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## WESTERN CENTRAL ATLANTIC FISHERY COMMISSION

**Report of the**

# THIRD MEETING OF THE WECAFC/CRFM/IFREMER WORKING GROUP ON SHRIMP AND GROUNDFISH OF THE NORTHERN BRAZIL-GUIANAS SHELF

**Paramaribo, Suriname, 26–27 November 2019**

*Cover photograph*: Courtesy of Tomas Willems (FAO REBYC II LAC Project)

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## Preparation of this document

This is the report of the Third Meeting of the Western Central Atlantic Fishery Commission (WECAFC)/ Caribbean Regional Fisheries Mechanism (CRFM)/ Institut Francais de Recherche pour l'Exploitation de la Mer (IFREMER) Working Group on the Shrimp and Groundfish of the Northern Brazil-Guianas Shelf, which was held in Paramaribo, Suriname from 26 to 27 November 2019.

Representatives from the following countries and regional partner organizations participated: Brazil, France (French Guiana), Guyana, Suriname, and Trinidad and Tobago, the Centre for Resource Management and Environmental Studies (CERMES), Conservation International Guyana, the Fisherfolk Organization Commewijne-Paramaribo, the Federation of Surinamese Agrarians, Ghent University, World Wildlife Fund (WWF) Guianas and Food and Agriculture Organization (FAO). The meeting was also attended by fisherfolk representatives from Guyana and Trinidad and Tobago.

The meeting was made possible through financial support provided by the FAO-UNOPS Inter-Agency Agreement on "Catalyzing Implementation of the Strategic Action Programme for the Sustainable Management of Shared Living Marine Resources in the Caribbean and the North Brazil Large Marine Ecosystems" (Project UNJP/RLA/217/OPS), which is focused on the shrimp and groundfish fishery resources of the Northern Brazil-Guianas Shelf, and the Sustainable Management of Bycatch in Latin America and Caribbean Trawl Fisheries (REBYC-II LAC) project, which includes Brazil, Suriname and Trinidad and Tobago among the beneficiary countries in the region.

The meeting was convened and chaired by Mr Fabian Blanchard of IFREMER. FAO technical assistance to the working group and its preparation was provided by Ms Tarub Bahri, Mr Carlos Fuentevilla and Mr Jeremy Mendoza. Administrative and logistical support was provided by Mr Tomas Willems, Ms Geeta Nidhansing and the FAO Office in Trinidad and Tobago. Ms Kim Sys provided support in preparing and drafting the document.

This report contains a record of the meeting, including summaries of presentations and discussions.

## Abstract

The Third Meeting of the Working Group on Shrimp and Groundfish of the Northern Brazil-Guianas Shelf was held in Paramaribo, Suriname, 26–27 November 2019. The meeting brought together 25 participants including Working Group members, fisheries officers, fisherfolk representatives, academia, government organizations and FAO. The scope of the Working Group is to provide scientific and management advice for the sustainable management of the shrimp and groundfish resources of the Northern Brazil-Guianas shelf in the WECAFC Region.

An update on stock status of shrimp and groundfish species for each country in the Northern Brazil-Guianas shelf was presented for each country and these showed decreasing trends in apparent abundance and fully exploited or overexploited stocks. An update on genetic studies of shrimp populations in the region showed that the cryptic species *Farfantepenaeus isabelae* was not present and only the southern brown shrimp (*F. subtilis*) was found in samples from Guyana, Suriname and Trinidad and Tobago. Regarding the Atlantic seabob (*Xiphopenaeus kroyeri)* a genetic analysis revealed a common population structure in samples obtained from French Guiana, Guyana and Suriname. Furthermore, an update was presented on the status of the WECAFC-FIRMS stocks and fisheries inventories and the related published and draft fact sheets. FIRMS has recently published 28 WECAFC marine fishery resources fact sheets mainly for the Gulf of Mexico, United States of America waters, and for the Caribbean spiny lobster (*Panulirus argus*) in Brazil, Colombia, Gulf of Mexico, Florida (United States of America) and Cuba. The need to complete draft records for the shrimp and groundfish fisheries of the North Brazil-Guianas shelf was underlined.

The member countries representatives also presented an update on the status and development of their national fisheries management plans, followed by a discussion about the current status and necessary steps to develop a sub-regional EAF management plan for shrimp and groundfish. Additionally, advances in a gender analysis along the small scale fisheries value chain in Guyana, Suriname, and Trinidad and Tobago was presented, as well as an update regarding progress with the development of the subregional Monitoring and Evaluation Framework and Indicators to inform policy making on governance effectiveness.

Working Group participants reviewed and discussed the draft regional strategy for bycatch management in the WECAFC Area developed by the REBYC II LAC project. They also discussed the needs and priorities to combat IUU fishing in the Northern Brazil-Guianas-shelf, as well as the need to enhance capacity in stock assessment techniques in the sub-region. A work plan for the intersessional period was agreed upon by the participants. Finally, based on Working Group discussions and the requirements for sustainable management of the shrimp and groundfish resources of the Northern Brazil-Guianas Shelf, a draft recommendation was prepared for consideration by the upcoming 18th session of WECAFC.

## Contents

## Abbreviations and acronyms

| | |
|---|---|
| AIS | Automatic Identification System |
| BRD | Bycatch Reduction Device |
| CC4FISH | Climate Change Adaptation in the Eastern Caribbean Fisheries Sector Project |
| CERMES | Centre for Resources Management and Environmental Studies |
| CLME+ | Caribbean and North Brazil Shelf Large Marine Ecosystems Project |
| CNFO | Caribbean Network of Fisherfolk Organizations |
| CRFM | Caribbean Regional Fisheries Mechanism |
| DSS | Decision Support System |
| DCRF | Data Collection Reference Framework |
| EAF | Ecosystem Approach to Fisheries |
| EEZ | Exclusive Economic Zone |
| FAO | Food and Agriculture Organization |
| FIRMS | Fisheries and Resources Monitoring System |
| FMP | Fishery Management Plan |
| GEAF | Governance Effectiveness Assessment Framework |
| GEF | Global Environment Facility |
| IFREMER | Institut Francais de Recherche pour l' Exploitation de la Mer |
| iMARINE | Data e-Infrastructure Initiative for Fisheries Management and Conservation of Marine Living Resources |
| IUU | Illegal, Unreported and Unregulated (Fishing) |
| LBP | Land Based Pollution |
| LBSPR | Length-Based Spawning Potential Ratio |
| LME | Large Marine Ecosystem |
| MCS | Monitoring, Control and Surveillance |
| MSC | Marine Stewardship Council |
| NBSLME | North Brazil Shelf Large Marine Ecosystem |
| NICs | National Inter-Sectoral Committees |
| NGO | Non-Governmental Organization |
| PSA | Productivity-Susceptibility Analysis |
| PSMA | Port State Measures Agreement |

| | |
|---|---|
| REBYC-II LAC | Project on Sustainable Management of Bycatch in Latin America and Caribbean Trawl Fisheries |
| RFB | Regional Fishery Body |
| RFMO | Regional Fishery Management Organization |
| RPOA | Regional Plan of Action |
| SAG | Scientific Advisory Group (WECAFC) |
| SAP | Strategic Action Programme (CLME+) |
| SOMEE | State of the Marine Ecosystems and Associated Economies (CLME+) |
| SWG | Seabob Working Group |
| TAC | Total Allowable Catch |
| TED | Turtle Excluding Device |
| T-TED | Trash and Turtle Excluding Device |
| TOR | Terms of Reference |
| UNEP | United Nations Environment Programme |
| UWI | University of the West Indies |
| VMS | Vessel Monitoring System |
| VPA | Virtual Population Analysis |
| VRE | Virtual Research Environment |
| WECAFC | Western Central Atlantic Fishery Commission |

## Opening of the meeting

1. The participants to the meeting were welcomed by Mr Radjes Ashraf, Working Group member from the Fisheries Department of the host country Suriname. All participants were invited to stand for the opening ceremony with the National Anthem of the Republic of Suriname.

2. The opening address was made by Ms Tarub Bahri, FAO Fisheries Resources Officer. Ms Bahri welcomed the participants and recalled the significance of the shrimp and groundfish fisheries in the North Brazil-Guianas shelf for the provision of food, livelihoods and income in the region. She described FAO's efforts to facilitate the transitioning to an Ecosystem Approach for the shrimp and groundfish fisheries in the region which encourages use of the "best available knowledge" in decision making. She highlighted the importance of this working group in contributing to this effort by providing recommendations to policy makers. Ms Bahri expressed her gratitude to the Government of Suriname for hosting the meeting and her satisfaction to see representatives from government agencies, private sector, research institutes and non-governmental organizations. The full transcript of the welcoming speech by Ms Bahri can be found in Appendix 4.

3. Mr Fabian Blanchard, Working Group Convener, started his opening remarks by thanking all people of the host country and FAO staff involved in organizing the working group meeting, all participants that had to travel from home to attend this meeting and the funding sources. He recalled that the Working Group was reactivated officially at the WECAFC Plenary Session of 2014 and that a fist meeting was held in 2015. Mr Blanchard highlighted the importance of the member countries to collaborate, to share data and to carry out stock assessments on a regional level in order to have a more complete analysis of the stock status and to be able to provide more accurate advice. He underlined that the work done by the Working Group is broader than stock assessment and that the Working Group can also contribute to various other programmes (e.g. FAO's FIRMS). Mr Blanchard emphasized that recommendations and advice will only be efficient if the respective governments endorse them and translate them into national regulations. The full transcript of the welcoming speech by Mr Blanchard can be found in Appendix 5.

4. Ms Tania Lieuw-A-Soe represented the Ministry of Agriculture, Animal Husbandry and Fisheries of Suriname. Ms. Lieuw-A-Soe opened her welcoming speech by apologizing for Mr Rabin Parmessar, Minister of Agriculture, Animal Husbandry and Fisheries, who could not attend the meeting due to other obligations. She highlighted the importance of the shrimp and groundfish resources for the Surinamese economy and the responsibility Suriname shares with the countries in the region to manage these fisheries in a sustainable way. She underlined the fact that populations of fish and shrimp are transboundary and that Suriname shares these resources with the neighboring countries which makes fisheries a very international activity that should be managed through regional collaboration. She underlined that the Ministry of Agriculture, Animal Husbandry and Fisheries is committed to support all efforts to ensure the sustainable use of the fisheries resources. Ms Lieuw-A-Soe thanked all participants for their attendance and wished them very fruitful discussions. The full transcript of the welcoming speech by Ms Lieuw-A-Soe can be found in Appendix 6.

## Attendance

5. Stakeholders, including fishery officers, industrial and small-scale fisheries representatives from several countries and regional partner organizations attended the meeting. Namely, representatives from Brazil, France (French Guiana), Guyana, Suriname, and Trinidad and Tobago, as well as the Centre for Resource Management and Environmental Studies (CERMES) of the University of the West Indies (UWI), Conservation International Guyana, Fisherfolk Organization Commewijne-Paramaribo, the Federation of Surinamese Agrarians, Ghent University, World Wildlife Fund (WWF) Guianas and FAO. The list of 25 participants, including Working Group members and resource persons is presented in Appendix 1.

## Scope and goal of the working group

6. The scope of the Working Group is to provide scientific and management advice for the sustainable management of the shrimp and groundfish resources of the Northern Brazil-Guianas shelf in the WECAFC Region. In undertaking its work, the Working Group will pay due attention to the Code of Conduct´s Article 6.4 of the general principles and the principles of the Ecosystem Approach to Fisheries (EAF) Terms of reference of the working group may be found at:http://www.fao.org/fi/static-media/MeetingDocuments/WECAFC/WECAFC2019/17/TOR-WG_WECAFC-CRFM-IFREMER_ShrimpGroundfishNorthernBrazil_GuianasShelf.pdf

7. Using a multidisciplinary approach, the Working Group is expected to contribute to the sustainable management of the shrimp and groundfish resources of the Northern Brazil-Guianas shelf by providing management advice to WECAFC Member Countries based on the best available knowledge. In pursuing this goal, the Working Group contributes to the fulfilment of national and regional objectives regarding the management of the shrimp and groundfish resources, and related or interacting species or fisheries in the WECAFC Region.

## Brief review of the second working group meeting

8. The Working Group held its second meeting in Barbados, 17–8 May 2018, with support from the FAO CLME+ Sub-project on Shrimp and Groundfish of the North Brazil Shelf Large Marine Ecosystem (NBSLME) and the Project on Sustainable Management of Bycatch in Latin America and Caribbean Trawl Fisheries (REBYC-II LAC). During the second meeting the Working Group members presented and discussed updated information on current management of the shrimp and groundfish resources, evaluated status of socio-economic and biological data for these fisheries and identified the most pressing data needs for successful management, reviewed a first draft Regional Strategy for Bycatch Management, analyzed the required steps and actions to develop and implement a Sub-regional Management Plan for Shrimp and Groundfish in the Northern Brazil-Guianas Shelf, and drafted a recommendation for consideration by the 17th Session of WECAFC. Recommendation WECAFC/XVII/2019/11 "On the Management of Shrimp and Groundfish Resources of the North Brazil-Guianas Shelf in the WECAFC Area" was endorsed by the Commission at its 17th Session, 1 – 8 July 2019, in Miami, United States of America.

## Meeting objectives and expected outputs

9. The purpose of the meeting is to enhance collaboration and cooperation amongst Working Group partners to act on Recommendations WECAFC/16/2016/5 and WECAFC/17/2019/11 on the Management of Shrimp and Groundfish Fisheries in the WECAFC Area and achieve the Working Group's long-term goal (agenda is in Appendix 2). These recommendations call, inter alia, for the development of a Sub-regional EAF Shrimp and Groundfish Management Plan and related national implementation plans, and to finalize a Regional Strategy on Shrimp/Bottom Trawl Bycatch Management with support from the REBYC-II LAC project. Furthermore, within the context of the FAO CLME+ Sub-project on Shrimp and Groundfish, the organization and functioning of National Inter-Sectoral Committees (NICs) on fisheries management in the Northern Brazil-Guianas shelf is being assessed, as well as the development of a set of indicators to monitor and evaluate governance effectiveness in the sub-region. For this session, the main objectives of the meeting were:

   - To present, discuss and submit updated information on status of shrimp and groundfish stocks.
   - To assess the status of National Inter-Sectoral Committees in fisheries.
   - To review and discuss a draft Sub-regional Management Plan for the Shrimp and Groundfish Resources.
   - To discuss implementation of the Regional Plan of Action on Illegal, Unreported and Unregulated (RPOA-IUU) fishing in the Northern Brazil- Guianas Shelf.
   - To review the Regional Strategy for Bycatch Management.
   - To review Monitoring and Evaluation indicators for the Government Effectiveness Assessment Framework (GEAF).
   - To discuss other issues (e.g. gender in fisheries, sargassum, capacity building).

   For this session, the main expected outputs were:

   - Updated information on fish stocks and fisheries inventories.
   - Supporting information for the WECAFC Interim Data Collection Reference Framework (DCRF) - an instrument to establish the foundation for comprehensive fisheries data and statistics collection and collation in the WECAFC area.
   - Comments to improve the draft Sub-regional EAF Management Plan and the related national implementation plans and next steps towards finalization of these plans.
   - Roadmap for implementation of Sub-regional Action Plan on IUU.
   - Comments on the draft Regional Strategy on Bycatch Management and recommendations for next steps in its development.
   - Recommendations on assessment and management of shrimp and groundfish fisheries of the Northern Brazil-Guianas Shelf.
   - Work plan for next inter-session period.

## Update on stock status of shrimp and groundfish species

### French Guiana

10. Ms Tagliarolo (IFREMER) presented the data available for French Guiana. The marine fishery sector in French Guiana is constituted by three main components: shrimp trawling fishery, snapper hand-line fishery operated by a Venezuelan fleet, and coastal small-scale fisheries using drift nets and targeting coastal fish species.

11. Southern brown shrimp (*Farfantepenaeus subtilis*) is the main targeted species by shrimp trawlers. Stock assessment using the Stock Synthesis (SS3) model for *F. subtilis* shows that the stock is at historically low levels and below management targets. The current Total Allowable Catch (TAC) and number of licenses are not effective since they potentially allow for overexploitation of the stock.

12. Results of stock assessment using Stock Synthesis (SS3) for Southern red snapper (*Lutjanus purpureus*) show that the current fishing effort is higher than that required for Maximum Sustainable Yield and that the spawning biomass is below MSY levels. Additionally, on average fifty-four percent of the catch length composition over the past 10 years is below the length at maturity (L50%).

13. A data limited approach was applied to 22 species exploited by the coastal small-scale fishery using a Productivity Susceptibility Analysis (PSA). The most important resources in terms of landings such as Acoupa weakfish (*Cynoscion acoupa*), Green weakfish (*C. virescens*) and the Crucifix sea catfish (*Sciades proops*) showed intermediate values of productivity and susceptibility, while elasmobranchs and the Atlantic goliath grouper (*Epinephelus itajara*) showed lower productivity and higher susceptibility. A General Additive Model (GAM) analysis was also utilized to investigate the relationship between sea surface temperature and Catch per Unit Effort (CPUE) in the small-scale fishery. Results suggest that species react differently to fishing pressure and to climate change. For example, Acoupa weakfish and sharks showed lower values of CPUE at higher temperatures, while Green weakfish and the Crucifix sea catfish showed higher CPUE values in the higher temperature range.

14. Stock assessments using Depletion Based Stock Reduction Analysis (DB-SRA) and a Bayesian biomass dynamics model (JABBA) applied to Acoupa weakfish (*Cynoscion acoupa)* as the main target species of the small-scale fisheries showed that, despite the high uncertainty of model outputs, the stock appeared to be overexploited partly due to the high levels of illegal fishing pressure in the area.

### Guyana

15. Mr Mendoza (FAO) presented information available from recent stock assessments in Guyana. As part of the Marine Stewardship Council (MSC) certification process a length-based assessment was made by Santos et al. (2018) using length-based indicators for three groundfish species: King weakfish (*Macrodon ancylodon*), Green weakfish (*Cynoscion virescens*) and Smalleye croaker (*Nebris microps*). Biological information such as length at maturity (L50%) was only available for M. ancylodon. Results indicated that fishing pressure on juveniles of M. ancylodon was high, but for the other two species values were within the expected range for sustainable exploitation. A Rapid Assessment Methodology analysis in 2019 of King weakfish (*M. ancylodon*), Green weakfish (*C. virescens*), Acoupa weakfish (*C. acoupa*), smalleye croaker (*N. microps*), Gillbacker sea catfish (*Sciades parkeri*) and Crucifix sea catfish (*S. proops*) showed particularly low scores for the last three species due to relatively lower productivity and higher susceptibility (Drugan, 2019). Finally, Mr Mendoza presented results

of a Bayesian biomass dynamics model (JABBA) for the Southern red snapper (*Lutjanus purpureus*) fishery in Guyana for the period 2000–2018 which indicated that the stock was overfished and that overfishing was occurring.

16. Mr Blanchard (IFREMER) enquired on the possibility of merging all national data from the sub-region to have a better insight on the sub-regional trends under the assumption of stock unity for several species of the Brazil-Guianas shelf. Mr Mendoza replied that most stock assessments and analyses had been applied at the national level, but that indeed there are strong indications that there are shared stocks for a number of species. He added that the results obtained for the same species among different countries were more or less similar and agreed on the need to conduct regional analyses.

17. Mr Willems (FAO) informed that there were length-based stock assessments available for six groundfish species in Suriname: King weakfish (*Macrodon ancylodon*), Acoupa weakfish (*Cynoscion acoupa*), two catfish species and Green weakfish (*Cynoscion virescens*) and that the status of these species in Suriname was comparable with the one in Guyana.

**Suriname**

18. Mr Mario Yspol (Suriname) presented the status of the Southern red snapper (*Lutjanus purpureus*) fishery in Suriname waters. A Bayesian biomass dynamics (JABBA) model was used with catch and effort data covering the period between 2004 and 2018. Under most scenarios analyzed stock biomass was relatively stable and slightly above the MSY level for the study period. However, Mr Yspol mentioned that the time series used does not include other fleets (e.g. shrimp trawlers) that catch Southern red snapper as bycatch.

19. Mr Blanchard (IFREMER) enquired if there were stock assessments done on other species. Mr Yspol replied that there are other basic stock assessments being done within the Fisheries Department as mentioned earlier by Mr Willems. He underlined that it is very important to improve the fisheries data quality in Suriname, as poor data quality was affecting the reliability of the stock assessment outcomes. He added that all artisanal vessels will be obliged to use a Vessel Monitoring System (VMS) from January 2020 onwards, which may help improve the quality of data collected.

**Brazil**

20. Mr Negreiros Aragao (Brazil) presented a population dynamics and bioeconomic analysis of Southern brown shrimp (*F. subtilis*) in Northern Brazil where industrial landings reached a record 6 900 tonnes of tails in 1987-1988 and declined since then, mainly due to economic reasons, and in the last five years have oscillated around 1 500 tonnes.

21. The flow of the Amazon River is the main environmental factor that governs the conditions of the coastal environment in the region and it was found that it is correlated with the annual fluctuations of shrimp abundance. The stock has been exploited at moderate levels in recent years, although it underwent high rates of exploitation in the 1980's which led to a reduction in population size. In recent years there is a trend of recovery of population biomass. The Maximum Sustainable Yield, considered as a long-term average, was estimated through the Thompson and Bell model at 4 032 tonnes of tails per year for a fishing effort of 19 370 days at sea. Short- and medium-term projections of the performance of the fishery, considering the pattern of recruitment to oceanic areas and the observed temporal distribution of fishing effort, showed that even for low levels of recruitment viable economic results in the fishery could be obtained with fishing effort around 19 000 days at sea.

22. Aditionally, Mr Aragao presented preliminary results on assessment of the Southern red snapper (*L. purpureus*) fishery in Northern Brazil with catch and effort data covering the period 1985-2016. In this fishery landings reached their maxima from the late 1990s to the mid-2000s when landings fluctuated between 5 000 tonnes and 7 000 tonnes; in recent years landings have been relatively stable around 4 000 tonnes. A Bayesian biomass dynamics model (JABBA) was used for parameter estimations. Under several scenarios analyzed mean values of fishing mortality were below MSY levels and mean biomass values were above MSY levels.

## Trinidad and Tobago

23. Ms Ferreira (Trinidad and Tobago) presented the status of shrimp and groundfish in Trinidad and Tobago. The data analyzed included shrimp length frequency distributions for females of the four (4) priority species Southern pink shrimp (*Farfantepenaeus notialis*), Southern brown shrimp (F. subtilis), Atlantic seabob (*Xiphopenaeus kroyeri*) and Southern white shrimp (*Litopenaeus schmitti*) spanning the period 1992-2015, though with a gap from 2003 to 2012. These data were also separated by trawler type and fishing area.

24. Input parameters for the Length-Based Spawning Potential Ratio (LBSPR) model were determined based on the existing literature for the four priority species. Length distributions for *F. notialis* in the Gulf of Paria from artisanal trawlers produced a Spawning Potential Ratio[1] (SPR) of 0.2 and less, while those from the non-artisanal single stern trawlers gave slightly better results of SPR of 0.2 - 0.6 using a natural mortality to growth coefficient ratio (M/K) equal to 3. Even lower SPR resulted from what was considered to be a more realistic M/K value of 1.1. The SPR target value for shrimp is considered to be around 0.3, and the SPR limit around 0.15. It was considered that the months with the greatest proportion of small shrimp may be biasing the results of the LBSPR and as such could be omitted from the assessment and the model re-run. In the case of *X. kroyeri* (M/K = 4), the SPR trend line for the artisanal trawlers in the Gulf of Paria was in the region of 0.4-0.8.

25. Previous stock and bio-economic assessments for the five shrimp species, those mentioned above as well as Red spotted shrimp (*F. brasiliensis*), found that there was a significant probability that stocks were overfished, that overfishing was occurring (data up to 2012), and that the fishery was over-capitalized. Assessments, including bio-economic assessments, of some of the major commercial groundfish species (*Micropogonias furnieri* (Whitemouth croaker); *Cynoscion jamaicensis* (Jamaican weakfish); *Lutjanus synagris* (lane snapper)) using data from the trawl and artisanal multi-gear fleets (up to 2008) found these stocks to be fully exploited to overexploited.

## Update on genetic studies of shrimp populations

26. Ms Tagliarolo (IFREMER) gave a presentation on genetic analysis of shrimp populations targeted by the French Guianese shrimp trawlers. Southern brown shrimp (*F. subtilis)* is the main target species but recent publications suggest that two cryptic species may be confused under this name. The analysis of the mitochondrial cytochrome oxidase gene sequence can provide a good separation of cryptic species, but it is less adapted for the investigation of population dynamics at large spatial scales. Preliminary results obtained with samples from French Guiana, Suriname and Trinidad and Tobago suggest that only one species is present and

[1] The spawning potential ratio is the amount of spawn produced by a recruit or cohort over its lifetime under a specific fishing regime relative to the amount of spawn produced over the lifespan without fishing.

no large scale spatial variability pattern was detected. Nevertheless, these are preliminary results on a small part of the available samples and final results will be available soon.

27. Mr Thomas Kerckhove (Ghent University) gave a presentation on population genetics of Atlantic seabob. The Atlantic seabob is an intensively exploited shrimp species in the Western Atlantic. In the Guianas shelf (Guyana, Suriname, French Guiana) this species currently constitutes the most important shrimp resource for both artisanal and industrial fisheries. The fishery in Suriname has been certified with the MSC-label for sustainable fisheries, being the first tropical shrimp fishery worldwide to obtain this label. Recently also the Guyanese Atlantic seabob industrial fishery has been certified with the MSC label. However, important questions on the population structure of the species remain unanswered.

28. The population structure of the Atlantic seabob was analyzed using microsatellite markers, which were newly developed using Next Generation Sequencing (NGS). Five populations from the Guianas shelf, and two additional populations from Trinidad and Colombia were studied. The results showed low genetic differentiation between different samples in the Guianas shelf, while differing markedly from samples in Trinidad and Colombia. This has implications for Atlantic seabob fisheries management within the Guianas shelf, as results indicate that only one single population is present there.

29. Mr Mendoza (FAO) enquired if more similarities could be expected between the populations from Trinidad and Tobago and Colombia based on the graphs presented. Mr Kerckhove responded that there are indeed more similarities, but sample size was small to reach hard conclusions. Mr Blanchard (IFREMER) expressed interest in applying the microsatellites technique to Southern brown shrimp (*F. subtilis*) in French Guiana. Mr Kerckhove added that it takes about one to two years to develop a species-specific microsatellite marker and this development also has a price tag on it. Ms Maison (Guyana) enquired if this new insight will have implications for the MSC assessment. Mr Willems (FAO) replied that MSC has so far considered the shrimp population in Suriname and Guyana as two different populations and he considered that these results would need to be taken into account by the MSC evaluators in the next assessment cycle. Mr Blanchard (IFREMER) considered useful to extend this kind of analysis to other shrimp and groundfish species in the region.

## Update on Fisheries and Resources Monitoring System (FIRMS) inventories and data needs

30. Mr Gentile (FAO) presented the status of the WECAFC-FIRMS stocks and fisheries inventories and the related published and draft fact sheets. FIRMS has recently published 28 WECAFC marine fishery resources fact sheets mainly for the Gulf of Mexico, United States of America waters, and for the Caribbean spiny lobster (*Panulirus argus*) in Brazil, Colombia, Gulf of Mexico, Florida, United States of America and Cuba. He underlined the need to complete the 19 fishery records drafted during the CLME+ Data Preparatory Workshop for Shrimp and Groundfish (Barbados, 23–25 October 2018) for French Guiana, Guyana, Suriname, and Trinidad and Tobago. In this regard, the Excel draft fisheries inventory was circulated among the participants for their inputs. Mr Gentile also asked for the provision of new data for the marine resources and fishery domains, in particular for those countries that have not yet contributed (e.g. Brazil, Bolivarian Republic of Venezuela). Additionally, the presentation covered how the FIRMS database can be exploited to extract summary information on stock status for the WECAFC region.

31. Other relevant FAO products were briefly presented, namely: i) The Global Record of Stocks and Fisheries (GRSF), ii) FAO SmartForms – a mobile App for data collection, and iii) E-learning - SDG Indicator 14.4.1 - Fish stocks sustainability.

32. Mr Fanning (CERMES Consultant) asked if the database for SmartForms was nationally held and how national data policy was tackled. Mr Gentile clarified that the ownership of and the access to the data depended on the type of data collection (e.g. national, regional), the actors involved (e.g. countries, IGOs, RFBs) and under which type of project or activity. Data collected through the SmartForms mobile App can be uploaded to FAO, as well as to any other receivers according to the type of agreement made on each specific data collection activity, including national repositories. Mr Willems (FAO) mentioned that Suriname is now, in cooperation with FAO, implementing a new fisheries data collection system called Calypso. He queried if this system was compatible with SmartForms. Mr Gentile replied that they were compatible; the data collected by SmartForms can be transferred to Calypso, as SmartForms was also designed to complement Calypso.

## Discussion on alignment of Ecosystem Approach to Fisheries (EAF) sub-regional management plan and national implementation plans

33. A draft of a Sub-regional Fisheries Management Plan (FMP) for the shrimp and groundfish fisheries of the Northern Brazil-Guianas shelf was presented by Mr Paul Fanning (CERMES Consultant). The plan was developed following the principles of the Ecosystem Approach to Fisheries (EAF) process. The draft was primarily based on provisions in existing national FMPs for Guyana, Suriname, and Trinidad and Tobago, and consultations held in each of those countries. Objectives, management measures (actions), and issues/problems identified in national plans and the consultation process were aligned across the three countries and a consensus version was proposed. Available information concerning Brazil and French Guiana was also considered, however, the scope of the draft needs to be expanded to include these latter countries which share the same ecosystem.

34. Also, the institutional arrangements required to put in place a sub-regional management process were discussed. Four major elements were identified: a technical/advisory body, a decision-making body, multiple technical working groups or sub-committees with specific terms of reference, and a secretariat to provide logistic support, coordination, and information dissemination. The current WECAFC/CRFM/IFREMER Working Group on Shrimp and Groundfish is well suited as the technical/advisory body, but it does not have a mandate for decision making.

35. The Working Group discussed that a sub-regional management plan needs to explicitly mention responsibilities of the various institutions that are expected to implement it. Mr Fanning also highlighted that currently the subregional FMP did not cover all the countries of the Northern Brazil-Guianas shelf and that there was a mismatch between the scope of the FMP and the geographical scope.

36. Ms Maison (Guyana) argued that it seems complicated to manage stocks in data deficient situations and therefore status of stocks is not known. Mr Fanning replied that a precautionary approach should be applied in any case and that general requirements need to be considered (e.g. effort control, improved quality of the data). He added that you could start with a very precautionary way of managing the stock, based on expert opinion, and that the advice can be

adjusted in time. He highlighted that a lack of data must not be a barrier to initiate the development and implementation of a FMP.

37. Mr Gary Baird (Guyana) encouraged all member countries to take this opportunity to work together to develop a Sub-regional FMP. He highlighted the fact that it is necessary to manage the shared stocks together. Ms Bahri (FAO) added that the inconsistencies between the national FMPs need to be solved and gaps between the countries need to be filled to harmonize practices and bring them to the same level.

## Status and development of national implementation plans and next steps

38. In order to set the scene, participants presented the current status of fisheries management in their respective countries. They provided an overview of the institutional arrangements, existing management plans and ongoing projects and activities aiming at improving effectiveness of fisheries management and compliance.

### Brazil

39. Mr Aragao (Brazil) presented the status for Brazil which is one of the countries where the Sustainable Management of Bycatch in Latin America and Caribbean Shrimp Fisheries Project (REBYC-LAC II/FAO) is being carried out. The management of the shrimp fisheries under the ecosystem approach is one of the components of the REBYC II LAC project. Therefore, a shrimp fishery management plan is being developed aiming at the sustainable use of the resource, taking in account the three main axes of the ecosystem approach: ecological, socio-economic and governance.

40. To achieve this objective a series of local workshops with stakeholders in fishery communities along the coastline have been carried out in all states where the shrimp fishery has socio-economic relevance. The results of these workshops are now being processed and integrated at state and regional levels, in order to consolidate management plans for the shrimp fishery for each region. A total of more than 60 workshops have already been carried out in the country of which 7 in the North region, in the states of Pará, Maranhão and Piauí. An upcoming workshop with the industrial fishery in the state of Pará is planned to be held in February 2020.

41. The methodology of the workshops comprises three main techniques: elaboration of a thematic map describing the fishery in the area; the development of a matrix of problems and proposals of solutions; and identification of responsible agents. The demands of the productive sector, as well as the knowledge gathered during the workshops, will be harmonized with the scientific knowledge to consolidate the management plans at the regional level in workshops to be conducted in March 2020.

### French Guiana

42. Ms Tagliarolo (IFREMER) presented the FMP for French Guiana. Fishing directives in French Guiana are managed at various levels (European, national or regional). Directives for shrimp trawling fishery include a total allowable catch (TAC) limitation, limited number of vessels, a trash-turtle excluding device (T-TED), Vessel Monitoring System (VMS), minimum mesh size and a coastal area fishing ban. The Southern red snapper hand-line fishery operated by a Venezuelan fleet is regulated by the number of licences, obligation to carry VMS and an obligation of landing seventy-five percent of the catch in French Guiana. Coastal small-scale fisheries are regulated by limits in the number of licenses and fishing net regulations.

43. Mr Fanning (CERMES Consultant) queried about the basis for the TAC calculations. Ms Tagliarolo replied that the VPA-protocol was used to calculate the TAC. Mr Blanchard (IFREMER) added that the TAC's are set according to the Maximum Sustainable Yield (MSY) principle. He explained that in French Guiana, the TAC is not a real constraint as the TAC is not reached.

44. Mr Willems (FAO) highlighted that monofilament nets are banned in Suriname as they cause problems when lost at sea (e.g. ghost fishing) and asked whether these are banned in French Guiana. Ms Tagliarolo replied that she would need to check whether indeed monofilament nets were being used in the coastal fleet of French Guiana.

### Guyana

45. Mr Gary Baird (Guyana) presented the current status on the development of fisheries management plans in Guyana. Under the CARICOM Fisheries Resource Assessment and Management Programme (CFRAMP) Guyana got its first Fisheries Management Plan which covered the period 1992–1998. This document however remained in draft format throughout the period. This FMP was further updated during the period 2007–2011 and continued to exist as a draft plan. In 2013, with funding from the EU-ACP Fish II Programme, the management plan was updated for the period 2013–2015. This document also remained in draft format until it was reviewed and extended to 2020 and adopted in January 2019. The Atlantic seabob Management Plan 2015–2020 was also created and adopted to facilitate the move by industry to attain Marine Stewardship Council certification, which it did in August 2019. Elements of these management plans include data collection, monitoring control and surveillance, piracy, and capacity building.

### Suriname

46. Mr Radjes Ashraf (Suriname) presented the status of the FMP for Suriname. The fishing sector in Suriname is managed by the Ministry of Agriculture, Animal Husbandry and Fisheries on behalf of the Surinamese Government. This Ministry is responsible for the effective management of national fishing capacities and the rational exploitation of fish resources, as well as for monitoring compliance with legal regulations for the protection of fish resources. The Fisheries Department is responsible for management of the fishing fleet, while the Fish Inspection Institute is responsible for the safety of fishery products. The first integrated FMP in Suriname was delivered in 2013 for the period 2014–2018. In 2019, the FMP was reviewed in consultation with the main stakeholders of the fishing sector in Suriname, including artisanal and industrial fisheries, the managing authorities and other stakeholders, such as representatives of NGOs and international organizations. The current FMP revision will result in a discussion paper that incorporates all concerns and recommendations as highlighted during the stakeholder sessions. The discussion paper will serve as the basis for the update/review of the FMP 2020–2024. The new FMP should be drafted by April 2020.

### Trinidad and Tobago

47. Ms Lara Ferreira (Trinidad and Tobago) presented the fisheries management planning for Trinidad and Tobago. The practical implementation of the Ecosystem Approach to Fisheries Management (EAF) for the shrimp and groundfish fisheries in Trinidad and Tobago began under the first phase of the Caribbean Large Marine Ecosystem (CLME) Project (2009–2013) with the development of the following activities: EAF training for Fisheries Division staff and fishing industry representatives; stakeholder identification and analysis; documentation on Institutional Framework for Fisheries Management; establishment and meetings of the Shrimp and Groundfish Fishery Task Group comprising fishing industry representatives from the west and south coasts

of Trinidad using trawl, nets and lines; fishing community meetings; costs and earnings study of trawl fleets; preparation of EAF baseline report for shrimp and groundfish fisheries; conduct of a Scoping Exercise to agree on the fishing methods and fishing areas to be covered and the objectives to be achieved; and finally hosting of a National Consultation in September 2012 to identify and prioritize issues in the fishery (under the categories of Ecological Wellbeing, Social and Economic Wellbeing, and the Ability to Achieve) and recommend solutions.

48. Developments in the trawl fishery management since the activities under the CLME Project included stakeholder consultations in February 2013 to consider possible controls to implement on the trawl fishery, stakeholder preferences for the timing of a closed season and alternatives during such periods. In August 2013 there was a Cabinet Decision to amend the Fisheries (Control of Demersal [Bottom] Trawl) Regulations made Pursuant to Section 4 of the Fisheries Act, to implement new management measures including a complete ban on non-artisanal trawlers; and a two-month closed season for artisanal trawlers. Government policy as of September 2013 was that no additional vessels would be allowed to enter the trawl fishery as of September 1st, 2013; and only vessels operating in the trawl fishery as of September 1st, 2013 and continuing, and inspected in the last quarter of 2013 by the Fisheries Division will be recognized as the participants in the trawl fishery. In June 2014, Cabinet varied its 2013 decision to a phased implementation towards a ban on non-artisanal trawling, including a number of other management measures pertaining to temporal and spatial restrictions on trawl fishing, vessel licensing, reporting and monitoring. A Multi-Sectoral Committee was appointed (for 5 months beginning end June 2014) to determine a relief package for trawl operators impacted by the new trawl management measures. A shrimp stock assessment was updated in 2014, a Draft Management Plan for the Shrimp Fishery prepared and a National Consultation was held in November 2014. A report with recommendations was submitted at the end of 2015.

49. Trinidad and Tobago is participating in the REBYC-II LAC Project through which the activities being developed will contribute to improved management of the trawl fishery. A participatory management approach is being promoted with the establishment of a "National Working Group/Trawl Multi-Sectoral Committee for Co-management on Bycatch Issues & Improved Livelihood Strategies in the Shrimp Trawl Fishery in Trinidad and Tobago". Bycatch Reduction Device (BRD) trials on double-rigged trawlers were conducted in 2017 and 2019 with positive results following training for the Fisheries Division and industry representatives in BRD technologies by the National Oceanographic and Atmospheric Administration (NOAA), United States of America. A Participatory Geographic Information System (PGIS) for the Gulf of Paria was developed with support from the University of the West Indies (UWI), Barbados, which integrates the local knowledge of fishers with conventional scientific data from various sectors. A shrimp trawl bycatch value chain study in Trinidad was conducted in 2019 by the UWI, St Augustine, Trinidad and Tobago.

50. Great strides have also been made in the last couple of years to ensure that, among other things, the Fisheries Management Bill of 2019 addresses IUU fishing. The Bill is being reviewed and amended by the Chief Parliamentary Counsel of the Ministry of the Attorney General and Legal Affairs, and is to be presented to Parliament in early 2020. Much work has also been done towards the re-establishment of a Fisheries Inspectorate for Monitoring, Control and Surveillance.

51. The Fisheries Division is represented on an Integrated Coastal Zone Management (ICZM) Committee established under the Ministry of Planning and Development with a view to achieving balance between development and conservation by managing human activities within the coastal zone and addressing conflicts amongst different resource users and uses.

## Discussion on alignment of Ecosystem Approach to Fisheries (EAF) sub-regional management plan and national implementation plans

52. The working group discussed the alignment of the EAF Sub-regional Management Plan and the National Implementation Plans. Ms Bahri (FAO) highlighted that the requested outputs need to be revised as the FMPs have evolved over the past years in the various countries.

53. Mr Mahon (CERMES) stated that a subregional strategic plan should also be discussed. He argued that there will be a need for one or more Sub-regional management units or entities, fully operational with decision-making mandates.

54. Mr Fuentevilla (FAO) highlighted that the necessity for a subregional management plan is stated in the CLME+ Strategic Action Programme which was approved by the Ministries of all participating countries. He added that the working group had a responsibility to follow-up on this deliverable.

55. Mr Mendoza (FAO) summarized the discussion and highlighted again that there were two levels of discussion: i) what needs to be done to align the national and subregional FMPs, and ii) which institutional body would have decision-making mandates concerning the Sub-regional FMP.

## Review of functioning of national inter-sectoral committees on fisheries and recommendations for improvement

56. Mr Mahon (CERMES) gave a presentation on supporting participatory governance of the shrimp and groundfish fisheries through National Intersectoral Coordination Mechanisms (NICs). The Ecosystem Approach to Fisheries (EAF) is one of the leading frameworks for the management and sustainable development of fisheries globally. The current Letter of Agreement (LOA) between FAO and UWI-CERMES details the activities to be led by UWI-CERMES under the CLME+ Sub-Project on "Ecosystem Approach to Shrimp and Groundfish Fisheries in the Northern Brazil Shelf". The required activities under the LOA and the Terms of Reference (TOR), call for a study in three countries (Guyana, Suriname and Trinidad and Tobago). One of the main objectives is to increase awareness about National Inter-sectoral Coordination Mechanisms (NICs), promote the establishment and/or consolidation of NICs, and develop recommendations and guidelines for improving NICs in each of the study countries. The main challenge is the poor governance of marine resources (including fisheries), which is impacting the region's ability to successfully implement inter-sectoral management of marine living marine resources as a whole, including the shrimp and groundfish fisheries.

57. Regional governance arrangements must be supported by adequate national capacity in order to be consistent with international processes. In theory, NICs could provide that needed national capacity. Data were collected via primary and secondary sources (e.g. national reports, government websites, interviews with key stakeholders and workshops), which were used to: 1) describe the current state of NICs; 2) identify the most suitable NIC arrangement; and 3) provide recommendations and guidelines, for each country. Each set of recommendations for countries included the encouragement for the utilization of good governance principles identified by stakeholders, gave practical guidance on how NICs (specifically the most suitable NIC for shrimp and groundfish governance) can improve its operations and function, and highlighted considerations for fisheries management plans.

58. As a result of the study and consultations carried out, NICs awareness was improved in the various countries and the capacity for NICs has been strengthened through workshops, trainings and discussions on and actions towards improving NIC operations. An informational flyer was produced and shared with key stakeholders in each country for the continued promotion of NICs. However, there are still many unanswered questions about inner-workings of NICs (how are issues prioritized, discussed, actions taken, roles of members).

59. Ms Leisa Perch (CERMES Consultant) asked about the adequacy of the representation in the NICs. Mr Mahon replied that it is sometimes unclear if the participants have the capacity to represent and the mandate to speak on behalf of the organization they represent.

60. Mr Blanchard informed that there are no NICs for fisheries in French Guiana. As Brazil was not covered in the presented study by Mr Mahon, Mr Blanchard (IFREMER) wondered if there are similar mechanisms operational in Brazil. Mr Aragao (Brazil) replied that there is a certain degree of representation of the fishing sector when it comes to strategic bodies that control the fisheries, as well as a scientific representation. Mr Aragao added that, as Mr Mahon already put forward, the problem is that most participants are not legitimated to speak for the organizations they represent.

61. Mr Willems (FAO) mentioned the Atlantic seabob Working Group (SWG) in Suriname as a successful formula of a NIC with adequate representatives who are committed and are willing to dedicate time for attending the meetings. He highlighted that the SWG is a success because the issues discussed are very specific and therefore appeal to the participants. Mr Willems added that this model could be a source of inspiration for other countries. Mr Willems also stressed that the reason behind the SWG was initially the MSC certification process.

62. Ms Bahri (FAO) asked about the relevance of setting up a Sub-regional NIC. Mr Mahon (CERMES) replied that NICs are extremely ambitious and cope with various issues. He added that currently the bodies that should cope strictly with the fishing sector are sometimes not present.

63. Mr Fuentevilla (FAO) asked about good functioning NICs in the region. Mr Mahon replied that there are some good examples in Jamaica and Colombia.

## Advances in gender studies in the shrimp and groundfish fisheries

64. Ms Leisa Perch (CERMES Consultant) gave a presentation on gender in shrimp and groundfish value chains. The presentation summarized the findings and preliminary conclusions of studies conducted in 2019 in Guyana, Suriname and Trinidad and Tobago, which sought to bolster the understanding of the human wellbeing dimension of the EAF and to explicitly enhance the role of women in shrimp and groundfish fisheries. Taking a value chain approach, the study explored the role and structure of the fishery and the value chain including where there were notable gender divisions of labour, perceptions of the role of men and women in the fishery, governance arrangements and participation by men and women, gaps and barriers to sustainable fisheries and environmental stressors that affected the fishery and by extension the income and livelihoods of fisherfolk. In the three countries, the artisanal sub-sector was analyzed and stakeholders engaged at markets and landing sites. Informed by key informant interviews and focus group discussions, as well as analysis of policies and existing legislation, some clear patterns were identified and some key priorities areas defined.

65. The study, which is still under finalization has confirmed the findings of other studies and also identified additional characteristics and patterns shaping the sustainability and vulnerability of these value chains. Key factors include:

    – Gender norms
    – Access and control over resources (knowledge, assets, social networks, etc.)
    – Governance and power
    – Gender division of labour
    – Quality of participation
    – Value chain performance

66. Ms Perch added that the subregional and national reports are still in an editing phase, but that authors are planning to publish them and make them available for consultation in early 2020.

67. Mr Blanchard (IFREMER) asked about the availability of quantitative indicators for socio-economic aspects of sustainability. Ms Perch replied that recommendations and suggestions for those types of indicators are possible and added that they do need to be validated before they should be applied.

## Sub-regional data policy and decision support system

68. Mr Gentile (FAO) introduced the Data Collection Reference Framework (DCRF) endorsed ad interim by WECAFC at its 17th Session (Miami, United States of America, 15–18 July, 2019) and the Decision Support System (DSS). The participants as members of one of the WECAFC species working groups were invited to:

    – Review the list of priority species
    – Review the List of Tasks
    – Review the proposed breakdown of FAO statistical areas
    – Provide vessel mapping with regional classification
    – Indicate any further needs if not covered yet in the DCRF
    – Review data access and sharing policies

69. In particular, for the "List of Tasks", the goal was to get specifications on which are the ones relevant to the WG, any comment on the proposed standards for the task, and which levels of access for the various tasks (in relation with the data access and sharing policies). A template for vessel mapping with regional classification was also circulated among the participants for their inputs.

70. The DSS was presented as a suite of web products enabling the user (e.g. fishery manager) to get up-to-date status and trends on stocks and fisheries. More specifically the following products: i) the iMarine VRE for shared documentation and inventories, ii) the FAO Global Record of Fishing Vessels, iii) the WECAFC regional database and its map viewer interface, and vi) the FIRMS data base with WECAFC fact sheets and synoptic products. For example, the WECAFC regional database could be utilized for contributing with data to the “status of fisheries in WECAFC area” and the underlying indicators for the CLME+ “State of the Marine Environment and Associated Economies” (SOMEE) reporting mechanism.

71. Mr Mendoza (FAO) stressed that the data reference and access of sharing policies should be tailored to the subregional needs. He added that this issue should be investigated in the intersession period. He highlighted that there is currently support for Suriname and Trinidad

and Tobago for them to develop a data collection and storage system, but Guyana lacks funds and is currently looking at Conservation International to support them. Mr Mendoza noted that it would be favorable to have the same data storage and access system in the three countries. He also underlined that Brazil still has serious problems with adequate data collection.

72. Mr Fuentevilla (FAO) asked the representatives of the Working Group member countries if there is the willingness to share data on transboundary shrimp and groundfish stocks. Mr Fanning (CERMES Consultant) replied that this is built in the FMP in Guyana. Ms Ferreira (Trinidad and Tobago) added that Trinidad and Tobago have shared aggregated data (no vessel specific data) with Guyana, Suriname and Venezuela in the past without any problem. Mr Fanning highlighted that there are different aspects of sharing data; the data can be brought together for a single event, or data can be shared permanently. He added that the access to the shared databases is an important issue to take into account (e.g. can analysts access the database any time they want for their own analysis?). Mr Mendoza (FAO) added that the working group members should eventually agree upon the exact specifications for a sub-regional data sharing program.

## Monitoring and evaluation framework and indicators for shrimp and groundfish fisheries of the northern Brazil-Guianas shelf

73. Mr Mahon (CERMES) updated the meeting regarding progress with the development of the sub-regional Monitoring and Evaluation Framework and Indicators. He noted that this is a reporting and evaluation tool at the level of the CLME+ Strategic Action Programme (SAP) to inform policy making at regional and sub-regional levels about governance effectiveness. He emphasized that this is not a management tool and that countries/IGOs will have their detailed indicators that would support the sub-regional M & E system. He also noted that this is a pilot effort and comprises the minimum set of indicators considered necessary to obtain a sub-regional perspective across the seven indicator categories of the Governance Effectiveness Assessment Framework (GEAF).

74. The sub-regional system has three sets of GEAF indicators, one for each topic: fisheries, pollution and habitats and biodiversity. Countries and IGOs were sent three questionnaires, one for each topic. Response to fisheries questionnaires were received from both IGOs and four countries while responses to pollution/biodiversity/habitats questionnaires were received from all IGOs and one country only. Participants were asked to assist with obtaining additional data from countries.

75. Results thus far obtained were presented. The critical questions that the work on the framework raises were briefly reviewed. The analysis of the sub-regional institutional governance architecture indicates that arrangements are weak and incomplete. Given the assumption that most resources are transboundary there is the need for a sub-regional mechanism that meets ‘good’ governance criteria and that can provide a means of conducting sub-regional assessments, providing advice and leading to management decisions at the sub-regional level. These needs were cross referenced with the presentation on a sub-regional EAF mechanism presented by Mr Fanning (CERMES Consultant).

76. Mr Mahon (CERMES) noted that the working group has an important responsibility in recommending next steps. He underlined that Mr Fanning (CERMES Consultant) presented the need for an institutional mechanism which the working group should consider for endorsement or not. Mr Mahon also proposed to work with technical groups during the intersession period

that would focus on various specific topics (e.g. stock assessment, social issues, and institutional arrangements) and would feed their findings to the Working Group members, who should report to the ministries with their recommendations. Mr Blanchard (IFREMER) added that it is certainly a good idea to work with subgroups but he wondered if there is money to fund these activities. Mr Mendoza (FAO) highlighted that there has been financial support through the CLME+ and REBYC-II LAC projects, but he also added that these projects have an expiration date. He informed that a fourth Working Group meeting should be organized before August 2020 (ending of CLME+) to raise the issue of how to go forward with the mandates and review the TOR of the Working Group. Ms Bahri (FAO) underlined that access to future funding would be facilitated if there are tangible signs that countries are willing to carry out collaborative management.

## Review of regional strategy on bycatch management – discussion and recommendations

77. Mr Fuentevilla (FAO) led the session concerning the review of the Regional Strategy on Bycatch Management. The Working Group went through this document together to reassess whether all the necessary elements were present, with a focus on the technical aspects of bycatch management. Mr Fuentevilla also highlighted that additional and/or specific comments could be sent by email. He also underlined that a new draft will then be presented to the Working Group for approval with a final submission for the WECAFC 18th Session of 2021 in mind.

78. Mr Blanchard (IFREMER) opened the discussion by enquiring on how to define the sustainability of bycatch. He underlined that there are over 150 fish species caught as bycatch by the shrimp trawlers in French Guiana; for most of these species stock assessments are not available. Mr Fuentevilla (FAO) replied that there is a general understanding of the kind of pressure these species are submitted to and that most of the bycatch species are small, fast growing species. He underlined that even though the exact stock status is not known, the fishing pressure on those species is not thought to be significant. He also added that it is important to focus on a responsible utilization of the bycatch and suggested to adapt a set of parameters to define responsible bycatch utilization.

79. The group discussed the definition of bycatch (e.g. treat discards and bycatch as separate) and which kind of data to collect when it concerns bycatch. Mr Fuentevilla (FAO) and Mr Gentile (FAO) suggested to align with the International Guidelines on Bycatch Management and Reduction of Discards (http://www.fao.org/3/a-ba0022t.pdf) and the WECAFC DCRF when it comes to defining bycatch.

80. Mr Blanchard (IFREMER) stated that the income from landing bycatch should not exceed the costs. Mr Willems (FAO) added that it is of major importance to respect the following workflow: first look at solutions to reduce the bycatch and then look at ways to valorize the bycatch. Mr Mohammed (Trinidad and Tobago) added that to his knowledge fishers in Trinidad and Tobago generally land around fifty percent of the bycatch because there is a market for these fish species and sizes, the other half is thrown overboard. He wondered if FAO could make recommendations on how to valorize the other fifty percent. He also highlighted that fishers from Trinidad and Tobago and Conservation International are partnering in a project that looks at possibilities for reducing bycatch.

81. Mr Fuentevilla (FAO) underlined that it is important to thoroughly review the sub regional strategy on bycatch management with the appropriate stakeholders for it to be final when this issue is being discussed at the national level. He invited the group members to involve ministers and parliamentarians and to include high level governmental officials.

## Discussion on needs and priorities to combat Illegal, Unreported and Unregulated (IUU) fishing in the northern Brazil-Guianas shelf

82. Mr Mendoza (FAO) led the session about the needs and priorities to combat IUU fishing in the Northern Brazil-Guianas shelf. Mr Hiwat (WWF) highlighted that WWF Guianas is focusing on developing strategies to combat IUU in the three Guianas. He added that a regional workshop was held earlier in 2018 to standardize efforts and determine an adequate approach; a national workshop is the next step in the process and is to be organized in 2020, pending on availability of funds. While underlining the value of involving Brazil and Trinidad and Tobago, he indicated that limited funds has prevented from including these countries in the first place. Mr Mendoza (FAO) suggested that FAO and WWF should share their strategies and design a collaborative approach.

83. Mr Baird (Guyana) stated that the prevention, elimination and deterrence of Illegal, Unreported and Unregulated (IUU) fishing is a high priority fisheries management issue for Guyana, some of the developments, activities and strategies implemented to address IUU fishing include working towards developing and putting in place the following instruments and tools to ensure all forms of fisheries harvesting and production are done sustainably and legally: (a) Port State Measures Agreement (PSMA), (b) International Plan of Action (IPOA) on IUU, (c) Global Record of Fishing Vessels, (d) Monitoring, Control and Surveillance (MCS). In 2018 FAO conducted a site visit to Guyana to assess the country's implementation of the PSMA. A Memorandum of Understanding for the formation of the Interagency Working Group on PSMA was finalized by the Fisheries Department and is awaiting the approval of the Permanent Secretary, Ministry of Agriculture for the formation of the Group. Efforts have been made to standardize the current vessel list for industrial and semi-industrial vessels to include at least the limited number of data required for the Global Record.

84. Mr Arjune (Suriname) added that Suriname requested assistance from FAO to facilitate the PSMA implementation. Concrete actions are being taken to arrange for training and contacts are being made for developing a National Plan of Action (NPOA) on IUU. Mr Willems (FAO) mentioned that the Surinamese Fisheries Department can get support from the FAO for ratification and implementation of the PSMA and training of the inspection staff. Mr Arjune underlined that the Surinamese government is aware of the current situation and that Parliament is working towards a better level of organization to deter IUU in Surinamese waters.

85. Ms Ferreira (Trinidad and Tobago) underlined that the Fisheries Management Bill for Trinidad and Tobago is now in a draft stage, with presentation to Parliament planned by the end of 2019. Ms Ferreira clarified a few aspects of the Bill that are necessary and important to combat IUU fishing.

86. Mr Fuentevilla (FAO) underlined that it is of major importance to incorporate all data to improve stock assessments in the region. Mr Blanchard (IFREMER) added that the accuracy and reliability of stock assessment results are highly dependent on the capacity to identify the impact of IUU; not taking into account IUU does not allow for an adequate estimate for the productivity of exploited species, leading to an underestimation of sustainable yields.

87. The Working Group discussed the use of VMS to tackle illegal fishing practices. Mr Arjune (Suriname) informed that Surinamese artisanal fishers will be obliged to use VMS in the near future. He added that it is a real challenge to convince the artisanal fishers that the implementation of VMS will benefit the whole sector. Mr Mendoza (FAO) mentioned that FAO, in partnership with other institutions, had done some analyses with Automatic Identification System (AIS) data to check for the spatial distribution of fishing activity by gear types at the global level, and that maps with the distribution of fishing activity per gear types could be found online. Mr Gentile (FAO) mentioned that the related publication Taconet et al. (2019) could be obtained from the FAO site - www.fao.org/3/ca7012en/ca7012en.pdf.

## Discussion on relevant issues and needs

88. Due to time constraints, the discussion concerning the Sargassum influx was not covered. It was suggested that structured questions about this and other topics should be addressed in subgroups in the next meeting.

89. The group reiterated the need for local fisheries staff trained in stock assessment methods. It was mentioned that two valuable stock assessment training courses were organized earlier this year, and that similar initiatives are required. Mr Aragao (Brazil) mentioned that for Brazil, the data collection itself is a priority and that this issue should be tackled first.

90. Mr Gentile (FAO) mentioned that the FAO website has e-learning tools available that cover stock assessment - https://elearning.fao.org/course/view.php?id=502. The group discussed which approach was more cost-effective: stock assessment trainings abroad for a limited number of specialists per country or local stock assessment trainings which would cover a larger number of participants. Mr Willems (FAO) considered that local trainings are advised in this regional context. Ms Ferreira (Trinidad and Tobago) agreed with this approach. She also added that Trinidad and Tobago had recently experienced a growth in staff which makes stock assessment training necessary. Mr Mendoza (FAO) highlighted that in the past, a small selection of fisheries management personnel per country was trained in regional workshops; these trainers would then go back to their countries and organize national trainings with support of FAO.

91. Mr Fanning (CERMES Consultant) underlined that stock assessment requires a sound foundation of mathematical skills, sound data collections systems, good data, etc. He added that it is unlikely that one person would have all the required skills, and that a dedicated team is required including, among others, IT specialists and statisticians. He added that valuable information for fisheries may be available in national data sets from other agencies.

92. Mr Willems (FAO) added that in Suriname the Minister identified the need for better fisheries databases as a crucial step towards better management of the fish stocks. He suggested that it would be very valuable for Suriname if FAO could provide guidance and /or training on which biological data to collect. Mr Gentile (FAO) replied that the WECAFC interim DCRF contains guidelines and data collection standards according to the different needs and goals of managers and stakeholders. The development of the WECAFC regional data base was also recalled in support to fisheries management.

## Work plan proposal for intersessional period

93. The WG agreed on a series of activities to be developed, which are presented in the following table:

| Activity | Timeframe | Responsibilities |
|---|---|---|
| 1. Finalization, publication and dissemination of the Report of the WG meeting in Suriname | March 2020 | CRFM/IFREMER/WECAFC and FAO with inputs from meeting participants |
| 2. Provide technical and scientific advice to national governments and WECAFC Commission | December 2019–July 2021 | WG members |
| 3. Report to the:<br>- 18th session of WECAFC, July 2021<br>- 11th meeting of the WECAFC Scientific Advisory Group (SAG), November 2020. | As deadlines for reporting require | WECAFC Secretariat |
| 4. Support initiatives at sub-regional level in the fight against IUU fishing in the Guianas-Brazil Shelf | December 2019–July 2021 | Sub-regional countries, FAO, WWF |
| 5. Collaborate with the Data and Statistics Working Group to update requirements presented at the Working Group's meeting. Review data access and sharing policy | December 2019–February 2020 | Working Group Members supported by IFREMER/CRFM and WECAFC |
| 6. Update WECAFC stocks and fisheries inventory for shrimp and groundfish of Guianas- Brazil Shelf | December 2019–July 2021 | FIRMS Secretariat and working group members |
| 7. Support and contribute to the development of a sub-regional strategy and management plan for shrimp and groundfish in the Guianas-Brazil Shelf | December 2019–July 2020 | Working Group with Support from CLME+ and Members |
| 8. Search for resources to continue work on:<br>- Data Preparation<br>- Training in stock assessment for WG Countries<br>- Carry out planned periodic stock assessments | December 2019–July 2021 | IFREMER/CRFM/WECAFC in collaboration with NOAA, FIRMS and potential donors |

| | | |
|---|---|---|
| 9. Assist WECAFC to ensure stakeholder consultations on the draft Regional Strategy on Shrimp by-catch and introduce to 18th Session of WECAFC. Working Group members to review draft Strategy and prepare update for next Working Group meeting. | December 2019–July 2021 | Working group Members with Support from CRFM/WECAFC/IFREMER and REBYC-II LAC |
| 10. Review and suggest inputs, targets and indicators for the CLME + SAP and contribute to the indicators of the GEAF framework for ecosystem approach for shrimp and groundfish | December 2019–July 2020 | CERMES to request input from Working Group Members |
| 11. Develop communications and work strategy between Working Group members for inter-sessional period<br>- Create common work-space and document repository | December 2019–July 2021 | WECAFC/CRFM/IFREMER |
| 12. Further studies on mainstreaming human well-being (including gender) in fisheries policies | December 2019 - July 2021 | Member countries |
| 13. Revise working Group TORs in view of the proposed sub-regional strategy for management of shrimp and groundfish resources taking into account other drivers and pressures (Pollution, sargassum, Piracy, etc.) | Draft: July 2020 Endorse: July 2021 | Working group members prepare draft for next Working group meeting. |
| 14. Strengthening and promoting the operation of National Intersectoral Committees (NIC) in member countries | December 2019–July 2021 | Member countries |
| 15. Support implementation of SSF Guidelines in member countries | December 2019–July 2021 | Member countries, WECAFC/FAO and CRFM |
| 16. Next Session of Working Group-intersessional meeting | June–July 2020 | IFREMER in collaboration with WECAFC/CRFM and CLME+ and REBYC-II LAC |

## Adoption of working group recommendations to Western Central Atlantic Fishery Commission (WECAFC)

94. The working group revised in plenary the draft recommendation to be submitted to the 18th Session of WECAFC. The recommendation would be presented to the WECAFC Secretariat for information and review and then to the Scientific Advisory Group for final review before presentation to the 18th WECAFC Session. The draft recommendation agreed by the Working Group are presented in Appendix 3.

## Closure of the meeting

95. Mr Blanchard (IFREMER), Working Group Convener, thanked all Working Group members and other participants for their active participation and contribution to the meeting. He wished all participants safe travel to their respective countries. Mr. Mendoza (FAO) thanked, on behalf of FAO, the Working Group Convener and wished everybody a fruitful intersession period.

96. The meeting was adjourned on Wednesday, November 26th at 18:30 hours.

## References

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Taconet, M., Kroodsma, D., & Fernandes, J.A. 2019. *Global Atlas of AIS-based fishing activity - Challenges and opportunities*. Rome, FAO.

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## Annex B. Meeting Agenda

| **Day 1: Tuesday November 26th** | | |
|---|---|---|
| | **MORNING SESSION** | **Presenter** |
| 08.30–09.00 | OPENING CEREMONY | |
| 09.00–09.15 | *Coffee Break* | |
| 09.15–09.45 | **Overview of workshop objectives and expected outputs - adoption of agenda** | Fabian Blanchard |
| 09.45–10.45 | **Update on stock status of shrimp and groundfish species** | |
| | - Brazil<br>- French Guiana<br>- Guyana<br>- Suriname | Jose Aragao<br>Morgana Tagliarolo<br>Jeremy Mendoza<br>Mario Yspol |
| 10.45–11.00 | *Coffee break* | |
| 11.00–11.15 | **Update on stock status of shrimp and groundfish species (Cont.)** | |
| | - Trinidad and Tobago | Lara Ferreira |
| 11.15–11.45 | **Update on genetic studies of shrimp populations** | Morgana Tagliarolo<br>Thomas Kerkhove |
| 11.45–12.15 | **Update on FIRMS inventories and data needs** | Aureliano Gentile |
| 12.15–13.00 | **Presentation, review and discussion of sub-regional EAF management plan and next steps** | Paul Fanning |
| 13.00–14.00 | *Lunch* | |
| | **AFTERNOON SESSION** | |
| 14.00–15.00 | **Status and development of national implementation plans and next steps** | |
| | - Brazil<br>- Guyana<br>- Suriname<br>- Trinidad and Tobago | Jose Aragao<br>Gary Baird<br>Zojindra Arjune<br>Lara Ferreira |
| 15.00–15.45 | **Discussion on alignment of EAF sub-regional management plan and national implementation plans** | Fabian Blanchard (leads) |

| | | |
|---|---|---|
| 15.45–16.00 | *Tea break* | |
| 16.00–16.45 | **Review of functioning of National Inter-Sectoral Committees on Fisheries and recommendations for improvement** | CERMES |
| 16.4517.30 | **Advances in gender studies in the shrimp and groundfish fisheries** | Leisa Perch |
| **Day 2: Wednesday November 27th** | | |
| | **MORNING SESSION** | |
| 08.30–09.00 | **Summary and conclusions of Day 1 – Agenda for Day 2** | Fabian Blanchard |
| 09.00–09.30 | **Sub-regional data policy and Decision Support System** | Aureliano Gentile |
| 09.30–10.15 | **Monitoring and evaluation framework and indicators for shrimp and groundfish fisheries of the North Brazil-Guianas shelf. Discussion on set of indicators** | Robin Mahon |
| 10.15–10.30 | *Coffee break* | |
| 10.30–11.30 | **Review of Regional Strategy on Bycatch Management. Discussion and recommendations** | Carlos Fuentevilla |
| 11.30–12.15 | **Discussion on needs and priorities to combat IUU fishing in the North Brazil-Guianas shelf** | Fabian Blanchard/<br>Jeremy Mendoza (lead)<br>Country Representatives |
| 12.15–13.30 | *Lunch* | |
| | **AFTERNOON SESSION** | |
| 13.30–14.15 | **Discussion on relevant issues and needs**<br>- Sargassum influx<br>- Increasing capacity in data collection and stock assessment<br>- Other issues | Fabian Blanchard (leads) |
| 14.15–15.30 | **Work plan proposal for intersession period** | Fabian Blanchard (leads) |
| 15.30–5.45 | *Tea break* | |
| 15.45–17.00 | **Wrap up, conclusions and closure**<br>- Adoption of Working Group recommendations to 18th Session of WECAFC | Fabian Blanchard |
| 17.00 | *Meeting Adjourned* | |

## Annex C. Draft recommendation from working group on shrimp and groundfish for 18th session of the Western Central Atlantic Fishery Commission (WECAFC)

**DRAFT RECOMMENDATION WECAFC/XVIII/2021/--**

**ON THE MANAGEMENT OF SHRIMP AND GROUNDFISH RESOURCES**

**OF THE NORTHERN BRAZIL-GUIANAS SHELF**

**IN THE WECAFC AREA**

The Western Central Atlantic Fishery Commission (WECAFC),

*RECALLING* that the objective of the Commission is to promote the effective conservation, management and development of the living marine resources within the area of competence of the Commission, in accordance with the FAO Code of Conduct for Responsible Fisheries, the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication, and address common problems of fisheries management and development faced by members of the Commission;

*RECALLING* that most WECAFC members have endorsed the Caribbean and North Brazil Shelf Large Marine Ecosystem (CLME+) Strategic Action Programme (SAP) and that under its Strategy 6 "Implement EBM/EAF of the Guianas-Brazil continental shelf with special reference to the shrimp and groundfish fishery" the same members are required to "Strengthen the FAO-WECAFC-CRFM sub-regional arrangement for the management of the shrimp and groundfish fisheries, and establish a decision-making capacity for policy formulation and management";

*NOTING* the long history of work of WECAFC (since 1975) on shrimp and groundfish resource assessment and biological and economic modeling of shrimp and groundfish fisheries, that guided the management of these resources by the members, as well as the more recent CLME project 'Transboundary Diagnostic Analysis (TDA)', which demonstrated the current challenges to the sector, including habitat damage and destruction of mangroves, land-based water pollution, Illegal, Unreported and Unregulated (IUU) fishing, overexploitation of some resources, piracy, and conflicts between stakeholders within the sector and with other sectors;

*REAFFIRMING* its commitments, made at the 17th session of WECAFC, to coordinate efforts through the WECAFC/CRFM/IFREMER Working Group on Shrimp and Groundfish in the Northern Brazil-Guianas Shelf to improve sustainability of these fisheries;

*MINDFUL* of the discussions and outcomes of the 3rd meeting of the Working Group held in Suriname on 26 and 27 November 2019, supported and financed by the CLME+ and REBYC-II LAC projects;

*RECOGNIZING* the significant contribution of the shrimp and groundfish fisheries to food and nutrition security, poverty alleviation, income generation, export earnings and employment for present and future generations in the WECAFC area;

*RECOGNIZING* the lack of gender-sensitive policies and the importance of understanding the role of gender and social and cultural dimensions of income and livelihoods across the entire value chain;

*REAFFIRMING* the crucial need for continued action by all stakeholders to ensure the long-term sustainable use and management of the shared shrimp and groundfish fisheries resources in the region based on the ecosystem approach to fisheries (EAF);

*NOTING* the concerns of the WECAFC/CRFM/IFREMER Working Group on Shrimp and Groundfish in the Northern Brazil-Guianas Shelf that despite the steps undertaken to build capacity on stock assessment, available and shared information to inform fisheries management and decision-making processes at the sub-regional level has been reduced over the last years such that most management plans are in draft form and enforcement capacity and collaboration in fisheries management is weak;

*NOTING* that the availability of updated information on stock assessment of commercially important species in the North Brazil Shelf contributes to the sustainable management of shrimp and groundfish fisheries;

*NOTING* that the recent results of studies on population genetics and findings on stock structure of Atlantic seabob (*Xiphopenaeus kroyeri*) and Southern brown shrimp (*Penaeus subtilis*) suggest that some stocks are shared across the sub-region by two or more countries;

*RECOGNIZING* the need to improve data and information to reduce uncertainties in stock assessment methodologies currently used, to investigate further on stock structure through genetic studies and other methods such as morphometrics, tagging, otolith shape and microchemistry, to monitor the long-term impacts of the trawl and gillnet fisheries on the stocks;

*RECOGNIZING* the role of the two projects on Sustainable management of bycatch in Latin America and Caribbean trawl fisheries (REBYC-II LAC) and on Catalyzing Implementation of the Strategic Action Programme for the Sustainable Management of Shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems (CLME+), in increasing knowledge on the shrimp and groundfish resources, fostering regional collaboration and enhancing management practices encompassing bycatch reduction, fisheries co-management, combating IUU fishing and building national capacities;

*HIGHLIGHTING* the continued MSC certification of the Atlantic seabob fishery in Suriname and the recently approved MSC certification of the Atlantic seabob fishery in Guyana;

*RECOGNIZING* the need for a regional strategy that guides the implementation of the International Guidelines on Management of Bycatch and Discards for shrimp and groundfish fisheries of the North-Brazil-Guianas Shelf;

*RECOGNIZING* the WECAFC Regional Database and the FIRMS system as the tools to support outcomes achieved through stock assessments, bio-economic modeling and other relevant information on shrimp and groundfish fisheries for decision making process for the management of fishery resources in the sub-region;

*RECOGNIZING* the need of well-established and agreed protocols for data and information sharing compliant with data policies of the participating countries;

*RECOGNIZING* that countries are already sharing their fisheries related data to improve management in the subregion;

*NOTING* that several management plans are under implementation in the sub-region and have undergone periodic reviews that led to adjustments in management measures;

*HIGHLIGHTING* that the national management plans are well aligned with the proposed sub-regional management plan for shrimp and groundfish fisheries;

*NOTING* that several WECAFC members have made substantial progress in the fight against IUU through enhanced Monitoring Control and Surveillance measures, policy and legislation;

*ADOPTS* in conformity with the provision of Article 6 (h) of the Revised Statutes of the WECAFC the *RECOMMENDATION* that:

1. Strengthen management, data collection and quality, periodic stock assessment and continue enhancing capacity on stock assessment including for data limited fisheries.

2. WECAFC members are encouraged to carry out joint stock assessments and design common management measures taking into account available scientific knowledge on stock identification;

3. WECAFC members continue the collaborative research to complement and refine results on stock identification and extend research to additional shrimp and groundfish species.

4. Support the establishment of a formal mechanism for technical advice, decision-making and implementation for the shrimp and groundfish resources of the North Brazil-Guianas Shelf.

5. Revise the terms of reference of the WG to reflect expected tasks on provision of advice to a formal shrimp and groundfish resources management mechanism in the North Brazil- Guianas shelf.

6. The national inter-sectoral committees (NICs) are strengthened and, where necessary and appropriate, special NIC sub-committees (e.g. Atlantic seabob Working Group) be employed to explore particular issues (e.g. pollution, piracy, sargassum).

7. Further gender analysis and gender gap analysis be carried out at the country and multi-country/sub-regional level to mainstream gender in fisheries policies.

8. WECAFC to collaborate with OSPESCA and CRFM to develop a regional strategy for management of bycatch in shrimp/bottom trawl fisheries to be completed in a consultative process that includes all stakeholders with the support of the REBYC-II LAC project and presented to the 18th Session of WECAFC for its review and endorsement.

9. Countries provide, in a timely manner, available fishery data and information on the priority species - as delineated in the WECAFC ad interim DCRF - and for the related stocks and fisheries inventories, to populate and maintain the WECAFC regional database which supports needs for stock assessment, fisheries management plans and a decision support system.

10. Adopt the sub-regional strategic and management plans on shrimp and groundfish fisheries in the North Brazil-Guianas Shelf that harmonize management practices within the subregion and define institutional mechanisms to increase inclusiveness and effectiveness of fisheries management.

11. WECAFC members contribute to the implementation of the RPOA-IUU by developing national plans of action as well as taking collaborative action in MCS measures at sub-regional scale.

12. WECAFC members support the implementation of the SSF guidelines as part of their efforts to improve food security, eradicate poverty and enhance sustainable livelihoods.

## Annex D. Welcoming remarks by FAO representative at working group meeting in Paramaribo – Ms Tarub Bahri

Good morning everyone. On behalf of FAO I would like to highlight how important this Working Group is. As most of you know, holding this meeting was made possible thanks to the FAO CLME+ and the REBYC-II LAC projects that have supported the previous WG meetings. The FAO CLME+ project has also supported a training course, data preparatory and stock assessment workshops that were held over the last two years.

The Northern Brazil Shelf Large Marine Ecosystem is singled out within the CLME+ region because of the high importance of the shrimp and groundfish fisheries for food, livelihoods and income. The shrimp resources in this region support a very important export-oriented shrimp fishery that in recent years has focused on Atlantic seabob. But there are also the groundfish resources such as snappers, weakfishes, whitemouth croaker and sea catfishes that are important for commercial and social reasons. All these shrimp and groundfish species are exploited by the industrial trawlers, but also by thousands of small scale fishers whose livelihoods depend on these species. These fishery resources represent a significant contribution to food security and poverty alleviation in the region, as well as a valuable commodity in national and international markets.

As you may know, FAO has been advocating for the responsible use of fisheries resources with the adoption and implementation of a number of instruments such as the Code of Conduct for Responsible Fisheries that then translated into the Ecosystem Approach to Fisheries. More recently, the adoption of the Small-scale Fisheries Guidelines and the Port State Measures Agreement have complemented and broadened the focus of previous instruments. Developing and adopting these instruments is not easy, but it is only the very first step towards sustainability. Implementing these instruments and making changes actually happen in fisheries resources management is a complicated task because we have to deal with the reality of facts. This reality is made of heterogeneous fleets harvesting shared stocks of a diversity of species; the reality is also made of institutions that often lack capacity on the ground, but also poor data.

FAO has been working in collaboration with the countries in the region on these fisheries for several decades. In recent years, focus has been on transitioning to an Ecosystem Approach to the shrimp and groundfish fisheries, mainly through improved governance and the reduction of bycatch.

One of the key features of the Ecosystem Approach to Fisheries is that it encourages use of the “best available knowledge” in decision-making, including both scientific and traditional knowledge, while promoting risk assessment/management and the notion that decision-making should take place even when there is a lack of detailed scientific knowledge.

This Working Group contributes to this effort, by providing recommendations to policy makers on a number of topics such as sustainable exploitation of fisheries resources, considerations on illegal unreported and unregulated fishing, data and knowledge management. We do hope that the outcomes of this Working Group will contribute to building momentum within WECAFC and that they will translate into concrete actions. FAO stands by the countries to provide all support needed, in line with its mandate.

On behalf of FAO, I wish to express my gratitude to the Government of Suriname for hosting this meeting of the WECAFC/CRFM/IFREMER Working Group on Shrimp and Groundfish of the North-Brazil Guianas Shelf. I also wish to express my satisfaction to see here representatives from the fisheries departments and divisions from the countries in the region, representatives from the industrial and small-scale fisheries sectors, researchers and non-governmental organizations. We look forward to the discussions and to benefit from all the knowledge in the room. I see many familiar faces around the table; I am confident we are in good hands and I trust the meeting will be productive.

Thank you

## Annex E. Welcoming remarks by the working group convener – Mr Fabian Blanchard

It is a great pleasure for me to contribute to the opening ceremony of this Third Meeting of the WECAFC/CRFM/IFREMER Working Group on Shrimp and Groundfish of the North Brazil-Guianas Shelf, here in Suriname, our neighbor country.

First of all, I want to thank all the people involved here in Suriname to host us, the ministries of Suriname involved in this event, and recognise the work done by the FAO staff, and especially by Jeremy Mendoza and Tarub Bahri. I also want to thank you, all the people coming here from Trinidad, Guyana, Suriname, Brazil, and from French Guiana. Of course, I don't forget the CLME+ program for funding our works and meetings.

As Tarub said just before me, the WECAFC Working Group on Shrimp and Groundfish of the North Brazil-Guianas Shelf was reactivated officially at the WECAFC plenary session of 2014, following my proposal during the SAG meeting of 2013. The first meeting was held in 2015 and funded by the Inter-American Development Bank. My first idea of the work to be carried out by this working group was stock assessment.

Actually, up to now, we carry out stock assessments in French Guiana considering only data from French Guiana, leading sometimes to give advice that seems detrimental to the fishers on the short term (reduce the number of licences or reduce the TAC for the shrimp stock, for instance). We do the best science we can, but considering only the data available from French Guiana. So when the stocks are shared by different countries, we need to work together, to carry out stock assessments together, in order to have a more complete analysis of the stock status and finally be able to provide more convincing advice, especially when advice leads to reduce the fishing effort.

And, with the help of the CLME+ funds, the Working Group on Shrimp and Groundfish did first stock assessments this last year! So the work of our Working Group that has been done this year during the data meeting, the training meeting for stock assessment and finally the stock assessment meeting in July, are then particularly important to me, increasing our science knowledge as one more step towards fisheries sustainability in the sub-region. We have to go on this way, to really be able to commonly assess stocks when necessary. And the ongoing population genetics work done on shrimps will help us to decide if we need common assessment for shrimp stocks.

Of course the work done by the Working Group is finally broader than stock assessment: we can quote our contribution to FIRMS, to the sub-regional EAF management and national implementation plans, to the Regional Strategy on Bycatch Management, and also our necessary contribution for the implementation of the measures and actions to combat IUU fishing.

Finally, as a perspective, I would say that, of course, our work, recommendations and advice will be efficient if our respective governments endorse them, and traduce them in national regulations, and better, implement some common management rules when necessary, for fisheries sustainability and equity between our populations. And we probably need more convincing communication towards the ministries level about this.

So one time more, I am very pleased to be here and I wish us a good and fruitful workshop.

## Annex F. Welcoming remarks by the ministry of agriculture, animal husbandry and fisheries of the government of Suriname – Ms Tania Lieuw-A-Soe

Dear ladies and gentlemen,

On behalf of the Government of Suriname and the Ministry of Agriculture, Animal Husbandry and Fisheries, I have the honor to welcome you to the 3rd Meeting of the Working Group on Shrimp and Groundfish of the North Brazil-Guianas Shelf, organized by the Western Central Atlantic Fisheries Commission (WECAFC), the Caribbean Regional Fisheries Mechanism (CRFM), the French Research Institute for Exploitation of the Sea (Ifremer) and the Food and Agriculture Organization of the United Nations (FAO).

We all know that the shrimp and groundfish resources are of great importance to our economy, supporting a very lively fishery sector. Both industrial and artisanal fishing fleets provide great benefits to our country in terms of livelihoods, employment, income and exports. Suriname is one of the top fish-exporting countries in the region in terms of volumes, but also in terms of quality. We are certified to export fishery products to the European Union and the USA, and have a shrimp fishery certified by the Marine Stewardship Council, an international standard for sustainable fishing. This also means that we have a big responsibility to manage our fisheries in a good way and keep our country at the top. To take this responsibility seriously, we need to work together with countries in the region.

While the management of the fishing fleets is a national matter, we know that the shrimp and fish species do not stick to the borders of the national waters of Suriname. Although we still need to do more research on this subject, we know that the populations of fish and shrimp are cross-boundary and that we share these resources with our neighboring countries. Fishermen as well are crossing borders: many fishermen working in Suriname are nationals from Guyana or other countries. Unfortunately, some of them are also not afraid of crossing borders at sea, resulting in illegal fishing activities. All of this makes fisheries a very international activity that should be managed through regional collaboration with our neighboring countries.

I am therefore very glad that this Working Group is having another meeting, and that we can welcome everyone here in our capital Paramaribo. This meeting will provide the opportunity to the participating countries (Trinidad & Tobago, Guyana, French Guiana, Brazil and Suriname), to exchange the latest knowledge on the status of the shrimp and groundfish resources and to discuss strategies to work jointly on managing these resources in a sustainable way.

The Ministry of Agriculture, Animal Husbandry and Fisheries is committed to support all efforts to ensure the sustainable use of the fisheries resources. Only in that way we can ensure a flourishing fishing sector that provides long-term revenues to our country. Looking at the agenda for the next 2 days, I am sure that we are making another step in the right direction. Therefore, I wish you very fruitful discussions and thank you in advance for your participation in this important meeting.

**The Third Meeting of the WECAFC/CRFM/IFREMER Working Group on Shrimp and Groundfish of the Brazil-Guianas Shelf was held in Suriname on 26-27 November 2019. The meeting was attended by 25 participants including Working Group members, fisheries officers, fisherfolk representatives, academia, government organizations and FAO. The participants reviewed and analyzed the current state of data collection and fisheries management in the Northern Brazil-Guianas Shelf. An update on stock status of shrimp and groundfish species for each country in the Northern Brazil-Guianas Shelf was presented, followed by an update on genetic studies of shrimp populations in the region. The participants reviewed and analyzed the current status of data collection and national fisheries management, followed by a discussion about the current status and necessary steps to develop a sub-regional EAF management plan for shrimp and groundfish. Working Group participants also reviewed and discussed the draft regional strategy for bycatch management in the WECAFC Area developed by the REBYC-II LAC project. They discussed the needs and priorities to combat IUU fishing in the Northern Brazil-Guianas-shelf, as well as the need to enhance capacity in stock assessment techniques in the sub-region. The meeting was made possible through support provided by the FAO CLME+ Sub-project on Shrimp and Groundfish of the North Brazil Shelf Large Marine Ecosystem (NBSLME) and the Project on Sustainable Management of Bycatch in Latin America and Caribbean Trawl Fisheries (REBYC-II LAC).**

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