



**REPORT OF THE CFRAMP BASELINE SURVEY ON THE ROLE OF REGIONAL
INSTITUTIONS IN FISHERIES RESEARCH AND MANAGEMENT**

by

Robin Mahon

Pelagic and Reef Fishes Resource Assessment Unit
Tyrell St. Kingstown,
St. Vincent and the Grenadines

and

Robert Bateson

Bellairs Research Institute, St. James, Barbados

ABSTRACT

This document describes the CFRAMP Baseline Survey of institutions involved in fisheries research in participating countries, carried out in order to determine the nature and extent of fisheries research carried out by them, and how they affect fisheries management at the national and regional levels. Fisheries research falls within the scope and objectives of several institutions in CFRAMP participating countries, most of them associated with educational institutions. None has fisheries as its primary focus. The research has been primarily biologically oriented. Only ISER has a socioeconomic focus, and this has been quite recent. There is a growing awareness among fishery managers that it is essential to understand the socio-economic implications of proposed management measures. Given the wide range of fishery resources and types which exist in the CARICOM region, the degree of fishery research activity is relatively low. A shortage of trained personnel, and difficulty in obtaining funding are cited as the main constraints to fishery research.

INTRODUCTION

The CARICOM Fishery Resource Assessment and Management Program is a regional Program, designed to be implemented over eight years through the Caribbean Community and Common Market (CARICOM). The Goal of the Program, as detailed in the Management Plan is to promote the management and conservation of fishery resources of CARICOM countries, and to permit exploitation of these resources on the basis of sustainable yield. The purpose of the Program is to enhance the basic information and institutional capacity necessary to manage and develop fishery resources in the CARICOM region. Specifically the Program will:

- Strengthen fisheries management structures and improve management capabilities and technical expertise within CARICOM through training and advisory assistance
- Provide information on fishery resource abundance and availability for management purposes within CARICOM
- Define and establish a suitable regional fisheries management advisory mechanism.

The Program is principally designed to target fisheries management institutions of the CARICOM region: national fisheries divisions; and regional research and management institutions such as the CARICOM Secretariat, the University of the West Indies and the Fisheries Unit of the Organization of Eastern Caribbean States (OECS).

In order to permit an evaluation of the impact of the Program, a baseline survey with three components has been undertaken. These are described in the Management Plan, and are: a Fisheries Division Component, and Institutional Component, and a Community Component.

This document describes the Institutional Component of the Baseline Survey. The objective of this component of the survey is to determine the nature and extent of fisheries research carried out by regional institutions in CFRAMP participating countries, and how these institutions and their research influence fisheries management at the regional and national levels. Both pure and applied research of relevance to fisheries are considered.

The institutions, or units within institutions, listed below, were considered for inclusion in the study, and those indicated with a bullet (●) were either sent a questionnaire, or visited, and the questionnaire administered by a CFRAMP staff member. The three units which were not ultimately included in the survey, were excluded because examination of University Departmental Reports indicated that they were not engaged in any fishery related research. Nine of the institutions, indicated by a tick (✓), replied, either in full or part, to the questionnaire.

- BELLAIRS RESEARCH INSTITUTE, BARBADOS ✓
- CARIBBEAN CONSERVATION ASSOCIATION (CCA), BARBADOS ✓
- CARIBBEAN METEOROLOGICAL INSTITUTE, BARBADOS
- CARIBBEAN NATURAL RESOURCES INSTITUTE (CANARI), ST. LUCIA •
- CARIBBEAN ENVIRONMENTAL PROGRAM, REGIONAL COORD. UNIT (CEP RCU), JAMAICA •
- CARIBBEAN ENVIRONMENTAL HEALTH INSTITUTE (CEHI), ST. LUCIA •
- INSTITUTE OF MARINE AFFAIRS (IMA), TRINIDAD AND TOBAGO ✓
- OECS, NATURAL RESOURCES MANAGEMENT UNIT, ST. LUCIA •
- UNITED NATIONS ECONOMIC COMMITTEE FOR LATIN AMERICA AND THE CARIBBEAN (UN ECLAC), TRINIDAD •
- UNIVERSITY COLLEGE OF BELIZE ✓
- UNIVERSITY OF GUYANA •
- UNIVERSITY OF THE WEST INDIES
 - CENTRE FOR MARINE SCIENCES, MONA ✓
 - INSTITUTE FOR SOCIO-ECONOMIC RESEARCH (ISER), ALL CAMPUSES ✓
 - FACULTY OF SOCIAL AND POLITICAL STUDIES, MONA
 - CENTRE FOR RESOURCE MANAGEMENT AND ENVIRONMENTAL STUDIES (CERMES), CAVE HILL ✓
 - BIOLOGY DEPT., CAVE HILL ✓
 - FACULTY OF SOCIOLOGY AND POLITICAL STUDIES, CAVE HILL
 - FACULTY OF NATURAL SCIENCES, ST. AUGUSTINE ✓

Of the respondents seven were either departments of, or closely related to, universities. There is a high degree of staff overlap between BRI and the BDCH, so many of their responses were very similar.

MANDATE, OBJECTIVES AND FOCUS OF FISHERIES RESEARCH

- *What are the mandate and objectives of your institution?*

Due to their links with universities, education and training were the primary objectives of many of the institutions surveyed (BRI, BDCH, CERMES, ISER, UCB, ZD/DBML & NSSA). IMA's remit was solely for fisheries research with emphasis on stock assessment, not management. The CCA's main aim was the promotion and coordination of programmes contributing to conservation.

The resources of each of the responding institutions in 1990 are summarised in Table 1 (information for 1986-1989 can be found in Appendix 2). The details of fisheries research staff at each institution are shown in Table 2. Several of the individuals are shared among the three institutions listed in Barbados. This considered, there was a total of 23 individuals -- 13 Ph.D., 5 M.Sc. and 5 B.Sc. -- working on fisheries and related topics in the CARICOM region. Closer inspection of Table 2 indicates that only 14 individuals are working specifically on fisheries -- 7

Ph.D., 3 M.Sc., 4 B.Sc. Several of these individuals are also active in related fields, for example marine conservation, and have administrative and teaching commitments.

- *What proportion of the research conducted by your institution is of a pure scientific nature? Of an applied nature?*

Five of the institutions (CCA, CERMES, ISER, UCB & ZD/DBML) indicated that their research was primarily applied nature, in some cases 100% applied research (ISER, CCA & ZD/DBML). BDCH, BRI and NSSA have a 50%:50% split between pure scientific and applied research, whereas only the IMA did more pure scientific research than applied (60%:40%).

- *What has been the main focus of fisheries research projects conducted by your institution over the past five years?*

The information submitted by the institutions as to the main focus of their fisheries research over the past five years differed in the degree of detail given. Therefore, it was impossible to quantify the results. All of the institutions, exception UCB and CCA, had been directly involved in fisheries research projects during the last five years:

- Biology and assessment of flyingfish (BRI, BDCH & IMA),
- Biology, assessment and management of sea urchins (BRI & BDCH),
- Conservation of marine turtles (BRI & BDCH),
- Effects of mesh size and ghost fishing on fish trap catches (BRI & BDCH),
- Stock structure and trends in abundance of large pelagics (BRI, BDCH & CERMES),
- Other fisheries management studies (CERMES, ISER & ZD/DBML),
- Socio-economic studies (ISER),
- Aquaculture (NSSA),
- Oceanographic surveys (NSSA)

The numbers and types of publications relating to fisheries research over the years 1986-1990, are summarised for these institutions in Table 3. This information was extracted from institutional reports submitted by the institutions, and from the UWI Departmental Reports published by the University.

Table 1. Summary of resources for institutions in 1990

TYPE OF RESOURCE	INSTITUTION								
	BRI	BDCH	CCA	CERMES	IMA	ISER	UCB	ZD/DBML	NSSA
Annual Operating Budget (\$Can./1000)	227	571	NI	NI	90	NI	553	NI	19
Annual Capital Budget (\$Can./100)	13	23	NI	NI	NI	NI	NI	NI	3
Vehicles	4	1	NI	NI	1	1	1	NI	1
Fishing Research Vessels	2	2 ¹	NI	NI	1	NI	NI	NI	NI
Researchers	30 ²	8 ³	NI	2	4	6	2	5	3
Support Staff	11	10	NI	3	1	10	3	NI	4
Document. Centre	No	Yes	No	Yes		Yes	Yes	Yes	Yes
Library	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inter-Lib. Loan	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes

NI - No information.

¹ - BDCH have use of BRI resources.

² - Includes visiting researchers.

³ - Includes 3 shared with BRI.

Table 2. Details of fisheries researchers at institutions in 1990

1990 Data. FISHERIES RESEARCHERS	INSTITUTION								
	BRI	BDCH	CCA	CERMES	IMA	ISER	UCB	ZD/DBML	NSSA
Number	8 ¹	2	N/A	2	4	1	None	5	5
Male/Female	4/4	1/1		0/2	1/3	1/0		3/2	5/0
Ph.D.	6	2		2	2	-		1	4
M.Sc. / M.Phil.	1	-		-	1	1		1	1
B.Sc.	1	-		-	1	-		3	-

¹ Includes 2 shared with BDCH, one shared with CERMES and 4 other part-time individuals

Table 3. A summary of fisheries research publication outputs by the institutions which were surveyed

Year	Publication Type	INSTITUTIONS								
		BRI	BDCH	CCA	CERMES	DMA	ISER	UCB	ZD/ DBML	NSSA
1986	1 st	6	5	NI	0	1	NI	NI	0	0
	2 nd	6	2	NI	0	4	NI	NI	0	0
	3 rd	2	2	NI	0	1 (3)	NI	NI	0	0
	Theses	1	1	NI	0	0	NI	NI	0	0
1987	1 st	2	1	NI	0	1	NI	NI	0	0
	2 nd	8 (1)	1	NI	0	6	NI	NI	1	0
	3 rd	1 (2)	0	NI	0	1 (1)	NI	NI	0	0
	Theses	2	0	NI	0	0	NI	NI	0	0
1988	1 st	1 (1)	2	NI	0	2 (1)	NI	NI	1 (3)	0
	2 nd	1	0	NI	0	1	NI	NI	1 (1)	0
	3 rd	1 (1)	0	NI	0	1	NI	NI	0	0
	Theses	0	0	NI	0	1	NI	NI	0	0
1989	1 st	(2)	0	NI	1	2 (1)	NI	NI	(3)	0
	2 nd	1 (1)	0	NI	0	2 (1)	NI	NI	3 (4)	1
	3 rd	1 (1)	(1)	NI	0	1	NI	NI	0	0
	Theses	3	0	NI	0	0	NI	NI	0	0
1990	1 st	(2)	0	NI	0	4 (4)	NI	NI	0	1
	2 nd	2 (1)	1	NI	6	0	NI	NI	0	0
	3 rd	1	1	NI	0	2 (1)	NI	NI	0	0
	Theses	0	0	NI	0	2	NI	NI	0	0

1st - Refereed journals, books and conference proceedings.

2nd - Technical reports, series, FAO publications & non-refereed conference proceedings.

3rd - Others, i.e. Governmental reports, educational publications etc.

() - Parentheses indicate publications relating to marine issues, not directly fisheries.

NI - No information.

CONSTRAINTS ON FISHERIES RESEARCH

- *What are the main constraints to conducting fisheries research in the region? How might these be overcome?*

There was a general consensus that lack of funding was the major constraint to conducting fisheries research (BRI, BDCH, CCA, CERMES, UCB, ZD/DBML & NSSA). Other limitations included:

- poor regional communications (CCA),
- lack of socio-economic data (ISER),
- lack of trained personnel (ZD/DBML & NSSA).

- *In what ways does the process of securing funds affect the nature and extent of fisheries research?*

The responses indicated that too much time has to be devoted to securing too little funds, and that delays in releasing funds could result in seasonal data being lost (CCA). ISER was also of the opinion that there was a bias towards biological rather than socio-economic studies.

- *Are the information resources (libraries, documentation centres, interlibrary loan services, fisheries publications, fisheries newsletters, etc.) available in the region sufficient for conducting fisheries research? If not, please indicate the areas of deficiency and how these could be remedied.*

All the institutions had libraries, documentation centers and/or reprint collections, and were involved in providing inter-library loans¹. The institutions indicated that they were generally able to access primary literature directly or via inter-library loans. However more specialised literature could be difficult to acquire (BRI, BDCH & CERMES). The CCA, indicated that some system of networking the centres could alleviate problems in accessing those resources. In contrast, ISER noted that there was an acute shortage of reliable and valid socio-economic data to be found.

¹ Authors note. Although institutions did not provide details of their library holdings in the area of fisheries, most of the major journals and newsletters which are relevant to fisheries and the marine sciences are available at libraries within the region, often at all three UWI campuses.

NATIONAL FISHERIES MANAGEMENT

- *What contribution does your staff or institution make to fisheries management in individual countries? Please specify types of input provided, how often provided and to whom it is provided.*

Most of the institutions, with the exception of the IMA, worked through the Fisheries Divisions of individual countries. They provided examples of their input:

- General advice and consultation (BRI, BDCH, CCA, CERMES & NSSA),
- Implementation of management of sea urchin fishery (BRI & BDCH),
- Turtle conservation measures (BRI & BDCH),
- Trawl net mesh size (IMA),
- Establishment of aquaculture farm (NSSA),
- Fishing impact on Montego Bay Marine Park, Jamaica (CCA),
- Socio-economic studies in Jamaica and Belize (ISER),
- Fishery data collection in Dominica as an element of IDRC/ECFFP (CERMES),
- Anguilla coastal zone management project (CERMES).

- *What aspects or elements of national fisheries management do you consider the most successful? Please indicate why.*

National fisheries management programs that were thought to have been successful included:

- Implementation of strategies to rebuild sea urchin stocks (BRI & BDCH),
- Fishery cooperatives in Belize (UCB),
- Jamaican management of some high value export fisheries (ZD/DBML),
- Inter-governmental agreements (NSSA),
- The development of fishery complexes in Barbados (CERMES),
- Stock assessments and fishery data collection (BRI, BDCH & NSSA).

- *What aspects or elements of national fisheries management do you consider the least successful? Please indicate why.*

Five institutions considered that the major shortcoming in national management five institutions was the failure to enforce current fisheries regulations (BRI, BDCH, CERMES, IMA & UCB). IMA noted that current fisheries statistics were patchy at best and CERMES observed that there was insufficient emphasis on stock assessment. ISER perceived the implementation of fisheries management by biologists as an impediment. Human resource development was also seen to be inadequate in this sector (NSSA).

REGIONAL FISHERIES MANAGEMENT

- *How has the fishery in the region benefitted from the research conducted at your institution? Please provide specific examples.*
- *What contribution does your staff or institution make to fisheries management at the regional level? Please specify types of input provided, how often provided and to whom it is provided.*

Several institutions were involved in fisheries management activities at the regional level (BRI, BDCH, IMA, ZD/DBML & NSSA). Some gave specific examples, whilst others stated only that they were active in contributing advice. CERMES and ISER stated that they had been established too recently to have had any significant effect on regional fisheries. CCA and UCB were not involved in this type of activity. IMA had no input to regional management as this was outside its mandate.

The input of institutions into regional fisheries management included:

- Flyingfish and turtle projects (BRI, CERMES & BDCH),
 - Participation in regional meetings and workshops at the technical and organisational levels i.e. GCFI, FAO, OECS and WECAFC (BRI, BDCH, CERMES & ZD/DBML),
 - Regional consulting services (ISER, BRI, BDCH).
- *What aspects or elements of regional fisheries management do you consider the most successful? Please indicate why.*

In the Eastern Caribbean the harmonisation of FAO/OECS regulations was regarded as a successful regional initiative (BRI, BDCH, CERMES). Regional meetings and workshops were perceived as making a significant contribution by providing a fora for the exchange of information (CERMES).

- *In your opinion, what are the most pressing issues facing fisheries management at the regional level? How might these be overcome?*

BRI and BDCH felt that the lack of successful management/coordination at the regional level was mainly due to the limited number of attempts. CERMES considered that the lack of a regional framework resulted in duplicated, disorganised efforts along with insufficient quantitative stock assessment data on which to base management measures. ISER was concerned that there may be an excessive emphasis on biology rather than the fisheries as a whole. IMA was of the opinion that regional fisheries management was not very successful. NSSA reiterated the need for adequate human resource development in the region.

Overall it was recognized that the most pressing issues facing regional fisheries management were:

- The need for better stock assessment, catch, effort and economic data on which to base fisheries management decisions (BRI, BDCH, CERMES, NSSA).
- The need for a regional framework for cooperation and the necessity for adequate training in the fields of fisheries management (BRI, BDCH,),
- The heterogeneity of regional fisheries should be noted and they should be treated in an appropriate way (IMA).
- The enforcement of fisheries regulations was also regarded with importance (BRI, BDCH, ISER).

SUMMARY AND CONCLUSIONS

Fisheries research falls within the scope and objectives of several institutions in CARICOM Member States, most of them associated with educational institutions. None has fisheries as its primary focus. The research has been primarily biologically oriented. Only ISER has a socioeconomic focus, and this has been quite recent. There is a growing awareness among fishery managers that it is essential to understand the socioeconomic implications of proposed management measures. Although the CFRAMP Management Plan does indicate that some socioeconomic work will be undertaken, it is unlikely to be able to meet all of the requirements for fishery management in this field. Therefore, it may be appropriate for CFRAMP to encourage interested institutions to seek funding for complementary studies in socioeconomics, and to work towards establishing linkages with these institutions to facilitate their inputs to fisheries management.

In addition to the deficiency in socioeconomic studies in fisheries, there are several major resource types which are not addressed by those individuals who are oriented towards biology and stock assessment, for example, lobster, conch, large pelagics, and shrimps. Most research was indicated as being at a local level, with the Eastern Caribbean Flyingfish Project, a subregional initiative, being the main exception. The fact that institutions could cite instances of having made inputs to fisheries management at the national level, but referred primarily to participation in meetings and workshops at the regional level, is consistent with the preceding observation.

Given the wide range of fishery resources which exist in the CARICOM region, and the diversity of fishery types exploiting them, the degree of fishery research activity is relatively low. Difficulty in obtaining funding, and a lack of trained researchers are cited as the main constraints to fisheries research. Most of the individuals are associated with universities, and are therefore free to pursue their own research interests or to shift them to other topics as sources of funding change. Given the recent emphasis on environmental issues and the resulting increases in available funding for environmental research, several of the fisheries researchers in educational institutions may shift their focus towards these issues in response to available funding. If so, there may be a decrease in fisheries research activity in the surveyed institutions.

during the next few years, unless steps are taken to create new, fisheries specific positions, and to stimulate research in the area of fisheries.

Despite expressing considerable interest in the activities of CFRAMP, most institutions provided very brief responses, and indicated that it was an imposition to complete the survey questionnaire. This is probably due to the large number of similar requests for information which they receive from the many agencies which are active in the Caribbean region. It also indicates that the potential benefits of interacting with CFRAMP are not immediately obvious to these institutions. CFRAMP will therefore have to take the lead in establishing linkages with these institutions in order to facilitate their fullest possible participation in the Program, and to optimise the potential for the individuals in these institutions to contribute to fisheries management.

APPENDIX 1: DETAILED ANSWERS TO THE QUESTIONNAIRES.

CARICOM FISHERIES RESOURCE ASSESSMENT AND MANAGEMENT PROGRAM (CFRAMP)

BASELINE SURVEY ON THE ROLE OF REGIONAL INSTITUTIONS IN FISHERIES RESEARCH AND MANAGEMENT

Note: The objective of this questionnaire is to determine the nature and extent of fisheries research carried out by regional institutions in the Caribbean, and how these institutions and this research influence fisheries management at the regional and national levels. Research is defined to include scientific and applied research, as well as resource assessment.

1. *What are the mandate and objectives of your institution?*

Bellairs Research Institute:

- To conduct pure and applied research in the marine sciences
- To provide a base for conducting courses and workshops in the above field

Biology Department, UWI, Cave Hill:

- To conduct pure and applied research in the biological sciences
- To offer undergraduate and graduate training in the biological sciences

CCA:

- Promotion and coordination of policies programmes and practices which contribute to the conservation protection and the wise use of natural and cultural resources to enhance the quality of life for present and future generations.

CERMES:

- Upgrading and widening the knowledge, training and skills of government and private sector decision makers with responsibility for environmental matters.
- Increasing the regions pool of expertise at the management level of resource and environmental planning.
- Conducting research relevant to environmental management, and to act as a repository for any other research and project information related to this subject in the Caribbean.
- Heightening of public awareness on matters of environmental importance.

IMA:

- To conduct fisheries research only (not management nor extension) with emphasis on stock assessment of commercially important species.

ISER:

- Social and economic research, publication, and resource centre to promote social and economic development

UCB:

- Teaching and research in the following areas:
 - Business Administration
 - Education (Bachelors degree)
 - Non-degree technical programs e.g. nursing, surveying

UWI, Mona, Jamaica:

- To co-ordinate and develop all aspects of marine science training and research within the University of the West Indies and to provide research and training services for the territories which contribute to the university system.

UWI, Faculty of Natural Sciences, St. Augustine:

- To provide a place or places of education, learning and research of a standard required and expected of a university of the highest standard, and to secure the advancement of knowledge and the diffusion and extension of arts, sciences and learning throughout the contributing territories.

2. *What has been the main focus of fisheries research projects conducted by your institution over the past five years?*

Bellairs Research Institute:

- Biology and assessment of flyingfish
- Biology, assessment and management of sea urchins
- Conservation of marine turtles

- Effects of mesh size and ghost fishing on fish trap catches
- Effects of environmental deterioration on coral reef habitats
- Recruitment processes limiting reef fish populations on natural and artificial reefs
- Stock structure and trends in abundance of large pelagics

Biology Department, UWI, Cave Hill:

NB: Most fisheries research has been conducted in collaboration with Bellairs Research Institute.

- Biology and assessment of flyingfish
- Biology, assessment and management of sea urchins
- Conservation of marine turtles
- Effects of mesh size and ghost fishing on fish trap catches
- Stock structure and trends in abundance of large pelagics

CCA:

(None on file) - However the association has been involved in a project to establish artificial reefs in Montserrat to boost fish stocks (prior to the last five years)

CERMES:

- Community based management
 - Snapper assessment
 - Eastern Caribbean pelagics
- (There have been various specific Masters and Diploma studies, but the fisheries component of CERMES has not been established for long enough to have a particular thrust)

IMA:

- Research into the biology of coastal pelagic (*Scomberomorus cavalla*) and the biology and energetics of demersal (*Micropogonias furnieri*) fish. Also started work on Tobago fish pot fishery, with emphasis on snappers and Tobago flying fish fishery. Limited work on tagging mackerel (*S. cavalla* and *S. brasiliensis*) also carried out.

ISER:

- Socio-economic study of small-scale fisheries in Jamaica, 1990 (Espeut)
- Socio-economic study of oyster farming in Jamaica, 1990 (Espeut and Lalta)
- Belize/Jamaica reef fish fisheries management project, 1991 (Espeut)

UCB:

- No fisheries research

UWI, Mona, Jamaica:

- Reef fisheries management

UWI, Faculty of Natural Sciences, St. Augustine:

- Aquaculture
- Oceanographic work

3. *What proportion of the research conducted by your institution is of a scientific nature? Of an applied nature?*

Bellairs Research Institute:

- Half and half

Biology Department, UWI, Cave Hill:

- Half and half

CCA:

- Scientific: 0%, Applied: 100%

CERMES:

- All applied

IMA:

- 60% Research, 40% Applied

ISER:

- 100% applied

UCB:

- Scientific research = 0%
- Applied sociology = 90%
- Various applied = 10%

UWI, Mona, Jamaica:

- In fisheries research 100% applied

UWI, Faculty of Natural Sciences, St. Augustine:

- 50% Scientific, 50% Applied

4. *How has the fishery in the region benefitted from the research conducted at your institution? Please provide specific examples.*

Bellairs Research Institute:

- Demonstrated that flyingfish were annual and were an internationally shared resource
- Partial recovery of the sea urchin fishery and implementation of management measures to sustain it
- Increased public awareness of the status of turtles and the measures required to conserve them; stimulation of recovery through nest relocations and headstarting
- Guided the selection of sewage outfall location to minimise environmental impacts.

Biology Department, UWI, Cave Hill:

- Demonstrated that flyingfish were annual and were an internationally shared resource
- Partial recovery of the sea urchin fishery and implementation of management measures to sustain it
- Increased public awareness of the status of turtles and the measures required to conserve them; stimulation of recovery through nest relocations and headstarting

CCA:

- Not applicable.

CERMES:

- CERMES is too new to have had a measurable impact

IMA:

- Mesh size of 3.5 cm regulated for cod ends of fish trawl nets as gazetted on 13 March 1989 (section 4 Fisheries Act) resulted from research carried out by staff of IMA in conjunction with Fisheries Division, Ministry of Food Production and Marine Exploitation.

ISER:

- Too soon to say

UCB:

- Not applicable

UWI, Mona, Jamaica:

- Provision of recommendations on fisheries management for regional governments.

UWI, Faculty of Natural Sciences, St. Augustine:

- Has assisted considerably in the establishment of aquaculture farm, e.g. Caroni Ltd.
- Also considerable advice have been given on marine fishing.

5. *What are the main constraints to conducting fisheries research in the region? How might these be overcome?*

Bellairs Research Institute:

- Lack of funding for permanent staff and basic operations
- Difficulty of rapidly mobilising small sums of funds to address specific fishery problems

Biology Department, UWI, Cave Hill:

- Lack of funding for permanent staff and basic operations
- Difficulty of rapidly mobilising small sums of funds to address specific fishery problems

CCA:

- Funding
- Poor communication/cooperation
- Training in grant writing and fund raising
- Greater intra-regional inter agency networking communication

CERMES:

- Lack of trained personnel
- Lack of capital for infrastructure, vessels, gear, etc.

IMA:

- Lack of access to a suitable vessel to carry out trawling and other fishing activities for research purposes or funds to charter such vessels.

ISER:

- Lack of data of a socio-economic nature. Most data are collected by biologists and are not suitable for socio-economic analysis.

UCB:

- Lack of funding

UWI, Mona, Jamaica:

- Trained researchers and adequate funding for their support. Individuals tend not to enter the field unless they can identify a long term career prospect, and competitive salaries.

UWI, Faculty of Natural Sciences, St. Augustine:

- Funding is one of the main constraints to further research. In addition the development of a cadre of top fisheries scientist. Adequate funding by appropriate agencies is necessary. Provision of adequate opportunities for fisheries scientists is also necessary.

6. *In what ways does the process of securing funds affect the nature and extent of fisheries research?*

Bellairs Research Institute:

- A large proportion of time must be devoted to preparing proposals and securing funds. This diminishes the time available for implementing research activities.

Biology Department, UWI, Cave Hill:

- A large proportion of time must be devoted to preparing proposals and securing funds. This diminishes the time available for implementing research activities.

CCA:

- Delays due to administrative release of funds can result in valuable data being lost eg. seasonally related information, baseline studies, pre- or post- disturbance studies etc.

CERMES:

- Funds are usually available in small amounts, therefore acquisition, i.e. preparation of proposals and dealing with bureaucracy, consumes too high a proportion of time.

IMA:

- More funds would enable more research.

ISER:

- Research funds can be secured, the main problem is that fishery research is managed by biologists, who may not feel the need for professional socio-economists.

UCB:

- Not applicable

UWI, Mona, Jamaica:

- In general we only obtain funding for research of an applied nature - the extent of the research depends on the size of the grant.

UWI, Faculty of Natural Sciences, St. Augustine:

- Training of scientists
- Implementation of various fisheries projects

7. *Are the information resources (libraries, documentation centres, interlibrary loan services, fisheries publications, fisheries newsletters, etc.) available in the region sufficient for conducting fisheries research? If not, please indicate the areas of deficiency and how these could be remedied.*

Bellairs Research Institute:

- Adequate information is usually available, but much of the applied fishery research is in the 'grey' literature, which is difficult to access. Accessing the primary literature is facilitated by the BRI connection with McGill University.

Biology Department, UWI, Cave Hill:

- Adequate information is usually available, but much of the applied fishery research is in the 'grey' literature, which is difficult to access.

CCA:

- The problem seems to be one of inability to have easy access to these info- resources. There is no efficient networking between territories and between documentation centres. The establishment of a database network would do much to alleviate this problem.

CERMES:

- Basic literature (the main fishery journals, report series etc.) is available, but specialist literature is not, and must be acquired via interlibrary loan.

IMA:

- There are 3 libraries servicing fisheries research. About 75% of English language fisheries research publications are available, as well as overseas interlibrary services.

ISER:

- Institutions abound, but not the data. There is an acute shortage of reliable and valid socio-economic data

UCB:

- These resources are minimal at UCB

UWI, Mona, Jamaica:

- The answer is site specific. At UWI the answer is "yes" because we have easy access to inter library loans. If one works in other institutions it may not be so easy.

UWI, Faculty of Natural Sciences, St. Augustine:

- These are satisfactory. The Institute of Marine Affairs is a regional data base centre.

8. *What contribution does your staff or institution make to fisheries management at the regional level? Please specify types of input provided, how often provided and to whom it is provided.*

Bellairs Research Institute:

- See question 4,
- Participation in regional meetings when invited
- Provision of consulting services

Biology Department, UWI, Cave Hill:

- See question 4,
- Participation in regional meetings when invited
- Provision of consulting services

CCA:

- Funding for regional fishermen to attend two workshops was last provided six years ago.

CERMES:

- CERMES makes ad hoc advisory inputs:
- Barbados/Trinidad flyingfish negotiations
- OECS 2nd Workshop
- Membership on GCFI board
- IDRC flyingfish project (UWI Biology, McGill, Bellairs)

IMA:

- None, except for the occasional accessing of information or provision of copies of fisheries articles.

ISER:

- Consulting services to FAO
- Consulting services to Fisheries Divisions, Jamaica and Belize
- Assistance with sample survey of fishery industry periodically undertaken by the Govt. of Jamaica

UCB:

- None

UWI, Mona, Jamaica:

- Contributions made at regional meetings and workshops.

UWI, Faculty of Natural Sciences, St. Augustine:

- Our staff liaise with the Institute of Marine Affairs which has a regional focus.

9. *What contribution does your staff or institution make to fisheries management in individual countries? Please specify types of input provided, how often provided and to whom it is provided.*

Bellairs Research Institute:

- Direct interaction with Barbados Fishery Division in formulating management approaches as often as requested

Biology Department, UWI, Cave Hill:

- Direct interaction with Barbados Fishery Division in formulating management approaches as often as requested

CCA:

- Baseline studies
- To be implemented within the next 6 months
- Jamaica (the impact of fishing industry on the Montego Bay Marine Park area)

CERMES:

- CERMES makes ad hoc advisory inputs:
- Barbados Fishery Division, advice on various aspects of Management
- Dominica fishery data collection, as part of the IDRC ECFFP
- Anguilla Coastal Zone Management (study of areas for reserves).
- Antigua, via Diploma Projects
- St. Lucia, via MSc project on snapper, and via Diploma Projects
- Trinidad, via Diploma Projects

IMA:

- As above. (Question 8).

ISER:

- Jamaica: (a) south coast socio-economic study, (b) assistance with sample survey
- Belize: Socio-economic survey

UCB:

- None, but there is some interaction with the Fisheries Department

UWI, Mona, Jamaica:

- It is not provided on a regular basis and is primarily through research reports and the recommendations contained therein

UWI, Faculty of Natural Sciences, St. Augustine:

- Staff liaises with various agencies such as:-
- Ministry of Agriculture & Food Production in fisheries projects.
- Providing advice to the Agricultural Development Bank which provides loans in the fisheries sector.

10. *What aspects or elements of regional fisheries management do you consider the most successful? Please indicate why.*

Bellairs Research Institute:

- FAO/OECS harmonised regulations and ICOD/OECS/FAO Data Collection activities are promising initiatives, the success of which depend on country by country implementation

Biology Department, UWI, Cave Hill:

- FAO/OECS harmonised regulations and ICOD/OECS/FAO Data Collection activities are promising initiatives, the success of which depend on country by country implementation

CCA:

- Don't Know.

CERMES:

- OECS Harmonised legislation, which has raised Member State consciousness of fishery management issues.
- Information sharing at international meetings such as WECAFC, GCFI and OECS, which have been the primary means of communication among fishery researchers.

IMA:

- There is little or none.

ISER:

- Design of management strategies

UCB:

- Not applicable

UWI, Mona, Jamaica:

- No reply

UWI, Faculty of Natural Sciences, St. Augustine:

- Trinidad and Tobago has recently concluded agreements with Venezuela and Barbados. Much work is however necessary on stock assessments.

11. *What aspects or elements of regional fisheries management do you consider the least successful? Please indicate why.*

Bellairs Research Institute:

- The lack of success in regional fisheries management is best perceived in the context of the limited number of attempts, rather than in the attempts which have failed.

Biology Department, UWI, Cave Hill:

- The lack of success in regional fisheries management is best perceived in the context of the limited number of attempts, rather than in the attempts which have failed.

CCA:

- Don't Know.

CERMES:

- The lack of a regional framework for management and research. This results in duplication of efforts and disconnected, disorganised efforts.
- Lack of quantitative stock assessment on which to base management measures
- The lack of a management planning framework for shared resources.

IMA:

- Same. (Question 10).

ISER:

- Implementation of management strategies: biologists cannot manage fishermen.

UCB:

- Not applicable

UWI, Mona, Jamaica:

- No reply.

UWI, Faculty of Natural Sciences, St. Augustine:

- Human resource development in this field is perhaps the least successful aspect. Without adequate human resources this sector cannot develop to assist with regional development.

12. *What aspects or elements of national fisheries management do you consider the most successful? Please indicate why.*

Bellairs Research Institute:

- Maintenance of an appropriate time-series of fishery data
- Support of the moratorium on sea urchin fishing as part of a strategy to rebuild stocks

Biology Department, UWI, Cave Hill:

- Maintenance of an appropriate time-series of fishery data
- Support of the moratorium on sea urchin fishing as part of a strategy to rebuild stocks

CCA:

- Don't Know.

CERMES:

- For Barbados, the development of fishing infrastructure, namely fishery complexes.

IMA:

- Research up to date reasonably successful. Management restricted to inadequate collection of fisheries statistics. (Strong in some areas, weak or non existent in others). Legislation reasonably adequate with 2 regulations pertinent to present day fisheries management but enforcement not adequate.

ISER:

- Design of management strategies

UCB:

- Establishment and management of cooperatives

UWI, Mona, Jamaica:

- Management of those elements of the fishery which are high priced and export orientated.

UWI, Faculty of Natural Sciences, St. Augustine:

- Trinidad and Tobago has recently concluded agreements with Venezuela and Barbados. Much work is however necessary on stock assessments.

13. *What aspects or elements of national fisheries management do you consider the least successful? Please indicate why.*

Bellairs Research Institute:

- Failure to enforce fisheries regulations

Biology Department, UWI, Cave Hill:

- Failure to enforce fisheries regulations

CCA:

- Don't Know.

CERMES:

- Enforcement of legislation currently in place,

- Stock assessment

IMA:

- As above. (Question 12).

ISER:

- Implementation of management strategies: biologists cannot manage fishermen.

UCB:

- Enforcement of fishing regulations

UWI, Mona, Jamaica:

- Artisanal fishery. Lack of political will

UWI, Faculty of Natural Sciences, St. Augustine:

- Human resource development in this field is perhaps the least successful aspect. Without adequate human resources this sector cannot develop to assist with regional development.

14. *In your opinion, what are the most pressing issues facing fisheries management at the regional level? How might these be overcome?*

Bellairs Research Institute:

- Need for better catch, effort, and economic data on fisheries
 - Need for better information on the status and potential yields of fishery resources
 - Need for regional mechanisms for management
 - Need for national management systems including enforcement
- These could be overcome by successful implementation of CFRAMP and support for regional institutions involved in fisheries research.

Biology Department, UWI, Cave Hill:

- Need for better catch, effort, and economic data on fisheries
 - Need for better information on the status and potential yields of fishery resources
 - Need for regional mechanisms for management
 - Need for national management systems including enforcement
- These could be overcome by successful implementation of CFRAMP and support for regional institutions involved in fisheries research.

CCA:

- Don't Know

CERMES:

- Stock assessment, particularly of shared resources
- The need for a regional framework for cooperation

IMA:

- Lack of cooperation
- Different types of fisheries. e.g. continental shelf fisheries (Trinidad) vs island shelf and reef fisheries.

ISER:

- Illegal fishing
- Definition of EEZs

UCB:

- Not applicable

UWI, Mona, Jamaica:

- Jurisdiction over shared resources and protection of national fishing rights.

UWI, Faculty of Natural Sciences, St. Augustine:

- Stock assessment is one of the most pressing issues. A regional programme is being developed to deal with this matter.
- Human resources. It is necessary to ensure that adequate training is available in the various areas of fisheries management.

Table 1: Bellairs Research Institute, Barbados
Structure, Organization and Function of Fisheries Research Institutions
Resources Available to Institution

Type of Resource	1986	1987	1988	1989	1990
Financial Resources					
Annual Operating Budget (BD\$)	0.300 M	0.311 M	0.350 M	0.372 M	0.398 M
Annual Capital Budget (BD\$)	0.020 M	0.016 M	0.015 M	0.018 M	0.022 M
Physical Resources					
Vehicles (#)	3	2	2	4	4
Fishing Research Vessels (#)	2	2	2	2	2
Other research facilities (Specify type of facilities on a separate sheet if information is not available in either annual reports or brochures)	See attached				
Personnel Resources					
Number of Researchers (includes visiting scientists)	18	22	23	27	30
Number of Support Staff	10	11	11	11	11
Information Resources					
Does your institution have a Documentation Centre?	No				
Does your institution have a library?	Yes				
Does your library offer an Interlibrary Loan Service?	Yes				
What other information resources are available at your institution?	Extensive reprint collection				
From what organizations do you receive fisheries publications? U.S. Dept. Comm. (US Fishery Bulletin); Fisheries and Oceans Canada (Can. J. Fish. Aquat. Sci.); American Fisheries Society (Transactions, Bulletin); Eastern marine Fisheries Dev. Centre, Thailand; ICLARM; ICCAT; FAO; GCFI; OECS; IDRC; <i>inter alia</i>					
To what organizations do you send fisheries publications? Most of the above, on request					

Table 1: Biology Dept., UWI, Cave Hill
Structure, Organization and Function of Fisheries Research Institutions
Resources Available to Institution

Type of Resource	1986	1987	1988	1989	1990
Financial Resources					
Annual Operating Budget (BD\$)	0.800 M	0.875 M	0.920 M	0.980 M	1.000 M
Annual Capital Budget (BD\$)	0.025 M	0.032 M	0.030 M	0.038 M	0.041 M
Physical Resources					
Vehicles (#)	1	1	1	1	1
Fishing Research Vessels (#)	Use Bellairs				
Other research facilities (Specify type of facilities on a separate sheet if information is not available in either annual reports or brochures)	See attached sheet				
Personnel Resources					
Number of Researchers	6	6	8	8	8
Number of Support Staff	8	8	10	10	10
Information Resources					
Does your institution have a Documentation Centre?	Yes; main UWI, Cave Hill library				
Does your institution have a library?	Yes; main UWI, Cave Hill library				
Does your library offer an Interlibrary Loan Service?	Yes				
What other information resources are available at your institution?	None				
From what organizations do you receive fisheries publications?	Same as Bellairs				
To what organizations do you send fisheries publications?	Same as Bellairs				

Table 1: Caribbean Conservation Association
Structure, Organization and Function of Fisheries Research Institutions
Resources Available to Institution

Type of Resource	1986	1987	1988	1989	1990
Financial Resources					
Annual Operating Budget (\$)	NI	NI	NI	NI	NI
Annual Capital Budget (\$)	NI	NI	NI	NI	NI
Physical Resources					
Vehicles (#)	0	0	0	0	0
Fishing Research Vessels (#)	0	0	0	0	0
Other research facilities (Specify type of facilities on a separate sheet if information is not available in either annual reports or brochures)	0	0	0	0	0
Personnel Resources					
Number of Researchers	0	0	0	0	0
Number of Support Staff	0	0	0	0	0
Information Resources					
Does your institution have a Documentation Centre?	NI				
Does your institution have a library?	Yes				
Does your library offer an Interlibrary Loan Service?	No				
What other information resources are available at your institution?	Audiovisual				
From what organizations do you receive fisheries publications?	None				
To what organizations do you send fisheries publications?	None				

NI - No Information

Table 1: CERMES, UWI, Cave Hill
Structure, Organization and Function of Fisheries Research Institutions
Resources Available to Institution

Type of Resource	1986	1987	1988	1989	1990
Financial Resources					
Annual Operating Budget (\$)	NI	NI	NI	NI	NI
Annual Capital Budget (\$)	NI	NI	NI	NI	NI
Physical Resources					
Vehicles (#)	NI	NI	NI	NI	NI
Fishing Research Vessels (#)	NI	NI	NI	NI	NI
Other research facilities (Specify type of facilities on a separate sheet if information is not available in either annual reports or brochures)	NI	NI	NI	NI	NI
Personnel Resources					
Number of Researchers	NI	NI	NI	NI	NI
Number of Support Staff	NI	NI	NI	NI	NI
Information Resources					
Does your institution have a Documentation Centre?	Yes				
Does your institution have a library?	Main UWI Library				
Does your library offer an Interlibrary Loan Service?	Yes				
What other information resources are available at your institution?	UWI, Learning Resources Centre				
From what organizations do you receive fisheries publications?	NI				
To what organizations do you send fisheries publications?	NI				

NI - No Information

Table 1: IMA
Structure, Organization and Function of Fisheries Research Institutions
Resources Available to Institution

Type of Resource	1986	1987	1988	1989	1990
Financial Resources					
Annual Operating Budget (\$) * \$ TT -	286,700	292,700	220,300	225,800	316,004
Annual Capital Budget (\$)	NI	NI	NI	NI	NI
Physical Resources					
Vehicles (#)	1	1	1	1	1
Fishing Research Vessels (#)	1	1	1	1	1
Other research facilities (Specify type of facilities on a separate sheet if information is not available in either annual reports or brochures)	NI	NI	NI	NI	NI
Personnel Resources					
Number of Researchers	4	4	2	2	4
Number of Support Staff	1	1	1	1	1
Information Resources					
Does your institution have a Documentation Centre?	NI				
Does your institution have a library?	Yes				
Does your library offer an Interlibrary Loan Service?	Yes				
What other information resources are available at your institution?	Electronic mail, Computerized database (in house)				
From what organizations do you receive fisheries publications?	FAO, IDRC, ICLARM				
To what organizations do you send fisheries publications?	NI				

* \$TT1.00 = \$US 0.24

- Salaries plus expenditure; excludes overtime and internal travel.
NI No Information.

Table 1: ISER
Structure, Organization and Function of Fisheries Research Institutions
Resources Available to Institution

Type of Resource	1986	1987	1988	1989	1990
Financial Resources					
Annual Operating Budget (\$)	NI	NI	NI	NI	NI
Annual Capital Budget (\$)	NI	NI	NI	NI	NI
Physical Resources					
Vehicles (#)	0	0	0	1	1
Fishing Research Vessels (#)	0	0	0	0	0
Other research facilities (Specify type of facilities on a separate sheet if information is not available in either annual reports or brochures)	NI	NI	NI	NI	NI
Personnel Resources					
Number of Researchers	4	4	5	6	6
Number of Support Staff	10	10	10	10	10
Information Resources					
Does your institution have a Documentation Centre?	Yes				
Does your institution have a library?	Yes				
Does your library offer an Interlibrary Loan Service?	Yes				
What other information resources are available at your institution?	Computer search				
From what organizations do you receive fisheries publications?	FAO				
To what organizations do you send fisheries publications?	None				

NI - No Information.

Table 1: UCB
Structure, Organization and Function of Fisheries Research Institutions
Resources Available to Institution

Type of Resource	1986	1987	1988	1989	1990
Financial Resources					
Annual Operating Budget (BZE\$)	NI	NI	NI	786,000	969,000 + tuition
Annual Capital Budget (BZE\$)	NI	NI	NI	1.23 M	1.63 M
Physical Resources					
Vehicles (#)	NI	1	1	1	1
Fishing Research Vessels (#)	0	0	0	0	0
Other research facilities (Specify type of facilities on a separate sheet if information is not available in either annual reports or brochures)	None				
Personnel Resources					
Number of Researchers	NI	NI	NI	1	2
Number of Support Staff	NI	NI	NI	1	3
Information Resources					
Does your institution have a Documentation Centre?	Yes				
Does your institution have a library?	Yes				
Does your library offer an Interlibrary Loan Service?	No				
What other information resources are available at your institution?	None				
From what organizations do you receive fisheries publications?	None				
To what organizations do you send fisheries publications?	None				

NI - No Information.

Table 1: UWI, Mona
Structure, Organization and Function of Fisheries Research Institutions
Resources Available to Institution

Type of Resource	1986	1987	1988	1989	1990
Financial Resources					
Annual Operating Budget (\$)	NI	NI	NI	NI	NI
Annual Capital Budget (\$)	NI	NI	NI	NI	NI
Physical Resources					
Vehicles (#)	NI	NI	NI	NI	NI
Fishing Research Vessels (#)	NI	NI	NI	NI	NI
Other research facilities (Specify type of facilities on a separate sheet if information is not available in either annual reports or brochures)	NI	NI	NI	NI	NI
Personnel Resources					
Number of Researchers	NI	NI	NI	NI	NI
Number of Support Staff	NI	NI	NI	NI	NI
Information Resources					
Does your institution have a Documentation Centre?	Yes				
Does your institution have a library?	Yes				
Does your library offer an Interlibrary Loan Service?	Yes				
What other information resources are available at your institution?	Yes				
From what organizations do you receive fisheries publications?	NI				
To what organizations do you send fisheries publications?	NI				

NI - No Information

Table 1: U.W.I. St. Augustine
Structure, Organization and Function of Fisheries Research Institutions
Resources Available to Institution

Type of Resource	1986	1987	1988	1989	1990
Financial Resources					
Annual Operating Budget (TT\$)	80,000	80,000	80,000	80,000	80,000
Annual Capital Budget (TT\$)	15,000	15,000	15,000	15,000	15,000
Physical Resources					
Vehicles (#)	1	1	1	1	1
Fishing Research Vessels (#)	0	0	0	0	0
Other research facilities (Specify type of facilities on a separate sheet if information is not available in either annual reports or brochures)	Research Lab	Research Lab	Research Lab	Research Lab	Research Lab
Personnel Resources					
Number of Researchers	3	3	3	3	3
Number of Support Staff	4	4	4	4	4
Information Resources					
Does your institution have a Documentation Centre?	No				
Does your institution have a library?	Yes				
Does your library offer an Interlibrary Loan Service?	Yes				
What other information resources are available at your institution?	Can do computer searches in institution's data banks				
From what organizations do you receive fisheries publications?	Institute of Marine Affairs				
To what organizations do you send fisheries publications?					
Agricultural Development Bank Ministry of Agriculture & Fisheries Institute of Marine Affairs, Journals					

NI - No Information

Table 2a. Fisheries Researchers Qualifications, Work Experience, and Areas of Expertise: Bellairs Research Institute, Barbados				
Name of Researcher	Male or Female	Qualifications of Researcher (Indicate Institution attended and Degree/Diploma Received)	Work Experience (# of years worked at this and previous institutions)	Areas of Research Expertise
W. Hunte	M	Ph.D.	10	Fisheries biology
J. A. Horrocks (Affiliate)	F	Ph.D.	10	Marine conservation
H. A. Oxenford (Affiliate)	F	Ph.D.	10	Fisheries biology
H. Wiltshire	F	B.Sc.	2	Conservation biology
C. Parker (part-time)	M	Ph.D. student	5	Sea urchin stock assessment
A. Johnson (part-time)	F	Ph.D. student	5	Sea urchin stock assessment
M. Wittenberg (part-time)	M	M.Sc.	4	Coral reefs
J. Lewis (Affiliate)	M	Ph.D.	30	Coral reefs

Table 2b. Fisheries Researchers Qualifications, Work Experience, and Areas of Expertise: Biology Department, UWI, Cave Hill				
Name of Researcher	Male or Female	Qualifications of Researcher (Indicate Institution attended and Degree/Diploma Received)	Work Experience (# of years worked at this and previous institutions)	Areas of Research Expertise
W. Hunte	M	Ph.D., UWI, Mona	15	Fisheries Biology
J. A. Horrocks (Affiliate)	F	Ph.D., UWI, Cave Hill	10	Marine conservation

Table 2c. Fisheries Researchers Qualifications, Work Experience, and Areas of Expertise: Caribbean Conservation Association				
Name of Researcher	Male or Female	Qualifications of Researcher (Indicate Institution attended and Degree/Diploma Received)	Work Experience (# of years worked at this and previous institutions)	Areas of Research Expertise
No fisheries researchers				

Table 2d. Fisheries Researchers Qualifications, Work Experience, and Areas of Expertise: CERMES

Name of Researcher	Male or Female	Qualifications of Researcher (Indicate Institution attended and Degree/Diploma Received)	Work Experience (# of years worked at this and previous institutions)	Areas of Research Expertise
H.A. Oxenford	F	Ph.D., UWI, Cave Hill	10	Fisheries Biology
E.A. Moore	F	Ph.D., McGill Univ., Montreal.	30	Marine Conservation

Table 2e. Fisheries Researchers Qualifications, Work Experience, and Areas of Expertise: Institute of Marine Affairs, Trinidad

Name of Researcher	Male or Female	Qualifications of Researcher (Indicate Institution attended and Degree/Diploma Received)	Work Experience (# of years worked at this and previous institutions)	Areas of Research Expertise
Maxwell Sturm	M	Ph.D., UWI, Trinidad	18	Inshore pelagic fish
Sherry Heileman	F	Ph.D., RSMAS, Univ. of Miami	12	Demersal fish
Dawn Phillip	F	M.Phil., UWI, Trinidad	2	Working on Tobago fish pot fishery
Suzanne Samlalsingh	F	B.Sc., UWI, Trinidad	1	Working on flyingfish fishery

Table 2f. Fisheries Researchers Qualifications, Work Experience, and Areas of Expertise: ISER

Name of Researcher	Male or Female	Qualifications of Researcher (Indicate Institution attended and Degree/Diploma Received)	Work Experience (# of years worked at this and previous institutions)	Areas of Research Expertise
Peter Espeut	M	B.Sc., (Natsci.), 1977, B.A., (Theol.), 1983, M.Phil., (Soc.Sci.), 1990	6	Socio-economics of fishing industry

Table 2g. Fisheries Researchers Qualifications, Work Experience, and Areas of Expertise: University College of Belize

Name of Researcher	Male or Female	Qualifications of Researcher (Indicate Institution attended and Degree/Diploma Received)	Work Experience (# of years worked at this and previous institutions)	Areas of Research Expertise
No Fisheries Researchers				

Table 2h. Fisheries Researchers Qualifications, Work Experience, and Areas of Expertise: Zoology Department/Discovery Bay Marine Lab., Jamaica

Name of Researcher	Male or Female	Qualifications of Researcher (Indicate Institution attended and Degree/Diploma Received)	Work Experience (# of years worked at this and previous institutions)	Areas of Research Expertise
Karl Aiken (ZD)	M	M.Sc. (U.W.I.)	20	Fisheries Management
Antoinette Clemetson (ZD)	F	B.Sc. (U.W.I.)	2	Research Assistant
Jeremy Woodley (DBML)	M	Ph.D.	25	Reef Ecology (4 years in fisheries)
Malden Miller (DBML)	M	B.Sc.	2	Research Assistant
Michelle Gill (DBML)	F	B.Sc.	2	Research Assistant

Table 2i. Fisheries Researchers Qualifications, Work Experience, and Areas of Expertise: Faculty of Natural Sciences, U.W.I. St. Augustine

Name of Researcher	Male or Female	Qualifications of Researcher (Indicate Institution attended and Degree/Diploma Received)	Work Experience (# of years worked at this and previous institutions)	Areas of Research Expertise
Indar Ramnarine	M	M.Sc.	4	Considerable experience in fresh water fisheries
Dr. D. Owen	M	Ph.D.	20	Expert in mathematical modelling - important to fisheries
Dr. H. Ramkissoon	M	Ph.D.	15	Fluid dynamics - important to fisheries
Dr. B. Bhatt	M	Ph.D.	15	Fluid dynamics - important to fisheries
Prof. R. Saunders	M	Ph.D.	Imperial College 1968-1971 Freie Universitat Berlin 1971-1978 Physics Department U.W.I. 1978- present	Instrumental aspects of fisheries