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DEVELOPING A MODEL LOGBOOK FOR FAD FISHERIES IN THE EASTERN CARIBBEAN

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ACRONYMS AND ABBREVIATIONS

CARIFICO	Caribbean Fisheries Co-management
CFO	Chief Fisheries Officer
CPC	Cooperating Non-Contracting Parties and Entities
CPUE	Catch Per Unit Effort
CRFM	Caribbean Regional Fisheries Mechanism
DoF	Director of Fisheries
EAF	Ecosystems Approach to Fisheries
FAD	Fish Aggregating Devices
GPS	Global Positioning System
ICCAT	International Commission for the Conservation of Atlantic Tunas
ICT	Information Communication Tools
IFREMER	L'Institut Français de Recherche pour l'Exploitation de la Mer (French Research Institute for Exploitation of the Sea)
IMO	International Maritime Organization
IUU	Illegal, Unreported and Unregulated fishing
JICA	Japan International Cooperation Agency
LOA	Length Overall
MAGDELESA	Moored fish AGgregating DEvice in the LESser Antilles
NAFCOOP	National Association of Fisherfolk Cooperative
PWG	Pelagic Fisheries Working Group
RFMO	Regional Fisheries Management Organization
ROP	Regional Observer Programme
RWT	Round Weight
SCRS	Standing Committee on Research and Statistics
TAC	Total Allowable Catch
VMS	Vessel Monitoring System

FOREWORD

Some CRFM Member States have been exploring the use of FAD fishing technology since the 1990s in order to alleviate fishing pressure on inshore resources, to reduce the cost of fishing, increase fishing efficiency and improve the livelihood of fishers as well as national food security in general. These countries have benefitted from previous regional initiatives under the JICA-funded Study on the Formulation of a Master Plan on the Sustainable Use of Fisheries Resources for Coastal Community Development in the Caribbean and the MAGDELESA Project that was funded by IFREMER, including efforts to implement data collection programmes on FAD fisheries. The CRFM Large Pelagic Fish Resource Working Group and more recently the reconstituted CRFM Pelagic Fisheries Working Group have also discussed and recommended minimum data requirements for FAD fisheries. Currently six CRFM Member States are participating in the JICA-funded CARIFICO Project which aims to engage stakeholders in the co-management of FAD fisheries, including their engagement in data collection on the fishery so as to provide a wide range of information for management decision-making on the fishery.

Building on the experiences of previous projects and mindful of the respective recommendations concerning data collection under a co-management approach, the CRFM Secretariat has assisted the CARIFICO Project to develop a model logbook for the FAD fishery. This document describes in detail the process followed to develop the model logbook. It is a companion document to the FAD Fishery Model Logbook which is published as CRFM Special Publication No. 4. The process of development of the model logbook has included: engagement of the countries involved in the CARIFICO Project to identify key data requirements; consideration of specific data requirements on FAD fisheries recommended by the International Commission for the Conservation of Atlantic Tunas; identification of data requirements to address management decision-making concerning the sustainability, profitability and environmental concerns regarding FAD fisheries; as well as consideration of the utility of the data collected for trip planning and financial record-keeping of fishers. This document also provides a number of recommendations for implementation of the logbook system, including the sensitization and training of fishers, development of supporting legislation and provision of feedback to stakeholders (fishers and decision-makers).

It is anticipated that the national fisheries authorities of the six countries that are participating in the CARIFICO Project will test and modify the logbook to suit the specific local situations and develop the corresponding computerized database to be able to store and analyze the data collected under the FAD Logbook Programme. Based on the results from testing of the logbook as well as any other data required by managers, boat owners or fishers it may become necessary to revise the model logbook in future and to update this document describing the respective process.

ACKNOWLEDGEMENTS

The development of the first version of the model logbook for the FAD fishery would not have been possible without the feedback from the staff of Fisheries Divisions of CRFM Member States that are participating in the CARIFICO Project namely: Antigua and Barbuda, St Kitts and Nevis, Dominica, Saint Lucia, St Vincent and the Grenadines and Grenada as well as members of the CRFM's Pelagic Fisheries Working Group. The assistance of staff of the CARIFICO Project, Mr Minoru Tamura for reviewing the logbook and Mr Mitsuhiro Ishida for assistance with the drawings of fishing gear, is gratefully acknowledged. As well, the following members of staff of the Secretariat are acknowledged for their assistance and support: Ms June Masters (Statistics and Information Analyst) who assisted with development of the first and second drafts of the logbook and for following up with feedback from Member States, Dr Susan Singh-Renton (Deputy Executive Director) who reviewed this document as well as the model logbook and Ms Pamela Gibson (Administrative Secretary) for formatting of the document and general review and editing of the content.

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1. INTRODUCTION AND BACKGROUND

Fisheries that use fish aggregating devices (FADs) are not new to CRFM Member States. Indeed Barbados and Trinidad and Tobago have traditionally used artisanal drifting FADs to catch the fourwing flyingfish while other countries such as Dominica and Saint Lucia have experimented since the 1990s with anchored FADs to catch large pelagic fishes (e.g. dolphinfish, wahoo, tunas and billfishes).

The Study on the Formulation of a Master Plan on the Sustainable Use of Fisheries Resources for Coastal Community Development in the Caribbean (JICA, 2012 – JICA Master Plan Study) was the first regional project which focused on the FAD fishery as one of three pilot projects. The purpose of the pilot project was to ensure the economic sustainability of FAD fisheries through community participatory FAD/pelagic fishery resource development and management as a coastal fishery resource management model. The expected outputs of the pilot project were: (*a) improved capability of FAD and associated pelagic fishery resource management on the part of fisheries officers and fishers/fishers' organizations; and (b) increased productive outputs of FAD and associated pelagic fishery resource by developing the skills and capacity to utilize potential species*. The pilot project focused heavily on the design, construction, deployment and maintenance of FADs as well as associated co-management of the fishery and on development of the fishery for diamond-back squid and associated marketing in Dominica and Saint Lucia.

As it pertains to data collection, the project established a monitoring team to collect data on catch, effort, FAD maintenance and biological characteristics of target species from selected fishing boats at Vieux Fort and Soufriere in Saint Lucia (JICA, 2012). This system worked well during the course of the project. However, following the end of the project a mechanism for its long-term sustainability was not established. In Dominica, although a voluntary group of fishers was identified under the Fisheries Division/NAFCOOP co-management to collect catch and effort and biological data, the attempt was not very successful (JICA, 2012). The main reasons posited for this were (1) the volunteer fishers found it difficult to reach the data collectors because they were uncertain of their job schedule and (2) reluctance on the part of some fishers to give information to the volunteer fishers due to miscommunication in some cases. The general perception was that *fishers cannot keep records by themselves because they have no interest in data collection* (JICA, 2012). As a consequence the Fisheries Department has implemented a random sampling system using the very limited available manpower and financial resources.

The project made the following specific recommendations for data collection under a Co-management approach:

1. The objectives of data collection must be clearly understood by all stakeholders;
2. The data collection form must be made as simple as possible;
3. Sustainability of the data collection system must be a priority;
4. Benefits of data collection must be made known to fishers in order to encourage their sharing of data;
5. There is need to demonstrate the use of data for management planning and decision-making and to provide feedback to fishers regularly;

6. The provision of data must be defined as part of the responsibility associated with the right to fish and have a licence (in the case of Dominica it may be better to gather data from specific groups such as fishers who bought licences);
7. The provision of data by fishers as well as necessary resource management measures should be clearly defined in government regulations or by-laws of cooperatives;
8. Efforts to increase awareness of the importance of recordkeeping, including book-keeping is necessary for fishers to be motivated to collect the data on their own initiative (logbook);
9. The present data collection system can be improved by having both data collection by the fisheries division as well as a logbook system whereby fishers submit data on their fishing activities;
10. Biological data collection of target species should be continued at Soufriere and Vieux Fort in Saint Lucia and Mahaut in Dominica where there is good cooperation of fishers;
11. A minimum number of samples (50 per month) should be maintained;
12. Sustainability of biological data collection should be prioritized and continued in the medium term;
13. Biological data collection for the main target reef and coastal demersal species and coastal pelagic species should be considered.

The Caribbean Fisheries Co-management (CARIFICO) Project is a follow-up of the FAD fisheries component to the JICA Master Plan Study. The project is being implemented as a bi-lateral technical cooperation project between JICA and the following CRFM Member States: Antigua and Barbuda, St Kitts and Nevis, Dominica, Saint Lucia, St Vincent and the Grenadines and Grenada. The 5-year project began in May 2013. Its purpose is to have a fisheries co-management approach suitable for each target country developed and shared in the Caribbean region. Since the project entails the sharing of knowledge, experiences and lessons learnt among the Caribbean countries which have common issues on fisheries management, collaboration with the CRFM is considered important for the coordination of regional activities.

The CARIFICO Project aims to introduce a logbook system for FAD fisheries as it sees the engagement of fishers in the data collection exercise as contributing to its overall co-management efforts. In this respect, the CRFM Secretariat is supporting the project by development of the respective model logsheet and assisting, to the extent possible, to make stakeholders aware of the importance of data collection as well as facilitating the analysis of data collected under the system. The logsheet would serve to standardize the data collection efforts on FAD fisheries and to aid consolidation of data among several countries to facilitate regional fisheries analyses. Consequently, introduction of a logbook system is anticipated to significantly improve the quality of available data on FAD fisheries, so as to allow more robust scientific analysis of the impacts of these fisheries on regional pelagic fisheries resources and the associated ecosystem, so that more focused management measures can be employed to ensure the long term sustainability of the pelagic fisheries resources and associated ecosystem.

One of the four outputs of the CARIFICO Project is that fisheries information required for co-management of target fisheries is collected, organized, and updated regularly. To facilitate this output the CRFM Pelagic Fisheries Working Group (PWG) conducted a review of existing fisheries data collection systems in FAD fisheries and made recommendations for integrating FAD fisheries in national field data

collection programmes as well as development of a FAD-fishery specific logbook programme (CRFM, 2014; Barnwell, 2014). The PWG considered implementation of a logbook system as a means to capture census catch and effort data and to promote the fishers' involvement in co-management. It noted however, the difficulties faced in the past to get the cooperation of fishers and proposed an awareness programme to facilitate their support. The PWG (CRFM, 2014; Barnwell, 2014) also recommended simplification of logbooks to capture the following minimum data:

1. Catch: weight; species; number of fish
2. Effort: time fishing; gear; number of hooks
3. Identify FAD: name; location
4. Fuel information
5. Bait type and quantity (if natural as opposed to artificial bait is used)
6. Field Data Collector:
7. Biological (sample size, length, weight)
8. Socio-economic data

Although the PWG agreed that most of the variables recommended by ICCAT Rec 14-01 for consideration in designing logbooks were not appropriate for the smaller boats used in the FAD fisheries in the region, it is evident from the minimum data requirements listed above that it still encouraged the collection of the necessary data to the extent possible.

2. DATA COLLECTION CONSIDERATIONS FOR ADDRESSING ISSUES IN FAD FISHERIES MANAGMENT

FAD fisheries are being developed among several CRFM Member States for several reasons, the main objectives being as a means of:

(1) relieving pressure from inshore resources, considered overexploited;
(2) increasing fish landings and therefore food security;
(3) increasing fishing efficiency by decreasing the time taken to locate fish and reducing fishing costs, through the use of less fuel;
(4) increasing the livelihood of fishers, through increased revenue (profits), and thereby alleviating poverty.

Existing fisheries data collection systems must therefore be expanded and strengthened so as to monitor and evaluate the performance of the fishery against the management objectives stated above. As well, management of FAD fisheries must be consistent with the ecosystem approach to fisheries management (EAF) and guided by the Caribbean Community Common Fisheries Policy. The central tenet of the EAF approach is that it focuses on human well-being, ecological well-being, and governance.

It should be noted that from an ecosystem perspective, FAD fisheries are not the only fisheries that target pelagic fish resources and hence any attempts to manage FAD fisheries must be considered in the broader context of pelagic fisheries management. As well, although this document focuses on a model logbook system for FAD fisheries, such a system will not be able to monitor the positive impacts intended through reduction of fishing pressure on inshore resources. These impacts will be best monitored through a national fisheries data collection programme that captures data for all fisheries (inshore and offshore). Some key issues that may be addressed through a logbook system are highlighted below.

2.1 Sustainability of the resources

FAD fisheries by their very nature may be considered unsustainable from a resource perspective if there are no active management systems in place. Since the devices cause fish to aggregate, there is misconception that FADs increase production or productivity, these being instead functions of the biology of the species (growth rate, mortality rate, reproduction, etc.). In fact, FADs aggregate existing fish in a smaller area than would otherwise be distributed, thus making them easier to catch, which explains the respective increase in landings. In order to assess the impacts of FADs on overall catches it is important to be able to distinguish catches[1] around FADs from catches for other pelagic fisheries. As well, there should be a methodology for estimating total catches from recorded (sampled) weight. Knowledge of whether or not all catches are landed, the total number of boats fishing simultaneously around the same FAD relative to the number of boats sampled would be critical to estimating total landings. To be able to disaggregate the total landings into the component catches of each species the recorded catch data must indicate the catch of each species separately (commonly called the species composition of the catch). In some countries fish may be landed in various processed forms in order to adhere to sanitary and phyto-sanitary requirements. It is important to record this level of processing so that the appropriate factor can be used to convert the processed weight to total (whole) weight. Since "catch per unit effort" is frequently used as a proxy for the abundance of various species it is also important to be able to estimate total fishing effort from recorded data.

A feature of aggregated fish is that their susceptibility to being overfished is increased because the catch per unit effort may remain high even though the overall number of fish is declining. From a resource-sustainability standpoint three critical issues must be addressed: (1) capture of juvenile fish; (2) capture of overexploited species; and (3) capture of non-target species that may be vulnerable or endangered to varying degrees. The respective data requirements to address these issues are described below.

Catches of juvenile fish: Depending on the location of the FAD (distance from shore and depth) as well as the gear (e.g. hook size) and bait used, and the time of fishing (whether day or night) catches of juvenile fish may be high – contributing to growth overfishing. Can a location (depth and or distance from shore) be identified for which the number of juveniles in the catch is minimised or can the gear technology be adjusted to accomplish the same effect? Could the type of bait used (artificial or natural) impact on the sizes of fish caught? To answer these questions data are required on: catch quantities in weight by species, the corresponding number of fish caught by species, the geographic area of fishing (including the depth and distance from shore) and the date of fishing (since seasonality effects may contribute to increased capture of juveniles), the time of fishing (day or night), the gear specifics (type of gear and e.g. hook size) and bait specifics (live or natural bait, species of bait used). While the catch weights and corresponding number of fish allow for estimation of the average individual weight of fish caught; the average weight may be compared with the size (weight) at maturity in the literature to ascertain whether or not juvenile fish have been caught. However, a more accurate method for ascertaining average size of fish in the catch would be a focused biological data collection programme that samples the length, weight, sex, and reproductive state.

[1] Note that "catches" may be different from "landings" – "catches" represent all that is caught, whether or not it is landed and includes both the target and non-target species – "landings" refer to the portion of the catch that is landed or brought ashore.

Catches of over-exploited species: Based on the most recent assessments conducted by ICCAT the yellowfin tuna, bigeye tuna, albacore, blue marlin and white marlin are considered overfished and the sailfish is considered as possibly overfished (ICCAT, 2015). FADs aggregate all fish, i.e. are not selective, however, certain species may be selected in the catch based on the type of gear or fishing method used and/or hook type and size and bait type (whether artificial or natural and the species if natural), the location of the FAD (depth and distance from shore) and relative position compared to other FADs, the depth of fishing, and the time of fishing (whether day or night and season or time of year). Hence it is important to record the respective data to identify possible interventions to minimize the capture of overexploited species as well as juvenile fish and contribute to the sustainability of the respective resources. Such controlled selection may facilitate continuous catches throughout the year (based on information on annual changes in abundance of the full range of species targeted) as well as catches of larger fish of higher value, thereby contributing to increased profitability of FAD fishing.

Catches of non-target (by-catch) species that may be vulnerable or endangered: Several species of sharks, marine turtles, mammals and seabirds may be considered vulnerable or endangered, to varying degrees. Some of these species are naturally drawn to FADs to feed on aggregated fish. The collection of data already mentioned above, as well as more specific data on these species, could assist in identifying specific interventions to minimize the respective catches thereby contributing to the sustainability of the respective resources.

2.2 Fishing costs and profits – improving fishers' livelihoods and alleviating poverty

The idea that FADs can help to reduce fishing costs, increase fishing efficiency (more fish is caught in less time fishing) and thereby increase profits is also used to promote development of the fishery. However, information on fishing costs as well as the revenue earned from the sale of fish are required to estimate the profits and only if these data are examined over a period of time for a reasonable sample of fishers can it be ascertained whether or not the livelihood (profits) of fishers is generally increasing. To be able to estimate fishing costs data on the cost of fuel, oil, ice, bait, food, gear and other trip-related costs are required. Similarly, to be able to estimate the revenue earned from the sale of fish the quantity of each species sold as well as the corresponding price per unit weight is required. The total revenue earned is the sum of the product of the quantity of fish sold and corresponding unit prices across all species that are sold. Although the logbook goes no further in determining the sharing of the profit, additional information on the crew size as well as the proportions of the profit paid to the boat owner, the captain and each crew member, is required to ascertain how the profit is shared. Additional information on the capital and maintenance costs of the vessel and engine will also have to be factored into the estimation of profit for the boat/engine owner.

With respect to measuring fishing efficiency, specific data on the fishing trip will be required such as the overall trip time, the proportion of the trip time that was spent fishing, the corresponding quantity and cost of fuel and oil used, as well as other trip costs, and the quantity of the respective catches and corresponding sale value.

Research has shown that the greater the number of boats fishing simultaneously around the same FAD, the smaller the catch per unit effort –and consequently the smaller the profit (Florida Sea Grant, 2014). What then is the optimum number of fishing boats that can fish around a FAD while still maintaining a CPUE which at existing market prices will cover the cost of fishing and realize a reasonable profit to be

shared among crew and boat owner? To answer this question data that allows estimation of the number of boats fishing simultaneously around a particular FAD, the overall cost of fishing, the overall quantity of fish caught by each boat, the ex-vessel value of the total fish sales of each boat, the number of crew and percentage share of profit to crew and boat owner are required.

A compounding factor is that in some countries, in order to minimize conflict, fishers have requested of fisheries authorities that FADs be set further offshore. Such action is likely to increase the cost of fishing due to the increasing quantity of fuel used – so here again data on catch quantities, ex-vessel value, fishing location and fishing costs (with specific information on fuel costs) will prove useful in considering the increasing costs of fishing against the benefits from the corresponding sale of fish.

2.3 Environmental influences

Fishers usually report informally that sea and weather conditions, as well as recent reports since 2011 of the presence of the invasive seaweed, have impacts on fisheries. However, the precise impacts and their magnitude are not known. Collecting data that could identify impacts of these environmental conditions on the magnitude and species composition of catches, sizes of fish in the catch and catch per trip could aid in more efficient trip planning as well as provide information to assist decision-makers.

3. REVIEW OF EXISTING "LOGSHEETS" FOR FAD FISHERIES DATA COLLECTION & MANAGEMENT

A review of data collection sheets from five of the countries participating in the CARIFICO Project was undertaken to assess whether or not the data fields recorded could facilitate analysis of the sustainability and costs and profits of FAD fisheries as well as the impacts of environmental conditions on catches of FAD fisheries (Table 1). The data sheets selected for review were presumed to be used as, or intended to be used as logsheets, whether or not completed by fishers. It was also assumed that data are collected for all fields listed on the data collection sheet i.e. no fields are left blank.

In most cases data are not collected in sufficient detail on the various fishing strategies (day or night fishing, type of gear and bait used, fishing location e.g. distance from shore and depth), along with associated catch per unit effort, and gear selectivity, to inform management decisions as regards the sustainability of the fishery. If catch and effort data are collected from a sample of FAD fishing vessels, and if fish are processed at sea, then it is uncertain how estimates of total catches are derived without corresponding information on the total number of vessels fishing at each FAD each day as well the level of processing of landed fish. There is limited ability to monitor catches of juvenile fish and no ability to monitor catches or discards of non-target (by-catch) species that may be endangered or vulnerable to varying degrees. In terms of estimation of fishing costs and profits, all countries request data to varying degrees on the cost of fishing but most do not request specific information on the quantity of fish sold (which may be different from the catch) and the corresponding unit price, though it is possible that such data may be obtained from other sources. Some countries request data on sea state but overall there is also limited ability to estimate environmental impacts on catches of FAD fisheries.

Table 1. Review of existing FAD data collection sheets in the context of addressing key management issues in FAD fisheries.					
CRFM Member States	Whether or not existing "logsheets" capture the required data for decision-making (√ - Yes; X – No)				
	Antigua & Barbuda	**Dominica**	**Grenada**	**St Lucia**	**St Vincent & the Grenadines**
Document analysed	*CARIFICO Project Fishing Vessels Logsheet (Appendix 1)*	*Boat Catch and Effort Form (Appendix 2)*	*Grenville FAD Fishers Daily Log Interview Form (Appendix 3)*	*Fishing Vessels Catch and Effort Form (Appendix 4)*	*FAD Data Collection Sheet in St Vincent and the Grenadines (Appendix 5)*
MANAGEMENT ISSUES					
1. SUSTAINABILITY OF FAD FISHERIES					
a. Ability to identify data collected for FAD fisheries as compared to other fisheries, whether or not they target the same species					
Identification of fishing details associated specifically with fishing around FADs as opposed to other fisheries	√	X – general, no specific reference to FADs	√ - - specific to FAD fishery	√ - specific to FAD fishery	√ - specific to FAD fishery
b. Ability to estimate fishing effort and efficiency associated with each FAD or fishing area					
Facilitates recording of effort data for fishing around <u>each</u> FAD or fishing area (if fishing is not around a FAD) - i.e. data specified separately for each FAD fished or fishing area	X – provisions to record whether or not the fishing trip was a dedicated FAD trip and total number of FADs visited as well as fishing location but not the details associated with each FAD	√ - total fishing time, soak time and number of fish pots by fishing area (location)	X	X – allows specification of number of gear used (and lost) but not linked to each FAD	X – main gear used specified but no gear details required (e.g., number of lines or hooks)
Number of fishers	√	√ - number of crew – perhaps all crew are fishers?	X	√ - number of crew – perhaps all crew are fishers?	X
Gear used	√ – gear is specified for each species caught and whether or not caught at a FAD in general	√ - specified as "method" but uncertain if linked to FAD or each species caught	√ - but uncertain if linked to FAD or each species caught	√ - but not linked to FAD or each species caught	√ - but not linked to each species caught
Number of lines per gear	√ – number of lines specified for each gear but not linked to	X	X	√ - specified as number of gear	X

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	each FAD				
Number of hooks per gear	X – but field data collection sheet "allows for recording avg. number of hooks per line	X	X	**X**	X
Number of hours fished	√ – but not linked to fishing at each FAD	√	X	√ – but not linked to fishing at each FAD	X
Day and night fishing	X – but provisions made for recording departure time and time spent fishing	X – but provisions made for recording the time spent fishing	X – but provisions made for recording departure and arrival time	X – but provisions made for recording the number of hours fished	X – but provisions made for recording departure and arrival times in respect of the fishing trip
Total number of boats fishing	√ – number of vessels at FAD	X	X	**X**	X
Depth fished	X – field data collection sheet allows recording of this	X	X	√ – but not linked to fishing at each FAD	X
c. Ability to estimate total catches around each FAD					
Recorded catch of each species associated with each FAD or area fished	X – but catch for fishing at FADs in general distinguished from other catches	√	? – facility to identify whether CARIFICO or MAGDELESA FAD but uncertain whether data captured is for both types combined	X – catches by species associated with the fishing trip but not linked separately to fishing at each FAD	√
Species composition of catch	√ – but for catches at	√	**?** - facility to	√ – but for catches at	√

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	FADs in general		identify whether CARIFICO or MAGDELESA FAD but uncertain whether data captured is for both types combined	FADs in general	
Level of processing of catch on board – by species	√ – but for each species caught at FADs in general	X	X	X	√
Number of boats fishing at FAD simultaneously – useful for raising data to account for catches from all boats fishing per day at a FAD (if census is not taken)	√	X	X	X	X
Total catch – weight of fish caught by species; level of processing; whether or not data collected for all boats fishing on a particular day at same site; number of fishing days	X – but ability to estimate total catches by species from FAD fishing in general	?	X	X	X
d. Ability to monitor catches of immature (juvenile) fish and to assign catches to each FAD, bait type and gear					
Link species caught to specific fishing area/FAD	X	√	? - uncertain	X	√
Catch by species	√	√	√	√	√
Link specific bait type to each species caught	√	X	X	X	X
Link species caught to specific gear/fishing method	√	√	√	X	X
Number of fish corresponding to total weight of each species caught	√	X	X	√	√

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e. Ability to monitor catches of non-target (by-catch) species that may be vulnerable or endangered					
Listing of relevant species in catch	X	X	X	X	X
Recording number of each species in catch that is kept, discarded dead, or discarded alive	X	X	X	X	X
2. IMPROVED LIVELIHOODS OF FAD FISHERS - FISHING COSTS AND PROFITS					
Profitability of the fishery					
Quantity of fish sold by species	√	X	X	X	X
Unit price per species	X	X	X	X	X
Cost of fishing broken down for fuel, ice, food, bait, oil, other	√	√ (fuel, bait & food only)	X	√ (fuel and bait only)	√ (fuel only)
Note: further information on the share of profits to boat/engine owner, captain and each crew is required to estimate the actual earning of each individual; as well the capital cost of the vessel, engine, gear and associated maintenance costs must be factored in to the calculation of earnings for the owner.					
3. ENVIRONMENTAL IMPACTS ON CATCHES OF FAD FISHERIES					
Sea state (weather conditions)	√	X	√ - but different scale used- good, fair, bad	√ – but different scale used – calm; gale; storm; hurricane; overcast skies; raining	X
Water colour	X	X	X	X	X
Presence of seaweed	X	X	X	X	X
Notes	Possible that fish prices are collected from another source; Field data collection sheet allows for capture of data on avg. number of hooks	Data collected on catch per species – unsure if ALL catch is sold; Possible that fish prices are collected from another source	Data collected on catch per species – unsure if ALL catch is sold; Also, facilitate recording of information on FAD condition –	Data collected on catch per species – unsure if ALL catch is sold;	Data collected as combined catch weight of ALL species at a particular landing site each day; unsure if ALL catch is sold and if a census

Table 1. Review of existing FAD data collection sheets in the context of addressing key management issues in FAD fisheries.					
CRFM Member States	Whether or not existing "logsheets" capture the required data for decision-making (√ - Yes; X – No)				
	Antigua & Barbuda	**Dominica**	**Grenada**	**St Lucia**	**St Vincent & the Grenadines**
Document analysed	*CARIFICO Project Fishing Vessels Logsheet (Appendix 1)*	*Boat Catch and Effort Form (Appendix 2)*	*Grenville FAD Fishers Daily Log Interview Form (Appendix 3)*	*Fishing Vessels Catch and Effort Form (Appendix 4)*	*FAD Data Collection Sheet in St Vincent and the Grenadines (Appendix 5)*
	per line		name of form suggests that data are captured through interview process rather than recorded directly by fishers		is taken of all FAD fishing boats

4. APPROACH TO DEVELOPMENT OF MODEL LOGBOOK

4.1 Information Sources

The draft model logsheet was developed based on previous work accomplished under the CRFM-JICA Project - Study on the Formulation of a Master Plan on the Sustainable Use of Fisheries Resource for Coastal Community Development in the Caribbean (JICA, 2012), more specifically the pilot project for FAD and associated pelagic fishery resource development and management implemented in Dominica and Saint Lucia. Discussions and recommendations of the Pelagic Fisheries Working Group at the CRFM Tenth Annual Scientific Meeting (CRFM, 2014) and the report of the consultancy which reviewed fisheries data collection systems in selected CRFM Member States and provided recommendations for integration of FAD fisheries (Barnwell, 2014) were also considered. In addition, the Grenville FAD Fishers Daily Log Interview Form used in Grenada (Appendix 3), the Daily Fish Catch and Effort Form used in Dominica (Appendix 6), the Field Data Sheet used in Saint Lucia (Appendix 7) as well as the Monthly Landed Schedule used in St Vincent and the Grenadines (Appendix 8) were examined. At the time, except for Grenada, existing national logsheets for the FAD fishery were not yet available for analysis.

4.2 First Draft of Model Logsheet

The first draft of the model logsheet (Appendix 9) was presented to the Directors of Fisheries/Chief Fisheries (DoFs/CFOs) Officers at a meeting of the CARIFICO Project in Antigua and Barbuda on 30 October 2014 for their review and feedback. The feedback received, both at and subsequent to the meeting, focused mainly on adjustments of the format of the logsheet to facilitate ease of completion by fishers and increased utility of the information collected to fishers. The specific proposed changes, which were considered in further development of the logsheet, are provided in Mohammed and Masters (2014).

4.3 ICCAT Considerations

Specific attention was given to fulfilling the data requirements of the International Commission for the Conservation of Atlantic Tunas (ICCAT) pertaining to FAD fisheries, which were formulated and adopted during ICCAT's annual Commission meeting in November 2014. In particular, the ICCAT recommendation (ICCAT, 2014 – Appendix 10), titled *ICCAT Rec 14-01 – Recommendation by ICCAT on a Multi-Annual Conservation and Management Program for Tropical Tunas*, informed additional adjustments to the logsheet. This recommendation pertains to ICCAT's Contracting and Cooperating Non-Contracting Parties and Entities (CPCs) which utilise purse seine and bait boat vessels that are 20m length overall or greater, to fish for bigeye and/or yellowfin and/or skipjack tunas mainly with drifting FADs. Consequently, the recommendation is not directly relevant to countries participating in the CARIFICO Project as these, except for St Vincent and the Grenadines, are not ICCAT CPCs and moreover they use mainly artisanal vessels and handlines, longlines or troll lines to catch a variety of pelagic species around anchored FADs. However, it is highly recommended that the respective data reporting requirements be followed, to the extent possible, in support of conservation and management measures of the respective species since the associated fisheries are of extreme importance for food security and livelihoods of many fishers in the region.

4.4 Second Draft of Model Logsheet

Based on the feedback from Directors of Fisheries/Chief Fisheries Officers at the CARIFICO Project's meeting in Antigua and Barbuda on 30 October 2014 as well as the review of ICCAT Rec 14-01, along

with considerations of plausible formats for the logbook, a second draft of the model logsheet was produced (Appendix 11) and compiled into a draft logbook, including guidelines for fishers on how to complete the logsheet as well as a sample of a completed logsheet (Mohammed and Masters, 2015).

4.5 Review, Customization and Testing of Logsheets

The draft logbook was circulated to the six countries participating in the CARIFICO Project in February 2015 to facilitate their review, customisation and testing. A model EXCEL template and guidelines were also developed and shared to facilitate computerisation of data collected using the model logsheet (Masters and Mohammed, 2015). As well, guidelines were provided for reporting on implementation of the FAD Logbook System as a component of the monthly country reporting on progress of the CARIFICO Project (Appendix 12, taken from Masters and Mohammed, 2015). Mindful of the need to increase awareness of fishers on the importance of data collection and to engender their support for implementation of the logbook system, the Secretariat also developed and circulated a powerpoint presentation to the respective Fisheries Departments to facilitate the training of fishers. The presentation provided background on the reasons for/ benefits of introducing the FAD fishery; management and conservation concerns; the role of data collection in assessing the long-term sustainability and economic viability of the fishery; the importance of co-management and role of fishers in data collection; the types of data to be collected and their utility for management decision-making; detailed guidelines for completing the logsheet; and solicited feedback from fishers on the feasibility of their participation in data collection.

The Secretariat liaised with the respective Directors of Fisheries as well as the CARIFICO Project Managers and Liaison Officers in seeking the necessary feedback to finalize the model logbook. Based on the feedback from countries: (1) the CARIFICO staff seemed not to be fully aware of the importance of the data collection on FAD fisheries and the specific data required for such fisheries to address the range of management issues and as a consequence they were not in a position to "sell the idea" of data collection to fishers; (2) the communication between CARIFICO staff and staff responsible for data collection, computerisation and analysis was not always evident based on the feedback provided; (3) there was reluctance to request fishers to provide the full range of data required as it was felt that either their literacy level would pose a problem or they would be reluctant to provide such detailed information; (4) feedback was unclear as to whether those countries that had not yet implemented a logbook system were intending to do so, or whether they were instead modifying their field data collection sheets to capture the necessary information – it appeared that Saint Lucia and St Vincent and the Grenadines were modifying their field data collection sheets; (5) feedback was unclear as to whether or not countries that were already implementing a logbook system were willing to modify the system to capture all data required in the model logbook – Grenada informally indicated its intention to test the model logbook from 01 April 2015.

Formal written feedback on the training of fishers was not provided by countries, as envisaged by the CARIFICO Project and CRFM Secretariat to facilitate their participation in the data collection exercise or on the testing of the model logsheet or associated modified national logsheets. However, copies of the following were made available: CARIFICO Project Fishing Vessels Logsheets used in Antigua and Barbuda (Appendix 1), a Boat Catch and Effort Form for Dominica (Appendix 2), a Fishing Vessels Catch and Effort Form for Saint Lucia which was developed after circulation of the second draft of the model logsheet (Appendix 4), an unnamed data collection sheet for St Vincent and the Grenadines which

was developed after circulation of the second draft of the model logsheet (Appendix 5),a Data Sheet for Landing of Fish and Shellfish used in Antigua and Barbuda (Appendix 13), a Field Data Sheet used in St Kitts and Nevis (Appendix 14) and a Daily Fish Landing Log used in Grenada (Appendix 15).

5. FINALIZATION OF MODEL LOGBOOK

Further adjustments were made to the model logbook based on a review of existing country logsheets which were provided after the second draft of the model logbook was circulated to Member States for review and feedback to the Secretariat. These adjustments were made specifically to:

a. Improve the recording of fishing effort - through capture of the following data for each FAD or fishing area: the type of gear and corresponding number of lines and hooks used, the number of hours fished, the depth of fishing at each FAD, total number of boats fishing simultaneously at the same FAD. In addition the number of fishers rather than the crew size (number of persons on board) is to be specified.
b. Improve the recording of catches – by specifying for each FAD or fishing area the: catch by species linked to the respective gear type and bait type.
c. Improve the recording of by-catch (non-target) species that may be vulnerable or endangered by specifying the number of each species kept (retained), discarded dead or discarded alive.
d. Improve the recording of costs and earnings – through specification of the quantity of fish sold (rather than assuming that all catches are sold in estimating revenue), specification of money spent on fuel and oil that were used for the trip, since more may be purchased than is actually required for the trip, and specification of other trip costs (ice, bait, food, gear, other).
e. Facilitate the recording of the presence of invasive *Sargassum spp.* a phenomenon thought to be due to environmental conditions which have had tremendous impacts on users of the coastal zone with consequences as well for the respective marine ecosystem.

The final model logsheet is provided in Appendix 16. Specific justification for the format and content of the final model logbook based on all feedback from the respective Fisheries Departments (*italicized text*) and consideration of requirements under ICCAT Rec 14-01 (TEXT IN SMALL CAPITAL LETTERS) is provided below along with recommendations (**emboldened text**). These changes vary slightly from those proposed in Mohammed and Masters (2014 and 2015) due to further consideration of the management issues to be addressed in FAD fisheries as well as space limitations on the legal size sheet used for the model logsheet.

5.1 Format of Finalized Model Logbook

a. The logbook comprises four main sections: (1) the first section contains details of the boat (name and registration number as well as site from which it operates) and owner (name, address and contact telephone number); (2) the logsheets – the details of each fishing trip are to be recorded on a separate logsheet; (3) a map, to be customised by Fisheries Departments, indicating departure and landing sites and fishing areas/FAD locations, coded for ease of data recording; (4) the guidelines for completion of the logsheets with appropriate keys; (5) a completed sample logsheet.

b. The logbook is to be printed with a sturdy cover and carbon-less copy paper so that fishers could retain a copy of all data for themselves. This provision also satisfies ICCAT REC. 14-01 – ANNEX 1 – MINIMUM SPECIFICATION FOR PAPER OR ELECTRONIC LOGBOOKS - which requires that one copy of the logsheet must remain attached to the logbook. However, whereas ICCAT requires submission of the logbook to the authorities the system proposed here is for the completed logsheets to be detached from the logbook and submitted to the respective Fisheries Department every two weeks. The boat owner will retain the copies of the data submitted in the logbook for his personal use. The number of logsheets contained within a book should be sufficient to facilitate recording of all fishing trips over a one month period. ICCAT REC 14-01 ALSO REQUIRES THAT LOGBOOKS BE KEPT ON BOARD THE VESSEL TO COVER THE PERIOD OF ONE TRIP OPERATION. **The feasibility of this practice on small fishing vessels is to be explored since the likelihood of damage or loss of the logbook at sea is greater. Alternative options should be identified and implemented as appropriate.** One option may be to make the logbooks water proof but this will significantly increase costs of the logbook programme.

c. Each logbook and the logsheets within must be numbered. The latter is a requirement under ICCAT REC. 14-01 – ANNEX 1 – MINIMUM SPECIFICATION FOR PAPER OR ELECTRONIC LOGBOOKS. **The Fisheries Division should keep a record of the logbook number(s) issued to each boat owner for use on a specific boat – each boat must have a separate logbook.** The details of the boat (name, registration number and site from which it operates) as well as the boat owner (name, address and contact telephone number) must be recorded on the second page of each logbook. **The boat owners should be responsible for ensuring that logsheets are submitted every two weeks and for requesting additional logbooks in good time so as not to disrupt the data collection system or cause any gaps in the data collected.**

5.2 Content of Finalized Model Logbook

a. Vessel identifiers: The current logsheet allows for recording of both the vessel registration number and vessel name. ICCAT REC. 14-01 – ANNEX 1 – MINIMUM STANDARD INFORMATION FOR LOGBOOKS – 3. VESSEL NAME, REGISTRY NUMBER, ETC. ALSO SPECIFIES THAT ICCAT NUMBERS AND IMO NUMBERS BE RECORDED. However, such numbers are currently issued for vessels above a certain size (24 metres length overall) and most if not all the vessels operating in the FAD fisheries are below this size. **Countries for which this requirement is applicable should modify the logsheet accordingly to record the necessary information.**

b. Dates, times and ports of departure and arrival: ICCAT REC. 14-01 – ANNEX 1 – MINIMUM STANDARD INFORMATION FOR LOGBOOKS – SPECIFIES THAT THE DATES OF DEPARTURE AND ARRIVAL (LANDING) AS WELL AS THE RESPECTIVE PORTS ARE TO BE RECORDED. SIMILAR INFORMATION IS ALSO REQUIRED UNDER ANNEX 1 – MINIMUM INFORMATION IN CASE OF LANDING, TRANSHIPMENTS. The logsheet makes provision for recording both the date and time of departure and landing although for most vessels trips are less than one day duration. Provision is also made for recording of the respective departure and landing sites (see 3. Below).

c. Recording of specific locations: *details of departure and landing sites as well as fishing location should be customised for each country for ease of recording* – This is the responsibility of the

respective Fisheries Departments. **It is recommended that a map be included in the section on "Guidelines for Completion of the Logsheet", with departure and landing sites coded separately for fishing areas or specific FADs.** The option to include fishing areas means that the logsheet could be extended to non-FAD fisheries. Fishers need only to record a number or letter to represent each of the respective locations. AS A CONSEQUENCE IT COULD ALSO SATISFY DATA REQUIRED UNDER THE ICCAT REC. 14-01- ANNEX 1 – MINIMUM STANDARD INFORMATION FOR LOGBOOKS –6. SPECIES IDENTIFICATION – (C.) FISHING MODE.

d. Fishing effort: the current logsheet allows for recording fishing effort at each FAD fished, with details on the "number of fishers" as opposed to crew size which could overestimate effort if all crew members do not fish; "total number of lines used" and "total number of hooks used" for each specified gear; as well as the "number of hours fished at each FAD"; whether or not fishing occurred during the day or night, "total number of boats fishing" and the depth of fishing. The data collected can facilitate analysis of fishing effort at each FAD and along with the corresponding catch data facilitate estimates of catch per unit effort by gear, species and location (FAD). THE PROVISION FACILITATES CAPTURE OF DATA FOR EACH VISIT ON A FAD AS REQUIRED BY ICCAT REC. 14-01, PARAGRAPH 20 AS WELL AS ANNEX 1 – MINIMUM STANDARD INFORMATION FOR LOGBOOKS – 4. FISHING GEAR.

e. Gear specifications: *in the first draft of the model logsheet "primary gear" should be replaced with "Gear #1" and "secondary gear" be replaced with "Gear #2"* - to address this issue the Second draft of the model logsheet instead specified the "main gear" and "other gear" respectively so that catches could be recorded accordingly. However, it was noted that on any given trip fishers could interchange the gear used, so what may have been considered the main gear becomes "other gear" and vice versa. Since the critical issue is that the catch by species must be linked to the gear used so as to examine issues related to gear selectivity and fishing effort, the final draft model logsheet requires that fishers identify the gear used, provide information on the respective number of lines and hooks and identify the corresponding gear used at each FAD to catch each species. The respective gear options are: Troll lines (TR); Handlines (HL); Droplines (DL); Rod and Reel (RR); Longlines (LL). THESE PROVISIONS FOR RECORDING GEAR SPECIFICATIONS ADDRESS ICCAT REC. 14-01, ANNEX 1 - MINIMUM STANDARD INFORMATION FOR LOGBOOKS – 4. FISHING GEAR. **Fisheries Departments can modify the logsheet accordingly to reflect the gears used in their respective FAD fisheries and update the guidelines for completion of the logsheet accordingly.**

f. Level of processing: Fishers may be required to undertake certain levels of processing at sea to satisfy national sanitary and phyto-sanitary requirements. As a consequence, the weights of processed fish recorded at landing may not be representative of the actual total (or whole) weight of the catch. To address this issue the option is provided to record the respective form of processing for each species landed. The current processing options are "gutted" gilled" headed" or finned" with the option "whole" if there is no processing. **Fisheries Departments may customize the respective processing options to suit the national situation. It is also necessary that conversion factors be derived for those species that are processed so as to facilitate**

estimation of the corresponding whole weight. Such conversion factors will facilitate part compliance with ICCAT REC. 14-01 – ANNEX 1 – MINIMUM STANDARD INFORMATION FOR LOGBOOKS – 6. SPECIFIES IDENTIFICATION WHICH REQUIRES THAT CATCHES BE RECORDED IN ROUND WEIGHT (IN TONNES PER SET), however, the data will be recorded from fishing at each FAD rather than each (gear) set.

g. Bait type: The types of bait used may range from artificial lures to natural species such as four-wing flyingfish and ballyhoo. Since bait type may influence the type of species and/or size of fish caught the logsheet provides for recording the bait type for each species caught and gear used. Fishers are also required to identify the species if natural bait is used.

h. Weights: The option is provided for indicating whether weights are measured or estimated in pounds (lbs) or kilogrammes (kg). It is assumed that the option selected is applicable to all weights recorded on the logsheet. Provision is also made for indicating whether the weights are estimated by eye or actually measured using a scale.

i. Catch: The logsheet allows for the specification of catch weights separately by FAD# or fishing area, gear type and bait type, including the corresponding number of fish, as well as indication as to whether the weights were estimated or actual weights (measured on a scale). This level of detail will facilitate analyses of species composition and corresponding catch levels separately for each FAD # or fishing area (to capture spatial and depth influences) and gear type. THE REQUIREMENTS ALSO ADDRESS ICCAT REC. 14-01 – ANNEX 1 – MINIMUM STANDARD INFORMATION FOR LOGBOOKS – 6. SPECIES IDENTIFICATION AND 9. MEANS OF WEIGHT MEASURE AS WELL AS MINIMUM INFORMATION IN CASE OF LANDING, TRANSHIPMENTS. In addition, there is provision for recording the quantity of each species that is sold and the corresponding unit price, to be used for estimation of revenue earned.

j. Size of fish caught: *Although data on the number of fish is good there is concern about bulk weight – information on individual weight or number of fish in a particular weight class is important for analysis of the quantity of each size class of fish caught* – The logsheet provides for recording the corresponding number of fish associated with the weight caught at each FAD, using each gear type and bait type. Consequently it is possible to estimate the average size of fish caught by gear, FAD (location/depth) and bait type. Based on the size at maturity of the respective species in the literature, inferences could be made as regards the capture of juvenile fish by gear, location and bait type. **Should this level of detail be insufficient for the respective assessment and management needs the Fisheries Departments should implement a separate biological data collection programme to record more detailed biological data.**

k. Species identification: *include photos of each pre-listed species (instead of species names) or consider different naming options e.g. rather than common names use local names that fishers are familiar with; also include "other" for recording of species caught that are not pre-listed* – it should be appreciated that the local names with which fishers are familiar pose a problem for species identification, e.g., all small tunas may be called "bonitos", both wahoo and king

mackerel may be called “kingfish”. Also, while inclusion of photos on the logsheet could serve as a quick method for species identification it poses a challenge in terms of use of available space on the logsheet for recording other important data requested by Fisheries Departments as well as allowing sufficient space for fishers to record their responses. As well, even though all relevant species may be listed, all are not caught on the same trip; in fact only about six different species are caught on any particular trip. If the photos are in colour this will also have implications for the cost of printing of logbooks. The only feasible option was to leave blank spaces for recording of the names of species caught and to include the photographs and common names of relevant species in the section of the logbook that provides guidelines for completion of the logsheet. **The respective Fisheries Departments should conduct training in species identification and can customize the logsheets accordingly to have pre-listed options of common species with the proper common names indicated. The Fisheries Departments may choose to list the local names if these do not pose problems for identification of the species composition of the catch.**

l. By-catch: There is the critical assumption in developing the logsheet that all that is caught is landed, however, if this is not the situation there is provision to record the species caught as by-catch (turtles, seabirds, sharks, whales, dolphins, porpoise, manatee, or other species) and to indicate whether the by-catch was kept (landed) or discarded dead or alive. THE PROVISIONS, ALONG WITH THOSE DESCRIBED ABOVE, PARTLY SATISFY *ICCAT REC 2014 -01 – ANNEX 3 – BY-CATCH* IN THAT THERE IS NO REQUIREMENT TO RECORD THE WEIGHT OR NUMBER OF SPECIMENS IN THE BY-CATCH. **Depending on the national situation the Fisheries Departments may modify the logsheet accordingly to capture this information.**

m. Fishing costs: *include a section whereby records of money spent on fuel, amount of fuel used, money spent on other expenses and total earned from sale – completion of this section should be optional – the information will help the fishers keep track of their accounts* – Inclusion of such a section is useful for both fishers and managers and therefore the provision of such data should be mandatory. Apart from the already stated benefits to fishers this section will also allow managers to keep track of the economic viability of the fishery to ascertain whether or not the rationale for development of the fishery is still valid, to ascertain whether or not there is need to apply specific management measures to maintain the economic viability of the fishery and to set relevant license fees for the fishery. From an economic standpoint, the financial information required to assess profit include the weight of each species sold and the corresponding unit price as well as the cost of fishing (cost of fuel, oil, bait, ice, food, gear etc.). Since certain portions of the catch may not be sold (kept for personal use, as bait, distributed among crew, etc.) it is necessary to record the portion of the catch that is actually sold to estimate revenue. It must be noted that the cost of fuel and oil pertain to the amounts actually used for the fishing trip as opposed to what was bought for the fishing trip since the latter may be greater. As requested, options are provided for listing the amount of fuel and oil used for the trip. **However, there is opportunity to further simplify the logsheet if Fisheries Departments keep track of the daily unit cost of fuel and oil which could in turn be used to estimate the respective quantities used based on the respective costs provided by fishers. Alternatively, if it is easier for fishers to simply state the quantities used**

for the fishing trip, then the associated costs could be estimated. In order to ensure that fishers fully benefit from the financial data recorded, the Fisheries Department should facilitate training of fishers on how to estimate revenue, costs and profits from the data recorded.

n. Sea State & Water Colour: The requirement to identify sea state and water colour are to facilitate investigations of the impacts of environmental conditions on catches. In addition, provision is made for recording the presence of invasive *Sargassum* spp.

o. Comments & Observations: This is a general section included where fishers can record any observations at sea including, the reasons for poor or no catches, any loss of fishing gear or damage to the FADs and the quantity of bait (natural) purchased or used.

p. Name of Fisher Submitting Report: This requirement identifies the fisher responsible for completion of the logsheet and allows for clarifications or queries of the Fisheries Department on the data provided to be directed to the appropriate member of crew. The provision deviates from ICCAT REC. 14-01 – ANNEX 1 – MINIMUM STANDARD INFORMATION FOR LOGBOOKS – 7. MASTER SIGNATURE since very often, because of the size of the fishing vessels, the master (or captain) also serves as a fisher and so the name of the fisher with the direct responsibility for reporting is required. The size of the fishing vessels also precludes accommodation of an Observer on board and so there is no requirement for signature of an Observer in relation to ICCAT REC. 14-01 – ANNEX 1 – MINIMUM STANDARD INFORMATION FOR LOGBOOKS – 8. OBSERVER SIGNATURE, IF APPLICABLE.

q. Official Use Section: The section is included for administrative purposes to keep track of persons responsible for receiving, verifying and entering (computerising) the data and the respective dates.

5.3 Other critical data considerations

In order to ascertain how the data collected from logsheets should be analysed to provide information for the FAD fishery in general, two additional pieces of information are required: (1) whether or not the logbook system is being implemented for all fishing vessels that fish at FADs (total census); and (2) if the logbook system is being implemented only for a sample of the FAD fishing vessels then both the number of vessels sampled as well as the total number of vessels that operate at each FAD on each fishing day must be recorded. The additional data would facilitate estimation of total catch and fishing effort for FAD fisheries from sampled data.

5.4 ICCAT Rec. 14-01 data requirements to be considered in future

a. Deployment of any FAD: -The proposed logsheet does not facilitate recording of data associated with deployment of FADs as required under ICCAT REC. 14-01, PARAGRAPH 20. (A) AND ANNEX 2, particularly in respect of FAD design characteristics. The FADs introduced under the CARIFICO Project (and those introduced under the previous MAGDELESA Project) are all anchored FADs. These FADs are either deployed by individuals, groups of fishers or the government depending on the respective country situation. As well, fishers who target flyingfish

and associated large pelagic species also use drifting FADs which are not the focus of the CARIFICO project. From a national perspective it is important to record data for all fisheries – and in the case of pelagic fisheries for all methods that target the respective species. However, it would be difficult to capture the details associated with deployment of FADs from fishers, in addition to the other details pertaining to the catch and effort. The responsibility to provide the required information on FAD deployment should be placed on the owner of the FAD. It is therefore recommended that **Governments institute a FAD registration and monitoring system, supported by relevant legislation to capture the details on FAD deployment in accordance with ICCAT Rec 14-01, including whether or not FADs are of the drifting or anchored type and the depth of water in which the FAD is set.** Fishers need only record the FAD marking or beacon ID so that other details concerning the FAD could be linked to the data recorded on the logsheets.

b. Visit on any FAD: ICCAT REC. 14-01, PARAGRAPH 20. (B) REQUIRES SUBMISSION OF SPECIFIC DETAILS CONCERNING A VISIT TO ANY FAD. Regarding the type of visit it is assumed that fishers in the region visit a FAD for the purpose of fishing using easily set and retrievable gear and the logsheet currently facilitates recording of information pertaining to the catch and by-catch at FADs along with details on the date, FAD identification number or fishing area. The specifications of "hauling" and "retrieving" may apply to vessels that set longlines and droplines. **This situation is to be confirmed by the respective Fisheries Departments and the logsheet modified accordingly if applicable.** Regarding specific geographic details of the position of the FAD, this may be onerous for fishers to report, particularly if their vessels are not equipped with global positioning systems. **Details regarding the position and type of FAD may be best obtained through the proposed registration system mentioned above,** with fishers simply recording the FAD number (or identifier). **Special consideration would have to be given to drifting FADs.** A section for recording of comments is included on the logsheet to facilitate provision of additional details regarding fishing, including possible reasons for poor or no catches on the fishing trip, details concerning loss of fishing gear, loss of or damage to FADs, the quantity of bait purchased or used on the fishing trip and IUU fishing.

c. Loss of any FAD: ICCAT REC. 14-01, PARAGRAPH 20. (C.) REQUIRES SUBMISSION OF DETAILS CONCERNING THE LOSS OF ANY FAD (LAST REGISTERED POSITION, DATE OF LAST REGISTERED POSITION AND FAD IDENTIFIER). Reporting on the loss of any FAD should be the responsibility of the owner of the FAD rather than the fisher. Consequently there is no provision for recording this information specifically on the logsheet, although fishers could note their observations in the general "comments" section. **The proposed FAD registration system should allow for recording such data on FAD losses, however, the collaboration of FAD owners, fishers and other user of the marine space will be required.**

6. CHALLENGES

The main challenges experienced in development of the model logsheet were:

a. the very limited and untimely, feedback from Member States in reviewing the second draft of the model logbook and providing their inputs to facilitate its further refinement;
b. the lack of clarity regarding the national approach to data collection for FAD fisheries as evidenced by the data sheets provided. It is uncertain whether these are to be used (1) for field data collection i.e. to be completed by data collectors; (2) as a FAD fishing trip logsheet i.e. to be completed by fishers; or (3) as a FAD fishing trip logsheet to be completed by data collectors;
c. ambiguity in the manner of heading national data collection sheets (whether for field data collection or logsheets) which further contributed to the uncertainty at (b).
d. uncertainty as to whether or not adjustments to the data collection sheets (whether for field data collection or logsheets) made by the CARIFICO Project Liaison Officers or Managers or data collection personnel were officially endorsed by the respective Fisheries Departments for widespread use.
e. the sharing of data collection sheets at different times throughout the process of development of the model logsheet rather than at the beginning so as to facilitate a comprehensive analysis of the existing situation.

7. RECOMMENDATIONS

The model logbook attempts to comprehensively capture the majority of data requirements to address management issues pertaining to (1) the sustainability of FAD fisheries, from a resource perspective; (2) the efficiency of FAD fisheries; and (3) the costs and earnings from the fishery, thereby addressing management objectives 2 to 4 as stated under Section 2. It is not intended to address all the management issues pertaining to FAD fisheries for which other mechanisms for data collection may be required (eg. a FAD registration and licensing system). The logbook however, facilitates standardization of data collection to enable regional analyses on pelagic fisheries, and FAD fisheries more specifically, given that the resources targeted are migratory and therefore shared among several countries. It may be implemented for both commercial and recreational fisheries with slight modification. There remain however, certain management objectives which can only be monitored and evaluated through a more extensive national fisheries data collection system (e.g. reduction of fishing pressure on inshore resources, increased fish landings). Baseline data on FAD fisheries would need to be collected in order to ascertain whether or not FAD fisheries are indeed contributing to reduction in fishing costs and improved livelihoods and food security.

With the above considerations in mind, as well as recommendations already listed under Section 4, the following additional recommendations are provided concerning implementation of a logbook system for FAD fisheries.

7.1 Fishers' Engagement in Data Collection as a Component of FAD Fisheries Governance

a. Awareness-building of fishers: In keeping with good practices in fisheries governance it is critical that stakeholders be kept informed of management initiatives and allowed to fully participate in the fisheries management decision-making process. Since the CARIFICO Project is seeking to

engage fishers in the governance process by initially having them participate in data collection on FAD fisheries through implementation of a logbook system it is important that fishers understand the link between data collection and management. Consequently, an awareness programme should be implemented for FAD fishers to explain the data requirements under the logbook system in the context of the stated management objectives for FAD fisheries, to identify the benefits of the data collected to the fishers and to keep fishers as well as other direct stakeholders periodically informed of the results of analyses of logbook data and how these results will contribute to management of FAD fisheries. The notion that fishers are not willing or interested in data collection likely stems from their misunderstanding, or lack thereof, of the utility of the data on a personal level. Since the success of the logbook system is dependent on the support of fishers it is worth the effort in spending time to educate fishers in this regard.

b. Awareness-building of decision-makers: The long-term sustainability of the logbook system is also dependent on the financial and human resource support provided by decision-makers. It is therefore necessary to make decision-makers aware of the utility of the information collected – placing these in the context of relevant management terms that indicate the value of the fisheries, the number of fishers, vendors and other persons employed in the fishery, the number of fishing vessels involved and the cost of full implementation of the logbook system (including collection, analysis and reporting of the data collected).
c. Training of fishers: involvement of FAD fishers in the data collection exercise using the proposed logbook will require that they be trained in the proper completion of the logbook. It is important that they have a clear understanding of the specific data requirements and how these link to management of the fishery. Such engagement with fishers may also serve to identify more feasible approaches for capture of the required data as well as areas where the logbook could be further simplified to facilitate wider understanding. Fishers should also be trained in identification of species so as to rectify common problems of species misidentification e.g., different species of mackerels may be collectively referred to as “kingfish” and different species of small tunas may be collectively referred to as “bonito”. As well, fishers should be trained on how to manipulate the data collected for their own use so as to generate wider interest in the logbook system. Special attention may also have to be given to increasing the literacy level of fishers in general.
d. Stakeholder engagement in deciding the way forward: The feasibility of collection of the full range of data outlined in the model logbook should be discussed with fishers and the implications for decision-making clearly understood if it is agreed that certain data types will not be collected. This is necessary to avoid any unrealistic expectations on the part of fishers and decision-makers as to the types of information that can and cannot be generated if the data requirements are “scaled-down”. In particular, fishers should be made aware of the utility of the data for themselves in trip and business planning (see 7.1 (a) above).

7.2 National Relevance of Logbooks and Long Term Sustainability of the Logbook System

a. Customisation of logbooks: Logbooks should be customised to include country specific FAD identifiers and fishing areas as well as local names of the species caught (mindful of the need for accurate scientific identification of species) and any other characteristics of the FAD fishery of relevance to management.
b. Additional economic data to estimate profits: further information on the share of profits to boat/engine owner, captain and each crew should be collected to estimate the actual earning of

each individual; as well, additional information on the capital cost of the vessel, engine, gear and associated maintenance costs should be factored in to the calculation of earnings for the owner.

c. Data verification and checking systems: A system for verification of the accuracy of FAD fisheries data collected on logbooks and checking for completeness of the data submitted should be implemented. Where field data collection programmes are being implemented by Data Collectors of the Fisheries Departments, the data so collected may be used to verify the accuracy of logbook data.

d. Mechanism for long-term sustainability of the logbook system: In addition to the suggestions at 7.1 (b) above a mechanism for long-term sustainability of the logbook system should be developed and supported by the decision-makers. A possible funding option may be to build the cost of implementation of the logbook system into the licence fee for FAD fisheries. If it is not possible to continuously support the logbook system then an alternative mechanism for data collection to support decision-making on the fishery should be explored.

e. Alternative means of data capture: It is likely that fishers may not want to carry the logbook on board as it may become water-soaked or lost at sea on such small fishing vessels. While in the past fishers would simply recollect details after landing their catch and record the information in the logbook it is not likely that fishers will be able to recall data in the level of detail required in the model logbook. As a consequence, there may be merit in exploring the use of ICT tools in data capture while at sea. Although this option will come with initial implementation costs these costs will eventually be offset through elimination of recurring costs associated with printing and distribution of logbooks. Such an option may also address any illiteracy issues that may impact on fishers' ability to read and understand the data requirements in the model logbook.

7.3 Improving National Fisheries Data Collection for Enhanced Fisheries Assessment and Management

a. Minimizing Data Reporting Requirements of Fishers: Field data collection and logbook systems must be rationalized so as to minimize the data reporting requirements for fishers. As well, if there is already a mechanism for tracking certain data types then fishers should not be required to provide such data unless of course they require it for their own purpose e.g., if there is an existing mechanism for tracking the daily unit price of fuel and oil, then fishers need only be required to provide information on the quantity of fuel and oil used on a trip and the corresponding monetary value could be calculated by the Fisheries Divisions/Departments.

b. Estimation of total catches of FAD fisheries: If Fisheries Departments are able to capture a census of all boats involved in FAD fishing then estimation of total catch by species is simple – a summation of all catches (both target and by-catch or non-target species whether retained or discarded, dead or alive). However, if data are collected for a sample of FAD fishing vessels each day, additional information on the total number of vessels fishing on each FAD, each day, will be required in order to raise the recorded data to total catches. A compounding factor, whether or not a census or sample is taken, pertains to the state of the landed catch –i.e whether there has been some processing while at sea (e.g., removal of entrails (guts), gills, fins, head etc.). Under such circumstances it is recommended that specific biological research be conducted to derive factors for conversion from various forms of processing to whole weight of the respective species.

c. Biological data collection system: It would difficult to integrate biological data collection into the logbook system given that fishers are not yet well trained or informed to be able to collect the

basic catch and effort data. While the logbook provides for recording the number of fish of each species corresponding to a specific weight from which the average size can be estimated (mindful of the need to convert to whole weight in cases where fish are processed at sea), the estimate will not likely be accurate enough if there are extreme sizes of fish in the catch. As a consequence there is a constraint in identifying whether or not immature fish are caught in the FAD fishery solely from analysis of logbook data. For this reason, a specific biological data collection programme should be implemented with focus on collection of length, weight, sex and maturity/reproductive data across all pelagic fisheries. These data may also be useful to ascertain details on the natural migration of fish (CRFM, 2012) and possible impacts of FAD fisheries specifically and pelagic fisheries in general.

d. Capture of vulnerable or endangered species: The incidence of vulnerable or endangered species (e.g. turtles, marine mammals, seabirds, sharks) in the FAD catches of CRFM Member States is not well documented. Consequently investigations should be carried out with fishers to document the species caught, location of capture and respective quantities. The final logsheet allows for the recording of the species, location and associated numbers of animals caught. If analysis of data collected suggests that there is an issue with the capture of these species then it would be necessary for managers to seek appropriate solutions, technological or otherwise, to minimise the capture of such species.

e. Integration of FAD logbook data into national fisheries data collection system: While analysis of FAD logbook data can provide specific information for management of FAD fisheries, the species targeted are caught in other pelagic fisheries that do not use FADs. Consequently, assessment of the status of pelagic fisheries resources in general will have to consider data from all pelagic fisheries. As well, FADs are promoted as contributing to the reduction in fishing pressure on inshore resources (e.g. reef resources). To be able to assess this impact and other national fisheries impacts, it is highly recommended that FAD logbook data be integrated into the national fisheries data collection, computerisation, analysis and reporting systems.

7.4 Making Data Collection a Mandatory Requirement in Support of Fisheries Management

a. Mandatory requirement to provide data: As with all fisheries, the provision of data on FAD fisheries should be made mandatory or legislated, with the appropriate monitoring, control and enforcement system in place and real consequences on the right to fish as a result of non-compliance.

b. Registration and monitoring of FADs: Countries should institute a formal registration and monitoring system for FADs, supported by relevant legislation, to capture details on the owner and the characteristics or specifications of each FAD as well as the respective geographic location (depth and distance from shore) and costs of construction and maintenance. Note that the current model logsheet does not facilitate the recording of distance from shore at which fishing occurred but allows for identification of the FAD at which fishing occurred. Registered FADs should be assigned an official and unique FAD number which must be affixed to the structure so that it is easily identifiable for data reporting and other purposes. Also, FAD owners should be required to report on the loss of FADs. The provision of information should be legislated. This information would allow decision-makers to have a full appreciation of the true costs and benefits of the FAD fishery (along with analysis of logbook data and data at (see 7.2 (d) above) and enable the setting of license fees for the right to fish in FAD fisheries that is commensurate with the respective

costs. As well, it would meet some of the data requirements under ICCAT Rec 14-01, specifically paragraph 20 (a) and (c) pertaining to deployment and loss of FADs and Annex 2 pertaining to FAD identification, characteristics and FAD and electronic equipment types. Special consideration should be given in the registration system for drifting FADs that are popular in the fishery for flyingfish and associated large pelagic species.

c. Licensing of FADs: A licensing system should be implemented, supported by legislation, for FAD fishing. This system should be fully integrated into any national fisheries licensing system and address both commercial and recreational fishing around FADs. Apart from the obvious control of access to FAD fisheries this system, if well monitored and enforced, would also provide details on the number of fishers and vessels involved in the fishery and could provide other demographic (social) data as well as characteristics of fishing vessels (including the economic information at (see 7.2 (b) above) useful for decision-makers.

7.5 Data-Sharing in support of improved Approaches to Assessment and Management of the Pelagic Resources and Fisheries

a. Regional fisheries analyses: The CRFM's Pelagic Fisheries Working Group is charged with the responsibility to conduct fisheries analyses and stock assessments (where practical) as well as to agree on and implement specific management measures. Consequently, it is recommended that all CRFM Member States share the respective data (from logsheets and other national data collection programmes) and that the Secretariat serves as a repository for such data to facilitate regional analyses and assessments until such time as there is a regionally agreed Data and Information Policy. Already there are at least 3 Sub-regional Fisheries Management Plans which require this level of collaboration and which are of relevance to FAD fisheries (the Sub-regional Fisheries Management Plan for Flyingfish in the Eastern Caribbean endorsed by the Ministerial Council for implementation, the Draft Sub-Regional Fisheries Management Plan for Blackfin Tuna Fisheries in the Eastern Caribbean, the Draft 2015 Sub-regional Management Plan for FAD Fisheries in the Caribbean Regional Fisheries Mechanism (CRFM) Member States).

b. Interactions with ICCAT: The logsheet seeks to capture pertinent data which may enable identification of specific factors contributing to the capture of over-exploited and vulnerable species, and thus facilitate technological or other changes to minimize the catches of over-exploited species and juvenile fish. However, the location of the respective countries, along with the prevailing environmental conditions, is conducive to feeding and spawning of certain species (ICCAT, 2015). It may well be that the capture of such species and sizes is unavoidable. CRFM Member States should therefore submit pelagic fisheries data, including data for the respective FAD fisheries, to ICCAT so as to improve the reliability of the assessments of the respective species and refinement of the management recommendations. The CRFM, through its PWG (management-level component) should also articulate a regional position to the ICCAT in support of special consideration of the respective countries given the importance of pelagic fisheries to the livelihood of fishers and national food security. Such consideration may include increasing the tolerance levels for capture of over-exploited species and juvenile fish.

8. THE WAY FORWARD

Implementation of the Logbook System comprises the sensitization and training of fishers, testing and modification of the logbook, data collection by fishers using logbooks, verification, computerization and analysis of such data, reporting on data analyses with associated management, statistics and research recommendations and supporting legislation and feedback to stakeholders (fishers and decision-makers). The CRFM will continue to work with the CARIFICO Project and relevant CRFM Member States to sensitise fishers about the proposed FAD fisheries logbook and foster an appreciation for basic issues concerning management and conservation of the resources upon which such fisheries depend as well as to conduct the necessary training to enable fishers to be able to complete the logsheets. The CRFM will also assist with development of an EXCEL template to facilitate computerisation of logbook data. However, in the long-term, FAD fisheries data (whether or not collected from logsheets) should be fully integrated into existing national fisheries databases. The CRFM will also facilitate the analysis of FAD fisheries data at meetings of the Pelagic Fisheries Working Group and publication of the associated reports. However, the full implementation and monitoring of the Logbook System remain primarily the responsibility of the Fisheries Departments of respective Member States.

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APPENDICES

Appendix 1. CARIFICO Project Fishing Vessels Logsheet used in Antigua and Barbuda. *(Extracted from Logbook)*

Trip No. : _______ **Length of trip:**___________ **Date:**_ _____ /______ /_______ **Captain**_______________________________

Time Depart				**No. of Fishers**		**No. of vessels at FAD**	
Dedicated FAD Trip		**Time spent FAD fishing**	**Weather (Circle the applicable conditions)**				
Yes	*No*	*- hours*	*Calm* *Slight* *Moderate* *Moderate to Rough* *Rough* *Very Rough*				
No. of lines used	*Troll lines*		*Drop lines/Traps*		*Troll (Bait)*		*Other (* *)*
No. of FADS Visited		**Fishing Location**					

Catch Record										**Disposal of Catch (lbs)**			
Species	No. of Fish	Weight in lbs	Weight type (✓)		FAD (✓)		Gear		Bait	Sold Fresh	Kept for Bait	Own Use	Stored for sale
			Gutted	Whole	Yes	No	Drop Line/ Trolling/Other						
Yellowfin Tuna													
Blackfin Tuna													
Marlin													
Mahi Mahi													
Wahoo													
King Fish													
Skip Jack													

Costs									
Bait	$	Fuel	$	Ice	$	Food	$	Other ( )	$

Observations:____

Comments:____

Appendix 2. Boat Catch and Effort Form used in Dominica. *(Reproduced from original)*

MINISTRY OF AGRICULTURE AND THE ENVIRONMENT

FISHERIES DIVISION

BOAT CATCH AND EFFORT FORM

Boat (Registration No.) _____ Landing site: _____ Collector: _____

Date	Fishing Location	Method	Soak time	No. of fish in pot	Total weight (Lbs.)	Cost of fishing operation			No. of Crew	Total fishing time	Species														
						Fuel	Bait	Food			Snapper	Grouper	Parrotfish	Squirrelfish	Grunts	Triggerfish	Caranx	Marlin	Dolphin	Yel. Tuna	B. Tuns	Skipjack	Wahoo		

Appendix 3. Grenville FAD Fisheries Daily Log Interview Form used in Grenada

Grenville FAD Fishers Daily Log Interview Form

Date:			Location: East Coast of Grenada.			FAD Fished		Species of Fish Caught & LBS										
Fishers Name & Boat #	Depart Time	Arrival Time	Gear Used Tolling Lines/ Drop lines	Weather conditions Good, Fair, Bad	FADs conditions: Floating Submerged	CARIFICO FADS	MAGDELESA FAD	KF/ WAH	DOL	YFT	SJT	BFT	BAR	CAV	RBR	BUM	SAI	**TOTAL**

Species code: KM – King Mackeral WAH – Wahoo DOL – Dolphin Fish YFT – Yellow Fin Tuna BFT – Black Fin Tuna BAR – Barracuda CAV – Cavalli
BUM – Blue Marlin SAI – Sailfish RBR – Rainbow Runner SJT – Skip Jack Tuna

Appendix 4. Fishing Vessels Catch and Effort Form of St Lucia

FISHING VESSELS CATCH AND EFFORT FORM

Name of fisher.....

Boat Reg # J6.....Boat Name.....

Trip #	1		2		3	
Date (DD/MM/YY)						
Number of crew						
Departure Site						
Landing Site						
Fuel Used in gals.						
Cost of Fuel						
Type &Number of gear	Number of Gear Used	Number of Gear Loss	Number of Gear Used	Number of Gear Loss	Number of Gear Used	Number of Gear Loss
TROL DRIFT LINE HAND LINE OTHER(specify):	....	....	....	....	....	....
FAD name and/or number	FAD 1..... FAD 2.....		FAD 1..... FAD 2.....		FAD 1..... FAD 2.....	
Type Bait Used						
Cost of Bait						
Hours Fished						
Length of Driftlin						
Depth fished						

Weight of Catch in Lbs/kg	Wt	Nu	Wt	Nu	Wt	Nu	Wt	Nu	Wt	Nu	Wt	Nu
SPECIES												
Skipjack tuna												
Yellowfin tuna												
Bullet tuna												
Frigate tuna												
Blackfin tuna												
Bigeye tuna												
Albacore tuna												
Little tunny												
Atlantic bonito												
Swordfish												
King mackerel												
Cero Mackerel												
Blue Marlin												
Wahoo												
Dolphin fish												
Atlantic sailfish												
Shark												
Tripple tail												
Triggerfish												

WEATHER	Calm	Gale	Storm	Hurricane	Overcast Skies	Raining
SEA CONDITIONS	Flat	Moderately high waves with breaking crests forming spindrift.	Very high waves with overhanging crests.	Huge waves. Sea is completely white with foam and spray.		

Comments:

Data Collector:-	Signature:-	Date: / / 2014
Entered by:-	Signature:-	Date: / / 2014
Checked by:-	Signature:-	Date: / / 2014

Appendix 5. FAD Data Collection Sheet in St Vincent and the Grenadines. *(Original sheet is without a heading)*

Date: _____ (DD/MM/YYYY) Departure from Landing Site: _____ a.m./ p.m. Arrival at Landing Site: _____ a.m./ p.m.

Boat I.D: _____ Captain: _____

FAD I.D # (see back page): _____ Main Gear Used: TR/HL/DL/RR Bait used _____ Total wt caught whole: _____ lb/kg; headed_____ lb/kg Total number of fish: _____ Fuel consumption ($) _____				FAD I.D # (see back page): _____ Main Gear Used: TR/HL/DL/RR Bait used _____ Total wt caught: whole _____ lb/kg; headed_____ lb/kg Total number of fish: _____ Fuel consumption ($) _____			
Individual Species Data				**Individual Species Data**			
Species	**Number**	**Weight (lb/kg)**		**Species**	**Number**	**Weight (lb/kg)**	
		Whole	**Headed***			**Whole**	**Headed***
Skipjack Tuna				Skipjack Tuna			
Yellowfin Tuna				Yellowfin Tuna			
Bullet Tuna				Bullet Tuna			
Frigate Tuna				Frigate Tuna			
Blackfin Tuna				Blackfin Tuna			
Big Eye Tuna				Big Eye Tuna			
Albacore Tuna				Albacore Tuna			
Little Tunny				Little Tunny			
Atlantic Bonito				Atlantic Bonito			
Swordfish				Swordfish			
King Mackerel				King Mackerel			
Cero Mackerel				Cero Mackerel			
Blue Marlin				Blue Marlin			
Wahoo				Wahoo			
Dolphin fish				Dolphin fish			
Atlantic sailfish (Ocean Gar)				Atlantic sailfish (Ocean Gar)			
Shark:				Shark:			
Other:				Other:			

Key to codes

Gear: TR = trolling; HL = hand line; DL = drop line; RR = rod & reel Headed* = Headed & Gutted

FAD I.D# - 1: MAGDELESA FAD Barrouallie; 2: MAGDELESA FAD Baliceaux; 3: CARIFICO FAD Baliceaux

Appendix 6. Daily Fish Catch and Effort Form used in Dominica

Government of the
COMMONWEALTH OF DOMINICA

FISHERIES DIVISION
Tel. 1(767)266-5291
fisheriesdivision@dominica.gov.dm

DAILY FISH CATCH and EFFORT FORM

Date: (YYYY/MM/DD) / / | Landing Site: | Data Collector: – | Sampled | Not Sampled | Fished | Not Fished

Boat ID: J 7 – – | Captain: | Crew | Engine? ○ Y ○ N
Departed (MM/DD) / | Boat Type ○ Canoe ○ FRP ○ Keel ○ Other
○ A.M ○ P.M : | Fuel | Oil | Ice
Returned (MM/DD) / | Bait | Food | Other
○ A.M ○ P.M :

	Fish	Wt.	Qty.	Status	Price	Type	Area	FAD?	Gear	Units	Soak Time	
1								○ Y ○ N				1
2								○ Y ○ N				2
3								○ Y ○ N				3
4								○ Y ○ N				4
5								○ Y ○ N				5

Boat ID: J 7 – – | Captain: | Crew | Engine? ○ Y ○ N
Departed (MM/DD) / | Boat Type ○ Canoe ○ FRP ○ Keel ○ Other
○ A.M ○ P.M : | Fuel | Oil | Ice
Returned (MM/DD) / | Bait | Food | Other
○ A.M ○ P.M :

	Fish	Wt.	Qty.	Status	Price	Type	Area	FAD?	Gear	Units	Soak Time	
1								○ Y ○ N				1
2								○ Y ○ N				2
3								○ Y ○ N				3
4								○ Y ○ N				4
5								○ Y ○ N				5

Boat ID: J 7 – – | Captain: | Crew | Engine? ○ Y ○ N
Departed (MM/DD) / | Boat Type ○ Canoe ○ FRP ○ Keel ○ Other
○ A.M ○ P.M : | Fuel | Oil | Ice
Returned (MM/DD) / | Bait | Food | Other
○ A.M ○ P.M :

	Fish	Wt.	Qty.	Status	Price	Type	Area	FAD?	Gear	Units	Soak Time	
1								○ Y ○ N				1
2								○ Y ○ N				2
3								○ Y ○ N				3
4								○ Y ○ N				4
5								○ Y ○ N				5

001 Page of for date

Checked by

Data Collectors Signature

Appendix 7. Field Data Sheet used in St Lucia

ST. LUCIA DATA MANAGEMENT PROGRAMME

FIELD DATA SHEET

Landing Site	Weather	Time arrived at site	Time departed from site
Date	Sea State	Name of collector	Total Vessels Out

Crew Size												
Landing Order												
Boat ID Number												
Time-Departure												
Time Returned												
Area Fished/Zone												
Fuel Used(Gal.)												
Gear Primary												
Gear Secondary												
Number of gear used (Trol, Pots, Nets, L-ling)												
Number of Sets (Nets, Longlines)												
Range of depth Pots, Nets, L-lines)												
Nets & Pots (mesh size)												
Total Dolphinfish												
Total YFT >20lbs												
Total YFT >60lbs												
Nets & Pots (hours/days soak time)												
Total Number of Hooks												
Weight Type (VE, FE, WT)												
SPECIES NAME	Weight (lbs)	GP	Price Per lb	Weight (lbs)	GP	Price Per lb	Weight (lbs)	GP	Price Per lb	Weight (lbs)	GP	Price Per lb
Trip Interview Program Sequence number												

Include reason for no/low catch or for early return: state of currents: weather condition. Fill in form when there is effort but no catch. *VE-Visual estimate, FE-Fishermen estimate, WT-Weight measurement, GP-Gutted Weight

*No. Sharks Caught*_____ *No. Tunas Caught*_____ *No. Wahoo Caught*_____
*No. Dolphin Caught*_____ *YFT more than 20lbs*_____ *YFT more than 60lbs*_____
COMMENTS:

Appendix 8. Monthly Landed Schedule used in St Vincent and the Grenadines. *(Reproduced from original with days in English)*

Month and Year:

7-2011

Boat Name: Fisherman's Name:

Date		Landing Site Where Departed		⇨	Landing Site Where Landed		Total Catch
01-7	F	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
02-7	S	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
03-7	S	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
04-7	M	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
05-7	T	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
06-7	W	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
07-7	T	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
08-7	F	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
09-7	S	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
10-7	S	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
11-7	M	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
12-7	T	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
13-7	W	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
14-7	T	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
15-7	F	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	

Month and Year:

7-2011

Boat Name: Fisherman's Name:

Date		Landing Site Where Departed		⇨	Landing Site Where Landed		Total Catch
16-7	S	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
17-7	S	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
18-7	M	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
19-7	T	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
20-7	W	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
21-7	T	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
22-7	F	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
23-7	S	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
24-7	S	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
25-7	M	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
26-7	T	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
27-7	W	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
28-7	T	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
29-7	F	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	
30-7	S	Home Site	Other Site [ ]	⇨	Home Site	Other Site [ ]	

Appendix 9. First Draft of Model Logsheet for FAD Fisheries Data Collection

Fisher Logbook

FISHING VESSELS CATCH AND EFFORT FORM

Name of fisher…….

Landing #	**1**				**2**				**3**			
Date (DD/MM/YY)												
Boat Reg #												
Boat Name												
Departure Site												
Landing Site												
	Primary Gear		**Secondary Gear**		**Primary Gear**		**Secondary gear**		**Primary Gear**		**Secondary Gear**	
Type &Number of gear												
FAD name and number												
# of sets for lines												
Hours Fished												
# of hooks												
Depth fished												
Weight of Catch in Lbs/kg	**Wt**	**Nu**	**Wt**	**Nu**	**Wt**	**Nu**	**Wt**	**Nu**	**Wt**	**Nu**	**Wt**	**Nu**
SPECIES												
Skipjack tuna												
Yellowfin tuna												
Bullet tuna												
Frigate tuna												
Blackfin tuna												
Bigeye tuna												
Albacore tuna												
Little tunny												
Atlantic bonito												
Swordfish												
King mackerel												
Cero Mackerel												
Blue Marlin												
Wahoo												
Dolphin fish												
Atlantic sailfish												
Shark												

WEATHER	Calm	Gale	Storm	Hurricane	Overcast Skies	Raining
SEA STATE	Flat	Moderately high waves with breaking crests forming spindrift.	Very high waves with overhanging crests.	Huge waves. Sea is completely white with foam and spray.		

Comments:

Data Collector:-	**Signature:-**	**Date: / / 2014**
Entered by:-	**Signature:-**	**Date: / / 2014**
Checked by:-	**Signature:-**	**Date: / / 2014**

Appendix 10. ICCAT Rec 14-01 – Recommendation by ICCAT on a Multi-Annual Conservation and Management Program for Tropical Tunas.

14-01 **TRO**

RECOMMENDATION BY ICCAT ON A MULTI-ANNUAL CONSERVATION AND MANAGEMENT PROGRAM FOR TROPICAL TUNAS

CONSIDERING that the adoption and the further implementation of a multi-annual program for the medium-term will contribute to the conservation and sustainable management of the tropical tunas fishery;

RECOGNIZING the necessity to adopt monitoring and control measures to ensure implementation of conservation and management measures and to improve the scientific assessment of those stocks;

EXPRESSING GRAVE CONCERN about the difficulties encountered by the Standing Committee on Research and Statistics (SCRS) in investigating the state of the stocks of tropical tunas from the Convention area and to fully evaluate options for area/time closures and propose precise relevant recommendations because of the lack of reliable data collection mechanisms by some CPCs;

RECOGNIZING that a pilot implementation of an area/time closure will contribute to the collection of such necessary data, and will enhance the reduction of the catches of juvenile tropical tunas;

NOTING that the SCRS does not have the data necessary to fully evaluate options for area/time options closure and to propose precise relevant recommendations;

RECOGNIZING the contribution that a reduction in the harvest of juvenile tunas in the Gulf of Guinea can contribute to the long-term sustainability of the stocks;

RENEWING the commitment to fully implement the existing mandatory reporting obligations, including those referred to in point 20 and 21 of the present Recommendation;

CONSIDERING that Recommendation 11-01 foresees the establishment as from 2013 of an ICCAT Regional Observer Programme (hereafter referred to as ROP TROP), to ensure the observer coverage of 100% of all surface vessels fishing for tropical tunas, including support activities, in association with fish aggregation objects, including Fish Aggregating Device (FADs), from 1 January to 28 February each year, in a delineated area;

NOTING that the establishment of the ROP TROP has not been achieved yet, and thus the vessels concerned were not in a position to deliver the tasks expected from ROP-TROP observers and that consequently vessels used the national observers on board to complete the tasks detailed in Annex 3 of Recommendation 11-01;

NOTING that the data collected by national observers adequately provide the data expected from the ROP TROP program;

FURTHER RECOGNISING that during the area/time closure period the coverage of national observers for purse seiner fishing for tropical tunas should be increased from the minimum of 5% of the fishing effort established by Recommendation 10-10 to a 100% coverage of fishing effort;

RECALLING recommendations by the Standing Committee on Research and Statistics (SCRS) to address the lack of reliable data collection mechanisms, particularly in tropical tuna fisheries carried on in association with objects that could affect fish aggregation, including FADs;

FURTHER RECALLING that as regards skipjack tunas SCRS stated in its 2014 report that the increasing use of FADs since the early 1990s has changed the species composition of free swimming schools, and that association with FADs may also have an impact on the biology and on the ecology of yellowfin and skipjack tunas;

NOTING that, according to the 2014 SCRS advice, increasing harvests and fishing effort for skipjack could lead to involuntary consequences for other species that are caught in combination with skipjack in certain fisheries;

RECOGNIZING the necessity to adopt data collection and transmission mechanisms to allow improvement of the monitoring and the scientific assessment of the related fisheries and associated stocks;

NOTING that in its 2013 report, SCRS recognized the effect of FADs on both sea-turtle and shark by-catch and the need to provide advice on the design of FADs that would lessen their impact on by-catch species. Therefore, information on dimension and material of the floating part and of the underwater hanging structure should be provided. More particularly the entangling or non-entangling feature of the underwater hanging structure should be reported;

RECALLING measures related to FAD management plans in other tuna RFMOs;

CONSIDERING that the multispecies characteristics of the tropical tuna fisheries makes it appropriate to extend to skipjack tuna the multi-annual management and conservation plan for yellowfin and bigeye tuna established by Recommendation 11-01, as amended by Recommendation 13-01;

THE INTERNATIONAL COMMISSION FOR THE CONSERVATION
OF ATLANTIC TUNAS (ICCAT) RECOMMENDS THAT:

Multi-annual Management and Conservation Program

1. Contracting Parties and Cooperating non-Contracting Parties, Entities or Fishing Entities (CPCs) whose vessels fish bigeye and/or yellowfin tunas in the Convention area shall implement the Multi-annual Management and Conservation Program initiated in 2012. As from 2015, such programme shall also apply to the eastern stock of skipjack tuna.

Capacity limitation for bigeye tuna

2. A capacity limitation shall be applied for the duration of the Multi-annual Program, in accordance with the following provisions:

   a) The capacity limitation shall apply to vessels 20 meters length overall (LOA) or greater fishing bigeye tuna in the Convention area.

   b) CPCs which have been allocated a catch limit in accordance with paragraph 13 shall each year:

      i) Adjust their fishing effort so as to be commensurate with their available fishing possibilities;

      ii) Be restricted to the number of their vessels notified to ICCAT in 2005 as fishing for bigeye tuna.

However, the maximum number of longline and purse seine vessels shall each year be subject to the following limits:

CPC	*Longliners*	*Purse seiners*
China	45	-
EU	269	34
Ghana	-	13
Japan	245	-
Panama	-	3
Philippines	11	-
Korea	14	-
Chinese Taipei	75	-

c) Ghana shall be allowed to change the number of its vessels by gear type within its capacity limits communicated to ICCAT in 2005, on the basis of two bait boats for one purse seine vessel. Such change must be approved by the Commission. To that end, Ghana shall notify a comprehensive and detailed capacity management plan to the Commission at least 90 days before the Annual meeting. The approval is notably subject to the assessment by the SCRS of the potential impact of such a plan on the level of catches.

d) The capacity limitation shall not apply to CPCs whose annual catch of bigeye tuna in the Convention area in 1999, as provided to the SCRS in 2000, is less than 2,100 t.

Specific authorization to fish for tropical tunas

3. CPCs shall issue specific authorizations to vessels 20 meters LOA or greater flying their flag allowed to fish bigeye and/or yellowfin and/or skipjack tunas in the Convention area, and to vessels flying their flag used for any kind of support to this fishing activity (hereafter referred to as "authorized vessels").

ICCAT Record of authorized tropical tuna vessels

4. The Commission shall establish and maintain an ICCAT record of authorized tropical tuna vessels. Fishing vessels 20 meters LOA or greater not entered into this record are deemed not to be authorized to fish, retain on board, tranship, transport, transfer, process or land bigeye and/or yellowfin and/or skipjack tunas from the Convention area.

5. CPCs shall notify the list of authorized vessels to the Executive Secretary in an electronic form and in accordance with the format set in the Guidelines for Submitting Data and Information Required by ICCAT.

6. CPCs shall without delay notify the Executive Secretary of any addition to, deletion from and/or modifications of the initial list. Periods of authorization for modifications or additions to the list shall not include dates more than 45 days prior to the date of submission of the changes to the Secretariat. The Secretariat shall remove from the ICCAT Record of Vessels any vessel for which the periods of authorization have expired.

7. For CPCs for which a capacity limitation applies in accordance with paragraph 2b) vessels fishing tropical tunas in the Convention area may be replaced only by vessels of equivalent capacity or lesser.

8. The Executive Secretary shall without delay post the record of authorized vessels on the ICCAT website, including any additions, deletions and/or modifications so notified by CPCs.

9. Conditions and procedures referred to in the *Recommendation by ICCAT Concerning the Establishment of*

an ICCAT Record of Vessels 20 meters in Length Overall or Greater Authorized to Operate in the Convention Area [Rec. 13-13] shall apply *mutatis mutandis* to the ICCAT record of authorized tropical vessels.

Vessels actively fishing tropical tunas in a given year

10. Each CPC shall by 1 July each year notify to the Executive Secretary the list of authorized vessels flying their flag which have fished bigeye and/or yellowfin and/or skipjack tunas in the Convention area in the previous calendar year.

    The Executive Secretary shall report each year these lists of vessels to the Compliance Committee.

11. The provisions of paragraphs 3 to 10 do not apply to recreational vessels.

Catch limits for bigeye tuna

12. The annual Total Allowable Catch (TAC) for 2012 and subsequent years of the Multi-annual Program is 85,000 t for bigeye tuna. The following shall apply:

    a) If the total of catches exceeds the TAC in a given year, the excess amount shall be paid back by CPCs to which a catch limit has been granted for the species concerned. Excess quantities shall be deducted the following year on a *prorata* basis from the adjusted quotas/catch limits of the CPC concerned, as per paragraphs 16 and 17.

    b) The TAC and catch limits for 2012 and subsequent years of the Multi-annual Program shall be adjusted based on the latest scientific assessment available. Whatever the outcome, the relative shares used to establish the annual catch limits for the CPCs appearing in paragraph 13 shall remain unchanged.

13. The following catch limits shall be applied for 2012 and subsequent years of the Multi-annual Program to the following CPCs:

CPC	*Annual catch limits for the period 2012-2015 (t)*
China	5,572
European Union	22,667
Ghana	4,722
Japan	23,611
Panama	3,306
Philippines	1,983
Korea	1,983
Chinese Taipei	15,583

14. Catch limits shall not apply to CPCs whose annual catch of bigeye tuna in the Convention area in 1999, as provided to the SCRS in 2000, is less than 2,100 t. However, the following shall apply:

    a) CPCs which are not developing coastal States shall endeavour to maintain their annual catch less than 2,100 t;

    b) if the catch of bigeye tuna of any developing coastal CPC not listed in paragraph 13 above exceeds 3,500 t for any one year, a catch limit shall be established for that developing CPC for the following years. In such a case, the relevant CPC shall adjust its fishing effort so as to be commensurate with their available fishing possibilities.

Transfers

15. The following annual transfer of bigeye tuna shall be authorized in 2012-2015:

    a) from Japan to China: 3000 t
    b) from Japan to Ghana: 70 t
    c) from China to Ghana: 70 t
    d) from Chinese Taipei to Ghana: 70 t
    e) from Korea to Ghana: 20 t

Underage or overage of catch

16. Underage or overage of an annual catch limit for CPCs listed in paragraph 13 for bigeye tuna may be added/to or shall be deducted from the annual catch limit as follows:

Year of catch	*Adjustment Year*
2011	2012 and/or 2013
2012	2013 and/or 2014
2013	2014 and/or 2015
2014	2015 and/or 2016
2015	2016 and/or 2017

However,

a) The maximum underage that a CPC may transfer in any given year shall not exceed 30% of its annual initial catch limit;

b) For Ghana, the overage catch of bigeye tuna in the period 2006 to 2010 shall be repaid by reducing the catch limit of Ghana for bigeye tuna by a yearly amount of 337 t for the period 2012 to 2021.

17. Notwithstanding paragraph 16 if any CPC exceeds its catch limit during any two consecutive management periods, the Commission will recommend appropriate measures, which may include, but are not limited to, reduction in the catch limit equal to a minimum of 125% of the excess harvest, and, if necessary, trade restrictive measures. Any trade measures under this paragraph will be import restrictions on the subject species and consistent with each CPC's international obligations. The trade measures will be of such duration and under such conditions as the Commission may determine.

TAC for yellowfin tuna

18. The annual TAC for 2012 and subsequent years of the Multi-annual program is 110,000 t for yellowfin tuna and shall remain in place until changed based on scientific advice.

    If the total catch exceeds the TAC for yellowfin tuna the Commission shall review the relevant conservation and management measures in place.

Recording of catch and fishing activities

19. Each CPC shall ensure that its vessels 20 meters LOA or greater fishing bigeye and/or yellowfin and/or skipjack tunas in the Convention area record their catch in accordance with the requirements set out in **Annex 1** and in the *Recommendation by ICCAT Concerning the Recording of Catch by Fishing Vessels in the ICCAT Convention Area* [Rec. 03-13].

20. CPCs shall ensure that all purse seine and baitboat fishing vessels and all support vessels (including supply vessels) flying their flag, and/or authorized by CPCs to fish in areas under their jurisdiction, when fishing in association with fish aggregating devices (FADs), including objects that could affect fish aggregation, shall collect and report, for each deployment of a FAD, each visit on a FAD, whether followed or not by a set, or each loss of a FAD, the following information and data:

a) Deployment of any FAD

i. Position
ii. Date
iii. FAD type (anchored FAD, drifting artificial FAD)
iv. FAD identifier (i.e., FAD Marking or beacon ID, type of buoy – e.g. simple buoy or associated with echosounder)
v. FAD design characteristics (dimension and material of the floating part and of the underwater hanging structure and the entangling or non-entangling feature of the underwater hanging structure)

b) Visit on any FAD

i. Type of the visit (hauling, retrieving, intervention on electronic equipment)
ii. Position
iii. Date
iv. FAD type (anchored FAD, drifting natural FAD, drifting artificial FAD)
v. FAD identifier (i.e., FAD Marking or beacon ID or any information allowing to identify the owner)
vi. If the visit is followed by a set, the results of the set in terms of catch and by-catch, whether retained or discarded dead or alive. If the visit is not followed by a set, note the reason (e.g. not enough fish, fish too small, etc.)

c) Loss of any FAD

i. Last registered position
ii. Date of the last registered position
iii. FAD identifier (i.e., FAD Marking or beacon ID)

For the purpose of the collection and the report of the information referred to under paragraphs 20(a), 20(b) and 20(c) and where paper or electronic logbooks already in place do not allow it, CPCs shall either update their reporting system or establish FAD-logbooks. In establishing FAD logbooks, CPCs may use possible templates laid down in **Annexes 2** and **3** as reporting formats. When using paper logbooks, CPCs may seek, with the support of the Executive Secretary, for harmonized formats.

21. CPCs shall ensure that:

a) Both paper and electronic fishing logbooks referred to in paragraph 19 and the FAD-logbooks referred to in paragraph 20, where applicable, are promptly collected and made available to national scientists;

b) The Task II data include the information collected from the fishing or FAD logbooks, where applicable, and is submitted every year to the ICCAT Executive Secretariat, to be made available to the SCRS;

c) The following information is submitted every year to the Executive Secretary, to be made available to the SCRS:

i. an inventory of all support vessels associated with purse-seine or baitboat fishing vessels flying their flag, detailing their identification, main characteristics and the fishing vessels they are associated with;
ii. the number of FADs actually deployed on a quarterly basis, by FAD type, indicating the presence or absence of a beacon or of an ecosounder associated to the FAD;
iii. for each support vessel, the number of days spent at sea, per 1° grid area, month and flag State.

22. To facilitate the submission of the information referred to in paragraph 21 above, the Executive Secretary shall design or modify electronic forms, as appropriate.

23. With the objective of providing information useful to estimate the fishing effort related to FAD-fishing each CPC should provide full access to VMS data and trajectories of FADs to its national scientists.

Area/Time closure in relation with the protection of juveniles

24. Fishing for, or supported activities to fish for bigeye, yellowfin and skipjack tunas in association with objects that could affect fish aggregation, including FADs, shall be prohibited:

    a) From 1 January to 28 February each year, and

    b) In the area delineated as follows:

Northern limit	African coast
Southern limit	Parallel 10° South latitude
Western limit	Meridian 5° West longitude
Eastern limit	Meridian 5° East longitude

25. The prohibition referred to in paragraph 24 includes:

- launching any floating objects, with or without buoys;
- fishing around, under, or in association with artificial objects, including vessels;
- fishing around, under, or in association with natural objects;
- towing floating objects from inside to outside the area.

26. The efficacy of the area/time closure referred to in paragraph 24 for the reduction of catches of juvenile bigeye, yellowfin and skipjack tunas shall be evaluated by the SCRS in 2015.

27. Each CPC fishing in the geographical area of the area/time closure shall:

    a) Take appropriate action to ensure that all vessels flying its flag, including supply vessels, when engaged in fishing activities during the time/area closure referred to in paragraph 24, have an observer on board in accordance with **Annex 4**. The information collected by the observers shall be reported each year by 31 July to the ICCAT Secretariat and to SCRS;

    b) Take appropriate action against vessels flying their flag that do not comply with the area/time closure referred to in paragraph 24;

    c) Submit an annual report on their implementation of the area/time closure to the Executive Secretary, who shall report to the Compliance Committee at each Annual meeting.

FAD Management Plans

28. By 1 July of each year, CPCs with purse seine and baitboat vessels fishing for bigeye, yellowfin and skipjack tunas in association with objects that could affect fish aggregation, including FADs, shall submit to the Executive Secretary Management Plans for the use of such aggregating devices by vessels flying their flag, following the Guidelines for Preparation for FAD Management Plans suggested in **Annex 5**.

29. The Executive Secretary shall report the content of these Management Plans to SCRS and to the Compliance Committee for review at each annual meeting.

30. The Commission encourages CPCs to undertake any research intended to improve knowledge of the potential effects of FADs on the resource and the environment and on the vessel fishing effort.

Non-entangling FADs

31. In order to minimize the ecological impact of FADs, in particular the entanglement of sharks, turtles and other non-targeted species, CPCs shall replace by 2016 existing FADs with non-entangling FADs in line with the guidelines under **Annex 6** of this Recommendation. CPCs shall report to ICCAT Secretariat on an

annual basis on the steps undertaken to comply with this provision.

VMS

32. If the VMS satellite tracking device of a vessel referred to in paragraph 3 stops functioning or has a technical failure when the vessel is inside the area/time closure referred to in paragraph 24, the flag State shall require the vessel to exit the area without delay. The fishing vessel shall not be authorized to enter the area again without the satellite tracking device having been repaired or replaced.

Identification IUU activity

33. The Executive Secretary shall "without delay" verify that any vessel identified or reported in the context of this Multi-annual Program is on the ICCAT record of authorized vessels and not out of compliance with the provisions of paragraphs 24 and 25. If a possible violation is detected, the Executive Secretary shall, without delay, notify the flag CPC. The flag CPC shall immediately investigate the situation and, if the vessel is fishing in relation with objects that could affect fish aggregation, including FADs, request the vessel to stop fishing and, if necessary, leave the area without delay. The flag CPC shall without delay report to the Executive Secretary the results of its investigation and the corresponding measures taken.

34. The Executive Secretary shall report to the Compliance Committee at each annual meeting of the Commission on any issue related to identification of unauthorized vessels, the implementation of the VMS, the observer provisions and the results of the relevant investigation made by the flag CPCs concerned.

35. The Executive Secretary shall propose to include any vessels identified in accordance with paragraph 32, or vessels for which the flag CPC has not carried out the required investigation in accordance with paragraph 33, on the provisional IUU list.

Port Sampling Plan

36. The Commission requests the SCRS to develop, by 2012, a Port Sampling Plan aimed at collecting fishery data for bigeye, yellowfin, and skipjack tunas that are caught in the geographical area of the area/time closure referred to in paragraph 24.

37. Beginning in 2013, the port sampling program referred to paragraph 36 shall be implemented in landing or transhipment ports. Data and information collected from this sampling program shall be reported to ICCAT each year beginning in 2014, describing, at a minimum, the following by country of landing and quarter: species composition, landings by species, length composition, and weights. Biological samples suitable for determining life history should be collected as practicable.

General provisions

38. This Recommendation replaces [Rec. 93-04], [Rec. 98-03], [Rec. 04-01], [Res. 05-03], [Rec. 08-01], [Rec. 09-01] [Rec. 10-01] Rec. [11-01] and Rec [13-01] and shall be revised in 2015.

Annex 1

Requirements for Catch Recording

Minimum specification for paper or electronic logbooks:

1. The logbook must be numbered by sheets
2. The logbook must be filled in every day (midnight) or before port arrival
3. One copy of the sheets must remain attached to the logbook
4. Logbooks must be kept on board to cover a period of one-trip operation

Minimum standard information for logbooks:

1. Master name and address
2. Dates and ports of departure, Dates and ports of arrival
3. Vessel name, registry number, ICCAT number and IMO number (if available)
4. Fishing gear:
   a) Type FAO code
   b) Dimension (length, mesh size, number of hooks...)
5. Operations at sea with one line (minimum) per day of trip, providing:
   a) Activity (fishing, steaming…)
   b) Position: Exact daily positions (in degree and minutes), recorded for each fishing operation or at noon when no fishing has been conducted during this day
   c) Record of catches
6. Species identification:
   a) By FAO code
   b) Round (RWT) weight in t per set
   c) Fishing mode (FAD, free school, etc.)
7. Master signature
8. Observer signature, if applicable
9. Means of weight measure: estimation, weighing on board and counting
10. The logbook is kept in equivalent live weight of fish and mentions the conversion factors used in the evaluation

Minimum information in case of landing, transhipments:

1. Dates and port of landing /transhipments
2. Products: number of fish and quantity in kg
3. Signature of the Master or Vessel Agent

Annex 2

FAD Identifier		*FAD & electronic equipment types*		*FAD Design characteristics*				*Observation*
				FAD floating part		*FAD underwater hanging structure*		
FAD Marking	*Associated beacon ID*	*FAD Type*	*Type of the associated beacon and /or electronic devices*	*Dimensions*	*Materials*	*Dimensions*	*Materials*	
(1)	(1)	(2)	(3)	(4)	(5)	(4)	(6)	(7)
…	…	…	…	…	…	…	…	…
…	…	…	…	…	…	…	…	…

(1) If FAD marking and associated beacon ID are absent or unreadable, mention it and provide all available information which may help to identify the owner of the FAD.

(2) Anchored FAD, drifting natural FAD or drifting artificial FAD.

(3) E.g. GPS, sounder, etc. If no electronic device is associated to the FAD, note this absence of equipment.

(4) E.g. width, length, high, depth, mesh sizes, etc.

(5) Mention the material of the structure and of the cover and if biodegradable.

(6) E.g. nets, ropes, palms, etc… and mention the entangling and/or biodegradable features of the material.

(7) Lighting specifications, radar reflectors and visible distances shall be reported in this section.

Annex 3

FAD marking	***Beacon ID***	***FAD type***	***Type of visit***	***Date***	***Time***	***Position***		***Estimated catches***			***By-catch***				***Observations***
						Latitude	***Longitude***	***SKJ***	***YFT***	***BET***	***Taxonomic group***	***Estimated catches***	***Unit***	***Specimen released alive***	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(8)	(8)	(8)	(9)	(10)	(11)	(12)	(13)
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…

(1, 2) If FAD marking and associated beacon ID are absent or unreadable, report it in this section.

(3) Anchored FAD, drifting natural FAD or drifting artificial FAD.

(4) I.e., deployment, hauling, retrieving, changing the beacon, loss and mention if the visit has been followed by a set.

(5) dd/mm/yy.

(6) hh:mm.

(7) °N/S/mm/dd or °E/W/mm/dd.

(8) Estimated catches expressed in metric tons.

(9) Use a line per taxonomic group.

(10) Estimated catches expressed in weight or in number.

(11) Unit used.

(12) Expressed as number of specimen.

(13) If no FAD marking neither associated beacon ID is available, report in this section all available information which may help to describe the FAD and to identify the owner of the FAD.

Annex 4

Observer Programme

1. Each CPC shall require its fishing vessels, including supply vessels, involved in the bigeye and/or yellowfin and/or skipjack tunas fisheries in the area and during the area/time closure referred to in paragraph 4 of this Recommendation to carry an observer.

2. The observers shall have the following qualification to accomplish their tasks:

   - Sufficient experience to identify species and fishing gear;
   - Satisfactory knowledge of the ICCAT conservation and management measures assessed by a certificate provided b the CPCs and based on ICCAT training guidelines;
   - The ability to observe and record accurately;
   - A satisfactory knowledge of the language of the flag of the vessel observed.

3. The observers shall:
   a) Be nationals of one of the CPCs;
   b) Be capable of performing the duties set forth in point 4 below;
   c) Not have current financial or beneficial interest in the tropical tuna fisheries.

4. The observer tasks shall be in particular:
   a) To monitor the fishing vessels' compliance with the relevant conservation and management measures adopted by the Commission.

   In particular the observers shall:
   i) Record and report upon the fishing activities carried out:
   ii) Observe and estimate catches and verify entries made in the logbook;
   iii) Sight and record vessels which may be fishing in contravention to ICCAT conservation and management measures;
   iv) Verify the position of the vessel when engaged in catching activity;
   v) Carry out scientific work such as collecting task II data when required by the Commission, based on the directives from the SCRS.

   b) Report without delay, with due regard to the safety of the observer, any fishing activity associated with FADs made by the vessel in the area and during the period referred to in paragraph 24 of this Recommendation.

   c) Establish general reports compiling the information collected in accordance with this paragraph and provide the master and farm operator the opportunity to include therein any relevant information.

   d) Submit to the Secretariat the aforementioned general report within 20 days from the end of the period of observation.

   e) Exercise any other function as defined by the Commission.

5. Observers shall treat as confidential all information with respect to the fishing and transhipment operations of the fishing vessels and accept this requirement in writing as a condition of appointment as an observer.

6. Observers shall comply with requirements established in the laws and regulations of the flag State which exercises jurisdiction over the vessel to which the observer is assigned.

7. Observers shall respect the hierarchy and general rules of behaviour which apply to all vessel personnel, provided such rules do not interfere with the duties of the observer under this program, and with the obligations of vessel personnel set forth in paragraph 8.

Obligations of the flag States of fishing vessels

8. The responsibilities regarding observers of the flag States of the fishing vessels and their masters shall include the following, notably:

   a) Observers shall be allowed to access to the vessel personnel and to the gear and equipment;

   b) Upon request, observers shall also be allowed access to the following equipment, if present on the vessels to which they are assigned, in order to facilitate the carrying out of their duties set forth in paragraph 4:

      i) satellite navigation equipment;

      ii) radar display viewing screens when in use;

      iii) electronic means of communication.

   c) Observers shall be provided accommodations, including lodging, food and adequate sanitary facilities, equal to those of officers;

   d) Observers shall be provided with adequate space on the bridge or pilot house for clerical work, as well as space on deck adequate for carrying out observer duties; and

   e) The flag States shall ensure that masters, crew and vessel owners do not obstruct, intimidate, interfere with, influence, bribe or attempt to bribe an observer in the performance of his/her duties.

Duty of the Secretariat

The Secretariat shall submit the observer reports to the Compliance Committee and to the SCRS.

Annex 5

Guidelines for Preparation of FAD Management Plans

The FAD Management Plan for a CPC purse seine and bait boat fleets must include at least:

a) Number of FAD to be deployed per purse seine and per FAD type b) FAD design characteristics (a description)
c) FAD markings and identifiers

and could include:

1. Objective of the FAD Management Plan
2. Description
   a) Vessel-types and support and tender vessels
   b) FAD types: AFAD = anchored; DFAD = drifting
   c) Reporting procedures for AFAD and DFAD deployment
   d) Catch reporting from FAD sets (consistent with the Commission's Standards for the Provision of Operational Catch and Effort Data)
   e) Minimum distance between AFADs
   f) Incidental by-catch reduction and utilization policy g) Consideration of interaction with other gear types h) Statement or policy on "FAD ownership"
3. Institutional arrangements
   a) Institutional responsibilities for the FAD Management plan b) Application processes for FAD deployment approval
   c) Obligations of vessel owners and masters in respect of FAD deployment and use d) FAD replacement policy
   e) Reporting obligations
   f) Observer acceptance obligations
   g) Conflict resolution policy in respect of FADs
4. FAD construction specifications and requirements a) Lighting requirements
   b) Radar reflectors c) Visible distance
   d) Radio buoys (requirement for serial numbers)
   e) Satellite transceivers (requirement for serial numbers)
5. Applicable areas
   a) Details of any closed areas or periods e.g. territorial waters, shipping lanes, proximity to artisanal fisheries, etc.
6. Applicable period for the FAD Management Plan
7. Means for monitoring and reviewing implementation of the FAD Management Plan
8. Means for reporting to the Executive Secretary

Annex 6

Guidelines for reducing the ecological impact of FADs in ICCAT fisheries

1) The surface structure of the FAD should not be covered or only covered with material implying minimum risk of entangling by-catch species.

2) The sub-surface components should be exclusively composed of non-entangling material (e.g. ropes or canvas).

3) When designing FADs the use of biodegradable materials should be prioritised.

Appendix 11. Second Draft of Model Logsheet for FAD Fisheries Data Collection

Boat name							
Boat registration number							
Departure site (see map to identify site)							
Date of departure (day/month/year)							
Landing site (see map to identify site)							
Date of landing (day/month/year)							
Number of persons on board (crew size)							
GEAR USED	**Main gear TR / HL / DL / RR (tick one)**			**Other gear TR / HL / DL / RR (tick one)**			
FAD number or fishing location (see map to identify site)							
Number of lines used							
Total number of hooks on lines							
Number of hours fished							
Type of bait used	☐ **Artificial** ☐ **Natural species……**			☐ **Artificial** ☐ **Natural species……**			
Depth fished ☐ **feet** ☐ **metres (tick one)**							
SPECIES							
Weight of catch in ☐ **lbs** ☐ **kg (tick one)** **Weight estimated** ☐ **Yes** ☐ **No** **Fish weighed in a scale** ☐ **Yes** ☐ **no** **LEVEL OF PROCESSING - GUTTED, GILLED, HEADED, FINNED, WHOLE (circle all that applies)**	**Weight**	**Number of fish**	**Price per unit weight (XCD)**	**Weight**	**Number of fish**	**Price per unit weight (XCD)**	
Albacore tuna **Gut, Gil, H, F, W**							
Atlantic bonito **Gut, Gil, H, F, W**							
Atlantic sailfish **Gut, Gil, H, F, W**							
Barracuda **Gut, Gil, H, F, W**							
Bigeye tuna **Gut, Gil, H, F, W**							
Blackfin tuna **Gut, Gil, H, F, W**							
Blue Marlin **Gut, Gil, H, F, W**							
Bullet tuna **Gut, Gil, H, F, W**							
Cero Mackerel **Gut, Gil, H, F, W**							
Dolphin fish **Gut, Gil, H, F, W**							
Frigate tuna **Gut, Gil, H, F, W**							
King mackerel **Gut, Gil, H, F, W**							
Little tunny **Gut, Gil, H, F, W**							
Shark **Gut, Gil, H, F, W**							
Skipjack tuna **Gut, Gil, H, F, W**							
Swordfish **Gut, Gil, H, F, W**							
Wahoo **Gut, Gil, H, F, W**							
Yellowfin tuna **Gut, Gil, H, F, W**							
Gut, Gil, H, F, W							
Gut, Gil, H, F, W							
Gut, Gil, H, F, W							
Others **Gut, Gil, H, F, W**							
By-catch (tick all that applies)	**Turtles Sea birds**	**Manatee Sharks Whales**	**Dolphins Porpoise**	**Turtles Sea birds**	**Manatee Sharks Whales**	**Dolphins Porpoise**	

Financial Statement
Money spent on fuel for the trip (XCD)……..
Money spent on oil for the trip (XCD)…….
Amount of fuel used for the trip ☐ Gallons ☐ Litres (tick one)……
Amount of oil used for the trip ☐ Gallons ☐ Litres (tick one)…….
Money spent on other expenses XCD……..
Total earned from sale of fish XCD…….

Sea state (tick one): see the Sea State Code Chart below in the key section for definitions.

Calm (glassy)	Calm (rippled)	Smooth (wavelets)	Slight	Moderate	Rough	Very rough	High	Very high

Water colour (tick one): see the Water Colour Description chart below in the key section for description

Blue	milky turquoise-blue	Blue-green	green	Dark green	Light brown	Red/Reddish/ Red strikes	Pink	Purple

Comments
……
NAME OF FISHER SUBMITTING REPORT (in BLOCK letters)……
Signature of person filling in the log sheet:……..
Date of completion of log sheet (day/month/year): ……..
FOR OFFICIAL USE

Entered by:-	**Signature:-**	**Date: / / 2014**
Checked by:-	**Signature:-**	**Date: / / 2014**

Appendix 12. Guidelines for Reporting on Implementation of FAD Logbook System

Reporting on the implementation of the FAD logbook system should be incorporated into the regular monthly reporting under the CARIFICO Project by country liaison officers in consultation with other relevant staff at the respective Fisheries Divisions in Antigua and Barbuda, Dominica, Grenada, St Kitts and Nevis, St Lucia and St Vincent and the Grenadines. The system comprises components addressing data collection, data verification, data computerisation, data analysis and reporting to inform management[2].

The report should include, but is not limited to, the following information:

Review and Modifications to Logsheet

1. Details of the Fisheries Division's review of the Draft Logsheet developed by the CRFM Secretariat in collaboration with the CARIFICO Project;
2. Details of any modifications to the Draft Logsheet to increase its relevancy to the national situation and the rationale for such modifications;

Training of Fishers & Boat Owners

3. Delivery of Training to FAD fishers – when was the training conducted?, number of fishers and boat owners trained, total number of fishers and vessels involved in the FAD fisheries in your country, base of operation of the respective fishers who were trained;
4. Fisher/boat owner feedback on feasibility of implementation of the logbook system as well as the quality of the training delivered;
5. Include a copy of the powerpoint presentation used for training (if modified from the version submitted by the Secretariat);

Testing of Logsheets

6. Number of fishers and boats involved in testing, base of operation of fishers, the sites at which they land and the FADs (by identifier) on which they fish
7. Duration of testing (start and end dates) at each location (landing site)
8. Issues identified in the testing period
9. Solutions identified to address issues at (8) and any additional modifications to the logsheet.

Implementation of Logbook System

10. Date of commencement of implementation;
11. Indicate whether logbook system is implemented for all boats fishing on FADs or for a sample of such boats;
12. If the logbook system is implemented for a sample of boats indicate the total number of boats at each departure site that is involved in FAD fishing;

[2] Note that initially the logbook system is targeted at commercial fishers – it may be necessary to extend to recreational fishers in future if relevant. While the system should target FAD fishers under the CARIFICO Project – for comprehensive data collection on FAD fisheries – data should be collected from ALL FAD fishing trips.

13. Indicate on a daily basis for each departure site – the total number of boats that fished at FADs and identify the FADs at which they fished
14. Outline procedures used to verify the accuracy of information submitted on logsheets;
15. Report on Data Entry – software used – number of logsheets submitted and number computerised to date – submit copy of data computerised to the Secretariat using format of EXCEL spreadsheet submitted by the Secretariat.

Appendix 13. Data Collection Sheet used in Antigua and Barbuda

DATA SHEET FOR LANDING OF FISH & SHELL FISH

FISHERIES DIVISION ANTIGUA & BARBUDA **DATA SHEET (Modified: 12/11/07)**

		Entered	Checked
Landing Site	Weather	By	By
Date (DD/MM/YY)	Sea State	Date (DD/MM/YY)	Date (DD/MM/YY)

Landing No.		
Vessel Name		
Vessel Id. No.		
Date – Departed (DD/MM/YY)		
Time – Departed		
Date – Returned (DD/MM/YY)		
Time – Returned		
Area Fished		
Depth Fished (specify fathoms or feet)		
Gear – Primary		
Gear – Secondary		
POTS: No. of Traps/Pots Hauled No. of Times Each Trap is Hauled Length of Soak Time		
LINES: No. of Lines Fished Average No. of Hooks Per Line **FAD (Circle: Yes or No)**		
NETS: No. of Times Net Hauled Total Length of Net		
SCUBA: No. of Dives (total no. of dives made by all divers) No. of Tanks Used		
No. of Crew		
No. of Divers (if applicable)		
Catch by Species	Lbs.	Lbs.
Fuel Used (specify) Gas or Diesel – Amount or Value		
Ice – Amount or Value		
Type of Bait Used – Amount or Value		
No. of Days Fished in the Last Week:		

Comments (gear replacement, piracy, any other issues, etc):

Appendix 14. Data Collection Sheet used in St Kitts and Nevis

THE DEPARTMENT OF MARINE RESOURCES **FIELD DATA SHEET**
ST.KITT AND NEVIS

	Time of data collection	Entered	Checked
_____	_____	_____	_____
Landing Site	**Begin**	**Date**	**Date**
_____	_____	_____	_____
Date	**Finish**	**By**	**By**

_____
Data Collector

Landing Site						
Boat ID						
Crew Size						
Time Departed						
Time Returned						
Trip Duration						
Area Fished						
Fuel Used($)						
Gear Primary						
Gear Secondary						
FADs(Jica,Mag,Privt)						
Number of Sets						
Soak Time(Pots)						
Depth Fished						
Total Weight						
Catch by Species						

Comments:_____
_____
_____

Appendix 15. Daily Fish Landing Log used in Grenada. *(Reproduced from original)*

FISHERIES DIVISION - GRENADA																						
DAILY FISH LANDING LOG																						
LOCATION:			**LANDING STIE:**						**TIME OF DATA COLLECTION:**								**START:**			**END:**		
DATA COLLECTOR:									**INTERVIEW DATE:**													
Boat Name:																						
Reg. No.																						
Boat Length:																						
Crew Size:																						
Area Fished:																						
Days Out/ Days Fished:																						
Hours Fished:																						
Type of Gear Used:																						
Quantity of Gear:																						
Min. Depth / Max. Depth:																						
Why Fishing was Terminated:																						
Species	Qty (lbs)	Ws. Pr.	Qty (lbs)	Ws. Pr.	Qty (lbs)	Ws. Pr.	Qty (lbs)	Ws. Pr.	Qty (lbs)	Ws. Pr.	Qty (lbs)	Ws. Pr.	Qty (lbs)	Ws. Pr.	Qty (lbs)	Ws. Pr.	Qty (lbs)	Ws. Pr.	Qty (lbs)	Ws. Pr.	Qty (lbs)	Ws. Pr.
TOTAL																						
COMMENTS:																						

P.T.O.

Appendix 16. Final Model Logsheet for the FAD Fishery

Boat Name:		Boat registration number:	
Departure site (see map to identify site):	Departure date (day/month/year):	Departure time:	
Landing site (see map to identify site):	Landing date (day/month/year):	Landing time:	
FISHING EFFORT	Number of Fishers:		
Gear Types: TR: trolling; HL: Handline DL: Dropline; LL: Longline RR: Rod & Reel	*See map to identify FAD # or fishing area*		
	FAD # or fishing area:	FAD # or fishing area:	FAD # or fishing area:
Gear used (select from above) :			
Number of lines			
Number of hooks			
Number of hours fished:			
Day (D) or night (N) fishing:	D □ N □	D □ N □	D □ N □
Total number of boats fishing:			
Depth fished: □ feet □ metres (tick one)			

CATCH

Levels of processing – Gutted (GU); Gilled (GI); Headed (H); Finned (F); Whole (W)
Bait Type: Artificial Lure OR Natural Species – list species (list below)
Weights in □ lbs □ kg (tick one) - **Weights are** □ estimated □ measured on a scale (tick one)

FAD#/ fishing area	**Species**	**Level of Processing** (encircle which applies)	**Gear Type** (encircle which applies)	**Bait Type**	**Weight Caught**	**No. Caught**	**Weight Sold**	**Unit Price**
		GU GI H F W	TR HL DL LL RR					
		GU GI H F W	TR HL DL LL RR					
		GU GI H F W	TR HL DL LL RR					
		GU GI H F W	TR HL DL LL RR					
		GU GI H F W	TR HL DL LL RR					
		GU GI H F W	TR HL DL LL RR					
		GU GI H F W	TR HL DL LL RR					
		GU GI H F W	TR HL DL LL RR					
		GU GI H F W	TR HL DL LL RR					
		GU GI H F W	TR HL DL LL RR					
		GU GI H F W	TR HL DL LL RR					
		GU GI H F W	TR HL DL LL RR					

BY-CATCH	Turtles	Seabirds	Sharks	Whales	Dolphins	Porpoise	Manatee	Other
Number Kept								
Number discarded dead								
Number discarded alive								

FISHING COSTS	Indicate money spent in XCD for the following that are <u>used</u> for the fishing trip						
	Fuel:	Oil:	Ice:	Food:	Bait:	Gear:	Other (specify):
	Amount of oil <u>used</u> for the trip: Gallons □ Litres □ (tick one)				Amount of fuel <u>used</u> for the trip: Gallons □ Litres □ (tick one)		

SEA STATE (encircle one): see the Sea State Code Chart in the guidelines.	Calm (glassy)	Calm (rippled)	Smooth (wavelets)	Slight	Moderate	Rough	Very rough	High	Very high

WATER COLOUR (encircle one): see the Water Colour Description Chart in the guidelines.	Blue	Milky turquoise-purple	Blue-green	Green	Dark green	Light brown	Red/Reddish/ Red strikes	Pink	Purple	Seaweed present

COMMENTS & OBSERVATIONS: ……

……..

SUBMISSION OF LOGSHEET: Name of fisher (in BLOCK letters)……..

Signature of person filling in the log sheet: …… Date of completion of log sheet (day/month/year): ……..

FOR OFFICIAL USE

Received by:-	Signature:-	Date (day/month/year):
Verified by:-	Signature:-	Date (day/month/year):
Computerized by:-	Signature:-	Date (day/month/year):

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.

The model logbook was developed through a joint collaboration between the CRFM and the JICA-funded Caribbean Fisheries Co-Management (CARIFICO) Project in which the following six CRFM Member States are participating, Antigua and Barbuda, Dominica, Grenada, St Kitts and Nevis, St Vincent and the Grenadines and Saint Lucia. The main purpose of the logbook is to involve fishers in the collection of data which will provide a wide range of information to help make the best possible decisions concerning the management of FAD fisheries. In addition, the logbook will enable fishers to keep records of their fishing operations to facilitate better fishing trip planning and business planning.

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