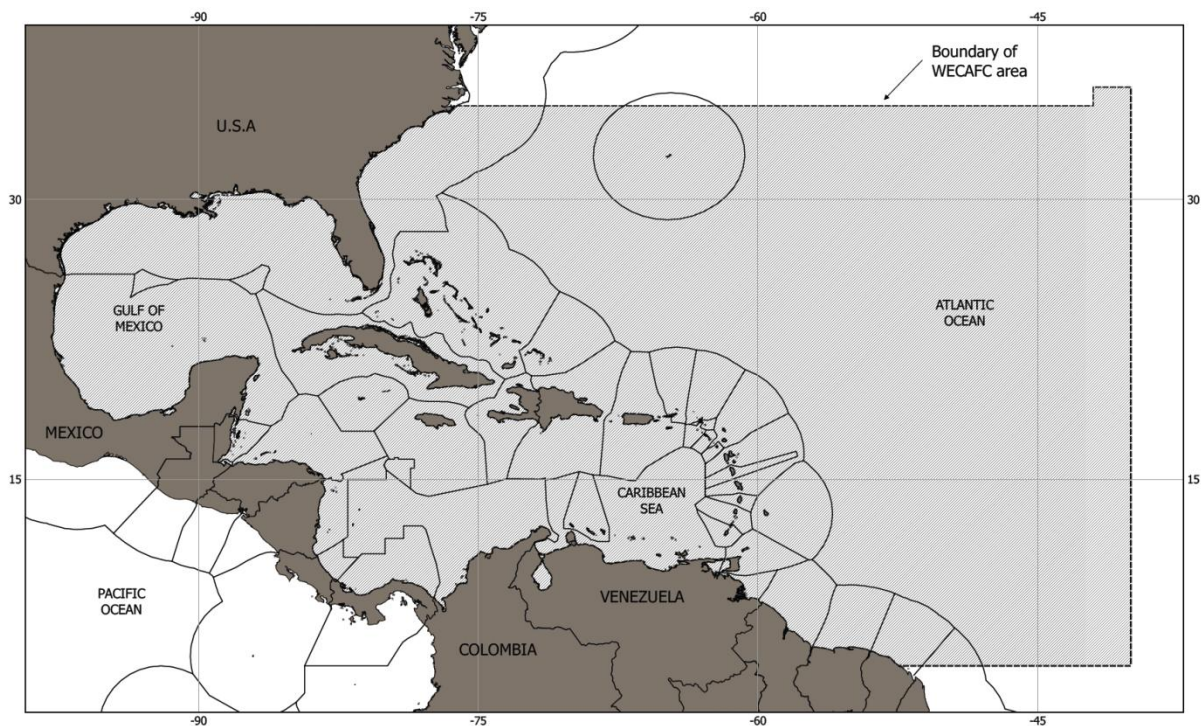


Hurricanes generate coastal sea level rise as high as 6 m, and storm waves that in coastal areas may have wave heights as great as 15 m at the time of breaking (Maul 1993).

#### 4.2 Political Geography

The eastern Caribbean (Lesser Antilles) sub-region is one of the most compact multinational archipelagos in the world. The eastern Caribbean flyingfish (*Hirundichthys affinis*) stock is shared by seven different states (Barbados, Dominica, Grenada, Martinique (France), St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago), each with a national democratic government (see Table 1 for details of governance). With the exception of Martinique, which remains a department of France, the other islands are all independent, most belonging to the commonwealth (Table 1). Furthermore, membership to regional and international organisations with responsibility for fisheries management and development in the wider Caribbean varies amongst the countries or states (Table 2).

All of the eastern Caribbean countries have declared 200 nmi EEZs, although most boundaries between some neighbouring countries are still to be negotiated. Grenada, St. Vincent and the Grenadines, and Trinidad and Tobago have also been granted Archipelagic Status under UNCLOS (Figure 3.)



**Figure 3.** Map of wider Caribbean showing potential EEZs (VLIZ, 2012) (Note that not all countries have accepted the proposed boundaries)

### 4.3 Demography and Economy

The states of the eastern Caribbean are diverse in their demographic and economic characteristics as illustrated by the summary of key demographic indicators given in Table 1.

**Table 2. Membership of countries in the eastern Caribbean to regional and international organisations with responsibility for fisheries management and development.**

Country	ACS	WECAFC	CARIFORUM	CARICOM	CRFM	OECS	ICCAT
Barbados	Y	Y	Y	Y	Y	N	Y
Dominica	Y	Y	Y	Y	Y	Y	N
Grenada	Y	Y	Y	Y	Y	Y	N
Martinique (Department of France)	Y	Y	N	N	N	N	Y
St. Lucia	Y	Y	Y	Y	Y	Y	N
St. Vincent & Grenadines	Y	Y	Y	Y	Y	Y	Y
Trinidad & Tobago	Y	Y	Y	Y	Y	N	Y

## 5. BIOLOGY AND ECOLOGY

Most of the information presented in this section is drawn from the research conducted by the IDRC/UWI/McGill University Eastern Caribbean Flyingfish Project (ECFFP) (1987-1993) in collaboration with the Eastern Caribbean Fishery Departments of Barbados, Dominica, Grenada, Martinique, St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago. Subsequent postgraduate research at the University of the West Indies has further informed the genetic population structure of the four-wing flyingfish in the central western Atlantic. This body of research is widely published in the scientific literature, but appears under one cover with synopses of the biological characteristics and management options for the four-wing flyingfish in Oxenford *et al.* (2007a).

Other substantive ECFFP documents include the Proceedings of the Project Development Workshop in 1985 (Mahon *et al.* 1986); and the OECS Fishery Report 9 (Oxenford *et al.* 1993) which contains the Proceedings of the Interim and Final Project Workshops of 1987 and 1992, the two Flyingfish Research Cruise Reports of 1988 and 1989, and the six project News Bulletins published from May 1987 – Jan 1991.

Other research efforts that have focused on the biology and assessment of the eastern Caribbean four-wing flyingfish include some early studies by Hall (1955), Lewis *et al.* (1962) and Storey (1983), a preliminary stock assessment for the flyingfish fishery of Tobago conducted in 1991 under a

UNDP/FAO Project for the Establishment of Data Collection Systems and Assessment of the Fisheries Resources (Samlalsingh and Pandohee 1992) and various review papers and national reports produced under the Small Coastal Pelagics and Flyingfish Sub-project of the CARICOM Fisheries Resource Assessment and Management Program (CFRAMP) (e.g. CFRAMP 1996) and the WECAFC ad hoc flyingfish working group of the eastern Caribbean (FAO 1999, 2002, 2010).

### 5.1 Description and Distribution of the Species

Although around 13 species of flyingfish (Exocoetidae) occur in the eastern Caribbean region, only three species (*Hirundichthys affinis*, *Cypselurus cyanopterus* and *Parexocoetus brachypterus*) are known to be exploited. However, the target species of the offshore flyingfish fisheries of the eastern Caribbean (accounting for ~ 99% of all flyingfish landed) is the four-wing flyingfish (*Hirundichthys affinis*). *H. affinis* is a relatively small (maximum length around 25 cm standard length (SL), mean size taken by the fisheries is around 20-22 cm SL) epipelagic species, distributed throughout the western tropical Atlantic (Figure 4) where it supports important commercial fisheries seasonally in the eastern Caribbean, Curaçao and off northeast Brazil (Parin 2002). *H. affinis* is also reported from the eastern tropical Atlantic (Parin 2002).

*H. affinis* is seasonally available to the fishing gear (November to July), and is patchily distributed across the eastern Caribbean. A tagging study has demonstrated that individuals move freely between islands of the eastern Caribbean (Oxenford 1994). Results from a flyingfish abundance survey cruise conducted in the eastern Caribbean in 1988 suggest that *H. affinis* is likely to be available in commercially viable quantities beyond the present range of local fishing fleets (Oxenford *et al.* 1995).

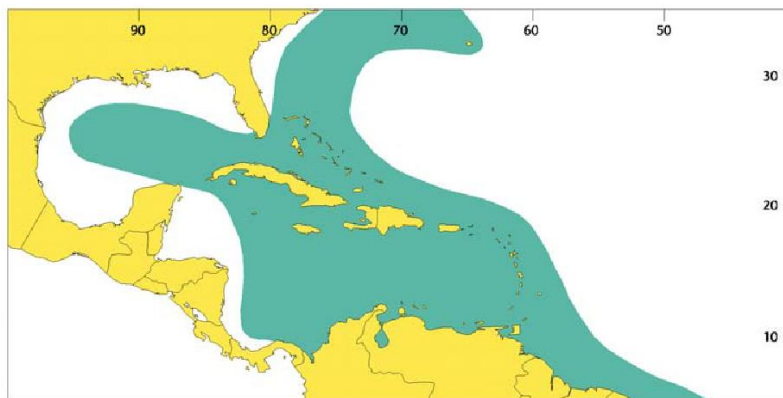


Figure 4. Distribution of the four-wing flyingfish, *Hirundichthys affinis*, in the Western Central Atlantic, after Parin (2002).

### 5.2 Age, Growth and Longevity

*H. affinis* is a short-lived, essentially annual species with a maximum age of around 18 months (Campana *et al.* 1993). *H. affinis* grows relatively fast when immature, reaching around 19 cm fork length (FL) in the first six months. Thereafter growth rate is slow, with fish reaching around 22.5 cm FL at age one year and a maximum size of around 23 cm FL at 18 months (Oxenford *et al.* 1994).

Direct aging through counting daily growth checks is relatively straightforward in juvenile specimens (up to 150 days) and has been validated through laboratory rearing (Oxenford *et al.* 1994), but becomes problematic as growth rate slows down markedly as fish mature. Confirmation of longevity required radio-chemical dating of adult otolith cores (Campana *et al.* 1993).

Best estimates of standard von Bertalanffy growth parameters for *H. affinis* based on validated size-at-age and longevity data are:  $L_4 = 24.5$  cm FL,  $k = 0.01$  (daily basis),  $t_0 = 2.85$  days (Oxenford *et al.* 1994)<sup>6 7</sup>.

### 5.3 Reproductive characteristics

*H. affinis* may reach first maturity as small as 18.0 cm FL (around 5 months of age). The majority of fish are mature by 20.3 cm FL (around 7 months of age) (Storey 1983, Khokiattiwong *et al.* 2000)<sup>8</sup>. They have relatively high gonosomatic indices (GSI values of around 11.5% for females and 6.5% for males) and are batch spawners, with females laying around 7,000 relatively large eggs per batch (Storey 1983, Khokiattiwong *et al.* 2000). Individual fish are believed to spawn several times within the November to July spawning season. Furthermore, there appear to be two peaks in spawning activity during the spawning season, with a minor peak from November to January and a major one in April / May. This tends to be reflected in higher catches by the commercial fisheries at these times, and results from the fact that the fishing gear and methods target spawning fish (Hunte *et al.* 2007).

Eggs are non-buoyant and highly adhesive, and are spawned on floating materials including natural flotsam, and the FADs and gillnets used to catch adult flyingfish. The scarcity of flotsam in the eastern Caribbean may be constraining flyingfish population size, or flyingfish may alternatively be using submerged spawning substrates. This issue needs further investigation and may reveal preferred spawning areas for this species (Hunte *et al.* 2007).

### 5.4 Mortality

The average life span for *H. affinis* is around one year (maximum 18 months), so mortality rates must be high.

Several crude estimates are available for instantaneous natural mortality ( $M$ ) on an annual basis, using empirical formulae after Pauly (1980) and Alagaraja (1984) (e.g.  $M = 4.4$ , Oxenford *et al.* 1993, Oxenford *et al.* 2007b;  $M = 1.8$  to 3.1, Samlalsingh and Pandohee 1992), which translate to actual natural mortality rates of somewhere between 83.5% and 98.8% of the population dying per year.

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<sup>6</sup> These estimates were adjusted slightly by Oxenford *et al.* (2007) to give values ( $L_4 = 23.2$  cm FL,  $k = 0.01$ ,  $t_0 = 4$  days)

<sup>7</sup> Alternative estimates are available for Tobago caught flyingfish ( $L_4 = 25.7$  cm FL,  $k = 0.141$  (daily basis),  $t_0 = -18.6$  days) based on unvalidated size-at-age for 20 specimens (Samlalsingh and Pandohee 1992)

<sup>8</sup> These estimates are loosely corroborated by Samlalsingh and Pandohee (1992) reporting a wide size range for first maturity of between 10.3 – 17.5 cm FL or 2.9 – 7.2 months).

A crude catch curve estimate of instantaneous total mortality ( $Z = 5.8$ ) on an annual basis is reported by Samlalsingh and Pandohee (1992), translating to an actual mortality of 99.7% of the population per year. This parameter is equivalent to the production/biomass ratio and was used in the trophic model of the Lesser Antilles pelagic ecosystem by Mohammed *et al.* (2008), although they recognised that the value was very high and probably represented a combination of both mortality and migration.

A crude estimate of the instantaneous fishing mortality ( $F = 3.3$ ) on an annual basis is also given by Samlalsingh and Pandohee (1992) using  $Z = M + F$ . Again they recognise that this is probably a significant over-estimate.

## 5.5 Recruitment

*H. affinis* becomes vulnerable (recruits) to the commercial fishing gear (gillnets and dipnets) at first sexual maturity (from around age 5 months, i.e. about 18.0 cm FL). The population is considered fully vulnerable at age 7 months (20.3 cm FL) when the majority of flyingfish are mature (Mahon *et al.* 2000).

The relationship between recruitment and the adult stock that produces those recruits (i.e. the stock recruitment relationship) for *H. affinis* has been investigated in a preliminary manner (Mahon 1989). Results indicate that *H. affinis* has a stock recruitment relationship typical of short-lived pelagic species, in which the number of recruits is more strongly influenced by the abiotic and biotic environment (including predation and food supply), than by adult population size, at least over a wide range of adult population sizes. Over the range of spawning stock sizes so far investigated for *H. affinis* in the eastern Caribbean (i.e. those occurring over the years 1958 – 1984 as indicated by CPUE data from the Speightstown, Barbados fishing fleet) the average recruitment has been fairly constant, although inter-annual fluctuations are high. As such, the eastern Caribbean flyingfish stock seems to be characterised by a high degree of inter-annual variation in abundance (with adult fish biomass fluctuating by a factor of +/- 60% from year to year). This variability is believed to be primarily due to the physical environment (rather than adult population size) and is therefore largely unpredictable. Indications are however, that if flyingfish harvest levels increase by more than 40% over the average harvest levels in the 1980s, this may well lead to a decline in recruitment (recruitment overfishing) (Mahon 1989).

## 5.6 Species interactions

The diet of *H. affinis* comprises largely zooplankton (particularly pteropods/copepods) and nekton (larval fish) (Hall 1955, Lewis *et al.* 1962), indicating that they are relatively low down in the food web. They are believed to occupy a trophic level of 3.8 ([www.fishbase.org](http://www.fishbase.org); Froese and Pauly 2009). Predators of juvenile and adult *H. affinis* include many of the large oceanic pelagic species (e.g. dolphinfish, wahoo, large tunas, billfishes) (Oxenford and Hunte 1999, Heileman *et al.* 2008). As such, *H. affinis* is an important baitfish for fisheries targeting these large pelagic species.

The strong trophic dependence of dolphinfishes on flyingfishes has been demonstrated using an Ecopath with Ecosim (EwE) model of the Lesser Antilles pelagic ecosystem (LAPE) (Mohammed *et al.* 2008), and is further explained in Fanning and Oxenford (2011).

## 5.7 Critical habitat

Critical habitat for adult *H. affinis* is clearly open ocean with availability of floating objects to use as spawning substrate. Preferred spawning areas are likely to be present but not well defined at the present time.

A tagging study of *H. affinis* off Tobago has indicated retention of spawning adults in the area (Oxenford 1994). This information, together with anecdotal information from fishers suggests that the shelf area off the northwest coast of Tobago may be a preferred spawning area. An abundance survey of *H. affinis* juveniles across the eastern Caribbean indicated a greater density in the area to the northwest of Trinidad and Tobago (Oxenford *et al.* 1995b); however, this could not be corroborated by the relative distribution of *H. affinis* eggs and larvae (Hunte *et al.* 1995).

## 5.8 Carrying capacity

New estimates of carrying capacity were developed during the 2011, bioeconomic assessment of the Eastern Caribbean flyingfish fishery (CRFM, 2011). These are: a base carrying capacity(k) of 44 302 tonnes; an intrinsic growth rate (r) of 0.28/year; - amplitude of k fluctuation ( $s_k$ ) of 4276 tonnes; and an environmental cycle of carrying capacity of 44 years.

## 6. LEGAL CONTEXT

### 6.1 International law and agreements

Internationally agreed fisheries instruments of direct relevance to flying fish fisheries in the Eastern Caribbean include the following legally binding treaties and agreements:

- 1982 United Nations Convention on the Law of the Sea (UNCLOS), which came into force in 1994;
- 1993 FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (FAO Compliance Agreement), which came into force in 2003;
- 1995 United Nations Agreement for the Implementation of the Provisions of the UN Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UN Fish Stocks Agreement), which came into force in 2001.

Other significant international instruments include the following non-binding declarations/codes:

- 1992 UN Agenda 21: Programme of Action for Sustainable Development, Chapter 17: Protection of the oceans, all kinds of seas, including enclosed and semi-enclosed seas and coastal areas, and the protection, rational use and development of their living resources. This action plan was agreed to at the 1992 United Nations Conference on Environment and Development (UNCED).
- 1994 Declaration of Barbados on the Sustainable Development of Small Island Developing States (SIDS) and its related Programme of Action for the Sustainable Development of Small Island Developing States.

- 1995 FAO Code of Conduct for Responsible Fisheries, which although largely voluntary, has certain provisions that are already, or may become, legally binding. The code covers all aspects of fisheries, including harvest, fishing operations, management, post-harvest, trade and research, and gives particular attention to Small Island Developing States and small-scale fisheries.
- 2001 Reykjavik Declaration, representing a voluntary commitment to adopt an ecosystem-based approach to fisheries management.
- 2005 Rome Declaration on IUU Fishing, recognizing the impacts of IUU fishing on small-scale fisheries, and calling for improved national and regional monitoring, control and surveillance of unauthorized, illegal fishing and implementation of severe punitive measures.
- 2010 United Nations General Assembly Resolution “Towards the Sustainable Development of the Caribbean Sea for Present and Future Generations” (UNGA 65/155, adopted on 20 December 2010).

Other relevant international considerations include the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the 1992 Convention on Biological Diversity (CBD), the 1973/78 International Convention on the Prevention of Marine Pollution from Ships (MARPOL), the 2002 World Summit on Sustainable Development (WSSD) Johannesburg Plan of Implementation and the International Labour Organization Work in Fishing Convention of 2007 (ILO Convention No. 188).

The 2009 FAO Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (Port State Measures Agreement), will in the coming years become an important international instrument for fisheries management in the Caribbean region. Membership to these conventions and treaties among the eastern Caribbean states is shown in Table 3.

**Table 3: Membership to international and regional conventions and treaties of relevance to fisheries (as of March 2014)**

Country	UNCLOS	UN Fish Stocks Agreement	FAO Compliance Agreement	CITES	CBD	MARPOL IMO	Cartagena Convention	SPAW Protocol	FAO Port States Measures
Barbados	√	√	√	√	√	√	√	√	-
Dominica	√	-	-	√	√	√	√	-	-
Grenada	√	-	-	√	√	-	√	√	-
Martinique (France/EU)	√	√	√	√	√	√	√	√	-
Saint Lucia	√	√	√	√	√	√	√	√	-
Saint Vincent & the Grenadines	√	√	-	√	√	√	√	√	-
Trinidad & Tobago	√	√	-	√	√	√	√	√	-

## 6.2 Regional and bilateral arrangements

Three regional agreements and arrangements govern and support flyingfish fisheries and management in the Eastern Caribbean. These include the following:

- 1) The Agreement on the establishment of the Caribbean Regional Fisheries Mechanism (CRFM) under the Caribbean Community (CARICOM) was signed in February 2002. The mission of this inter-governmental organization 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” and as such its three bodies – the Ministerial Council; the Caribbean Fisheries Forum; and the CRFM Secretariat, aim to further the objectives of CRFM. Barbados, Dominica, Grenada, Saint Lucia, Saint Vincent and the Grenadines and Trinidad and Tobago are all active members of the CRFM.
- 2) The Draft Agreement on the Establishment of the Caribbean Community Common Fisheries Policy (CCCFP) was endorsed by the CRFM Ministerial Council in 2011. It will (once ratified) govern the fisheries through establishment of measures for conservation, management, sustainable utilization and development of fisheries resources and related ecosystems; the building of capacity amongst fishers and the optimisation of the social and economic returns from their fisheries and the promotion of competitive trade and stable market conditions.
- 3) The Western Central Atlantic Fishery Commission (WECAFC) was established by the FAO Council in 1973 as a Regional Fishery Body under Article VI of the FAO constitution. All above CRFM member countries are members of WECAFC as well as France (Martinique). WECAFC aims to promote the effective conservation, management and development of the living marine resources in FAO Area 31, in accordance with the FAO Code of Conduct for Responsible Fisheries, and to address common problems of fisheries management and development faced by members of the Commission.

The members of CRFM and WECAFC have established the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean through a decision by the 14th session of WECAFC (Panama, February 2012). Initially the Working Group was charged with the responsibility of updating the proposed draft Sub-regional Fisheries Management Plan (FMP) for Flyingfish in the Eastern Caribbean and the Draft Resolution on the FMP. The scope of the Working Group is to facilitate the achievement of management objectives as outlined in this FMP, through the application of international best practices consistent with the precautionary, ecosystem and participatory approaches to fisheries management. Specifically, the Working Group is required to monitor, evaluate and advise on the status of implementation of the Sub-regional FMP, advise on the status of the fishery and provide technical support to national implementation of the management measures agreed under the Sub-regional FMP.

Also of particular relevance in the region are the 1983 Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (i.e. the Cartagena Convention), which entered into force in 1986, and the associated 1990 Protocol for Specially Protected Areas and Wildlife (SPA), which entered into force in 2000. Membership to these is also shown in Table 4above.



The following declarations and resolutions are also of importance for the management of flying fish fisheries in the Eastern Caribbean:

- 2010 Castries (St. Lucia) Declaration on Illegal, Unreported and Unregulated Fishing of the Caribbean Regional Fisheries Mechanism;
- 2012 Resolution of the members of the Western Central Atlantic Fishery Commission on Strengthening the Implementation of International Fisheries Instruments.

None of the above regional arrangements and agreements has at present any specific jurisdiction over flyingfish resources and their management in the Eastern Caribbean. Therefore the Sub-regional Management Plan is not a legally binding instrument, which can form the basis of a legal challenge. The sub-regional plan, however, harmonizes the fisheries management and conservation of the flying fish resources in the Eastern Caribbean. The national authorities' regulatory powers (under the national Fisheries Acts of the participating countries) will enable implementation of the management plan corresponding with the provisions of the international and regional arrangements and instruments.

### **6.3 National policies, laws and regulations**

In terms of fisheries legislation, all of the Commonwealth Caribbean countries have Fisheries Acts, and those of the Eastern Caribbean countries (Dominica, Grenada, St. Lucia and St. Vincent and the Grenadines) are nearly identical, because they were based in large part upon OECS model laws (CRFM 2012b). The Commonwealth Caribbean fisheries statutes are generic in nature in the sense that they do not tend to have provisions specific to particular fisheries, such as those for flyingfish, but rather contain provisions applicable to all forms of fishing.

While none of the Fishing Acts currently in force expressly requires fisheries authorities to follow the ecosystem approach and fisheries-related principles such as the precautionary principle, in most of the current Acts there are references to key concepts such as conservation, management, sustainability and use of scientific information.

Like the fisheries statutes, most existing national fisheries management plans and policies are of a more generic and general nature, some still in draft form and in the process and need of being revised and updated. They do not contain specific provisions for the management and conservation of flyingfish with the exception of, in some cases, meshsize regulations for gillnets.

## **7. MANAGEMENT UNIT**

To date, three genetically discrete sub-regional stocks of *H. affinis* have been identified in the Western Central Atlantic. These are located in the eastern Caribbean, the southern Netherlands Antilles and off northeast Brazil. As such, the eastern Caribbean *H. affinis* may be considered as a unit stock, shared by the countries of the eastern Caribbean, with distribution extending both eastward and westward, beyond the EEZs of the respective countries. There is also considerable movement of adult flyingfish between the eastern Caribbean countries, particularly prior to spawning. This suggests that the minimum appropriate management unit for *H. affinis* should be the combined EEZs of the Eastern Caribbean states, from Dominica south to Tobago (FAO 2010).

## 8. FISHERY CHARACTERISTICS

### 8.1 Ecosystem services of the pelagic ecosystem

Flyingfish fisheries in the eastern Caribbean are part of the pelagic ecosystem. The pelagic ecosystem provides a range of ecosystem services, which can be divided into provisioning, regulating, cultural and supporting services. The provisioning services include the provision of fish for food and for commercial, recreational and subsistence fishing; the generation of wave energy, oxygen provision, and the provision of a medium for transportation, i.e. shipping and pharmaceutical products. The prominent regulatory service of the pelagic ecosystem is climate regulation. Cultural ecosystem services include recreational and tourism services and values, knowledge systems and educational values as well as spiritual and inspirational values. Supporting ecosystem services of the pelagic ecosystem include habitat for a variety of marine plant and animal life, including critical habitat for eggs and larval stages of fish and shellfish, transport of eggs and larvae to feeding and recruitment grounds as well as biodiversity functions related to sea turtles, sea birds and marine mammals (CRFM, 2012b).

### 8.2 Flyingfish fisheries in the Eastern Caribbean

In the central western Atlantic, the four-wing flyingfish supports commercially important fisheries in three geographically separate areas: the eastern Caribbean islands, the southern Netherlands Antilles and northeast Brazil. Tagging and genetic studies suggest that there is a single stock of four-wing flyingfish (*Hirundichthys affinis*) within the southeastern Caribbean area extending from Dominica to Trinidad and Tobago.

The four-wing flyingfish is essentially an annual species. The strong seasonal variation in catches is probably due to combination of:

- peak seasonal spawning behaviour (flyingfish being much more readily caught when spawning), and
- their variable abundance resulting from high post spawning mortality and a one-year lifespan, such that there is a gap in between successive adult cohorts occurring between July and October when adults are dead and juveniles have not yet grown into the fishery (recruited)

Flyingfishes are an important prey group for a number of large pelagic predators such as bigeye tuna, dolphinfishes, billfishes, blackfin tuna as well as squids.

The four-wing flyingfish supports important small-scale fisheries in the region in terms of employment generation, food security and supply of bait for fisheries targeting large pelagic fish species. Like other small-scale fishers in the Caribbean, fishers involved in flyingfish fisheries often belong to the lower socio-economic strata of society (CRFM, 2012c).

Flyingfish fisheries are concentrated in the southern end of the Lesser Antilles chain. Barbados, Tobago, Martinique and Saint Lucia all have large flyingfish fisheries and to a lesser extent Dominica and Grenada. Barbados accounts for about two thirds of the regional catch. Compared to other countries in the region, Barbados also adds more value to flyingfish catches through

processing and sale to the tourism sector. Altogether 1700 boats of small to medium size are engaged in flyingfish fisheries. The annual value of the flyingfish catch in Barbados alone is estimated at USD 15 million (Mahon *et al.*, 2007).

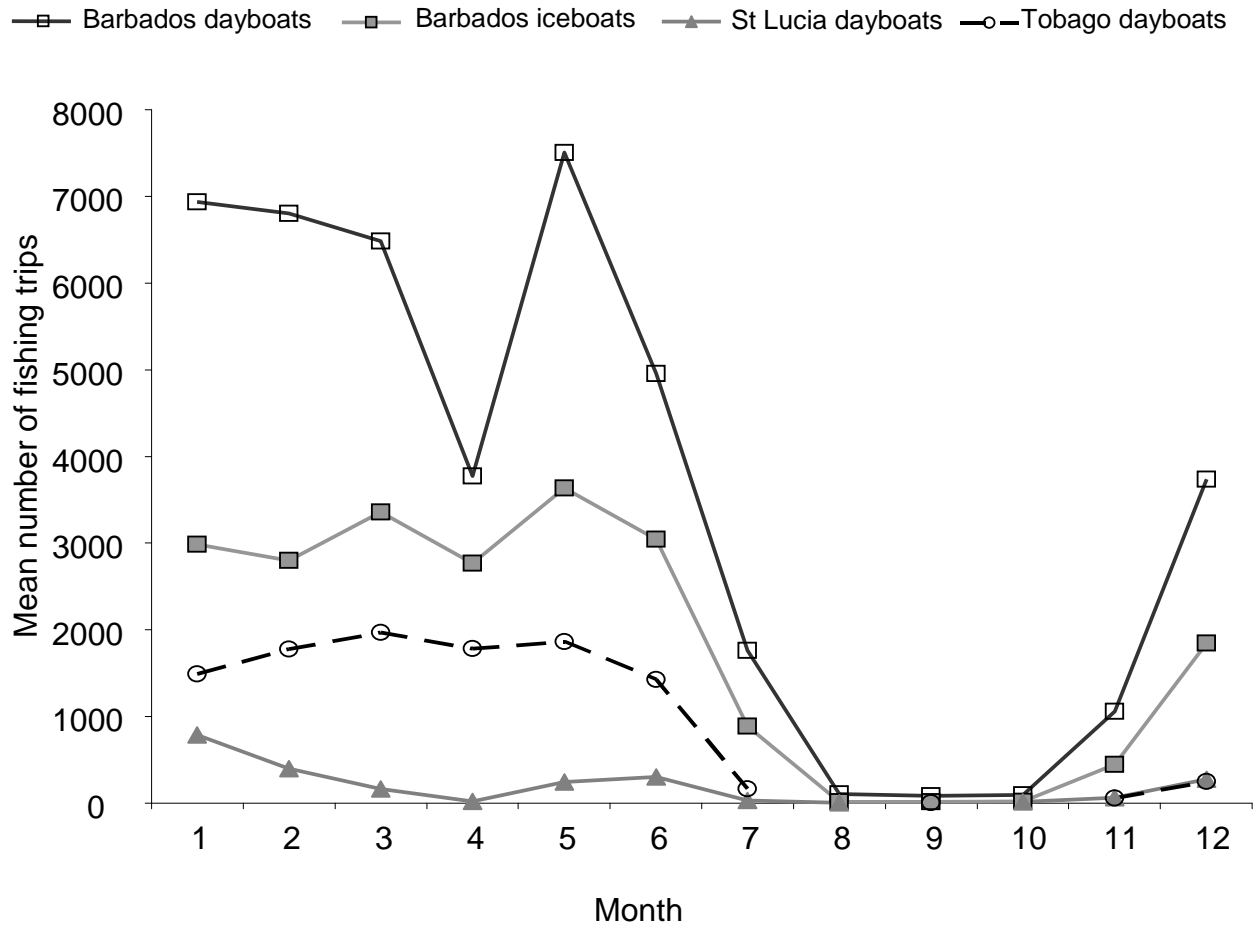
The flyingfish fishery is of particular importance to Barbados. In 1952 there were 400 boats involved in this fishery, 18 of which were mechanized with average engine size of 23 hp (Rose, 1954). Iceboats were introduced in the 1970s, the fleet size increasing to 61 vessels in addition to 442 dayboats by 1988 (Willoughby *et al.*, 1988). In 2007 there were 167 iceboats and 242 dayboats (pirogues) (Parker, 2010). The total annual recorded catch of flyingfish in Barbados was 2292 tonnes in 2009 (CRFM, 2012a). The average annual recorded catch of flyingfish between 1997 and 2009 was 1736 tonnes, fluctuating from a low of 922 tonnes in 2006 to a high of 2680 tonnes in 1998. In the case of Barbados, flyingfish accounted for approximately 62 percent of fish landings over the period 1998-2007. More than 90 percent of the catch is landed by the ice-boat and day boat fleets. In 2007, there were 167 ice boats and 242 registered day boats. The flyingfish fishery is the most important fishery in Barbados employing 2000 fishers, 500 vendors as well as 325 persons employed as de-boners or workers in fish processing plants (FAO, 2012).

Other countries in the area also have important flyingfish fisheries. In Trinidad and Tobago, the flyingfish fishery is located on the Caribbean Sea coast of the island of Tobago. The fishery began with the introduction of appropriate fishing technology in the 1950s, there being only one boat utilising gillnets in 1957 (King-Webster, 1957). By the early 1990s there were 75 pirogues and one iceboat operating in the fishery (Samalasingh and Pandohee, 1992) and by 2008 there were 51 pirogues and eight iceboats (Caesar *et al.*, 2010). The main fishing craft currently used is the fibreglass pirogue, ranging from 6.7–9.8 m. The number of boats involved in the fishery between 1988 and 2008 averaged 50 boats per season (FAO, 2010). In Saint Lucia, 331 vessels were engaged in the flyingfish fishery in 2007 (FAO, 2010). According to figures provided by the department of fisheries, the total flyingfish catch of Saint Lucia was 109.35 tonnes in 2010. The total annual catch of flyingfish in Martinique was 47.6 tonnes in 2009 and 64.6 mt in 2010. There are no targeted flyingfish fisheries in Saint Vincent and the Grenadines. In the case of Dominica there has been a shift from the flyingfish fishery to the large pelagic fishery within the last eight years due to the increased use of FADs. The annual flyingfish landings in Dominica were reported to be 54.22 tonnes in 2011 (Commonwealth of Dominica, 2012, p. 11).<sup>9</sup>

The fishing effort for flyingfish is highly seasonal (December – June), driven by the seasonal availability of both flyingfish and the large pelagic species, particularly dolphinfish. The most recent estimates of fishing effort in the sub-region, in terms of the number of fishing trips during which flyingfish were caught, were assembled by Medley *et al.* (2008) for Barbados, Tobago and St. Lucia for the period 1988-2008. The monthly mean fishing effort over this period is shown in Figure 5 and demonstrates the very low fishing effort during the summer (July – November). The mean total number of flyingfish fishing trips conducted per year by the fleets of these three countries over this period is in excess of 78,200. Barbados day boats account for the majority of fishing trips averaging 43 300 per year, followed by Barbados ice boats averaging around 21 800. Tobago day boats contribute on average 10 800, while Saint Lucia day boats make some 2 300 trips per year.

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<sup>9</sup> Additional information on social and economic indicators of the importance of flyingfish fisheries in the Eastern Caribbean is provided by FAO (2010, p. 71) and in country reports.



**Figure 5. Seasonality of fishing effort shown as monthly mean number of recorded fishing trips (1988-2008) by the flyingfish fishing fleets of Barbados, Tobago and St. Lucia (FAO, 2010)**

A further complication, when examining the regional fishing effort database, is the difference in fishing power among the different boat types and national fleets. This is particularly problematic when using catch per effort (catch per fishing trip) as an index to examine trends in flyingfish abundance over time. Medley *et al.* (2009) attempted to standardise the catch per unit effort data of Barbados, Tobago and St. Lucia for the last two decades (1988-2008) against the January catches of the dayboat fleet in Barbados each year. The resulting catch per unit effort time series is shown in (Figure 6) and suggests that flyingfish abundance has remained stable over the long term.

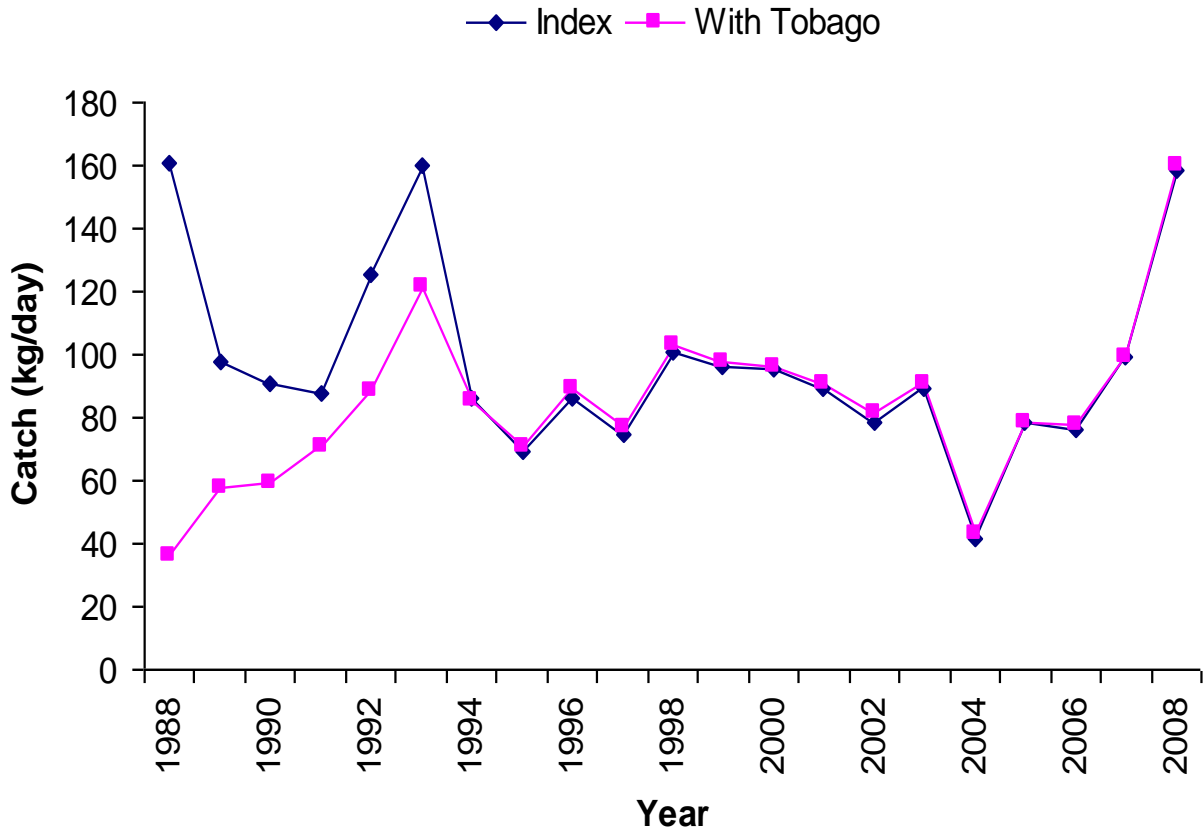


Figure 6. Standardised index of abundance for eastern Caribbean flyingfish representing catch per unit effort data for Barbados, St Lucia and Tobago, standardized annually to Barbados January dayboat effort (trips) (FAO, 2010).

The flyingfish fishery targets the four-wing flyingfish (*Hirundichthys affinis*) although small catches of other flyingfish species, as well as catches of large pelagic species are also reported. Flyingfishes are caught as they form large schools and aggregate to spawn around floating objects on which they deposit their sticky eggs to maintain buoyancy. The fishing gears employed consist primarily of: (i) floating surface gillnets (or driftnets) attached to the boat; (ii) mats of floating palm fronds or sugarcane leaves prepared for attracting flyingfish in search of suitable floating spawning substrate, and hence which serve as FADs (called ‘screelers’ in Barbados); and (iii) handheld dip nets. While the flyingfish fishery is a directed fishery, it is at the same time part of a multi-species, multi-gear fishery, which also targets regional large pelagic species. When travelling to the fishing ground and while gillnets are soaking, stationary or trolled, hooks and lines are used for regional large pelagic species such as dolphinfish, wahoo and other species. Flyingfish is also used as bait to catch these species.

An important ecosystem linkage of flyingfish concerns the growing longline fisheries for large pelagics in the region. These fisheries depend to an unknown degree on flyingfish fisheries for

bait. Beach seine fisheries also provide bait for longlining. This seems to be particularly important in Trinidad and Tobago and Grenada with their growing longline fisheries.

The high demand for flyingfish and other small pelagic fish catches of beach seines to be used as bait for longlining has a negative impact on the food security of local populations. Flyingfish and beach seine catches have traditionally been a source of low cost food and protein in rural areas. The increased demand for these species as bait in the longline fisheries has resulted in increased prices and in some cases removed some coastal pelagics altogether from local food supplies.

### **8.3 Trophic interactions, food web and habitat**

The four-wing flyingfish is one of thirteen species of flyingfishes (*exocoetids*) that have been reported in the Eastern Caribbean. As far as their role in the ecosystem is concerned, flyingfishes are an important component of the pelagic food web as shown by a recently completed study of the Lesser Antilles Pelagic Ecosystem Project of the Food and Agriculture Organization of the United Nations regarding the four-wing flyingfish (Heileman *et al.*, 2008).

The findings of the study confirm the previously known trophic dependence of dolphinfishes (*coryphaenids*) on flyingfishes in the eastern Caribbean (Mohammed *et al.*, 2008). The findings highlight the vulnerability of dolphinfishes to any substantial decrease in the abundance of flyingfish, even without any change in fishing pressure on dolphinfish.

Four-wing flyingfish are relatively low in the food web. Their diet largely comprises zooplankton (particularly pteropods/copepods) and nekton (larval fish). While critical habitat for adult four-wing flyingfish is the open ocean with availability of floating objects to use as substrate, spawning areas can be in coastal waters such as the shelf area off the northwest coast of Tobago, which are impacted by land based human activities. Anecdotal information suggests that sea-based, human activities such as oil and gas exploration and shipping can have negative impacts on the abundance of flyingfish.

## **9. STATUS OF THE FISHERY**

### **9.1 State of the stock**

Based on quantitative assessments completed in 2008 (FAO, 2010) and in 2011 (CRFM, 2011), there is no immediate action required by management to conserve the stock, unless there is a significant increase in catches.

Estimates of annual total flyingfish landings for the eastern Caribbean are available in FAO (2010). The landings, estimated for Barbados, Trinidad and Tobago, St Lucia, Grenada, St Vincent and the Grenadines, Dominica and Martinique vary considerably from year to year. These estimated landings ranged from 1,025 to 2,523 tonnes per year between 1950 and 1979 and appeared to have increased thereafter, ranging from 2,121 to 4,725 tonnes per year between 1980 and 2007. The estimated average annual landing between 2002 and 2007 was 2,512 tonnes.

These data, however, are to be treated cautiously as they are likely underestimates of the true catches in the sub-region. In the case of bait fisheries the catches have not been well documented. There are also gaps in available data, which required interpolation to estimate landings for years without data. Generally, several countries lack a clear methodology for estimating total catches from recorded data. Consequently, there is tremendous uncertainty in the level of historical catches of flyingfish for the Eastern Caribbean. Estimates of fishing effort are also uncertain.

The 2008 assessment identified that an annual catch trigger reference point of 5,000 t should be established when action may be taken to ensure the stock does not become overfished. This trigger point therefore defines when further management action should be undertaken. The maximum recorded annual catch to date is 4,700 t. The 2008 assessment indicated that any fisheries development exceeding 5,000 t per year would have unpredictable consequences. Among the actions that should be taken if catches rise to, or above, the trigger point, are a freeze on further fishery development until a full scientific re-assessment of the stock has been completed. An improved stock assessment may lead to further international fishing controls.

The 2011 assessment explored the bio-economic dynamic impacts of managing the multi-fleet and multispecies flyingfish fishery and undertook risk analysis of alternative fishery management decisions (CRFM 2011).

The results of this preliminary dynamic bio-economic analysis were, among other things, that under open access, harvest rates in the neighbourhood of 5000 ton /year could result in collapse of this pelagic fishery. According to CRFM (2011) this could be prevented with catch quotas, or effort controls to reduce exploitation rates by 30% to allow the resource to recover its natural fluctuations over time.

The multi-species nature of this fishery involves additions to the flows of revenues to the fishery over time coming from the harvest of valuable large pelagic species like dolphinfish, tunas, and wahoo, among others. Therefore, under open access, fishermen will not react by reducing their effort when encountering lower biomass levels of flyingfish because the other species harvested will tend to cover the variable costs of the fishing trip. Also, it was pointed out that price of flyingfish has been very seasonally sensitive to supply (harvest rates over time), tending to reach substantial increases in price with low catch rates. This effect not explored in the quantitative analysis will tend to accentuate the need for managing the fishery with the input and output control measures mentioned above.

The most significant uncertainty in the 2008 and 2011 assessments stem from the poor data available on catches and effort. Improved data collection and monitoring is required to ensure sustainable use of this and other fishery resources.

## **9.2 Social status of fishers**

A recently completed general diagnostic study to determine poverty and vulnerability levels in CARICOM fishing communities (CRFM, 2012c) covered Barbados, Grenada, Saint Vincent and the Grenadines and Trinidad and Tobago (other countries with flying fish fisheries were not included). The study included capture fisheries, aquaculture and fish processing. Poverty and

vulnerability were identified with reference to unsatisfied basic needs (UBN). Households with more than one UBN were classified as poor households. Households with one UBN were classified as vulnerable.

In the case of Grenada and Saint Vincent and the Grenadines, more than 5 percent of the households in the fisheries/aquaculture sectors were classified as being poor; 6.61 and 5.41 percent, respectively (CRFM, 2012c). In both countries, these households were involved in capture fisheries. In Trinidad and Tobago, the percentage of fisheries households living in poverty was 1.32 percent. Poverty in fisheries households was not an issue in Barbados.

Compared to poverty, vulnerability was found to be a much more important issue in all four countries covered by the study. Grenada topped the list with 25.62 percent of fisheries households being vulnerable, followed by Trinidad and Tobago with 15.23 percent, Saint Vincent and the Grenadines with 10.81 percent and Barbados with 7.37 percent.<sup>10</sup>

Any approach to the management of flyingfish fisheries must, as far as is reasonably practicable, seek to ensure that fishers enjoy decent conditions of work<sup>11</sup>. In addition, such an approach must also ensure that other users also do their share to restore and conserve fishery resources. This includes efforts to efficiently regulate [industrial fishing]<sup>12</sup> fleets, efforts to end IUU fishing, the reduction and prevention of water pollution and coastal erosion caused by housing, quarries, removal of sand and industrial development, and the proper management of other factors, which have an impact on fisheries resources and aquatic habitat.

### 9.3 Issues and constraints

A number of problems currently exist which are constraining the development and management of the flyingfish fishery in the eastern Caribbean. Some of the key issues and constraints are listed below (not in any order of importance):

#### Ecological issues:

- negative impacts of sea and land based human activities such as oil and gas exploration, shipping, pollution, shoreline erosion, runoff, etc. on the marine ecosystems;

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<sup>10</sup> The main components of poverty and vulnerability were lack of access to services, poor quality of dwellings, semi-illiteracy and low levels of education as well as low economic capacity and productivity. Large household and family sizes as well as high illiteracy and semi-illiteracy levels figured prominently among the demographic characteristics of poor and vulnerable households. Another characteristic, poor and vulnerable fisheries households had in common, was that they depended more strongly on fisheries for their income as compared to other households.

<sup>11</sup> The ILO Work in Fishing Convention, 2007 (No. 188) – specifies decent conditions of work on board fishing vessels in terms of meeting minimum requirements with regard to work on board, conditions of service, accommodation and food, occupational safety and health protection, medical care and social security.

<sup>12</sup> The FAO Fisheries Management Performance Review defines industrial fishery as “a fishery conducted for the purpose of wide marketing” – Another definition - Source: <http://www.fao.org/fishery/topic/12306/en> is: “Capital-intensive fisheries using relatively large vessels with a high degree of mechanization and that normally have advanced fish finding and navigational equipment. Such fisheries have a high production capacity and the catch per unit effort is normally relatively high.”



- unsustainable fishing practices; and
- evaluation of risks due to global environmental change.

#### Socio-economic issues:

- constrained access for far-ranging vessels (e.g. Barbadian ice-boat fleet) and other near-ranging fleets (e.g. French boats) to fishing areas occupied by the shared *H. affinis* stock;
- market gluts occurring as a result of bunched landings and inadequate distribution leads to lowered incentive to harvest flyingfish when plentiful;
- marked seasonality in availability of *H. affinis* leads to discontinuous market supply and seasonal fishing effort;
- high energy costs in the processing sub-sector;
- inadequate post-harvest technology to ensure a good quality product and reduce fish wastage, i.e. poor quality of landed fish from improper bulk storage at sea and ashore;
- some eastern Caribbean countries have significant difficulties with producing cost-competitive local exports of fresh flyingfish or fish products as a result of very different national economies;
- labour shortage and lack of adequate blast freezing facilities for processing plants;
- vulnerability and poverty of fishers and their families and household members;
- lack of, or inadequate, safety equipment and navigational training of crew for some boat types;
- difficulties with accessing credit and insurance in the fisheries sector;

#### Governance issues:

- lack of a regional mechanism for managing shared resources;
- inadequate fishery information and statistics (particularly socio-economic data) for planning and management;
- inadequate human capacity in fishery departments to conduct required level of research and data analysis;
- inadequate development of participatory management with all stakeholders at national and sub-regional levels;
- limited facilities for disposal or use of fish offal at landing sites;
- limited landing site and marketing facilities in some countries;
- IUU fishing;
- lack of, or inadequate, monitoring, surveillance and enforcement;
- competition for use of the coastal zone (landing and launching areas).

## **9.4 Opportunities**

A number of expansion and development opportunities exist within the flyingfish fisheries of the sub-region. Some of these opportunities are created by current regional and international instruments such as: the Draft Caribbean Community Common Fisheries Policy (upon endorsement of CARICOM Heads of Government); the 2010 Castries (St. Lucia) Declaration on Illegal, Unreported and Unregulated Fishing of the Caribbean Regional Fisheries Mechanism; the FAO Port Stats Measures agreement and the ILO Work in Fishing Convention of 2007.

Current opportunities include:

- availability of international support for the ecosystem, approach to fisheries management initiatives, and food security through fisheries;
- international support for the provision of decent working condition onboard fishing vessels and protection of the rights of fisheries and workers;
- assistance to develop and strengthen fisherfolk cooperatives/associations/networks to facilitate improved collection and sharing of data and information and greater involvement in the fisheries management process;
- development of local value-added flyingfish products of competitive quality;
- accessing specialised niche markets in North America and the United Kingdom of Great Britain and Northern Ireland;
- expanding frozen fish storage facilities to meet market demands during the flyingfish ‘off-season’;
- expanding range of current fishing fleets into geographic range of the eastern Caribbean *H. affinis* unit stock;
- development of products utilizing fish offal;
- development of flyingfish deboning skills in all eastern Caribbean countries to increase value of fresh fish;
- development of better fish distribution mechanisms for marketing fresh fish in rural areas;
- increasing interest of stakeholders in information and management measures.

## **10. MANAGEMENT OBJECTIVES**

The management objective is to ensure the long-term sustainability of the resource through implementation of best fishing practices in accordance with the FAO Code of Conduct for Responsible Fishing, such that the *H. affinis* resource in the waters of the eastern Caribbean is optimally utilized for the long-term benefit of all people in the eastern Caribbean region. Responsible management in the face of uncertain information on the true status of the flyingfish stock requires a precautionary approach.

The significant trophic, technical and economic linkages between the flyingfish fisheries and the fisheries targeting large oceanic pelagic species (e.g. dolphinfish, wahoo, tunas, billfishes) provide strong justification for an ecosystem approach to the management of these fisheries. The flyingfish stock is shared among the eastern Caribbean countries [states] and as such under UNCLOS Article 63<sup>9</sup> these countries [states] are legally obligated to collaborate in its management. An institutional arrangement allowing for sub-regional collaborative management is therefore critical.

Management of flyingfish in the Eastern Caribbean is to be guided by three management goals, which are further sub-divided into general objectives. These are shown in Table 5 together with their assessment criteria and descriptions based on Campbell and Singh-Renton (2012).

### **10.1 Stakeholder contributions**

Two recent studies, carried under guidance of the Caribbean Large Marine Ecosystem Project, documented the management priorities for stakeholders participating the Eastern Caribbean

flyingfish fishery (Ferrier and Singh-Renton, 2012; Campbell and Singh-Renton, 2012). These studies showed that stakeholders overwhelmingly supported sustaining the flyingfish resource as the foundational management objective, to be supported by accurate information and monitoring systems and effective management strategies. Another management priority of equal concern to stakeholders was the optimal use of the fishery for social benefits. Ecological objectives and criteria tend to be given a comparatively lower priority (Campbell and Singh-Renton, 2012), although stakeholders acknowledge their support for an ecosystem approach to fisheries management.

The findings of these two studies were used to develop an initial practical working set of fishery management goals and objectives, and to propose an initial set of suitable operational objectives, indicators and reference points for evaluating fishery performance, relative to the priority objectives identified. These are provided in table 5. It is intended that the objectives, indicators and reference points would be further developed through a participatory approach and used to inform the management process and to guide monitoring and evaluation of implementation of the plan.

**Table 5: Updated management objectives, general objectives, operational objectives, indicators and reference points.**

<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>	<p><b>1.1 Sustained resource</b></p> <p>Ensuring that there are flyingfish available for future generations. Preventing overfishing to maintain a healthy stock</p>	<ul style="list-style-type: none"> <li>• Current average catch rates sustained over the long-term and throughout the area of distribution</li> <li>• Stock biomass is maintained at or above MSY level</li> </ul>	<ul style="list-style-type: none"> <li>• National CPUEs (spatial)</li> <li>• Total national landings</li> </ul>	<ul style="list-style-type: none"> <li>• Long-term average catch rate</li> <li>• Total subregional annual landings (catch trigger point of 5000 tonnes)</li> </ul>
	<p><b>1.2 Accurate information</b></p> <p>Ensuring that an effective data collection system is in place to provide accurate information and knowledge about the state of the fishery</p>	<ul style="list-style-type: none"> <li>• National data collection improved and gaps filled</li> </ul>	<ul style="list-style-type: none"> <li>• Sampling coverage</li> <li>• Sampling design</li> </ul>	<ul style="list-style-type: none"> <li>• Adequate coverage of landing sites</li> <li>• Adequate sampling design</li> </ul>

Management Goals (category)	General objectives (sub category)	Operational Objectives	Indicators	Suggested reference points
	<b>1.3 Effective management</b>  Ensuring that there is an effective system for adaptive and responsive management and enforcement	<ul style="list-style-type: none"> <li>Establish a harmonized sub-regional database</li> </ul>	<ul style="list-style-type: none"> <li>Sub-regional database operational</li> </ul>	<ul style="list-style-type: none"> <li>Harmonized sub-regional database established and maintained</li> </ul>
		<ul style="list-style-type: none"> <li>Timely submission of data and information to CRFM</li> </ul>	<ul style="list-style-type: none"> <li>Annual submission of data</li> </ul>	Current data in database
		<ul style="list-style-type: none"> <li>Establish authorized access to fishery</li> </ul>	License/permit system specifically for flying fish	All sub-regional flying fish fleets licensed
		<ul style="list-style-type: none"> <li>Establish precautionary measures as required</li> </ul>	Variety of indicators as required (e.g. fleet size)	Adjustment of related reference points
		<ul style="list-style-type: none"> <li>Ensure ability to make and enforce management decisions.</li> </ul>	Legislation and regulations in place  Compliance levels	Laws and regulations in place and enforced  Established level of compliance
		<ul style="list-style-type: none"> <li>Ensure ability to collaborate effectively with stakeholders and other countries and organizations both vertically and horizontally</li> </ul>	Level of stakeholder engagement (consultation and feedback) Stakeholder network indicators	Adequate level of stakeholder engagement

Management Goals (category)	General objectives (sub category)	Operational Objectives	Indicators	Suggested reference points
		<ul style="list-style-type: none"> <li>Adaptation to external drivers/ perturbations</li> </ul>	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	<ul style="list-style-type: none"> <li>Optimize social, economic and financial benefits derived from the fishery</li> </ul>	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>	<ul style="list-style-type: none"> <li>Ensure that flying fish remains an affordable and available source of food for the future</li> </ul>	Per capita 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>	<ul style="list-style-type: none"> <li>Ensure fair access to fishing grounds</li> <li>Minimize conflict/competition with other resource sectors/users.</li> </ul>	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

Management Goals (category)	General objectives (sub category)	Operational Objectives	Indicators	Suggested reference points
				between countries.
	<b>2.4 Optimal utilization/processing for domestic and export markets</b>	<ul style="list-style-type: none"> <li>Promote fish quality and safety for consumers</li> <li>Develop value addition for the post-harvest sector for domestic and export markets</li> </ul>	<p>Fish and fishery products related SPS standards (e.g. HACCP)</p> <p>Value of post-harvest production</p> <p>Export value</p>	<p>Quality and safety standards and requirements met</p> <p>Adequate level of post harvest processing</p> <p>Fish and fishery products trade balance</p>
<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	<ul style="list-style-type: none"> <li>Maintain off-shore pelagic habitat health</li> <li>Minimize habitat degradation</li> </ul>	<p>Water quality parameters</p> <p>Marine debris/pollution occurrence</p>	
	<b>3.2 Healthy and resilient ecosystem</b> (with balanced trophic levels)	<ul style="list-style-type: none"> <li>Maintain aquatic biodiversity and balanced ecosystem</li> <li>Adaptation to climate change and weather extremes</li> </ul>	<p>Species composition of catches (including size)</p> <p>Trophic levels (predator –prey composition)</p> <p>Adaptation and vulnerability indicators</p>	

## **10.2 Reference points**

Under the 2008 Draft Sub regional Fisheries Management Plan for flyingfish in the Eastern Caribbean, a trigger point of 5000 tonnes annual catch had been established (FAO 2010) relative to the agreed biological objective. The assessment stated that sustained catches at or above this level are expected to bring about an unacceptable risk of overfishing. The assessment further stated that either catches are maintained below this level, or further research, data collection and stock assessment work is required to enable a new higher limit to be set while still ensuring that the limit is safe. In comparison, a bio-economic analysis (CRFM, 2011) suggests that in a fishery targeting an annual species, which reacts rapidly to environmental changes, biomass and catch target reference points and limit reference points (TRP and LRP, respectively) would have to be determined and adjusted over time because there is no equilibrium biomass or constant maximum sustainable yield.

Since these two recent assessments, the underreporting of flyingfish catches and data quality concerns have not been addressed, and some stakeholders have expressed concern about the impact of this on the accuracy of the available stock assessments. However, the 2008 assessment used the best available data, and as data are improved in the future, this will facilitate improved estimation of stock status.

## **11. DATA, MONITORING AND RESEARCH REQUIREMENTS**

The statistical system needs to be developed to capture the range of indicator variables identified in Table 5. At present, only certain types of data are typically collected, e.g. catch and effort. However, in view of the range of management priorities identified by stakeholders, which was noted earlier and also reflected in table 5, the statistical systems will need to be expanded to incorporate collection and storage of other types of data, e.g. price, consumption, export value, data on water quality, etc.

### **11.1 Catch/effort and vessel data**

The most important shortcoming is the incompleteness of statistics on flyingfish catch/landings in the region due to poor data collection systems and under-reporting.

Under this sub-regional flyingfish management plan, the following steps will be taken to address this shortcoming:

- a) Expansion of coverage of data collection systems to systematically include flyingfish caught for bait. The Fisheries Authorities, in collaboration with other stakeholders (such as flyingfish fishers, buyers of flyingfish to be used as bait, fisherfolk associations and other stakeholders) should identify a suitable data collection system and support interpretation and use of data collected.
- b) Improvement of collection of statistics on flyingfish catches and effort in the sub-region as part of ongoing efforts to improve fisheries statistical systems.
- c) Fisheries Authorities, in collaboration with stakeholders (such as flyingfish fishers, buyers of flyingfish to be used as bait, fisherfolk associations and other stakeholders), should be involved in interpretation and use of data collected.

- d) Allocation of sufficient and appropriately skilled staff and sufficient resources for the collection, recording and analysis of fisheries statistics. This should include adequate training, orientation and involvement of staff dealing with the collection, analysis and sharing of flyingfish and other fisheries statistics.
- e) Establishment of a sub-regional database for catch and effort data of the Eastern Caribbean flyingfish, which should eventually also encompass biological, ecological, oceanographic, economic and social data. The database should be managed by the CRFM Secretariat in cooperation with the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean. It should draw on regional data sets assembled at the 3<sup>rd</sup> Meeting of the WECAFC Ad Hoc Working Group on Flyingfish in the Eastern Caribbean and the 7<sup>th</sup> CRFM Annual Scientific Meeting for the assessment of the Eastern Caribbean flyingfish stock. The database should also include flyingfish catches and effort from Martinique and Guadeloupe.
- f) Harmonization and improvement of national vessel registration and licensing systems and expansion of the use of suitable software to clearly identify vessels fishing for flyingfish. The registration and licensing systems should track the change of ownership, base of operation and use of vessels. This information on licensed/registered flyingfish vessels should be provided to CRFM Secretariat to be incorporated in any future regional registration and licensing database of CRFM in the context of the implementation of the Draft Caribbean Community Common Fisheries Policy.

## **11.2 Economic, social and ecological information**

The sub-regional fisheries management plan further encourages investigations/research which aims at strengthening the flyingfish fishing industry including: utilization and trade, the social and economic status of industry participants, the contribution of flyingfish fisheries to food security/nutrition and to poverty alleviation. These investigations will lead to a better understanding of the ecosystem which supports the flyingfish fishery, and of the threats to the health of that ecosystem.

The proposed studies ultimately aim to generate information about the flyingfish fishing industry which is needed to attract investments in sustainable harvesting and value addition, and to facilitate application of the ecosystem approach to management of the flyingfish fishery.

## **11.3 Research needs**

The following studies are proposed:

### ***Economic and Social Evaluations of Flyingfish Fisheries***

- Conduct a sub-regional cost and earnings study and comparison of the economic and financial performance of flyingfish fisheries and flyingfish value addition in selected countries of the Eastern Caribbean.
- Conduct of a socio-economic study of flyingfish fishers, to include an examination of their conditions of work, and processors in selected countries of the Eastern Caribbean.



### ***Studies on Ecosystems and Trophic Interactions***

- Conduct study on the impact of sea and land based human activities on habits, life cycles and food webs of flyingfish and the productivity of related marine ecosystems.
- Conduct studies to improve understanding and estimation of the risks associated with climate change, extreme weather events, and other aspects of global environmental change.

### ***Bio-economic research***

In addition to the cost and earnings, socio-economic and ecological studies suggested above, future bio-economic research for this important fishery of the CLME, should consider the following (CRFM 2011):

1. Long-term stock fluctuations associated with changes in the abundance of predators (i.e. dolphinfish, and other large pelagic species) and competitors (other small pelagic) targeted by other fleets?
2. The cycle of long-term fluctuating stocks within a changing environment and the associated adequate vessel capacity.

### ***Governance research***

Monitoring and evaluation of implementation of the plan are critical in determining whether or not the plan is contributing to achievement of the general objectives for the fishery and to informing any adaptations to the management measures if it is not. However, details of the operational objectives, indicators and reference points are not yet fully developed. Consequently it is proposed that priority be given to identifying with stakeholders, appropriate operational objectives, indicators and reference points to be applied in monitoring and evaluation of the performance of the agreed management priorities included for implementation under this management plan.

## **12. MANAGEMENT ADVICE AND IMPLEMENTATION OF THE PLAN**

### **12.1 Management advice**

Taking into consideration shortcomings in data collection and analysis, following the precautionary approach to fisheries management, and with the ultimate view to safeguard the socio-economic well-being of the flyingfish industry in the sub-region and the health of the ecosystem that sustains the flyingfish fishery, this updated sub-regional management plan proposes the following 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>13</sup> and/or fishing capacity<sup>14</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 (or any other appropriate trigger point), 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 authorised vessel types, should the agreed catch trigger point be realized, and timely reassessment of the resource status and identification of any required changes to the management measures;
  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.

The overall management of the flyingfish fisheries needs to be improved by taking the following actions:

- improving and harmonizing data collection and analysis in the sub-region;
- 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;
- establishment of a sub-regional flyingfish catch and effort database<sup>15</sup> to be managed by the CRFM Secretariat;
- establishment of a sub-regional flyingfish vessel registry database<sup>16</sup> to be managed by the CRFM Secretariat;
- prioritising the development of a protocol on data and information sharing;

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<sup>13</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>14</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>15</sup> This database is envisioned as a component of a broader regional database pertaining to shared fisheries resources in the region.

<sup>16</sup> This database is envisioned along similar lines as above.

- 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;
- 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;
- improved monitoring, control, surveillance and enforcement mechanisms for flyingfish fisheries and ending IUU fishing;
- implementing national programmes to build stakeholder awareness on the management measures to be implemented and related legislation and enforcement measures;
- institution of national training and public awareness programmes to strengthen fishers' participation in the management process;
- 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;
- promotion of the principles and provisions enshrined in fisheries and related regional and international agreements to which countries are signatory.

## **12.2 Institutional and legal arrangements**

The CRFM is the appropriate regional advisory authority in respect of flyingfish management to be tasked with the implementation, review and evaluation of the 2014 Sub-regional Flyingfish Fisheries Management Plan. The task will be carried out with technical advice from the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean in cooperation with Fisheries Authorities, fishers' organizations and the fishing industry at large. The management functions to be carried out by CRFM Member States will be along the lines of the ones adopted by the recently established CRFM Ministerial Sub-committee on Flyingfish. They are summarized in the Terms of Reference of the Sub-Committee provided in ANNEX I.

In countries, where present laws and regulations do not provide for limiting entry into a fishery or where no management plan is currently in force, legislation and regulations will need to be changed/implemented or management plans created and brought into force to allow for application of the proposed management measures. The following general steps are envisaged for the implementation of the management plan.

During implementation of the updated sub-regional flyingfish management plan, consultative processes will be used to facilitate participation of stakeholders in the monitoring and adjustment of the management plan. Feedback will be provided to stakeholders on results of the implementation of the plan including information of catch and effort trends, number of licenses issued/renewed, results of stock assessments, industry performance evaluations, etc. The updated management plan will be renewed/updated on a regular basis and inputs from stakeholders will be encouraged and given due regard.

### **12.3 Co-management**

The present functioning and structure of national Fisheries Advisory Committees (FACs) should be revised to assure participation of all fisheries sub-sectors. Stakeholders from sectors other than fisheries, who have an impact or interest in flyingfish fisheries and its ecosystem, should also be represented. This could be facilitated through national inter-sectoral committees that are established under the CLME project for promoting the ecosystem approach to fisheries. The selection process for members of Fisheries Advisory Committees should be made transparent and carried out in close consultation with the groups which are to be represented on the FAC. The structure and functioning of the FACs should be more clearly defined and operational ensuring, among other things, that the chairperson of the committees has sufficient time and resources to fulfil her/his task.

Impact and outcomes of management decisions on flyingfish stocks, stakeholders and marine ecosystem should be regularly reviewed at the national and regional levels and evaluated together with concerned stakeholders who should be representative of the entire ecosystem affecting flyingfish fisheries. Depending on the outcome of these evaluations, management plans and measures should be adjusted on a regular basis consistent with an ecosystem approach to fisheries management.

### **12.4 Monitoring, Control, Surveillance and Enforcement**

Monitoring, control and surveillance of flyingfish fisheries will be carried out by the national law enforcement agencies, in close cooperation with the respective national fisheries authorities, as well as any specialized fisheries MCS entities established for this purpose; and guided by the technical and policy directions provided by the Caribbean Fisheries Forum and the CRFM Ministerial Council as well as related Ministerial Sub-committee on Flyingfish. At the regional level, the Regional Security System and the CARICOM Implementation Agency for Crime and Security (CARICOM IMPACS) will play critical roles.

The functions of CRFM will include the development of a harmonized control and inspection schemes to ensure compliance with management and conservation measures, to review compliance with adopted conservation and management measures and to implement adopted control, surveillance and enforcement measures.

### **12.5 Institutional Strengthening**

National fisheries authorities as well as national monitoring, control, surveillance and enforcement agencies will have to be provided with the requisite resources to facilitate effective implementation of the plan. At the regional level, the CRFM Secretariat is also to be provided with the requisite resources to facilitate establishment, management and reporting on the respective sub-regional flyingfish catch and effort and vessel registry databases.

### **12.6 Financing**

Financing the implementation of this sub-regional flyingfish fisheries management plan will largely be done at the national level. However, additional funding will be required for database management as well as for carrying out regional management functions of an advisory and MCS

nature. This funding will be secured by the CRFM Secretariat with support of multi- and bilateral donor agencies and funds. The CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean may also advise the CRFM Secretariat on the required funding to facilitate execution of its Terms of Reference, the most recent being those developed by the Executive Committee of the Caribbean Fisheries Forum and subsequently approved by the 15<sup>th</sup> Session of WECAFC for the period 2014 to 2016 (ANNEX II).

## 12.7 Monitoring and Evaluation of Implementation of the Plan

Monitoring and evaluation of implementation of the Plan and performance of the proposed management measures, at the national level, will be undertaken by the respective fisheries authorities and progress reported annually to the CRFM or WECAFC, whichever is relevant. At the regional level similar monitoring and evaluation will be coordinated by the CRFM-WECAFC Working Group that comprises those States having a real interest in the Eastern Caribbean flyingfish fishery, together with scientific observers and representatives of both the CRFM and WECAFC Secretariats. The national reports to CRFM and WECAFC would be used as the basis for monitoring and evaluation at the regional level. The CRFM-WECAFC Working Group, in its turn, will be responsible for reporting to both the CRFM and WECAFC decision-making bodies on the implementation of the agreed plan and performance of the respective management measures at the regional level.

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## CARIBBEAN REGIONAL FISHERIES MECHANISM

### Ministerial Sub-Committee on Flyingfish Fisheries Terms of Reference

The four-wing flyingfish (*Hirundichthys affinis*) fishery is the single most important small pelagic fishery in the southern Lesser Antilles. It is a shared resource, which is exploited by seven different States (Barbados, Dominica, Martinique, Grenada, St. Vincent and the Grenadines, St. Lucia, and Trinidad and Tobago) producing annual landings of about 3000-4000 metric tons<sup>17</sup>. With expanding fleet capacity and limited cooperation among the States exploiting the flyingfish, there is concern that the resource may become overfished. The States participating in the Caribbean Large Marine Ecosystem (CLME) Project agreed that strengthening governance and management arrangements for the flyingfish should be undertaken as one of the case studies under the Project. The CRFM was therefore contracted to implement this Case Study which will, firstly, review and complete the trans-boundary diagnostic analysis (TDA) for the fishery, and secondly, prepare a SAP which should identify the policy, legal and institutional reforms and investments needed to address the priority trans-boundary problems identified.

The purpose of this initiative is to establish a Ministerial Sub-Committee to provide policy direction and supervise the development of cooperative arrangements for improved governance and management of the flyingfish fishery to achieve optimum sustainable social and economic benefits for the people of the region.

#### Establishment of Sub-Committee

The Ministerial Council hereby establishes a Sub-Committee on Flyingfish pursuant to Rule 10(1) of the CRFM Rules of Procedure. The Terms of Reference, including, *inter alia*, objective, members, and functions of the Sub-committee are provided below.

#### Objective

The objective of the Sub-committee is to contribute, through cooperation and consultation, to the long-term conservation, management and sustainable use of the shared flyingfish resources, and protect and safeguard the ecosystems in which they are found in the Eastern Caribbean.

#### Membership

The Ministerial Sub-Committee on Flyingfish shall consist of:

- (a) CRFM Member States with a real interest in the flyingfish fishery<sup>18</sup>; and
- (b) Any other Caribbean States or Territories having a real interest in the flyingfish fishery<sup>19</sup>, subject to the agreement of the CRFM Ministerial Council.

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<sup>17</sup> See paragraph 51, page 18 of the UNDP, UNOPS, Project Document, PIMS 2193 – Sustainable Management of the Shared Living Marine Resources of the Caribbean Large Marine Ecosystem (CLME) and Adjacent Regions.

<sup>18</sup> The CRFM Member States with real interest in the flyingfish are: Barbados, Trinidad and Tobago, Grenada, Saint Lucia, Saint Vincent and the Grenadines, Dominica (See CLME Flyingfish Research Proposal)

<sup>19</sup> In addition to the six (6) CRFM Members mentioned above, Martinique is also deemed to have a real interest in the fisheries. The intention is, therefore, to provide an opportunity for Martinique to participate in the deliberations of the Sub-Committee if it so desires, subject to the negotiations of a cooperation agreement between the French Islands and the CRFM.

## **Functions**

1. The functions of the Flyingfish Sub-Committee shall be to make recommendations for policy decisions to ensure long-term conservation, management and sustainable use of the shared flyingfish resources, and protect and safeguard the ecosystems in which they are found in the Eastern Caribbean.
2. The Sub-Committee shall make recommendations for policy decisions mentioned at paragraph (1) above on the basis of scientific advice provided by the Forum, CRFM/FAO/WECAFC Working Group, UWI, or other competent technical or scientific body.
3. Without prejudice to the generality of paragraphs 1 and 2, the Sub-Committee shall:
  - (1) Review proposals and make recommendations for joint action by Member States and other Cooperating States or Territories in the Caribbean designed to achieve sustainable use of the flyingfish resources;
  - (2) Regularly review reports and recommendations submitted to it regarding the status of the flyingfish stocks and actions required for their conservation and management;
  - (3) Provide a forum for Member States and other Cooperating States or Territories in the Caribbean to discuss and make recommendations on proposed joint conservation and management measures to ensure long-term sustainable use of the flyingfish resources;
  - (4) Provide a forum for Member States and other Cooperating States or Territories in the Caribbean to discuss and propose harmonized monitoring, control and inspection scheme to ensure compliance with conservation and management measures;
  - (5) Review compliance with conservation and management measures adopted by the Ministerial Council or Member States and make such recommendations to the Member States and to take action as may be necessary to ensure their effectiveness;
  - (6) Review the implementation of measures for monitoring, control, surveillance and enforcement adopted by the Ministerial Council or Member States and make such recommendations to Member States or take action as may be appropriate to ensure their effectiveness;
  - (7) Monitor and review information pertaining to IUU fishing and recommend actions to be taken by Member States and other Cooperating States or Territories in the Caribbean to discourage and eliminate such activities;
  - (8) Refer to the Secretariat, Forum, Scientific Meeting (including the Small Coastal Pelagic Working Group and other bodies), or other competent bodies such as FAO/WECAFC or UWI, as may be necessary from time to time, in order to achieve its objectives.
  - (9) Receive and consider reports, proposals and recommendations from the Forum or CRFM Secretariat (or other competent bodies);
  - (10) Perform such other tasks as it may consider necessary or as directed by the Ministerial

Council or Member States to ensure sustainable development, conservation and effective management of the flyingfish fishery; and (11) Submit reports of its work to the Ministerial Council.

4. In carrying out its functions, the Sub-Committee shall be guided by the CRFM Agreement 2002, Revised Treaty of Chaguaramas 2001, and relevant principles of international fisheries law found in the 1982 UN Law of the Sea Convention, the 1995 UN Fish Stocks Agreement, the 1995 FAO Code of Conduct on responsible fisheries and associated instruments and any other relevant agreement to which the Member States are signatories.

#### **Meetings**

The Sub-Committee may meet during the Annual Meeting of the CRFM Ministerial Council or on other occasions as deemed necessary to fulfil its mandate.

#### **Rules of Procedures**

The Rules of Procedure of the CRFM Ministerial Council shall apply to the Flyingfish Sub-Committee pursuant to Rule 10(2) of the CRFM Rules of Procedure.

## ANNEX II

### CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean

Conveners: CRFM/WECAFC

#### TERMS OF REFERENCE

#### 4. BACKGROUND AND RATIONALE<sup>20</sup>

The four-wing flyingfish supports important small-scale fisheries in the region in terms of employment generation, food security and supply of bait for fisheries targeting large pelagic fish species. Like other small-scale fishers in the Caribbean, fishers involved in flyingfish fisheries often belong to the lower socio-economic strata of society.

Flyingfish fisheries are concentrated in the southern end of the Lesser Antilles chain. Barbados, Tobago, Martinique and Saint Lucia all have large flyingfish fisheries and to a lesser extent Dominica and Grenada. Barbados accounts for about two thirds of the regional catch. In 2009 the total annual recorded catch in Barbados was 2292 tonnes. There were about 167 ice boats, which account for more than 90% of the catch, and 242 registered day boats in 2007. Compared to other countries in the region, Barbados also adds more value to flyingfish catches through processing and sale to the tourism sector. The annual value of the flyingfish catch in Barbados alone is estimated at USD 15 million. The flyingfish fishery is the most important fishery in Barbados employing 2000 fishers, 500 vendors as well as 325 persons employed as de-boners or workers in fish processing plants.

Other countries in the area also have important flyingfish fisheries. In Trinidad and Tobago, the flyingfish fishery is located on the Caribbean Sea coast of the island of Tobago. The number of boats involved in the fishery between 1988 and 2008 averaged 50 boats per season while in Saint Lucia, 331 vessels were engaged in the flyingfish fishery in 2007. According to figures provided by the department of fisheries, the total flyingfish catch of Saint Lucia was 109.35 tonnes in 2010. The total annual catch of flyingfish in Martinique was 47.6 tonnes in 2009 and 64.6 mt in 2010. There are no targeted flyingfish fisheries in Saint Vincent and the Grenadines. In the case of Dominica there has been a shift from the flyingfish fishery to the large pelagic fishery within the last eight years due to the increased use of FADs. The annual flyingfish landings in Dominica were reported to be 54.22 tonnes in 2011.

Unlike many other commercial species in the region the flyingfish, and in particular the four-wing flyingfish, *Hirudichthys affinis*, which comprises the majority of the flyingfish catch, has been extensively studied. There is a rich information-base on its stock delineation, distribution and biology. Less has been documented however, on the socio-economic, bio-economic and, ecological aspects of the fishery and resource, including the impacts on the population and risks associated with climate change, extreme weather events, and other aspects of global environmental change. Although the stock has been assessed in 2008, the capacity in terms of the maximum number of fishing vessels that should be allowed in the fishery without jeopardizing its long term sustainability has not yet been estimated.

Results of the 2008 stock assessment suggested 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 it is unlikely that catches have ever exceeded MSY for this stock. The study identified an annual catch trigger reference point of 5,000 t at which further management action should be taken to ensure the

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<sup>20</sup> Information taken from the 2012 Draft Sub-Regional Management Plan for Flyingfish in the Eastern Caribbean which should be consulted for the references to information sources.

stock does not become overfished, since development beyond this level would have unpredictable consequences. The maximum recorded annual catch to date is 4,700 t. A 2011 preliminary assessment explored the bio-economic dynamic impacts of managing the multi-fleet and multispecies flyingfish fishery and undertook risk analysis of alternative fishery management decisions. Results indicated that, among other things, under open access, harvest rates in the neighbourhood of 5000 ton /year could result in collapse of this pelagic fishery but that this could be averted with catch quotas, or effort controls to reduce exploitation rates by 30% to allow the resource to recover its natural fluctuations over time. The most significant uncertainty in the 2008 and 2011 assessments stem from the poor data available on catches and effort. Improved data collection and monitoring is required to ensure sustainable use of this and other fishery resources.

Under the CLME Project a Flyingfish Case Study was completed by the CRFM. The study included a bio-economic assessment of the fishery (mentioned above); a Multi-Criteria Analysis; a Stakeholder Analysis; a review of existing policies and legislation and establishment of a CRFM Ministerial Sub-Committee on flyingfish.

At the Fourteenth Session of WECAFC, convened in Panama City, Panama from 06 to 09 February 2012, the Commission agreed *to continue all Working Groups (Spiny Lobster, Flying Fish, FADs, Queen Conch, Nassau Grouper/Spawning Aggregations) as joint working groups of WECAFC with partner organizations. It was considered that a leading role could be played by these partners as well.* The Terms of Reference for the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean, among other joint regional Working Groups, was also agreed upon. Between March 2013 and February 2014 two joint meetings of the CRFM Small Coastal Pelagic Fish Resource Working Group and the CRFM-WECAFC Working Group on Flyingfish in the Eastern Caribbean were convened. The joint meetings focused on review of the Draft Sub-Regional Fisheries Management Plan (FMP) for Flyingfish in the Eastern Caribbean, initially drafted in 2002 by Dr Hazel Oxenford and updated in 2008 by Dr Paul Medley (WECAFC Consultants) under the previous WECAFC Ad-Hoc Working Group on Flyingfish, and subsequently updated again in 2012 by Dr Uwe Tietze (CRFM Consultant) under the Caribbean Large Marine Ecosystem Project (CLME Project). The joint meetings also gave direction in respect of national consultations to review the Draft Sub-Regional FMP and associated Draft Resolution of the respective CRFM Ministerial Sub-Committee. As at February 2014, national consultations were convened in four CRFM Member States and the reports made available to the Working Group to continue its work.

The Sixth Session of the WECAFC Scientific Advisory Group, which was convened in Corpus Christi, Texas on 03 November 2013, discussed the TORs of the various Working Groups and made recommendations for their improvement and harmonization. This revised version of the Terms of Reference for the Working Group on Flyingfish in the Eastern Caribbean gives consideration to the SAG recommendations and supports the Caribbean Community Common Fisheries Policy (awaiting endorsement of Heads of Government), the Draft Sub-Regional Fisheries Management Plan for the Eastern Caribbean Flyingfish (to be amended following Member State review and feedback and endorsed by the Caribbean Fisheries Forum and CRFM Ministerial Council Ministerial Sub-Committee on Flyingfish) while giving due cognisance for maintaining transparency and accountability in the operations of the Working Group.

## **5. ROLE OF THE WORKING GROUP**

### ***5.1 Scope***

The scope of the Working Group is to facilitate the achievement of management objectives as outlined in the respective sub-regional management plan for flyingfish in the Eastern Caribbean, through the application of international best practices consistent with the precautionary, ecosystem and participatory approaches to fisheries management. These management objectives are: a) sustained flyingfish resources

(biological objective), b) optimal use of the flyingfish resource for long-term benefit (socio- economic objective) and c) sustained ecosystem health (ecological objective). The Working Group is to function in a technical and advisory capacity over the period April 2014 to March 2016.

### ***5.2 Specific Terms of Reference for the period 2014 to 2016***

- h. Finalize and implement the [ 2012] Sub-Regional Management Plan for Flying Fish in the Eastern Caribbean;
- i. Finalize and seek adoption by CRFM and WECAFC of a Management Resolution on Eastern Caribbean Flyingfish based on the best available scientific information;
- j. Monitor and evaluate implementation of the [2012] Sub-Regional Management Plan for Flying Fish in the Eastern Caribbean;
- k. Provide advice on the status of the fishery and its management to the CRFM Ministerial Sub-Committee on Eastern Caribbean Flyingfish and to WECAFC;
- l. Consider options for integrating environmental variables in assessment of the status of the resource;
- m. Support the regional and national level implementation of activities outlined under the CLME + (Implementation of Strategic Action Programme) that are aligned with the above Terms of Reference; and
- n. Take other necessary actions on emerging issues pertaining to the sustainable use of Eastern Caribbean flyingfish.

### ***5.3 Mode of Operation***

#### 2.3.1 Membership of the Working Group

Membership shall consist of all Member States of CRFM and WECAFC, including Overseas Territories and Departments, with a real interest in the flyingfish fishery. Membership may also include representatives of key flyingfish stakeholders of Member States as well as relevant regional organizations and experts.

#### 2.3.2 Election of Chair of the Working Group

The Working Group shall elect a Chair from among its Members States to serve over the two-year period.

#### 2.3.3 Role of Member States and other Collaborating Countries

- a. To develop or update national fisheries management plans, based on the agreed Sub-Regional Fisheries Management Plan (FMP) for Flyingfish in the Eastern Caribbean;
  - b. To implement national fisheries management plans;
  - c. To monitor and evaluate implementation of the FMP at the national level;
  - d. To report annually to the CRFM/WECAFC Working Group on the progress made in implementation of national FMPs;
  - f. To improve the coverage and quality of data nationally to facilitate assessment of the fishery and associated stock as well as monitoring and evaluation of the FMP at the regional level; and
- To support the national level implementation of activities outlined under the CLME + (Implementation of Strategic Action Programme) that are aligned with the specific Terms of Reference.

#### 2.3.4 Role of the CRFM Secretariat

- a. To assist with coordination of activities of the Working Group, at the regional level;
- b. To assist with procurement of funds for the activities of the Working Group;

- c. To assist with convening of meetings of the Working Group;
- d. To continue efforts to formalize the relationship between France and the CRFM to facilitate involvement of Guadeloupe and Martinique in the management process;
- e. To promote training in assessment methodologies and other relevant areas of interest identified;
- f. To promote technical assistance and support to research and resource assessment through collaboration with regional and international research partners; and
- g. To coordinate the formulation and adoption of recommendations by the Working Group so as to facilitate the decision-making process at the sub-regional level.

#### 2.3.5 Role of WECAFC Secretariat

- a. To coordinate activities of the Working Group, among CRFM and Non-CRFM Members, at the wider regional level;
- b. To assist with procurement of funds for the activities of the Working Group;
- c. To assist with convening of meetings of the Working Group;
- d. To promote training in assessment methodologies and other relevant areas of interest identified; and
- e. To promote technical assistance and support to research and resource assessment through collaboration with regional and international research partners;
- f. To coordinate the formulation and adoption of recommendations by the Working Group so as to facilitate the decision-making process at the level of WECAFC Area 31.

#### 2.3.6 Communication

Communication is critical to the efficient execution of the work programme of the Working Group, particularly during the inter-sessional periods so as to maximize the quality of outputs. Consequently, each country should designate a National Focal Point for this purpose. The National Focal Point is to liaise with the Convener/ Chair of the Working Group as well as the CRFM and WECAFC Secretariats to facilitate effective implementation of the Terms of Reference and communication among all entities. Available ICT tools, such as the CRFM DGroup and GoToMeeting, should be utilized for this purpose as far as possible. The outputs of the Working Group will be communicated through the CRFM and WECAFC Secretariats to the respective Member States.

#### 2.3.7 Working Group Meetings

Face-to-face meetings of the Working Group should be convened at least once every two years, or as required, if resources are available. Where possible the use of available ICT tools to facilitate electronic meetings should be maximized. Meetings shall be chaired by the Chair of the Working Group.

### **6. AMENDMENTS TO THE TERMS OF REFERENCE**

The Terms of Reference may be amended as required by Member States at the level of CRFM and WECAFC, following each two-year period coinciding with meetings of the WECAFC.

**Signed this 30<sup>th</sup> day of May 2014 at Roseau, Commonwealth of Dominica by Ministers with responsibility for fisheries, or their designated representatives, of the following CRFM Member States:**

**Anguilla**

**Antigua and Barbuda**

**Barbados**

**Belize**

**Dominica**

**Grenada**

**Guyana**

**Haiti**

**Jamaica**

**Montserrat**

**St Kitts and Nevis**

**St Lucia**

**St Vincent and the Grenadines**

**Suriname**

**The Bahamas**

**Trinidad and Tobago**

**The Turks and Caicos Islands**



## **Appendix 7: Draft 2012 Resolution on the Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean**

CRFM Ministerial Council  
Ministerial Sub-Committee on Flying Fish

### **Draft [Resolution] on the Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean**

The Ministers and other respective authorities responsible for fisheries and aquaculture in the Eastern Caribbean states:

*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 scientific 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 was not overfished up to 2010, but remains at risk under the current open access arrangement;

*Noting* the limitations in the data and information available to inform management decision making, which requires application of a precautionary approach to fisheries;

*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 2010 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;

*Agree* to make 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.

*Agree* to the following sub-regional flyingfish management measures:

1. Per 1 June 2013, establishment of an authorized entry (license/permit) system for flying fish fisheries, which enters into force for the flyingfish fisheries season 2013/2014.
2. Adoption of a sub-regional total annual catch trigger point of 5000 tonnes, at which point action shall be taken to ensure that the stock does not become overfished.
3. Precautionary introduction of a 2-year sub-regional freeze on expansion of flyingfish fishing capacity.

*Agree* that the overall management of the fishery will be greatly improved by the following joint actions:

- improving and harmonizing flyingfish data collection and analysis in the sub-region;
- improving and harmonizing flyingfish vessel licensing and registration in the sub-region;
- establishment of a sub-regional flyingfish catch and effort database to be managed by the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean in cooperation with the CRFM Secretariat;
- establishment of a sub-regional flyingfish vessel registry database to be managed by the CRFM/WECAFC Working Group of Flyingfish in the Eastern Caribbean in cooperation with the CRFM Secretariat;
- formalizing the relationship with Martinique and Guadeloupe to ensure their involvement in the management process as far as the flyingfish fishery in its EEZ are concerned;
- improved control and surveillance of flyingfish fisheries and ending IUU fishing; and
- promotion of fishing access agreements between and among states.

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

*Request* the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean to inform the CRFM at every session on the progress made in the implementation of the sub-regional management plan.

## **Appendix 8: Revised Draft Resolution on the Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean**

CRFM Ministerial Council  
Ministerial Sub-Committee on Flyingfish

### **Draft [Resolution] on the Sub-Regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean**

The Ministers and other respective authorities responsible for fisheries and aquaculture in the Eastern Caribbean states:

*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 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, which requires application of a precautionary approach to fisheries;

*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 2010 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;

*Agree* to make 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.

*Agree* to 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>21</sup> and/or fishing capacity<sup>22</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 (or any other appropriate trigger point), 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 authorised vessel types, should the agreed catch trigger point be realized, and timely reassessment of the resource status and identification of any required changes to the management measures;
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.

The overall management of the flyingfish fisheries needs to be improved by taking the following actions:

- improving and harmonizing data collection and analysis in the sub-region;
- 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;

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<sup>21</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>22</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)

- establishment of a sub-regional flyingfish catch and effort database<sup>23</sup> to be managed by the CRFM Secretariat;
- establishment of a sub-regional flyingfish vessel registry database<sup>24</sup> to be managed by the CRFM Secretariat;
- prioritising the development of a protocol on data and information sharing;
- 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;
- 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;
- improved monitoring, control, surveillance and enforcement mechanisms for flyingfish fisheries and ending IUU fishing;
- implementing national programmes to build stakeholder awareness on the management measures to be implemented and related legislation and enforcement measures;
- institution of national training and public awareness programmes to strengthen fishers' participation in the management process;
- 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;
- promotion of the principles and provisions enshrined in fisheries and related regional and international agreements to which countries are signatory.

*Direct* the Fisheries Divisions/Departments, 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.

*Direct* the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean to inform the CRFM Caribbean Fisheries Forum and the WECAFC, at every meeting or session, on the regional progress made in the implementation of the sub-regional management plan and performance of the associated management measures.

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<sup>23</sup> This database is envisioned as a component of a broader regional database pertaining to shared fisheries resources in the region.

<sup>24</sup> This database is envisioned along similar lines as above.

**Signed this 30<sup>th</sup> day of May 2014 at Roseau, Commonwealth of Dominica by the Ministerial  
Sub-Committee on Flyingfish:**

**Barbados**

**Grenada**

**Dominica**

**St Lucia**

**St Vincent and the Grenadines**

**Trinidad and Tobago**