別添 1

『カリコム地域水産資源管理評価』コース

General Information

INFORMATION ON COUNTRY FOCUSED TRAINING COURSE

Seminar on Fisheries Resource Management for the CARICOM Region

JFY 2002

国別特設：カリコム地域水産資源管理評価

COURSE NO. : J-02-20185

November 14, 2002 —December 22, 2002

JAPAN

THE GOVERNMENT OF JAPAN
JAPAN INTERNATIONAL COOPERATION AGENCY

Preface

The Japanese Government extends official development assistance (ODA) to developing countries to support self-help efforts that will lead to economic progress and a better life for the citizens of those countries.

Since its foundation in 1974, The Japan International Cooperation Agency (JICA) has implemented Japan's technical cooperation under the ODA programme.

Currently, JICA conducts such activities as training, dispatch of experts, provision of equipment, project-type technical cooperation, development study, dispatch of cooperation volunteers (JOCV), survey and administration of capital grant aid programmes.

The training programme for overseas participants is one of JICA's fundamental technical cooperation activities for developing countries. Participants come from overseas in order to obtain knowledge and technology in a wide variety of fields.

The objectives of the JICA training programme are:

(1) to contribute to the development of human resources who will promote the advancement of developing countries, and

(2) to contribute to the promotion of mutual understanding and friendship.

Seminar on Fisheries Resource Management for the CARICOM Region aims to improve the strategic planning capability of senior officers which will significantly contribute towards ensuring sustainable use of fisheries resources.

Fisheries resources are often managed as common property resources which leads to excessive competition among fishers. Above all, coastal fisheries are very difficult to manage due to the complex situation where too many fishermen use a wide variety of fishing gears to catch a large number of fish species.

In Japan, over several centuries, coastal fisheries villages have developed their own community based management system that is suited to the natural and social environment. Presently, there is a well-organized traditional fisheries management system that includes the participation of local and national government research officers. Fisheries universities are also involved in fisheries research and education within the national and international frameworks and have significant experience in fisheries globally. These circumstances can provide the best learning environment for the participants who are involved in policy making and planning in the fisheries development.

This programme is five-weeks duration and includes workshops, lectures, discussion groups, seminars, observation tours and study trips to various field stations in Japan. The curriculum is based on Japan's experience and case studies about fisheries resource management, also the world current issues. The topics covered are shown in the Section II.

As an output of this course, all participants will collaborate to develop and present a regional plan for fisheries resource management in the CARICOM region. This plan will be based on logical framework planning. Information and knowledge gained through the discussion groups, workshops, lectures and study trips together with participant s previous experience will be the basis for formulating the plan. This regional plan will be the "seed" to establish an appropriate regional fisheries management system, after participants return to their home country.

I. ESSENTIAL FACT

COURSE TITLE (No.)	Seminar on Fisheries Resource Management for the CARICOM Region (J-02-20185)
DURATION	November 14, 2002 —December 22, 2002
DEADLINE FOR APPLICATION	September 13, 2002 *for acceptance in the JICA office or the Embassy of Japan
NUMBER OF PARTICIPANTS	14
LANGUAGE	English
TARGET GROUP	Chief / Senior Fisheries Officer or equivalent who involved in policy making and planning in the fisheries development.
COURSE OBJECTIVES	Upon successful completion of the course, participants are expected to; (1) understand how legal, institutional and social frameworks can contribute to sustainable fisheries resource management. (2) be able to discuss and make comparative analysis about several fisheries resource management approaches. (3) understand participatory strategic planning processes (4) prepare and present a regional plan about fisheries resource management to establish appropriate fisheries management system of their home country.
TRAINING INSTITUTE	Yokohama International Center, JICA Address: 13 Shinko, Naka-ku, Yokohama-City, Kanagawa Pref., 231-0001, Japan *Yokohama International Center is under construction now.
ACCOMMODATION	Yokohama International Center, JICA Address: 13 Shinko, Naka-ku, Yokohama-City, Kanagawa Pref., 231-0001, Japan *Yokohama International Center is under construction now. *If no room is available at Yokohama International Center, JICA will arrange accommodations for participants at other appropriate places.
ALLOWANCES & EXPENSES	The Government of Japan bears the following allowances and covers the following expenses through JICA in accordance with relevant laws and regulations. Details Round-trip air ticket between an international airport designated by JICA and Japan, accommodation allowance, living allowance, outfit allowance, book allowance, shipping allowance, expenses for JICA study tours, free medical care for participants who become ill after arrival in Japan (costs related to preexisting illness, pregnancy and dental treatment are not included), etc.

II. CURRICULUM

Subject	Objectives	Number of Days Required	Concept of Seminar
Japanese Fisheries	General information on fisheries in Japan	1	Fisheries production and values of Japanese coastal, offshore and far seas fisheries including socio-economic data on Japanese coastal fisheries
CARICOM case studies on resource management present condition			
Case studies of resource management in CARICOM countries - 1	A 2 day workshop to identify specific resource management problems / *constraints in* each CARICOM country – Focus on discussion of problems and common themes in Caribbean countries. Commentators will be invited to respond to each of the case studies presented and the workshop will be moderated by chair person.	2	Participatory workshop Each participant will present a 20-minute paper on the *status of a specific stock (or* stocks) in their country. Paper will include species information, fisheries information, stock status, resource management advice and problems associated with managing the fishery. Each case study will be discussed in group meetings and form part of the problem solving workshops carried out in latter parts of the program.
Case studies of resource management in CARICOM countries - 2			
Case studies of resource management in Japan	1 day seminar to present examples of Japanese fisheries resource management	1	2-3 examples of Japanese resource management case studies will be presented to show the Japanese approach to coastal resource management
Resource Management - Problem Solving workshop - 1	2 day workshop to characterize the problems facing regional fisheries resource management in CARICOM countries	2	Participatory workshop Stakeholder analysis, Problem identification, problem tree, Analysis of cause and effect, vertical and horizontal logic analysis. The results of the workshop will be prepared in MS Word format
Resource Management - Problem Solving workshop - 2			

Study trip of Japanese examples of resource management			
Site observation	Study trips to fisheries and fisheries cooperatives around Japan	3	Site observations of Japanese coastal fisheries and resource conservation strategies. Role of FCA and relationship to research activities
Himi Set Net Fishery Summit - 1	A summit on the merits of set net fisheries for conservation of coastal resources	2	Participation in the Himi set net summit to learn about the conservation aspects of set net fisheries. Site observation of fishing grounds, landing of fish, etc. and potential for introducing to tropical countries
Himi Set Net Fishery Summit - 2			
Stock rebuilding strategies			
Effort control	Introduction to effort control mechanisms	1	1 day seminar to describe the various options open to resource managers to reduce fishing effort. The seminar will cover definitions of fishing effort, closures, limited entry, landing restrictions, gear control etc. Japanese coastal effort control methods will be introduced
Fishing gear control strategies	Practice on interpretation of gill net selectivity	3	Practical examples of how to set up research trials to carry out selectivity studies and analyze results. Emphasis on applying standard methods and necessity of statistical analysis. Impacts of selective gears on catch composition and revenues will be covered. Reduction of ghost fishing will also be included.
	Practice on interpretation of trawl net selectivity - shrimp / BRD		
	Practice on interpretation of trap and hook and line selectivity		
Stock enhancement	Japanese approach to rebuild resources	2	Japanese approach to resource enhancement through seed release with fishers associations
Bio-economic modeling of fishery	Impacts of effort control on fishers income	1	To show the relationship between effort control strategies and fishery revenues

Effort diversification strategies	Introduction to FAD fisheries	1	To discuss the use of FADs for Artisanal fishers using trolling and drop lines
Improvement of effectiveness of fisheries management system			
Governance in fisheries	Principles of governance	3	A discussion of the various factors that contribute to effective governance
	Data quality requirements for resource management		The importance of data quality and times series data for monitoring and managing fisheries
	Participatory management strategies		Discussion of various types of stakeholder participation and management styles (top down – co-management etc) including researchers, fisheries dept, fishing associations
International rules for straddling stocks and migratory species	UN regulations	1	Guidance on rules and regulations affecting management of straddling stocks, shared stocks and migratory species.
Fisheries information systems	Fisheries monitoring	1	The importance of collecting environmental data for fisheries management
Fisheries feedback systems	Providing information to fishers	1	The seminar will describe Japanese examples of giving back information to fishers in a form which is easily understood GIS mapping for fisheries
The Japanese fishery Cooperative	The role of coastal fishers in resource management	1	A seminar on the Japanese coastal fisheries cooperative system and their roles in resource management
Conflict resolution	Mechanisms to reduce conflicts through negotiation	1	A seminar on methods to reduce conflicts through negotiation and communication
Environmental impact Assessment	Importance of watershed and coastal area conservation	1	A seminar on the importance of assessing impacts of development activities in the coastal areas

CARICOM strategies to improve resource management - Forward Planing			
Resource Management - Problem Solving workshop - 3	Development of countermeasure strategies to improve regional fisheries management	2	This is the second part of the problem solving workshop using data from CARICOM countries - Objectives analysis, selection of approach, elaboration of activities
Resource Management - Problem Solving workshop - 4			
Group presentation on fisheries resource management for CARICOM - Strategic Planing			
Resource Management – Development Strategy workshop - 5	Presentation of regional plan for resource management	1	Participants to review results of regional problem solving and planning workshops to JICA and invited guests

The curriculum may be subject to minor changes.

III. REQUIREMENT FOR APPLICATION

Applicants should:

(1) be Chief / Senior Fisheries Officer or equivalent who involved in policy making and planning in the fisheries development,

(2) be university graduates or equivalent,

(3) have a sufficient command of spoken and written English,

(4) be under fifty (50) years of age,

(5) be nominated by their government in accordance with the procedures mentioned in IV. below;

(6) be in good health, both physically and mentally, to undergo the training, and

(7) not be serving in the military.

ATTENTION

Participants are required:

(1) not to change seminar subjects or extend the seminar period,

(2) not to bring any members of their family,

(3) to return to their home country at the end of their seminar according to the international travel schedule designated by JICA,

(4) to refrain from engaging in political activities or any form of employment for profit or gain, and

(5) to observe the rules and regulations of their place of accommodation and not to change accommodations designated by JICA.

IV. PROCEDURES FOR APPLICATIONS

(1) A government desiring to nominate applicants for the course should fill in and forward one (1) original and three (3) copies of the Nomination Form (Form A2A3) for each applicant, to the JICA office (or the Embassy of Japan) **by September 13, 2002.**

(2) The JICA office (or the Embassy of Japan)will inform the applying government whether or not the nominee's application has been accepted **no later than October 15, 2002.**

V. OTHER MATTERS

(1) Pre-departure orientation is held at the JICA office (or the Embassy of Japan) to provide the selected candidates with details on travel to Japan, conditions of training, and other matters. Participants will see a video, "TRAINING IN JAPAN" , and will receive a textbook and cassette tape , "SIMPLE CONVERSATION IN JAPANESE". A brochure, "GUIDE TO TRAINING IN JAPAN" will be handed to each selected candidate before (or in the time of) the orientation.

(2) Materials should be prepared and brought to Japan

Each participant will be kindly requested to present 20 minutes presentation about status of specific fisheries stocks and management situation in participant's home country. Each presentation will be discussed in the group meetings for participatory workshop. From this reason, all the participants are requested to bring reports about fisheries general in their country, stock status, resource management system, problems and constrains. In addition, fisheries statistics, photos about specific fisheries site and some maps will also help participant's presentation, and recommended to bring. If possible, it is better to submit these materials together with the Nomination Form, prior to the participant's arrival.

(3) Participants who have successfully completed the seminar will be awarded a certificate by JICA.

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『カリコム地域水産資源管理評価』コース

研修日程案

平成14年度　カリコム地域水産資源管理評価コース日程（案）

月	日	曜日	研修内容・日程
11	14	木	来日（東京着）
	15	金	ブリーフィング（TIC）　　横浜へ移動・YIC入館
	16	土	
	17	日	カントリーレポート発表準備（各自）
	18	月	開講式　/　カントリーレポート発表会
	19	火	自国漁業管理の問題分析（PCM）
	20	水	自国漁業管理の問題分析（PCM）
	21	木	日本の沿岸水産資源管理（ケーススタディ）
	22	金	漁獲努力量管理概論
	23	土	（勤労感謝の日）午前：横浜→氷見 午後：「世界定置網サミットIN氷見」に参加
	24	日	「世界定置網サミットIN氷見」に参加
	25	月	「世界定置網サミットIN氷見」に参加
	26	火	氷見→石垣
	27	水	貝類資源管理ケーススタディ・その他見学
	28	木	貝類資源管理ケーススタディ・その他見学
	29	金	パヤオ（FAD）漁業・その他見学
	30	土	
12	1	日	石垣→横浜
	2	月	漁獲努力量管理（刺し網）
	3	火	漁獲努力量管理（トロール）
	4	水	漁業-経済モデルと資源管理（CPUE分析等）
	5	木	水産情報と資源管理
	6	金	高度回遊性魚類・ストラドリング魚類管理
	7	土	
	8	日	PCMワークショップ
	9	月	漁業協同組合と沿岸資源管理
	10	火	漁業者間紛争
	11	水	地域参加型水産資源管理システム（ガバナンス）
	12	木	自国漁業管理の目的分析（PCM）
	13	金	自国漁業管理の目的分析（PCM）
	14	土	築地見学
	15	日	
	16	月	見学：漁業情報サービスセンター・中央水産研究所
	17	火	カリコム地域水産資源共通管理政策案発表会
	18	水	評価会　/　閉講式
	19	木	帰国（東京発）

別添 3

カリブ地域における地域機関

Background Information of Regional Organization

The CARICOM Fisheries Unit (CFU)

The CARICOM Fisheries Unit (CFU), located in Belize, was established in 1991 to execute the "CARICOM Fisheries Resource Assessment and Management Program" (CFRAMP). This program is a sustainable development initiative of the twelve English-speaking member states of CARICOM. The countries are Antigua and Barbuda, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Kitts & Nevis, St. Lucia, St. Vincent & the Grenadines and Trinidad & Tobago. The role of the CARICOM Fisheries Unit as a leading regional executing agency for fisheries resource conservation and management has since been expanded. The CFU presently implements a suite of projects, namely:

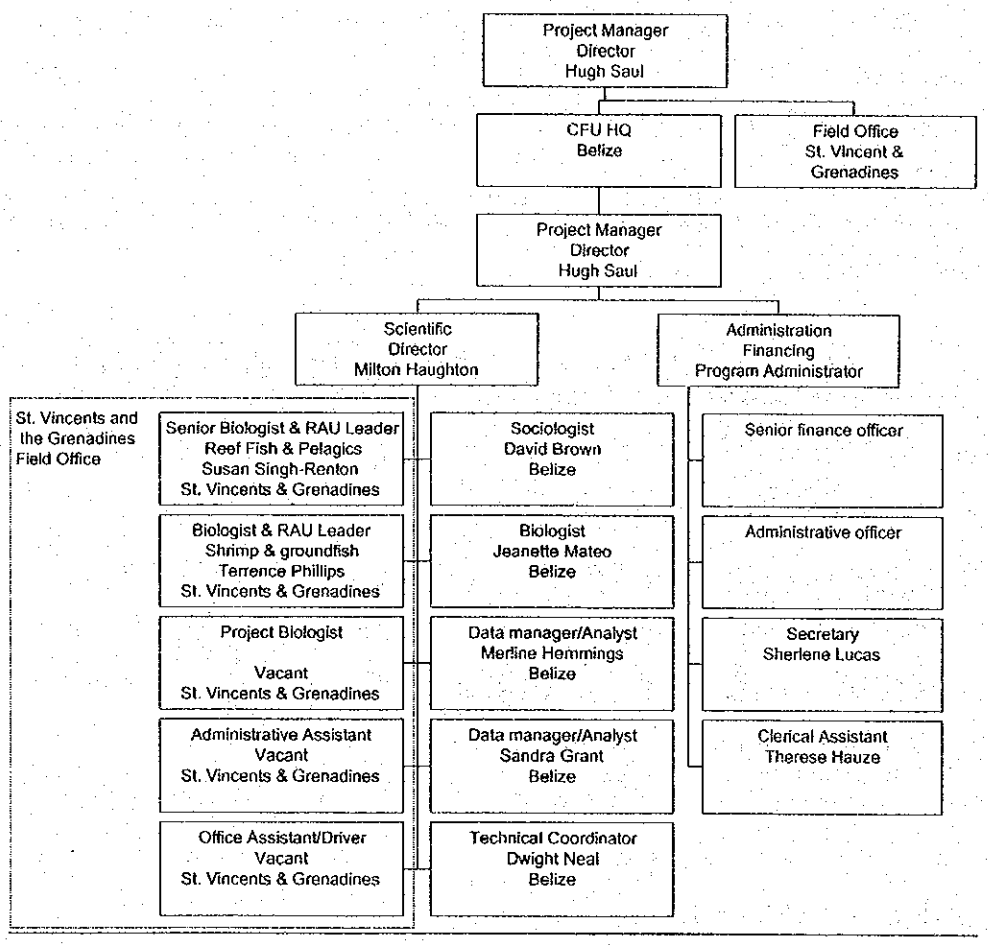
- CFRAMP, which is aimed at promoting sustainable utilization, conservation and management of the fishery resources of member countries. CFRAMP is funded jointly by CIDA and the participating CARICOM countries.
- The ACP-EU Fisheries Project, "Strengthening of Fisheries and Biodiversity Management in ACP Countries", which was initiated in late 1997 and has the participation of the Bahamas, the Dominican Republic, Haiti and Suriname, in addition to the twelve CARICOM countries. The ACP-EU Biodiversity Project is funded by all the ACP components of the Seventh European Development Fund, Lome IV.
- The "Integrated Caribbean Regional Agricultural and Fisheries Development Program - Fisheries Component" (CARIFORUM), funded by the European Union under Lom · IV, which is intended to augment the efforts of CFRAMP and extend it to the other four CARICOM countries, namely Bahamas, Haiti, Dominican Republic and Suriname. Implementation of this project commenced in August of 1999.
- The Community Based Coastal Resource Management project (CBCRM) in the Caribbean is supported by the International Development Research Centre (IDRC) of Canada. This project addresses the development of the MultiStakeholders Approach to Coastal Zone Management. Implementation of this project commenced in September 1999.
- The CARICOM Regional Fisheries Mechanism (CRFM) is a recent initiative that will replace CFRAMP when it ends in September, 2001 and provide the CARICOM Region with the a mechanism for the regional management of resources.

CFU MISSION:

- improving the quality and availability of fisheries resource information, including improvements to fisheries management information systems,
- strengthening the capacity of national fisheries administrations to manage fisheries,

- promoting community involvement by fisher folk in the development, implementation and monitoring of fishery management plans,
- improving fisheries scientific capability in the region,
- assisting Caribbean researchers and managers in the sustainable management of aquatic resources,
- supporting and assisting with the development of Multi-stakeholders approach to Coastal Zone Management,
- promoting and encouraging the full and rational use and management of fisheries resources in the Caribbean

Staff Structure CARICOM Fisheries Unit Headquarters, Belize City, BELIZE	
Project Manager° - hsaul@caricom-fisheries.com *Scientific Director* - haughton@caricom-fisheries.com Program Administrator - mills@caricom-fisheries.com Sociologist - dbrown@caricom-fisheries.com Biologist - mateo@caricom-fisheries.com Data Manager/Analyst - grant@caricom-fisheries.com Data Manager/Analyst - hemmings@caricom-fisheries.com Technical Coordinator - neal@caricom-fisheries.com Senior Finance Officer°-°heredia@caricom-fisheries.com Administrative Officer - fuller@caricom-fisheries.com Accounting Officer ° Secretary - audinett@caricom-fisheries.com Clerical Assistant	**LOCATION** CARICOM Fisheries Unit P.O. Box 642 Princess Margaret Drive Belize City BELIZE, C.A. Tel.: (501) 2 34443 /4 /5 Fax: (501) 2 34446 EMAIL cframp@btl.net °
Field Office, Kingstown, St. Vincent and the Grenadines	
STAFF Biologist/RAU Leader - Shrimp and Groundfish terrencephillips@vincysurf.com *Senior Biologist/RAU Leader - Pelagics and Reef fish* ssinghrenton@vincysurf.com Project Biologist Administrative Officer° Office Assistant/Driver	**LOCATION** CARICOM Fisheries Unit (SVG) c/o fisheries Division° Ministry of Agriculture, Industry *and Labour* Kingstown, ST. VINCENT and the GRENADINES Tel.: (784)°456-2738 Fax: (784)°457-2112 EMAIL: cfusvg@vincysurf.com°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David Brown
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Senior finance officer
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Shrimp & groundfish
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St. Vincents & Grenadines
Biologist
Jeanette Mateo
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Project Biologist
Vacant
St. Vincents & Grenadines
Data manager/Analyst
Merline Hemmings
Belize
Secretary
Sherlene Lucas
Administrative Assistant
Vacant
St. Vincents & Grenadines
Data manager/Analyst
Sandra Grant
Belize
Clerical Assistant
Therese Hauze
Office Assistant/Driver
Vacant
St. Vincents & Grenadines
Technical Coordinator
Dwight Neal
Belize

The CARICOM Fisheries Resource Assessment and Management Program (CFRAMP)

The CARICOM Fisheries Resource Assessment and Management Program (CFRAMP) is a sustainable development initiative of 12 Member States of CARICOM.° It was created in 1991 and is funded jointly by the Canadian Government through the Canadian International Development Agency (CIDA) and the participating CARICOM countries. CFRAMP is being excuted in two phases.Phase 1 of the project was concluded in 1998 and Phase 2, which is presently underway, is due to be completed in December 2000. It is hoped that there will be a transition to a more permanent Regional Fisheries Mechanism.

CFRAMP'S GOAL:

To promote sustainable development and conservation of the region's fish stocks to permit sustainable use of these resources by the people in the region.

CFRAMP's Purposes:

To enhance the basic information and institutional capacity necessary to manage and develop the fisheries in the CARICOM region

To establish a regional fisheries mechanism to promote regional cooperation and facilitate regional management of shared stocks

CFRAMP Phase 1

The first phase of CFRAMP commenced in 1991 and came to an end on December 31, 1998. It was valued at some $20 million Canadian, of which CIDA provided 80% and the participating countries provided the remaining 20%. The activities of Phase 1 included:

- Training of fisheries personnel from participating countries,
- Establishment of fisheries data and information management systems,
- Preparation of fisheries management plans,
- Establishment of advisory/decision making mechanisms
- Community awareness building
- Strengthening of fishers groups and organizations to increase their capacity to participate in co-management arrangements in partnership with governments.

CFRAMP Phase 2

In December 1998, CIDA agreed to provide the Region with an additional Canadian $1.5 million to allow the countries to complete key activities which were delayed during the first phase of the

project. This was matched with $800,000.00 from the participating CARICOM countries. In this regard the main areas of focus during Phase 2 are:

- The establishment of the Regional Fisheries Mechanism as a permanent and sustainable successor to the CFRAMP;
- Support towards national capacity building for sustainable development of fisheries; and
- Data analysis and information dissemination.

The CARICOM Regional Fisheries Mechanism (CRFM)

The establishment of a Regional Fisheries Mechanism is one of the expected outputs of the CFRAMP Project. It is considered as a permanent and sustainable successor to the CFRAMP, with the purpose of facilitating the sustainable utilization, conservation and management of the fisheries resources of the region. It is expected, *inter alia*, to enhance regional cooperation in the sustainable management of the shared resources; act in an advisory capacity to the national governments in matters relating to fisheries resource management, and to further build the capacities of the participating countries in that direction.

Through a series of national consultations, workshops and working group activities, It is expected that there will be a seamless transition from CFRAMP to the Regional Fisheries Mechanism.

CFRAMP SUB-PROJECTS

i. Establishment of Fisheries Management Data and Information Systems
   - Catch and Effort Data Collection Systems
   - Licensing and Registrations Systems

ii. Assessment of Commercially Important Fish Stocks
   - Reef and Pelagic Fishes Assessment
   - Shrimp and Groundfish Assessment
   - Lobster and Conch Assessment

iii. Management of Fisheries Resource
   - National Fisheries Management Planning
   - Regional Fisheries Mechanism
   - Fishing Community Involvement and Education
   - Training and Human Resource Development

Community Based Coastal Resources Management in the Caribbean CBCRM

The International Development and Research Centre (IDRC) of Canada, has provided funding to support the implementation of a Caribbean Regional Project on ICZM. The overall goal of the project is to promote, through research, multi-stakeholder approach to coastal resource management in the Caribbean with a view to enhancing sustainable development.

The specific objectives of the project are:

1. To synthesize lessons learnt to date on multi-stakeholder approaches to coastal zone management, including organizational principles and means to manage coastal resource conflicts;

2. To identify and generate effective tools and approaches for resource system monitoring and community planning, including social and biophysical indicator of progress towards multi-stakeholder and sustainable coastal zone management;

3. To develop strategies to apply lessons learnt in multi-stakeholder coastal zone management to new situations; and

4. To demonstrate the benefits of multi-stakeholder coastal zone management to policy makers and national institutions.

The Project provides small grants of up to $30,000 CND to individuals and institutions in the Caribbean region working in coastal zone management. Application for grants must include proposals involving applied research on topics with the aim of enhancing sustainable development and management of the coastal zone and its associated resources related to coastal zone management in the Caribbean.

IDRC, supported by Laval University, has overall responsibility for this project as Canadian Executing Agency. The CFU and IOI are responsible for administration of the project in the Caribbean. A Steering Committee made up of representatives from these four organizations provides strategic guidance to the project.

During 1999 two meeting of the Project Steering Committee were held and 15 small grants were awarded. Projects were selected on a competitive basis. Successful projects were distributed as follows: Barbados (1), Belize (1), Costa Rica (2), Colombia (1), Cuba (5), Mexico (2), St. Lucia (2), Trinidad and Tobago (1). The successful projects include a range of sectors including coastal and marine resource conservation and management, fishing and aquaculture, tourism and coastal agriculture.

The CARICOM Regional Fisheries Mechanism CRFM

BACKGROUND

A great challenge facing the countries of the Caribbean is the development and management of the living aquatic resources of the region in a responsible and sustainable manner to improve the quality of life of the thousands of persons who depend upon the fishery resources for their well-being and livelihood. The establishment of a CARICOM regional fisheries mechanism, hereinafter called the Caribbean Regional Fisheries Mechanism (CRFM), will enhance efforts to consolidate and advance the process of regional co-operation and promote sustainable fisheries management in the region. Fisheries management, which includes development, requires a broad-based, multidisciplinary approach.

In January 1991, CARICOM Governments with the support of the Government of Canada, officially launched the CARICOM Fisheries Resource Assessment and Management Programme (CFRAMP) to promote sustainable use and conservation of the fisheries resources of CARICOM Member States. The development and establishment of a regional fisheries mechanism that will provide support to CARICOM Member States after the CFRAMP Project concludes, is one of the three specific purposes of CFRAMP.

Given the ending of CFRAMP in March 2001, the Working Group considers it urgent to establish the CRFM in time for a smooth takeover of the CFRAMP responsibilities. The situation in which the CFRAMP project concludes without the CRFM in place is highly undesirable. This report, however, reflects not only the recommendations of the working group but also the views of national fisheries representatives and other stakeholders in CFRAMP and CARIFORUM who have been engaged in the participatory process of which this is a result. The goal of The CRFM is:

To promote sustainable use of fisheries and aquaculture resources in and among Member States, by the development, management and conservation of these resources in collaboration with stakeholders to benefit the people of the Caribbean region.

Guiding principles

The CRFM is guided by principles derived largely from the Code of Conduct for Responsible Fisheries. The Code is an international instrument that promotes globally the adoption of principles and standards for the sustainable use, management, development, and conservation of all fisheries and aquaculture through the voluntary compliance of governments, fishing industries, non-governmental organisations and other entities associated with fisheries.

Functions of the CRFM

The functions elaborate upon the goal of the CRFM. They need to be broad in scope so that the CRFM can be proactive and flexible to meet the short and long-term developmental needs of all aspects of fisheries and aquaculture in Member States.

In determining the functions, the Working Group drew on Protocol V amending the Treaty Establishing the Caribbean Community. Specifically, the functions of the CRFM are considered to be as follows:

- To provide technical, consultative and advisory services to Member States in the development, assessment, management and conservation of fisheries resources and, as needed, in the discharge of any obligations arising from bilateral and international instruments;
- To facilitate the management, conservation and development of the shared fisheries resources of the Caribbean region either through attainment of competence over the resources or through cooperation with competent fishery organizations;
- To support and enhance the institutional capabilities of Member States in areas such as,
    - policy formulation,
    - economics and planning,
    - registration and licensing systems,
    - information management,
    - resource monitoring, assessment and management,
    - education and awareness building,
    - monitoring, control and surveillance,
    - harvest and post-harvest technologies;
    - To encourage, support and, as appropriate, to provide effective regional representation at international fora;
    - To develop and maintain relations with national, regional and international agencies and organizations that have an impact on the fisheries within the region;
    - To promote and facilitate the development of aquaculture;
    - To promote and facilitate human resource training and development at the professional, technical and vocational levels;

- To promote and support programs to establish, facilitate and strengthen research;
- To promote and encourage technical cooperation, information exchange and networking among states;
- To seek and mobilize financial and other resources in support of the execution of its mandate;
- To develop and execute projects in support of its mandate.

Priority areas for the CRFM

The priority areas within the full set of functions were selected at the First Technical Workshop (CFRAMP 1999)

ASSESSMENT AND MANAGEMENT OF SHARED RESOURCES

This area was identified as being of the highest priority. Most marine fishery resources of interest to CARICOM countries are shared by two or more countries. The CRFM would enable CARICOM countries to take part in the management of shared resources. The role of the CRFM would vary according to the way in which the resources area shared (Fish stocks wholly within EEZs of CARICOM countries, Fish stocks wholly within EEZs of wider Caribbean countries, Fish stocks within CARICOM EEZs and on the high seas). In each category, the CRFM would identify the organisations competent to manage the resource, and determine what is required for participation. In those cases where no competent organisation exists, the CRFM could promote or facilitate the establishment of the organisation, even to the extent of becoming the organisation if so desired by the member States.

ASSESSMENT AND MANAGEMENT OF RESOURCES AT THE NATIONAL LEVEL

This area encompasses all fisheries resources including shared resources, and is regarded as the second highest priority. The CFTU would provide financial and technical support to assist Member States to monitor assess and develop management recommendations.

In general terms the types of activity at the national level will include:

- Technical backstopping and technical advice to follow-up on previous fisheries assessment and management initiatives such as those initiated by CFRAMP.
- Specific support related to fisheries assessment and management issues of concern to a particular Member State or group of States.

The CRFM should have the required flexibility to accommodate requests from Member States for specific support. However, the CFTU through the CRFM must seek to identify common areas of interest among Member States and make use of economies of scale.°

Regional and national capacity-building and institutional strengthening°

This priority area addresses the human operational requirements for fisheries management at the national and regional levels. The CFTU will collaborate with Member States in the establishment, enhancement and development of the institutional capacity of states in all areas of fisheries management, including: organisational structures, long and short-term training, and technical cooperation. This will include: ensuring that the national fisherfolk organizations are further strengthened, and their capacities enhanced to become co-managers of the fisheries resources; facilitating a community involvement and education programme with a view to the establishment of a network of community based co-management projects; and developing links with major information disseminating institutions around the world, in order to obtain the latest information on all aspects of fisheries.

Regional and national project development and management

A significant part of the work program of the CRFM will be developed and financed by way of projects funded by both donor and Member States' contributions. The CFTU will therefore be proactive in developing project proposals, negotiating funding and technical assistance and managing projects within its approved work program to achieve the mandate of the mechanism in promoting sustainable fisheries development in the region. Projects will be developed to conduct research, provide training and technical assistance and build institutional capacity for sustainable fisheries at both the national and regional levels.

The CFTU will develop project proposals in collaboration with the national fisheries administrations and other national and regional organizations to address priority areas within the approved work program of the CRFM. Although many projects may be implemented by the CFTU, advantage will be taken of opportunities to delegate project development and management to other CRFM elements.

Regional representation in international fora

CARICOM countries are frequently affected by decisions taken in fora where there is little participation by Member States. As there are few fisheries issues without global dimensions, it is important that fisheries interests are represented. The types of fora include: Management, Technical, and Donor agencies. Some possible types of representation are:

- Full legal or political

- Official CARICOM spokespersons
- National representative speaking on behalf of other national representatives
- National official representatives looking out for the interests of other CARICOM countries°
- Information feedback.

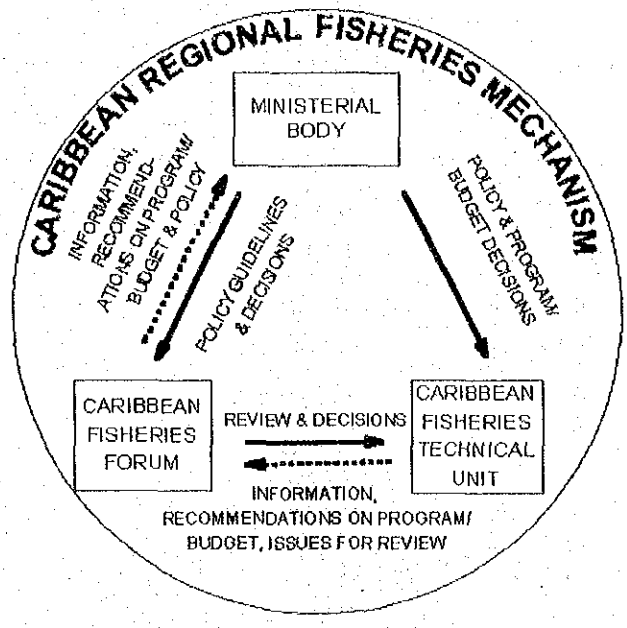
REGIONAL AND NATIONAL SOCIO-ECONOMICS AND PLANNING

The lack of reliable and up-to-date data on the social and economic aspects of the fishing industry has been contributing to the relative neglect of fisheries in national development planning. The situation will worsen if national socio-economics and planning are not addressed as areas of priority. Sustainable fisheries development requires information not only on the biological and ecological aspects of the resource, but also on the social and economic aspects. The CRFM, will provide technical support to national programmes for the collection of social and economic data, and also to the implementation of frame surveys, which also provide valuable socio-economic data. These data will be compiled in national and regional databases.

The overall structure of the CRFM

The CRFM is the core of a complex interactive network of a wide variety of stakeholders in fisheries. Three bodies together make up the Caribbean Regional Fisheries Mechanism (CRFM). These are: 1) the Ministerial Body; 2) the Caribbean Fisheries Forum; and 3) the Caribbean Fisheries Technical Unit (CFTU).°

Outside of this core will be the many stakeholders in the CRFM. The boxes in Figure 2 represent types and examples of stakeholders. The numbers and positions of boxes will change with time and circumstance. Therefore the extent of the network must necessarily be left open with the expectation that it will evolve. The core of the network, the CRFM, which is its decision-making and coordinating arrangement will, however, be clearly specified and established as a well-defined entity.



The composition and role of the bodies of the caribbean regional fisheries mechanism

The Ministerial Body, the Caribbean Fisheries Forum and the Caribbean Fisheries Technical Unit comprise the CRFM (Figure 3). These provide strategic direction and determine how the functions of the CRFM are operationalised. Only the CFTU is a full-time body with offices. The Council and Forum are convened as periodic assemblies. However, between meetings the participants may maintain connection and decision making function through formalised communication.

Membership

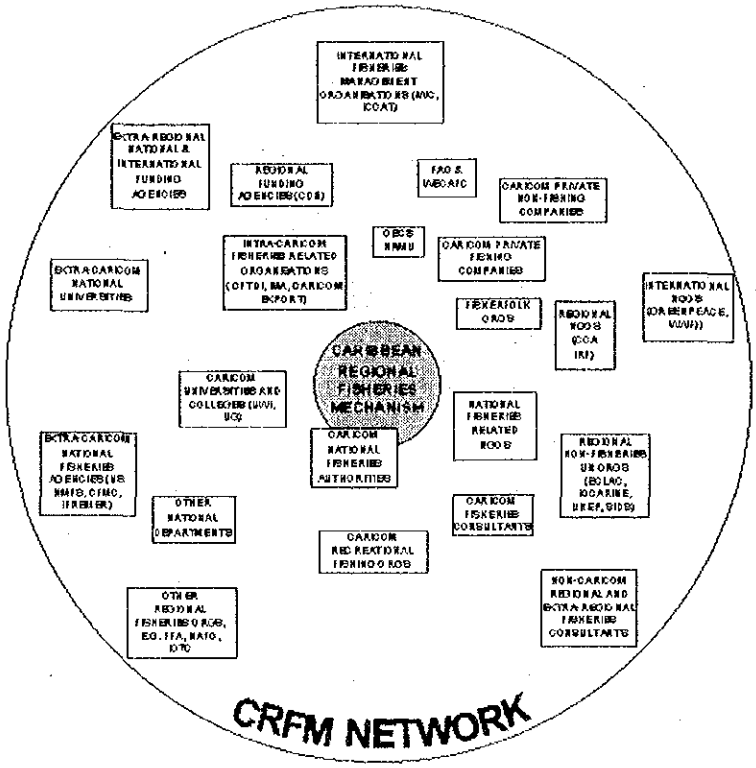
Membership in the Caribbean Regional Fisheries Mechanism would be open to all CARICOM countries as full members. Beyond this, provision could be made for accession to Associate Membership by three categories of other countries in the Caribbean:

- CARIFORUM States
- Non-CARICOM Caribbean states;
- Caribbean Dependent Territories which obtain special empowerment from their metropolitan powers to join.

Membership will ultimately be determined by political processes within CARICOM and the wider Caribbean. However, the objective should be to provide all key stakeholders some level of membership and others at least observer status.

Associate membership would entail the right to participate without voting privileges, subject to such associate members having the right to participate in decision-making on management regimes for

fisheries which they share with other members. The operation of CRFM would also support the efforts of full members who share fisheries with associate members or non-members to develop appropriate management arrangements for such fisheries. Non-Caribbean countries with an interest in Caribbean fisheries, as well as relevant fisheries institutions, would be offered observer status. Associate members and observers would be required to pay appropriate fees to the CFRM for the relationship and participation at the forum.



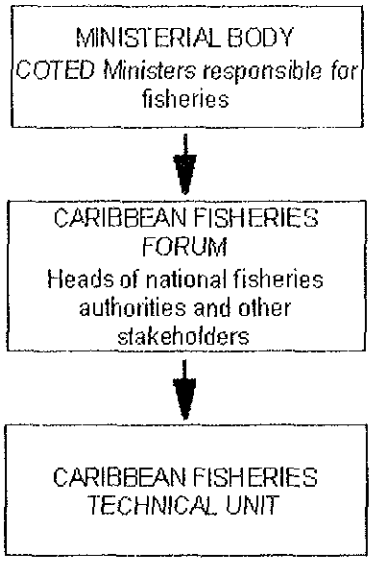


Figure 3b. The hierarchy of decision making within the CFRM

Ministerial body

The Ministerial body is the highest decision/policy making body within the Caribbean Regional Fisheries Mechanism (Figure 3b).

Based on current practices within CARICOM and the recent passage of Protocol V, there are several alternatives for the composition of the Ministerial Body, one of which must be selected.°

A new decision-making arrangement comprising CARICOM Ministers with specific responsibility for fisheries would probably be the most efficient and effective alternative. However, with a view to minimizing the changes to the present council structure, COTED meetings of ministers responsible

- for fisheries with input from COFCOR as required is considered to be the appropriate arrangement for a Ministerial Body for the CFRM.

The role of the Ministerial body would be to:

- Provide policy guidelines and decisions in response to recommendations and requests from the Fisheries Forum.
- Approval of CFTU strategic plan, work program and budget.
- Review and decide on regional and international fisheries treaties and arrangements.

Caribbean Fisheries Forum

The Forum is the main technical and scientific decision making arena. It is made up of full members, associate members, and observers. The full members will be the decision making component of the Forum.°

Full and associate members will be represented by heads of national fisheries authorities. CARICOM and OECS bodies will be ex officio members of the Forum. Observers may include, but are not limited to, intergovernmental fisheries organisations, fisherfolk organisations and other NGOs, and universities. The CFTU will be the secretariat of the Forum.

The role of the Forum will be to:

- Provide forum for information exchange on all fisheries related matters.
- Review and decision making body for the operation of the CFTU and CRFM.
- Recommendations for and approval of the long and short-term work programs of the CFTU to the Ministerial Body.
- Provide fisheries policy advice and recommendations to Ministerial Body and Member States°
- Provide forum for proactive planning of the regional fisheries sector program
- Review and consider new issues and directions in fisheries for incorporation into the work of the CRFM.
- Ensure that the CFTU is properly financed, structured and staffed.

Review executive management actions, to ensure that they are congruent with policy and plans and that the CFTU is making the best use of resources and achieving desired results.

The national fisheries authorities will have a dual role in the CFRM. They will be both the major contributors to decision-making and operational programming of the CFRM, as well as being its main clients. As integral and most important components of the CFRM, national fisheries authorities have the opportunity to shape and guide these arrangements for the benefit of the people. The authorities will be expected to participate in the Ministerial Body and Forum through their policy-making and technical representatives.

Caribbean Fisheries Technical Unit

This unit will comprise a permanent body of technical, scientific and support staff. Its role will be to:

- Collaborate with national fisheries authorities.

- Formulate the work program and submit to the Fisheries Forum
- Implement the work program recommended by the Fisheries Forum and approved by the Ministerial Body.
- Provide management and development advice and assistance, particularly in the areas of coordination, communication and technical scientific operations.
- Address urgent or ad hoc requests outside of the regular work program presented by Member governments.
- Serve as secretariat to the Forum and Ministerial Body.

The network used by the CRFM

The elements of the network shown in Figure 2 will be involved in the work of the CFRM in various ways. The lead responsibility for executing particular tasks that are coordinated by the CRFM may vary with the task.

Organisation and staffing of the Caribbean fisheries technical unit

The new Caribbean Fisheries Technical Unit must be organised and staffed to carry out the functions of the CRFM, with initial emphasis on the priority areas assigned. The CFTU may grow over time as new functions are added based on its performance and assumption of responsibility. It should start small and effective, this being achieved through appropriate staffing and performance-based rewards.°

The types of skills required to reside within the CFTU to address the priority areas can be provided by a minimal initial complement of six professional core staff (Table 1). These staff will be located at two offices: one, in Belize, will be the headquarters of the CRFM; the other will be located in the eastern Caribbean to provide a base from which to serve this part of the CARICOM region (Figure 5).

The Director will be responsible for the overall operation of the CFTU, and will have broad knowledge and experience in fisheries development and management, including international fisheries issues and organizations. The Director will focus on formulation of fisheries policy recommendations, the development of projects and the acquisition of funding to address the priority areas as identified by the Caribbean Regional Fisheries Mechanism.

The Deputy Director will be responsible for the operation of the eastern Caribbean office, and will assist the Director with overall operation of the CFTU. The Deputy Director will focus on developing a programme for the management of shared stocks.

There will be three Technical Officers with responsibility for developing programmes that: (1) Provide assistance with national fisheries to Member Countries; (2) establish and maintain regional fisheries data and information system; and (3) Address the social and economic aspects of management and planning of fisheries.'

These staff will be supported by administrative and support staff shown in Figure 4. The headquarters will be primarily responsible for the priority areas relating to project development, acquisition of funding, data and information management and sociological and economic planning. Continued use of cost-effective communication between headquarters and the Eastern Caribbean office will ensure that adequate coordination is maintained with all CRFM participants.

The Eastern Caribbean office will be primarily responsible for the priority areas addressing the management of shared resources and national level fisheries.

Given that the headquarters of the CRFM will be in Belize, a second office in the eastern Caribbean is considered to be highly advantageous for the following reasons:

- Travel and communications costs between the CFTU and Member States can be reduced by the proximity of the eastern Caribbean countries to the majority of Member States;
- The professional staff with primary responsibility for the shared stocks program can be in the immediate area where most of these fisheries are taking place;
- The Eastern Caribbean office can facilitate access to the mechanism by Member States in this area.

Financing

The capital costs of building(s) or rental costs for accommodation for the CFTU will be met by the Member States hosting the units. Vehicles, office equipment and furniture will be inherited from current projects such as CFRAMP. The staff will be offered salaries and conditions that relate to regional norms while at the same time serving to attract and retain highly competent personnel.

Operational costs of the CFTU, which include both fixed and recurrent costs for emoluments, services etc, and variable costs associated with operational programs will be met by

- Annual contributions from each Member State,
- Profits on cost recovery for some services provided by the CFTU;
- Overheads from donor agencies;

- Income from intellectual property created and owned by the CFTU;
- Grant funds received from regional and international aid agencies.

The preliminary estimate for the establishment of the CFTU and the operation of the CFRM is US$970,000 for the first year.

CARIFORUM Integrated Caribbean Regional Agriculture and Fisheries Development Programme - Fisheries Component

Financed by the European Union, this six-year project has been designed to extend to four other Caribbean ACP countries (the Bahamas, Suriname, Haiti and the Dominican Republic) the benefits which the original 12 CARICOM countries have been obtaining from CFRAMP, and for all 16 countries to benefit from areas such as fisheries surveillance and enforcement, marketing, processing and training.

Objectives:

Within the context of the Integrated Caribbean Regional Agriculture and Fisheries Development (ICRAFD) Programme, the overall objective of this project is the optimal utilization and sustainable management of marine fisheries resources in CARIFORUM countries.

Purposes:

- To strengthen fisheries planning and management capacity of national fisheries departments in CARIFORUM countries. These Departments are responsible for formulating fishery policies, elaborating plans and implementing programmes. To do this well, they require reliable and timely information on the structure and performance of the sector and the status of the resources.

- to enhance the effective participation and support of fishers communities in the planning and management process of the fishing industries for the sustainable use of the coastal and marine fishery resources. Good fisheries policies and programmes must start from the bottom, hence the importance of understanding their perspectives, constraints and priorities.

Expected Results and Beneficiaries

The successful completion of the Project is expected to produce the following results:

- A functional administrative office in Belize City: This office will provide back-up planning and networking activities, will develop good working relationship with the Caricom Fisheries Unit (CFU), EU office in Belize, the Deputy Regional Authorizing Officer, and the 4 national fisheries administrations.

- Analysis and diagnosis of national fisheries institutions and industries: Institutional strengths and weaknesses will have been identified, and activities initiated to address the priority institutional strengthening and training needs. A database with detailed information on the fisheries sector will be established with each national fisheries administrative entity of the 4 countries.

- Formal and informal training program in process: At least 4 degree and 12 diploma-level students will be enrolled in formal training programs. At least 200 fishermen will participate in planning and training workshops. Dialogue between representatives of fishing communities and governments will be in process to address the most pressing problems of fisheries development.

- Proposals for: elaborating regional fisheries policies; coordinating regional fisheries surveillance; improving fisheries management schemes; and improving post-harvest handling, processing and marketing of fish and fishery products.

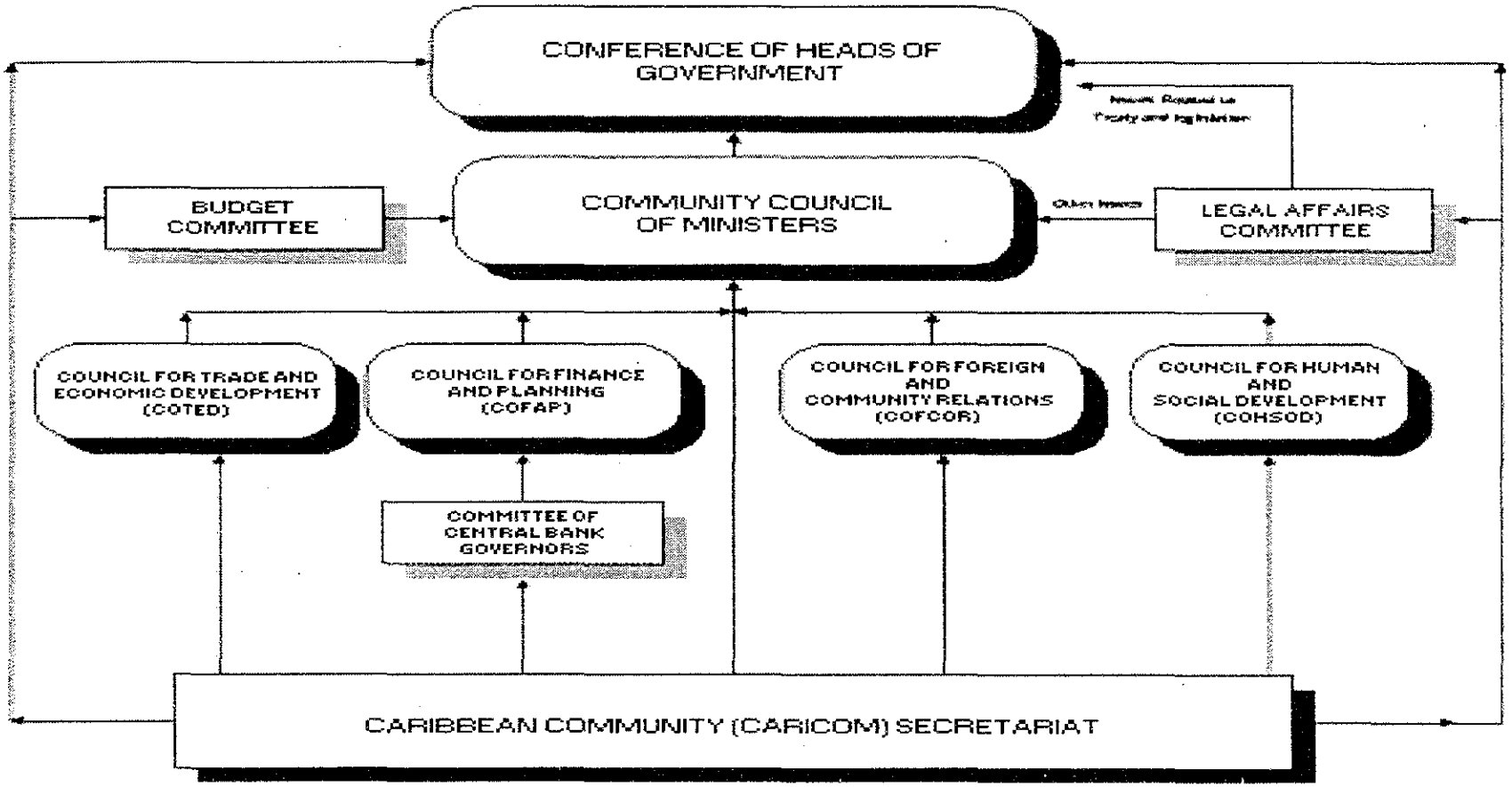
The primary beneficiary of the project are the fishing communities and households whose main source of livelihood, i.e. employment, income, food and nutrition and empowerment, depend on the quantity and quality of the fisheries resources. The national fisheries institutions will also benefit in terms of improvement of staffing, relevant information and databases, and financial resources, which will enable them to get closer to reaching their mission. The national governments, economy and the society at large, will also be assisted indirectly due to the increased employment, income and resource conservation benefits.

別添 4

CARICOM 組織図

Organizational Chart of CARICOM

FUNCTIONAL RELATIONSHIP OF THE ORGANS AND BODIES OF THE CARIBBEAN COMMUNITY



別添 5

カリブ地域における水産資源の動向

Status of stocks in WECAFC Areas

（FAO ウェブサイトから引用）

Food and Agriculture Organization of the United Nations | Organisation des Nations Unies pour l'alimentation et l'agriculture | Organización de las Naciones Unidas para la Agricultura y la Alimentación

WESTERN CENTRAL ATLANTIC FISHERY COMMISSION

Tenth Session

WECAFC LESSER ANTILLES FISHERIES COMMITTEE

Seventh Session

Bridgetown, Barbados, 24-27 October 2001

THE STATUS OF FISHERIES RESOURCES IN THE WESTERN CENTRAL ATLANTIC REGION.

INTRODUCTION

1. The area served by the Western Central Atlantic Fisheries Commission (WECAFC) extends from Cape Hatteras in North Carolina, United States (35°N), to just south of Cape Recife in Brazil (10°S). It includes an area of approximately 15 million km^2 of which approximately 1.9 million km^2 is shelf area (Stevenson 1981). The major subdivisions in the area are the Southeast coast of the United States, the Gulf of Mexico, the Caribbean Sea and the Northeast coast of South America which includes the Guianas and Brazil (Figure 1 and Table 1).

2. The Western Central Atlantic Fishery Commission includes FAO Statistical Area 31 and the portion offshore of northern Brazil, which falls into Area 41. The major island sub-divisions in Area 31 are the Bahamas and adjacent banks and islands, which account for over half of the islands and banks shelf area, the Greater Antilles (Cuba, Puerto Rico, the Virgin Islands, and Hispaniola), and the Lesser Antilles (Stevenson 1981).

3. The Western Central Atlantic area is characterized by anti-cyclonic (i.e. clockwise) flow of currents. The South Equatorial Current flows westwards just north of the equator and divides into the Guiana current flowing northwards into the Caribbean and the southward flowing Brazil Current (Stevenson 1981). Northward the equatorial Atlantic water flows through the eastern Caribbean, mainly between Barbados and Tobago where it forms the "core" of the westward flowing Caribbean Current which occurs approximately 200 km north of South America (Appeldoorn *et al.* 1987). There is also the North Equatorial Current which flows north to north-west through the Antilles, entering the region at approximately 14 to 15°N (Appeldoorn *et al.* 1987). The water entering the Caribbean then flows through the Yucatan Channel, as the Caribbean Current, and leaves the Gulf of Mexico through the Florida Straits where it forms the Gulf Stream, flowing northwards along the east coast of the United States of America and Canada (Stevenson 1981). However, the area is also marked by substantial variability, with counter currents, meanders and eddies (Stevenson 1981) and Appeldoorn and his colleagues (1987) described the flow

through the Antilles as being "complex and variable". The region also comes under the influence of runoff from the major rivers discharging into the region, including the Mississippi, Orinoco and Amazon Rivers.

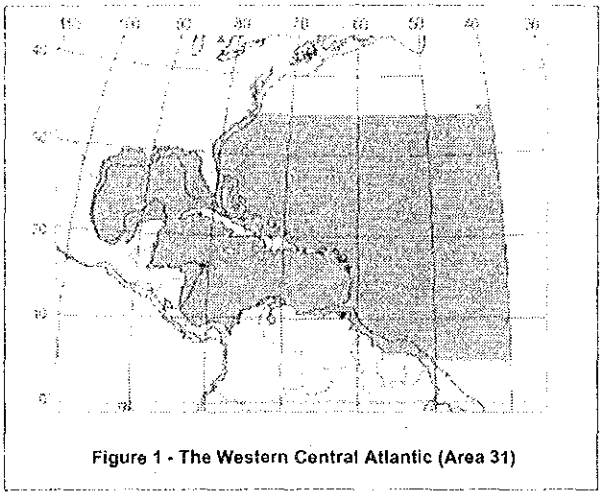


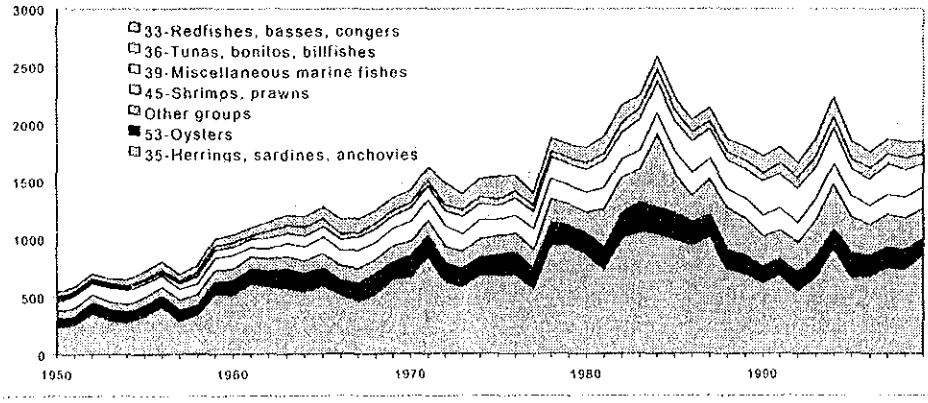
Figure 1 - The Western Central Atlantic (Area 31)

Table 1 Locality and area of the major coastal shelf zones in the western central Atlantic (Stevenson 1981).

	LOCATION	AREA (000 km ^{2})
Continental Shelf		
	U.S. east coast	110
	Gulf of Mexico	600
	Yucatan – Eastern Venezuela	250
	Guyana, Surinam, French Guiana	200
	Northern Brazil	360
	TOTAL	1520
Islands		
	Islands and offshore banks	380
	GRAND TOTAL	1900

4. The fish resources of the WECAFC area are extremely diverse. Cervigón et al. (1993) stated that about 680 species of bony fish of interest to fisheries and about 49 species of sharks occur in the waters of the northern (Atlantic) coast of South America from the border between French Guiana and Brazil to Colombia. When the invertebrates exploited by fisheries and additional species of the Gulf of Mexico and the Antilles islands are included, the number of species is even higher.

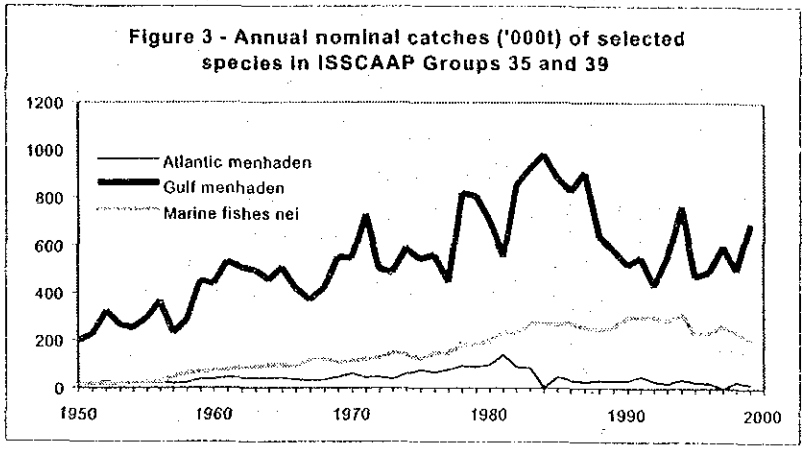
Figure 2 Annual nominal catches ('000 t) by ISSCAAP species group in the Western Central Atlantic (Area 31)



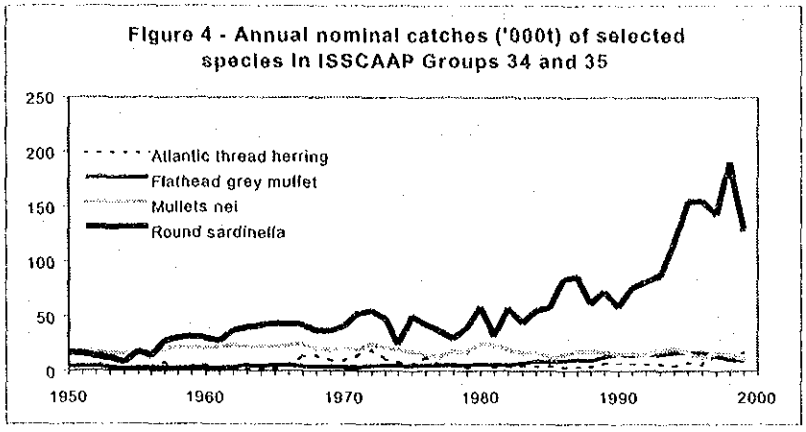
PROFILE OF CATCHES

5. Nominal catches from the region increased steadily from approximately 500000t in 1950, to a peak of approximately 2.5 million tonnes in 1984. They subsequently declined but showed some increases in the early 1990s, with 2.2 million tonnes being landed in 1994 but seem to have stabilised at around 1.8 million tonnes in recent years (Figure 2).

6. Overall, small pelagics accounted for the largest catches by mass and fishes from seven families dominate small pelagics catches in the region. These are: Exocoetidae (flyingfish); Clupeidae (herrings and sardines); Engraulidae (anchovy and anchoveta); Carangidae (jacks, bumpers and scads); Hemiramphidae (halfbeaks); Belonidae (needlefish) and Mugilidae (mullet). The ISSCAAP group making the largest contribution to catches continues to be Group 35 Herrings, sardines, anchovies. This group is dominated by the Gulf menhaden (*Brevoortia patronus*) which occurs from the Yucatan Peninsula to Florida. Catches of the species increased irregularly from about 200000t in 1950 to close to one million tonnes in 1984 but have shown a general decline since then, varying around approximately 50000t during the 1990s (Figure 3). There was also an important fishery for the other menhaden species, Atlantic menhaden (*B. tyrannus*), with peak catches of 140000t in 1981, but the fishery declined steeply in subsequent years to 4 000t in 1984. Catches have generally been under 40000t since 1992 and were less than 20 000t in 1999 (Figure 3).

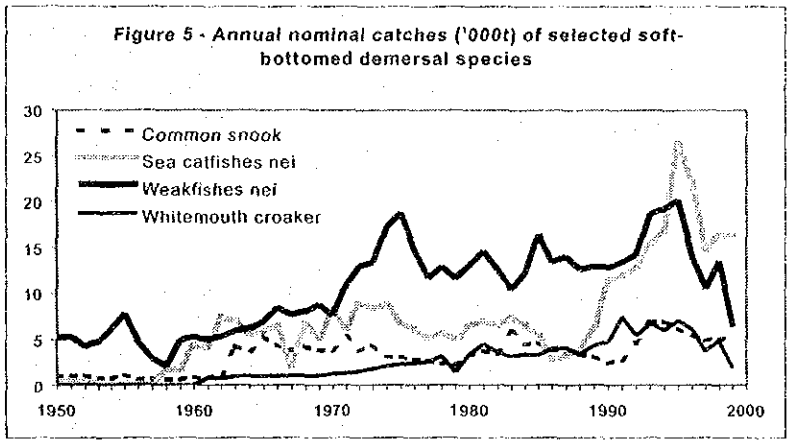


7. The round sardinella (*S. aurita*) is also an important small pelagic species and total catches of this species increased steeply from 59000t in 1990 to almost 200 000t in 1998 but fell back sharply to 128 000t in 1999 (Figure 4). Landings of this species are mostly recorded by Venezuela. Other small pelagic species occurring in ISSCAAP Groups 34 (Jacks, mullets, sauries) and 35 include the flathead grey mullet (*Mugil cephalus*), unidentified mullets and the Atlantic thread herring (*Opisthonema oglinum*), all of which have generated catches under 20000t in recent years (Figure 4). There has been a substantial increase in catches of the unidentified jacks and crevalles of the genus *Caranx*. Fished mainly by Mexico and Venezuela, catches of this group have approximately doubled from the early 1980s, reaching a peak of over 12 000t in 1997 and 1998 but declining to just under 10 000t in 1999. The four-winged flyingfish (*Hirundichthys affinis*) supports locally important fisheries in some of the lesser Antilles islands, including Barbados, Grenada and Tobago. Catches of this species peaked at nearly 6000t in 1988, but more typically fluctuate between 1000 and 3 000t, as they did throughout the 1990s. The common dolphinfish (*Coryphaena hippurus*) is another pelagic species important to the small island states. It is also landed by the United States and Mexico and a directed fishery for the species has developed in Venezuela in recent years. Catches of common dolphinfish in the region doubled from 2000t in 1984 to 4 300t in 1997.



8. The ISSCAAP Group 33 – redfishes, basses, congers also makes an important contribution to the catches of the region (Figure 2). This group covers a wide diversity of species, of which the following contribute most to catches : sea catfishes (*Ariidae*); the groupers, seabasses etc. (*Serranidae*) especially the groupers (*Epinephelus spp.*); grunts, sweetlips (*Haemulidae*); snappers, jobfishes (*Lutjanidae*), especially the unidentified snappers (*Lutjanus spp.*) and the yellowtail snapper (*Ocyurus chrysurus*); croakers, drums (*Sciaenidae*) especially the weakfishes (*Cynoscion spp.*) and the whitemouth croaker (*Micropogonias furnieri*); the ponyfishes (*Leiognathidae*); and the snooks (*Centropomidae*) especially the common snook (*Centropomus undecimalis*). The catches made up by members of this group totalled 113000t in 1999 compared to an average annual value of 140 000t during the 1990s as a whole.

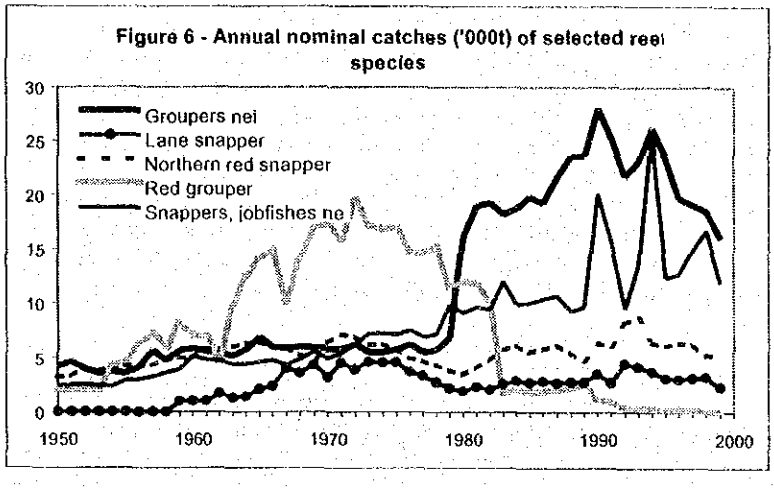
9. The redfishes, basses, and congers can be subdivided into two broad groups based on habitat: those occupying areas with soft substrata and those typically occurring over reefs. Amongst those occupying areas with soft strata, unidentified sea catfishes have accounted for the highest catches in recent years, and these showed a substantial increase from under 5000t in 1988 to over 26 000t in 1995 but have subsequently declined to less than 20000t (Figure 5). These species are recorded on the FAO database as



being landed by mainland countries. Unidentified weakfishes peaked at over 2000t in 1995 but have also subsequently declined, falling to 6 400t in 1999 (Figure 5). Catches from Mexico and the United States of America, identified as spotted weakfish (*Cynoscion nebulosus*), contributed additional catches of weakfish of over 6 000t in 1998 and 1999. The whitemouth croaker and common snook were also important contributors to catches of fish from soft-bottomed habitats. Catches of both these species have shown increases since 1950, with the whitemouth croaker generating catches of near 9000t in 1998, but with

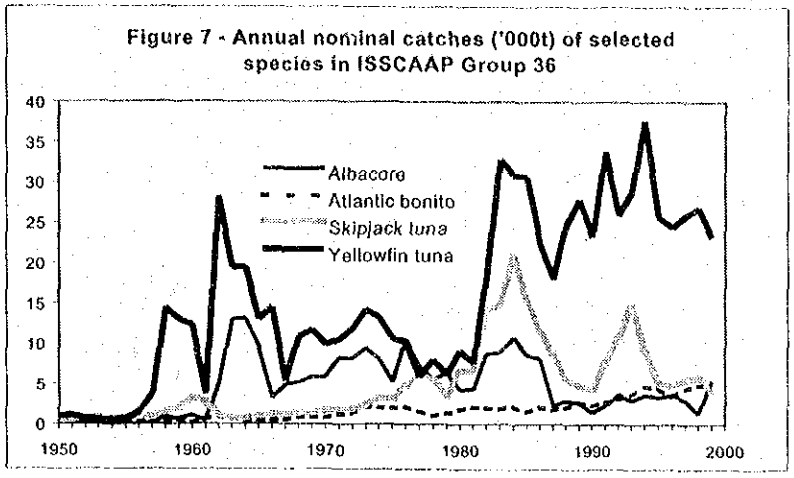
only 1 900t recorded in 1999, and the common snook producing catches of over 3000t in 1998 and 1999 (Figure 5).

10. Amongst the dominant reef fishes in catches, those of unidentified groupers increased markedly in the late 1970s and early 1980s, from under 10 000t, to above 20 000t which they maintained until 1995, subsequently falling to 16 000t in 1999 (Figure 6). Catches of red grouper (*Epinephelus morio*) fell from a peak of 19 600t in 1972 to 119t in 1999, while those recorded for Nassau grouper (*E. striatus*) fell from 3200t in 1962 to 429t in 1999. However, the WECAFC Scientific Advisory Group, at their meeting in Trinidad in April 2001, suggested that some landings of red grouper may not be being recorded as such, thereby leading to an underestimate of true landings. Catches of the unidentified snappers and jobfishes have shown a substantial increase from under 5000t in 1950 to more than 25 000t in 1994 although they have declined since then. Catches of northern red snapper (*Lutjanus campechanus*) have remained relatively constant, as have those of lane snapper (*L. synagris*) over the last two decades.

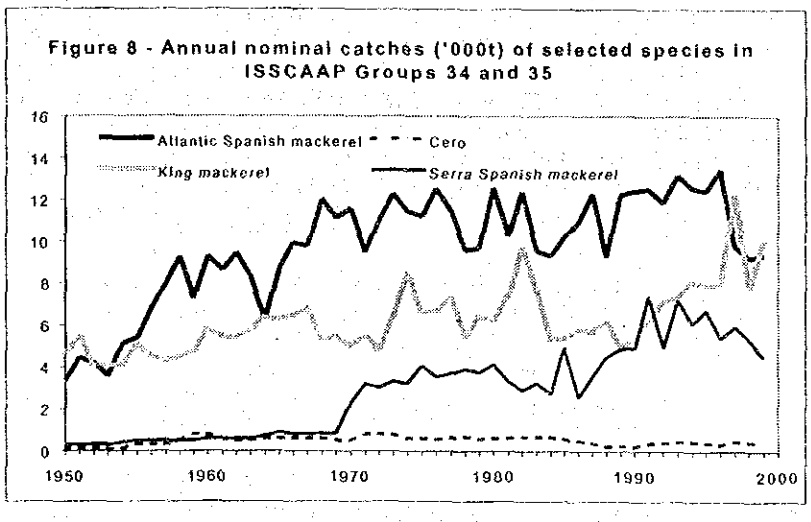


11. There are also important fisheries for snapper on the Brazil-Guianas shelf, targeting particularly the southern red snapper (*L. purpureus*) but also lane snapper and the Vermillion snapper (*Rhomboplites aurorubens*). Several of the countries of the Brazil-Guianas shelf have local and foreign fleets fishing for snapper in their waters and Venezuelan vessels are particularly active, fishing legally in the EEZs of most countries in the area. Catches have not been recorded on the FAO fisheries database, but Venezuelan authorities have reported that between about 3500 and 5 000t of southern red snapper are landed annually in Venezuela, with over 50% caught in foreign waters (FAO 2000).

12. The catches of ISSCAAP Group 36 tunas, bonitos, and billfishes have increased over the last three decades and catches during the 1990s averaged 89000t (1999 catches = 82 000t), compared to averages of 79 000t in the 1980s and 53 000t in the 1970s. For management purposes, this group is dividedinto two sub-groups, the oceanic species whose distribution extends beyond the WECAFC region and can be trans-oceanic, and the coastal large pelagics whose distribution is largely confined to the WECAFC region. Amongst the oceanic species, by far the largest catches are for yellowfin tuna (*Thunnus albacares*), catches of which increased steeply in the early 1980s, as a result of increasing fishing effort mainly by fleets from within the region. Some 23000t of the species were landed in 1999, compared to about a quarter or less of this for the other major species (Figure 7).



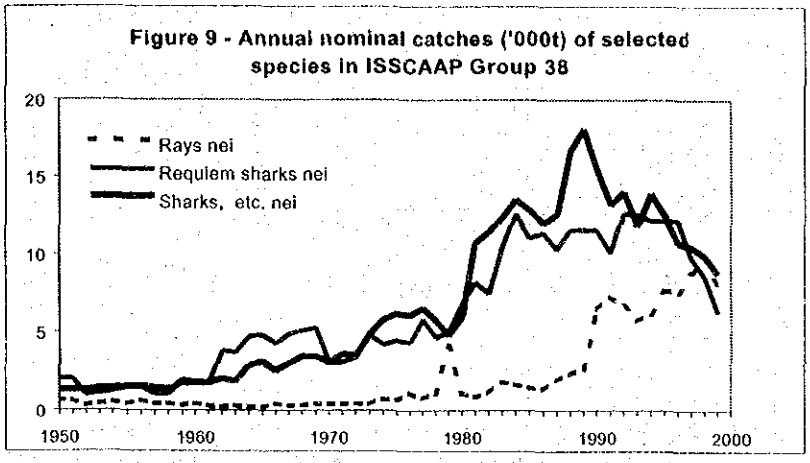
13. The coastal large pelagic catches were dominated by four species of *Scomberomorus*. These were, in 1999, king mackerel (*S. cavalla* - 10 000t) and Atlantic Spanish mackerel (*S. maculatus* - above 9 000t), Serra Spanish mackerel (*S. brasiliensis* – 4 500t) and Cero (*S. regalis*) of which only 411t were landed. Catches of Serra Spanish mackerel increased considerably between 1970 and 1997 (Figure 8).



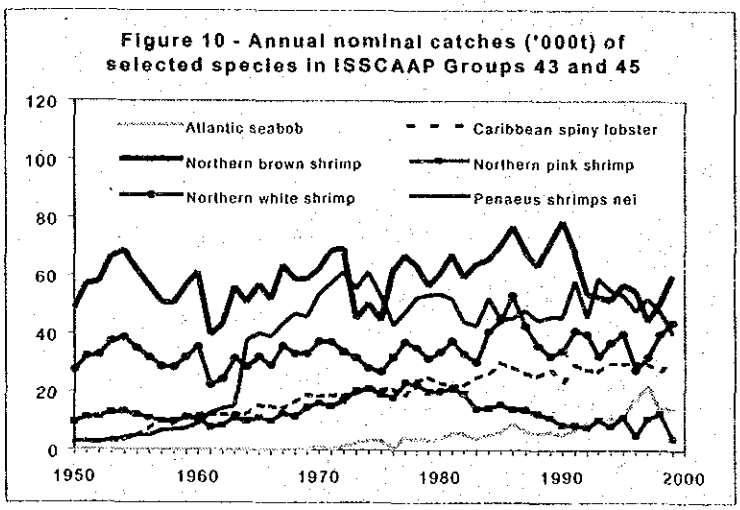
14. Sharks have attracted considerable attention in recent years, as concerns have been raised about their over-exploitation. Within the WECAFC region, recorded catches escalated substantially after 1950 (Figure 9) and peaked at nearly 37 000t in 1994. Since then, however, they have fallen steadily and only 23 000t was recorded in 1999. The fact that little information is available on the species composition of the landings reinforces the need for careful moitoring.

15. A report by Yegres *et al.* (1996) on the shark fishery in Venezuela, operating beyond the EEZ of that country in both the Caribbean Sea and the Atlantic Ocean in the south western reaches of the WECAFC area, listed 31 shark species as being caught. The most common, by number, in the industrial fleet included blue shark (*Prionace glauca* - 36%), reef shark (*Carcharhinus springeri* - 14%), and short-fin mako (*Isurus oxyrinchus* - 12%), and in the artisanal fleet, Caribbean sharpnose shark (*Rhizoprionodon*

porosus - 21%), scalloped hammerhead (*Sphyrna lewini* - 14%) and smalleye hammerhead (*S. tudes* - 12%). Bonfil (1997) reported that 34 species of shark occur in the Mexican waters of the Gulf of Mexico, of which 14 are important in fisheries and nine of these he described as being of "prime importance". Included in the nine most important were five *Carcharhinus* species and two *Sphyrna* species.

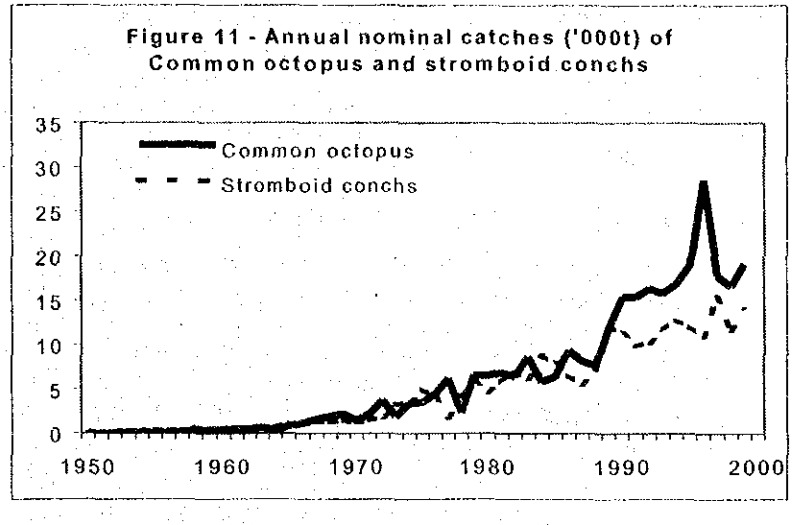


16. Some of the most valuable fisheries in the Western Central Atlantic are crustacean fisheries, in particular that for Caribbean spiny lobster (*Panulirus argus*) and those for a number of shrimp species, particularly penaeid shrimps (Figure 10). Catches of spiny lobster have been consistently above 27000t since 1991 and reached their highest recorded level of 31 500t in 1999. With a high monetary value per unit mass, spiny lobster represents one of the most valuable fishery resources in the region. Recorded catches of unidentified penaeid shrimps have varied without meaningful trend between approximately 40 000 and 59 000t since the mid-1970s, with the minimum during this period of 40 100t being recorded in 1999. The most productive shrimp species is the northern brown shrimp (*Penaeus aztecus*), with 1999 catches of over 60 000t, followed by the Northern white shrimp *P. setiferus*) with catches of 44 000t in the same year. Recorded catches of Atlantic seabob (*Xiphopenaeus kroyeri*) increased in recent years from approximately 5 000t in 1990 to 21 000t for 1997, but fell back to 14 000t in 1998 and 1999.

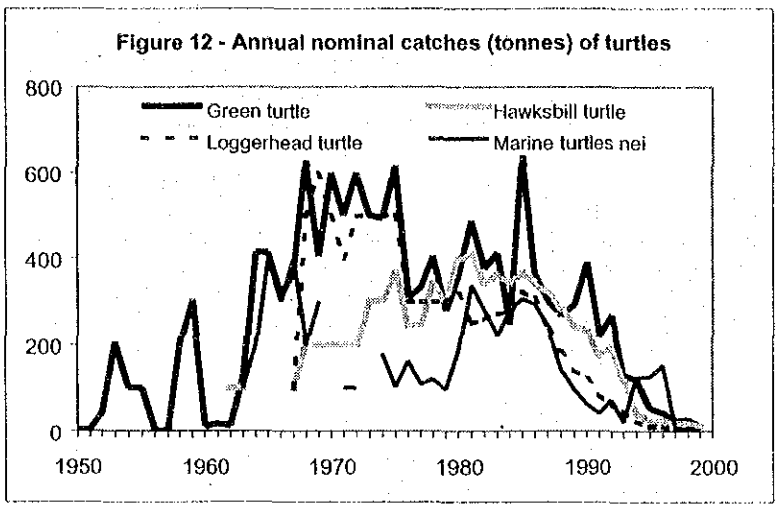


17. Amongst the molluscs, the highest catches (given in total weight, including shell) in recent years have been of American cupped oyster (*Crassostrea virginica*), which peaked at 159 000t in 1983, fell to 59 000t in 1991 but remained above 85 000t from 1993 to 1999 inclusive, and ark clams (*Arca spp.*) of which over 40 000t were landed in 1999. Catches of calico scallop (*Argopecten gibbus*) have been highly variable, peaking at nearly 400 000t total weight in 1984, but with zero catches recorded in 1991 - 1993 and again since 1996.

18. Two resources in which substantial increases have been observed in recent years are the octopus, recorded as common octopus (*Octopus vulgaris*), and the stromboid conchs (*Strombus spp.*). Catches of both have increased steadily since 1950 (Figure 11). Catches of common octopus were slightly over 8500t in 1983 and have subsequently climbed to an average of over 18000t in the 1990s, with the highest recorded catch of over 28 000t in 1996. The increase in catches of stromboid conchs has been less steep but nevertheless marked, rising from an annual average of 3 200t in the 1970s to over 12 000t in the 1990s.



19. All species of Chelonidae, the sea turtles, have been listed on CITES Appendix 1 since 1977. Despite this, landings of the three species recorded on the FAO database for the WECAFC area (green, hawksbill, loggerhead) and those not identified, remained high until the late 1980s and, in fact, peaked at 1 600t in 1985. Thereafter, they declined rapidly, falling to only 31t in 1999, made up mainly of green and hawksbill turtles (Figure 12). Marine turtles are harvested and utilised in the WECAFC region for a range of uses from subsistence to provision of luxury items (Fleming, 2001).



RESOURCE STATUS AND FISHERY MANAGEMENT

20. The capacity for effective fisheries management differs markedly between the different coastal states of the Western Central Atlantic. In some countries there are appropriate institutions, with fishing and fisheries being monitored and controlled in attempts to ensure sustainable utilisation, while in others fisheries are largely unmanaged or managed only in a rudimentary manner. However, even amongst the most advanced fisheries management agencies in the region, there are problems in coping with the high species diversity and from the region as a whole there is little information on the status of the important resources and even less on the hundreds of species of lesser importance to the region's fisheries. This is, again, reflected in the 2000 Report to Congress by the National Marine Fisheries Service (NMFS) of the United States. In this report, it is recorded that of the 57 stocks falling under the jurisdiction of the Gulf of Mexico Fisheries Management Council (GMFMC), the status of 46 (81%) was unknown or undefined, while of the 179 stocks falling under the jurisdiction of the United States Caribbean Fisheries Management Council (CFMC), the status of 175 (98%) was unknown or undefined. Such uncertainty applies to a country with one of the highest, if not the highest, capacity for fisheries assessment and management in the region, and therefore the position in most other countries is likely to be similar or worse.

21. Based on their stock sizes, neither of the two menhaden species, the Gulf and the Atlantic menhaden, are considered to be overfished (NMFS 2001). Amongst the small pelagics, quantitative estimates of status are available only for the round sardinella in Venezuela, which supports an important local fishery. Using virtual population analyses (VPA) techniques, Mendoza, Fréon and Guzmán (1994) estimated that the stock was lightly exploited at that time, but that may have changed with the increased annual catches showed in Figure 4. The general understanding of the stock status of small pelagics in the region is that they vary from under- to fully-exploited (FAO 1998).

22. Within the groundfish species, dominated by ISSCAAP Group-33, Redfish, basses and congers, NMFS (2001) recorded four Gulf of Mexico stocks, the Red snapper (*Lutjanus campechanus*), Red grouper (*Epinephelus morio*), Nassau grouper (*Epinephelus striatus*), Jewfish (*Epinephelus itajara*) and Red drum (*Sciaenops ocellatus*) as being overfished, while the Gag grouper (*Mycteroperca microlepis*) is estimated to be approaching an overfished condition. Overfishing was reported to be occurring on the Red snapper, Red grouper, Gag grouper and Vermilion snapper (*Rhomboplites aurorubens*). The status of the large majority of remaining reef fishes falling under the jurisdiction of the GMFMC was unknown.

23. Within the area under the jurisdiction of the CFMC, the local stocks of Nassau Grouper, Jewfish and Queen conch are considered to be overfished and the stock of Spiny lobster not to be overfished. Overfishing was not considered to be occurring at the time of reporting on Spiny lobster, Nassau Grouper and Jewfish but to be taking place on the Queen conch resource. The status of the remaining Caribbean stocks is reported to be unknown (NMFS 2001). Red grouper in the coastal waters of Mexico has been estimated to be over-exploited (Arenas and Díaz de León 1998).

24. Some recent work has been undertaken, and is on-going, on the groundfish stocks of the Brazil-Guianas shelf, under the auspices of the CARICOM Fisheries Resource Assessment and Management Programme (CFRAMP) and the FAO WECAFC *ad hoc* Working Group on the Shrimp and Groundfish Fishery of the Brazil-Guianas Shelf. The data are sparse and the results only preliminary, but using yield and spawner biomass per-recruit reference points, there are indications that the stocks which have been examined, predominantly soft bottom dwellers, are being overexploited. The stocks which have undergone preliminary analyses include some local stocks of whitemouth croaker (*Micropogonias furnieri*), Jamaica weakfish (*Cynoscion jamaicensis*) and green weakfish (*C. virescens*), smalleye croaker (*Nebris microps*), and king weakfish (*Macrodon ancylodon*) (FAO 1999, 2000). A recent assessment of *L. purpureus* in French Guiana, showed indications of over-exploitation of the stock (Charuau 2000). At a meeting of senior decision-makers from the fisheries agencies of the six Brazil-Guianas countries (Brazil, Guyana, French-Guiana, Surinam, Trinidad and Tobago, and Venezuela), the delegates undertook to continue, and strengthen as far as practicable, national and regional efforts for responsible management of these fisheries resources (FAO 2001a).

25. Apart from these scientifically-based estimates, there is a general acceptance of the fact that the inshore reef and groundfish resources are commonly fully exploited and some are over-exploited (FAO 1998). Mahon (1993) reported that "It is generally accepted that reef fish resources of the island platforms are extremely overexploited in most Lesser Antillean countries".

26. There is considerable interest amongst some states of the region in expanding their fisheries for large pelagics, both oceanic and coastal, and in recent years fisheries for these stocks have increased considerably. FAO is currently assisting the CARICOM countries of WECAFC, through a Technical Cooperation Project, in planning future development of their fisheries for large pelagics. The stocks being targeted by these expanding fisheries fall under the mandate of the International Commission for the Conservation of Atlantic Tunas (ICCAT). Recent assessments (ICCAT 1999) of the status of the most important stocks in the WECAFC area indicate that yellowfin tuna, which is considered to consist of a single Atlantic stock, is fully-exploited and possibly over-exploited. The stock structure of skipjack tuna (*Katsuwonus pelamis*) is not well known, but it is treated as two management units, an eastern and a western unit. ICCAT (1999) considered that "a state of over-exploitation of skipjack seems to have been reached" for the western management unit. ICCAT (1999) considers albacore (*Thunnus alalunga*) to consist of a northern, a southern and a Mediterranean stock, and the northern, of primary interest to WECAFC, is considered to be fully or over exploited. ICCAT did not provide an estimate of the status of Atlantic bonito (*Sarda sarda*).

27. Amongst the coastal species, the status of Serra Spanish mackerel and Cero is unknown. NMFS (2001) considered a Gulf of Mexico "group" of the king mackerel to be overfished, while the Atlantic "group" is considered to be "not overfished". Marcano *et al.* (1999) found no signs of overexploitation of King mackerel in their study on a fishery for the species in eastern Venezuela. Neither the Gulf nor the Atlantic "groups" of Atlantic Spanish mackerel are considered overfished by NMFS.

28. The status of the stocks of sharks in the region is poorly understood, but there is concern due to their vulnerability to over-exploitation. Bonfil (1997) referred to some assessments undertaken on shark in Mexico, suggesting fishing mortalities ranging from approaching that yielding the maximum sustainable yield (F_{MSY}) to above them. However, he stressed the preliminary nature of these assessments. He did draw attention to the concentration of fishing effort on juvenile sharks in Mexico, which he suggested was

one of the most important concerns in these fisheries. Many of the stocks of shark in Area 31 are likely to be widely distributed and hence to require regional and international co-operation for adequate fishery management.

29. The status of the Caribbean spiny lobster was examined at three WECAFC workshops held in 1997, 1998 and 2000, attended by scientists from all the major lobster producing nations in the region (FAO 2001b, 2001c) and, in the case of the 2000 workshop, also by senior decision-makers from these countries. The results from these workshops indicated a resource that is being fully or over-exploited throughout much of its range, although there were insufficient data from some areas to estimate the status reliably. The workshops concluded that in most countries there is an urgent need to control and in many cases to reduce the fishing effort in the lobster fisheries. As many countries have open access to their lobster fisheries, this may require implementing restricted entry systems into the fishery, ensuring that the resulting total effort is commensurate with the productivity of the resource, and that the licensed fishers are able to obtain acceptable economic returns. In some areas, the size of the lobsters being caught was smaller than desirable and in these cases it was recommended that suitable minimum size restrictions should be implemented and enforced.

30. The other valuable crustacean fisheries in the region are those for shrimp, mainly penaeid shrimp, and also the Atlantic seabob. Stocks of brown, pink (*Penaeus duorarum*), white (*P. setiferus*) and royal red shrimp (*Hymenopenaeus robustus*) have been estimated by the GMFMC not to be overfished in that region, while the status of seabob (*Xiphopenaeus kroyeri*) is unknown. The CFRAMP/WECAFC workshops referred to above (FAO 1999, 2000) have made good progress in assessing the status of important shrimp stocks in the Brazil-Guianas continental shelf, along the coastline of Venezuela, Trinidad and Tobago, Guyana, Surinam, French Guiana and the northern coast of Brazil. The results suggest that in most cases, the national stocks which have been assessed of southern white shrimp (*P. schmitti*), southern pink shrimp (*P. notialis*) and brown shrimp (*P. subtilis*) are not being biologically overexploited but were probably being fished above the economic optimum fishing effort. There are indications of high rates of fishing mortality on red spotted shrimp (*P. brasiliensis*).

31. Amongst the molluscs, the recent catches of octopus (*O. maya*) are estimated not to be sustainable (Arenas and Díaz de León 1998). One molluscan stock which has been the subject of considerable study is the Queen conch (*Strombus gigas*). At the Queen Conch Stock Assessment and Management Workshop held in Belize in March 1999, it was found that many countries did not have sufficient or suitable data to make reliable estimates of the current status of the stocks (CFMC and CFRAMP, 1999). In those cases where there were sufficient data, the estimated status varied from lightly to over-exploited. The Second International Queen Conch Conference was held in the Dominican Republic in July 2001.

32. At the CITES Conference of the Parties held in April 2000, a proposal was put forward by Cuba to downlist the Cuban population of hawksbill turtles from Appendix I to Appendix II, which would have allowed international trade for this population. However, the proposal was unsuccessful. The status of management of turtles varies considerably between the countries of the region and in some countries the marine turtle populations have increased under effective management programmes, while in others there have been substantial declines. At the 21st Annual Symposium on Sea Turtle Biology and Conservation, held in the United States of America in February 2001, it was agreed that a special group on marine turtles should be formed to investigate the impact of incidental fishing on sea turtle populations and to establish a framework of reference for conservation and regulation for the controlled use of this resource

33. Overall, the discussion above reflects he great uncertainty regarding the status of even the more important fisheries resources of the region. There are no easy solutions to this problem. The Western Central Atlantic is a region with a high diversity of species and this is compounded by what is most probably a very complex stock structure arising from the complex patchwork of continental shelf, traversed by several major rivers, and many island platforms. It is therefore not surprising that knowledge of the status of stocks is sparse. However, in order to conserve and maintain the social and economic benefits

being derived from the region's marine resources, it is important that those states lacking sufficient information take steps to monitor and assess at least selected key and indicator stocks. In some cases it may be sufficient to monitor the trends in species groups or communities, although attention may then need to be given to the relative abundance of species of particular conservation concern. As so many of the resources are shared between two or more countries, this will also require close co-operation at a variety of international levels.

34. Within each country, it is recommended that the key species or groups from a socio-economic perspective, as well as selected indicator species or groups for each major habitat type and taxonomic group, are carefully monitored and regularly assessed, including sub-regionally or regionally as appropriate. This will require at least adaptation and, frequently, improvement, to existing fishery monitoring and data collection programmes and systems. As already mentioned, the fisheries of the region are frequently marked by high species diversity and, while single-species management approaches have a key role to play in some of the fisheries, consideration should also be given to implementing management measures *and strategies that are less demanding of high quality, recent data, and that are more robust to uncertainties* in the available information. Management measures such as suitable control on total effort and greater use of closed areas (Marine Protected Areas) would be appropriate in many fisheries and habitats.

35. This may require additional financial commitments in several countries, and these additional financial resources are likely to be hard to find. However, in considering the costs of effective management, attention also needs to be given to the severe social and economic consequences of the alternative of ineffective management, which alternative is almost certain over-exploitation of resources, resulting in their depletion and the loss of the benefits being derived from them.

SUGGESTED ACTION BY THE COMMISSION

36. It is suggested that the Commission examine the groups of resources where there is particular cause for concern, either because current catches are considerably lower than the historically highest levels, reflecting decreases in abundance, or where a lack of information makes accurate assessment of the true state of the resources impossible. To a lesser or greater extent, one of these two conditions applies to all the groups discussed in this report but examples of resources of particular fisheries or conservation interest which are not currently receiving close attention at a regional scale include: a number of the soft-bottom and reef dwelling species of redfish, basses and congers; and the large pelagics, in particular the coastal large pelagics. The Commission may wish to discuss means of addressing these problems at a regional or sub-regional level.

37. The International Plan of Action for the Conservation and Management of Sharks was adopted at the 23rd Session of COFI in February 1999. This WECAFC report draws attention to the lack of detailed information on catches of shark in the WECAFC area, especially with regard to the taxonomic composition of catches. The WECAFC Scientific Advisory Group proposed that there was a need for WECAFC countries to improve their sampling programmes to collect information on sharks at the lowest appropriate taxonomic level. The Commission may wish to discuss the feasibility of this proposal and means to achieve it at a regional level.

38. Some progress has been made in improving assessment and management of some resource groups at a regional and sub-regional level through the activities of Working Groups, several of which fall under WECAFC. These Working Groups include those focussing on: the Brazil-Guianas shrimp and groundfish fisheries; Caribbean spiny lobster; flyingfish; and queen conch. The Commission may wish to consider means of strengthening the activities of these groups and the need to address other resources in the same cooperative manner.

APPENDIX

SOME SOURCES OF INFORMATION

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