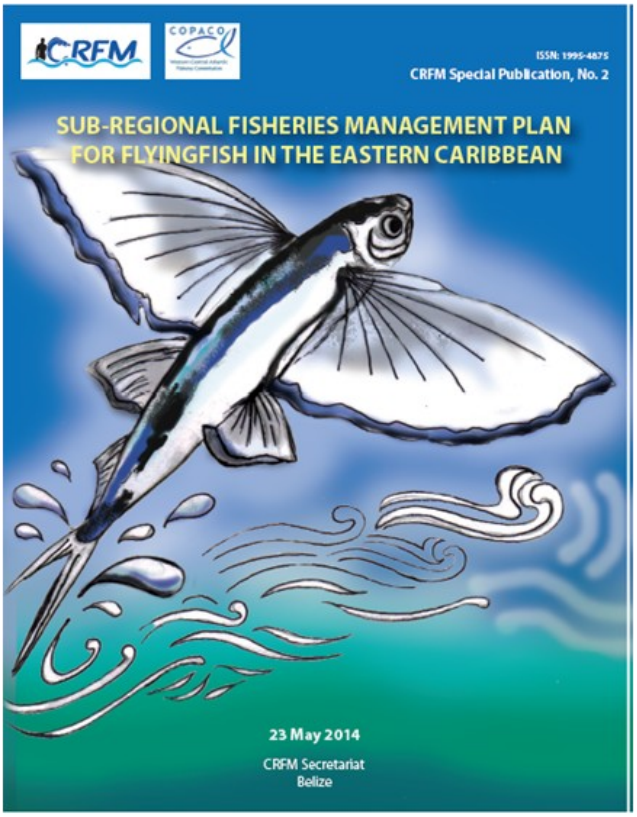
The Newsletter of the Caribbean Regional Fisheries Mechanism - **Scientific Issue, August 2014**

This newsletter highlights activities conducted by the CRFM Secretariat, Member States and partner organizations during the period ***June 2013-May 2014****.*

THE SUB-REGIONAL FISHERIES MANAGEMENT PLAN FOR FLYINGFISH IN THE EASTERN CARIBBEAN - DATA AND RESEARCH REQUIREMENTS *by Elizabeth Mohammed - CRFM Secretariat*

The four-wing flyingfish, scientifically known as *Hirundichthys affinis*, has long been the subject of attention in the region. Growing to just about 25cm in length, living at most just 1.5 years, and being caught in the fishery from as early as 5 to 7 months, this species supports a fishery that is of direct, significant importance for food and nutrition security and employment in at least in two CRFM Member States, Barbados and Trinidad and Tobago. Flyingfish is also becoming more important as a source of bait for the expanding offshore fisheries that target large pelagic species such as dolphinfish, wahoo, yellowfin tuna, skipjack tuna, and billfishes, which are top predator fishes for which flyingfish is a natural food source. Consequently, flyingfish is a key species in the food web as any drastic declines in the size of the population is likely to affect fisheries for large pelagic species, many of which are high-priced. Considerable research has been conducted on the biology, ecology, genetic stock structure, distribution and migration of the four-wing flyingfish as well as attempts at assessing the health or status of the stock.



Management Plan - copy can be downloaded from www.crfm.int.

Inside this issue:

The sub-regional fisheries management plan, in particular the proposed management measures and research, has been informed by the results of these studies as well as extensive consultation with a wide range of stakeholders. However, there still remain gaps in data and information which can impact on the effectiveness of the management plan.

In order to **manage the fisheries in a manner that would achieve long-term sustainability of the resources**, one of the goals as set out in the FMP, basic data and information on the human components in the fishery remain incomplete. As yet, the region is not able to estimate the total catches of flyingfish for both food and bait uses at a level accurate enough that we feel confident in the management advice provided from analysing such data. The region is also not able to accurately determine the present fishing capacity to exploit the resource, nor the level of fishing effort required to maximize long-term sustainable catches.

These limitations have plagued scientists in their attempts to assess the status of the flyingfish stock. Although a regional stock assessment conducted in 2008 concluded that the flyingfish stock was not overfished or being overfished, due to the uncertainties in the catch and effort data, the study was unable to provide a reliable estimate of maximum sustainable yield (MSY) - a management reference point - that could be sustained by the fishery. Instead, a catch trigger point of 5,000 tonnes, based on trends in overall regional catches between 1955 and 2007 (Figure 1) was proposed. This is considered a precautionary approach i.e. it recognizes the limitations in data and information but does not delay management action because there is need to safeguard the stock. A freeze on further fishery development was also proposed if the trigger point is reached, until a full scientific assessment of the stock could be completed. A 2011 bio-economic analysis of the fishery, that considered the multi-species aspect, indicated that under an open access arrangement, catches around the 5,000 tonne trigger point previously estimated could result in collapse of the fishery. Although catch quotas and effort controls could be used to allow the resources to recover there is a challenge in determining the historic and existing levels of catch and effort to inform effective implementation of such management measures.

Both the 2008 and 2011 assessments noted the poor quality of data on catches and effort and recommended improved data collection and

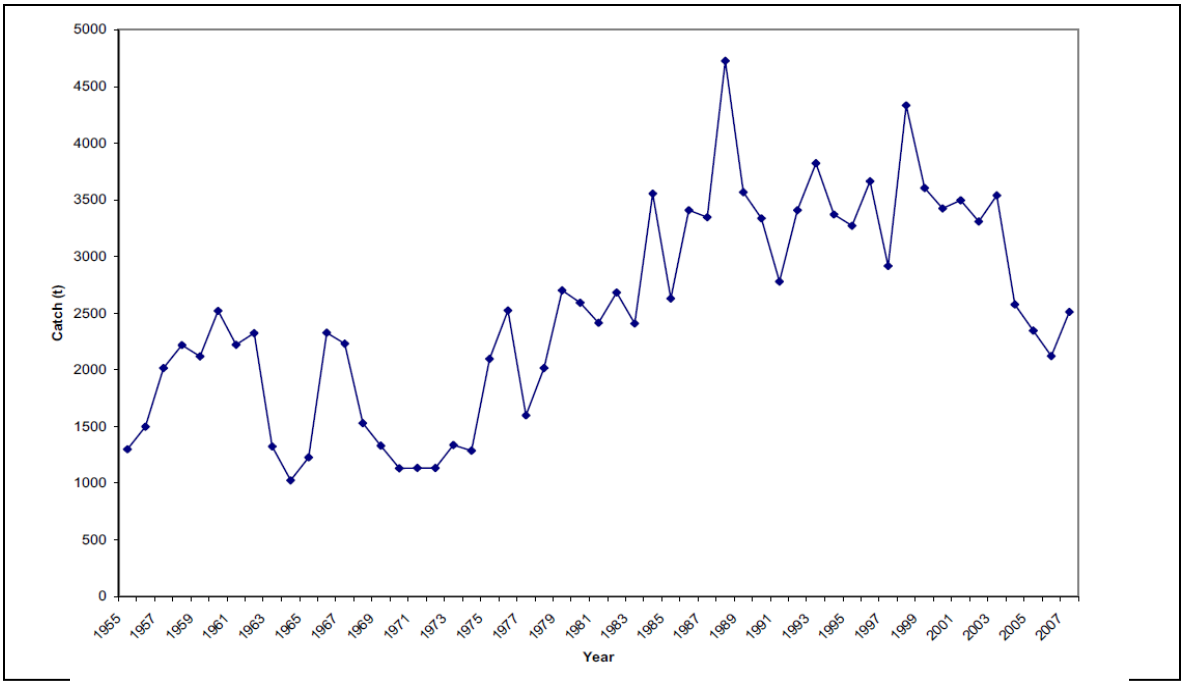


Figure 1. Time series of estimated total flyingfish catches from the Eastern Caribbean stock used for the 2008 assessment model. (Source: FAO Report of the Third Meeting of the WECAFC Ad Hoc Flyingfish Working Group of the Eastern Caribbean)

monitoring to ensure sustainable use of the resource. Consequently the FMP outlines specific management measures for improvement in the quality of data - relevant CRFM Member States are required to report catch and effort data on an annual basis and to establish an authorised national entry (license/permit) system as a management tool that will also allow for improved estimates of existing fishing effort and potential fishing capacity.

Oistins Fish Market [Photo source: Bertha Simmons]

The FMP goes a step further to recommend development of a regional protocol on data and information sharing as well as harmonization of data collection and analysis within the region. The strengthening of national data collection systems is a requirement aimed at improving assessment of the resource status, estimating existing levels of fishing effort and fishing capacity and overall monitoring and evaluation of implementation of the sub-regional FMP in accordance with the objectives and indicators previously agreed.

The FMP further considers the data and research requirements necessary for monitoring and evaluation of the other two stated management goals: **achieving the optimal use of the resource for long-term socio-economic benefit and sustained ecosystem health**. Some proposed research studies include:

- Sub-regional costs and earnings study – including comparison of economic and financial performance and value-addition regionally;
- Socio-economic study of flyingfish fishers;
- Assessment of the ecological impacts of sea and land-based human activities on the flyingfish resource and related marine ecosystem;
- Risk analysis of the impacts of climate/ environmental variability and change;
- Bio-economic studies that consider the trophic linkages with predators and competitors that are also targeted by other fisheries;
- Assessment of the most appropriate vessel/ fishing capacity for achieving the stated management goals in light of long-term fluctuations in stock abundance and a changing environment.
- Refinement of the operational objectives, indicators and reference points for monitoring and evaluation of agreed management measures.

The expanded portfolio of research to inform management-decision making necessitates thinking "outside the box" to identify new and efficient approaches to acquire the required data. The data must allow for decision-making that considers both human well-being (e.g. food security, livelihoods) as well as the environment (e.g. climate change, overfishing, pollution, habitat destruction) consistent with the ecosystem approach to fisheries assessment and management. Innovative approaches to data acquisition require the support of, and dialogue with, the full range of stakeholders (fishers, processors, vendors, traders, scientists, policy makers, etc.). It also requires strengthening the institutional linkages between national fisheries authorities and other state agencies with responsibility for trade, environment, health, customs and excise, as well a national and regional research institutions, among others. This, in essence, embodies the participatory approach to fisheries management.

CRFM NINTH SCIENTIFIC MEETING *by Elizabeth Mohammed—CRFM Secretariat*

The Ninth Annual CRFM Scientific Meeting took place during 10 to 14 June 2013 in Kingstown, St Vincent and the Grenadines. During this Meeting, the five CRFM Resource Working Groups met. The Conch and Lobster (CLWG), Large Pelagic Fish (LPWG), and Reef and Slope Fish (RSWG) Resource Working Groups each reviewed the relevant components of the 2013 Strategic Action Programme (SAP) for the Sustainable Management of the Shared Living Marine Resources of the

Caribbean and North Brazil Shelf Large Marine Ecosystems (CLME+), taking into account the need to consider the precautionary approach as well as ecosystem and global environmental change. Each Resource Working Group also developed a work plan for 2013 - 2014.

The CLWG reviewed the regional management options paper which was prepared and validated under the ACP FISH II Programme and proposed sub-regional regulations for the Queen Conch (*Strombus gigas*).

The LPWG reviewed the regional billfish conservation plan proposed by the WECAFC/OSPESCA/CRFM/CFMC Working Group on Recreational Fisheries and the sub-regional blackfin tuna management plan prepared by the CRFM under the CLME Project. It provided guidance and recommendations on the way forward for implementation of both plans in the region. The LPWG also identified critical research needs to improve the quality of fisheries resource assessments and management recommendations and discussed data collection and reporting requirements for ICCAT in 2013-2014.

The RSWG reviewed the regional lionfish strategy and status of implementation, as well as the performance of Marine Protected Areas in some countries and provided suggestions for the way forward. It also undertook a preliminary analysis of data on landings, effort and fishing operation costs for the fisheries in Anguilla and prioritized data collection needs for improved fisheries management advice.

The Shrimp and Groundfish Resource Working Group (SGWG) conducted separate assessments of the seabob (*Xiphopenaeus kroyeri*) fishery for Suriname and Guyana. It also discussed the proposed new methodological approach and the draft fisheries management plans for Guyana, Suriname and Trinidad and Tobago that was at the time being developed under the ACP Fish II Programme.

Report of the Ninth Annual CRFM Scientific Meeting

The Small Coastal Pelagic Fish Resource Working Group (SCPWG), together with the CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean, provided guidance on the implementation, monitoring and evaluation of the sub-regional management plan and agreed management actions for the Eastern Caribbean Flyingfish and reviewed the related Draft Resolution of the respective Ministerial Sub-Committee.

The Report of the Ninth Annual Scientific Meeting is published in one volume (Figure 1). The main Volume 1 contains the report of the plenary sessions and the full reports of the CRFM Conch and Lobster, Large Pelagic Fish, Reef and Slope Fish and Shrimp and Groundfish Resource Working Groups for 2013. Nine national reports were submitted and these are published as Supplement 1 to Volume 1. The report of an inter-sessional meeting of the Shrimp and Groundfish Working Group, which was convened in February 2013 in Georgetown, Guyana, is published as Supplement 2 to Volume 1. The report of the combined meeting of the SCPWG, and CRFM/WECAFC Working Group on Flyingfish in the Eastern Caribbean is published as Supplement 3 to Volume 1. All reports are available at www.crfm.int.

GUYANA SEABOB ASSESSMENT 2013 *by Seion Richardson - Guyana Fisheries Department*

A full assessment was done on Guyana`s Seabob (*Xiphopenaeus kroyeri*) Stock at the Ninth Annual CRFM Scientific Meeting which was held in June, 2013. The results from this assessment indicated that the stock is being fully exploited, but not overfished. The assessment was conducted by CRFM consultant Dr. Paul Medley with representatives from Suriname; Mr. Zojindra Arjune and Guyana; Ms. Dawn Maison and Mr. Seion Richardson.

In light of the findings, a Harvest Control Rule (HCR) was proposed following deliberations with the Trawler Association and the Fisheries Department, with the aim of promoting sustainability. A wide range of harvest control rules was considered, based on two types of controls: overall effort control (as a fixed quota for each licensed vessel) and an overall catch limit (most probably enforced as an export limit). The HCR CPUE Index, which is a simple calculation based on the standardized catch rate (kg per day fishing), was used as a proxy for the stock status. The HCRs were tested using the stock assessment to check whether they were consistent with Maximum Sustainable Yield and the precautionary approach[1]. The effort based controls (Figure 1) were found more stable and more precautionary than alternative catch based controls and as a result would be able to maintain a higher long-term yield. This is primarily because the population dynamics for seabob operate on a time scale of months rather than years, and a catch based control would not react rapidly enough. A decision was taken to support a draft HCR which allowed for 87 vessel licenses with an allocated 225 days at sea for each vessel annually (Figure 1).

Picture showing seabob harvested
[Photo source: David Ramjohn]

Provisions were also made for the implementation of a closed season, which was actually recently implemented (September 8th to October 26th, 2014) to allow for growth and replenishment of the stock. It was accepted that this measure will not limit current fishing activity as long as indicators remained high, and would allow the fishery to take advantage of strong recruitments. The rule was later evaluated and endorsed by the members of CRFM's Continental Shelf Fisheries Working Group (CSWG) at the just concluded June, 2014 scientific meeting.

Monitoring of the sector and the HCR is undertaken through gathering of data by the Fisheries Department on shrimp landings which is then used to calculate catch per unit effort (CPUE); an indicator used in making important management decisions, and in this case, in evaluating the performance of the HCR.

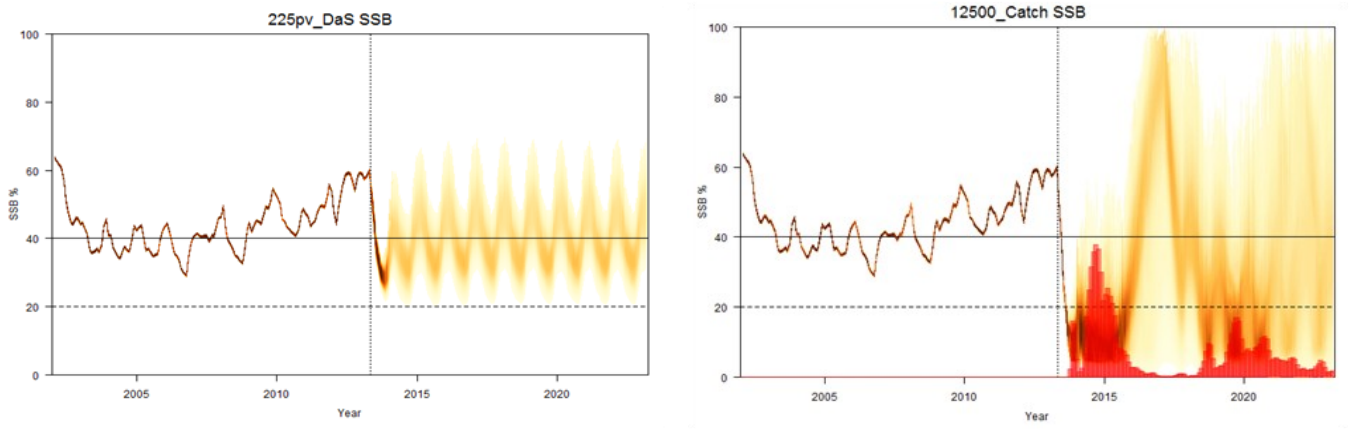


Figure 1. Example tests of the adopted HCR (left: 225 days at sea per vessel) and a rejected HCR (right: an annual catch limit of 12500t). The plots show a time series of the spawning stock biomass (SSB) relative to its unexploited state (%). The plots represent the probability of outcomes, where the lighter more dispersed colours indicate greater uncertainty. The horizontal black lines are the reference points indicating whether the stock status is safe or not. In particular, if the stock falls below the lower dotted line (limit), the state of the stock would be considered unsafe. The vertical dotted line indicates the start of the simulated projection of the harvest control rule. The red histograms on the right hand plot indicate the proportion of these simulations where the stock has collapsed.

[1]*Maximum Sustainable Yield and precautionary approach are considered fishery management international best practices (FAO Code of Conduct for Responsible Fisheries).*

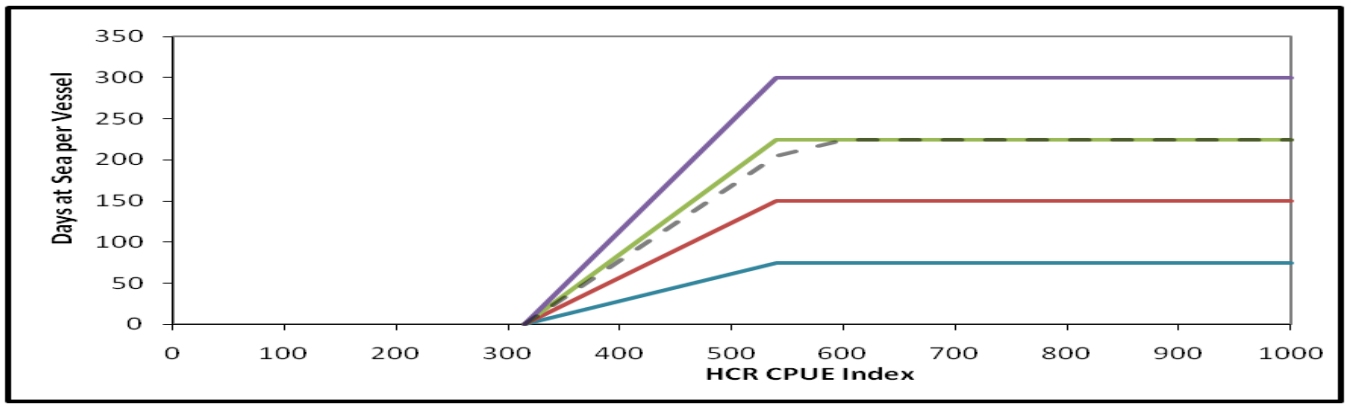


Figure 2. Alternative harvest control rules (HCR) based on different effort limits. The dotted line represents the harvest control rule (HCR) recommended from the stakeholder consultations.

Measures are currently being put in place for Guyana's seabob fishery to be assessed for Marine Stewardship Council certification. Some of these measures include: the installation of vessel monitoring system (VMS) and by-catch reduction devices (BRDs) on trawler vessels along with drafting of regulations such as vessel monitoring system regulation, general fisheries regulations, fisheries product regulations among others. Attainment of such certification will signify to the international community that harvesting and management of that particular fishery resource is being done in a sustainable manner, which in turn allows for preferential access into global markets.

Vessels moored during closed season

RAISING THE PERFORMANCE BAR FOR QUEEN CONCH FISHERIES MANAGEMENT *by Susan Singh-Renton - CRFM Secretariat*

Queen conch has been the subject of much scientific and management investigation over the past 2 decades, especially in response to concerns about uncontrolled overfishing and since the species was listed by CITES in 1992 on its Appendix II (*the CITES Appendix II list includes species that are not necessarily threatened with extinction but for which controlled trade is considered necessary to ensure use compatible with long-term survival*).

CRFM, in its turn, has also made tireless efforts, working with its countries and other sister agencies to improve the management of commercial fishing operations for queen conch, because of the large social and economic implications.

In 2013, the CRFM, under the ACP Fish II Programme, brought together queen conch scientists

Part of the 2013 technical expert meeting, considering options to improve queen conch science & management. [Photo source: Karl Aiken]

from within the region and across the globe to review and evaluate the efficacy of scientific approaches to management currently being practiced in key CRFM conch fishing States (Figure 1). A good sample of country situations was examined, and a technical expert meeting was held for the purpose of identifying practical, but also internationally acceptable and consistent standards to be implemented by all States. By this means, country-specific actions were also being tailored for harmonized benefits on a regional scale.

The CRFM review highlighted best practices within the region, and discussed how to overcome key challenges being experienced by countries for satisfying the main components making up a responsible harvest strategy for queen conch: data collection; data analysis; the decision-making process and management actions. Recent reviews and recommendations made in other regional scientific fora on queen conch management were also taken on board in developing the improved CRFM harmonized approach, which has since been documented in the form of a regional management options paper. The CRFM management options paper identified specific goals for all main components of the harvest strategy, and also took into account inputs from the 2013 meeting of CRFM's Conch and Lobster Working Group.

Improving the accuracy of existing catch and effort statistical data systems for better management performance was emphasized, as well as the usefulness of other types of monitoring, depending on the management measures of interest, e.g. size and habitat data for informing performance of size and habitat area-related regulations. Other major elements for improving data performance included the need to develop conversion factors at different levels of processing, and to establish a catch documentation scheme to track movement of conch resources during import and export operations. This was related to the fact that earlier in 2013, CITES had recognized the need for conversion factors to be developed and adopted a resolution towards this end, for implementation by 2016.

For data analysis, proposed management improvements highlighted the need for developing and testing harvest strategies and stock assessment methods, and making use of an independent peer review process for greater international recognition of the scientific practices in place.

The performance of management measures themselves received as much careful attention, and the CRFM expert review noted the need for regional coordination and harmonization of regulations. Across the region, there are variations in minimum size and meat weight limits, and in the timing of closed seasons. Hence, to minimize opportunities for mobile, illegal operators, certain regulations should be applied on a regional scale as far as possible.

Of course, realizing these improvements and raising the management performance bar will require CRFM countries to invest more in their present queen conch fisheries management systems. CRFM has since made an early start on the development of conch weight/size conversion factors, and re-organized its Fisheries Working Groups to include regional-level management functions, including management regulations.

DEVELOPMENT OF COMMON METHODS FOR ASSESSING AND MONITORING OF SPINY LOBSTER STOCKS *by Maren Headley - CRFM Secretariat*

The spiny lobster fishery is one of the most important fisheries in terms of income and employment in the region of the Western Central Atlantic Fishery Commission (WECAFC). Total landings for this region, excluding Brazil, were approximately 30,000 tonnes whole weight with an estimated ex-vessel value of approximately 500 million US dollars in 2012. Given the importance of this resource, there is a need to monitor the catches and the status of the spiny lobster at the regional level. In this light, the 14th Session of WECAFC decided to re-establish the Working Group on spiny lobster under the leadership of the Organización del Sector Pesquero y Acuícola del Istmo Centroamericano (OSPESCA), Caribbean Regional Fisheries Mechanism (CRFM) and WECAFC. One of the main tasks of this working group is to "Develop common methods to assess and monitor spiny lobster stocks and involve the private sector in data collection."

As a first step to completing this task, the CRFM Secretariat conducted a review of the types of data available and the methods used to assess spiny lobster fisheries in 30 WECAFC Member Countries. It was found that length data are the most frequently available biological data (22 countries) and the most commonly used assessment method was length cohort analysis (12 countries). Based on these findings, the adoption of length cohort analysis and eventually virtual population analysis as common assessment methodologies was proposed. For those countries which only have catch and effort data, the application of catch models was suggested as an interim method. The review also provided general outlines to improve the types of data available by country and allow accurate regional comparisons including; development of biological data sampling programs, standardized mandatory reporting of spiny lobster landings, and consistent monitoring techniques of the distribution and abundance of spiny lobster. Ways to involve processors and fleet owners in the data collection and monitoring processes were also identified and include: raising awareness about the importance of stakeholder participation and its contribution to improved management and profitability of the fishery; training in methods of data collection and reporting; and exchanging knowledge and information among fishers, processors, scientists and managers. The results will be presented during the first meeting of the joint Working Group which will be convened during October 21-24, 2014 in Panama City, Panama. The full report is available online at www.crfm.int.

Collecting spiny lobster biological data dock side: weight (left) and carapace length (right).

BIG PLAN FOR A SMALL TUNA *by Susan Singh-Renton - CRFM Secretariat*

Blackfin tuna - a small tuna found in the Western Atlantic

Blackfin tuna is considered a small tuna species by international standards, but this small tuna supports major commercial fisheries in the Eastern Caribbean, with about 30% of all western Atlantic tuna catches taken in this area. Many of the CRFM island states in this area, because of their make-up and position between the Caribbean Sea and the Atlantic Ocean, and lying just north of major river and ocean current systems that are active off northeast South America, have fairly diverse fisheries targeting a range of resources both close to shore and for some distance offshore.

While the offshore fisheries of these islands record a variety of large pelagic fish species (large-bodied, fast-swimming fish that live in the upper water column) in their catches, blackfin tuna is one of the most common and dependable species caught throughout the year. Being a small tuna, fish schools also sometimes venture close enough to the coast, to be taken in beach seining operations. Whether they are caught offshore or by coastal beach seines, without a doubt, blackfin tuna forms a large portion of the fresh fish produce available for local consumption in the CRFM Eastern Caribbean island states concerned.

So, not surprisingly, the CRFM, with its present keen focus on food and nutrition security and on the ecosystem approach that balances human needs with those of nature, has picked blackfin tuna for making the first big strides towards sub-regional management of a shared large pelagic fishery resource. This effort was greatly assisted by the 3-year Caribbean Large Marine Ecosystem (CLME) project that came to a close in 2013, by which time CRFM had carved out the first proposed Eastern Caribbean sub-regional management plan for blackfin tuna.

The proposed sub-regional management plan has been inspired by the principles of the relevant regional and international fisheries instruments, such as FAO's Code of Conduct for Responsible Fisheries, the Caribbean Community Common Fisheries Policy, the Castries Declaration on Illegal, Unreported and Unregulated Fishing. It therefore includes provisions for supporting responsible fisheries management, good governance, the participatory approach, the precautionary approach, and the ecosystem approach to fisheries management.

In terms of the plan's objectives, these range from sustaining fish and ecosystem health to human social and economic benefits such as level of employment and profitability have been included, as developed for the CLME by the CLME project, and which capture the full essence of an ecosystem approach. But the plan does not stop there. Importantly, general stakeholder concerns on fisheries management issues, reflected in the sub-regional management plan for Eastern Caribbean Flyingfish, already adopted by the CRFM for the same states and fishing communities, were used to inform operational management objectives for blackfin tuna and so give a clear focus for activities directed at data collection, analysis and management actions.

At present, the health of blackfin tuna has not been evaluated according to the usual quantitative scientific process. However, recent analyses of the available data and trends in the new emerging FAD fisheries of the islands concerned have caused the CRFM to propose a precautionary approach at this time, with advice that blackfin tuna catches should not be increased above present levels until better data and analyses are in hand.

Of course, the proposed new plan has identified various types of data to be collected, to cover the full range of stakeholder concerns. So while catch and effort data are still included to monitor the impacts of fishing on blackfin tuna health, stakeholders have called for more monitoring of other management goals, such as social and economic performance, ecosystem health, and the quality of the management process. All these aspects are therefore incorporated into the new plan.

CRFM states are yet to finalize and adopt the plan, a process that must necessarily involve further consultation with stakeholders and also by the CRFM itself. Nonetheless, for this small tuna, nothing less than a big plan should be placed on the table.

CRFM'S FISHERIES WORKING GROUPS *by Elizabeth Mohammed - CRFM Secretariat*

Since its establishment in 2003, the CRFM has established five Resource Working Groups (WGs) that promote the sustainable utilisation of: small coastal pelagic fish (SCPWG), large pelagic fish (LPWG), reef and slope fish (RSWG), conch and lobster (CLWG) and shrimp and groundfish (SGWG). The technical component of these WGs meet at the CRFM's Annual Scientific Meetings (Figure 1.) to review and analyse fisheries data and information, explore methods for assessing the status of fisheries resources that are suited to the data-limiting situation in the region and provide recommendations for management as well as improvements in statistics and information.

PWG delivers its report to the plenary session of the 4th Scientific Meeting (June 2008)

In addition, a working group was established for coordination of regional participation in activities of the International Commission for the Conservation of Atlantic Tunas (ICCAT), which is responsible for conservation and management of tunas and billfishes (large, highly migratory pelagic fish) in the Atlantic Ocean and adjacent seas.

In May 2014 the CRFM Ministerial Council agreed to have the WGs restructured to better be able to consider the broad range of issues that impact on fisheries, commonly called the Ecosystem Approach to Fisheries (Figure 1). These issues include the long-term sustainability of the resources (targeted and by-catch), as well as issues of livelihood and food security, that impact those directly involved in the fisheries sector and the population in general. The environment is also to be considered in light of the impacts of fishing on the behaviour and interactions among species, the impacts of pollution and destruction of critical fish habitat, as well as the cross-cutting issue of climate variability and change are also to be considered.

The restructured WGs have additional responsibility to build awareness about fisheries management issues and proposed management measures among the full range of stakeholders and to ensure their involvement in fisheries assessment and the management decision-making process.

Perhaps most importantly, is the inclusion of a management level function for the restructured WGs. The Caribbean Fisheries Forum (CFF, management component of the WGs), in addition to considering the management, statistics and research recommendations arising out of the Annual Scientific Meetings, is now mandated to draft the necessary proposals for endorsement by the Ministerial Council, the highest decision-making body within the CRFM. This sets the stage for implementation of these recommendations at the national or regional level as appropriate.

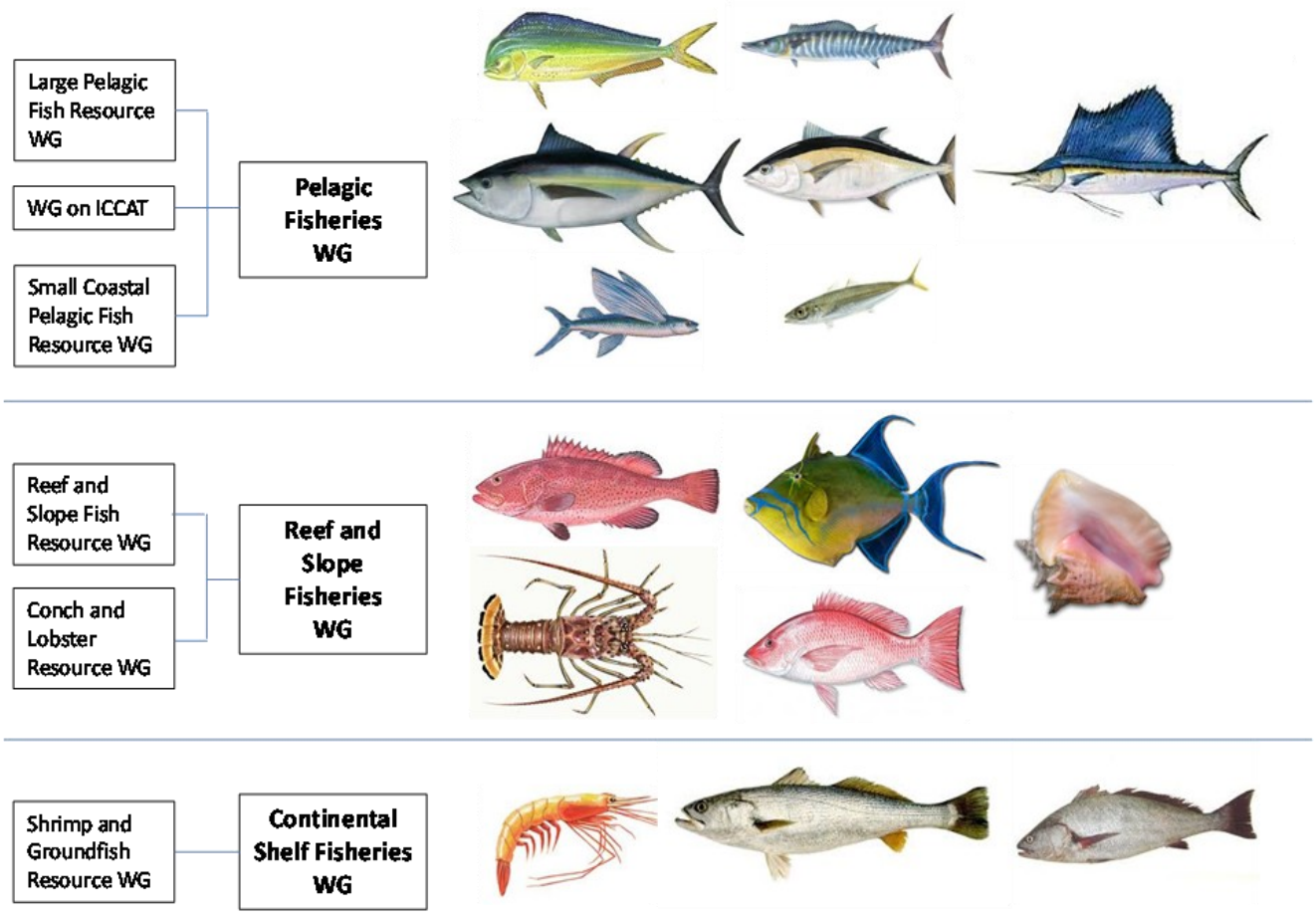


Figure 1. CRFM's Restructured Fisheries Working Groups (note: graphics are not intended to depict relative sizes of organisms)

Monitoring and evaluation (M&E) of the activities of the WGs is now a specific requirement. As a consequence, the responsibilities of the various entities of the WGs (national technical focal points, CRFM Member States, CFF, CRFM Secretariat) are now explicitly defined. The WGs work plans are now defined over a 2-year period, consistent with the overall biennial Work Plan of the CRFM and aligned with the work plans of CRFM Member States for improved planning and allocation of resources. Annual reporting of the CFF to the Ministerial Council on regional management performance and quarterly reporting of the technical component of the WGs to the CRFM Secretariat on progress of statistics and research activities are specific M&E requirements. In addition, so as to contribute to the CRFM data, information and knowledge base, all outputs of the activities of the technical component of the WGs are to be submitted to the Secretariat for future reference and training purposes.

The WGs now have at their disposal a range of tools for electronic communication over the internet. It is hoped that regular use of these tools will enable the WGs to overcome the past challenges associated with maintaining dialogue and feedback within the WG for effective execution of the work plan during the periods between scheduled face-to-face meetings.

STRENGTHENING REGIONAL CAPACITY IN FISHERIES STATISTICS AND INFORMATION *by Elizabeth Mohammed - CRFM Secretariat*

In February 2014 the CRFM, in collaboration with the United Nations University – Fisheries Training Programme (UNU-FTP) convened a workshop in Kingstown, St Vincent and the Grenadines to examine the status of fisheries statistics and information management in the region and to make recommendations for specific capacity-building interventions. The workshop benefitted from a range of expertise, including representatives of the UNU-FTP (Iceland), UNU-Institute for Water, Environment and Health (Canada), the University of the West Indies – Caribbean ICT Research Programme, Fisheries Departments of Dominica, St Lucia, St Vincent and the Grenadines and Suriname. The full report of the workshop is available at www.crfm.int.

February 2014 Workshop on Fisheries Statistics and Information Management

Recommendations focused on four specific intervention points:

- field sampling and data collection;
- database management and manipulation;
- data analysis and meaningful reporting; and
- monitoring and performance evaluation.

Field sampling and data collection should focus on critical, yet minimum, data requirements for fisheries management with standardized formats for collection and presentation of data. As well, national fisheries sampling plans should be routinely updated to take account of changing circumstances, with the CRFM Working Groups taking an active role in this exercise. Systems for regular checking of the quality of data should also be put in place. As well, more efficient use of limited resources for sampling could be made by identifying the 10 most important commercial species for regional assessment and monitoring. There is a need to make stakeholders aware of the importance of data and information in the management process and to encourage them to assist in this exercise. The experiences of other Regional Fisheries Bodies that assess similar fisheries would be invaluable in transferring best practices in sampling and data collection.

National and regional databases should be updated to capture the data required for reporting at these two levels as well as internationally. Among the CRFM Member States there is a range of computer software being used for storage and analysis of fisheries data. In order to be able to analyse such data at the regional level there is need to consider the most cost-effective approach to consolidating the data from Member States into a common format. There is online technology which can be explored to achieve this and partnerships should be developed with agencies using such technology for management and continued maintenance of any agreed regional fisheries database.

In terms of data analysis, the data requirements of simple versus complex mathematical models that are used to determine the status of fisheries resources as well as the risks and uncertainties in these models should be examined. This kind of cost-benefit analysis will help to further refine data collection to make the most use of limited resources. The CRFM Working Groups should take

2014 Meeting of the CRFM Data, Methods and Training Working Group

an active role in updating national sampling plans. The CRFM Annual Scientific Meetings should take a step-wise approach to building competence and skills in fisheries analyses. Initial focus should be placed on basic analyses that provide general information on development, status and importance of fisheries before moving on to more complex data collection and analysis. As well, to build regional confidence and to empower existing regional experts should be encouraged to assist with national and regional fisheries analyses at these meetings. A concerted effort is also required to source higher level training opportunities within the region, for experienced and skilled fisheries persons who do not have the academic requirements for entry to university level courses.

The technical reporting at CRFM Annual Scientific Meetings should continue, in keeping with international standards. However, there is a need to repackage the technical information, using the most suitable media, reporting and communications format to reach the wide range of fisheries stakeholders.

Systems for monitoring and evaluating the use of data should be put in place to help improve sampling strategies and identify better analysis methods to meet the information needs of managers. These outcomes could also be achieved by developing the capacity to recognize data deficiencies as well as early screening of data prior to analysis at Annual Scientific Meetings. More efficient use could be made of limited resources if there is agreement on how frequent certain species/resources should be assessed and the activities of the CRFM Working Groups could best be monitored if their work plans were time bound.

Role of the CRFM Data, Methods and Training Working Group (DMTWG): The DMTWG is responsible for reviewing data, assessing and identifying suitable methods of analysis best suited to the regional situation and building regional capacity through training in multi-disciplinary approaches to fisheries assessments. However, it is also to take a lead role in using the technical skills acquired through various statistical training programmes to screen data and identify those datasets that are suitable for analysis at the CRFM's Annual Scientific Meetings. In 2014 the DMTWG committed to executing some of the recommendations of the February 2014 workshop, pending approval of the Caribbean Fisheries Forum. The associated activities include: developing new or updating existing national sampling plans, identifying and prioritising a list of species to be assessed and monitored regionally and conducting training for data collectors in certain CRFM Member States.

UPCOMING EVENTS - August-December 2014

No.	Event	Date	Location
1.	Caribbean Marine Atlas Kick-off Meeting	25—29 August	Miami, Florida
2.	UNU–Fisheries Training Programme (6 month course)	September 2014 - March 2015	Iceland
3.	Second CRFM/ANCORS Fisheries Law and Management Training Course	1 September—3 October	Australia
4.	United Nations Third International Conference on Small Island Developing States	1-4 September	Apia, Samoa
5.	7th World Recreational Fishing Conference	1-4 September	Sao Paulo, Brazil
6.	4th ACP Fisheries Ministers Meeting	8-12 September	Namibia
7.	World Small-Scale Fisheries Congress	21-25 September	Merida, Mexico
8.	ICCAT SCRS Species Group Meetings	22-26 September	Madrid, Spain
9.	First round—Informal Consultations on Ominbus Resolution on Oceans and the Law of the Sea	29 September—3 October	UNHQ, New York
10.	Technical Workshop on Bottom Fisheries in the High Seas Areas of the Western Central Atlantic	30 September—02 October	Barbados
11.	Caribbean Week of Agriculture	6-12 October	Suriname
12.	CANARI/CNFO/UWI-CERMES/PANOS/CRFM: Strengthening Fisherfolk to Participate in Governance Second Regional Caribbean Fisherfolk Action Learning Group Workshop	20-24 October	The Bahamas
13.	Regional IMO Training Course for the Implementation of the Cape Town Agreement	20-24 October	Belize
14.	First Meeting of the OSPECA/WECAFC/CRFM/CFMC Working Group on Spiny Lobster	21-24 October	Panama
15.	How to Combat the Invasive Lionfish in the Central American Caribbean	27-29 October	Belize
16.	CTA / ACP Brussels Briefing IUU Fishing / Aqua Project follow up meeting	27-28 October	Brussels
17.	Second Meeting of CARIFICO Project Directors	30 October	Antigua & Barbuda
18.	67th Annual GCFI Meeting	3-7 November	Barbados
19.	FAO/UWI-CERMES Workshop on strengthening organizations and collective action in fisheries: towards the formulation of a capacity development programme	4-6 November	Barbados
20.	Regional Workshop on Marine Protected Areas as a Tool for Responsible Fisheries and Sustainable Livelihoods in the Caribbean	6-8 November	Barbados
21.	19th Special Meeting of the ICCAT Commission	10-17 November	Fiera di Genova, Itlay
22.	Informal Consultation on Sustainable Fisheries	11-18 November	UNHQ, New York
23.	CFMC/WECAFC/OSPESCA/CRFM Queen Conch Working Group Meeting	18-20 November	Panama
24.	First round—Informal Consultation on Omnibus Resolution on Ocean and the Law of the Sea	19-25 November	UNHQ, New York
25.	CRFM/CTA Fisheries Workshop: Investing in Blue Growth	20-21 November	Grenada
26.	UNEP-CAR/RCU, Secretariat of the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Regional Intergovernmental Meetings	24-29 November	TBA
27.	1) CARICOM/Japan Friendship Year Workshop (3-4 Dec) 2) CRFM/CARIFICO Workshop (5 Dec)	3-5 December	Trinidad & Tobago

EDITOR'S NOTE

This newsletter provides information on the scientific, research and related activities of the CRFM conducted between June 2013 and May 2014. Details of the assessment of the Guyana seabob fishery at the Ninth Scientific Meeting and associated harvest control rules are outlined. Issues pertaining to the data, information and research requirements for application of an ecosystem approach to fisheries (EAF) assessment and management are discussed with reference to specific fisheries, one being the eastern Caribbean flyingfish for which there is now an approved regional management plan. A common methodology for assessing and monitoring the widely-distributed Caribbean Spiny Lobster as well as options for building regional capacity in statistics and information are proposed.

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