

FINAL TECHNICAL REPORT

TECHNICAL SUPPORT ON IMPLEMENTATION OF MANAGEMENT / STRESS REDUCTION MEASURES IN THE EASTERN CARIBBEAN FLYINGFISH FISHERY



CRFM Technical & Advisory Document – Number 2019 / 05

Final Technical Support on Implementation of Management / Stress Reduction Measures in the Eastern Caribbean Flyingfish Fishery

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Technical Support on Implementation of Management / Stress Reduction Measures in the Eastern Caribbean Flyingfish Fishery: Final Technical Report

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Fig. 1 | Eastern Caribbean fishers at sea
Wikimedia

EXECUTIVE SUMMARY

In Blue Earth's final technical report, we present a summary of our approach, methods, activities, and recommendations as they pertain to our CRFM consultancy: Technical Support on Implementation of Management / Stress Reduction Measures in the Eastern Caribbean Flyingfish Fishery (Stress Reduction). Blue Earth's Stress Reduction consultancy was one of six consultancies managed by the CRFM that composed the sustainable fisheries sub-strategy relating to flyingfish fisheries as part of the UNDP / GEF funded project, *Catalysing Implementation of the Strategic Action Programme for the Sustainable Management of Shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems* (CLME+). The Stress Reduction consultancy's primary deliverables were the ECFF-FMP Management Performance Evaluation (Annex E in Adaptive Management report), Assessment Methodology: Progress in Implementation of Recommended Data Collection Systems (Annex K), Review of Fisheries Operations and Related Data Collection Systems (Annex F), Vessel Census Report (including list of registered fishing vessels) (Annex H), Model Fisheries (Amendment) Act (Annex I), List of Authorized Fishing Vessels Report (Annex J), and Evaluation of the Process of Implementation of the Recommendations for National-level Management and Improvements in National Data Collection Systems (Annex K). The consultancy began in August 2017 and ended in July 2019. Blue Earth used two sub-contractors (Davis Berry, Nexus) to develop the project's deliverables. We also worked to identify linkages and opportunities for streamlining and building off work performed by Nexus and the Caribbean Natural Resources Institute (CANARI), the CLME+ flyingfish sub-projects' other contractors.

During the project's beginning stages, we worked with the CRFM to determine an appropriate and cost-effective consultative process that would produce the project's deliverables, keeping in mind the CLME+ projects intent of giving ownership of the work to the participating countries. We accomplished this by allowing national focal points to take on their own in-country activities. The Blue Earth team supported this methodology throughout the Stress Reduction project. We began our work by researching project related information including the 2014 ECFF-FMP and the CRFM's 2016 implementation evaluation of the FMP. With the assistance of the CRFM, we identified potential informants (national fisheries division staff, CRFM staff, representatives of regional technical level organizations, fishers, fishing cooperative members, and fisherfolk organization representatives) in each of the project's participating countries (Barbados, Dominica, Grenada, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago) whom we could interview to inform our sub-regional ECFF-FMP implementation evaluation. As part of this process, Blue Earth, the CRFM, and national focal points supported two country specific meetings (Dominica, Saint Lucia) with local stakeholders and one regional meeting with regional technical level organizations. During this process, we received additional flyingfish management implementation information from national focal points, local stakeholders, and regional technical level organization representatives that informed our sub-regional ECFF-FMP implementation evaluation.

During the consultative process we reached-out to national focal points and local stakeholders from three major flyingfish harvesting countries (Barbados, Grenada, Trinidad and Tobago) and engaged them in two-way communication to collect information specific to each nation's fisheries data collection system, fisheries licensing agreements, and vessel census. Due to their staffing constraints, fisheries divisions were not able to support our efforts to conduct the census. We were, however, able to review Barbados' and Grenada's vessel registries (Trinidad and Tobago does not have a fishing vessel registry) and compile a list of non-flyingfish specific registered fishing vessels in those countries. We also provided census survey forms to fisheries division staff in each of the CRFM Member States involved in the CLME+ project and offered guidance on how staff should apply them.

As part of the reporting and document submission procedures, we included recommendations that can be used by the CRFM and national focal points to aid their efforts to develop a sub-regional ecosystem-based approach to flyingfish fisheries management. We also provided the CRFM with lessons learned that emerged from the consultative process that will aid national focal points' and the CRFM's ongoing flyingfish management efforts. These included the following:

- **Update national licensing systems:** Utilizing the Model Fisheries (Amendment) Act and Model Flyingfish Fisheries Regulations developed through the Stress Reduction project, each country integrates the relevant amendments into national legislation and / or regulations as needed.
- **Strengthen local stakeholder involvement to offset fisheries divisions' budget constraints that hinder their efforts to implement the ECFF-FMP:** These groups are a critical bridge between fisheries division staff and fishers. Their involvement in fishery management, including data collection, monitoring, and sharing and receiving information related to decision-making reduces the management burden on national fisheries divisions.
- **Increase political support for data collection and management protocols:** The ability of the CRFM and national focal points to implement harmonized data collection and management protocols is dependent on political support, including from national environment ministries and international bodies.
- **Improve and incentivize fishers' willingness to share information:** Accurate data collection depends on fishers' willingness to record and share their data with national fisheries divisions. Work is needed to increase fishers' trust of fisheries divisions and willingness to share complete and accurate data. Legislative obligations to keep and provide data have been added under the Model Fisheries (Amendment) Act and the Model Flyingfish Fisheries Regulations.

ACRONYMS

CANARI	Caribbean Natural Resources Institute
CLME+	<i>Catalysing Implementation of the Strategic Action Programme for the Sustainable Management of Shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems</i>
CRFM	Caribbean Regional Fisheries Mechanism
ECFF-FMP	Eastern Caribbean Flyingfish Fisheries Management Plan
FAC	Fisheries Advisory Committee
FMP	Fisheries Management Plan
GEF	Global Environment Facility
NIC	National Inter-sectoral Committee
TOR	Terms of Reference
UNDP	United Nations Development Programme
WECAFC	Western Central Atlantic Fishery Commission

INTRODUCTION

This final technical report refers to Blue Earth's CRFM consultancy titled: Technical Support on Implementation of Management / Stress Reduction Measures in the Eastern Caribbean Flyingfish Fishery (Stress Reduction). We based our work on the premise of enhancing long-term livelihoods and human well-being of the local stakeholders of the Eastern Caribbean flyingfish fishery (Barbados, Dominica, Grenada, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago) by facilitating an ecosystem approach to the fishery. The final report's purpose is to provide the CRFM; its Member States; fishers, fisherfolk organizations and cooperatives; national fisheries division staff (national focal points); and local stakeholders including flyingfish vendors, boat owners, and regional technical level organizations with a summary of Blue Earth's and the CRFM's contributions to the UNDP / GEF funded *Catalysing Implementation of the Strategic Action Programme for the Sustainable Management of Shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems* (CLME+) project.

The CLME+ project joins countries and regional organizations and stakeholders, like the CRFM, to work toward sustainable management of the shared living marine resources of the Caribbean Large Marine Ecosystem and adjacent regions. Under the strategic action plan for the CLME+ project, there is a specific sustainable fisheries sub-strategy relating to flyingfish fisheries, including through inter-sectoral coordination and implementing the ecosystem-based approach to fisheries management. Blue Earth's Stress Reduction project formed one of the six components of the work on this sub-strategy.

This report contains the methods and activities that we and our subcontractors (Nexus, David Berry) used to produce the Stress Reduction consultancy's deliverables. Our report has 13 sections. In section two, we introduce Blue Earth's and the CRFM's approach to the Stress Reduction project. In section three, we provide comments on the project's terms of reference (TOR). In sections four through six, we present the project's methods, our delivery of the TOR, and we describe how both organizations and our subcontractors carried out the project's activities. We then describe project mobilization and national missions' aspects in sections seven and eight. In sections nine, 10, and 11, we explain the reporting procedures that we used with the CRFM, the consultancy's technical aspects, and offer some conclusions on the Model Fisheries (Amendment) Act and Model Flyingfish Fisheries Regulations, Vessel Census Report, List of Registered Fishing Vessels Report, and the project's Assessment Methodology: Progress in Implementation of Recommended Data Collection Systems. In section 12, we offer a list of recommendations that the CRFM and national focal points can use to aid their efforts to develop a sub-regional ecosystem-based approach to flyingfish fisheries management, and we provide lessons learned that emerged from our project work. Lastly, as part of the report's annexes (section 13), we include the project's deliverables that are not already a part of other project's annexes. For the Stress Reduction project, these comprise our Assessment Methodology: Progress in Implementation of Recommended Data Collection Systems, Review of Fisheries Operations and Related Data Collection Systems, Vessel Census Report, Model Fisheries (Amendment) Act and Model Flyingfish Fisheries Regulations, List of Registered Fishing Vessels Report, and Evaluation of the Process of Implementation of the Recommendations for National-level Management and Improvements in National Data Collection Systems.

APPROACH TO THE ASSIGNMENT

The CRFM designed its CLME+ consultancies to give ownership of the work to the participating countries by allowing fisheries divisions to take on their own in-country activities. This approach allowed the CRFM and Blue Earth to facilitate a stakeholder outreach process that enabled us to compile information provided by national focal points and local stakeholder groups that served as a base for our development of the consultancy's deliverables. Specific to the Stress Reduction consultancy, the

information these groups provided informed country specific flyingfish data collection systems; registered fishing vessels; vessel licensing regulations; and fisheries division capacity. The consultancy team also conducted site visits to Grenada and Barbados in October 2017 and August 2018 and met with national focal points to further research and collect information on these topics.

COMMENTS ON TERMS OF REFERENCE

The CRFM stated in the terms of reference (TOR) for the Stress Reduction consultancy that it was looking for a contractor to (1) support national-level planning and implementation of the sub-regional flyingfish FMP through consultations and meetings in at least three countries; (2) review and develop recommendations for improving national data collection systems in at least three countries; and (3) review and develop model licensing regulations for adoption and a regional list of authorized flyingfish fishing vessels.

After submitting our first proposal based on our interpretation of the consultancy's scope of work, the CRFM informed us that Nexus, like Blue Earth, was contracted on additional CLME+ flyingfish sub-projects. Given the overlap between our CLME+ projects and those of Nexus, and our better understanding of the CRFM's approach to the Stress Reduction consultancy, we amended our scope of work and methods to better integrate our activities with those of Nexus and to ensure consistency in advice and consultancy outputs. Our revisions also considered CANARI's involvement in the CLME+ flyingfish sub-projects.

Through our discussions with the CRFM on an inception call that we held at the beginning of the consultancy (August 2017), we addressed overarching topics that applied across project components and shifts to the work packages. These resulted in the following changes, agreements, and strategies:

- Blue Earth combine efforts among Stress Reduction Work Package 1 and Adaptive Management Work Package 1 to streamline work on evaluating ECFF-FMP implementation, making recommendations for improving the FMP, and updating the FMP.
- We defined the consultancy's target countries: Barbados, Grenada, and Trinidad and Tobago (the same countries involved with Nexus' existing consultancies).
- Nexus took into consideration the fishery/use of the fish (i.e., food vs. bait) in the project countries and determined where the most data collection and vessel licensing support is needed.
- Nexus took a flexible approach to gathering stakeholder input and applied country specific survey and interview methods.
- Additionally, we revised the consultancy's timeline and moved data collection system survey and vessel census activities for Work Packages 2 and 3 to be earlier in the consultancy.

ORGANIZATION AND METHODOLOGY

Blue Earth's consultancy methodology was composed of five components:

1. Consultancy Inception

2. Work Package 1 (FMP implementation and management recommendations)
3. Work Package 2 (National fisheries data collection systems)
4. Work Package 3 (Fisheries licensing agreements and vessel census)
5. Reporting and Assessment

The components built off each other chronologically, except for Reporting and Assessment which occurred throughout the consultancy process. Work Package 1 was linked with many of our Governance and Adaptive Management activities.

During the consultancy's beginning stages, we worked with the CRFM to determine the most appropriate and cost-effective consultative process to gain feedback on ECFF-FMP implementation. We began our work by reviewing and drawing out relevant information about management and limited vessel entry system needs from the Fisheries Advisory Committee (FAC) and National Inter-sectoral Committee (NIC) FMP monitoring and evaluation reports and other documents sent to us by the CRFM. We then reviewed the 2014 ECFF-FMP and the CRFM's 2016 implementation evaluation of the FMP. As part of this process, Blue Earth, the CRFM, and national focal points supported two country specific meetings (Dominica, St. Lucia) with local stakeholders and one regional meeting with regional technical level organizations. Together, these three meetings created awareness among the greater flyingfish community for ecosystem-based management strategies for flyingfish in the Eastern Caribbean. During this process, we received additional flyingfish management implementation information from national focal points, local stakeholders, and regional technical level organization representatives that informed our sub-regional ECFF-FMP implementation evaluation. At the conclusion of these meetings, we created an interview tool and conducted 14 interviews with 15 informants. We then synthesized our findings of the online survey, informant interviews, and consultative process to develop our sub-regional ECFF-FMP implementation evaluation.

Work Package 2 and 3 focused on Barbados, Grenada, and Trinidad and Tobago. The Blue Earth team engaged in two-way communication to collect information specific to each nation's fisheries data collection systems, fisheries licensing agreements, vessel registries, and vessel censuses. The information provided by national focal points allowed us to propose performance indicators that can be used by fisheries divisions to assess their progress implementing data collection systems.

In addition to these conversations, we compiled information from existing vessel registries that informed our fishing vessel census in Barbados and Grenada. Trinidad informed us that they did not maintain information specific to Tobago, and Tobago opted to not provide this information. We also provided census survey forms to fisheries division staff in each of the CRFM Member States involved in the CLME+ project and offered guidance on how staff should apply them. Once fisheries divisions collect this information, they will be able to cross reference it with the vessel registry data that we compiled in the consultancy's Vessel Registry Report. Implementation of the survey by fisheries division staff would enhance their involvement in the implementation of the consultancy and facilitate communication between themselves and vessel owners/operators.

Regarding legal mechanisms to govern fisheries, we reviewed existing legislation, policies, and regulations related to fisheries management in Barbados, Grenada, and Trinidad and Tobago and compared them with international best practices, including Canada, in order to determine effective and appropriate regulatory models for the flyingfish fisheries. We then drafted a Model Fisheries (Amendment) Act and Model Flyingfish Fisheries Regulations that can be used by fisheries divisions as a guide, when practical and necessary, to update their national legislation. These model laws provide for,

amongst other things, conservation and protection of marine biodiversity, search and seizure powers for fisheries officers, vessel registration regimes, fisheries licensing regimes, fisheries management orders, record keeping obligations, data collection mechanisms and participation of fishers and fisherfolk organizations in the management process, in an effort to ensure effective regulation of flyingfish fisheries.

Our research and outreach allowed us to develop an ECFF-FMP Management Performance Evaluation (Annex E in Adaptive Management report), the Assessment Methodology: Progress in Implementation of Recommended Data Collection Systems (Annex K), a Review of Fisheries Operations and Related Data Collection Systems (Annex F), a Report of Evaluations of the Processes of Implementation of the Recommendations for National-level Management and Improvements in National Data Collection Systems (Annex K), Model Fisheries (Amendment) Act and Model Flyingfish Fisheries Regulations (Annex I), a List of Authorized Fishing Vessels Report (Annex J), and a Vessel Census Report (Annex H). The consultancy's methods were guided by the following objectives:

- **Objective 1:** Improved implementation of the sub-regional FMP in at least the major harvesting countries by year 2
- **Objective 2:** Agreement on implementation of improved national data collection systems in at least three countries
- **Objective 3:** A model for regulating vessel licensing and registration and increased knowledge of existing authorized flyingfish fishing vessels in major harvesting countries

Blue Earth team members developed numerous strategies related to consultancy organization, coordination, reporting, and information-sharing requirements for this consultancy. Given the overlapping elements of Blue Earth's three flyingfish-focused consultancies, as well as overlap with work conducted by Nexus and CANARI, project coordination became a significant component of the Stress Reduction consultancy.

DELIVERY ON TERMS OF REFERENCE

CLME+ flyingfish sub-projects' TORs were interrelated and coordination among contractors was required by the consulting groups. To assist in this, the CRFM sent a letter introducing national focal points to the Stress Reduction consultancy. This helped us identify linkages and opportunities for streamlining our work with national focal points. Also, as part of our approach to streamlining components across our three consultancies and those implemented by Nexus and CANARI, we endeavored to reduce stakeholder fatigue by consolidating stakeholder outreach and by addressing multiple topics in one consultation to the extent practical. Accordingly, we consolidated survey questionnaires to ensure fisheries division staff could conduct single surveys that collected and compiled information for multiple purposes.

Blue Earth carried out activities (see section six for a list of these activities) that fulfilled the TOR's scope of work as it pertains to the consultancy's three work packages and general deliverable requirements. These activities allowed us to produce deliverables that correspond to those presented by the CRFM in the Stress Reduction consultancy's TOR unless otherwise noted:

Work Package 1

- a) Provide technical support for national-level planning, promotion, and implementation of the sub-regional FMP at national stakeholder consultations and meeting of the NICs and FACs for FMP monitoring and evaluation: **Annex C**, Flyingfish Stakeholder Meetings Summary.

- b) Assist with refinement of national-level management recommendations based on FAC and NIC FMP monitoring and evaluation reports, and taking into account the need to incorporate present and emerging management needs, including the need to establish a limited vessel entry system: **Annex I**, Model Fisheries (Amendment) Act; **Annex C**, Flyingfish Stakeholder Meetings Summary.
- c) Evaluate the process of implementation of the recommendations for national-level management: **Annex E**, ECFF-FMP Management Performance Evaluation **in Adaptive Management report**.

Work Package 2

- a) Review of fisheries operations and related data collection systems as well as general national data collection systems in three countries: **Annex F**, Review of Fisheries Operations and Related Data Collection Systems
- b) Provide recommendations for improvements in national data collection systems: **Annex K**, Assessment Methodology: Progress in Implementation of Recommended Data Collection Systems (**annex contains two reports**)
- c) Evaluate the process of implementation of the recommendations for improvements in national data collection systems: **Annex K**, Report of Evaluations of the Processes of Implementation of the Recommendations for National-level Management and Improvements in National Data Collection Systems (**annex contains two reports**)

Work Package 3

- a) Carry out an assessment of samples of national fisheries legislation in respect of licensing arrangements in three countries. If provisions are already made for licensing of fishing vessels, then (b)
- b) Develop model laws and regulations, consistent with management recommendations in the sub-regional FMP, in consultation with States and taking into account appropriate in-country processes for adoption: **Annex I**, Model Fisheries (Amendment) Act and Model Flyingfish Fisheries Regulations
- c) Develop a regional list of authorized fishing vessels for flyingfish: **Annex H**, Reports of National Censuses of Flyingfish Fishing Vessels
- d) Conduct national censuses of flyingfish fishing vessels in (at least) the major harvesting countries: **Annex H**, Vessel Census Report

General

- a) Prepare impact assessment tools for CRFM use in follow up work: **Annex K**, Impact Assessment Tool, in Adaptive Management report
- b) Prepare bi-monthly technical activity progress reports: **Annex D**, Final Bi-monthly Technical Report
- c) Prepare a final technical report

The Stress Reduction consultancy's TOR directed Blue Earth to support fisheries divisions' work, in at least three of the major flyingfish harvesting countries, with their efforts to implement the ECFF-FMP. To accomplish this task, we needed fisheries division staff to perform the flyingfish vessel census and compile a list of vessels active in the flyingfish fishery in each of the three major harvesting countries (Barbados, Grenada, and Trinidad and Tobago). Due to their staffing constraints, fisheries divisions were not able to support our efforts to perform the census. We were, however, able to review Barbados' and Grenada's vessel registries (Trinidad and Tobago does not have a fishing vessel registry) and compile a list of non-flyingfish specific registered fishing vessels in those countries. We also provided electronic copies of the census survey forms to fisheries division staff in each of the CRFM Member States involved in the CLME+ project and offered guidance on how staff should apply them during field visits in October 2017 and August 2018.



Fig. 2 | Eastern Caribbean flyingfish fishing boat
Wewn Fawn

DESCRIPTION OF ACTIVITIES CARRIED OUT

By carrying out the following activities as part of the Stress Reduction consultancy, we produced the ECFF-FMP Management Performance Evaluation, the Assessment Methodology: Progress in Implementation of Recommended Data Collection Systems, a Review of Fisheries Operations and Related Data Collection Systems, a Report of Evaluations of the Processes of Implementation of the Recommendations for National-level Management and Improvements in National Data Collection Systems, Model Fisheries (Amendment) Act and Model Flyingfish Fisheries Regulations, a List of Registered Fishing Vessels Report, and a Vessel Census Report. The following is a list of the principal activities we undertook to satisfy the consultancy's TORs:

- **Facilitated a comprehensive, updated assessment / evaluation of management performance for the flyingfish fishery:** Annex E, ECFF-FMP Management Performance Evaluation, in Adaptive Management report
- **Observed fisheries operations and fisheries divisions' data collection systems:** Annex F, Review of Fisheries Operations and Related Data Collection Systems
- **Proposed performance indicators that can be used by fisheries divisions to assess their progress implementing data collection systems:** Annex K, Assessment Methodology: Progress in Implementation of Recommended Data Collection Systems
- **Developed recommendations, based on country specific observations and conversation with national focal points, for data collection / harmonization improvement:** Annex K, Report of Evaluations of the Processes of Implementation of the Recommendations for National-level Management and Improvements in National Data Collection Systems
- **Reviewed existing legislation, policies, and regulations in respect to vessel licensing arrangements in Barbados, Grenada, and Trinidad with a focus on effectiveness and appropriateness. Drafted model amendments:** Annex I, Model Fisheries (Amendment) Act and Model Flyingfish Fishery Regulations
- **Compiled information from existing vessel registries that informed our fishing vessel census in Barbados and Grenada:** Annex H, List of Registered Fishing Vessels Report
- **Provided census survey forms to fisheries division staff in each of the CRFM Member States involved in the CLME+ project and offered guidance on their use:** Annex H, Vessel Census Report
- **Developed an impact assessment tool:** Adaptive Management Final Technical Report Annex K, CRFM Flyingfish Impact Assessment Tools

CONSULTANCY MOBILIZATION

The CRFM and Blue Earth teams staged a call at the beginning of the Stress Reduction consultancy to discuss the work plan and how to adaptively manage activities. As part of this call, we discussed the deliverable submission process, formats, the review timeline, and procedures for bi-monthly reports. The CRFM also shared their thoughts on how Blue Earth could coordinate its consultancies with other CLME+ project consultants and non-profits including Nexus and CANARI whose consultancies in certain ways overlapped with ours. Using the CRFM's input, we amended the consultancy's timeline reflecting a new start date (August instead of July). We also moved Nexus' activities in Work Package 2 and 3, involving the census/interview processes, to earlier in the timeline.

NATIONAL MISSIONS

Specific to Blue Earth's Stress Reduction consultancy, we helped organized an awareness building and consultative process with national focal points in each of the six CLME+ Eastern Caribbean countries to encourage local stakeholders' input into fishery data collection systems. As a result of this process, two meetings were staged by national focal points and/or regional technical level organizations (Dominica and

Saint Lucia; May 2018). Because only two of the six participating countries held meetings, the consultancy staged a third meeting in Barbados (October 2018) to help national focal points lead the awareness building and consultative meeting process. To gain feedback on individual country systems during these meetings, we produced the following tools:

- **Meeting agendas:** Guidance to share the meeting goals and topics with local stakeholders with country-specific flyingfish expertise.
- **Facilitation plans:** A more detailed guide for national focal points to use while leading consultative meetings, including key discussion questions.
- **Note-taking templates:** A template in which national focal points recorded input from the meeting discussions; national focal points shared the notes with Blue Earth following the meetings.

The consultative process also included the May 2019 meeting in Saint Lucia that led up to the final revised ECFF-FMP and the 3rd Meeting of the Ministerial Sub-Committee on Flyingfish. Additionally, for this consultancy, the consultant team conducted semi-structured data collection system interviews with fisheries division directors, senior staff (data managers) and extensions officers / field staff in Grenada (5 interviews), Trinidad & Tobago (4 interviews), and Barbados (6 interviews). The team also interviewed market managers (3 interviews), academic researchers (2 interviews: CERMES and Department of Economics) and a Food and Agriculture Organization of the United Nations (FAO) representative (1 interview). The purpose of these interviews was to collect information on the structure and organization of data collection systems and to determine trends in data collection at the local and national levels.

The information that we collected during this process informed our ECFF-FMP Management Performance Evaluation (Annex E in Adaptive Management report) and Review of Fisheries Operations and Related Data Collection Systems (Annex F).

REPORTING

The Blue Earth team submitted 10 bi-monthly progress reports for the Stress Reduction consultancy to the CRFM detailing our advancements. (Annex D). These reports also included Nexus' and Davis Berry's progress made towards deliverables for which they were responsible. The reports contained a Contract Status section, organized by the CRFM into consultancy phases and activities according to the TOR's scope of work, an overarching reporting section, and lessons learned and best practices sections. They also allowed us to note milestones and risks, as well as summarize financial information. We organized the reports by the main phases of the consultancy, and they reflect the work we performed during the consultancy's duration. We also attached all deliverables submitted during the reporting period as appendices to the reports. Additionally, we submitted an Inception Report (Annex B). We also frequently spoke with CRFM staff via Skype to discuss consultancy details and strategies. This communication allowed us to adapt to situations as they arose.

REPORTING ON THE TECHNICAL ASPECTS OF THE CONSULTANCY

We began our work by reviewing and drawing out relevant information about management and limited vessel entry system needs from the FAC and NIC FMP monitoring and evaluation reports and other documents sent to us by the CRFM. We then reviewed the 2014 ECFF-FMP and the CRFM's 2016 implementation evaluation of the FMP. As part of this process, Blue Earth, the CRFM, and national focal

points supported two country specific meetings (Dominica, Saint Lucia) with local stakeholders and one regional meeting with regional technical level organizations. Together, these three meetings created awareness among the greater flyingfish community for ecosystem-based management strategies for flyingfish in the Eastern Caribbean. During this process, we received additional flyingfish management implementation information from national focal points, local stakeholders, and regional technical level organization representatives that informed our sub-regional ECFF-FMP implementation evaluation. At the conclusion of these meetings, we created an interview tool and conducted 14 interviews with 15 informants. We then synthesized our findings of the online survey, informant interviews, and consultative process to develop our sub-regional ECFF-FMP implementation evaluation.

During the consultative process we reached-out to national focal points and local stakeholders from three major flyingfish harvesting countries (Barbados, Grenada, and Trinidad and Tobago) and engaged them in two-way communication to collect information specific to each nation's fisheries data collection systems, fisheries licensing agreements, and vessel census. Due to their staffing constraints, fisheries divisions were not able to support our efforts to perform the census. We were, however, able to review Barbados' and Grenada's vessel registries and compile a list of non-flyingfish specific registered fishing vessels in those countries. We also provided census survey forms to fisheries division staff in each of the CRFM Member States involved in the CLME+ project and offered guidance on how staff should apply them.

Additionally, we provided the CRFM with lessons learned from the consultative process. These, along with our recommendations will aid national focal points' and the CRFM's future flyingfish fishery development work.

COMMENTS AND CONCLUSIONS

CLME+ consultancies were designed by the CRFM to give ownership of the work to the participating countries. This was accomplished by allowing national focal points to take on their own in-country activities. The Blue Earth team supported this methodology throughout the Stress Reduction consultancy. Our ECFF-FMP implementation evaluation activities included research of existing documents, an online survey, and phone interviews. During this process, we prepared comprehensive interview guides to collect information from fishery managers, researchers, market staff, consumers, and fishers involved in Member State flyingfish fisheries. We analyzed our findings and determined that human resource and budget limitations in Barbados, Grenada, and Trinidad and Tobago meant that fisheries division staff in those countries could not conduct the flyingfish vessel census, which is a labor-intensive activity, during the duration of the Stress Reduction consultancy. Direct input by the Blue Earth team was beyond the budgetary scope of the consultancy; therefore, fisheries divisions in these countries need a significant financial investment to fund this and other ECFF-FMP implementation activities. The Model Fisheries (Amendment) Act and Model Flyingfish Fisheries Regulations provide for vessel registration and fisheries licensing regimes. These regimes are critical to allow for the collection of data which will be necessary for the proper management of flyingfish fisheries. We provide cost estimates for these activities in the consultancy's After-Life Plan (Annex E).

RECOMMENDATIONS (including lessons learned)

Blue Earth's Stress Reduction consultancy was the product of a stakeholder engagement process, an online survey, interviews with national fisheries division staff, country specific research, and in-person interaction with fisheries division staff, regional fisheries management experts, fishers and fisherfolk organizations, and researchers. The process informed our development of the ECFF-FMP implementation evaluation; data collection systems review, assessment, and evaluation; vessel census; and model licensing agreement. The following list of recommendations can be used by the CRFM and national focal

points to aid their efforts to develop a sub-regional ecosystem-based approach to flyingfish fisheries management.

Recommendations:

- **Develop ways for fishers to experience reciprocity for their efforts:** In order for fishers to buy into the data collection and management improvement process, they need to know that there is something in it for them. Managers could consider helping fishers and their organizations that participate in the data collection process develop value chains that empower them through social and economic returns including higher ex-vessel prices, more stable markets, resource sustainability, access to health insurance, and educational opportunities.
- **Increase political support for data collection and management protocols:** The ability of the CRFM and national focal points to implement harmonized data collection and management protocols is dependent on political support, including from national environment ministries and international bodies.
- **Improve and incentivize fishers' willingness to share information:** Accurate data collection depends on fishers' willingness to record and share their data with national fisheries divisions. Work is needed to increase fishers' trust of fisheries divisions and willingness to share complete and accurate data. Legislative obligations to keep and provide data have been added under the Model Fisheries (Amendment) Act and the Model Flyingfish Fisheries Regulations.
- **Collect key actionable data:** Focus short-term data collection on key areas, including catch and effort. If resources are available, fisherfolk organizational capacity building work could take place to establish a data collection focal project upon which to base others. After this has occurred, the data collection process can move to the next step which is ensuring that all data collection efforts are harmonized across the region (consistent forms, terminology, units of measurement, etc.) to facilitate information sharing, synthesis, and reliable findings. Consider electronic monitoring to collect consistent, unbiased data across the fishing fleet.
- **Determine ecosystem relationships and how flyingfish abundance levels impact other fisheries:** A stronger understanding of the role flyingfish play in the diets of other pelagic fishery species would help managers effectively manage both types of fisheries, particularly in the face of climate change impacts. Managers could use findings to justify their actions to develop and implement adaptive flyingfish management strategies. This would be particularly useful in countries where flyingfish landings contribute minimally to fisher livelihoods, and landings of their predator species (such as dolphinfish) contribute more greatly.
- **Promote transparency throughout the management decision making process:** Transparency in management decision making processes will increase managers' need for and use of reliable scientific information. When this information comes from stakeholders working in conjunction with fisheries divisions to develop data collection and decision-making systems, all parties feel a part of the management process, and buy-in increases.

Lessons Learned:

- **Countries need updated national licensing systems:** The Stress Reduction consultancy developed a Model Fisheries (Amendment) Act and Model Flyingfish Fisheries Regulations so

that each country could integrate the relevant amendments into national legislation and / or regulations as needed.

- **Management capacity is low in fisheries divisions:** The fisheries divisions of all six CLME+ countries experience capacity limitations that effect their ability to manage the flyingfish fishery. The stress Reduction consultancy has developed tools and strategies to help offset some of these deficiencies.

ANNEX A: TERMS OF REFERENCE

TERMS OF REFERENCE

ANNEX A

CLME' SUB-PROJECT # 3: EAF FOR THE EASTERN CARIBBEAN FLYINGFISH

TERMS OF REFERENCE

CONSULTANT SERVICES

TECHNICAL SUPPORT TO IMPLEMENTATION OF MANAGEMENT/STRESS REDUCTION MEASURES IN THE EASTERN CARIBBEAN FLYINGFISH FISHERY

CLME/SP3-FF/EOL-IMS/01/17

1.0 INTRODUCTION

In view of the significance of the Eastern Caribbean four-wing flyingfish commercial fisheries, the CRFM, in collaboration with WECAFC and with support provided during the corresponding case study under the CLME Project (GFF ID 1032), developed and finalized a Sub-regional Management plan (Sub-regional FMP) for Flyingfish in the Eastern Caribbean. The plan takes into account the relevant provisions of two key CRFM instruments, the Agreement on the Establishment of the Caribbean Community Common Fisheries Policy (CCCFP), and the 2010 Castries (St. Lucia) Declaration on Illegal, Unreported and Unregulated (IUU) Fishing. The Sub-regional FMP was endorsed by the 15th Sessions of WECAFC, by the Caribbean Fisheries Forum in April 2014, and by the CRFM Ministerial Council in May 2014, following extensive consultation with stakeholders at both the national and regional levels, and is now cleared for voluntary, regional implementation by CRFM Member States. The general management objectives outlined in the Sub-regional FMP 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).

A specific sub-strategy relating to flyingfish fisheries was included under Strategy 5 of the CLME' Strategic Action Programme (SAP). Sub-Strategy 5A of the SAP aims to enhance the governance arrangements for implementing an ecosystem approach to flyingfish fisheries in the CLME' region. Under this sub-strategy, a number of short-term (0 - 5 years) and medium-term (6-10 years) actions were agreed upon:

- | | |
|----------------------|--|
| 5A.1 [Short] | Strengthen the FAO-WECAFC and CRFM sub-regional arrangements for the assessment and management of the flyingfish fisheries including the establishment of a decision-making capacity for management; |
| 5A.2 [Short] | Establish and operationalise a formal agreement between the CRFM and France on the management of the flyingfish fisheries; |
| 5A.3 [Short, Medium] | Operationalise and strengthen an integrated, sub-regional Decision Support System (DSS) for the flyingfish fisheries (in coordination with the large pelagies arrangements); |
| 5A.4 [Short, Medium] | Strengthen the FAO-WECAFC and CRFM capacity to develop, adopt and implement management and conservation measures for the flyingfish fisheries (full policy cycle implementation); |
| 5A.5 [Short, Medium] | Implement the CRFM/FAO-WECAFC Sub-Regional Management Plan for Flyingfish Fisheries in the Eastern Caribbean; |
| 5A.6 [Short, Medium] | Develop and implement education and awareness building initiatives to improve understanding and enhanced stakeholder commitment and participation in decision-making in the flyingfish fisheries. |

The Sub-Project of which this consultancy is a part, aims at contributing to the delivery of Output

1.0


5. Long-term enhancement of livelihoods/human well-being facilitated (O5.1, O5.2, O5.3) under COMPONENT 3 of the main CIME Project Document: *"Transition to an ecosystem approach for the Eastern Caribbean flyingfish fisheries demonstrated"*. It has been developed in response to the corresponding calls for action under (a) the CIME Strategic Action Programme (SAP), politically endorsed at the regional level in 2013 and (b) the approved Regional Fisheries Management Plan (FMP) for Flyingfish in the Eastern Caribbean.

This Consultancy seeks contribute to fostering long-term human well-being of the (direct and indirect) stakeholders of the Eastern Caribbean flyingfish fishery by supporting implementation of management / stress reduction measures in the Eastern Caribbean Flyingfish fishery. The UNOPS will provide general oversight for the action. The CRFM is responsible for providing technical supervision, leadership and coordination to execute the activities related to this action.

THE CONSULTANT: Blue Earth Consultants, a Division of Eastern Research Group, Inc

2.0 OBJECTIVE

To support implementation of management/stress reduction measures in the Eastern Caribbean Flyingfish fishery

3.0 SCOPE OF WORK

The Consultant will work under the general direction of [personnel assigned to supervise] to improve stakeholder access to data and information of relevance to application of the EAF assessment and management of eastern Caribbean flyingfish and improved availability of data and information to the global community; and, strengthen the Ecosystem Approach to Fisheries (EAF) information and knowledge base.

The scope of work covers all activities necessary to accomplish the Expected Results stated. The main tasks / activities are as follows:

Work Package 1

- (a) Provide Technical support for National-level planning, promotion and implementation of the sub-regional FMP at National stakeholder consultations (funded under Output 3.2) and meetings of the NICs and FACs for FMP monitoring and evaluation (funded under Output 1.3)
- (b) Assist with refinement of national-level management recommendations based on FAC and NIC FMP monitoring and evaluation reports, and taking into account the need to incorporate present and emerging management needs, including the need to establish a limited vessel entry system, to reduce and eliminate IUU fishing practices, to reduce possible impacts of present fishing strategies on long-term flyingfish recruitment, and to improve resilience to climate change and climate variability impacts.
- (c) Over the consultancy period, evaluate the process implementation of the recommendations for national-level management.

Work Package 2

- (a) Review of fisheries operations and related data collection systems as well as general national data collection systems in 3 countries
- (b) Provide recommendations for improvements in national data collection systems to be incorporated into the FMP update upon completion of the first policy cycle, in consultation with

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- States and taking into account appropriate in-country processes for agreement and implementation
- (c) Over the consultancy period, evaluate the process of implementation of the recommendations for improvements in national data collection systems

Work Package 3

- (a) Carry out an assessment of samples of national fisheries legislation in respect of licensing arrangements, in 3 countries – if provisions are already made for licensing of fishing vessels then (b)
- (b) Develop model regulations, consistent with management recommendations in the Sub-regional FMP, in consultation with States and taking into account appropriate in-country processes for adoption
- (c) Develop a [regional] list of authorised fishing vessels for flyingfish by SPY 3
- (d) Conduct national censuses of flyingfish fishing vessels in (at least) the major harvesting countries (which would allow measurement of fishing capacity required for imposing fishing effort regulations)

General

- (a) Prepare impact assessment tools for CRFM use in follow up work
- (b) Prepare bi-monthly technical activity progress reports.
- (c) Prepare a final technical report, taking into account comments provided by the CRFM Secretariat. The report would at least contain the following sections: Acknowledgements; Abbreviations and Acronyms; Executive Summary; Introduction; Approach to the Assignment; Comments on Terms of Reference; Organization and Methodology ; Delivery of Terms of Reference ; Description of Activities Carried Out; Project Mobilization; National Missions; Reporting; Comments and Conclusions; Recommendations (including lessons learned); Annex 1 - Terms of Reference; Annex 2 - Inception Report; Annex 3 - Mission Reports; Annex 4 - Consultancy Products, namely, Work Plan; programme reports; reports on support provided for National-level planning, promotion and implementation of the sub-regional FMP; report on the review of fisheries operations and related data collection systems as well as general national data collection systems in (at least) 3 countries; reports of stakeholder consultations; reports of national censuses of flyingfish fishing vessels; model vessel licensing regulations; list of authorised flyingfish vessels; Reports of evaluations the processes of implementation of the recommendations for national-level management and improvements in national data collection systems; project final technical report; project final financial report; other agreed reports.
- Drafts of each product are to be reviewed by the CRFM, prior to finalization

4.0. EXPECTED RESULTS

- 1) Technical support provided to effect the implementation of the sub-regional FMP for flyingfish in (at least) the major harvesting countries
- 2) Recommendations made for further development of agreement on and implementation of improved national data collection systems in support of the EAF assessment and management of the eastern Caribbean Flyingfish fishery in at least 3 major harvesting countries participating in the fishery
- 3) National vessel licensing regulations formulated for adoption in accordance with legislation, and census of flyingfish vessels used to establish list of authorised fishing vessels

5.0 DELIVERABLES

1. An inception report and work plan

2. Reports on support provided for National-level planning, promotion and implementation of the sub-regional FMP
3. Report on the review of fisheries operations and related data collection systems as well as general national data collection systems in (at least) 3 countries
4. Reports of stakeholder consultations
5. Reports of national censuses of flyingfish fishing vessels
6. Model vessel licensing regulations
7. List of authorised flyingfish vessels
8. Reports of evaluations of implementation of the recommendations for national-level management and improvements in national data collection systems;
9. Project final financial report.
10. Final Technical report as described in the scope of work (with annexed Bi-monthly Progress Reports); including final, publisher-ready versions of all the deliverables of the assignment
11. Other agreed reports

6.0 ROLES AND RESPONSIBILITIES

The CONSULTANT is responsible for execution of the main ACTIONS and accomplishing the Expected Results and Deliverables as outlined above.

In the conduct of the assignment the KTs will be supported by the CRFM Secretariat, which will provide overall guidance on implementation of the contract. The CRFM Secretariat will assign two (2) staff (fisheries experts) who will work closely with the team at all times. The CRFM Secretariat will also assist in the circulation of documents for regional-level review, and facilitate the finalization of all documents produced.

The CONTRACTING PARTY, through the CRFM Secretariat in Belize and St. Vincent and the Grenadines, will provide the following assistance to the CONSULTANT in a timely manner:
[agreed-upon assistance to be provided by CRFM Secretariat]

7.0 REPORTING

The CONSULTANT will prepare an inception report, progress reports and final reports. The progress reports will be submitted bi-monthly over the contractual period. The final technical report should include methodologies used to deliver the various outputs, with lessons learned and recommendations for follow up action, and include final technical deliverables in publisher-ready format. The report should be produced in Microsoft Word for Windows format and submitted electronically to the CRFM Secretariat.

8.0 LOGISTICS

All logistical arrangements pertaining to travel by the CONSULTANT and workshop participants are the responsibility of the CONSULTANT.

9.0 DURATION

The assignment will require 24 months, for the period 1 August 2017 to 26 July 2019.

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ANNEX B: INCEPTION REPORT AND WORK PLAN

INCEPTION REPORT AND WORK PLAN

Document Introduction

To begin our consultancy with the Caribbean Regional Fisheries Mechanism (CRFM), Blue Earth Consultants, a Division of Eastern Research Group, Inc. (Blue Earth), held an inception call with CRFM on 8 August 2017. Call participants were Kelsey Jacobsen and Charlotte Dohrn of Blue Earth, Christopher Milley of Nexus Coastal Resource Management (Nexus Coastal), and Peter A. Murray, June Masters, and Delmar Lanza of CRFM. This document summarizes the key decisions from the call and serves as a reference for updating the original scope of work for the consultancy.

Overarching

We discussed CRFM's perspective on what success will look like at the conclusion of this consultancy. Main points included the following:

- Overall objective of improving sustainable management of the Eastern Caribbean flyingfish fishery, including through integration with related sub-projects (e.g., consultancies conducted by Blue Earth, and Nexus Coastal)
- Updated Eastern Caribbean Flyingfish Fishery Management Plan (ECFF-FMP or FMP) that is workable and incorporates stakeholder input through a consultative process
- Lessons learned that can be transferred to other fisheries

Through our discussions on the inception call, we addressed several overarching topics that apply across consultancy components:

- Throughout this consultancy and other related CLME+ sub-project consultancies led by Blue Earth and Nexus Coastal, we will work to identify linkages and opportunities for streamlining and building off work performed through the range of sub-projects
- As part of the approach of streamlining components across consultancies, Blue Earth will endeavor to reduce stakeholder fatigue by consolidating stakeholder outreach, addressing multiple topics in one consultation to the extent practical
- CRFM will send a letter introducing national ministry-level contacts to the project, including Blue Earth and Nexus Coastal; Blue Earth suggests coordinating this announcement with the similar announcements regarding Blue Earth's new sub-project focused on Adaptive Management (and Nexus Coastal's other new sub-project), to reduce confusion and multiple emails to the ministerial contacts
- The target countries for this consultancy will be Barbados, Trinidad, and Grenada (the same countries involved with Nexus Coastal's existing consultancy), which the Blue Earth Team will engage in two-way communication and capacity building support; we will also ensure communication is to Martinique, Saint Vincent and the Grenadines, and Saint Lucia to provide them with updates, and if they are willing, to share their experiences. This will increase the potential benefits of the consultancy to a wider area within budgetary constraints. Vision of a Successful Project

Consultancy Approach

Work Package 1: FMP Implementation and Management Recommendations

The following points summarize the outcomes of our discussion on Work Package 1:

- Blue Earth will combine efforts among this Work Package, Work Package 1 of the Adaptive Management consultancy, and existing efforts through our ongoing consultancy, to the extent practical, to streamline work on evaluating ECFF-FMP implementation, making recommendations for improving the FMP, and updating the FMP
- Blue Earth will ask national points of contact to send any relevant NIC/FAC reports or other relevant materials
- The Blue Earth Team will work with CRFM to determine the most appropriate and cost-effective consultative process to gain feedback on ECFF-FMP implementation; the process could, but will not necessarily, include in-person meetings

Work Packages 2 and 3: National Fisheries Data Collection Systems and Fisheries Licensing Arrangements and Vessel Census

We discussed several aspects that apply to Work Packages 2 and 3:

- These work packages feed strongly into Nexus Coastal's existing consultancy, and will also link with Blue Earth's existing work related to developing a sub-regional fishery data policy
- Focusing on the same three countries as Nexus Coastal's existing consultancy will strengthen both consultancies; communicating with French territories by sharing information with Martinique will strengthen the sub-project's connections with the European Union members of the Organisation of Eastern Caribbean States (OECS)
- Consideration of the varying objectives of the fishery / use of the fish (i.e., food vs. bait) will have implications on fishery data collection and vessel licensing, especially since both objectives coexist in some countries; Nexus Coastal will take an interactive process to determining where the most support is needed
- Nexus Coastal will take a flexible approach to gathering stakeholder input, as different survey and interview methods may be more effective in different countries; specific methods will be determined through discussions with Member Country Fisheries staff

Communication

Blue Earth and CRFM will utilize the following guidelines for communication between CRFM, Blue Earth, and Nexus Coastal:

- Blue Earth will serve as the main point of contact with CRFM
- CRFM will send all communications to Kelsey Jacobsen, cc'ing Tegan Hoffmann and Charlotte Dohrn; cc Christopher Milley and Bugsy Delesalle on all communications regarding Nexus Coastal's consultancy activities
- The Blue Earth Team will send all communications to Peter A. Murray, cc'ing secretariat@crfm.int, crfmsvg@crfm.int, and June Masters; for matters relating to contracts, finances, consultation and reporting, we will also cc Delmar Lanza
- Blue Earth will save all Word, Excel, and PowerPoint documents as Microsoft Office 97 (.doc, .xls, .ppt) formats to ensure file compatibility across computer platforms

Timeline

The timeline below reflects the start date in August (instead of July) and moves Nexus Coastal's activities in Work Packages 2 and 3 involving the survey / interview processes to occur earlier in the timeline. Please note that we will submit a combined timeline that addresses all six flyingfish sub-projects following conversations with Nexus Coastal and CANARI.

Technical support on implementation of management/stress reduction measures in the Eastern Caribbean Flyingfish fishery <i>Proposed Project Timeline - 2017-2019</i>		2017		2018												2019						
		Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April
		= team members at in-person meeting													= Call with client							
Project Inception																						
Activity 1. Host Inception Call	Inception call; reports sent to Blue Earth team																					
Activity 2. Develop Inception Report and Impact Assessment Tool Outline	Inception Report; Impact Assement Tool outline																					
Work Package 1: FMP Implementation and Management Recommendations																						
Activity 1. Review Monitoring and Evaluation Reports	Data collection framework; report review																					
Activity 2. Prepare for Consultative Processes with NIC/FAC and Stakeholders	Agenda and facilitation plan																					
Activity 3. Implement Consultative Processes and Analyze Findings	Agenda and facilitation plan																					
Activity 4. Evaluate Process of Implementing Recommendations	Assessment methodology; 2 assessments																					
Work Package 2: National Fisheries Data Collection Systems																						
Activity 1. Selection of Participant Countries	Selected countries																					
Activity 2. Prepare Study Design	Interview guides																					
Activity 3. Conduct Surveys of Data Collection Systems	Survey findings																					
Activity 4. Survey Analysis and Recommendations	Analyzed survey findings; recommendations																					
Activity 5. Evaluate Process of Implementing Recommendations	Assessment methodology; 2 assessments																					
Work Package 3: Fisheries Licensing Arrangements and Vessel Census																						
Activity 1. Prepare Licensing Systems Assessment Tools	Survey instrument																					
Activity 2. Conduct Survey and Review Existing Legislation	Survey and review findings																					
Activity 3. Develop Model Regulations	Draft model regulations																					
Activity 4. Prepare List of Authorized Flyingfish Fisheries Vessels	List of vessels																					
Activity 5. Conduct National Census of Flyingfish Fisheries vessels in Participating Member States	Vessel census																					
General Reporting and Impact Assessment																						
Activity 1. Prepare Inception Report	Inception Report																					
Activity 2. Prepare Bi-Monthly Technical Activity Progress Reports	Progress Reports																					
Activity 3. Develop Impact Assessment Tool	Assessment Tool																					
Activity 4. Prepare Final Technical Report	Technical Report																					

ANNEX C: MISSION REPORTS

FLYINGFISH STAKEHOLDER MEETINGS SUMMARY

Introduction

This document provides a summary of national flyingfish consultative processes regarding Eastern Caribbean flyingfish management. These activities were held as part of consultancies by Blue Earth Consultants (Blue Earth), a Division of Eastern Research Group, Inc. for the Caribbean Regional Fisheries Mechanism (CRFM). Three meetings took place, two of which were held at the national level by national focal points (Saint Lucia and Dominica; May 2018), and the third in Barbados (October 2018) where stakeholders from six countries and several international bodies attended a special meeting of the CRFM-Western Central Atlantic Fishery Commission (WECAFC) Working Group on Flyingfish.

The meetings contributed to several key outputs of Blue Earth's consultancies to advance flyingfish fishery management in the Eastern Caribbean. The outputs include an updated Eastern Caribbean Flyingfish Fishery Management Plan (ECFF-FMP), a cooperation agreement between the CRFM and Martinique on living marine resource management, a data policy for Eastern Caribbean flyingfish, and a performance evaluation of implementation of the ECFF-FMP.

Blue Earth is completing three consultancies under contract to CRFM as part of the United Nations Development Programme/Global Environment Facility funded project, *Catalysing Implementation of the Strategic Action Programme for the Sustainable Management of shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems* (CLME+). These meetings contributed to outputs associated with all three consultancies.

National-Level Meetings

In the beginning stages of our consultancies, Blue Earth developed draft recommendations for how to update the ECFF-FMP, a data policy, and a cooperation agreement for review. To engage stakeholders in developing these documents, we organized a consultative process with focal points in each of the six Eastern Caribbean countries (Barbados, Dominica, Grenada, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago). Below are the objectives and methodology for this consultative process.

Objectives

The stakeholder meeting objectives were as follows:

- Convene stakeholders with expertise related to the country's flyingfish fishery and other living marine resources
- Share draft documents related to flyingfish fishery management, including recommendations for updating the Eastern Caribbean fishery management plan (ECFF-FMP), a sub-regional data policy conceptual proposal, and a cooperation agreement
- Gather stakeholder input on draft documents to inform revisions and prepare documents for regional endorsement

Materials and Methods

Blue Earth created the following flyingfish fishery stakeholder meeting facilitation templates to help in-country focal points lead national consultative meetings to gain feedback on the documents.

- **Meeting agenda:** High-level guidance to share the meeting objectives and topics with stakeholders with country-specific flyingfish expertise.
- **Facilitation plan:** A more detailed guide for national points of contact to use while leading consultative meetings, including key discussion questions.
- **Note-taking template:** A template in which focal points recorded input from the meeting discussions; focal points shared the notes with Blue Earth following the meetings.

As part of the consultative process, the Blue Earth team (including subcontractors Christopher Milley and Mark Tupper) held calls with at least one fisheries division staff in each of the six ECFF-FMP participating countries to walk through these meeting facilitation materials and answer their questions. Fisheries staff used the materials to stage, facilitate, and document workshops in Dominica (9 May 2018) and Saint Lucia (25 May 2018). Focal points from the other four countries did not hold consultative meetings. Below, we summarize the main themes in the feedback gathered in Saint Lucia and Dominica.

Key Outcomes: Saint Lucia

Stakeholders generally agreed with the draft recommendations for updating the ECFF-FMP and with the information presented in the draft sub-regional data policy and cooperation agreement. Additionally, they provided input summarized below.

ECFF-FMP Update Recommendations

Stakeholders suggested the following:

- Present the document in a more user-friendly way (e.g., text boxes with key points at the beginning of each section, tables that highlight priority information).
- Address management gaps by merging the sub-regional flyingfish management plan with Saint Lucia's national plan where appropriate.
- Rank the management measures in order of importance.
- Add the need to research species that feed on or are otherwise part of the flyingfish food web to determine how an increase or decrease in their abundance will impact the flyingfish population.
- Include sustainable flyingfish harvesting methods and mention the need to determine flyingfish habitats and spawning grounds.
- Add a description of how flyingfish research will be financed.
- Use language clearly stating that all stakeholders will be involved in flyingfish governance activities.
- Define obtainable measuring and monitoring objectives.

Sub-Regional Data Policy

Meeting participants discussed and/or suggested the following:

- Based on this draft, Saint Lucia would support the outlined agreements.
- The data generated by the policy's research activities should be interpreted into useful information that flyingfish managers can utilize.
- The policy's most useful aspect is its data management and sharing approach.
- Environmental data – including about Sargassum, factors impacting flyingfish abundance, and costs of operation – are needed to support fishery decision-making.
- The policy should include high-priority protocols that include data ownership and access rights.
- The policy should define the entity responsible for enforcing it.

Cooperation Agreement

Flyingfish stakeholders stated and/or recommended the following:

- Saint Lucia would support the draft agreement.
- The Chairman of the CRFM Ministerial Council should endorse the agreement on behalf of CRFM Member countries.
- Knowledge transfer between stakeholders and training in sustainable fishing techniques for entry-level fishers should be a component of the agreement.
- The dispute settlement process needs to be clarified.

Key Outcomes: Dominica

Meeting participants generally agreed with the information presented in the cooperation agreement draft, recommendations for updating the ECFF-FMP, and sub-regional data policy draft. In certain instances, however, they felt that the latter two documents could be strengthened with more country-specific information.

ECFF-FMP Update Recommendations

Meeting participants discussed the following recommendations regarding the ECFF-FMP update:

- Dominica could adopt the ECFF-FMP, though it may be useful to also prepare a national FMP that captures unique local issues.
- Managers should keep stakeholders apprised of the ECFF-FMP's progress and roll-out strategy at the regional and national levels and allow stakeholders to play a central role in these activities.
- Certain ECFF-FMP aspects currently not in place in Dominica may need to be rolled out incrementally, including logbooks and a licensing scheme.
- Fish aggregating device impacts on the flyingfish fishery need research so we can better address them.
- Managers should look at the trigger point more closely as more data, including on flyingfish captured for bait, become available.
- Fisherfolk groups and cooperatives should be involved in adaptive management activities.

Sub-Regional Data Policy

Outcomes from the participants' discussion on the draft data policy included the following:

- Dominica would require a policy or Memorandum of Understanding before it could share data.
- The data policy's most useful aspects are fisher data collection and data sharing.
- The following types of data (and frequency of collection) are needed to support fishery decision making in Dominica:
 1. Catch and effort (daily)
 2. Social (annually)
 3. Economic (price of fish sold should be collected at least monthly, trip costs daily)
 4. Seasonality (annually)
 5. Weather and seas (daily)
- High priority issues in Dominica related to the policy include data sharing (access rights), ownership, and usage.

Cooperation Agreement

The discussion surrounding the draft cooperation agreement included the following points:

- Most aspects of the cooperation agreement are useful.
- Participants did not propose any refinements to the agreement.
- The agreement should be endorsed by the CRFM and the Organization of Eastern Caribbean States.

SPECIAL MEETING OF THE CRFM-WECAFC WORKING GROUP ON FLYINGFISH

All consultants involved in the CLME+ flyingfish projects, which include Blue Earth, Nexus Coastal Resource Management, and the Caribbean Natural Resources Institute (CANARI), had trouble gaining input and participation from national focal points. This played out when only two of the six countries held stakeholder meetings through the process described above. Given these challenges, Blue Earth, Nexus, CANARI, and the CRFM determined that the most effective way to gather input from all countries would be to hold a special meeting of the CRFM-WECAFC Working Group on Flyingfish for all focal points. Blue Earth developed the first draft agenda for the two-day meeting held in Barbados, developed a facilitation plan, and facilitated select sessions. Below is a summary of the desired meeting outputs and discussion outcomes; further detail is available in the CRFM's report, "Special Meeting of the Joint CRFM / WECAFC Working Group on Flyingfish in the Eastern Caribbean."

Desired Meeting Outputs

Going into the meeting, the outputs sought included the following:

1. A compilation of all deliverables and outputs of the six consultancies
2. Analysis of the relationship between planned outputs and Member States' needs and capacities
3. Comments and suggestions on the deliverables and outputs to facilitate updating of the Flyingfish FMP
4. Considerations and suggestions concerning institutional and incentive structures and responsibilities of governments and other stakeholders for bringing the ECFF-FMP into implementation in the region, including identification of constraints and recommendations.

Discussion Outcomes

Below is a summary of the main points gathered through discussion of each of the primary meeting topics.

Capacity Availability and Needs

Themes that came out of the meeting discussions of fisheries management capacity and needs in the region included the following.

- Many national fisheries divisions lack human and technical capacity to implement the ECFF-FMP.
- Fishers' organizations hold potential for supporting both fisheries divisions and fishermen, but they require training and capacity development to meet their potential.
- There is a need for more two-way information sharing with fishermen, including sharing rationales for why certain regulations are in place and engaging fishermen in information analysis and dissemination.
- A mechanism such as National Intersectoral Committees (NICs) / Fishery Advisory Committees (FACs) – or another appropriate fishery advisory entity – is needed to enhance engagement of

experts and fishermen in decision-making. Membership in these groups needs careful consideration to ensure all stakeholder groups are represented.

ECFF-FMP

Below are several outcomes of the participants' discussions about the draft updated ECFF-FMP.

- There are currently many gaps in understanding of flyingfish ecological and fishery dynamics and filling these gaps will be a critical first priority for implementing the ECFF-FMP.
- The existing draft ECFF-FMP is highly technical; to make it more accessible to all stakeholder groups, it could either be re-written to be more straightforward or could come with an accompanying summary in plain language.
- There is a need for a strategy, or implementation plan, for how to deploy the ECFF-FMP at the national level and integrate it with existing national FMPs.
- There is a need to emphasize the roles of fishermen, fishers' organizations, and NICs / FACs (or other appropriate fisheries advisory bodies) in the ECFF-FMP.
- The 5,000-tonne trigger point can be viewed as an impetus to consult with fishermen about the state of the stock and their catches, rather than triggering a close of the fishery.
- Currently relevant factors such as Sargassum, climate change, ocean acidification, changes in fishery focus to different species, and changes in fishing methods should appear in the ECFF-FMP.

Data Policy

Below are several outcomes from the participants' discussions of the draft data policy.

- There are numerous arrangements in development and created through past projects related to fisheries data collection and management.
- The data policy is a high-level policy, not a detailed plan.
- The data policy should link to the Caribbean Community Common Fisheries Policy.
- The data policy focuses on flyingfish as a pilot species and can be used as a model or expanded to address other fishery data policies in the future.
- CRFM will take on the role of compiling and analyzing flyingfish data from Eastern Caribbean countries.
- There needs to be consistency in data formats, collection timelines, minimum data requirements across countries, and an understanding of data confidentiality and intellectual property.
- Implementation of the data policy will focus on incremental progress, focusing on critical data collection in the near term on catch, landings, and vessel registration.
- There could be the need to create an incentive and consequence system for participation in data collection.
- Technologies such as smartphones and tablets could provide cost-effective and convenient options to improve data collection.

Data Collection Approaches and Minimum Requirements

Christopher Milley from Nexus presented a set of data collection recommendations for input. These included mandatory membership in fishers' organizations and the introduction of logbooks that fishers would fill out and submit at landing sites in exchange for a landings fee waiver. He recommended that fishers' organizations collect the logbooks and share aggregated data with fisheries divisions.

- Mandatory membership in fishers' organizations is not feasible without a high level of political intervention.
- Logbooks could be effective, though fishermen need to retain ownership over their personal data.

- Many fishers' organizations do not have adequate resources to manage and analyze fishermen's data.
- Cost recovery methods other than landings-based fees could be effective.
- Fisheries divisions could host annual events for fishermen where they share scientific findings. The events can incentivize fishermen to collect data.
- Fishers need a mandatory requirement to report catches. Alternatively, the incentive of receiving synthesized findings and participating in data analysis may provide sufficient incentive for fishermen to participate in data collection.
- E-logbooks are worth investigating as a convenient way for fishermen to collect and submit data.

Cooperation Agreement

Meeting participants came to several conclusions regarding the draft cooperation agreement, including the following:

- The cooperation agreement will address all major, shared living marine resources in the relevant geography.
- The cooperation agreement should mention sharing of information that would be useful for combatting illegal, unreported, and unregulated fishing. There could be complications discussing markets and marketing since this would necessitate review by other bodies, like from the central French government.
- Gaining political-level agreement within the timeframe of the CLME+ consultancies is infeasible; therefore, we will seek a more practical agreement at the technical level in the near term. CRFM and Martinique may pursue a political-level agreement in the future.
- The most effective approach will be to begin with a simple agreement that all parties can agree to.
- CRFM will sign the cooperation agreement on behalf of its member nations, through either the Secretariat or the Ministerial Council, depending on the level of the signatory representing Martinique.

Additional Stakeholder Consultations

The CRFM held additional stakeholder consultations during Blue Earth's Governance consultancy. These included a March CRFM Forum meeting, a May 2019 regional consultation in St. Lucia, and the 3rd Meeting of the CRFM Ministerial Sub-Committee on Flyingfish, in Basseterre, Saint Kitts and Nevis in June, during which participants reviewed and discussed the consultancy's draft Eastern Caribbean Flyingfish Fisheries Management Plan 2020 - 2025, Cooperation Agreement, and Data Policy.

Conclusions

The stakeholder engagement process for revising the ECFF-FMP and developing the Data Policy and Cooperation Agreement has included several opportunities for individuals in the region to provide input and comments. This process included the three meetings described in this document as well as other engagement methods including an online survey, phone interviews, and opportunities to provide written comments on draft documents. Blue Earth gathered input from each of these methods to develop updated, revised versions of the documents for further review and vetting. After a final round of stakeholder feedback via written comments, Blue Earth finalized the documents for endorsement at the appropriate levels.

ANNEX D: PROGRESS REPORTS

PROGRESS REPORT #11, JULY 2019

This document summarizes activities and progress made by the Blue Earth team (Blue Earth Consultants, a Division of Eastern Research Group, Inc. [Blue Earth] and NEXUS Coastal Resource Management Ltd. [Nexus]) on the consultancy, “Technical support on Implementation of Management / Stress Reduction Measures in the Eastern Caribbean Flyingfish Fishery” (Stress Reduction). Blue Earth is completing the Stress Reduction project under contract to the Caribbean Regional Fisheries Mechanism (CRFM) as part of the United Nations Development Programme (UNDP) / Global Environment Facility (GEF) funded project *Catalyzing Implementation of the Strategic Action Programme for the Sustainable Management of shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems* (CLME+ Project). This consultancy is closely linked to the “Technical Support to Enhance Governance Arrangement for Implementing an Ecosystem Approach for Flyingfish Fisheries” (Governance) and the “Technical Support to Facilitate Adaptive Management for Eastern Caribbean Flyingfish Fisheries” (Adaptive Management) consultancies that Blue Earth is also implementing. This document reflects work performed under this consultancy to date. The *Contract Status* section below is organized by activities as listed in the scope of work.

Contract at a Glance

Sub-Project Title	Technical support on Implementation of Management / Stress Reduction Measures in the Eastern Caribbean Flyingfish Fishery		
Consultant	Eastern Research Group, Inc.		
Contract name	Technical support on Implementation of Management / Stress Reduction Measures in the Eastern Caribbean Flyingfish Fishery		
Update Period	9 February 2019 – 5 April 2019		
Contract Lead	Eastern Research Group, Inc.		
Contract Start Date	1 August 2017		
Contract end date	26 July 2019		
Total Contract Amount	\$91,253		
Cash received (to date)	\$59,313		
Amount spent	\$91,253		
Activity Implementation Status	Good	Satisfactory	Poor
	x	x	
Financial Implementation status	Good	Satisfactory	Poor
	x		
Consultancy Partners	Nexus Coastal Resource Management Ltd.		
Submitted by	Andy Bystrom		
Submission date	July 2019		

*Includes funds spent by Blue Earth and Nexus

Contract Status

Each table below lists the activities included under each Work Package of the Consultancy, as well as the status of activities and results achieved to date. Please note that this Bi-Monthly Progress Report is cumulative; therefore, status descriptions include activities completed during past reporting periods as well as the current reporting period.

Consultancy Inception		
Deliverables / Outputs (as listed in Contract Document[s])	Status	Results to Date (measured against the Deliverables / Outputs listed in Contract Document[s])
Inception Call	Complete: <ul style="list-style-type: none"> Organized and held inception call between CRFM Secretariat staff, Blue Earth, and Nexus Coastal Management. Signed and executed sub-contract with Nexus and David Berry. 	<ul style="list-style-type: none"> Produced draft call agenda and other materials Completed inception call Executed sub-contracts
Inception Report and Impact Assessment Tool Outline	Complete: <ul style="list-style-type: none"> Developed and submitted Inception Report and Impact Assessment Tool Outline. 	<ul style="list-style-type: none"> Inception Report Impact Assessment Tool Outline

Work Package 1: FMP Implementation and Management Recommendations		
Deliverables / Outputs (as listed in Contract Document[s])	Status	Results to Date (measured against the Deliverables / Outputs listed in Contract Document[s])
Review Monitoring and Evaluation Reports	Complete: <ul style="list-style-type: none"> Reviewed CRFM's existing management performance evaluation and developed draft evaluation objectives and topics (to link with Adaptive Management consultancies). 	<ul style="list-style-type: none"> Draft evaluation objectives and topics
Prepare for Consultative Processes with NIC / FAC and Stakeholders	Complete: <ul style="list-style-type: none"> Worked with CRFM Secretariat staff to develop facilitation and reference materials for national consultative processes. Materials developed for discussion and dissemination included draft recommendations for updating the FMP, other draft materials related to all three of Blue Earth's consultancies, a draft meeting agenda, and infographic for share with meeting invitees. Facilitation materials included an internal timeline for the consultative processes, facilitation plan with talking points and key questions, note-taking template, and draft surveys focused on fisheries data collection systems and vessel licensing that focal points will coordinate conducting. These materials were assembled into "packets" and shared 	<ul style="list-style-type: none"> Facilitation packets containing draft recommendations for updating the FMP, facilitation materials, and surveys 5 completed planning calls with focal points to support coordinating consultative processes

Work Package 1: FMP Implementation and Management Recommendations		
Deliverables / Outputs (as listed in Contract Document[s])	Status	Results to Date (measured against the Deliverables / Outputs listed in Contract Document[s])
	<p>with focal points in each country.</p> <ul style="list-style-type: none"> • Held 5 calls with 11 focal points in Barbados, Dominica, Grenada, Saint Lucia, Saint Vincent and the Grenadines, Trinidad, and Tobago to review draft materials and plan national consultative processes • Supported consultative processes in member countries and collected stakeholder feedback on the draft Cooperation Agreement from Saint Lucia • Attended and discussed with country stakeholders at the 16th Meeting of the Caribbean Fisheries Forum in Montserrat, where CRFM Secretariat staff provided a presentation and the draft partnership agreement to all participants for review • Participated in call with CRFM Secretariat, Nexus, and CANARI to discuss steps for multi-level stakeholder engagement 	
Implement Consultative Processes and Analyze Findings	<p>Complete:</p> <ul style="list-style-type: none"> • In alignment with the FMP update process under the Governance consultancy, worked with CRFM Secretariat staff to develop online survey gathering feedback on the FMP, loading the survey into Qualtrics online survey software for distribution to focal points. • Developed draft list of Recommendations for Improving the FMP and sent to focal points in all six countries. • Conducted outreach via phone and email to secure responses from focal points to online survey and comments on the recommendations. • Received responses to the online survey from representatives of all six countries. • Analyzed FMP online survey data and input on recommendations for revising the 2014 FMP collected under the Governance consultancy. 	<ul style="list-style-type: none"> • Online survey and phone interview responses • Draft Recommendations for Updating the Eastern Caribbean Flyingfish Fishery Management Plan • Additional FMP evaluation questions • Facilitation packets containing questions and other reference materials related to updating the FMP • 5 completed planning calls with focal points to support coordinating consultative processes

Work Package 1: FMP Implementation and Management Recommendations		
Deliverables / Outputs (as listed in Contract Document[s])	Status	Results to Date (measured against the Deliverables / Outputs listed in Contract Document[s])
	<ul style="list-style-type: none"> Identified data gaps and developed additional questions on the implementation of the FMP. Developed materials related to updating the FMP for national consultative processes; incorporated themes from additional questions into facilitation materials for national consultative processes. Working with focal points to plan and conduct national consultative processes. Supported implementation of national consultative process meeting in St. Lucia and received documentation of stakeholder input. Gained feedback on the draft FMP updates from Dominica Incorporated feedback from St Lucia and Dominica into draft updated ECFF-FMP and data policy Currently updating ECFF-FMP based on discussions at Barbados meeting Submitted draft updated ECFF-FMP for March Forum meeting review. Latest version has Cooperation Agreement and Data Policy as appendices. 	<ul style="list-style-type: none"> Saint Lucia and Dominica consultative processes completed, and attendance lists and documentation of stakeholder feedback received Draft updated ECFF-FMP based on country feedback developed Draft Updated ECFF-FMP (Appendix B in Governance progress report #13)
Evaluate Process of Implementing Recommendations	Complete: <ul style="list-style-type: none"> Discussed and aligned on the focus of the Assessment Methodology with PM,FMD. Developed and revised a draft outline of a data collection system recommendations document It is considered doubtful whether the data collection system recommendations can be done (26 March 2019 email). In the After-Life Plan, Blue Earth included recommendations for FMP implementation support that fisheries divisions and the CRFM could follow. 	<ul style="list-style-type: none"> Draft outline of a data collection system recommendations document Sub-project After-Life Plan
Progress report on review of FMP monitoring and evaluation	Complete: <ul style="list-style-type: none"> Synthesized data and developed a progress report of preliminary findings regarding monitoring and evaluation 	<ul style="list-style-type: none"> Progress Report on Eastern Caribbean Flyingfish Fishery Management Plan Monitoring and

Work Package 1: FMP Implementation and Management Recommendations		
Deliverables / Outputs (as listed in Contract Document[s])	Status	Results to Date (measured against the Deliverables / Outputs listed in Contract Document[s])
	<ul style="list-style-type: none"> of ECFF-FMP implementation. Revised based on feedback from CRFM Secretariat staff and resubmitted on 14 December 2017. Added correct CLME+ project logos and resubmitted on 3 April 2018. Submitted Final FMP Evaluation Report 	<ul style="list-style-type: none"> Evaluation ECFF-FMP Management Performance Evaluation

Work Package 2: National Fisheries Data Collection Systems		
Deliverables / Outputs (as listed in Contract Document[s])	Status	Results to Date (measured against the Deliverables / Outputs listed in Contract Document[s])
List of selected data collection participant countries	Complete: <ul style="list-style-type: none"> Selected Barbados, Trinidad and Tobago, and Grenada as the focus of this consultancy. The Blue Earth team will also extend communications to Martinique, as previously discussed. 	<ul style="list-style-type: none"> List of countries to target for data collection
Prepare Study Design (Data collection interview guides)	Complete: <ul style="list-style-type: none"> Developed and submitted data collection interview guides to CRFM, which will be used to guide open-ended discussions. Revised based on CRFM Secretariat staff feedback and resubmitted. Shared interview guides with focal points and began coordinating data collection. 	<ul style="list-style-type: none"> Data collection interview guides Planning calls with focal points in Barbados, Grenada, and Trinidad and Tobago Follow-up calls arranged to discuss timetable for survey and barriers to implementation of surveys
Conduct Surveys of Data Collection Systems	Complete: <ul style="list-style-type: none"> Beta tested an early version of the interview guides during interviews with government and industry representatives in Barbados, Trinidad and Tobago, and Grenada. Updated/expanded survey instruments to include broader target audience. Prepared an on-line and tablet version of the survey. 	<ul style="list-style-type: none"> Preliminary information from beta testing Preliminary results from in-country surveys Outline of Data Collection Systems Recommendations Report

Work Package 2: National Fisheries Data Collection Systems		
Deliverables / Outputs (as listed in Contract Document[s])	Status	Results to Date (measured against the Deliverables / Outputs listed in Contract Document[s])
	<ul style="list-style-type: none"> • Prepared list of key targets for survey • Conducted surveys in Barbados and Grenada in August 2018 in collaboration with the Data and Information Management for Decision Support Project. Nexus has conducted site surveys in Barbados and Grenada, and preliminary results have been submitted to CRFM - Additional simple statistical analysis of findings is ongoing. Detailed surveys using full questionnaires were not conducted by Fisheries Divisions (due to staff shortages and work priorities). 	
Survey Analysis and Recommendations	Complete: <ul style="list-style-type: none"> • Conducted preliminary analysis of survey findings; detailed analysis is ongoing. • Discussed preliminary recommendations with country representatives during regional meeting. • Continued review of preliminary recommendations for mandatory fishers' organizations completed through direct in-country discussions in Barbados and Saint Lucia. • Final recommendations prepared 	<ul style="list-style-type: none"> • Final recommendations
Evaluate Process of Implementing Recommendations	Complete: <ul style="list-style-type: none"> • Submitted (28 December 2018) an assessment methodology to member states to track their ongoing progress in the implementation of recommendations for improving data collection and management systems in the Eastern Caribbean flyingfish fishery • Received comments from CRFM (7 January 2019) • Received edits from Nexus; waiting for Nexus to send mark-up copies for CRFM • Submitted (21 February 2019) revised Assessment Methodology for Progress in Improving Data Collection System 	<ul style="list-style-type: none"> • Revised Assessment Methodology: Progress in Implementation of Recommended Data Collection Systems • Submitted Final report

Work Package 2: National Fisheries Data Collection Systems		
Deliverables / Outputs (as listed in Contract Document[s])	Status	Results to Date (measured against the Deliverables / Outputs listed in Contract Document[s])
	<ul style="list-style-type: none"> Submitted (5 April 2019) Final report: Evaluations of the Process of Implementation of the Recommendations for National Level Management and Improvements in National Data Collection Systems 	

Work Package 3: Fisheries Licensing Arrangements and Vessel Census		
Deliverables / Outputs (as listed in Contract Document[s])	Status	Results to Date (measured against the Deliverables / Outputs listed in Contract Document[s])
Licensing Systems Assessment Tools	Complete: <ul style="list-style-type: none"> Developed the survey instruments following conversations held with fisheries staff during country visits in October 2017 and based on existing licensing system survey instruments from other countries; submitted licensing systems survey instruments to CRFM. Revised based on feedback from CRFM Secretariat staff and re-submitted on 14 December 2017. Added correct CLME+ project logos and resubmitted on 3 April 2018. 	<ul style="list-style-type: none"> Licensing Systems Survey Instrument Survey tools reviewed and discussed with fisheries staff, with follow-on discussions planned for face-to-face meetings at Fisheries Forum
Conduct Survey and Review Existing Legislation	Complete: <ul style="list-style-type: none"> Provided survey instruments to CRFM for distribution to member states for survey implementation; provided surveys to country focal points and began discussing data collection process Preparing list of key targets for survey to guide survey implementation Preparing tentative schedule for survey Survey timing may be affected by fishing activity (in-season) Reviewed existing fishery legislation in Trinidad and Tobago, Grenada, Barbados, and for cross reference 	<ul style="list-style-type: none"> Review of existing legislation

Work Package 3: Fisheries Licensing Arrangements and Vessel Census		
Deliverables / Outputs (as listed in Contract Document[s])	Status	Results to Date (measured against the Deliverables / Outputs listed in Contract Document[s])
	purposes, Canada	
Model Regulations	Complete: <ul style="list-style-type: none"> • Compiled and evaluated sample regulations for data reporting. • Dr. David Berry and NEXUS have drafted outline of flyingfish fishery act amendments and corresponding regulations that can be used by fisheries divisions as a guide, when practical and necessary, to update their national legislation • Developed full draft licensing legislation legal instruments 	<ul style="list-style-type: none"> • Draft outline of model act amendments and regulations • Draft licensing legal instruments
List of Authorized Flyingfish Fisheries Vessels	Complete: <ul style="list-style-type: none"> • Preliminary discussions held with Member State Fishery representatives and requested current data on registered vessels (information to provide baseline for comparison with survey results). • Developed and revised a draft outline of document to contain a list of authorized flyingfish fishing vessels. • Report completed 	<ul style="list-style-type: none"> • Draft outline of document to contain a list of authorized flyingfish fishing vessels • Report of authorized fishing vessels
National Census of Flyingfish Fisheries vessels in Participating Member States	Complete: <ul style="list-style-type: none"> • Census survey tools have been provided to participating fishery divisions. No surveys have been completed as yet. • Current vessel registration data has been compiled from Grenada and Barbados. Vessel census forms have been provided to respective Fisheries Divisions. • Fisheries Divisions staff have completed no surveys. • Developed an overview of the rationale and approaches to a vessel census for the flyingfish fishery within participating Member States in the Eastern Caribbean. Overview includes census survey tools (questionnaire). Submitted 28 December 2018 • Received comments from CRFM (7 January 2019) 	<ul style="list-style-type: none"> • No reportable results to date • Data from current registry (not verified by census due to insufficient fishery division resources to undertake work. This situation could not be overcome by the consultancy) is provided in the report on authorized vessels • Flyingfish Fishery Vessel Census Report

Work Package 3: Fisheries Licensing Arrangements and Vessel Census		
Deliverables / Outputs (as listed in Contract Document[s])	Status	Results to Date (measured against the Deliverables / Outputs listed in Contract Document[s])
	<ul style="list-style-type: none"> Received edits from Nexus; waiting for Nexus to send mark-up copies for CRFM Submitted (21 February 2019) revised Flyingfish Fishery Vessel Census Report 	

General Reporting and Impact Assessment		
Deliverables / Outputs (as listed in Contract Document[s])	Status	Results to Date (measured against the Deliverables / Outputs listed in Contract Document[s])
Inception Report	Complete: <ul style="list-style-type: none"> See <i>Project Inception</i> section above. 	<ul style="list-style-type: none"> Inception Report
Appropriate number of bi-monthly reports	Complete: <ul style="list-style-type: none"> This is the tenth and final bi-monthly report submitted for this project. 	<ul style="list-style-type: none"> 10 bi-monthly progress reports
Develop Impact Assessment Tool	Complete: <ul style="list-style-type: none"> Developed and revised Impact Assessment Tools (IATs) that address Blue Earth's work under Blue Earth's three CRFM consultancies: Governance, Adaptive Management, and Stress Reduction. Revised IATs to align with CLME+ project Governance Effectiveness Assessment Framework based on feedback from Robin Mahon and Lucia Fanning. Further revised based on CRFM input. 	<ul style="list-style-type: none"> Impact Assessment Tools Impact Assessment Tools revised again
Prepare Final Technical Report	Complete: <ul style="list-style-type: none"> Blue Earth compiled information and reports. CRFM to provide feedback (requested on 1 February 2019) on final technical report format and feasibility of combining reports into one document with 3 separate appendices Requested clarification from CRFM on aspects of the final technical report (email 7 March 2019) and received a response on 26 March 2019 	<ul style="list-style-type: none"> Final Technical Report

General Reporting and Impact Assessment		
Deliverables / Outputs (as listed in Contract Document[s])	Status	Results to Date (measured against the Deliverables / Outputs listed in Contract Document[s])
	<ul style="list-style-type: none"> Final technical report submitted end of July 	

Overarching Reporting	
Identify any adjustments / changes that have been made to deliverables / outputs	The consultancy timelines have shifted due to response rates of in-country stakeholders, timing of the multi-stakeholder meeting in Barbados, and other factors. However, with feedback from the meeting in Barbados we are moving forward on developing deliverables.
Identify Lessons Learnt and Best Practices	<p>Lessons learned include the following:</p> <ul style="list-style-type: none"> Fishers need to experience reciprocity. This means that for fishers to buy into the data collection and management improvement process, they need to know that there is something in it for them. Managers could consider helping fishers and their organizations that participate in the data collection process develop value chains that empower them through social and economic returns including higher ex -vessel prices, more stable markets, resource sustainability, access to health insurance, and educational opportunities Promoting transparency throughout the management decision making process will increase managers' need for and use of reliable scientific information. When this information comes from stakeholders working in conjunction with fisheries divisions to develop data collection and decision-making systems, all parties feel a part of the management process, and buy-in increases. In some cases, processes outlined in the consultancy proposal for gaining stakeholder input needed to be revised to fit the schedules and time commitments of stakeholders, particularly those at the political level. The <i>de facto</i> sequence for gaining input from a range of stakeholders in the Eastern Caribbean involved gaining input from technical- and community-level stakeholders first and discussing with political-level stakeholders later in the process. During in-country surveys it was noted that there was a significant change in the importance of flyingfish in some member states, with an associated diminishment in the political will and ability to expend limited fiscal resources for data collection / monitoring of the fishery. Updates to the sub-regional FMP from all sub-projects should be implemented in a single document. Flyingfish must be considered together with other pelagic fisheries in the Eastern Caribbean, since in many countries, fishermen target multiple species. Maintain a view of what will be useful for the CRFM and Eastern Caribbean flyingfish management in the big picture when determining the direction to take with deliverables written in the contract.
Identify contract milestones	Milestones include the following (also mentioned above in Status column):

Overarching Reporting	
achieved within update period	<ul style="list-style-type: none"> Developed and submitted deliverables including full draft model licensing system legal instruments and agendas and facilitation plans for past consultative meetings Developed and submitted deliverables: Assessment Methodology: Progress in Implementation of Recommended Data Collection Systems; Flyingfish Fishery Vessel Census Report
Identify any risk to contract outputs	Please outline the risk management strategy adopted
<p>Risks to the contract outputs include the following:</p> <ul style="list-style-type: none"> Potential challenges gathering stakeholder input from fisheries division staff who may not be familiar with flyingfish fishery management systems and data collection and convening meetings with NICs and FACs, which may not be active Difficulty gaining substantive input from flyingfish fishermen (particularly in Barbados) who may be at sea during proposed consultative process timelines. Limited staff capacity to conduct data collection and vessel licensing surveys Potential for low survey response rates and non-statistically significant representation of fishers due to timing of the flyingfish fishery season and limited survey capacity 	<p>Risk management strategies included the following:</p> <ul style="list-style-type: none"> Worked with focal points to develop ad hoc stakeholder advisory groups and provide materials to support facilitation of stakeholder processes. Identified opportunities for fishers, fisher groups, and other value chain members to support survey implementation and data collection. Allocated consultant staff time to support key countries with in-country consultative meetings (Saint Lucia, Grenada) Created an opportunity to gather political, technical, and other stakeholders to gather and discuss outputs across consultancies (Barbados meeting) Individual fishery divisions should identify what actions they will take regarding the vessel census results and whether or not these actions support the sustainable development of the flyingfish fishery.

Overarching Reporting	
<ul style="list-style-type: none"> Limited capacity of in-country stakeholders including fishery staff to support the consultancy, including Tobago's requirement of additional capacity in order to participate Provision of vessel census results could provoke pushback from fishers and fisher groups and negatively impact their willingness to participate in data collection activities with fishery divisions. 	

Financial Implementation

Contract implementation on track?				If no, please indicate why
Yes	X	No		

Is revised payment schedule needed? If yes, please attach revised plan.	Blue Earth and Nexus agreed to a timetable of deliverable deadlines based on the timing of in-country visits and the CRFM-WECAFC meeting held in October 2018. We attached this schedule in the column to the right.	Dec-18	Stress Reduction Payment 4
			(1.) Meeting facilitation reports [BEC]
			(2.) Assessment methodology for tracking progress on the implementation of recommendations and other measures for improving data collection systems [Nexus]
			(3.) Vessel census results [Nexus]
			(4.) Appropriate number of progress reports [BEC]
		Apr-19	Stress Reduction Payment 5
			(1.) Final Technical Report (with annexed Bi-monthly Progress Reports), including, inter alia [BEC]
			(2.) Consultancy Products, namely: Work Plan; programme reports; reports on support provided for National-level planning, promotion and implementation of the sub-regional FMP [BEC]
			(3.) Report on the review of fisheries operations and related data collection systems as well as general national data collection systems in (at least) 3 countries [Nexus]
			(4.) Reports of stakeholder consultations [BEC]
			(5.) Reports of national censuses of flyingfish fishing vessels; model vessel licensing regulations [Nexus]
			(6.) List of authorized flyingfish vessels [Nexus]
			(7.) Reports of evaluations of the processes of implementation of the recommendations for national-level management and improvements in national data collection systems [Nexus]
			(8.) Final financial report [BEC]
(9.) Other agreed reports [BEC/Nexus]			
(10.) Drafts of each product having been reviewed by the CRFM, prior to finalisation [BEC]			

Additional Information

Identify any activities during the reporting period that address gender equality	<p>No components of the activities reported on explicitly address gender equality. However, the 8th Special Meeting of the Ministerial Council has issued the following statement on gender, youth and decent work:</p> <p>“The Council accepted that international and national norms regarding issues pertaining to gender, youth, and decent work be adhered to, and be incorporated into all CRFM policies, protocols, programmes, and plans.” This statement was considered throughout the remainder of the consultancy and the deliverables it produced.</p>
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ANNEX E: REPORTS ON SUPPORT PROVIDED FOR NATIONAL-LEVEL PLANNING, PROMOTION AND IMPLEMENTATION OF THE SUB-REGIONAL FMP

FLYINGFISH STAKEHOLDER MEETINGS SUMMARY

INTRODUCTION

This document provides a summary of national flyingfish consultative processes regarding Eastern Caribbean flyingfish management. These activities were held as part of consultancies by Blue Earth Consultants (Blue Earth), a Division of Eastern Research Group, Inc. for the Caribbean Regional Fisheries Mechanism (CRFM). Three meetings took place, two of which were held at the national level by national focal points (Saint Lucia and Dominica; May 2018), and the third in Barbados (October 2018) where stakeholders from six countries and several international bodies attended a special meeting of the CRFM-Western Central Atlantic Fishery Commission (WECAFC) Working Group on Flyingfish.

The meetings contributed to several key outputs of Blue Earth's consultancies to advance flyingfish fishery management in the Eastern Caribbean. The outputs include an updated Eastern Caribbean Flyingfish Fishery Management Plan (ECFF-FMP), a cooperation agreement between the CRFM and Martinique on living marine resource management, a data policy for Eastern Caribbean flyingfish, and a performance evaluation of implementation of the ECFF-FMP.

Blue Earth is completing three consultancies under contract to CRFM as part of the United Nations Development Programme / Global Environment Facility funded project, *Catalysing Implementation of the Strategic Action Programme for the Sustainable Management of shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems* (CLME+). These meetings contributed to outputs associated with all three consultancies.

NATIONAL-LEVEL MEETINGS

In the beginning stages of our consultancies, Blue Earth developed draft recommendations for how to update the ECFF-FMP, a data policy, and a cooperation agreement for review. To engage stakeholders in developing these documents, we organized a consultative process with focal points in each of the six Eastern Caribbean countries (Barbados, Dominica, Grenada, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago). Below are the objectives and methodology for this consultative process.

Objectives

The stakeholder meeting objectives were as follows:

- Convene stakeholders with expertise related to the country's flyingfish fishery and other living marine resources
- Share draft documents related to flyingfish fishery management, including recommendations for updating the Eastern Caribbean fishery management plan (ECFF-FMP), a sub-regional data policy conceptual proposal, and a cooperation agreement
- Gather stakeholder input on draft documents to inform revisions and prepare documents for regional endorsement

Materials and Methods

Blue Earth created the following flyingfish fishery stakeholder meeting facilitation templates to help in-country focal points lead national consultative meetings to gain feedback on the documents.

- **Meeting agenda:** High-level guidance to share the meeting objectives and topics with stakeholders with country-specific flyingfish expertise.
- **Facilitation plan:** A more detailed guide for national points of contact to use while leading consultative meetings, including key discussion questions.
- **Note-taking template:** A template in which focal points recorded input from the meeting discussions; focal points shared the notes with Blue Earth following the meetings.

As part of the consultative process, the Blue Earth team (including subcontractors Christopher Milley and Mark Tupper) held calls with at least one fisheries division staff in each of the six ECFF-FMP participating countries to walk through these meeting facilitation materials and answer their questions. Fisheries staff used the materials to stage, facilitate, and document workshops in Dominica (9 May 2018) and Saint Lucia (25 May 2018). Focal points from the other four countries did not hold consultative meetings. Below, we summarize the main themes in the feedback gathered in Saint Lucia and Dominica.

Key Outcomes: Saint Lucia

Stakeholders generally agreed with the draft recommendations for updating the ECFF-FMP and with the information presented in the draft sub-regional data policy and cooperation agreement. Additionally, they provided input summarized below.

ECFF-FMP Update Recommendations

Stakeholders suggested the following:

- Present the document in a more user-friendly way (e.g., text boxes with key points at the beginning of each section, tables that highlight priority information).
- Address management gaps by merging the sub-regional flyingfish management plan with Saint Lucia's national plan where appropriate.
- Rank the management measures in order of importance.
- Add the need to research species that feed on or are otherwise part of the flyingfish food web to determine how an increase or decrease in their abundance will impact the flyingfish population.
- Include sustainable flyingfish harvesting methods and mention the need to determine flyingfish habitats and spawning grounds.
- Add a description of how flyingfish research will be financed.
- Use language clearly stating that all stakeholders will be involved in flyingfish governance activities.
- Define obtainable measuring and monitoring objectives.

Sub-Regional Data Policy

Meeting participants discussed and/or suggested the following:

- Based on this draft, Saint Lucia would support the outlined agreements.
- The data generated by the policy's research activities should be interpreted into useful information that flyingfish managers can utilize.
- The policy's most useful aspect is its data management and sharing approach.
- Environmental data – including about Sargassum, factors impacting flyingfish abundance, and costs of operation – are needed to support fishery decision-making.
- The policy should include high-priority protocols that include data ownership and access rights.
- The policy should define the entity responsible for enforcing it.

Cooperation Agreement

Flyingfish stakeholders stated and / or recommended the following:

- Saint Lucia would support the draft agreement.
- The Chairman of the CRFM Ministerial Council should endorse the agreement on behalf of CRFM Member countries.
- Knowledge transfer between stakeholders and training in sustainable fishing techniques for entry-level fishers should be a component of the agreement.
- The dispute settlement process needs to be clarified.

Key Outcomes: Dominica

Meeting participants generally agreed with the information presented in the cooperation agreement draft, recommendations for updating the ECFF-FMP, and sub-regional data policy draft. In certain instances, however, they felt that the latter two documents could be strengthened with more country-specific information.

ECFF-FMP Update Recommendations

Meeting participants discussed the following recommendations regarding the ECFF-FMP update:

- Dominica could adopt the ECFF-FMP, though it may be useful to also prepare a national FMP that captures unique local issues.
- Managers should keep stakeholders apprised of the ECFF-FMP's progress and roll-out strategy at the regional and national levels and allow stakeholders to play a central role in these activities.
- Certain ECFF-FMP aspects currently not in place in Dominica may need to be rolled out incrementally, including logbooks and a licensing scheme.
- Fish aggregating device impacts on the flyingfish fishery need research so we can better address them.
- Managers should look at the trigger point more closely as more data, including on flyingfish captured for bait, become available.
- Fisherfolk groups and cooperatives should be involved in adaptive management activities.

Sub-Regional Data Policy

Outcomes from the participants' discussion on the draft data policy included the following:

- Dominica would require a policy or Memorandum of Understanding before it could share data.
- The data policy's most useful aspects are fisher data collection and data sharing.
- The following types of data (and frequency of collection) are needed to support fishery decision making in Dominica:
 1. Catch and effort (daily)
 2. Social (annually)
 3. Economic (price of fish sold should be collected at least monthly, trip costs daily)
 4. Seasonality (annually)
 5. Weather and seas (daily)
- High priority issues in Dominica related to the policy include data sharing (access rights), ownership, and usage.

Cooperation Agreement

The discussion surrounding the draft cooperation agreement included the following points:

- Most aspects of the cooperation agreement are useful.
- Participants did not propose any refinements to the agreement.
- The agreement should be endorsed by the CRFM and the Organization of Eastern Caribbean States.

SPECIAL MEETING OF THE CRFM-WECAFC WORKING GROUP ON FLYINGFISH

All consultants involved in the CLME+ flyingfish projects, which include Blue Earth, Nexus Coastal Resource Management, and the Caribbean Natural Resources Institute (CANARI), had trouble gaining input and participation from national focal points. This played out when only two of the six countries held stakeholder meetings through the process described above. Given these challenges, Blue Earth, Nexus, CANARI, and the CRFM determined that the most effective way to gather input from all countries would be to hold a special meeting of the CRFM-WECAFC Working Group on Flyingfish for all focal points. Blue Earth developed the first draft agenda for the two-day meeting held in Barbados, developed a facilitation plan, and facilitated select sessions. Below is a summary of the desired meeting outputs and discussion outcomes; further detail is available in the CRFM's report, "Special Meeting of the Joint CRFM / WECAFC Working Group on Flyingfish in the Eastern Caribbean."

Desired Meeting Outputs

Going into the meeting, the outputs sought included the following:

1. A compilation of all deliverables and outputs of the six consultancies
2. Analysis of the relationship between planned outputs and Member States' needs and capacities
3. Comments and suggestions on the deliverables and outputs to facilitate updating of the Flyingfish FMP
4. Considerations and suggestions concerning institutional and incentive structures and responsibilities of governments and other stakeholders for bringing the ECFF-FMP into implementation in the region, including identification of constraints and recommendations.

Discussion Outcomes

Below is a summary of the main points gathered through discussion of each of the primary meeting topics.

Capacity Availability and Needs

Themes that came out of the meeting discussions of fisheries management capacity and needs in the region included the following.

- Many national fisheries divisions lack human and technical capacity to implement the ECFF-FMP.
- Fishers' organizations hold potential for supporting both fisheries divisions and fishermen, but they require training and capacity development to meet their potential.
- There is a need for more two-way information sharing with fishermen, including sharing rationales for why certain regulations are in place and engaging fishermen in information analysis and dissemination.
- A mechanism such as National Intersectoral Committees (NICs) / Fishery Advisory Committees (FACs) – or another appropriate fishery advisory entity – is needed to enhance engagement of experts and fishermen in decision-making. Membership in these groups needs careful consideration to ensure all stakeholder groups are represented.

ECFF-FMP

Below are several outcomes of the participants' discussions about the draft updated ECFF-FMP.

- There are currently many gaps in understanding of flyingfish ecological and fishery dynamics and filling these gaps will be a critical first priority for implementing the ECFF-FMP.

- The existing draft ECFF-FMP is highly technical; to make it more accessible to all stakeholder groups, it could either be re-written to be more straightforward or could come with an accompanying summary in plain language.
- There is a need for a strategy, or implementation plan, for how to deploy the ECFF-FMP at the national level and integrate it with existing national FMPs.
- There is a need to emphasize the roles of fishermen, fishers' organizations, and NICs / FACs (or other appropriate fisheries advisory bodies) in the ECFF-FMP.
- The 5,000-tonne trigger point can be viewed as an impetus to consult with fishermen about the state of the stock and their catches, rather than triggering a close of the fishery.
- Currently relevant factors such as Sargassum, climate change, ocean acidification, changes in fishery focus to different species, and changes in fishing methods should appear in the ECFF-FMP.

Data Policy

Below are several outcomes from the participants' discussions of the draft data policy.

- There are numerous arrangements in development and created through past projects related to fisheries data collection and management.
- The data policy is a high-level policy, not a detailed plan.
- The data policy should link to the Caribbean Community Common Fisheries Policy.
- The data policy focuses on flyingfish as a pilot species and can be used as a model or expanded to address other fishery data policies in the future.
- CRFM will take on the role of compiling and analyzing flyingfish data from Eastern Caribbean countries.
- There needs to be consistency in data formats, collection timelines, minimum data requirements across countries, and an understanding of data confidentiality and intellectual property.
- Implementation of the data policy will focus on incremental progress, focusing on critical data collection in the near term on catch, landings, and vessel registration.
- There could be the need to create an incentive and consequence system for participation in data collection.
- Technologies such as smartphones and tablets could provide cost-effective and convenient options to improve data collection.

Data Collection Approaches and Minimum Requirements

Christopher Milley from Nexus presented a set of data collection recommendations for input. These included mandatory membership in fishers' organizations and the introduction of logbooks that fishers would fill out and submit at landing sites in exchange for a landings fee waiver. He recommended that fishers' organizations collect the logbooks and share aggregated data with fisheries divisions:

- Mandatory membership in fishers' organizations is not feasible without a high level of political intervention.
- Logbooks could be effective, though fishermen need to retain ownership over their personal data.
- Many fishers' organizations do not have adequate resources to manage and analyze fishermen's data.
- Cost recovery methods other than landings-based fees could be effective.
- Fisheries divisions could host annual events for fishermen where they share scientific findings. The events can incentivize fishermen to collect data.

- Fishers need a mandatory requirement to report catches. Alternatively, the incentive of receiving synthesized findings and participating in data analysis may provide sufficient incentive for fishermen to participate in data collection.
- E-logbooks are worth investigating as a convenient way for fishermen to collect and submit data.

Cooperation Agreement

Meeting participants came to several conclusions regarding the draft cooperation agreement, including the following.

- The cooperation agreement will address all major, shared living marine resources in the relevant geography.
- The cooperation agreement should mention sharing of information that would be useful for combatting illegal, unreported, and unregulated fishing. There could be complications discussing markets and marketing since this would necessitate review by other bodies, like from the central French government.
- Gaining political-level agreement within the timeframe of the CLME+ consultancies is infeasible; therefore, we will seek a more practical agreement at the technical level in the near term. CRFM and Martinique may pursue a political-level agreement in the future.
- The most effective approach will be to begin with a simple agreement that all parties can agree to.
- CRFM will sign the cooperation agreement on behalf of its member nations, through either the Secretariat or the Ministerial Council, depending on the level of the signatory representing Martinique.

Additional Stakeholder Consultations

The CRFM held additional stakeholder consultations during Blue Earth's Governance consultancy. These included a March CRFM Forum Meeting, a May 2019 regional consultation in Saint Lucia, and the Third Meeting of the CRFM Ministerial Sub-Committee on Flyingfish, in Basseterre, Saint Kitts and Nevis in June, during which participants reviewed and discussed the consultancy's draft Eastern Caribbean Flyingfish Fisheries Management Plan 2020 - 2025, Cooperation Agreement, and Data Policy.

Conclusions

The stakeholder engagement process for the Stress Reduction consultancy allowed the team to speak with fisheries department directors to ensure that the data we requested would be forthcoming. During the meetings the team met with fisheries division directors, data managers, extension workers, market operators, and fishers from Grenada and Barbados to collect and compile all available data and to determine fishery division perspectives on data gaps. Lastly, we met with Barbados fisheries department directors, University of the West Indies professors, and FAO staff to identify alternative sources of data and to discuss the general condition of data collection systems in the sub-region.

SUB-PROJECT AFTER-LIFE PLAN

BACKGROUND AND PURPOSE

This document provides an After-Life Plan for Blue Earth Consultants' (Blue Earth), a Division of Eastern Research Group, Inc. three consultancies under contract to the Caribbean Regional Fisheries Mechanism (CRFM). The consultancies constitute part of the flyingfish sub-project of the United Nations Development Programme (UNDP) / Global Environment Facility (GEF) funded project, *Catalyzing Implementation of the Strategic Action Programme for the Sustainable Management of shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems (CLME+ Project)*. Blue Earth's three consultancies are:

1. Technical Support to Enhance the Governance Arrangements for Implementing an Ecosystem Approach for Flyingfish Fisheries (Governance)
2. Technical Support to Facilitate Adaptive Management for Eastern Caribbean Flyingfish Fisheries (Adaptive Management)
3. Technical support on Implementation of Management / Stress Reduction Measures in the Eastern Caribbean Flyingfish Fishery (Stress Reduction)

The three primary outputs of Blue Earth's work are an updated Eastern Caribbean Flyingfish Fishery Management Plan (ECFF-FMP), a Sub-Regional Data Policy that outlines data collection priorities and considerations, and a Cooperation Agreement that establishes a framework for cooperation between the CRFM Member States and Martinique with respect to the management of major, shared living marine resources.

The purpose of this After-Life Plan is to provide the CRFM with a roadmap it can use at the conclusion of the CLME+ flyingfish sub-project to complete the policy cycle and management plan and to continue improving regional management of pelagic fisheries, including the flyingfish fishery. The CRFM and Member States involved in the CLME+ Project (Barbados, Dominica, Grenada, Saint Lucia, Saint Vincent and the Grenadines and Trinidad and Tobago) can use this plan to guide their ongoing flyingfish management efforts as they relate to the strategies described in the ECFF-FMP, Data Policy, and Cooperation Agreement. It provides guidance on the enabling conditions needed to move toward ecosystem-based flyingfish fisheries management; key activities for achieving those conditions; estimates of management activity costs; potential financing mechanisms to pursue; and a framework for monitoring, evaluation, and adaptive management.

UPDATED POLICY AND MANAGEMENT RECOMMENDATIONS

Several enabling conditions will need to be in place for Member States to complete the policy cycle as it relates to their implementation of the ECFF-FMP, Data Policy, and Cooperation Agreement beyond the timeframe of the CLME+ sub-project. Below, we discuss these enabling conditions and recommended key activities that flyingfish stakeholders can perform to create them.

Enabling Conditions for Completing the Policy Cycle and Management Plan

The vision for the flyingfish fishery, as stated in the 2014 ECFF-FMP, includes 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 to secure optimal benefits from those resources for the people and for the Caribbean region. To achieve this vision and implement the outputs created through the flyingfish sub-project, several enabling conditions will need to be in place. These enabling conditions represent the legal, financial, institutional, and management context required to implement the sub-project outputs and ecosystem-based flyingfish fishery management strategies. We

recommend that the CRFM and its Member States recognize and consider the importance of the following enabling conditions as they relate to the successful completion of the Eastern Caribbean flyingfish policy cycle and management plan. We have organized them by the broad themes of stakeholder involvement, political support, capacity-building, and communication.

Stakeholder Involvement

Stakeholder involvement will play an important role as the CRFM and its Member States continue their efforts to complete the flyingfish policy cycle and ECFF-FMP. The following enabling conditions, some of which are already in place, will facilitate these processes:

- **Strong fisherfolk organizations:** These groups are a critical bridge between fisheries division staff and fishers. Their involvement in fishery management, including data collection, monitoring, and sharing and receiving information related to decision-making reduces the management burden on national fisheries divisions. Fisherfolk organizations with strong operational and technical capacity can enhance stakeholder engagement.
- **Stakeholder champions:** Motivated and knowledgeable individuals from stakeholder groups can disseminate information, build buy-in, and provide a link between fisheries division staff and the greater flyingfish community. Identifying champions in each country and building relationships with them could greatly enhance stakeholder engagement in flyingfish management.
- **Involvement of non-traditional groups:** Chain of custody members, business and legal sectors, and local police can assist with activities such as socio-economic data collection. Involving these groups could alleviate some of the budget and staffing shortcomings that fisheries divisions around the region experience, as well as give managers access to a variety of different types of fishery-related information.

Political Support

The ability of CRFM and its Member States to complete the policy cycle and implement many aspects of the ECFF-FMP is dependent on political support – including from national environment ministries and international bodies – and adherence to the Western Central Atlantic Fishery Commission’s (WECAFC) recommendations and resolutions. The following enabling conditions will indicate the existence of this support:

- **Support for FMP implementation:** With general agreement on the ECFF-FMP in place, there is a need to focus management efforts to the national level where they are most needed. Support from regional management entities (CRFM, WECAFC, etc.) for country specific activities would help national fisheries divisions to use their limited resources on priorities that are consistent across the region. Availability of funds for such support would likely require some level of political support, such as if funding comes from the budget of a ministry or an international body, or if those bodies are responsible for developing grant proposals. Funds raised with new, sustainable financing mechanisms, described in the key activities section below, could be used to support this process.
- **Institutionalized cooperation with Martinique and, where appropriate, other non-CARICOM WECAFC Member Countries:** Guided by the Cooperation Agreement between the CRFM and France, the CRFM and technical leaders from Martinique will need to establish regular and open communication regarding major, shared living marine resources. Communication and sharing of data and information will be necessary for managing flyingfish stocks in a holistic regional manner, irrespective of national borders.
- **Endorsement of the Data Policy:** Endorsement of the Data Policy by the CRFM (representing each of the six CLME+ countries) represents one step toward implementing regionally harmonized data collection and management protocols. Endorsement at the political level would

represent even stronger support for this policy and could enable greater investment in implementing the plan.

Technical and Financial Capacity

ore, they require adequate training to carry out their duties. Some enabling conditions that will indicate improved capacity include the following:

- **Adequate capacity in fisheries divisions:** The fisheries divisions of all six CLME+ countries experience capacity limitations that effect their ability to manage the flyingfish fishery. Enhanced capacity through hiring, trainings, and / or financial resources would aid efforts to implement the ECFF-FMP, Data Policy, and Cooperation Agreement.
- **Adequate capacity in stakeholder groups:** The updated ECFF-FMP emphasizes the importance of co-management with fishers and other stakeholder groups, and the Data Policy relies on fishers to collect key data. Therefore, these groups will need information and trainings to fill their roles in flyingfish management. As they become knowledgeable and comfortable with their responsibilities, fishers, fisherfolk organizations, value chain members, and others will play increasingly important roles in management activities.
- **Financing mechanisms in place:** Additional financial resources will be necessary to implement many aspects of the ECFF-FMP, Data Policy, and Cooperation Agreement.

Communication and Cooperation

Another important ingredient that will aid the CFRM and its Member States' efforts to complete the policy cycle and construct harmonized regional flyingfish management activities will be strong communication. Below are some enabling conditions related to communications:

- **Willingness to cooperate at the technical and political levels:** Regional efforts to manage the flyingfish fishery at the technical and political levels hinge on mutual trust and the understanding that cooperation will lead to benefits for all parties. Willingness to cooperate and share information will be necessary for harmonized management across the sub-region.
- **Fishers' willingness to share information:** Accurate data collection depends on fishers' willingness to record and share their data with national fisheries divisions. Work is needed to increase fishers' trust of fisheries divisions and willingness to share complete and accurate data.
- **Two-way stakeholder engagement:** An institutionalized system is needed for sharing data between fishers/fisherfolk organizations, national fisheries divisions, and the CFRM. All parties should play roles in both collecting or compiling data and reviewing and commenting on synthesized fishery data and information. Established communication channels will build trust and mutual understanding of the state of the fishery.

Recommended Key Activities for Completing the Policy Cycle and Management Plan

The CFRM, regional technical level organizations, Member States, fisherfolk organizations, researchers, and flyingfish value chain members can perform key activities to create the enabling conditions necessary to complete the policy cycle and management plan. In this section, we present a list, in chronological order, of recommended key activities that, when completed, will create the enabling conditions needed to implement the ECFF-FMP, Cooperation Agreement, Data Policy, and data collection systems. Their timeframes refer to the number of months after approval of the After-Life Plan by the CFRM.

ECFF-FMP

The activities in Table 1 will help create the enabling conditions necessary for implementation of the updated ECFF-FMP.

Table 1: Activities to Enable ECFF-FMP Implementation

Perform needs assessments	Countries conduct legislative and capacity needs assessments, as appropriate, that identify the conditions needed to roll out management of the ECFF-FMP (or a national FMP addressing flyingfish).	Months 1 - 10
Implement capacity-building efforts	Fisheries divisions undertake capacity-building efforts for staff members, fishers, select fisherfolk organizations, and other stakeholder groups as needed to increase their abilities to participate in fishery management efforts.	Months 6 - 10 and periodically in the future
Implement stakeholder engagement	Fishers collect data and report regularly to fisheries divisions; fisherfolk organizations assist with data collection, compilation, and communications between fishers and fisheries divisions. CRFM and fishery divisions regularly share findings from data collection with fisherfolk organizations and fishers.	Ongoing beginning in month 10
Draft harmonized fisheries acts	Each participating country updates their existing fisheries acts to align with the ECFF-FMP and the model act amendments and regulations on vessel registration.	Months 6 - 21
Secure sustainable financing	CRFM/WECAFC Working Group on Flyingfish identifies and secures political support for at least one new revenue stream that supports flyingfish management	Months 1 - 12
	CRFM/WECAFC Working Group on Flyingfish establishes a pilot flyingfish management revenue stream(s)	Months 12 - 18
	Member States and the CRFM/WECAFC Working Group on Flyingfish scale up the management revenue mechanism(s)	Months 18 - 24
Develop implementation plans	Fishery managers create implementation plans that address their needs assessments and map the remaining steps needed to implement priority aspects of the ECFF-FMP (or a national FMP addressing flyingfish).	Months 12 - 18
Endorse management policy	The appropriate national body(ies) endorse fisheries acts and implementation plans.	Months 12-18

Cooperation Agreement

The activities in Table 2 will help the participating parties give effect to the Cooperation Agreement between the CRFM and Martinique:

Table 2: Activities that will Enable Cooperation Agreement Implementation

Sign Cooperation Agreement	Representatives from the CRFM and Martinique sign the Cooperation Agreement and consider whether endorsement at a higher political level is worth pursuing.	Months 1-4
Formalize fishery management coordination efforts	The CRFM, Martinique, and, where appropriate, other non-CARICOM WECAFC Member Countries coordinate their fishery management strategies, drawing from the framework provided by the Cooperation Agreement. This activity includes regular communication of their joint expectations for information sharing.	Ongoing, beginning upon endorsement of the agreement
Develop implementation plan	The CRFM and Martinique develop a more detailed plan for near-term priorities on research, data collection, and/or other aspects of coordinated management. If desired, parties also adopt more detailed rules and designate the appropriate entity(ies) responsible for implementing the agreement. The designated responsible entity(ies) determine a schedule for reviewing and revising priorities and direction, at a minimum every three years.	Months 6-10

Data Policy

The activities detailed in Table 3 will help flyingfish stakeholders implement the data policy.

Table 3: Activities that will Enable Data Policy Implementation

Create centralized database	The CRFM adopts and begins utilizing a specific software and database framework for compiling flyingfish fishery data from across the region.	Months 1 - 6
Draft data access and confidentiality procedures	CRFM leads a stepwise process outlining access privileges to fishery data; appropriate national body(ies) and the CRFM institutionalize the protocol and share its key points with stakeholders.	Months 4 - 8
Collect standardized and accurate data	Fisheries divisions and fishers collect and share accurate catch, effort, and vessel registration data in a timely manner. The CRFM produces regional information analysis with the data, allowing fishery managers to make informed decisions regarding the use of the Eastern Caribbean flyingfish resource.	Ongoing, beginning in month 8
Test electronic monitoring	Two test countries begin to electronically monitor fishing activities across the fleet and reduce the need for data collectors on the water and at landing sites.	Months 12 - 18
Implement the Castries	All Caribbean states update lists of authorized fishing vessels, vessels involved in IUU fishing, and standards for	Months 12 - 18

Declaration on IUU fishing	fishing vessel marking and identification in accordance with Recommendation WECAFC/17/2018/1 ¹ .	

Data Collection Systems

Flyingfish stakeholders will need to perform several activities, including those detailed in Table 4 to improve their flyingfish data collection systems.

Table 4: Activities that will Enable Development of Fishery Data Collection Systems

Develop regulatory instruments	The appropriate national body(ies) develop regulatory instruments requiring fishers, fisherfolk organizations, and value chain members to use logbooks and begin researching the feasibility of using electronic data collection tools including Electronic Catch Documentation and Traceability (eCDT) systems.	Months 1 - 6
Train fishers in data recording and management	Regional management bodies, universities, and capacity-building organizations offer trainings in data recording and management, such as the use of logbooks, or appropriate eCDT systems where / when available.	Months 4 - 18
Assess data reliability	Fisheries Divisions survey fishers, fisherfolk organizations, and value chain members determine consistency and completeness of data coverage and compilation. Develop tune-up trainings or other protocols needed based on the survey findings.	Months 12 - 24

ESTIMATES OF EASTERN CARIBBEAN FLYINGFISH MANAGEMENT ACTIVITY COSTS

The CRFM and its Member States' level of capacity to perform the key activities to create the enabling conditions for ECFF-FMP, Data Policy, and Cooperation Agreement implementation will depend on the amount of additional funding that they can secure. In this section, we present yearly estimates, based on best practices, of the management implementation costs for both the CRFM and its Member States involved in the CLME+ Project. The breakdown of these costs in US dollars (Table 5) corresponds to the key activities associated with ECFF-FMP, Cooperation Agreement, Data Policy, and data collection systems implementation that Blue Earth presented in Tables 1 - 4 above. Cost variations among Member States reflect each fisheries division's management capacity as identified in Blue Earth's ECFF-FMP Management Performance Evaluation report. We estimate the possible cost to fully implement the After-Life Plan to be \$810,000 / year for the CRFM and \$220,000 – \$275,000/year for each Member State. We estimate the possible implementation cost range to be \$500,000 – \$1,000,000 for the CRFM and \$150,000 – \$300,000 for Member States.

In Table 5, we first present activities and their costs that are not specifically associated with the ECFF-FMP, Cooperation Agreement, Data Policy, and data collection systems, but they are nonetheless inherent to ecosystem-based management strategies for flyingfish in the Eastern Caribbean. These include staffing, travel, and equipment costs. We estimate the total cost of this section to be \$335,000 for the CRFM and

¹ Western Central Atlantic Fishery Commission (WECAFC). (2017). Eight Session on the Scientific Advisory Board (SAG): Recommendations and resolutions to WECAFC 17 for SAG review. Food and Agriculture Organization of the United Nations, Rome, 30 pp.

between, \$75,000 – \$115,000 for Member States. We estimate that the activities to help create the enabling conditions necessary to implement the updated ECFF-FMP will cost the CRFM \$300,000 and Member States \$25,000. We estimate Cooperation Agreement coordination and implementation costs to be \$100,000 for the CRFM. We do not anticipate Cooperation Agreement coordination and implementation expenses for Member States. We estimate the Data Policy and data collection system implementation cost to be \$75,000 for the CRFM and between \$120,000 and \$135,000 for Member States.

Table 5: Estimates of Yearly Eastern Caribbean Flyingfish Fishery Management Costs in US Dollars for the Caribbean Regional Fisheries Mechanism and its Member States

<u>Costs</u>	<u>CRFM</u>	<u>Barbados</u>	<u>Dominica</u>	<u>Grenada</u>	<u>Saint Lucia</u>	<u>Saint Vincent and the Grenadines</u>	<u>Trinidad and Tobago</u>
Key activities							
Personnel	\$250,000	\$60,000	\$60,000	\$90,000	\$90,000	\$60,000	\$90,000
Travel	\$75,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Purchase equipment	\$10,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$15,000
Subtotal	\$335,000	\$75,000	\$75,000	\$105,000	\$105,000	\$75,000	\$115,000
ECFF-FMP							
Perform needs assessment; build capacity; develop implementation plan	\$200,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Engage local stakeholders		\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Secure sustainable financing	\$100,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Subtotal	\$300,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
Cooperation Agreement							
Coordination/implementation with France/Martinique	\$100,000						
Subtotal	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0
Data Policy/Collection Systems							
Create centralized database	\$25,000						
Collect/analyze/share data		\$90,000	\$90,000	\$90,000	\$90,000	\$90,000	\$90,000
Test electronic monitoring	\$50,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Train fishers in data recording		\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Register vessels		\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$25,000
Subtotal	\$75,000	\$120,000	\$120,000	\$120,000	\$120,000	\$120,000	\$135,000
Possible Estimated Annual Implementation Cost	\$810,000	\$220,000	\$220,000	\$250,000	\$250,000	\$220,000	\$275,000
<i>Possible Implementation Cost Range</i>	<i>\$500,000- \$1,000,000</i>	<i>\$150,000- \$300,000</i>	<i>\$150,000- \$300,000</i>	<i>\$150,000- \$300,000</i>	<i>\$150,000- \$300,000</i>	<i>\$150,000- \$300,000</i>	<i>\$150,000- \$300,000</i>

FINANCING MECHANISM AND FORMALIZING (CO-) FINANCING COMMITMENTS

Funding to support implementation of the ECFF-FMP and related documents, including the Data Policy and Cooperation Agreement, will be needed at both the national and international levels. Regional partnerships and national fisheries divisions can address omnipresent concerns over the availability of financial resources by developing new financing mechanisms. This funding can support activities outlined in the ECFF-FMP, Data Policy, and Cooperation Agreement, including data collection; monitoring,

control, and surveillance; equipment purchases; infrastructure improvements; hiring of additional staff; local stakeholder engagement and training; and more (Table 5). Though we provided some estimates above, the amounts of funding needed to support these activities per annum will need to be determined by individual Member States and communicated to the CRFM.

In the report “Financing Mechanisms for Eastern Caribbean Flyingfish Management”, produced by Blue Earth for the CLME+ flyingfish sub-project, we presented research findings and recommendations for the CRFM to consider regarding sustainable financing mechanisms for Eastern Caribbean flyingfish management (see Appendix A: Excerpt of Relevant Information from Report: Fishery Financing Mechanisms for more information). To arrive at these recommendations, we developed criteria for the selection of case study fisheries. These criteria included the following:

- a) **Adaptability:** Can the mechanism be adapted to suit the social, political, and economic context of Eastern Caribbean fisheries?
- b) **Geographical scope:** Is the mechanism geographically limited regarding its impact, activities, and implementation?
- c) **Governance:** Are the Eastern Caribbean Member States’ fisheries management structures capable of administering the mechanism, in a transparent manner?
- d) **Experience:** Do Member States have financing mechanism development experience and the financial resources available to implement it?
- e) **Performance:** At what level of funding and for how long can the mechanism potentially contribute to fisheries management initiatives in the Eastern Caribbean?
- f) **Allocation:** Can Member States allocate funding from the mechanism fairly among themselves? If not, do States agree with a disproportionate allocation scheme?

We then performed a rapid analysis of fisheries around the world and selected three to focus on as case studies (Philippines municipal fishery, South Pacific islands offshore tuna fisheries, North Pacific fishery). The information we obtained through research and interviews allowed us to map the flow of funds from source to deployment, describe successes and challenges encountered in implementing each of the mechanisms, and provide ideas of mechanisms that could also be effective in the Eastern Caribbean.

In the report, Blue Earth recommends several financing mechanisms for further due diligence by the CRFM and its Member States. One of these is a permit-based fee system that regulates and/or draws revenue from ocean-based resource extraction activities. Hotel, cruise ship, and departure taxes also offer an opportunity for governments, including fisheries divisions, to use country visitation fees to fund environmental protection and management activities. But potentially the most promising for Eastern Caribbean flyingfish is protected area user fees.

The Eastern Caribbean boasts a wealth of activities for tourists to engage in and places to enjoy, many of which are water-based and depend on a healthy natural environment. There could be opportunities to levy increased or additional fees on access and activities and use a portion of these to fund fisheries management activities like the methods used by the Philippines Municipal Fishery that we detailed in the report. This could occur on the local or national scale, such as through park access fees or fees assessed on activities like scuba diving or sport-fishing.

The mechanisms we present in our Fishery Financing Mechanisms report may vary among countries and will require further due diligence by the CRFM / WECAFC Working Group on Flyingfish and fisheries divisions to learn about the feasibility of implementing the mechanism and potential financial returns. Blue Earth recommends that the CRFM / WECAFC Working Group on Flyingfish researches the financing mechanisms that we shared in the report and others. At the same time, we suggest that the CRFM engage with leadership at the political level in each country as well as conversations with fisheries divisions and local stakeholders about fishery management costs and the need for managers and fishers to

identify management financing mechanisms. As leadership at the political level, managers and local stakeholders begin to understand the gap that exists between current management budgets and the real costs of applying ecosystem-based approaches to fishery management, the more likely they will be to support and buy-into the funding mechanism development process. Because these outreach activities will incur expenses of their own, we encourage the CRFM to approach potential private and public donor organizations that might be interested in supporting its efforts to identify, build political, management, and stakeholder will, and develop a pilot revenue stream.

After it secures donor funding to initiate this process, the CRFM, national focal points, and local stakeholders can take the following steps to assess the feasibility of developing funding mechanisms. We present the following steps using the protected area user fee mechanism as an example:

1. Perform a landscape analysis of existing protected areas in participating countries, noting those that have an existing entry fee system and their annual visitation levels; identify whether there are protected areas without existing fee structures that could provide a viable revenue stream.
2. Perform a willingness-to-pay study, or draw from existing studies in the region, to determine whether visitors would be willing to pay additional or increased fees for access to protected areas.
3. Determine a logical chain of custody of the flow of user fee funds from their initial collection point to their final use, based on existing legislative and political requirements; note whether there are points on the chain of custody that could result in leakage or reallocation of the funds to activities other than fishery management.
4. Develop and deliver a concise “pitch” to explain the need for the additional user fee to the appropriate political leaders; negotiate the fee level and implement specifics as needed.
5. The CRFM’s continued partnership with multi- and bi-lateral public and private large-scale environmental funders, in addition to its ongoing pursuit of GEF funding will ensure CLME+ project continuity. It is essential to identify and secure funding to continue planning and implement the FMP and After-Life Plan. A thoughtful and holistic approach to how any additional funding of this kind might complement existing projects and build on past work could increase the CRFM’s chances of obtaining support and the likelihood that the organization could use it in an efficient way.

MONITORING, EVALUATION, AND ADAPTIVE MANAGEMENT

A standardized tool is needed to facilitate CRFM’s ongoing assessment of implementation of the ECFF-FMP, Data Policy, and Cooperation Agreement. Blue Earth designed three impact assessment tools that CRFM can deploy to assess the extent to which the main objectives of the consultancies are being carried into the future. The impact assessment tools include a tool focused on assessing the Governance consultancy, a tool focused on assessing the Adaptive Management consultancy, and a general tool that addresses aspects that cross both consultancies. CRFM will need to draw from various sources of data and information to complete the impact assessments, which may include documents, data analysis, surveys, or stakeholder interviews. The CRFM could perform the impact assessments regularly following the consultancies’ completions, for example every 12 - 18 months.

ANNEX F: REPORT ON THE REVIEW OF FISHERIES OPERATIONS AND RELATED DATA COLLECTION SYSTEMS

REPORT ON THE REVIEW OF FISHERIES OPERATIONS AND RELATED DATA COLLECTION SYSTEMS AS WELL AS GENERAL NATIONAL DATA COLLECTION SYSTEMS IN (AT LEAST) 3 COUNTRIES

SECTION I: DOCUMENT OVERVIEW

Nexus Coastal Resource Management Ltd. produced the following report as part of Blue Earth Consultants, a Division of Eastern Research Group, Inc.'s *Technical support on Implementation of Management/Stress Reduction Measures in the Eastern Caribbean Flyingfish Fishery* (Stress Reduction) consultancy with the Caribbean Regional Fisheries Mechanism (CRFM). In the document, the consultant team provides a review of existing fisheries operations and related national data collection systems for CRFM and CRFM Member States to advance and enhance fishery data collection regarding the understanding and management of the Eastern Caribbean flyingfish fishery. In addition, we summarize the recommendations from our Assessment Methodology: Progress in Implementation of Recommended Data Collection Systems document on how to enhance future data collection systems. Our objective was to provide CRFM and fisheries division staff from Barbados, Grenada, and Trinidad & Tobago with a technical analysis of these countries' flyingfish fishery data collection systems. We were able to accomplish this through site visits, interviews, and general observations. Because all three countries' data collection systems and procedures are similar, we present our findings in general terms, though when appropriate we highlight country specific data collection activities and methodologies.

SECTION II: BACKGROUND

The fourwing flyingfish (*Hirundichthys affinis*) fishery has historically been the most important small pelagic fishery in the southern Lesser Antilles. Across the region, flyingfish fisheries include directed commercial and artisanal fisheries as well as bait fisheries. The socioeconomic significance of the flyingfish fishery varies among the countries in the region. Flyingfish is targeted by fishers in Barbados, Dominica, Grenada, Martinique (France), Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago for local consumption, bait, and limited export. In the case of Barbados, flyingfish is a culturally important species. An estimated 6,000 people are involved in the flyingfish fishery, and fisher landings typically account for nearly two-thirds of the country's total annual harvest. While still an important fishery in other Eastern Caribbean countries, flyingfish is less economically and culturally important outside of Barbados. As a result, the region's fisheries divisions place varying levels of effort on fishery data collection activities. As a result, fisheries division staff manage the fishery in the absence of proper and reliable assessments.

In recent years, fishermen have noted fluctuations in flyingfish abundance, reduced catch, and the presence of different flyingfish species, which could be due in part to influxes of Sargassum seaweed. Several regional technical level organizations e.g., Caribbean Regional Fisheries Mechanism (CRFM), Organization of Eastern Caribbean States (OECS), Western Central Atlantic Fishery Commission (WECAFC) work with fisheries divisions to advise on the management of the fishery.

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

Accessible, dependable, and timely data are essential for fisheries management. Fisheries management is based on stock assessments which require the following data streams: catch volumes of directed and bycatch species, spatial data, temporal data, fisheries gear type, level of effort.

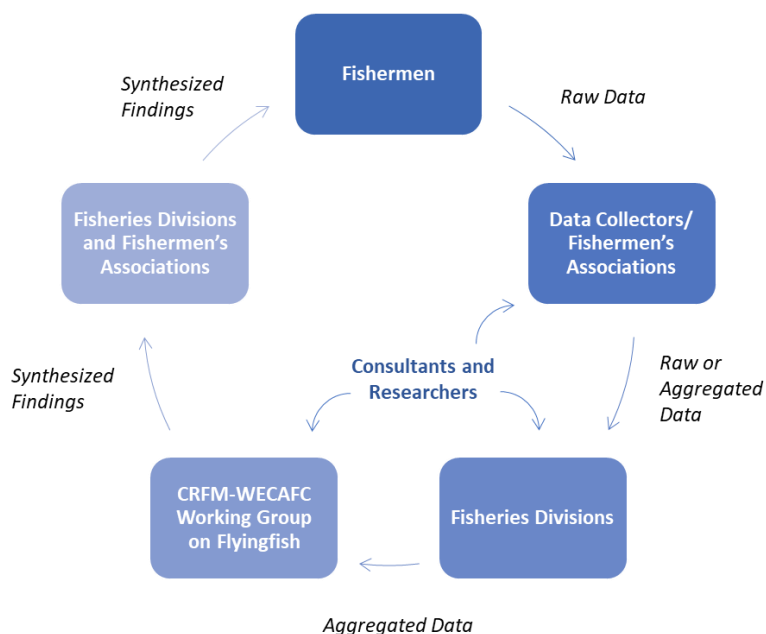


Figure 1: Flyingfish Fishery Data Collection and Sharing (from ERG, Draft Sub-Regional Data Policy for Eastern Caribbean Flyingfish)

The draft Sub-Regional Data Policy for Eastern Caribbean Flyingfish notes that raw data collected and compiled from local fishers is the foundation for national and regional assessments (see Figure 1). Therefore, it is essential that Member State data collection systems be robust, thorough and consistent. Additionally, it is important that the region's data collection system be affordable and able to withstand changes in national fiscal conditions. For these reasons, we conducted the following review of Member States' data collection procedures.

SECTION III: REVIEW OF EXISTING DATA COLLECTION SYSTEMS

In the following section, we provide an overview of the consultant team's meeting facilitation and data collection survey application activities and the existing data collection systems that exist in three Member States: Barbados, Grenada, and Trinidad and Tobago. In all selected Member States, government employed data collectors record landings data at designated landing sites. They then provide this data, in summary form, to the data manager within their fisheries division.

Review Process and Meeting Facilitation

The ERG-NEXUS team prepared comprehensive interview guides for use in collecting information from fishery managers, researchers, market staff, consumers, and fishers involved in Member State flyingfish fisheries (Appendix A). The consultant team sent these guides, in the form of survey questionnaires, to Member States' fishery divisions for their use in collecting information on various aspects of the fishery, particularly the data collection process.

On 10 – 26 October 2017, using the questionnaires as guides, the consultant team conducted semi-structured data collection system interviews with fisheries division directors, senior staff (data managers) and extensions officers / field staff in Grenada (5 interviews), Trinidad and Tobago (4 interviews), and Barbados (6 interviews). The team also interviewed market managers (3 interviews), academic researchers (2 interviews: CERMES and Department of Economics) and a Food and Agriculture Organization of the United Nations (FAO) representative (1 interview). The purpose of these interviews was to collect information on the structure and organization of data collection systems and to determine trends in data collection at the local and national levels. All interviews were confidential in that the specific individual comments and the identity of persons interviewed were not revealed by the consultant team. This is in keeping with research protocols and standards adopted by the team and ensured that the interviewees could candidly respond to our questions.

The team subsequently spoke with fisheries department directors on 15 - 18 April 2018 during the Montserrat Forum meeting to ensure that the data we requested would be forthcoming. On 28 July - 11 August 2018 the team met with fisheries division directors, data managers, extension workers, market operators, and fishers from Grenada and Barbados to collect and compile all available data and to determine fishery division perspectives on data gaps. Lastly, we met with Barbados fisheries department directors, University of the West Indies professors, and FAO staff from 1 – 3 October 2018 to identify alternative sources of data and to discuss the general condition of data collection systems in the sub-region.

The team conducted all interviews and discussions in the interviewees' normal places of work. These environments included government offices, landing sites, and markets. This ensured a relaxed interview and enabled the interviewees to access information that supported their responses. At the time of the interviews, and wherever available, we collected examples of data collection sheets and ones with compiled data for use in other CLME+ flyingfish fishery management projects. We discuss the matter of data quality and completeness in greater detail in our Flyingfish Fishery Vessel Census Report and Assessment Methodology: Progress in Implementation of Recommended Data Collection Systems reports.

Member State Flyingfish Data Collection

Fisheries division staff collect landing data for all species at designated markets. They also collect some effort (number of vessels that regularly berth and fish from the site) and value chain data (prices) at these sites. Most Member State fisheries divisions maintain national registries of fishing vessels. These

registries contain information on vessel type, size, construction material, owner, and principle landing site. However, fisheries division staff do not verify the registries to determine redundancies (vessels no longer active in the fishery, or vessels that may have been entered more than once in the system due to changes in name or ownership). Additionally, the registries do not provide any information on recreational vessels which may be incidentally involved with fish harvesting. Furthermore, staff collects little or no data about the types / amount of fishing gear used by fishers, fishing activity location, or the time it took fishers to catch the fish they are landing at the market.

Fisheries division staff collect data in the three selected countries to determine landing fees and catch value. They record this data on paper forms and provide summaries on a weekly basis. They then submit summary sheets, along with the daily forms, to the fishery data manager. In a time-consuming and labor-intensive process, fisheries division staff compile the data into an electronic format (Excel spreadsheets in Grenada and Trinidad and Tobago and Microsoft Access in Barbados). Staff do not consistently record landing data at all market sites due in part to budget constraints and competing data collection priorities.

Errors occur when staff transcribe daily landings data from paper sheets onto weekly summary sheets (e.g., transposed numbers, missed data entries), leading to incomplete data sets. Staff commit similar errors when transcribing data sheets into electronic storage systems. Entire data sheets may be discarded by fisheries division staff if they are illegible (due to poor penmanship or wet / damaged paper copies).

During our discussions with data collectors, we learned that some perceive data collection as a matter of maintaining records for fiscal priorities (for example, determination of landing / market fees, fuel subsidy, and earnings), and in some instances there is little due-diligence by staff to maintain data accuracy for assessment and fishery management planning purposes. Some interviewees suggested market staff may be inadequately trained to accurately collect and handle the data, leading to a lack of appreciation on their part of the importance of data on catch, landings, vessels, amount/type of gear, location, and fishing duration. Furthermore, fisher organizations participate on a limited basis in the data collection process.

Data Storage

As noted above, fisheries division staff store data electronically, but because of the time-consuming process they undertake, there is often a backlog of data for them to enter. While we did not find evidence that this is a significant problem, inattention to detail and ultimately data entry errors are more likely to occur when staff rush to catch up with their work. We also observed that Member States use different software to store data which reduces the potential for data harmonization between fisheries divisions. By using Access, fishery managers in Barbados are more able to query their data base and analyze and assess trends than staff in Grenada and Trinidad & Tobago who use Excel. While Excel data can be converted to Access for compilation and analysis at the regional scale, use of different data units, and different data structures undermines the process,

Data Analysis

While each of the Member State fisheries divisions possess staff who are academically and professionally qualified to conduct analysis of stock trends and stock assessment, their limited budgets mean that they are tasked with broad responsibilities and are unable to focus on these analysis activities. As a result, third party consultants and researchers undertake much of this work, often times collecting additional data not recorded by the government. Furthermore, their work is for academic or project purposes and does not always reflect fisheries divisions' management responsibilities or intentions. Consideration should be given to having research "ethics approval systems" which require researchers who access local fisher's knowledge and fisheries data to harmonize research work with Member States' fisheries management priorities.

SECTION IV: SUMMARY OF RECOMMENDATIONS FOR DATA COLLECTION SYSTEMS

Below we present a list of general recommendations that are consistent with the ones we included for Member States involved with the Eastern Caribbean Flyingfish fishery in our Recommendations for Data Collection Systems report. We developed these recommendations to help fisheries divisions across the sub-region construct more robust and effective data management systems. We understand that each Member State has specific informational needs and data collection capacities that reflect their national priorities. Furthermore, each Member State's flyingfish fishery has organizational systems that reflect local tradition and experience. As a result, the following recommendations may require greater attention by managers in some Member States, and less attention by managers in others.

Capacity Building

Government

The consultant team recommends that fisheries managers in each Member State review their individual fisheries division's technical and human capacity to undertake data collection on a regular basis and manage data in an organized system. Each fisheries division should employ a data manager who is proficient in statistical analysis and support staff capable of assuming data collection responsibilities as this will ensure a transitional plan for consistent data management into the future.

Industry

We recommended that fisher organization members be a fundamental unit for data collection, and fisheries division staff should make efforts to train them in record keeping and use of appropriate technologies.

Technology

Logbooks

As a foundational system for record keeping, we recommended that Member States enact legislation requiring all fishers to keep detailed government issued logbooks of their catch, landings, and other relevant information. Member States should also consider exempting fishers from landing fees who complete and present their standardized logbooks at landing site to fisheries division staff, and/or exempt fishers from registration fees when they have completed logbooks for the preceding year.

Electronic Monitoring (vessel / dockside)

Electronic video monitoring, both on vessels and dockside, is an emerging industry that is improving managers' capacities to collect and store data, and the consultant team recommends that fisheries divisions consult with fisher organizations to assess cost-effective electronic monitoring systems for potential use in their countries' fisheries. Subject to the results of the assessment, fisheries divisions should develop a strategy to fund, acquire, and deploy an electronic monitoring system. Due to fiscal limitations and scale of the fishery, electronic monitoring systems should be simple, cost effective and specific to the data needs of the fisheries managers.

Some electronic monitoring systems incorporate cameras, sensors and tags (hydraulic, rotation, radio-frequency identification (RFID) tags, etc.) to monitor and collect data on fisheries. Managers can use the systems to collect or verify data on fisher catch of target; bycatch; and endangered, threatened, and protected species. These tools can also determine the length, size and sex of certain species. Electronic

video monitoring can also be used by managers to monitor fishery activity, enforce regulations, and to collect various types of oceanographic data, including pH, temperature, and salinity.

Purchase slips

Buyers should be responsible for providing fishers with purchase slips that clearly indicate the date, time, and the quantity of fish that they purchased. Buyers should then submit copies of these purchase slips to fisheries divisions.

Data Content

Types of data

Fishery managers should identify the types of data, including the units of measure, they need to make educated management decisions. They should then devise a strategy to collect and analyze this information. Overburdening fishers with data forms that are complex can undermine their use of logbooks and/or electronic monitoring systems. Therefore, we recommended that flyingfish fishery managers collect, at a minimum, the data types we provide in Table 1.

Table 1: Fishery Data Requirements

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

Format

Regardless of the systems managers use to collect data at the fisher level (i.e. logbooks, or electronic monitoring systems), they must compile it in a standardized format, and we recommend they compile and store their data in Microsoft Access. This software is commonly available, relatively inexpensive, and user training is readily available. Manager use of a common storage platform for data collected through standardized reporting systems (i.e. logbooks) will ensure data consistency across Member States' systems.

Compilation

Wherever possible, fisher organizations can greatly reduce data compilation costs. Therefore, the consultant team recommends that fisher organizations compile data wherever reasonable and possible.

Accordingly, we recommend that fisheries divisions, with the assistance of the CRFM, provide fisher organizations with the appropriate training they need to perform these activities.

Storage, Access, and Sharing

Fisheries divisions should store raw data within secure computer systems that can only be accessed by authorize staff members (data managers and technicians). We recommend they keep hard copy (paper) data collection sheets / logbooks in a secure file storage area for a minimum of five years. They should treat individual fishers' data as confidential and only share it with third parties in aggregated units in accordance with national data sharing protocols.

Appendix A: Interview Guides

The following questions will be used to guide interviews and conduct field meetings and surveys. These questions may be augmented by open discussions with interviewees.

Interview guide – Harvesters

Background

1. Are you the vessel owner?
 - a) If not, are you directly employed by the vessel owner?
 - b) If not, do you lease the vessel from the owner?
2. Tell me about your business and how it works.
 - a) When does your flying fish season start and end?
 - b) How many days per week do you fish?
 - c) How many hours per day? From when to when?
 - d) Who decides when the season starts / ends?
 - e) How much do you typically catch in a day?
 - i) Most?
 - ii) Least?
 - f) How do you catch flyingfish?
 - g) Where do you fish?
3. Are you required to have a license to fish?
 - a) If no, is the vessel owner required to have a license?
 - b) If yes, can you explain how you get licensed?
4. Is your vessel registered?
 - a) If yes, is the vessel registered by vessel owner? Or the Operator?
 - b) Can you explain how you get the vessel registered?
5. Are you aware of any standards for quality that must be met for fish landings?
 - a) Who sets these standards? (Government, Buyers, Markets, etc.)
 - b) Who monitors/enforces these standards?
 - c) Are there any challenges in meeting these standards?
6. In your opinion, what is the primary objective for fishing? (Commercial sale of catch, bait, personal / family consumption, etc.)
7. What dictates what you catch?
 - a) Nature / opportunity?
 - b) Buyers / customers?
 - c) How does that work?
8. What are the major challenges in harvesting flyingfish?
9. In your opinion, is the fishery doing well?
 - a) Have you seen changes in the fishery over the past few years?
 - b) What were these changes?
 - c) Do you think more research needs to be done to determine the health of the fishery?

Finance

1. How much does it cost to enter the fishery?
2. Did you need to borrow / save money to start up?
 - a) Continue operations?
3. Where do you go when you need money for your business?
4. Do you get credit from equipment / materials suppliers?

- a) What are the terms?
5. Do you get financing from your buyers?
 - a) What are the terms?
6. Do you have need for additional financing at the moment?
 - a) What would it be used for?
7. What sources (formal or informal) have you approached for loans, and what have been the key problems?

Livelihood

1. What % of your income comes from fishing for flyingfish?
2. Does flyingfish provide you with enough work annually to make a living?
 - a) Do you need to supplement your flyingfish harvesting income with other species / work?
 - b) What do you do?
3. Is fishing for flyingfish a worthwhile way to make money?
 - a) What do people in your community think of flyingfish harvesting?
4. Would you say the income you receive from the flyingfish fishery is enough to cover your basic needs / expenses?
 - a) Does it allow you to do all the things you need / want to do?
 - b) Are you or your household at risk of not being able to make ends meet if there was a downturn in the flyingfish fishery?
5. What would happen to your ability to make ends meet if you were unable to catch flyingfish?
 - a) Resource disappeared.
 - b) Equipment lost broken.
6. Do you like your job?
 - a) What do you like most / least?
 - b) Is there anything you'd rather be doing?

Reporting Requirements

1. What are the regulatory requirements in harvesting flyingfish?
 - a) Licensing?
 - b) Reporting / Logbooks?
 - i) What data do you collect?
 - ii) How do you keep track of information about your catch?
 1. Size
 2. Number
 3. Weight
 4. Income
 5. Expenses
 6. Taxes
 7. Location of catch
 - iii) Are you monitored by regulators?
 1. If yes, where? (Dockside, at sea?)
 - c) Is there a minimum training requirement?
 - i) Have you been formally trained?

Marketing

1. What happens when get back to the dock / beach?
 - a) Who buys your fish? (Large firms, small firms, wholesalers, exporters, retailers, direct to consumers, etc.)?
 - b) What percentage goes to each?
 - c) How much do you sell your fish for (per kilo)?
 - d) Who decides the price?
 - e) How much does price change from day to day, week to week, month to month?
2. Describe the relationships you have with the people who buy your fish (who determines what to catch, product specifications, prices, and amount purchased?).
 - a) What are buyers looking for (quality, size, volume)?
 - b) How much control / influence do you have?
3. Do you promote and market your fish?
 - a) How?
4. Who are your major competitors?
5. Do the fish you catch have to meet any standards or certification requirements?
 - a) Quality?
 - b) Food safety?
6. Are there external (non-market) pressures on how you work / sell / fish?
 - a) Government
 - b) International

Data Collection & Monitoring

1. What is your opinion about reporting:
 - a) Location of fishing?
 - b) Landings?
 - c) Catch / Bycatch?
 - d) Income?
2. In your opinion what data should be collected that is not already being collected?
 - a) Who should collect this data? (Fisheries staff, buyers, market managers, fishermen, etc.)
 - b) Where? (Landing sites, onboard logbooks, etc.)
 - c) How should this data be used?
3. What is your opinion on vessel registration?
 - a) Should vessels be registered?
 - b) Should vessels be inspected?
4. Should fishermen be licensed?
 - a) What should the conditions of a license be?

Interview Guide – Buyers / Processors

Background

1. Can you explain your business and how it works?
 - a) What species do you process?
 - b) What percentage of your total throughput is flyingfish?
 - i) By volume or price?
2. How do you procure flyingfish?
 - a) Who do you buy from?
3. How much influence / control do you have over what species are harvested / sold?
4. How much do you buy each year?
5. How much do you pay per lbs / kg?
 - a) Who sets the price?
 - b) How much does price vary?
 - i) By day / week / month / season?
6. How much do you sell flyingfish for per kilo?
 - a) To whom?
 - b) Who decides the price?
7. What is your gross margin on flyingfish products?
8. Describe the relationships you have with the people who buy your fish (who determines what to catch, product specifications, prices, and amount purchased?).
 - a) What are buyers looking for (quality, size, volume)?
 - b) How much control do you have?
9. Who do you ship processed product to?
 - a) Where?
 - b) How much?
 - c) How?
10. How do you promote and market your fish?
11. How strong is the market for your products/services right now?
 - a) Next year?
 - b) How have things changed over last year / 5 years / 10 years?
 - c) What trends do you see?
12. Who are your major competitors?
13. How has industry changed over the past 10 years?
 - a) More / fewer processors?
 - b) Consolidation?
 - c) More / less money to be made?
14. How much money do you make in a year from flyingfish alone?
 - a) How much do you keep / profit after all costs are accounted for?
 - b) How does this compare to living costs / other jobs?
15. What are the major challenges in processing flyingfish?
16. How could the fishery / processing be improved?
17. Do you process flyingfish to consume yourself?
 - a) How much?
 - b) How often?

Input Supply

1. Do you own any fishing vessels?
2. What equipment / supplies do you purchase in order to process?

- a) Who supplies them?
- b) Boat
 - i) Cost?
- c) Machinery / equipment
 - i) Cost?
- 3. What are your total operating costs per year?
 - a) Gross profit?
- 4. Do you have problems sourcing certain equipment or materials?
 - a) What materials / equipment?
 - b) What's the problem?
- 5. Is the current equipment or materials an impediment to growth?
 - a) How?
 - b) What kind of equipment or machinery could improve your business?
 - c) What are your major needs / gaps / challenges in materials / equipment?
- 6. How could flyingfish processing be improved?

Reporting Requirements

- 1. What regulatory requirements govern processing flyingfish?
 - a) License
 - b) Reporting
 - c) What data is collected?
 - d) How do you keep track of information about your catch?
 - i) Size
 - ii) Number
 - iii) Weight
 - iv) Income
 - v) Expenses
 - vi) Taxes
 - vii) Location of purchase
 - e) Monitoring
 - f) Training
 - i) Have you been formally trained?
 - ii) Do you offer formal training to employees?
- 2. Do the fish you process and sell have to meet any standards or certification requirements?
 - a) Quality?
 - b) Food safety?
- 3. Who sets these standards and requirements?
- 4. Does anyone help you to conform to these standards and requirements?
 - a) Does anyone enforce them?
- 5. Are there any challenges in this area?
- 6. External pressures on how you work / sell / fish?
 - a) Government
 - b) International

Product Development

- 1. What other species do you process / sell?
 - a) What percentage does each product represent in terms of your gross revenue?
- 2. Has there been anything done to improve flyingfish products over the years?
 - a) Quality programs?

- b) Is there anything that could / should be done?

Workforce

1. How big is your workforce?
 - a) Is it fulltime?
 - b) Seasonal?
 - c) Demand-driven?
2. How are they paid?
 - a) Daily?
 - b) Hourly?
 - c) Percentage?
 - d) Piecemeal?
 - e) Any incentives, extra benefits?
3. Are people generally willing and available to work?
 - a) How do you find / hire them?
4. Do you or does anyone else provide training?
5. What is your biggest challenge when it comes to hiring / retaining labour?
 - a) Availability
 - b) Cost
 - c) Reliability
 - d) Skill level
 - e) Other

Finance

1. How much does it cost to enter the industry?
2. Did you need to borrow / save money to start up?
 - a) Continue operations?
3. Where do you go when you need money for your business?
4. Do you get credit from equipment / materials suppliers?
 - a) What are the terms?
5. Do you have need for additional financing at the moment?
 - a) What would it be used for?
6. What sources (formal or informal) have you approached for loans, and what have been the key problems?

Livelihood

1. What % of your income comes from processing and selling flyingfish?
2. Does processing flyingfish provide you with enough working days per year to make a living?
 - a) Do you need to supplement your flyingfish processing income with other species / work?
 - b) What do you do?
3. Is processing flyingfish a worthwhile way to make money?
 - a) What do people in your community think of flyingfish processing?
4. Would you say the income you receive from the flyingfish fishery is enough to cover your basic needs / expenses?
 - a) Does it allow you to do all the things you need / want to do?
 - b) Are you or your household at risk of not being able to make ends meet if there was a downturn in the flyingfish fishery?
5. What would happen to your ability to make ends meet if you were unable to process flyingfish?

- a) Resource disappeared.
- b) Equipment lost broken.
- 6. Do you like your job / industry?
 - a) What do you like most / least?
 - b) Is there anything you'd rather be doing?

Data Collection & Monitoring

- 1. What is your opinion about reporting:
 - a) Location of fishing?
 - b) Landings?
 - c) Catch / Bycatch?
 - d) Income?
- 2. In your opinion what data should be collected that is not already being collected?
 - a) Who should collect this data? (Fisheries staff, buyers, market managers, fishermen, etc.)
 - b) Where? (Landing sites, onboard logbooks, etc.)
 - c) How should this data be used?
- 3. What is your opinion on vessel registration?
 - a) Should vessels be registered?
 - b) Should vessels be inspected?
- 4. Should fishermen be licensed?
 - a) What should the conditions of a license be?

Interview Guide – Administrators / Managers

Background

1. How does the flyingfish fishery work?
 - a) When does the season start and end?
 - b) How many days per week do people fish?
 - c) How many hours per day? From when to when?
 - d) Who decides when the season starts / ends?
 - e) How much is typically catch in a day / month / year?
 - i) Most?
 - ii) Least?
 - f) Where does the fishery take place?
2. What dictates what is caught?
 - a) Nature / opportunity
 - b) Buyers / customers
 - c) How does that work?
3. Describe the value chain from dockside to retail.
 - a) To whom are fish sold and how? (Large firms, small firms, wholesalers, exporters, retailers, direct to consumers, etc.)?
 - b) What percentage goes to each?
 - c) How much do fish currently sell for (per kilo)?
 - d) Who decides the price?
 - e) How much does price change from day to day, week to week, month to month?
 - f) Where do fish go once bought?
 - i) Processing?
 - ii) Direct to retail?
 - iii) Other?
4. What are buyers looking for (quality, size, volume)?
 - a) How much control do harvesters have?
5. Are fish promoted and marketed?
 - a) How?
6. How strong is the market for flyingfish right now?
 - a) How have things changed over last year / 5 years / 10 years?
 - b) What trends do you see?
 - c) Next year?
7. Who are the major competitors?
 - a) Species
 - b) Other food products
 - c) Other countries
8. What is the scale of the flyingfish industry?
 - a) Volume
 - b) Value
 - c) Profit after all costs are accounted for?
 - d) How does this compare to other industries?
 - e) Food fishery.
9. How could the fishery be improved?

Reporting Requirements

1. What regulatory requirements govern flyingfish?
 - a) License
 - b) Reporting
 - c) What data is collected?
 - d) How do you keep track of information about your catch?
 - i) Size
 - ii) Number
 - iii) Weight
 - iv) Income
 - v) Expenses
 - vi) Taxes
 - vii) Location of purchase
 - e) Monitoring
 - f) Training
 - i) Have you been formally trained?
 - ii) Do you offer formal training to employees?
2. Do the fish landed, processed and sold have to meet any standards or certification requirements?
 - a) Quality?
 - b) Food safety?
3. Who sets these standards and requirements?
4. Does anyone help people in the industry conform to these standards and requirements?
 - a) Does anyone enforce them?
5. Are there any challenges in this area?
6. External pressures on how people work / sell / fish?
 - a) Government
 - b) International

State of the Fishery

1. How many people work in fisheries?
 - a) Number of total harvesters
 - b) Number of flyingfish harvesters
 - c) Processing
 - d) Retail
 - e) Fisheries total
2. How are workers in the fishery paid?
 - a) Hourly, daily, share of catch
 - b) How much?
3. Are people generally willing and available to work in the flyingfish fishery?
4. Does anyone provide training in the fishery?
5. What is the biggest challenge when it comes to hiring / retaining labour for the flyingfish fishery?
 - a) Availability
 - b) Cost
 - c) Reliability
 - d) Skill level
 - e) Other

Finance

1. How much does it cost to enter the fishery?
2. Do harvesters / processors usually need to borrow / save money to start up?
 - a) Continue operations?
3. Where do harvesters / processors go when they need money?
4. Do they get credit from equipment / materials suppliers?
 - a) What are the terms?
5. Do they get financing from buyers?
 - a) What are the terms?
6. What are the main sources (formal or informal) for loans, and what have been the key problems?

Livelihood

1. How much do harvesters / workers in flyingfish fishery make per year?
2. What % of their income comes from harvesting and selling flyingfish?
3. Does harvesting flyingfish provide them with enough working days per year to make a living?
 - a) Do they need to supplement flyingfish income with other species / work?
 - b) What do they do?
4. Is catching / processing flyingfish a worthwhile way to make money?
 - a) What do people in the community think of flyingfish fishermen / processors?
5. Is the income they receive from the flyingfish fishery is enough to cover basic needs / expenses?
 - a) Are households at risk of not being able to make ends meet if there was a downturn in the flyingfish fishery?
6. What would happen to their ability to make ends meet if they were unable to fish flyingfish?
 - a) Resource disappeared.
 - b) Equipment lost.
7. Do they generally like their job?
 - a) What do they like most / least?

Data

1. Do you have information available on the current (2017) number of:
 - a) Harvesters / enterprises.
 - b) Vessels.
 - c) Annual landings (volume and value).
 - d) Buyers / brokers.
 - e) Processors / facilities.
 - i) Annual throughput.
 - ii) Annual sales.
 - iii) Employment.
2. If data is not available what steps do you think should be taken to collect data for:
 - a) Location of fishing?
 - b) Landings?
 - c) Catch / Bycatch?
 - d) Income?
3. In your opinion what data should be collected that is not already being collected?
 - a) Who should collect this data? (Fisheries staff, buyers, market managers, fishermen, etc.)
 - b) Where? (Landing sites, onboard logbooks, etc.)
 - c) How should this data be used?
4. What is your opinion on vessel registration?

- a) Should vessels be registered?
- b) Should vessels be inspected?
- 5. Should fishermen be licensed?
- a) What should the conditions of a license be?

Research and Monitoring

- 1. What equipment / supplies are required to monitor the fishery
 - a) Bait
 - i) What used?
 - ii) Price?
 - iii) From whom?
 - b) Boat
 - i) Cost?
 - c) Fuel
 - i) Cost?
 - d) Specialized Equipment
 - e) Total / major cost?
 - f) Make / catch own?
- 2. Are there problems sourcing certain equipment or materials?
 - a) What materials / equipment?
 - b) What's the problem?
- 3. Is the current equipment or materials an impediment to effective research and monitoring?
 - a) How?
 - b) What kind of equipment or machinery could improve the fishery / industry?
 - i) Harvest Monitoring
 - ii) Market Monitoring
 - iii) Environmental Monitoring
 - c) What are the major needs / gaps / challenges in materials / equipment?

Licensing Systems Survey Instrument

Licensing: Opinion Survey			
1 Do you currently hold any fishing Licenses?			
	Yes		
	No		
2 If Yes, For which species			
3 Are there conditions to these licenses?			
	Yes		
	No		
4 What are these conditions?			
5 If no to #2, What is your opinion on Licenses for flying fish harvesting?			
a. Are you in favour of licensing the flyingfish fishery (Y or N)?			
	for commercial harvesting		
	for bait harvesting		
	for personal use		
	Why?		
b. Are you opposed to licensing the flyingfish fishery (Y or N)?			
	for commercial Harvesting		
	for bait harvesting		
	for personal use		
	Why?		

Vessel Information									
Vessel Name				Identification Number					
				Registration Number (if any)					
Overall Length				Net Tonnage/Weight			Gross Tonnage/Weight		
Year Built		Year of Last Hull Maintenance			Hull Material				
Engine Make		Engine Type			Horsepower				
		Gas							
		Diesel							
Vessel Purchase Value									
est. Current Value									

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

<u>Vessel Use</u>				
Primary Use:		Fishing	<input type="text"/>	
		Recreation	<input type="text"/>	
		Tourism	<input type="text"/>	
		Transportation	<input type="text"/>	
		Cargo	<input type="text"/>	
Species Fished:		Gear type		
Average # days used per month				
		Jan	<input type="text"/>	
		Feb	<input type="text"/>	
		Mar	<input type="text"/>	
		Apr	<input type="text"/>	
		May	<input type="text"/>	
		Jun	<input type="text"/>	
		Jul	<input type="text"/>	
		Aug	<input type="text"/>	
		Sep	<input type="text"/>	
		Oct	<input type="text"/>	
		Nov	<input type="text"/>	
		Dec	<input type="text"/>	

Gender Specific Questions:

- 1. What are the traditional male roles in the fishery? [Select all that apply]**
 - a) Manage
 - b) Catch Fish
 - c) Transporting Fish
 - d) Sell
 - e) Process
 - f) Market
 - g) Supply Fishing Gear / Ice
 - h) Boat Building / Maintenance
 - i) Other (specify): _____

- 2. What are the traditional female roles in the fishery? [Select all that apply]**
 - a) Manage
 - b) Catch Fish
 - c) Transporting Fish
 - d) Sell
 - e) Process
 - f) Market
 - g) Supply Fishing Gear / Ice
 - h) Boat Building / Maintenance
 - i) Other (specify): _____

- 3. What do men own related to the fishery? [Select all that apply]**
 - a) Fishing Gear
 - b) Boats
 - c) Processing Space / Equipment
 - d) Trucks or other transport equipment
 - e) Market / Storage Space
 - f) Retail Facilities
 - g) Restaurant / Food Stands
 - h) Other (specify): _____

- 4. What do women own related to the fishery?**
 - a) Fishing Gear
 - b) Boats
 - c) Processing Space / Equipment
 - d) Trucks or other transport equipment
 - e) Market / Storage Space
 - f) Retail Facilities
 - g) Restaurant / Food Stands
 - h) Other (specify): _____

- 5. Who makes the decisions in each of the following categories? [Select all that apply]**
 - a) Regulatory Management
 - i) Men
 - ii) Women
 - iii) Both
 - b) Business Management
 - i) Men

- ii) Women
 - iii) Both
- c) Where to fish
 - i) Men
 - ii) Women
 - iii) Both
- d) When to fish
 - i) Men
 - ii) Women
 - iii) Both
- e) Initial sale of the catch
 - i) Men
 - ii) Women
 - iii) Both
- f) Processing the fish
 - i) Men
 - ii) Women
 - iii) Both
- g) Marketing the fish (Vendors and Processors)
 - i) Men
 - ii) Women
 - iii) Both

6. How are the decisions made in each of these categories? [Select all that apply]

- a) Regulatory Management
 - i) Individually
 - ii) As a family
 - iii) As a group / committee
 - iv) By the Government
- b) Business Management
 - i) Individually
 - ii) As a family
 - iii) As a group / committee
 - iv) By the Government
- c) Where to fish
 - i) Individually
 - ii) As a family
 - iii) As a group / committee
 - iv) By the Government
- d) When to fish
 - i) Individually
 - ii) As a family
 - iii) As a group / committee
 - iv) By the Government
- e) Initial sale of the catch
 - i) Individually
 - ii) As a family
 - iii) As a group / committee
 - iv) By the Government
- f) Processing the fish
 - i) Individually
 - ii) As a family

- iii) As a group / committee
- iv) By the Government
- g) Marketing the fish (Vendors and Processors)
 - i) Individually
 - ii) As a family
 - iii) As a group / committee
 - iv) By the Government

7. Who makes decisions on how revenue is used from the following? [Select all that apply]

- a) Initial sale of the catch
 - i) Men
 - ii) Women
 - iii) Both
- b) Processing the fish
 - i) Men
 - ii) Women
 - iii) Both
- c) Marketing the fish (Vendors and Processors)
 - i) Men
 - ii) Women
 - iii) Both

What are the primary uses of the revenue?

8. Who are the benefits the most from these decisions? [Select all that apply]

- a) Regulatory Management
 - i) Men
 - ii) Women
 - iii) Both
- b) Business Management
 - i) Men
 - ii) Women
 - iii) Both
- c) Where to fish
 - i) Men
 - ii) Women
 - iii) Both
- d) When to fish
 - i) Men
 - ii) Women
 - iii) Both
- e) Initial sale of the catch
 - i) Men
 - ii) Women
 - iii) Both
- f) Processing the fish

- i) Men
 - ii) Women
 - iii) Both
- g) Marketing the fish (Vendors and Processors)
 - i) Men
 - ii) Women
 - iii) Both

9. In your opinion, are current fishery policies / regulations:

- a) Gender blind
- b) Gender aware
- c) Gender neutral

Comment (if any):

10. Do you think the roles men and women in the fishery are changing, remaining constant but need to change or remaining constant without need to change, in each of the following:

- a) Regulatory Management
 - i) Changing
 - ii) Remaining constant but need to change
 - iii) Remaining constant without need to change
- b) Business Management
 - i) Changing
 - ii) Remaining constant but need to change
 - iii) Remaining constant without need to change
- c) Where to fish
 - i) Changing
 - ii) Remaining constant but need to change
 - iii) Remaining constant without need to change
- d) When to fish
 - i) Changing
 - ii) Remaining constant but need to change
 - iii) Remaining constant without need to change
- e) Initial sale of the catch
 - i) Changing
 - ii) Remaining constant but need to change
 - iii) Remaining constant without need to change
- f) Processing the fish
 - i) Changing
 - ii) Remaining constant but need to change
 - iii) Remaining constant without need to change

- g) Marketing the fish (Vendors and Processors)
 - i) Changing
 - ii) Remaining constant but need to change
 - iii) Remaining constant without need to change

Comment (if any):

- 11. What opportunities exist or should exist to increase gender diversity (the inclusion of both men and women) in the fishery?**

Comment:

- 12. What opportunities exist or should exist to increase gender equity (no barriers, equal opportunity and equal benefits for both men and women) in the access to and control of the fishery?**

Comment:

- 13. What steps or actions should be taken to ensure gender equity (no barrier, equal opportunity and equal benefits for both men and women) in benefiting from the fishery?**

Comment:

ANNEX G: REPORTS OF STAKEHOLDER CONSULTATIONS

FINAL REPORT OF MEETINGS AT THE NATIONAL LEVEL FOR AWARENESS-BUILDING AND DISCUSSIONS ON ISSUES RELATED TO ECOSYSTEMS BASED MANAGEMENT OF FLYINGFISH

1. Introduction

The purpose of this report is to provide the Caribbean Regional Fisheries Mechanism (CRFM), its member states, and Martinique with a summary of the national level meetings that Blue Earth Consultants (Blue Earth), a Division of Eastern Research Group, Inc., the CRFM, and national focal points (national fisheries division staff) supported. These meetings built awareness for ecosystem-based management strategies for flyingfish in the Eastern Caribbean and allowed local stakeholders, including flyingfish vendors, boat owners, fishers, fisherfolk organizations, and cooperatives that participated in these meetings, to recommend revisions to the Eastern Caribbean Flyingfish Fishery Management Plan (ECFF-FMP). We divided the report into six sections. In section two we introduce Blue Earth's three consultancies under contract to the CRFM and provide background information about these projects. In section three we summarize the regional and national awareness building tools and approach that Blue Earth and the CRFM developed and implemented, and we identify which local flyingfish stakeholders our materials targeted. In section four we explain the national meetings' key outcomes and the challenges that national focal points experienced during the national awareness building process. In section five we present key outcomes from the regional meeting that regional technical level organizations, national focal points, and local stakeholders attended. Finally, in section six we offer our recommendations and conclusions on awareness building for issues related to flyingfish management in the Eastern Caribbean.

2. Consultation Background

This document provides a summary of national flyingfish consultative processes regarding Eastern Caribbean flyingfish management. Blue Earth developed the consultative strategy that contributed initial information to our evaluation of implementation of the ECFF-FMP, an updated ECFF-FMP, a Sub-Regional Data Policy that outlines data collection priorities and considerations, and a Cooperation Agreement that establishes a framework for cooperation between the CRFM Member States and Martinique with respect to the management of major, shared living marine resources.

The work is part of the United Nations Development Programme / Global Environment Facility (UNDP / GEF) funded project, *Catalysing Implementation of the Strategic Action Programme for the Sustainable Management of Shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems* (CLME+). The cooperation framework development efforts comprise portions of Blue Earth's three consultancies under contract to the CRFM. These consultancies are:

1. Technical Support to Enhance the Governance Arrangements for Implementing an Ecosystem Approach for Flyingfish Fisheries (Governance)
2. Technical Support to Facilitate Adaptive Management for Eastern Caribbean Flyingfish Fisheries (Adaptive Management)
3. Technical support on Implementation of Management/Stress Reduction Measures in the Eastern Caribbean Flyingfish Fishery (Stress Reduction)

3. Summary of Regional and National Awareness Building Tools

Throughout 2017 and much of 2018, Blue Earth organized an awareness building and consultative process with national focal points in each of the six CLME+ Eastern Caribbean countries (Barbados, Dominica, Grenada, Saint Lucia, Saint Vincent and the Grenadines, and Trinidad and Tobago) to encourage local stakeholders' input into the evaluation of the existing ECFF-FMP, the updated version of the ECFF-FMP, Data Policy, and Cooperation Agreement drafting process. We began this process by

administering an online survey to national focal points in each country. The survey's questions reexamined the 2016 CRFM ECFF-FMP implementation evaluation and provided useful information used by Blue Earth and the CRFM to draft the updated ECFF-FMP, Data Policy, and Cooperation Agreement. Additionally, we developed an interview guide (Appendix A) that followed up on the online survey and gained more information related to the implementation evaluation. Blue Earth performed a total of 14 phone interviews with 15 people, representing national fisheries divisions in all six countries as well as individuals with expertise at the regional level.

Represented Local Stakeholders

This awareness building process, spearheaded by Blue Earth and the CFRM, included two national meetings and one regional meeting. National focal points invited the following local stakeholders to the national meetings:

- Flyingfish vendors
- Flyingfish boat owners and fishers
- Fisherfolk organizations and cooperatives
- Non-governmental organizations

Below are the objectives and materials and methods developed by Blue Earth and the CRFM for the national meeting based consultative process.

Objectives

The meetings objectives were as follows:

1. Convene local stakeholders and national focal points with expertise related to the region's flyingfish fishery and other living marine resources
2. Share draft documents related to flyingfish fishery management, including recommendations for updating the Eastern Caribbean fishery management plan (ECFF-FMP), a sub-regional Data Policy conceptual proposal, and a Cooperation Agreement
3. Gather local stakeholder input on draft documents to inform revisions and prepare documents for regional endorsement

Materials and Methods

We created the following flyingfish fishery local stakeholder meeting facilitation templates to help national focal points lead awareness building and consultative meetings to gain feedback on the documents:

Meeting agendas: Guidance to share the meeting goals and topics with local stakeholders with country-specific flyingfish expertise (Appendix B).

Facilitation plans: A more detailed guide for national focal points to use while leading consultative meetings, including key discussion questions (Appendix C).

Note-taking templates: A template in which national focal points recorded input from the meeting discussions; national focal points shared the notes with Blue Earth following the meetings (Appendix D).

The Blue Earth team held calls with at least one fisheries division staff member in each of the six ECFF-FMP participating countries to walk through these meeting facilitation materials and answer their questions.

4. Key Outcomes: National Meetings

National focal points used the materials to stage, facilitate, and document workshops in Dominica (May 9, 2018) and Saint Lucia (May 25, 2018). This section details the key outcomes from these two awareness building meetings facilitated by national fisheries division staff.

Key Outcomes: Dominica

At the 9 May 2018 meeting in Dominica led by staff members from Dominica's Fisheries Division, local stakeholders generally agreed with the information presented in the Cooperation Agreement draft, the recommendations for updating the ECFF-FMP, and the sub-regional Data Policy draft. In certain instances, however, they felt that the latter two documents could be strengthened with more country-specific information.

ECFF-FMP Update Recommendations

Local stakeholders discussed the following recommendations regarding the ECFF-FMP update:

- Dominica could adopt the ECFF-FMP, though it may be useful to also prepare a national FMP that captures unique local issues.
- Managers should keep local stakeholders apprised of the ECFF-FMP's progress and roll-out strategy at the regional and national levels and allow local stakeholders to play a central role in these activities.
- Certain ECFF-FMP aspects currently not in place in Dominica may need to be rolled out incrementally, including logbooks and a licensing scheme.
- Fish aggregating device impacts on the flyingfish fishery need research so we can better address them.
- Managers should look at the trigger point more closely as more data, including on flyingfish captured for bait, become available.
- Fisherfolk groups and cooperatives should be involved in adaptive management activities.

Sub-Regional Data Policy

Outcomes from the participants' discussion on the draft Data Policy included the following:

- Dominica would require a policy or Memorandum of Understanding before it could share data.
- The Data Policy's most useful aspects are fisher data collection and data sharing.
- The following types of data (and frequency of collection) are needed to support fishery decision making in Dominica:
 - Catch and effort (daily)
 - Social (annually)
 - Economic (price of fish sold should be collected at least monthly, trip costs daily)
 - Seasonality (annually)
 - Weather and seas (daily)
 - High priority issues in Dominica related to the policy include data sharing (access rights), ownership, and usage.

Cooperation Agreement

The discussion surrounding the draft Cooperation Agreement included the following points:

- Most aspects of the Cooperation Agreement are useful.
- Participants did not propose any refinements to the agreement.

- The agreement should be endorsed by the CRFM and the Organization of Eastern Caribbean States.

Key Outcomes: Saint Lucia

At the 25 May 2018 meeting in Saint Lucia led by staff members from Saint Lucia's Department of Fisheries, participants generally agreed with the draft recommendations for updating the ECFF-FMP and with the information presented in the draft sub-regional Data Policy and Cooperation Agreement. Additionally, they provided input summarized below.

ECFF-FMP Update Recommendations

Local stakeholders suggested the following:

- Present the document in a more user-friendly way (e.g., text boxes with key points at the beginning of each section, tables that highlight priority information).
- Address management gaps by merging the sub-regional flyingfish management plan with Saint Lucia's national plan where appropriate.
- Rank the management measures in order of importance.
- Add the need to research species that feed on or are otherwise part of the flyingfish food web to determine how an increase or decrease in their abundance will impact the flyingfish population.
- Include sustainable flyingfish harvesting methods and mention the need to determine flyingfish habitats and spawning grounds.
- Add a description of how flyingfish research will be financed.
- Use language clearly stating that all local stakeholders will be involved in flyingfish governance activities.
- Define obtainable measuring and monitoring objectives.

Sub-Regional Data Policy

Meeting participants discussed and / or suggested the following:

- Based on this draft, Saint Lucia would support the outlined agreements.
- The data generated by the policy's research activities should be interpreted into useful information that flyingfish managers can utilize.
- The policy's most useful aspect is its data management and sharing approach.
- Environmental data – including about sargassum, factors impacting flyingfish abundance, and costs of operation – are needed to support fishery decision-making.
- The policy should include high-priority protocols that include data ownership and access rights.
- The policy should define the entity responsible for enforcing it.

Cooperation Agreement

- Local flyingfish stakeholders stated and/or recommended the following:
- Saint Lucia would support the draft agreement.
- The Chairman of the CRFM Ministerial Council should endorse the agreement on behalf of CRFM Member countries.
- Knowledge transfer between local stakeholders and training in sustainable fishing techniques for entry-level fishers should be a component of the agreement.
- The dispute settlement process needs to be clarified.

Challenges to National Awareness Building

Two of the six countries (Dominica and Saint Lucia) held stakeholder meetings. As a result, consultants involved in the CLME+ flyingfish projects, which include Blue Earth, Nexus Coastal Resource Management, and the Caribbean Natural Resources Institute (CANARI), experienced challenges obtaining and compiling national focal points' and local stakeholders' updated ECFF-FMP recommendations. For this reason, Blue Earth, Nexus, CANARI, and the CRFM determined that the most effective way to gather input from all countries would be to hold a special two-day regional meeting in Barbados of the CRFM-Western and Central Atlantic Fisheries Council (WECAFC) Working Group on Flyingfish for national focal points, local stakeholders, and regional technical organizations to attend.

The following regional technical level organizations, in addition to national focal points and local stakeholders, participated in the regional meeting:

- Caribbean Regional Fisheries Mechanism (CRFM)
- Organization of Eastern Caribbean States (OECS)
- Institut français de recherche pour l'exploitation de la mer (IFREMER)
- University of the West Indies (UWI)
- Western Central Atlantic Fishery Commission (WECAFC)
- Food and Agriculture Organization of the United Nations (FAO)
- Caribbean Natural Resources Institute (CANARI)
- United Nations Development Programme (UNDP)

This meeting complimented the national awareness building and consultative process. Blue Earth developed the meeting's first draft agenda (Appendix E), facilitation plan (Appendix F), and facilitated select sessions.

5. Key Outcomes: Special Meeting of the CRFM-WECAFC Working Group on Flyingfish

Below is a summary of the outcomes from the two-day Special Meeting of the Joint CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean for regional technical level organizations, national focal points, and local stakeholders held in Barbados on 01 - 02 October 2018.

Desired Meeting Outcomes

Going into the meeting, the outcomes included the following:

- A compilation of all deliverables and outputs of the six consultancies
- Analysis of the relationship between planned outputs and Member States' needs and capacities
- Comments and suggestions on the deliverables and outputs to facilitate updating of the ECFF-FMP
- Considerations and suggestions concerning institutional and incentive structures and responsibilities of governments and local stakeholders for bringing the ECFF-FMP into implementation in the region, including identification of constraints and recommendations.

Discussion Outcomes

Below is a summary of the main points gathered through discussion of each of the primary meeting topics.

- Capacity Availability and Needs
- Themes that came out of the meeting discussions of fisheries management capacity and needs in the region included the following.

- Many national fisheries divisions lack human and technical capacity to implement the ECFF-FMP.
- Fisherfolk organizations hold potential for supporting both fisheries divisions and fishermen, but they require training and capacity development to meet their potential.
- There is a need for more two-way information sharing with fishermen, including sharing rationales for why certain regulations are in place and engaging fishermen in information analysis and dissemination.
- A mechanism such as National Intersectoral Committees (NICs) / Fishery Advisory Committees (FACs) – or another appropriate fishery advisory entity – is needed to enhance engagement of experts and fishermen in decision-making. Membership in these groups needs careful consideration to ensure all local stakeholders are represented.

ECFF-FMP

Below are several outcomes of the participants' discussions about the draft updated ECFF-FMP.

- There are currently many gaps in understanding of flyingfish ecological and fishery dynamics; filling these gaps will be a critical priority for implementing the ECFF-FMP.
- The existing draft ECFF-FMP is highly technical; to make it more accessible to all local stakeholders, it could either be re-written to be more straightforward or could come with an accompanying summary in plain language.
- There is a need for a strategy, or implementation plan, for how to deploy the ECFF-FMP at the national level and integrate it with existing national FMPs.
- There is a need to emphasize the roles of fishermen, fisherfolk organizations, and NICs / FACs (or other appropriate fisheries advisory bodies) in the ECFF-FMP.
- The 5,000-tonne trigger point can be viewed as an impetus to consult with fishermen about the state of the stock and their catches, rather than triggering a close of the fishery.
- Relevant factors such as sargassum, climate change, ocean acidification, changes in fishery focus to different species, and changes in fishing methods should appear in the ECFF-FMP.

Data Policy

Below are several outcomes from the participants' discussions of the draft Data Policy.

- There are numerous arrangements in development and created through past projects related to fisheries data collection and management.
- The Data Policy is a high-level policy, not a detailed plan.
- The Data Policy should link to the Caribbean Community Common Fisheries Policy.
- The Data Policy focuses on flyingfish as a pilot species and can be used as a model or expanded to address other fishery data policies in the future.
- CRFM will take on the role of compiling and analyzing flyingfish data from Eastern Caribbean countries.
- There needs to be consistency in data formats, collection timelines, minimum data requirements across countries, and an understanding of data confidentiality and intellectual property.
- Implementation of the Data Policy will focus on incremental progress, focusing on critical data collection in the near term on catch, landings, and vessel registration.
- There could be the need to create an incentive and consequence system for participation in data collection.
- Technologies such as smartphones and tablets could provide cost-effective and convenient options to improve data collection.

Data Collection Approaches and Minimum Requirements

Christopher Milley from Nexus presented a set of data collection recommendations for input. These included mandatory membership in fisherfolk organizations and the introduction of logbooks that fishers would fill out and submit at landing sites in exchange for a landings fee waiver. He recommended that fisherfolk organizations collect the logbooks and share aggregated data with fisheries divisions.

- Mandatory membership in fisherfolk organizations is not feasible without a high level of political intervention.
- Logbooks could be effective, though fishermen need to retain ownership over their personal data.
- Many fisherfolk organizations do not have adequate resources to manage and analyze fishermen's data.
- Cost recovery methods other than landings-based fees could be effective.
- Fisheries divisions could host annual events for fishermen where they share scientific findings. The events can incentivize fishermen to collect data.
- Fishers need a mandatory requirement to report catches. Alternatively, the incentive of receiving synthesized findings and participating in data analysis may provide sufficient incentive for fishermen to participate in data collection.
- E-logbooks are worth investigating as a convenient way for fishermen to collect and submit data.

Cooperation Agreement

- Meeting participants came to several conclusions regarding the draft Cooperation Agreement, including the following.
- The Cooperation Agreement will address all major, shared living marine resources in the relevant geography.
- The Cooperation Agreement should mention sharing of information that would be useful for combatting illegal, unreported, and unregulated fishing. There could be complications discussing markets and marketing since this would necessitate review by other bodies, like from the central French government.
- Gaining political-level agreement within the timeframe of the CLME+ consultancies is infeasible; therefore, we will seek a more practical agreement at the technical level in the near term. CRFM and Martinique may pursue a political-level agreement in the future.
- The most effective approach will be to begin with a simple agreement that all parties can agree to.
- CRFM will sign the Cooperation Agreement on behalf of its member nations, through either the Secretariat or the Ministerial Council, depending on the level of the signatory representing Martinique.

6. Recommendations and Conclusions

Blue Earth's and the CRFM's work to build local stakeholder support for the updated ECFF-FMP included several opportunities for national focal points and local stakeholders to provide their input and comments. We began the work in the first half of 2017 by distributing our first round of draft updated ECFF-FMP recommendations for review by national focal points in six countries. Following this process, Blue Earth distributed an online survey soliciting feedback from national focal points on the existing ECFF-FMP. We synthesized our findings of the ECFF-FMP online survey and comments on the draft recommendations and then began coordinating a consultative process with CRFM and national focal points. This work resulted in the Dominica, Saint Lucia, and Barbados meetings, allowing Blue Earth and the CRFM to gain additional feedback from local stakeholders and technical guidance from national focal points and regional technical level organizations on the draft updated ECFF-FMP. We then used the input from these meetings to develop an updated draft final version of the document for further review. After a

final round of feedback via written comments in February 2019, Blue Earth will finalize the document for consideration by CRFM Member States during the Forum meeting in March 2019. The following recommendations are designed to help the CRFM and its member states continue to strengthen local stakeholder awareness of and support for ecosystem-based management strategies for flyingfish in the Eastern Caribbean.

- **Increase two-way information sharing between national focal points and local stakeholders:** Fisheries division staff prioritize outreach and engagement with fishers and other local stakeholders and explain ECFF-FMP updates and why certain regulations are in place, as well as share and disseminate data analysis results. Engagement and sharing information will improve professional relationships between these groups. Additionally, increased willingness on the part of fishers and other local stakeholders to share accurate data with national focal points will improve fisheries divisions' overall knowledge of the fishery and lead to scientific based management decisions in the future.
- **Continue to identify and develop national focal points:** Identification of champion national focal points encourages information dissemination, buy-in, and creates a link between regional technical level organizations and local stakeholders. The CRFM's continued engagement of national focal points and a greater emphasis on capacity building activities will help with updated ECFF-FMP implementation by the project's countries.
- **Increase national focal points' capacities and financial resources:** The CRFM and its regional technical level organization partners can address concerns over national fisheries divisions' human resource deficiencies by providing capacity building opportunities to national focal points that improve their abilities to prioritize and streamline fisheries outreach. It is crucial that the CRFM and its regional technical level partners secure funding for this work. Blue Earth has described possible financing mechanisms for fisheries management in our "Financing Mechanisms for Eastern Caribbean Flyingfish Management" and "Sub-Project After-Life Plan" reports.
- **Continue to hold regional flyingfish stakeholder meetings:** The formal, structured, regional meeting where Blue Earth was able to be present and facilitate certain sessions proved the most useful technique for gaining ECFF-FMP input. Similar events should be staged at strategic intervals in the future to ensure continued information sharing and stakeholder engagement.
- **Reengage underrepresented local stakeholders:** Not all relevant local stakeholders, such as fisheries scientists, lawyers, and value chain representatives, were engaged in early discussions leading to the development of the ECFF-FMP, and their participation in the updated ECFF-FMP development process remains low. Fishery managers should identify key members of these and other underrepresented local stakeholders, create and provide incentives, and solicit their involvement in flyingfish management activities.
- **Support participation of local stakeholders including fisherfolk organizations in ECFF-FMP implementation strategies:** Local stakeholders, and more specifically fisherfolk organizations, hold great potential to support fisheries divisions' flyingfish management efforts. Key fisherfolk organizations, with the proper training, can support vessel or fishing license recording and data collection activities. Other groups such as chain of custody members, the business and legal sectors, and local police can also take a stronger role in flyingfish management. This strategy could alleviate some of the budget and staffing shortcomings that fishery divisions around the region are experiencing.

This guidance; strong local stakeholder support; and the use of recently developed policy, information, and cooperation frameworks will help managers prioritize activities, allocate their limited resources, build political will, and gain buy-in to implement Eastern Caribbean flyingfish management activities.

ANNEX H: REPORTS OF NATIONAL CENSUSES OF FLYINGFISH FISHING VESSELS (INCLUDING LIST OF REGISTERED FISHING VESSELS)

This Annex is published separately as part of CRFM Fishery Report – 2019 / 02.

ANNEX I: MODEL FISHERIES (AMENDMENT) ACT

This Annex is published separately as CRFM Special Publication No. 28

ANNEX J: LIST OF AUTHORIZED FLYINGFISH VESSELS

This annex is published separately as part of CRFM Fishery Report – 2019 / 02.

**ANNEX K: REPORTS OF EVALUATIONS OF THE
PROCESSES OF IMPLEMENTATION OF THE
RECOMMENDATIONS FOR NATIONAL-LEVEL
MANAGEMENT AND IMPROVEMENTS IN NATIONAL
DATA COLLECTION SYSTEMS**

EVALUATION OF THE PROCESS OF IMPLEMENTATION OF THE RECOMMENDATIONS FOR NATIONAL-LEVEL MANAGEMENT AND IMPROVEMENTS IN NATIONAL DATA COLLECTION SYSTEMS

Section I: Document Overview

Nexus Coastal Resource Management Ltd. produced the following report as part of Blue Earth Consultants, a Division of Eastern Research Group, Inc's. *Technical support on Implementation of Management/Stress Reduction Measures in the Eastern Caribbean Flyingfish Fishery* (Stress Reduction) consultancy with the Caribbean Regional Fisheries Mechanism (CRFM). In the document, the Consultant Team provides an overview of assessment methodologies to determine CRFM Member States' level of implementation of recommendations for the enhancement of data collection systems related to the Eastern Caribbean flyingfish fishery. Our objective was to evaluate the data collection progress made by fisheries division staff from Barbados, Grenada, and Trinidad and Tobago. Because of fisheries divisions' budget constraints and the consultancy's 24-month duration, managers were not able to make significant flyingfish fishery data collection improvements. However, this report, and others that we have produced for the Stress Reduction consultancy, serves as a guide that managers can use to improve their data collection systems and harmonize them with those from other Member States in the Eastern Caribbean.

Furthermore, the Consultant Team understands that Member States' Fisheries Divisions are experiencing budgetary limitations due to the vagaries and condition of the global economy and the need to address uncertainties caused by climate change impacts. As a result, States may be unable to provide the fiscal resources necessary for implementation of recommendations, including evaluation of the extent to which they are making changes to their data collection processes.

Section II: Background

The fourwing flyingfish (*Hirundichthys affinis*) fishery has historically been the most important small pelagic fishery in the southern Lesser Antilles. Across the region, flyingfish fisheries include directed commercial and artisanal fisheries as well as bait fisheries.

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

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

The Eastern Caribbean Flyingfish Fishery Management Plan (ECFF-FMP) is the guiding fishery management document and recommends that managers improve and harmonize data collection systems and analysis in the sub-region. The type, amount, and accuracy of flyingfish fishery data that Member

States collect varies. Because of this, there is a need among these nations to harmonize their data collection and data sharing abilities to more effectively manage this shared resource.

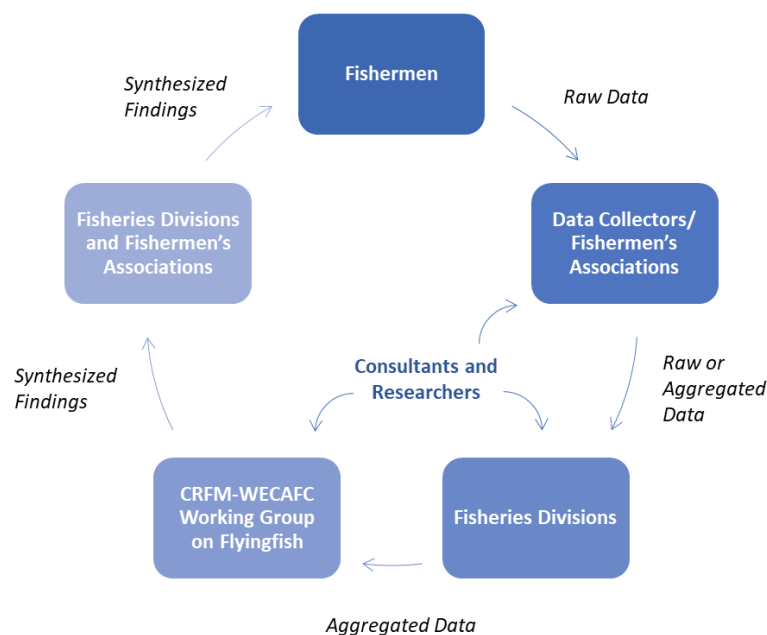


Figure 1: Flyingfish Fishery Data Collection and Sharing (from ERG, Draft Sub-Regional Data Policy for Eastern Caribbean Flyingfish)

Accessible, dependable, and timely data are essential for fisheries management. Fisheries management is based on stock assessments which require the following data streams: catch volumes of directed and bycatch species, spatial data, temporal data, fisheries gear type, level of effort.

The draft Sub-Regional Data Policy for Eastern Caribbean Flyingfish notes that raw data collected and compiled from local fishers is the foundation for national and regional assessments (see Figure 1). Therefore, it is essential that Member State data collection systems be robust, thorough and consistent. Additionally, it is important that the region's data collection system be affordable and able to withstand changes in national fiscal conditions. For these reasons, we conducted the following review of Member States' data collection procedures.

Section III: Key Recommendations Summary

In the following section, we provide a summary of the data collection related recommendations that we presented in the *Review of Fisheries Operations and Related Data Collection Systems* report.

Capacity Building

Government

- Review current capacity within each Member State's fisheries division.
- Fisheries divisions should have a staff member (and support staff) who has proficiency in statistical analysis oversee data collection and management (Data Manager).

Industry

- Member States should use fisher organization members as data collectors.

- Member States should provide record keeping and technology use trainings to members of fisher organizations.

Technology

Logbooks

- Member States should enact legislation requiring all fishers to keep detailed logbooks of their catch, landings, and other relevant information.
- Member States may consider exempting fishers from landing fees when they present completed logbooks.

Electronic Monitoring (vessel / dockside)

- Member States should consider integrating new technologies into data collection systems.
- Member States should undertake an assessment of available and cost-effective electronic monitoring systems for use within the fishery.
- Member States should determine how to acquire and deploy appropriate electronic monitoring systems.

Purchase slips

- Member States should require buyers to provide purchase slips to fishers that indicate date, time, and the quantity of fish that they purchased.
- Member States should require buyers to submit purchase slips to fisheries divisions.

Data Content

Types of data

- Member States should determine the types of data, including the units of measure, managers need to make educated management decisions.
- Member States should harmonize data collection activities for the Eastern Caribbean flyingfish fishery across the region.

Format

- All Member States should compile national fishery data in Microsoft Access.

Compilation

- Member States should provide, or support, data compilation training for fisher organizations.
- Member States should request and/or make mandatory fisher organization data collection participation.

Storage, Access and Sharing

- Member States should have secure computer systems capable of storing raw data supplied by fisher organizations or fisheries divisions.
- Member States should take measures to protect and treat fishers' data as confidential.
- Member States should store hard copy (paper) data collection sheets/logbooks in designated and secure file storage areas for a minimum of five years.
- Member States should develop national data protocols that determine the way compiled and aggregated data will be shared with third party users (academia, other users), including research ethic protocols regarding access to and use of fishers' data and local knowledge.

Section IV: Methodology for tracking data collection progress

The Consultant Team understands that Member States' Fisheries Divisions are experiencing budgetary limitations due to the condition of the global economy, and the need to address uncertainties caused by climate change impacts. As a result, States may be unable to provide the fiscal resources necessary for implementation of all or many recommendations for data enhancement, including their evaluation of the extent to which they are making data collection process changes. Accordingly, the Consultant Team offers cost effective measures for consideration by Member States. Ideally, Member States will use multiple measures to enhance and verify improvements to the data collection process, though we understand that there may be a political necessity to limit expenditures. For this reason, States should strive to attain the maximum benefits that data enhancement and evaluation offer within the confines of their limited fiscal resources.

The first step that fishery managers can take to improve the effectiveness of their data management systems is to select appropriate and fishery specific performance indicators. This step involves managers' critical analysis of the data systems gaps, and their determination of the consistency of the systems to provide the information necessary to assess if the overall fishery management objectives are being achieved. The data system performance indicators must also address specific Member States' flyingfish fishing activities, including commercial harvesting, harvesting for bait, and mixed-use harvesting.

There are several avenues of enquiry that fisheries divisions can take to conduct annual reviews of implementation measures to enhance data collection systems. These include the following:

1. Has there been development and implementation of regulatory instruments requiring the use of fisher logbooks or appropriate electronic data collection tools?
2. Has there been an adoption of regulatory instruments that ensure the requirements for, and role of, fishers' organizations in fishery management?
3. Are there fishers' organizations representatives from all communities and / or landing sites?
4. Are all of these representatives registered members of a fishers' organization?
5. Have the data collection instruments (logbooks, data cards, apps etc.) been made available to all fishers?
6. Have there been focused governance and data management training courses provided to all fishers' organizations?
7. Has there been training in data recording, such as use of logbooks or appropriate electronic data collection tools, provided to all fishers?

Proper manager assessment of the implementation of recommendations must also account for the varying harvesting strategies and locations (sites and activities) where managers collect data (available across Member State fisheries). Furthermore, managers must use performance indicators to assess the level of implementation for both catch monitoring (on boat data collection) and monitoring of landings (port/dockside monitoring).

We recommend that data collection efforts include dockside monitoring, as well as electronic monitoring to verify compiled data. Similarly, we recommend that managers research multiple at-sea data collection systems, including at-sea observers (on larger vessels), log books, and, the potential for electronic video monitoring implementation. There is a suite of potential performance indicators that meet the above criteria that may be considered by managers for use in tracking progress in implementation of recommended data collection activities. To properly assess the progress, selected performance indicators must include both quantitative and qualitative assessment mechanisms. These include:

Quantitative assessment of implemented recommendations:

- Number of dockside monitors employed at all landing sites.

- Number of vessels logged at landing sites (to determine % coverage)
- Number of fishers using logbooks
- Number of logbooks completed / percentage of fleet using log books
- Number of cameras used for dockside monitoring
- Number of purchase slips issued / records of intake weights / volumes in fishery processing / retail facilities
- Number of export permits / weigh slips issued
- Number of vessels using electronic monitoring equipment (cameras, recording scales, etc.)
- Number of data analysts hired to review electronic data
- Hours of data analyzed

Qualitative assessment of implemented recommendations:

1. Managers should perform an attitudinal survey of market facility staff and fishers to determine changing perceptions of the industry. This survey should focus on staff perceptions on data collection and their voluntary participation in data collection activities. Survey results can provide useful insight in determining reliability and consistency in data collection systems along the flyingfish value chain.

While we recommend that managers involve fisher organizations as key players in national data collection activities, we also understand that there are administrative and capacity factors that may inhibit the timely implementation of the recommendations including:

- No fishers' organizations in some geographical areas.
- Insufficient governance and administrative capacity in existing fishers' organizations.

Accordingly, managers' complete assessment of the level of implementation of the recommendations should include a review of government's efforts to improve fisher organization capacity for organizational governance; data collection; and data management capacity.

Section V: Implementation Assessment - Determinable Metrics

Though we discussed our data collection recommendations with fishery division staff, it is too early for us to determine when and at what degree Member States will implement them. As a result, we were not able to complete an evaluation of the level of implementation of national data collection systems by Member States. Considering the current fiscal climate in the region, we propose that Member States use simple, measurable components (metrics) to determine their performance in implementing the recommendations. Member States can use these metrics to develop a progress report card that evaluates their data collection systems. They can then compare their report cards to those from other Member States to evaluate the Eastern Caribbean's regional data collection performance.

Below is a list of metrics that fisheries divisions can use to evaluate their efforts. Each metric can be easily determined and compiled into an annual summary report by fishery managers to assess country specific progress and compared this progress with that of other Member States.

Data Collection

- Number of fisheries division / fisher organization staff trained in data collection
- Number of fisheries division / fisher organization staff employed as data collectors
- Legislation passed regarding logbooks (yes/no)
- Number of logbooks provided to fishers
- Number of completed logbooks collected from fishers
- Number of days data is collected weekly at each landing site

- Number and type of electronic recording devices used for data collection (i.e. tablets, computers, databases, apps, etc.)
- Number of landing sites with electronic scales
- Number of electronic scales at each landing site
- Number of complete data collection forms
- Number of fisher organizations collecting data
- Number of trained data collectors in fisher organizations
- Number of fisher organization members employed / involved as data collectors
- Presence / absence of data collection activities budget

Vessel Data Collection

- Legislation requiring vessel registration (yes / no)
- Number of vessels registered (for comparison with periodic censuses)

Fisher Registration

- Legislation requiring fishers to register activities (yes / no)
- Number of registered fishers (for comparison with periodic censuses)

The Consultant Team recommends that Member State fisheries divisions collaborate on compiling this information. We also recommend that the CRFM coordinate this process during an annual meeting with Member State fisheries divisions. This process will allow managers to share their experiences and to define future data collection collaboration opportunities.

Member States can use a variety of indicators to assess their performance in enhancing fishers' capacity to participate in data collection activities. These include tracking the number of training courses, number of trainers, changes in training budgets, and number and location of organizations established for data collection purposes.

ASSESSMENT METHODOLOGY: PROGRESS IN IMPLEMENTATION OF RECOMMENDED DATA COLLECTION SYSTEMS

Section I: Document Overview

The purpose of this document is to provide an assessment methodology to Member States to track their ongoing progress in the implementation of recommendations for improving data collection and management systems in the Eastern Caribbean flyingfish fishery.

It is understood that data required for flyingfish fishery management should be consistent with data compiled and shared across the region for the management of other fisheries resources. Therefore, the data collection systems and the assessment tools used for flyingfish fisheries should be integrated with data collection systems for all fisheries.

Section II: Selection of Assessment Criteria and Methodology

Selection of appropriate performance indicators for the implementation of recommendations to enhance data management systems is a fundamental first step. The performance indicators must address the recommendations for the specific types of flyingfish fishing activities in the various Member State fisheries including commercial harvesting, harvesting for bait, and mixed-use harvesting.

While it has been recommended that the fishers' organizations be used as the focus and foundation of national data collection activities, it is understood that there are factors that may inhibit the timely implementation of the recommendations including:

- No fishers' organizations in some geographical areas; and,
- Insufficient governance and administrative capacity in existing fishers' organizations.

Therefore, a proper assessment of implementation of the recommendations should include assessment of efforts made to establish fishers' organizations, and efforts made to support capacity building in organizational governance, data collection and data management capacity through regulatory support, training and advisory support services.

To this end, Member States can use the following enquiries to determine general level of performance in the implementation of recommendations to enhance national data collection capacities:

- Has there been development and implementation of regulatory instruments requiring use of fisher logbooks or appropriate electronic data collection tools?
- Has there been an adoption of regulatory instruments that ensure the requirements for, and role of, fishers' organizations in fishery management?
- Are there fishers' organizations representatives from all communities and or landing sites?
- Are all registered fishers' members of a fishers' organization?
- Have the data collection instruments (logbooks, data cards, apps etc.) been made available to all fishers?
- Have there been focused governance and data management training courses provided to all fishers' organizations?
- Has there been training in data recording, such as use of logbooks, or appropriate electronic data collection tools provided to all fishers?

Proper assessment of the implementation of recommendations must also account for the varying harvesting strategies and locations (sites and activities) where data is collected (available across Member

State fisheries. Furthermore, performance indicators must be useful in assessing the level of implementation for both catch monitoring (on boat data collection) and monitoring of landings (port / dockside monitoring).

Data collection recommendations include dockside monitoring, as well as electronic monitoring to verify compiled data. Similarly, multiple at-sea data collection systems will be recommended, including at-sea observers (on larger vessels), log books, and, the potential for electronic video monitoring. Once final recommendations are presented, specific performance indicators can be selected. There is a suite of potential performance indicators that meet the above criteria and may be considered for use in tracking progress in implementation of recommended data collection activities. To properly assess the progress, selected performance indicators must include both quantitative and qualitative assessment mechanisms. These include:

- Quantitative assessment of implemented recommendations:
- Number of dockside monitors employed at all landing sites.
- Number of vessels logged at landing sites (to determine % coverage)
- Number of fishers using logbooks
- Number of logbooks completed / percentage of fleet using log books
- Number of cameras used for dockside monitoring
- Number of purchase slips issued / records of intake weights/volumes in fishery processing / retail facilities
- Number of export permits / weigh slips issued
- Number of vessels using electronic monitoring equipment (cameras / recording scales etc.)
- Number of data analysts hired to review electronic data
- Hours of data analyzed

Qualitative assessment of implemented recommendations:

A directed attitudinal survey of market facility staff and fishers to determine changing perceptions of the industry should be conducted. This survey should focus on staff perceptions on data collection and their voluntary participation in data collection activities. Survey results can provide useful insight in determining reliability and consistency in data collection systems along the flyingfish value chain.

Section III: Audit and Analysis of Performance Indicators

An audit of the implementation of recommendations will involve several activities to collect information related to the performance indicators. These activities could include:

- Conduct an examination of online data reports to compile metadata,
- Undertake interviews with fishery staff, and
- A more comprehensive systems audit involving an extensive review of data compiled and interviews with fishers, fishers' organizations, and fisheries division staff in each country.

These activities should include:

- Surveys of fishers' organizations to determine completeness of regional coverage of data compilation.
- Surveys of fishers to determine logbook completeness / consistency or completeness / consistency of use of electronic data collection tools.
- Field studies / spot-checks to determine data reliability including the level of, and consistency in, dockside monitoring activities.
- Sector analysis to cross reference data collected along the value chain (export and retail sales comparison with catch / landings reports).

To maintain objectivity during the audit and review the audit / assessment should be completed by a third party. This will also ensure the review and assessment does not interfere with ongoing data collection activities and is not biased by those involved with program delivery.

Section IV: Reporting

Reports on the findings from the assessments and audits of the implementation of the recommendations for data collection will be prepared and submitted by Fisheries Division staff to the CRFM. The CRFM will compile the results from each member state assessment into a composite report and submit it to the Caribbean Fisheries Forum for their review and discussion.

The CRFM is an inter-governmental organization whose mission is to “Promote and facilitate the responsible utilization of the region’s fisheries and other aquatic resources for the economic and social benefits of the current and future population of the region”. The CRFM consists of three bodies – the Ministerial Council, the Caribbean Fisheries Forum and the CRFM Secretariat.

CRFM members are Anguilla, Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago and the Turks and Caicos Islands.

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