



**CARICOM FISHERIES UNIT
BELIZE**

**REPORT OF THE MULTIDISCIPLINARY SURVEY
OF THE FISHERIES OF THE DOMINICAN REPUBLIC**

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1.0 INTRODUCTION

The Dominican Republic is one of four ACP/CARIFORUM countries in the Caribbean region to benefit from a 5-6 year fisheries project geared towards the sustainable utilization, development and management of their marine fisheries resources. The major purpose is to extend to these countries the benefits of the 9-10 year old CARICOM Fisheries Resource Assessment and Management Program (CFRAMP) that the countries participating in the latter have been enjoying.

The CFRAMP is a regional project, financed jointly by Canada's CIDA and the governments of the CARIBBEAN Community (CARICOM), designed to promote the sustainable management and conservation of fisheries resources in twelve (12) English speaking CARICOM countries, and to permit the exploitation of these resources on the basis of sustainable yield. The participating countries are Antigua & Barbuda, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Lucia, St. Kitts & Nevis, St. Vincent and the Grenadines and Trinidad & Tobago.

The 5-6 Year project from which these four additional Caribbean/CARIFORUM countries will benefit is the Fisheries Component of a European Union-funded Integrated Caribbean Regional Agricultural and Fisheries Development Program (ICRAFD). It has been designed as a prototype of the CFRAMP project for the four countries, Haiti, Suriname, the Dominican Republic and the Commonwealth of the Bahamas, to be brought to the same level of competence in sustainable fisheries development and management as the participating countries of CFRAMP. The main activities of the project are Fisheries Institutional Strengthening and Development and specialized fisheries studies and surveys.

In each of the four countries, a technical team of experts from the CARICOM Fisheries Unit (CFU) in Belize, responsible for the execution of both the CFRAMP and the ICRAFD projects, embarked on a Planning Mission and conducted a Multidisciplinary Survey. This is the report of the Survey of the Dominican Republic. From June 12- June 18, 2000, a four-member technical team from the CFU, Belize, was in the Dominican

Republic on a Planning Mission. The main objective of the Mission was to examine all aspects of the fisheries programs run by the Department of Fisheries and to formulate a new work program based on the information garnered from the survey. For that purpose preliminary data was collected through review of existing literature and official documents, formal and informal discussions with officials and stakeholders, general observation and participatory observation, after which a number of mini-surveys, under the general rubric, "Multidisciplinary Survey," were conducted.

The 5 instruments of the survey, each administered jointly by the CFU team members and the staff of the Dominican Republic's Fisheries Department, were as follows:

- Socioeconomic Baseline Survey of Fishing Communities
- Baseline Survey of the Fisheries Department's Structures and Programs
- Key Informant Interviews
- Interviews on the Status of the Data Collection Program, and
- Interviews on the Status of the Fishermen's Organizations.

The data and recommendations emanating from this report will form the basic subject matter for a National Fisheries Workshop at which all the stakeholders will meet "to discuss a common approach to fisheries management," and the basis for setting up the major sub-projects under the ICRAFD project, such as a statistical data collection system, designing and executing relevant fisheries research, a community involvement and public education sub-project, and the basis for developing fisheries policies, management plans and the institutionalizing of a National Dialogue Group of stakeholders. The latter will draw the country close to formalizing co-management at the macro level, and empowering organized fishers and other stakeholders groups to participate in the decision making process. The formation of a National Fisheries Advisory Committee of stakeholder groups is one of the institutional instruments meant to strengthen sustainable fisheries resource development and management capabilities in the Dominican Republic.

The findings of this survey will also serve as a benchmark from which future progress will be measured as technical and media intervention by the CFU and the Fisheries Department take place. Second, it will also form the basis for improving on the 5-6 year work program, out of which the first two-year work program has been prepared for implementing. Third, it is expected that the findings could serve as basic data for further

research by students, professionals and other scholars. The next brief section will expatiate on the 5 mini-survey instruments administered by the joint CFU-DOF team.

2.0 DATA COLLECTION AND THE SOCIAL AND DEMOGRAPHIC CONTEXT

2.1 Survey Instruments:

The data from which this report was compiled mainly came from administering five mini-survey instruments. The first was a **Baseline Survey of the Fisheries Department** of the Dominican Republic designed to capture the structure and functions of the department and policy issues involved in its mandate and operations. Being the main institution responsible for the day-to-day implementation of the work programs, it is necessary to have an approximate indicator of its capability to measure up to expectations. A copy of the instrument is attached as Appendix 1.

It enquired from the human resource base to the individual units that make up the department and to bring to light its strengths and weaknesses. That would be the target for the technical intervention of this ICRAFD project. The units covered included Fisheries Research, Fisheries Management, Legislation, Surveillance and Enforcement, Fisheries Extension, Information Management and Post-Harvest Technology. The main respondent was the head of the institution, the Director. Two other copies of the instrument were administered to senior members of the staff.

The second instrument was the **Key Informant Interviews**, made up of open-ended questions enquiring into their perceptions, attitudes and opinions on matters relating to fisheries policies, fisheries management and community participation. The instrument was administered to 13 knowledgeable and experienced individuals whose opinions mattered in the fishing industry and communities, such as traditional spokespersons, experienced and retired fishers and other stakeholders, political and cultural leaders and other officials in the bureaucratic set-up of the fishing industry. The make up of the respondents was as follows: 2 Traditional Leaders, 1 Senior Bureaucrat, 1 Senior Fisheries Officers, 4 Fishers, 3 Fisheries Entrepreneurs, and 2 NGO representatives. See Appendix 2 for a copy of the instrument.

The third survey instrument was the **Interviews on the Status of the Data Collection Program**. This assumed the existence of a program and attempts to identify the major issues and problems facing the program. The aim was for the project to find solutions to

the problems and to reorganize the entire system for better results. Six of these instruments were administered to the field officers and their supervisor. A copy of the instrument is attached as Appendix 3.

The fourth instrument was the **Status of the Fishers' Organizations (Appendix 4)** questionnaire that also assumed the prior existence of such organizations, and enquired into the structure, functions, the services they provide to the membership, their relationship with the fisheries administration and policy makers, the problems facing their organizations and the priorities they place on finding solutions to these problems. Three of these instruments were administered to groups of members of three of these organizations. The findings will enable the project to develop institutional strengthening programs for building the capacities of the members of these organizations to enable them to effectively participate in the decision making process.

The fifth instrument was the **Socio-economic Baseline Survey of Fishing Communities** in the Dominican Republic (Appendix 5). It sought to collect information on the socio-economic parameters of the fishing industry, the fisheries management practices, the perceptions, needs, attitudes and knowledge base of the fishers and the stakeholders on resource conservation and management, the fishing technology and their bibliographical background. These instruments were administered to 100 respondents in sampled fishing communities and at selected landing sites.

2.2 METHODS OF DATA COLLECTION

The Multidisciplinary Survey was designed to provide coverage of the widest cross section of the disciplines which together make up the fisheries industry, and as much coverage of the stakeholders that constitute the backbone of the industry, as was possible under the prevailing circumstances. The use of multiple techniques of data collection, including formal and informal one-on-one and group discussions, literature and official and non-official documentary reviews, participatory and non-participatory observation and structured and non-structured interviews, also added to the reasonable quality of the data garnered. Bearing in mind the lack of any reliable and consistent data base from which a random sample could be taken and further bearing in mind the lack of resources and the paucity of time available, the multidisciplinary-multi-stakeholder-triangulation approach was the nearest to approximating reality as could be designed and executed, under the existing conditions.

The Socioeconomic Baseline Survey of the fishing communities, the main instrument that gave the widest coverage to all the elements that make up the fisheries of the Dominican Republic, was designed along these lines. All the instruments were administered on the non-random sampling techniques of a combination of Quota and the Snowball techniques, in selecting the potential respondents at the landing sites and in the fishing communities. The sampling of the Community Baseline Survey was stratified according to coastal/geographical zones and coastal administrative provinces (PORPESCAR-SUR,1998), types of major species targeted and gear types utilized. The aim was to provide the widest coverage by these elements. The outcome is summarized in Table 1 below, followed by Fig.1, illustrating the information in the form of a map.

Conch and coastal pelagics are the most prevalent species in all areas, and while lobsters are mainly found in the South West region, they are targeted in most other regions. Reef fishes are identified with the areas with, what is left of, the coral reefs. Though the Samana Bay area in the NE is noted for the shrimp fishery, some shrimping is also done in the Northern Region.

Table 1: COMMUNITY BASELINE SURVEY: DISTRIBUTION OF RESPONDENTS

Coastal Regions	Administrative Provinces	Main Species Targeted	Main Gear Types	Interview Areas	Number of Respondents
Costa Suroeste (SW)	Barahona-Azua	Conch, Lobster Deep Slope fishes	Traps Diving Nets, Long lines Handlines	Barahona Puerto Viejo	20
Costa Sur (S)	Peravia San Cristobal National District	Conch Lobster Large Pelagics	Traps Diving, Nets Long lines/Hand lines	Santo Domingo	5
Costa Este (E)	San Pedro del Marcoris La Altagracia	Conch Lobsters Large Pelagics	Traps Diving Nets Long Lines	La Punta Bayahibe Boca de Yuma Isla Saona	25
Costa Nordeste (NE)	Samana Maria T. Sanchez	Shrimps, Crabs Large Pelagics	Nets Traps Long lines	Samana- Sanchez Nagua	25
Costa Norte (N)	Puerto Plata- Monte Cristi	Large Pelagics DeepSlope Fishes Demersals Conch	Nets Long Lines Hand Lines Traps/Diving	Puerto Plata Monte Cristi	25

FIG. 1: MAP OF FISHING LOCATIONS SAMPLED FOR COMMUNITY BASELINE SURVEY



Since the selection of the samples was not randomized and might not be scientifically representative of the Dominican Republic as a whole, inferences drawn from the sample cannot be legitimately extrapolated wholesale to the wider population outside of that from which it was drawn. However, the findings will provide valuable information that can be utilized as crude indices of the reality on the ground.

2.3: SOCIO-ECONOMIC CONTEXT OF THE COMMUNITY BASELINE SURVEY

The Community Baseline Survey was the main instrument of the Multidisciplinary Survey, due to the fact that its main focus are the fishers and immediate stakeholders in the fishing communities. The attitudes, perceptions and behaviours of the resource users towards fisheries resource conservation and management can make the difference between success and failure of implementing resource conservation measures. Table 2 below shows the status of the respondents to the community baseline survey in the industry:

Table 2: Distribution of Respondents by Status in the Fishing Industry

Status	No of Respondents	Percentage
Active Fishers	68	91%
Fisher- Boat owners	2	
Fisher- Captains	18	
Fisher- Vendors	3	
Vendors	6	
Processors	1	
Fisher's Family Members	2	
TOTAL	N=100	100%

The data shows that about 91% of the sampled respondents are active or full time fishers, together with others combining actual fishing with related roles in the fishing industry. The findings would therefore approximate the views of the resource users and those closest to the direct resource users.

The next table (Table 3) provides a distribution of age groups into which the respondents fall. The large number of respondents in the 21-40 years bracket is supported by other results of surveys undertaken in Samana Bay (CEBSE, 1996) and in Parque del Este (MAMMA Report, 2000). Whilst the preponderance of 'young blood' in the industry, might suggesting that inexperience may be a factor to take into account in management planning, some of these might have started fishing at very young ages, as a form of traditional family-based apprenticeship system. In the absence of the latter, it could also suggest the possible tendency to ignore or break traditional and official management measures, which might be a cause for conflict among resource users. There is a very large room for new entrants into the industry to be exposed to modern conservation ideas and practices, to be woven into community training and awareness building programs. This could be subjected to further examination at the National Fisheries Conference, and be expatiated on, in educational and awareness building programs.

Table 3: Age Structure of Respondents

AGE GROUPS	NUMBER OF RESPONDENTS	PERCENTAGE
< 20	5	75.8
20 – 29	24	
30 – 39	26	
40 - 49	20	
50 – 59	16	24.2
60 – 69	8	
TOTAL	99	100.0%

It is legitimate to assume that high educational attainment may be associated with the tendency to voluntarily or readily understand, support and accept resource conservation principles and methods, and hence may be linked to the likelihood of observing management regulations. It might also suggest the motivational and instructional media that would have the most effect, in terms of awareness building and training programs among target groups. The next three tables (Tables 4,5 & 6) provide the indicators to assist in making such extrapolations among the group of respondents in the survey areas.

Although the levels of educational attainment of this group of respondents is quite impressive, with 89% having had some elementary and secondary education, and about 50% having completed primary school education and higher, only a scant 10% have completed secondary school. This group also has an encouraging 58% with reading ability, but that still leaves some 42% whose reading ability is in doubt. It is certainly a group that can handle simple reading material accompanied by graphic and audio representation of the reading material.

TABLE 4: EDUCATIONAL ATTAINMENT

EDUCATIONAL LEVELS	NUMBER OF RESPONDENTS	PERCENTAGE
Never went to school	6	6
Primary school not completed	45	89
Primary school completed	14	
Secondary school not completed	25	
Secondary school completed	5	
Tertiary/vocational/professional, not completed	4	5
Tertiary/vocational/professional completed	0	
University not completed	1	
University completed	0	
TOTALS	100	100%

TABLE 5: GENERAL READING ABILITY

ABILITY LEVELS	NUMBER OF RESPONDENTS	PERCENTAGE
Can manage	55	58
Read a Little	21	22
Can't Manage	19	20
TOTALS	95	100%

TABLE 6: FREQUENCY OF READING NEWSPAPERS

DAYS PER WEEK	NO. OF RESPONDENTS	PERCENTAGE
Daily (6-7 days per week)	7	7.1
3-5 days/week	8	8.1
1-2 day/week	13	13.1
Rarely	29	29.3
Never	42	42.4
TOTAL	99	100.0

Since over 70% have not cultivated the habit of reading regularly, the medium for communication must remain simple reading material on familiar subject areas, illustrated graphically and preferably, accompanied by audio representation. It would seem logical that printed motivational and instructional materials such as presented on graphically illustrated posters, brochures, hand-outs, fact sheets, booklets, cartoons and simple newsletters would be the ideal medium for sending critical messages to resource user groups and other stakeholders in the fishing communities, such as students and teachers in the fishing communities. These issues could be deliberated on at the National Fisheries Workshop. If the grounds for our conclusions, and the conclusions themselves are confirmed, than the conference could develop strategies for implementing such activities as may be identified at the workshop.

Table 7 below shows that about 64% and 68% respectively own Television and Radio sets in their homes. This strengthens the conclusion that we have just made regarding graphical and audio media utilization to back up simple reading material, for communication and training purposes. Alternative grounds could also be explored. The costly nature of utilizing the TV for communication purposes makes it a less attractive medium than the Radio. The latter could be utilized for public education purposes, from which not only fishers', but also the general public could benefit. Where conservation issues like pollution are concerned, for example, this could be the medium most suitable. The National Fisheries Workshop could deliberate on the possibilities and the logistics and resources required for this to happen. The discussions could be continued by the National Dialogue Group

TABLE 7: OWNERSHIP OF COMMUNICATION AND TRANSPORTATION DEVICES

ITEMS	PERCENTAGE
Colour Television	64
Radio at Home	68
Radio at the Wharf	9
Radio at Sea	9
Video Cassette Recorder	12
Bicycle	13
Motor Cycle	20
Motor Car, Van, Truck	10

It is not encouraging that despite the popularity of the radio, it seems to be utilized only for information at home. Only about 9% of the respondents carry their radios to the wharf and to sea. It is interesting that the same respondents who responded that they carried their radios to the wharf, were the same who carried them out to sea. The link between radio messaging and safety at sea requirements, should be the subject of intensive public education, and the strategies for bringing a radio network for safety-at-sea purposes should be thoroughly examined by both the National Fisheries Workshop and the National Dialogue Group. And the Government should be invited into the process of dialogue and negotiations.

2.4: FISHING TECHNOLOGY AND FISHING PRACTICES

The types of vessels used by most of the fishers in the survey locations are typical of artisanal fisheries elsewhere in the region. They are either made of wood or more recently, fiberglass and the majority are up to about 25 feet in length, fitted for exploiting resources in the inshore coastal areas. Table 8 represents the vessels reportedly used by respondents in the survey locations:

TABLE 8: TYPES OF BOATS

TYPES	NO. OF RESPONDENTS	PERCENTAGE
Cayuco	11	12.4
Yola	40	45.0
Bote	29	32.6
Bote de Velocidad	1	10.0
Barco	4	
Pivotes	3	
TOTAL	89	100.0 %

The commonest vessel utilized by the artisanal fishers in the area is the Yola, usually made of wood or fiberglass with a flat bottom. The smallest vessel is the Cayuco, made of one piece of wood. The Bote, next to the Yola in popularity, is also made of either wood or fiberglass, but with a V shape and a narrow bottom. Together, these three constitute 90% of the vessels operating in the sampled areas.

This nearly equates the measurements in Table 8, showing that about 92% of the boats operating in the survey areas are between < 15' – 25'.

TABLE 9: LENGTH OF FISHING BOATS

CATEGORIES (FT.)	NUMBER	PERCENTAGE
<15-20	71	82
21-25	9	10
26-30	1	1
31-35	1	1
36-40	1	1
>40	4	5
TOTAL	87	100

The sizes of the majority of the fishing vessels in the fishing locations where this survey was conducted (15'-25') is typical of other artisanal fishing areas in the region, with crew sizes typically averaging between 3 – 5.

Similar to trends elsewhere in the region, small-scale fishers in the Dominican Republic are not only changing from wooden vessels to fiberglass types, but are moving from utilizing vessels which depend upon the elements for locomotive power, to those that are

powered by engines, particularly, the outboard variety (71%) as shown in Table 10 below:

This movement to the use of engine-powered vessels for fishing, has been triggered by evidence of depleting stocks in the inshore area, where the small -scale fishers have been operating for generations. It shows the growing attempt at targeting off-shore pelagic species, thus reducing the pressure on the near-shore fisheries. In so far as this proves to be the real reason for the change, it should be encouraged

TABLE 10: HOW FISHING BOATS ARE POWERED

SOURCES OF POWER	NUMBER	PERCENTAGE
Outboard engine and oars	62	71
Oars only	14	16
Outboard engine and sails	2	2
Inboard engine only	3	3
Oars and Sails only	4	5
Sails only	2	3
TOTALS	87	100

There are a great variety of gear types utilized by small-scale fishers in the survey areas as shown in Table 11:

Besides clear evidence of over fishing in the near shore fisheries grounds, particularly reducing catches of commercially important species such as lobsters, conch, and fin fish (demersals & pelagics), there is evidence that pollution, and the use of destructive fishing methods and gear, such as drag nets are causing the degradation of important fish habitats such as mangroves, sea grasses and coral reefs. The dangers in certain methods of diving, such as the use of hookah and scuba must also be subjects for intensive public education and discussion. So should be the matter of the on-going establishment of Marine Protected Areas (MPAs). The public should be effectively educated on these issues, beginning with the National Fisheries Workshop, followed by the National Dialogue Group.

TABLE 11: DISTRIBUTION OF GEAR TYPES

NAMES	NUMBERS REPORTED	NOTES
Hand lines	40	Reef fishes
Beach Seine	6	Demersals
Set Nets , Traps	23	Shrimps &
Drift/Floating Nets	7	Crabs
Vertical/ Horizontal Long Lines	7	Large Pelagics & Deep Slope Fishes
Traps	11	Conch,
Free Diving	15	Lobsters
Diving with Scuba /Hookah	6	Octopus
Diving with Spear	11	Snappers & Groupers
TOTAL	126**	

**** The total comes up to more than the total number of respondents because of multiple responses.**

The Catch

The main species targeted by resource users are demersal and pelagic fishes, conch, lobsters and shrimps. The latter is mainly domiciled in the Samana Bay area, although some are targeted in the northern provinces. The table that follows shows a summary of the main types targeted.

Besides the large pelagics, scientific observations and research have shown that the rest of the main species are either fully exploited or are in danger of becoming depleted. The discussions at the National Fisheries Conference must discuss each type in detail and find strategies of reversing the trend. The ICRAFD Project must also promote further studies in this area for a better appreciation of the situation.

TABLE 12: MAIN CATCHES (SEASONAL AND REGULAR)

MAIN SPECIES	EXAMPLES	NUMBER/ PERCENTAGE
Large Pelagics	King Mackerel, Blue fin tunas, wahoo, dolphin, barracuda, yellow fin tunas	33
Coastal Pelagics	Mullet, snook, jacks.	20
Reef /demersal fishes	Snappers, groupers, grunt	27
Other demersals	Parrot fishes, trigger fishes, goat fishes.	7
Queen Conch (lambi)	-----	7
Spiny Lobster (Langosta)	-----	6
TOTAL	-----	100%

3.0 STRUCTURE AND FUNCTIONS OF THE FISHERIES RESOURCES DIRECTORATE

As the executing agency of the ICRAFD project, the CFU will provide most of the resources and technical support to the Fisheries Directorate of the Dominican Republic to implement the project on a day-to-day basis. The capability of the Fisheries Directorate to take on the additional responsibility is critical to the successful implementation of the project. Part of the mandate of the Planning Mission to the Dominican Republic was to examine the directorate's organizational structure and human resource capabilities, and measure it against the responsibilities it would be expected to carry, and make recommendations for its restructuring. The instrument of the Baseline Survey of the Fisheries Directorate, enquired into such matters.

The Fisheries Resources Directorate has the enormous responsibility of managing the fisheries of the Dominican Republic on the behalf of the government. The fisheries administration, in providing a general overview of the fisheries, estimated the number of fishers in the country conservatively at 12,000, the majority of which are artisanal operators, with only about 5% licensed or officially registered, 80% full time and 20% part time. The annual total weight catch per annum was estimated at 8,000-18,000 t. averaging 13,015t. per year, but the breakdown of this data into landings, discards and export values was not readily available.

It is generally estimated that the importation of fish products into the country accounted for more than 50% of local fish consumption, and fish and fish products contributed insignificantly to the country's annual GDP. More importantly, the once impressive natural marine biodiversity ecosystems of the Dominican Republic had suffered extensive degradation, resulting in fish yield levels continuously falling. The enormosity of the problems to which the project is expected to provide support to the directorate to find solutions, can be appreciated in this light.

3.1: ORGANIZATION AL STRUCTURE OF THE FISHERIES DIRECTORATE

The Directorate of Fisheries Resources, with its headquarters in Santo Domingo, is in the Ministry of Natural Resources & the Environment. The Director of the Fisheries Directorate reports to the Vice-Minister. The latter is responsible for the management of Coastal & Marine Resources. It had a staffing strength of about 30-40, the majority of

which are stationed in a sub-office in Barahona, in the far South West corner of the country. The main difficulty facing the headquarters was the lack of qualified personnel, since many technical positions were difficult to fill. Some positions had been filled with unqualified personnel. Government sources did not normally allocate budgetary provisions for training and the only sources that occasionally became available were through foreign-funded projects. The area of training, both short-term and long-term, is the first priority area to be addressed, and the project has begun addressing that issue.

The second area of concern is the blurred functional responsibilities between the headquarters and the sub-office in Barahona. It was not clear to the outsider how supervisory and reporting relationships operate between the two entities, and the functional relationships in the sub-office seemed more clear-cut than in the headquarters. The field interactions with resource user groups and other stakeholders during the planning meetings, clearly showed that the latter groups were more familiar with the work of the sub-office. Most of the field work in data collection and community involvement and public education were carried out by the sub-office personnel, albeit restricted largely to the Pedernales, Azua, Bani and Barahona administrative provinces in the south-west.

The sub-office goes by the name of PROPECAR-SUR, after a German-Dominican Republic initiated fisheries development and management project. Most of the personnel engaged in the project benefited from training programs. The end of the project, and hence the end of external funding, had greatly affected the operations of the office, but had left a viable organizational structure and a qualified human resource base. At the time of the Mission, the PROPECAR-SUR still existed as a semi-independent arm of the Fisheries Directorate, with its head office in Barahona. It had a staff complement of about 20, a Director of its own, who purportedly reported to the main Director of Fisheries in Santo Domingo. The ICRAFD project has recognized this area as one to be addressed urgently, and has begun responding.

The administering of the Baseline Survey instrument has revealed that the department is not very clear about priority areas to be addressed. Two different pictures emerged when respondents were asked to arrange priority areas for training purposes, as shown in Table 13:

TABLE 13: PRIORITY AREAS FOR STAFF TRAINING

1ST OFFICIAL RESPONSE	2ND OFFICIAL RESPONSE
Post harvest knowledge and skills	Fisheries Resource Conservation & Mgmt.
Data Management	Community Participation & Education
Fisheries Research	Environmental Protection
Fisheries Statistical Analysis	Data Management
Community Participation & education	Fisheries Research
Fisheries Resource Conservation &Mgmt.	Fisheries Statistical Analysis
Environmental Protection	Post-harvest knowledge and skills

We suggest that some attempt be made to revisit the two lists submitted above for reconciliation, and the proper authorities brought into the picture. It would also be interesting to hear the views of the stakeholders at the National Fisheries Conference on this issue.

3.2 FISHERIES INFORMATION SYSTEM

By means of relevant sections of both the status of the data collection system and the baseline survey of the fisheries directorate instruments, the Planning Team sought to enquire into the existing status of the system of collecting, storing, analyzing and reporting on data. The collection of data at sampled landing sites had begun as far back as 1978. The objective was to estimate annual catch and effort data and to prepare annual reports to the FAO, some of the consulates of foreign countries such as Japan, the Republic of China, local and international lending agencies such as Helvetas, UNDP, TNC & GTZ, that had provided funding for research in the fisheries sector, and selected government departments. The raw data was sent monthly to the central office in Santo Domingo. According to the fisheries administration, only the FAO tended to provide feedback.

For the duration of the PROPESCAR-SUR project, the factors taken into consideration in determining what types of data were to be collected were, types of boats, gear types. levels of fishing effort, types of species, and areas of capture and landing sites. Catch data was collected on species and weight of the catch; effort data on number of fishes, number of vessels, and boat size capacity; data on gear on types, numbers and time spent on fishing; biological data on length and weight frequencies and sex distribution, and other details. In 1993-94, a one-time socio-economic data on costs and prices and

export–import were collected, as part of the fisheries census of 1993. The sub-office, whose activities were largely confined to the South and South West, had 12 field officers and 7 assistant field officers assigned to data collection.

By the time the Planning Mission did its work in the Dominican Republic, the data system had only been partially computerized, being restricted to only data storage, the equipment was obsolete and broken down; almost all needing replacement with more modern equipment with better storage and manipulative capacities; the software knowledge for operations was only limited to Excel and Microsoft Word. Internet connection had never been established.

The system needed additional data collection on seasonality, maturity, feeding habits, habitat distribution and hard parts collection for age estimation. It also needed to make socio-economic data collection a permanent feature of its collection program. The program needed to be expanded to make it more national in scope. Clearly, the whole system needed radical revamping and modernizing; the team made urgent recommendations and the ICRAFD project has since begun responding equally with urgency.

3.3: FISHERIES RESEARCH

The fisheries administration considers fisheries research as an essential part of its mandate. Generally, the main focus of research had been on the state of the resource, catch and effort data collection, and more recently, attention has been focused on marine shrimp aquaculture, with NGOs increasingly involved.

The sub-sector faces many constraints such as lack of qualified human resource or expertise, lack of funds, equipment and library facilities. Not much funding for fisheries research comes from government sources. The sector has for long depended on external funding agencies for assistance in fisheries research. This includes GTZ, Germany – funded PROPESCAR-SUR, the Taiwanese Aquaculture Project, the Japanese Artisanal Fisheries Training Project, involving exploratory or experimental fishing.

The department is looking for further assistance in institutional strengthening, particularly training scholarships, research equipment and other facilities, and would like to extend its areas of research to include assessment and location of natural spawning grounds,

coral reef monitoring and more sophisticated techniques of species identification that could contribute to the opening up of new fisheries. The Project is looking closely at these areas for possible assistance.

3.4: AQUACULTURE

A burgeoning sub-sector of the fishing industry is Aquaculture. At the time of the planning mission this sub-sector was variously reported to have about 25 establishments, ten of which were fairly new. It was said to have 38 hectares of tilapia/carps and 93 hectares of crustaceans. The annual total value of production and annual total value of exports were unknown or not readily available.

What was certain was that there were plans to appreciably expand the sub-sector. There was an on-going Chinese project for developing aquaculture fishes and shrimp. It was estimated that about US \$21million was necessary for a meaningful expansion of the sub-sector, and government was in the process of seeking external assistance.

The Directorate of Fisheries also considers the aquaculture area as one that would need urgent expansion and assistance in training about 10 more officers, in addition to the four already in existence. This subject might be given some attention under the ICRAFD project. The Resource User Groups would need the information and assistance to promote their investment in this sub-sector. Apart from the prospect of improving the financial base of their organizations and their individual standards of living, it could also become a viable contributor to foreign exchange accumulation and might reduce fishing pressure on the in shore fisheries.

3.5: ORNAMENTAL FISHERY

This is a relatively small sub-sector of the fisheries industry in the Dominican Republic. This economic activity is mainly confined to the Monte Cristi area of the North West Province. There were only three private companies involved in this activity, but both the annual total production value and the annual export value were unknown or were not readily available, except for data for 1996-1999 from the Department of Fisheries that put export figures for that period at 125,132, averaging about 31,283 units per year. The main types of species involved were coral reef fishes and invertebrates. A decree on management measures exists but not yet operational. The directorate would continue to monitor developments in this area of fishery activity. The National Fisheries Conference,

and later, the National Dialogue Group, might like to put this sub-sector and that of aquaculture on their agendas, in order to formulate strategies for the possible participation of the Resource User Groups and Individuals.

3.6: POST- HARVEST TECHNOLOGY: QUALITY ASSURANCE AND CONTROL

Stringent quality assurance and marketing standards being imposed by the European Union and the United States on exporters of fish and fish products into their territories, has made the subject very high on the agenda of private enterprises, fishers' organizations and government. At the time of the Mission no national policy on marketing of fish and fish products existed, and no regulations on fish handling, packaging and exporting existed. Some of the legal requirements' including set standards, are included in a draft fisheries legislation, but in the form of an unenforceable bill, yet to become statute law. There are only few processing plants owned by private sector entrepreneurs. Fishers' organizations have no controlling interest in fish processing, but there existed a proposal to develop a project to address that. The fisheries directorate itself played no significant role in the handling, processing and marketing of fish and fish products.

It is imperative that those involved in the handling and processing of fish should be properly trained in that area so that the highest forms of sanitary standards are maintained for both the local and the external markets. Four fisheries officers had been trained in HACCP, but there was no evidence that fishers, who play a critical role in the handling of fish and fish products, had benefited from training in this area. The National Fisheries Conference should deliberate on this issue – the training of more fisheries officers and members of the fisher folk organizations- and find means to bring this into reality. The issue could also appear on the agenda of the proposed National Dialogue Group.

3.7: FISHERIES EXTENSION PROGRAMS

The sub-unit of the Directorate of Fisheries (PROPESCAR SUR), had been responsible for planning and implementing extension work mainly in the south west of the Dominican Republic since 1978. This Extension Program was not based on policy, nor was it derived from a Fisheries Management Plan. It was the creation of a project by the same name as the sub-unit, funded through German-Dominican Republic cooperation. The objectives of the project were to increase fish production, reduce fishing effort in the in-shore fisheries grounds, decrease the catch of under-size fishes through the provision of

technical and resource assistance for the development of new fishing technology, conduct of fisheries research and assessment, and introduce aquaculture, sports fishing, and development of inland fisheries. The project also provided services in the areas of financing equipment and gear procurement, preparation of business proposals and information dissemination and sharing.

The methods used in working with fishers included community meetings, face-to-face interaction and group discussions. The ICRAFD project, through its Community Involvement & Education sub-project has planned to supplement this with training and provision of equipment for the production and usage of printed educational materials, video documentaries and radio as means of communicating with fishers and stakeholders. The administration has also called for training of fisheries field officers in the areas of fisheries technology, group mobilization and organization, group leadership and communication techniques. The ICRAFD project plans to respond through a series of short-term training programs, including two major seminar-workshops.

The Fisheries Directorate in responding to enquiries admitted that there were no regular meetings with fishers' groups, and that such meetings, if they were held, were far between, and were usually ad-hoc in nature, mainly convened to deal with emergency issues. Some degree of consultation takes place before new regulations and other management measures are introduced, but even so, enforcement of such regulations always lagged far behind. Fishers were not formally included in the decision making process until recently when attempts were being made to improve relations with the resource user groups, and prepare the grounds for planning and implementing effective extension programs.

In June, 2000, when the Planning Mission was in the Dominican Republic, field enquiries made showed that there were four reasonably active fisher folk organizations in the country, namely,

- *Cooperativa Grupo Manati Barahona* in Barahona.
- *Cooperativa Carlos Marte* in the Bani-Azua- Palmar de Ocoa area.
- *Grupo de Pescadores Salinas Puerto Hermoso* in Puerto Salinas, and
- *Asociacion de Pescadores de Hatillo* in San Cristobal.

Additionally, there were a number of dormant groups in the Samana- Sanchez region in the East, the Monte Cristi- Puerto Plaza area in the North West, and the San Pedro de Marcoris-San Rafael del Yuma zone in the South East.

But this was a far cry from what pertained over a decade earlier as shown in the following table:

**TABLE 14: GRUPOS DE PESCADORES (1978-1990)
(Fishermen's Groups)**

Provincia (Provinces)	Activa (Active)	Inactiva (Inactive)	Desintegrada (Dormant)	TOTAL
Monte Cristi	1		1	2
Puerto Plata		1		1
Samana	5		2	7
El Seibo			2	2
La Ramana			1	1
San Pedro de Marcos			1	1
Districo Nacional	2		1	3
San Critobal			1	1
Peravia	1		1	2
Azua	5			5
Barahona	2		2	4
Pedernales			1	1
TOTAL	16	1	13	30

Source: Colon,R., Z. Reyes & Y. Gill. 1991. *Censo Comprensivo de la Pesca Costera de la Republica Dominicana Reportes del PROPESCAR-SUR: Contribuciones al conocimiento de las pesquerias en la Republica Dominicana, vol.1.*

Two observations can be made from this picture. The first is that the number of active groups has been falling partly because field activities by NGOs and government officials had also been declining. This contention is supported by the fact that the areas with the most active organizations, Peravia-Azua-Barahona area in the South West, and the Samana Bay in the East, were the central focus of the PROPESCAR-SUR project when it was fully operative, and the CESBE project in the Samana Bay area, respectively. In fact, in the latter area, it was reported that by 1993, 19% of the fishers in the Samana Bay area were organized in 25 groups (Cooperatives & Associations) [S. Miguel & C. Aquino, 1993]. Even though these projects have ended, these areas still have some active and semi-active groups operating albeit, at a less dynamic pace.

The few active organizations consulted during the Planning Mission, had as their objectives, the following:

- Reduction of their operating costs through government subsidies.
- Easier access to credit facilities
- Eliminating the middleman from the market
- Setting their own prices for the product, and
- Creating employment in the fishing communities.

When asked to name some specific problem facing their organizations, individual fishers mentioned the following:

- Lack of funding
- Government's failure to enforce the fisheries laws
- Low catches
- Lack of training in conservation
- Low public awareness of the condition of the fish stocks.

When asked to identify some projects they would wish to see implemented, the following were the most mentioned:

- Credit and financing
- Introduction of processing facilities
- Storage facilities
- Training in Conservation
- Training in Aquaculture.

In a nutshell this reflects the perceptions of the small-scale fishers of the main contemporary problems facing them. The National Fisheries Workshop will do well to revisit these problems; examine them, and subject them to public scrutiny, emerging with possible solutions. The resource user groups would need the technical support and guiding role of the fisheries field officers serving under this project, and the support of relevant NGOs, to keep these motivational objectives alive and developing their capacity for fully participating in the sustainable management of the fisheries. Towards this end, a 'Revival – Consolidation – Capacity Building Drive' has been recommended for pursuance by the ICRAFD project.

This would mean that the fisheries administration and the fishers' organizations should work closely together to improve relations with each other. When questioned about the

nature of the working relationships they had with others, the following were the responses obtained from representatives of fishers' organizations interviewed:

TABLE 15: FISHERS' GROUPS REPORTED RELATIONSHIPS WITH OTHER GROUPS

OTHER GROUPS	NATURE OF RELATIONSHIPS
Government	Not cordial
Fisheries officials	Barely cordial
The Community	Very supportive
Executive & membership	Very Cordial
Other fishers' organizations	Very cordial

Respondent groups and individuals cited bureaucratic barriers as the most inhibiting factor in their relations with government officials. They claim that they get no response when they refer complaints to the Ministry, and receive no information from government sources. Finally, they are informed of decisions made after the fact. It would be imperative that fisheries field officers should craft good working relationships with these fisher folk organizations and to endeavour to operate as partners for the same cause of sustainable development and management of the fisheries resources.

4.0 FISHERIES RESOURCE CONSERVATION AND MANAGEMENT

This section deals with findings on the perceptions, opinions, attitudes and behaviours of groups of stakeholders in the survey areas in relation to resource conservation and management. Emphasis will be placed on the status of fisheries management as seen through the eyes of the fisheries administration, the views of the Key Informants interviewed and the fishers and other stakeholders in the fishing communities.

4.1 STATUS OF FISHERIES MANAGEMENT.

The purposes of the enquiries made on this subject was to better understand how the fisheries of the Dominican Republic are managed and the medium to long term objectives of the policies pursued. At the time of this survey no legally binding Fisheries Management Plan was available. There existed a draft of a new Fisheries Law that had not as yet had the final legal push by the government. However, there existed some management measures such as the following:

- Closed seasons and minimum sizes for lobsters (*langosta*) and conch (*lambi*) .
- Minimum mesh sizes traps and nets.
- Regulations regarding the use of resources in Marine Reserves.

The existence of these regulatory stipulations was one thing whilst their enforcement was another matter. The Department has a number of fisheries inspectors who were expected to monitor the adherence of resource users to the regulations, but lack of resources made it an uphill task that was difficult to implement.

Most resource users and stakeholders are aware of the Marine authorities as the ultimate monitors who organize surveillance, on and off, of the marine environment to ensure that the regulations are adhered to. Most respondents however do not perceive them as being effective in doing that task. They are rather seen as being arbitrary and biased in their dealings with stakeholders. The lack of effective institutional support and lack of funding are the charges laid against the government functionaries in control of the fisheries sector. The majority of respondents observed that it seemed that all management measures and related support measures are provided as by-products of foreign-funded projects such as the PROPESCAR SUR in the South West and the *Centro Para La Conservacion Y Ecodesarrollo de La Bahia de Samana Y Su Entrorno (CEBSE) Inc.* project in the Samana Bay area. The other sources of institutional support come from local NGOs. There seemed to be a consensus among the

respondents that government needed to have a more hands on approach to fisheries management matters.

In the area of policies, when fisheries administrators were asked to order some items of policy representing the goals of the department in order of priority, the following dual picture emerged:

TABLE 16: POLICY PRIORITY AREAS

RANKING	AREAS 1	AREAS 2
1 ST	Sustainable Management	Fisheries Development
2 ND	Fisheries Development	Sustainable Management
3 RD	Full Employment	Food Self-sufficiency
4 TH	Environmental Protection	Environmental Protection

Whilst there is not much difference between the two positions, one should take note of the implied contradiction in the responses. Food self-sufficiency and full employment would tend to shift strategies in policy in favour of fisheries development, while environmental protection and sustainable management would lay emphasis on the latter. The problem is how to balance these two apparent contradictory positions in the process of implementation. It would need a blend of the managerial skills of the fisheries administrators, and the support and involvement of the resource user groups and stakeholders.

4.2 THE LEGAL ASPECTS OF THE NATIONAL FISHERIES

Enquiries in this area were meant to determine the current status of the legislative and regulatory framework under which the fisheries operated. The existing legislative authority, at the time of the survey, was Fisheries Law 5914 of 1962, including a number of decrees and resolutions for management regulations, the latest being the declaration of closed seasons for Fisheries Management Plan, but stopped short of mandating it. A management plan was developed under a GEF/Marine Biodiversity Project for the entire Jaragua National Park but this was never implemented. With the support of the Swiss Association for the Development and Cooperation (HELVETAS), *Grupo Jaragua, Inc.*, designed and implemented a fisheries management plan in Laguna de Oviedo, *Parque Jaragua*, in a co-management arrangement with the direct involvement of the resource users group, *Grupo Jaragua*.

The Sub-Ministry of Fisheries has developed a legal framework for developing a National Fisheries Management Plan but the measure had not been carried further that that, at the time of this survey. It was recognized that the new ICRAFD project would have to provide assistance in bringing this to reality.

Enquiries were made to determine the existing capacity of the governmental establishment for monitoring, controlling and effecting surveillance of the fisheries and fishing, particularly to what extent regulations were strictly enforced. It was realized that Surveillance was the responsibility of both the Fisheries Department and the Navy. The two entities were Resource Inspectors from the Department of Natural Resources and the Coast Inspectors from the Navy. Generally, whilst the Inspectorate System was depicted by most respondents as riddled with political bias, the civilian section was considered as being relatively ineffective, while the more effective military section, was considered as being unnecessarily high handed in handling offenders.

In carrying out their work on the beaches and in the business places, the officers tend to pay particular attention the infraction of lobster and conch closed season regulations, the protection of mangroves and the use of chemicals in fishing. Violators are prosecuted under Article 47 of Law 5914 (1962), but official corruption, lack of equipment, insufficient logistical support, and ridiculously low fines, could not effectively discourage violations. It would seem that the whole area of surveillance and enforcement must be a priority issue to be discussed at the National Fisheries Workshop, and improvements sought through dialogue between government and the proposed National Dialogue Group. Certainly there is need for a workable Fisheries Management Plan, with new laws and regulations, and the provision of resources to strengthen the enforcement aspects of the fisheries laws of the Dominican Republic. The ICRAFD project should take a critical and close look at this area, and determine the extent of technical and resource support it could provide.

4.3 KEY INFORMANTS ON FISHERIES MANAGEMENT

The open-ended questions in this instrument targeted community leaders, potential opinion leaders, knowledgeable and experienced fishers and stakeholders within the fishing communities and the industry as a whole. The enquiries sought their opinions, understanding and perceptions of issues relating to fisheries management as a whole, and stakeholders' participation in fisheries management. The respondents engaged in this exercise in the Dominican Republic are shown in the following table:

TABLE 17: RESPONDENTS TO KEY INFORMANTS INTERVIEWS

CATEGORIES	NUMBERS
Community Leaders	2
Senior Bureaucrat	1
Fisheries Administrator	1
Fishers (Active & Retired)	4
Entrepreneurs (fish products)	3
NGO Representatives	2
TOTAL	13

When each of the respondents was provided the opportunity to identify the main problems facing the fishing industry in the Dominican Republic, the respondents identified a variety of problems falling in various categories such as the following:

- **Biological:** Over fishing, and environmental destruction resulting in stock depletion, due to destructive fishing gear and practices.
- **Financial:** Lack of funds to acquire suitable equipment and accessories, to experiment with innovative, and sustainable fishing techniques.
- **Participatory:** Lack of effective participation of resource users in fisheries governance.
- **Technological:** Lack of appropriate technology for fish handling and storage facilities, coupled with poor infrastructure for landing, storage and distribution of the catch.
- **Commercial:** Problems with marketing the produce during certain critical seasons in the year.

The last two seem to be the most worrisome of all the problems from the standpoint, particularly of the fishermen. Most of the fishers with whom the Planning Team interacted, either on a one-on-one basis or in groups, confirmed the problems identified by the Key Informants. The government and some NGOs have succeeded in persuading many small scale fishers to shift from fishing in the near shore area to the off shore areas where, with their new and efficient gears, they are able to harvest large quantities of large pelagic (tunas, and tuna-like) species during the months of June-December. This results in a glut in the market, with the consequential loss of revenue to spoilage and low prices. Most fishers claimed awareness of both the stock depletion and the marketing problems in the fishing communities.

On the basis of their perception, the fishers expressed disappointment that government was practically doing nothing about these problems and were calling for some action to be taken. Most fishers called for better storage facilities (freezing and ice boats, large scale refrigeration facilities on land, and ice making machines) and markets for their catch. They not only called for opening of marketing avenues for the tuna they catch, but also more processing facilities so that the importation of fish products into the country could be drastically reduced. This issue (storage facilities and marketing) should be considered as critical for the industry, and must be firmly placed on the agendas of both the National Fisheries Conference and the National Dialogue Group.

On the subject of fishers' response to management initiatives by government, the majority responded that, besides the good working relationships with the staff PROPESCAR SUR, the responses are mainly negative, because of too much bureaucratic impediments. The PROPESCAR SUR was placed on a higher pedestal over and above the fisheries department office in the capital, when it came to assessing the two entities, in terms of relationship with the resource users and other stakeholders. There is generally lack of trust in the authorities, particularly the Navy and the Fisheries Inspectors.

None of the respondents among the Key Informants was aware of any existing institutional arrangements for community participation in the planning and implementation of resource management in the country, except what pertains to the PROPESCAR SUR. Yet almost all the respondents thought that community involvement in management decision - making was an imperative. Of the 13 respondents, 10 agreed that government and fishermen should be partners in the management of the fisheries resources in the country, whilst the remaining 3 thought that the partnership formula should be widened to include Non-Governmental Organizations (NGOs) and CBOs (Community-Based Organizations) and other stakeholders. This augurs well for the future, if only this way of thinking can be kept alive and become a reality in the future of fisheries resource management in the Dominican Republic. The issue of Resource User Groups' involvement in the management decision-making is critical for sustainable utilization, development and management of the resources.

4.4 FISHERS AND FISHING COMMUNITIES ON FISHERIES MANAGEMENT

The Condition of the Stocks

It is generally argued and accepted, that local direct users of the fisheries resources are supposed to have a better knowledge and appreciation of the condition and status of the resources than outsiders. The Socio-Economic Baseline Survey of Fishing Communities enquired into the perceptions of the fishers and stakeholders in the fishing communities on the health of the fish stocks in the country. The results are summarized in the table 18 below (next page)

Some respondents might not have been foretold that the questions being asked about finfish would be repeated for lobster stocks and thereafter for conch stocks. The responses to the first set of questions might contain information on lobsters and conch. Second, some margin of error might have been introduced through the back and forth translation of language from English to Spanish back to English, and the interpretation of concepts such as species composition, fish weight, and fish size. Third, there might have been relatively fewer respondents targeting lobsters and conch than there were for fin-fish. It should be noted that at the time when this survey was conducted, the lobster closing season was in effect, and some of the main landing sites were not covered in the administering of the instruments. These would partly explain the sharp fall in the numbers as one goes down the table. Suffice it to say that generally, respondents have noticed a continuing fall in the catch, and some changes in catch sizes, weight, and composition of the species harvested.

The responses to questions about the changes observed in fish locations and previous fishing grounds were couched in general terms. For example, many responses suggested that there now empty fishing grounds at locations which were previously fertile grounds were expressed in such general terms as, 'all around the coast', 'all around the shoreline and coral reefs', 'all the nearby grounds'. Some respondents have observed that some fish locations have changed to, 'elsewhere', 'the open sea', 'the sea bottom'. Such non-specific responses might be indicators of uncertainty, exaggeration or genuine high level of awareness. This issue could further be tackled at the National Fisheries Conference.

TABLE 18: PERCEPTIONS ON THE HEALTH OF THE FISHERIES RESOURCES

PERCEPTIONS AND OPINIONS	PERCENTAGE
<i>On Finfish Stocks</i>	
Concerned about the condition of the fish population	92
Catch Weight have declined	61
Catch size declined	27
Species composition changed	29
Some fish locations changed	54
Previous good fishing grounds now empty	88
<i>On Lobster Stocks</i>	
Concerned about the condition of the lobster population	52
Catch weight have declined	31
Catch size declined	12
Some lobster location changed	23
Previous good fishing grounds now empty	37
<i>On Conch Stocks</i>	
Concerned about the condition of the conch population	32
Catch Weight declined	15
Catch size declined	06
Some conch location changed	10
Previous good fishing grounds now empty	20

Causes of Stock Depletion

When questioned about what the causes of depleting stocks might be, most respondents provided specific responses such as too much intensive fishing, too many vessels and fishers, the use of forbidden, destructive gears, pollution, and the ‘El Nino Effect’. One put it in the following pseudo-religious terms. “ These are prophetic times. Men are damaging everything God gave to them.”

When respondents were provided with a list of likely causes of the depletion of stocks, and requested to arrange them from the most likely to the least likely, the following picture emerged:

TABLE 19: CAUSES OF STOCK DEPLETION

CAUSES	NUMBER
Fish caught too young	73
Too many fish traps	69
Changes in the weather	68
Net meshes too small	66
Fish traps' meshes too small	62
Not enough credit finance	55
Too many fishers	51
Too many nets	44
Destruction of mangroves	43
Fish getting smarter	37
Too many commercial fishers	35
Pollution from farms	34
Pollution from sewage	33
Pollution from factories	32
Foreigners fishing illegally	24
Too many sports fishers	16
Pollution from Hotels and Tourism	15
Not enough markets	14
The use of dynamite	11
Fish traps with too big mesh sizes	10
Net meshes too big	10
Too many fishers using spear guns	10

Topping the list is the concern for the harvesting of juvenile fishes before they have the chance to mature and produce new stocks, known in the scientific parlance as growth over fishing. But the most striking on the list is the occupation of the top rungs of the table by the observation that there are too many fishers, traps and nets operating in the fisheries, thereby implying that measures to cut down numbers or control entry of new traps, nets and fishers would be welcome. This is an unusual position since most studies in the region suggest that such measures which might result in affecting fishers economically almost immediately are usually less preferred than neutral measures such as the protection of the environment and juveniles from destruction and harvesting. A second interesting issue is the occupation of the top echelons by advocacy of avoidance of the use of traps and nets with small mesh sizes, contradicted at the bottom rungs by expression of regrets that larger sizes of mesh are used for fishing.

These (causes of stock depletion) are issues that should be clarified at the National Fisheries Workshop, and become subjects for public awareness and education programs, before finding their way into the National Fisheries Management Plan. The issue of pollution of the marine

environment from various sources, firmly occupying the lower-middle echelons, should also be treated in like manner.

Strategies for Fisheries Management Planning

One of the planned activities of the ICRAFD project for the Dominican Republic is the provision of technical assistance for the development of a Fisheries Management Plan. The input and involvement of the resource users and other stakeholders in the fishing communities would be critical in this exercise. When asked to choose from a list, which of a number of options would they want to see included in a Fisheries Management Plan for the Dominican Republic, the following (Table 20) summarizes the results listed downwards according to priorities. With some minor exceptions, one observes that the choices and priorities have shifted back to the usual pattern by which fishers tend to place less premium on measures that could reduce their incomes drastically as the last three preferences show. The high level of popularity of the alternative livelihood program confirms the choice of less economically punishing alternatives. Besides the almost hostile attitude towards dynamiters, that is usually the case elsewhere in the region, most of the top priorities are relatively neutral and general in nature, most of which could be avoided or ignored without direct and immediate economic consequences.

TABLE 20: STRATEGIES FOR FISHERIES MANAGEMENT PLAN

STRATEGIES	PERCENTAGE
Part time fishers to move from fishing into other income earning vocations	94
Establish Closed Seasons for certain species	92
Every Fisherman must have a license and keep it up to date	92
Heavy fines and punishment for dynamiters	92
Protect the small fish from being caught	90
Persons fishing without a license should be fined	84
Protection of mangroves and sea grass beds	80
Banning some types of gears	79
Establish fish sanctuaries for the fish to breed	78
Net mesh should be made wider	73
Establish strict restrictions to access to the resources.	69
Limiting the number of large boats	40
The number of fishermen should be limited/controlled	24
The quantity of fish caught should be limited/controlled	24

4.5 Strategies for Restoring the Health of the Fisheries

Fishers and other stakeholders in the fishing communities where the baseline survey was conducted had well informed views on how the problem of over fishing and habitat degradation can be tackled and possibly solved. They had largely comparable and similar views for solving the problem vis-à-vis finfish, lobsters and conch, as shown in the following table:

TABLE 21: IMPROVING THE HEALTH OF THE STOCKS

FINFISH	LOBSTERS	CONCH
Prohibit destructive gears such as trasmallo , chinchorro de arrastre(drag net) & fola (turtle nets)	Ban some gear such as chinchorro de ahorque(gill net) licuadoa and chinchorro de arrastre.	Ban scuba/ hookah diving (licuadora)
-----	Introduce longer closed season	Introduce longer closed season
Address pollution problem & fish poisoning at Higuano River.	Address pollution problem	-----
Find alternative employment for fishers	-----	-----
Enforce use of larger net meshes	Protect breeding grounds	Protect juveniles
-----	Improve enforcement of closed season.	Improve enforcement of closed season.
Reduce number of fishing trips	Reduce number of fishers	Reduce number of fishers
-----	Introduce temporary closure of the fishery.	Introduce closed areas at breeding grounds such as Calaninita Island

Most of the propositions presented above are theoretical answers to genuine problems plaguing the fisheries and need to be revisited by the Fisheries Conference. The outcome of the deliberations might inform the provisions which could be included in the National Fisheries Management Plan. It would be interesting to know the position of the stakeholders represented at the conference on recommendations such as the reduction of the number of fishers, nets and traps; introducing longer closed seasons; closing the fisheries for two or more years; introducing closed areas at previous spawning aggregation grounds; banning popular gears such as the chinchorro (nets) and the practice of licuadora (scuba diving). The search for solutions to the twin problems of over fishing and habitat degradation are so critical that the stakeholders should be intimately involved in the exercise. The National Fisheries Conference should be the appropriate start-off forum.

4.6 Multiple Use Conflict and Conflict Resolution

The problem of multiple use conflict is not unique to the Dominican Republic. It is by far the most expanding problem facing most of the fisheries in the Caribbean. In almost all cases the problem is both internal to the resource users within the countries, and between the local fishers and outsiders who intrude. If we take the testimony of the fishers and stakeholders in this survey at face value, the Dominican Republic could distinguish itself as the only CARIFORUM

country without any significant illegal foreign fishers' incursions into its territorial waters, apart from its closest neighbour Haiti. There are reports of Haitian incursions particularly in Pedemales and the Parque National Jaragua. The technological deficiencies of the small-scale fishers of Haiti could not have produced any significant widespread evidence in off-shore areas. One could only speculate that the problem with language and interpretation might partly explain this lacuna. The concept of 'conflict' might have been the main cause.

The other explanation might have been the fact that besides the case of Haiti, foreign incursions were mainly a one-way process: DR fishers intruding into other countries' marine territories, for example, The Bahamas, Jamaica, Cayman Islands and Colombia. The opposite traffic is not as lucrative due to relatively poor state of the stocks in the Dominican Republic. Hence it was no wonder that the fishers of the DR did not find it necessary to complain. Evidence from documented sources, oral testimony by top bureaucrats, fisheries administrators and some traditional leaders shows a preponderance of these incidents pitching DR fishers against fishers of the Bahamas, with official complaints from the Bahamian governmental sources on record. The ICRAFD project plans to support the establishment of a joint conflict resolution mechanism between the DR and the Bahamas.

Internally, there were a variety of multiple use conflicts in the form space/territory and clashes of incompatible gears, setting divers against float fishers and sports fishers, set nets and drift nets users, scuba divers and line fishers, line fishers against chinchorro (net) users. Another interesting finding is that none of the respondents claimed that these conflicts resulted in physical confrontation; all took the form of arguments, usually ending up with the Marine Authorities. The overwhelming evidence was that the latter were incompetent in handling such matters. There was no evidence that the fishers' organizations had developed any mechanisms for settling disputes. Neither was the Fisheries Department involved in any significant way.

The stakeholders could consider discussing the proposition that all the fishermen's Organizations should make it a priority to include conflict resolution mechanisms in their organizations' constitutions. Second, processes should be set in motion for the formation of a national umbrella organization that will streamline the process and develop a national approach to the settlement of disputes. Third, the Fisheries Department should consider establishing standards and procedures for reducing multiple use conflicts to the minimum. The ball could start rolling at the National Fisheries Conference.

4.7 Co-Management of the Resources

The Key Informants had already given their full support to this proposition, and went further to advocate for the expansion of the constituting of the partnership to go beyond fishers as such, to include other stakeholders. The fishers and stakeholders in the fishing communities who participated in the Community Baseline Survey provided a mixed position as shown in the table that follows:

Table 22: Support for Co-Management

PREFERRED APPROACHES	PERCENTAGE
By the government and the fishermen	60
The government alone	12
The fishermen alone	17
Government and all the stakeholders	4

The choices made here do not reveal any clear-cut decision compared to the choices made by the Key Informants and the CARICOM fishers (P. Espeut, 1994). The choice of systems managed by government alone and fishers alone need to be reexamined critically by the National Fisheries Workshop. The concept of co-management needs to be defined and operationalized in terms of the peculiar circumstances of the Dominican Republic, and the nature of establishing Community Based Co-Management regimes needs to be critically examined. The concept and practice of co-management should be a subject matter for training programs for fishers' groups in the country at large.

The composite Multidisciplinary – Multi stakeholder – Triangulation method was utilized in collecting the data that has been analyzed to produce this report. The latter has brought to the surface a number of ideas, issues and problems that would need further consideration by the stakeholders and policy makers of the Dominican Republic. The discussions engendered by the findings of this report will facilitate the following:

- Provide information on which the deliberations of the National Fisheries Workshop will be based.
- Provide the initial information for the agenda of the proposed National Dialogue Group of stakeholders.
- Begin shaping the direction of future fisheries management policies.
- Adjustments to the 5-year work plans initially prepared from documentary and on-the-spot information garnered during the Planning Mission.
- Preparation of a national Fisheries Management Plan and related fisheries laws and regulations.

It is expected that these discussions would be monitored closely by the policy makers, and that they would pave the way towards institutionalizing the involvement of the resource user groups and stakeholders in the decision making process. As stated in the report on Suriname, “ The Workshop and the National Dialogue Group will be forums at which the stakeholders would be well represented. There could be no better opportunity for the government to serve notice of, and demonstrate its seriousness to involve the resource users and the stakeholders in the resource management decision-making process.”

The rest of this concluding section would identify and briefly explain each of the issues generated by the analysis of the survey data.

ISSUE # 1: Capacity Building for the Resource User Groups and other Stakeholders

Based on the literacy levels of the majority of the respondents and their reading abilities and habits, this report has suggested that there needs to be a combined use of simple printed educational materials, and audio-visual aids such as the radio and the video to build the capacities of the resource user groups and other stakeholder groups at the community level. This could be implemented through educational programs and regular information dissemination and exchange sessions, to prepare them for the responsibilities involved in the co-management of the resources. This proposal should be examined at the National Fisheries Conference and

furthermore, by the proposed National Dialogue Group of stakeholders. These groups could come out with detailed strategies for the realization of this objective as follows:

- **WHO** the Resource Persons and the participating groups should be and how to mobilize them for effective participation.
- **WHAT** the subjects for the educational sessions should be and what training materials would be needed.
- **WHERE** these sessions would be held in particular communities.
- **WHEN** these training sessions would be held and their frequency, taking into consideration the daily and seasonal work cycles of the generality of the resource users groups and other stakeholder groups.

ISSUE # 2: The Use of the Radio for Safety at Sea.

We reiterate the fact that even though the radio was very popular with most respondents, only nine of them carried their radio out to sea. The habit of carrying radios with the capacity of relaying messages to land while at sea in emergency situations should be inculcated into all small-scale fishers. The participants of the National Fisheries Workshop could be introduced to the VHF radio and its capability of ensuring the safety of the crew in emergency situations. They could be trained on how to use it for communication with colleagues at sea, and with officials on land. The possibility of establishing a net work between sea and land, involving fishers, their organizations and the fisheries administration on land could be explored.

ISSUE #3: Solutions to the General Problems of the Fisheries.

The analysis has shown that the inshore fisheries of the Dominican Republic is faced with the problems of over fishing, the threat of stock depletion, habitat degradation and irresponsible fishing practices through the use of inappropriate gears and methods. The real causes of these problems have not, however been brought to light. It will be the task of the National Fisheries Conference to examine these issues and systematically and critically determine the causes and the possible solutions to them. The stakeholders at this gathering could also recommend legal regulations that could contribute to solving these problems and the means of enforcing them. The formulation of the national Fisheries Management Plan could benefit tremendously from this, particularly due to the fact that the Resource User Groups would have had a hand in their formulation.

ISSUE # 4: Department's priority areas for staff training

Two sharply differing pictures were generated when the fisheries administrators were requested to list, in order of priority, a number of policy areas in terms of the training needs of the department. (Table 13, page 19). The official priorities in fisheries policy are expected to approximately reflect the problems and needs of the fishing industry and those of the fishing communities. Such a sharply contrasting outcome leaves much to be desired. It should be legitimate therefore, for the situation to be better clarified by the direct resource user groups and other stakeholder groups, to be represented at the National Fisheries Conference. The outcome could impinge on the future official policies and the content of the National Fisheries Management Plan.

ISSUE # 5: Aquaculture

Fish farming is the burgeoning sub-sector of the fishing industry in the Dominican Republic, with the potential of eventually overtaking marine fish capturing as the most sizeable contributor to economic growth within the industry. The Fisheries Conference could put it on the agenda. Could the artisanal sub-sector organizations and communities benefit from participation in this economic activity, and if so, how? How would this contribute to institutional strengthening, or alternative income generating opportunities? What leading role could the resource user organizations play in this? What assistance would be needed, and how could government and NGOs support these ventures?

ISSUE # 6: Fish Handling and Marketing

This report has identified the lack of skills and means of storing, preserving, processing and packaging of fish and fish products for the market as lying at the heart of the problems facing the small-scale fishers. The fishers have lived for a long time with the problems posed by the lack for freezing facilities for handling the catch from the fishing grounds to the processing facilities. This has been exacerbated by the outcomes of the recent advances made in fishing technology that has enabled them to operate offshore and hence to harvest large pelagics. The outcome has been seasonal gluts of tuna fishes and related loss of revenue to the fishers. There is also a need to build the capacities of the artisanal fishers in the handling of fish (HACCP) and the storage, processing and marketing of the product. Training programs would provide the skills and means to play a more active role in the export market. These observations should be critically examined at the National Fisheries Conference, and possibly, pursued further by the National Fisheries Dialogue Group.

ISSUE # 7: Sustenance of Fisher folk Organizations

The meaningful and effective participation of the resource users in the management of the fisheries resources is contingent on their being organized into dynamic organizations. As in many other CARIFORUM countries, the history of these organizations is characterized by instability. The specific problems inhibiting the sustenance of these organizations should be explored, and the strategies and support needed to end this trend should be examined at the national Fisheries Conference. As in the case of Suriname, the deliberations of the stakeholder groups represented at the Conference could include, but not limited to the following propositions:

- Identify stumbling blocks that hindered the sustenance of past organizations.
- Chart various courses for averting a repetition of these in future.
- Identify motivational factors and incentive schemes that could engender the formation of new resource user organizations.
- Identify means of attracting new members and keeping them active.
- Identify ways of maintaining organizational stability and sustenance.
- Identify the role of government and its functionaries in the process.
- Identify the role which the resource user groups themselves should play.
- Examine the role Non-Governmental Organizations (NGOs) could play, and
- Make appropriate recommendations for follow up action.

The National Dialogue Group could in future explore the possibilities in fisher folk groups becoming economically self-sufficient, and generating economic benefits for the generality of the membership. This could include gaining access to credit on easier terms for the organizations and for their members; investing in the processing and exporting business, aquaculture and other profit generating ventures, and encouraging the members also to diversify their economic bases. Organizations with solid economic bases and built-in incentive schemes, in which the benefits and perceived by the members to outweigh the costs, tend to be more stable and active.

ISSUE # 8: Surveillance and Enforcement

The findings of this report show that the dual surveillance and enforcement regime shared by the fisheries department through the Ministry of the Environment, and the Military establishment, through the Navy, has not been effective. Surveillance and Enforcement are two very vital elements needed for the sustainable development and management of the fisheries resources. The National Fisheries Conference should review the existing system, its advantages and disadvantages, and how to improve it or replace it with an entirely differently constituted institutional arrangement. What would be the differing roles of the different groups constituting the team? What factors could facilitate the effective participation of the fishers and fishing communities?

ISSUE # 9: Causes of Stock Depletion and Remedial Action for Sustainable Fisheries Management.

The elements of fisheries management that constitute Tables 19, 20 & 21 under the headings:

- Causes of Stock Depletion
- Strategies for Fisheries Management Planning, and
- Improving the Health of the Stock, respectively,

could be reproduced for the participants for critical examination, culminating in the making of recommendations that could guide the preparation of a National Fisheries Management Plan and a set of regulations for the management of the resources. Some of the issues raised could also constitute subjects for the deliberations of the National Dialogue Group, and public educational programs.

ISSUE # 10: Internal Conflicts and Conflict Resolution

Multiple - Use Conflict has been identified as the most expanding problem facing the fisheries of the Caribbean/CARIFORUM states. This report has identified conflict over space/territory, those pitching users of incompatible gears against one another, and others that could evolve in physical confrontation. On page 36 of this report, we have recommended that:

The stakeholders could consider discussing the proposition that all the fishermen's Organizations should make it a priority to include conflict resolution mechanisms in their organizations' constitutions. Second, processes should be set in motion for the formation of a national umbrella organization that will streamline the process and develop a national approach to the settlement of disputes. Third, the Fisheries Department should consider establishing standards and procedures for reducing Multiple Use conflicts to the minimum.

The National Fisheries Conference should include this issue on the agenda and in addition, make realistic recommendations for future action.

ISSUE # 11: Dealing With Across Border Conflicts

The intrusion of fishers into the territorial waters of neighbouring countries for poaching is also one of the growing conflict areas that need to be addressed. We have attempted to rationalize and explain why the respondents of this survey downplayed their encroachment into the waters of neighbouring countries, citing among other things, language problems, and the largely unidirectional nature of the phenomenon. We have shown that there exists overwhelming evidence from other sources, of fishermen from the DR. getting involved in conflict with fishers from neighbouring states such as the Bahamas, Jamaica, and the Cayman Islands.

The issue should be examined at the National Fisheries Conference, and recommendations made on policies that could reduce these conflicts to a minimum. The Conference should also recommend mechanisms that would make the participation of the Resource User Groups in deliberations on dispute settlements across borders a priority, and institutional provisions made to that effect. This could begin with the formation of “Bi-national committees to promote dialogue, greater exchange of information and closer co-operation” between the DR. and the Bahamas, Jamaica, and Haiti, under WBS 512.2 of the Work Plan for the Dominican Republic (April 2000 – March 2005) of the ICRAFD project.

ISSUE # 12: PROMOTING THE CONCEPT AND PRACTICE OF CO-MANAGEMENT

Unlike other CARICOM/CARIFORUM countries which made a clear-cut preference for co-management of the resources (P.Espeut,1994), followed lately by Suriname (CFU, 2000), the choices made by the respondents of this survey was not definitive. For example the choice of some respondents for management by government alone (12%) and by fishers alone (17%), need to be reexamined at the National Fisheries Conference. The definition of the concept, the forms that it could take, the specific geographical, environmental, socioeconomic conditions most suitable for the system, the roles that organized fishers, fishing communities, government and NGOs could play in institutionalizing the system and ensuring its sustenance and the working relationships it should engender, should all be subjects for intense examination by the National Fisheries Conference, the National Dialogue Group, and the educational programs for fishers, the stakeholders and students in the fishing communities.

This report has comprehensively tackled a number of problems and issues germane to the development and management of the fisheries of the Dominican Republic. Whilst most of the findings are similar to those found elsewhere in the CARICOM/CARIFORUM region, this report has also generated some findings that are peculiar to the Dominican Republic. A number of

issues have been identified in this concluding section as warranting further examination by the National Fisheries Conference, and by extension, by the proposed institution to be known as the National Dialogue Group. This latter, could be the forerunner of a National Advisory Committee. These arrangements are geared towards providing the institutional provisions that would systematically anchor the Fishers' and other stakeholder groups into the national decision making process, and institutionalize their role in the co-management of the fisheries resources of the Dominican Republic.

In conclusion, it should be noted that these provisions would only operate successfully with the legal and political support of the government of the day.

Appendix I

Baseline Survey of Fisheries Divisions/Departments

in

Four Caribbean ACP Countries

(Suriname, Bahamas, Dominican Republic & Haiti)

by

CARICOM FISHERIES UNIT, BELIZE

for the

Fisheries Component of the

Integrated Caribbean Regional Agriculture and Fisheries Development Program (ICRAFD)

[The CARIFORUM Fisheries Project]

- Director of Fisheries/Chief Fisheries Officer
- Senior Fisheries Officer
- Other (specify).....

Country:

Location:

Interviewer :.....

Date of Interview :.....

SECTION 1

GENERAL OVERVIEW OF THE NATIONAL FISHERY

(Objective: The purpose of this section is to obtain a general overview of the size and importance of the fisheries of this country)

1. Approximately, how many fishermen operate in this country?
 - (i) How many are registered or licensed?.....
 - (ii) How many are full time fishers?.....
 - (iii) How many are part time fishers?.....
 - (iv) How many are recreational fishers?.....
2. Approximately, how many fishing boats are there in this country?
 - (i) How many are commercial boats?.....
 - (ii) How many are recreational?.....
3. What is the approximate annual total weight of
 - (i) The catch?.....
 - (ii) The landings?.....
 - (iii) Discards?.....
4. What is the value of the landings?.....
5. What is the **quantity** of fish exported annually?.....
6. What is the **value** of fish exported annually?.....
7. How much fish is imported annually:
 - (i) In weight?.....
 - (ii) In value?.....
8. How do fish and fish products rank in the annual GDP of your country?.....
.....

SECTION 2

LEGISLATION, REGULATIONS AND ENFORCEMENT

(Objective: The purpose of this sub- section is to determine the current status of the legislative and regulatory framework governing fisheries in this country)

1. What act or acts provide legislative authority over fisheries in this country?.....
2. When did the legislation(s) come into force?.....
3. Does the legislation authorize preparation and implementation of fisheries management plans? Yes No
4. When were the most recent fisheries management regulations passed?.....
5. Under whose authority are fisheries regulations passed?.....

MONITORING, SURVEILLANCE AND ENFORCEMENT

(Objective: The purpose of this sub-section is to determine the current capacity for monitoring, controlling and effecting surveillance within the national sea space and the extent to which fisheries regulations are enforced)

- 6. What method is used to bring regulations to the attention of fishermen and other stakeholders in the fishing industry?.....
- 7. Are monitoring and surveillance of the fisheries regularly carried out?
 Yes No

SECTION 2

- 8. Which organization is responsible for fisheries surveillance and enforcement?
.....
- 9. Describe how the surveillance operations are carried out.....
.....
- 10. How frequently are patrols conducted?.....
.....
- 11. How many persons in your department are involved in fisheries surveillance and enforcement – on a :
 i. full time basis?
 ii. part time basis?.....
- 12. Are all fisheries management regulations enforced?
 Yes No
If no, why?.....
- 13. Which regulations are seen as the most important?.....
.....
- 14. What actions are taken when violation of regulations are discovered?.....
.....
- 15. Are these actions sufficient to discourage further infractions?
 Yes No
- 16. What do you think are the main constraints to monitoring, controlling and effecting surveillance in your country?.....
- 17. What should be done to improve monitoring, surveillance and enforcement of fisheries regulations?

SECTION 3

STATUS OF FISHERIES MANAGEMENT

(Objective: The aim of this section is to better understand how fisheries are managed, how fisheries management plans are formulated and implemented and how the fisheries change as a result of management intervention)

1. What is/are the main goal(s) of fisheries management in your country?

If yes, what is the order of priority? (e.g. 1,2,3 etc with 1 indicating the highest priority)

Fisheries development	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	.....
Food self-sufficiency	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	.....
Full employment	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	.....
Sustainable management	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	.....
Social stability	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	.....
Foreign exchange earnings	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	.....
Environmental protection	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	.....

2. What management measures are now in place to regulate the fisheries?

.....
.....

3. Do you have a fishery management plan? Yes No

4. If yes, when was the most recent plan:

- i. prepared?.....
- ii. introduced?.....
- iii. updated?.....

5. What are the objectives of the current plan?.....

.....
.....

6. Were fishers and other stakeholders involved in the preparation process?

Yes No

7. What aspects of the fisheries or species does the plan focus on?.....

.....

8. Was the plan developed as part of a fisheries project funded by an external agency? Yes No

If yes, what organization provided the funds, and how much funding did it provide?.....

.....

9. If you had to prepare another plan, what would you do differently?.....

.....

-
10. If you do not have a management plan, please explain why?.....

11. In the absence of a formal plan, how are management measures developed
 and implemented?.....

SECTION 4

STRUCTURE AND FUNCTIONS OF THE FISHERIES DEPARTMENT

(Objective: To gain some insight into the structure and operation of the fisheries departments of CARICOM members.
 The main aspects of interest are organizational arrangements,
 staffing levels and training.)

1. Describe the place of your department in the government structure.....

2. To whom does the head of your department report?.....

3. What has been the annual employment level of the department for the past
 five years?.....

4. Which positions are the most difficult to fill with qualified personnel?.....

5. Which of these vacant positions are regarded as critical for your operations?.....

 Give reasons.....

6. How is the functioning of the department affected by these vacancies?.....

7. What steps are being taken to recruit or train personnel to fill vacant positions?.....

8. Are there any sources of funding available for training staff? Yes No

If yes, specify.....

9. Which subject areas have the greatest need for training?

**If yes, what is the order of
 priority?
 (e.g. 1,2,3 etc)**

- | | | | | | |
|--|--------------------------|-----|--------------------------|----|-------|
| Fisheries resource conservation and management | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No | ..... |
| Post-harvest knowledge and skills | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No | ..... |
| Community participation and public education | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No | ..... |
| Data management | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No | ..... |
| Fisheries research | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No | ..... |
| Fisheries statistical analysis | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No | ..... |
| Environmental protection | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No | ..... |

10. What are the priority sector areas to which scarce resources should be applied in the future?

**If yes, what is the order of priority?
 (e.g. 1,2,3 etc)**

- | | | | | |
|--|--------------------------|-----|--------------------------|----|
| Fisheries data management | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| Stock assessment | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| Fisheries technology | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| Community Participation & Public Education | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| Surveillance, Monitoring & Enforcement | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| Habitat Protection | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| Fisheries co-management | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| Institutional Strengthening / training | | | | |
| Fisheries Administration | | | | |
| Other (specify)..... | | | | |

11. What information and reports does your staff routinely prepare?.....

12. What are the major problems affecting the operations of the department?.....

13. What recommendations would you make to improve effectiveness and efficiency of your department?.....

SECTION 5

EXTENSION PROGRAMS

(Objective: The purpose of this section is to gain some insight into the nature and extent of fisheries extension services delivered by the fisheries department)

1. Does your department have an extension program or offer extension services?

Yes No

If yes, how long has the program or services been in existence?.....

2 Does the program flow from a national policy or management plan, or a fisheries project, or are services offered on an ad hoc basis?.....

.....

3. What are the main objectives of your extension program?.....

.....

4. Are these being achieved? Yes No

If not, why?.....

.....

5. To which section(s) of the fishing industry are extension services provided?.....

.....

6. What services are delivered?.....

.....

Which services are considered to be the most important?.....

.....

7. What methods are used in delivering the services?

Radio

Television

Posters/handouts/brochures

Community meetings

Videos/Slides

Face-to-Face interactions

Group discussions

Environmental protection

Newspapers

Other (specify).....

8. How many of your staff is involved in extension work?.....

What percentage is this, of your total staff?.....

9. Are all the extension positions filled? Yes No
 If not, what percentage is vacant?.....
10. What training has your extension staff received?.....
 What further training is required?.....

11. What are the major constraints to offering extension programs/services?.....

12. How do you deal with these constraints?.....

SECTION 6

DEPARTMENT'S RELATIONS WITH RESOURCE USER ORGANIZATIONS

(Objective: This section examine the working relationships between the fisheries department, representing government interests in the fisheries and the resource user groups, who are the main stakeholders)

1. Are there any fisher folk organizations in your country? If yes, how many?
 Yes No
 If yes, how many?.....
2. Are they well organized?
 Yes No
3. Do they effectively represent fishers?
 Yes No
4. Does the fisheries department have regular meetings with the organizations?
 Yes No
5. What are the objectives of these meetings?.....

6. How often do you hold meetings?.....
7. What topics are generally discussed at these meetings?.....

8. Could you cite any specific examples where the interaction with fishers' organizations has led to improvements in the fisheries?.....

.....
.....
.....

9. Does your department involve fishers' organizations in making decisions effecting changes in the industry?

Yes No

If yes, explain the process through which this is done.....

.....
.....
.....

10. If fishers' organizations support the activities of your department, are there

i. particular areas of activity they support?

Yes No

ii. Are there any areas they do not support?

Yes No

If yes, which areas?.....

11. How would you describe the working relations between your department and the fishers' organizations?

- very poor
- poor
- barely cordial
- cordial
- very cordial
- excellent

12. What, if anything, needs to be done to improve the relations between your department and fishers' organizations?.....

.....
.....

SECTION 7

FISHERIES RESEARCH

(Objective: The aim of this section is to determine the existing capacity, the past and the present records of fisheries research in the country)

General Research

1. Does fisheries research fall within the mandate of your department?

Yes No

2. What has been the main focus of the fishery research conducted in your country over the past five years?.....
.....

Provide titles of the projects, budget levels.....
.....

3. Has there been an increase or decrease in fisheries research over the past five years?

increase
decrease
no change

4. What factors account for the change?.....
.....
.....

5. What are the main sources of funding?.....
.....
.....

6. What are the main constraints?.....
.....
.....

7. What aspects of fisheries management would benefit most from fisheries research in your country?.....
.....
.....

Research Capacity

8. What resource does your department have to support fisheries research?.....
.....
.....

9. What resources are needed for promoting fisheries research?.....
.....
.....

10. Has your department received external funding for fisheries research projects in the past five years?

If yes, specify donor, amount received and focus of the research.....
.....
.....

SECTION 8

DATA COLLECTION

(Objective: The purpose of this section is to develop an understanding of the current status of data collection systems in your country. Of interest are data collection, analysis and reporting.)

1. Does your department collect fisheries data? Yes No

If yes,

- i. in what year did **routine data** collection begin?
- ii. how often do you collect data?.....

2. Why do you collect fisheries data?.....

.....

.....

3. What factors are taken into consideration in deciding what data to collect?.....

.....

.....

4. Where are data collected?

- in boats
- at landing sites
- in the market
- in hotels/restaurants
- at the Co-operatives
- Other (specify).....

5. What collection instruments are used :
(Tick all options that apply)

- Logbook
- Questionnaire
- Routinely
- Census
- sample survey
- Observers
- Form
- Routinely
- Census
- sample survey
- Observers
- visual survey
- Receipts
- Other (specify).....

6. What data elements do you record for?

- i. Catch
- Species Weight
- Other (specify).....
- ii. Effort
- Number of fishermen Number of boats
- Boat size capacity
- Other (specify).....

- iii. **Gear**
- | | | | |
|----------------------|--------------------------|-----------|--------------------------|
| Type | <input type="checkbox"/> | Size | <input type="checkbox"/> |
| Numbers | <input type="checkbox"/> | Soak time | <input type="checkbox"/> |
| Dimension | <input type="checkbox"/> | Bait | <input type="checkbox"/> |
| Non –bait | <input type="checkbox"/> | | |
| Other (specify)..... | | | |

- iv. **Biological Data**
- | | | | |
|----------------------|--------------------------|------------------|--------------------------|
| length frequency | <input type="checkbox"/> | weight frequency | <input type="checkbox"/> |
| maturity | <input type="checkbox"/> | hard parts | <input type="checkbox"/> |
| Other (specify)..... | | | |

- v. **Cost & Price**
- vi. **Exports & Imports**

Other (Specify).....

7. List the person(s) –e.g. extension officers :
- i. assigned to collect data in the field?.....

- ii. assist in data collection in the field?.....

8. How many persons are :
- i. assigned to collect data in the field?.....
- ii. assist in data collection in the field?.....

9. Do persons assigned to collect data have other departmental responsibilities?
 Yes No
- If yes, what other responsibilities?
-
-

10. How co-operative are fishers in providing data?
- | | |
|------------------------|--------------------------|
| always cooperative | <input type="checkbox"/> |
| most times cooperative | <input type="checkbox"/> |
| sometimes cooperative | <input type="checkbox"/> |
| never cooperative | <input type="checkbox"/> |

11. Has the data collection system changed over the past five years in terms of the:
- | | | | | |
|------|--------------------------|--------------------------|---------------------------------|----------------|
| | | | | Explain |
| i. | type of data collected? | <input type="checkbox"/> | Yes <input type="checkbox"/> No | ..... ..... |
..... |
| ii. | coverage of collection? | <input type="checkbox"/> | Yes <input type="checkbox"/> No | ..... ..... |
..... |
| iii. | method of collection? | <input type="checkbox"/> | Yes <input type="checkbox"/> No | ..... ..... |
..... |
| iv. | frequency of collection? | <input type="checkbox"/> | Yes <input type="checkbox"/> No | ..... ..... |
..... |

12. Is the data management system computerized?

Yes No

i. Which operating system is currently running on the computer(s)?

- | | | | |
|-------------|--------------------------|----------------------------|--------------------------|
| DOS | <input type="checkbox"/> | Windows NT 4.0 Workstation | <input type="checkbox"/> |
| Windows 3.1 | <input type="checkbox"/> | Windows NT 4.0 Server | <input type="checkbox"/> |
| Windows 95 | <input type="checkbox"/> | Windows Professional 2000 | <input type="checkbox"/> |
| Windows 98 | <input type="checkbox"/> | Linux | <input type="checkbox"/> |

ii. What software application(s) (eg Microsoft Word, Excel, Dbase) do currently have on your computer(s)?.....

.....
.....
.....

iii. What are the problems involved in using the computerized system?

.....
.....
.....

13. Are there other organization(s) involved in:

Name of the Organisation

- | | | | | | |
|---------------------------------------|--------------------------|-----|--------------------------|----|-------|
| i. data collection | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No | ..... |
| ii. fisheries statistical analysis | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No | ..... |
| iii. fisheries reports/summary tables | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No | ..... |

14. If yes, what type(s) of:

- i. data do they collect?.....
- ii. reports do they produce?.....

15. What information products (eg. annual production tables, reports, etc) are produced from the data collected by your department?.....

.....
.....

16. For whom are these products produced (e.g. external organizations such as the FAO, the national fisheries division etc.):

.....
.....
.....

17. Does the department receive any feedback on the adequacy of the statistics/reports from users?

Yes No

i. If yes, from whom?.....
.....

18. What are the main gaps (e.g. no data collected in 1993) in your data collection system?.....

-

19. What additional data elements (e.g. length frequency) should be collected?.....

20. How are decisions made about the data collection system?

21. Who participate in the decision making process?.....

22. List any current problem(s) in the area of :
- i. data
 collection
 - ii. data
 analysis
 - iii. Reporting

SECTION 9
AQUACULTURE

1. Is aquaculture development one of the sub-sectors of the fishing industry?
 Yes No
2. Approximately how many aquaculture establishments are there?.....
3. What is the annual total value of aquaculture products?.....
4. What is the annual export value of aquaculture products?.....
5. Are there plans to expand this sub-sector in the future? Yes No
6. If so, what are the plans?.....

7. What resources will be needed for this expansion?.....

8. Do you have an aquaculture unit in your department? Yes No

9. How many officer serve in this unit?.....

10. How many more will need to be trained to serve in this unit?.....

SECTION 10

ORNAMENTAL FISHERY

1. Is ornamental fishery one of the sub-sectors of the fishing industry?

Yes No

If yes, which areas of the country are noted for this fishery?.....
.....
.....

2. Approximately how many persons are involved?.....

3. What are the species of fish involved?.....
.....
.....

4. What is the annual total value of this industry?.....
.....

5. What is the annual export value?.....
.....

6. What resources will be needed for this purpose?.....
.....

7. Is there a management plan for this fishery?.....
.....

8. Is this fishery regulated?
 Yes No

If yes, what are the regulations?.....
.....

9. Are there plans to expand this sub-sector?
 Yes No

If yes, what are the plans?.....
.....

SECTION 11

POST HARVEST TECHNOLOGY

1. What regulations exist for the handling of captured fish?.....
.....
.....

2. Are these required standards backed by law? Yes No
3. Are the laws enforced? Yes No

4. Is/Are there persons in your department who have been trained in HACCP?
 Yes No
5. Are there fishers who have been trained in HACCP? Yes No

6. Is there any national strategy for marketing fish and fish products?
 Yes No
7. Are there any fish processing plants in your country? Yes No

8. How many are there?.....
who owns them?.....

9. Do fishers' organizations have some control over fish processing?
 Yes No
10. If yes, explain.....
.....

11. What role does the department play in the handling, processing and marketing of fish and fish products?.....
.....
.....

12. Would there be any need for training persons in the department in this area?
 Yes No

Appendix II

Key Informant Interviews in ACP Countries (Qualitative Assessment of Caribbean Fisheries Management)

(Suriname, Dominican Republic, Bahamas and Haiti)

CARIFORUM PROJECT,

CARICOM FISHERIES UNIT, BELIZE

Belize City, Belize C.A.

The Fisheries Component of The European Union (EU) financed Integrated Caribbean Regional Agriculture and Fisheries Development Program (ICRAFD)

Please tick as appropriate for Respondent

- | | |
|---|---|
| <input type="checkbox"/> Fisher (Member of Organization) | <input type="checkbox"/> Fisheries Officer (Extension /Field) |
| <input type="checkbox"/> Fisher (Non-member of Organization) | <input type="checkbox"/> Political Leader (Local, Regional) |
| <input type="checkbox"/> Community Leader/ Stakeholder | <input type="checkbox"/> Senior Bureaucrat (Agriculture/Fisheries) |
| <input type="checkbox"/> Fisheries Administrator/Senior Fisheries Officer | <input type="checkbox"/> NGO Representative (Fisheries, Marine Environment) |
| <input type="checkbox"/> Academia (University) | |

Country.....

Location.....

Interviewer.....

Date of Interview.....

1. What are the main fisheries management issues/problems in your
 - a) Community?
 - b) Country?

2. What is the level of community awareness of these issues in your
 - a) Community?
 - b) Country?

3. What is being done, at the community level, to respond to these issues/problems?

.....

.....

.....

4. What (more) do you think could be done to respond to these issues/problems?
 - a) At the local level?
 - b) At the national level?

5. What are the current institutional arrangements (laws, rules, regulations & organizations) to deal with fisheries management issues?
 - a) In your community?
 - b) In your country?

6. What specific arrangements exist to facilitate community participation in fisheries in your country?

.....

.....

.....

7. Do you feel provisions should be made for (increased) community participation in fisheries management?

Yes No

If yes, what should these be?.....

.....

.....

...

8. Do fishers in your communities **positively or negatively respond** to the management initiatives of government agencies?

Yes No

Why?.....

.....

.....

9. Are there any laws/regulations that you would wish could be introduced in fishing in your country?

If yes, what are these?

10. Who do you think should manage the fisheries in your community/country?

- Government alone
- Fishermen alone
- Government and fishermen as partners
- Other, (specify).....

Appendix III

Questionnaire on Current Data Collection Issues in the ACP Countries

by

THE CARICOM FISHERIES UNIT, BELIZE

For

(THE CARIFORUM FISHERIES PROJECT)

Fisheries Component of the Integrated Caribbean Regional Agriculture and Fisheries Development Program (ICRAFD)

Questionnaire on Current Data Collection Issues

(For Suriname & Bahamas)
Section A

General

Please tick where applicable

Please list the data collection locations in your country	Is Biological Data Collected at this location?		Is Catch and Effort Data Collected at this location?		Are there conflicts /Problems at this location?		Is there need for immediate attention?	
	Yes	No	Yes	No	Yes	No	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section B
Source of Problems/Conflicts

1. Indicate which group(s) cause(s) the most problem

- Vendors
- Fishers
- Boat owners
- Captains
- Other, specify.....

Section C
Nature of Problems/Conflicts

Please tick as appropriate

Problem Issues	In Relation to Biological Data		In Relation to Catch and Effort Data	
	Yes	No	Yes	No
Providing estimate of catch data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Handling of unsold fish for maturity data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cutting of unsold fish for maturity data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reluctance/refusal to provide effort data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None payment for fish handled	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total absence of cooperation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other, specify:.....				

Section D
The Human Effort Base

Please tick as appropriate

Human Resource Problems/Issues	Yes	No
	Shortage of staff for data collection	<input type="checkbox"/>
Lack of effective supervision of data collectors	<input type="checkbox"/>	<input type="checkbox"/>
Problems with payments of salaries	<input type="checkbox"/>	<input type="checkbox"/>
No concerted effort by department/division	<input type="checkbox"/>	<input type="checkbox"/>
Poor conditions of work	<input type="checkbox"/>	<input type="checkbox"/>
Lack of effort by data collectors	<input type="checkbox"/>	<input type="checkbox"/>
Lack of effort by extension officer(s)	<input type="checkbox"/>	<input type="checkbox"/>
Insufficient training of data collectors	<input type="checkbox"/>	<input type="checkbox"/>
Inexperience of data collectors	<input type="checkbox"/>	<input type="checkbox"/>
Fishers not convinced that the program will benefit them	<input type="checkbox"/>	<input type="checkbox"/>
Lack of equipment and transportation	<input type="checkbox"/>	<input type="checkbox"/>
Other, please specify:.....		

Appendix IV

Questionnaire for Fishers' Organizations

THE CARIFORUM FISHERIES PROJECT

[The Fisheries Component of The Integrated Caribbean Regional Agriculture and Fisheries Division (ICRAFD)]

by

The CARICOM Fisheries Unit, Belize City, Belize

NAME OF COUNTRY:.....

NAME OF ORGANIZATION:.....

LOCATION OF ORGANIZATION:.....

Section 1

Structure and Functions

Please tick all statements that apply to the organization.

1.1 Reasons for the formation of the organization.

- To provide services (give examples....) in the community
- To gain access to credit facilities
- To create employment in the community
- To gain access to fishery resources
- To have a better say in the decision making
- To obtain subsidies from government
- To do group business with little or no investment
- To stimulate the local economy
- To participate in the better management of the fisheries stock
- To make contact with the national fisheries authorities easier
- Any other (specify).....

1.2 **Type of Organization:**

- Marketing or producer type:** to harvest and/or distribute and market fish and fish products, including processing and storage
- Consumer or Supply type:** to supply members with various types of merchandise, including fishing gear and vessel parts, which are in short supply or too costly to buy in the open market place.
- Credit or Financial type:** to pool savings together for mutual aid eg. credit union, with minimal rate of interest.
- Service type:** to offer cultural and social facilities which do not exist in the community eg. housing, funeral expenses, day care facility etc.
- Lobby or Pressure Group type:** to represent the interest of members to government and other formal organizations.
- Any other (specify).....

1.3 **Characteristics of the Organization:**

- Active:** operates continually throughout the year.
- Dormant:** comes alive only in times of crisis or in emergencies
- Voluntary membership
- Equal distribution of benefits
- Restriction in membership exists (provide a brief explanation.....
.....)

-
- Cooperation exists within the group
 - There is cooperation with other sister organizations
 - Leaders determine who gets/says what
 - Any other (specify).....

1.4 Membership and Leadership Structures:

- How many members has your organization?
- How many are boat owners?
- How many are women?
- How many are fishers/boat owners/fisheries crew
- How many are non-fishers?

The Executive

- How many members serve on the executive?
- On the executive how many are boat owners?
- How many women are on the executive?
- How many non-fishers are on the executive?

Democratic Practices

How long has the present executive been in office?

- Less than a year
- One year
- Two years
- Three years
- Four years
- More than four years

How long did the previous executive stay in office?

- Less than a year
- One year
- Two years
- Three years
- Four years
- More than four years

1.5 Operations of the Organization

How many statutory meetings are held in a year?

How would you describe the rate of attendance at meetings?

- Very high
- High
- Reasonable
- Low
- Very low

On which day(s) of the week are meeting usually held?

- Sunday
- Monday

- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

During which times of the day are meetings usually held?

- Early morning
- Afternoon
- Evening

How often is election of office bearers held?

- Once in 1 year
- 2 years
- 3 years
- 4 years
- 5 years

Section 2

Working Relationships

2.1 Working relationships between your organization and other organizations could be described using the following scale:

- c Very poor
- Poor
- Barely cordial
- Cordial
- Very cordial
- Excellent

2.2 **On this basis how would you describe the working relations between:**

- The executive of your organization and the general membership?
- Your organization and the community at large?
- Your organization and other fishers' organization in the area in which your members operate?
- Your organization and the fisheries department officials?
- Your organization and the government?

2.3 Does your organization find it easy in presenting matters of concern to your members to Ministry/Fisheries officials?
 Yes No

2.3.1 If yes, how often do you get feedback?

- Regularly
- Sometimes
- Rarely
- Never

2.4 Does your Organisation have easy access to information from fisheries department?
 Yes No

2.5 How would you describe the existing nature of fishers' organization participation in fisheries management?

- Informed of decisions already made by government alone
- Responds to consultation at a late stage before final decisions are made
- Operates in partnership with fisheries officials in management
- Operates in partnership with fisheries officials in management
- Government has delegated certain powers to us in management of the fisheries
- Fishers organizations, including our own, are in complete control of management

Section 3

Condition of the Fisheries

3.1 Over the last 5 years what changes (if any) has your organization observed on the following:

- i. The volume of the catches
 - Increasing
 - Decreasing
 - Remained steady

- ii. The weight of individual fishes caught
 - Increasing
 - Decreasing
 - Remained steady

- iii. The size of the fishes caught
 - Increasing
 - Decreasing
 - Remained steady

- iv. The number of fishery ground
 - Increasing
 - Decreasing
 - Remained steady

- v. The population of fishes in the fishing grounds
 - Increasing
 - Decreasing
 - Remained steady

3.2 List/Outline the problems in the condition of the fisheries in your area of operation which need to be addressed.

.....
.....

3.3 List/Outline the specific measures which need to be taken to improve the situation.

.....
.....
.....
.....
.....

3.4 List/Outline your organization's views, based on the existing conditions, on the future of the fisheries in your area.

Section 4
Fishery Management

4.1 What form of fisheries management would your organization prefer?

- By government only
- By government and fishers' organization
- By fishers' organization alone

4.2 Under a joint management system it has been suggested that fishers' organizations would be required or expected to:

- | | | |
|------|---|--|
| i. | Provide information to fisheries officers on conditions in the fisheries | Would your organization like to participate?
<input type="checkbox"/> Yes <input type="checkbox"/> No |
| ii. | Assist in the self-policing of fisheries including turning in violators even from their own organizations and communities | Would your organization like to participate?
<input type="checkbox"/> Yes <input type="checkbox"/> No |
| iii. | Serve as surveillance agents in keeping track of foreign fishing fleet activities | Would your organization like to participate?
<input type="checkbox"/> Yes <input type="checkbox"/> No |

4.3 Does your organization have the personnel and resources to do these things?

- Yes No

4.4 If not, list the resources your organization needs in order to be able to do these things very well?

.....
.....
.....

Section 5
Needs Assessment

5.1 List/Outline the major problems facing fishers' organization like your own.

.....
.....
.....
.....

5.2 List in order of priority from the highest downwards the resources your organization needs to enable it to function more effectively

.....
.....
.....
.....

5.3 List/Outline in order of priority, from the most urgent/important, projects which need to be implemented in your area of operation in order to your organization become more effective..

.....
.....
.....
.....

5.4 Do you see any need for members of your organization to undergo some training program(s) in the near future?

Yes No

5.4.1 If yes, define the subject area(s) for the training program.

.....
.....
.....

5.5 Do extension officers operate in your communities?

Yes No

5.5.1 If yes, list some of the activities they have been carrying out?

.....
.....
.....
.....

Appendix V

Baseline Survey of Fishing Communities in the ACP Countries (Suriname, Dominican Republic, Bahamas and Haiti)

CARIFORUM Project,

CARICOM Fisheries Unit

Belize City, Belize, C.A.

The Fisheries Component of The European Union (EU) financed Integrated Caribbean Regional Agriculture and Fisheries Development Program (ICRAFD)

Fisher Vendor Processor
Boat Owner Captain Other

Country.....
Location.....
Interviewer.....
Date of Interview.....

Section 1

**Current Resource Management Practices
(Fishers/boat owners only)**

Please tick where applicable....

1. Do you fish from a boat?
 - i. Yes No

2. Do you own your boat?
 - i. Yes No

3. If yes, how many?.....

4. How is the main boat you fish from powered?

No boat	<input type="checkbox"/>	Engine and oars (outboard engine)	<input type="checkbox"/>
Sails only	<input type="checkbox"/>	Engine sails	<input type="checkbox"/>
Engine only (inboard engine)	<input type="checkbox"/>	Oars and sails	<input type="checkbox"/>
Engine only (outboard engine)	<input type="checkbox"/>	All three (oars, sails & engine)	<input type="checkbox"/>
Other (Specify).....			

5. Approximate length of boat (state units)

boat one <input type="checkbox"/>	meters							
boat two <input type="checkbox"/>	meters							
boat three <input type="checkbox"/>	meters							

If more than twelve boats insert the information overleaf.

6. What word best describes your type of boat?

Canoa	<input type="checkbox"/>	Dingue	<input type="checkbox"/>
Piragua	<input type="checkbox"/>	Pivote	<input type="checkbox"/>
Yola	<input type="checkbox"/>	Boston Whaler	<input type="checkbox"/>
Bote	<input type="checkbox"/>	Cayuco	<input type="checkbox"/>
Velero	<input type="checkbox"/>	Boat de Velocidad	<input type="checkbox"/>
Yate	<input type="checkbox"/>	Barco	<input type="checkbox"/>
Other (Specify).....			

Note, the boat names are in spanish

7. What describes your status in the fishing industry?

Boat owner and captain	<input type="checkbox"/>	Crew, receiving a share	<input type="checkbox"/>
Boat owner, but not captain	<input type="checkbox"/>	Crew, receiving a salary	<input type="checkbox"/>
Boat owner but does not fish	<input type="checkbox"/>	Crew, not receiving a salary	<input type="checkbox"/>
Boat captain, but not owner	<input type="checkbox"/>		<input type="checkbox"/>
Other, (specify)			

8. How many (total) persons go fishing in this boat?

Regularly.....

Occasionally.....

9. Which of the following fishing gear do you use?

Nasas habitianas	<input type="checkbox"/>	Buceo a compresor	<input type="checkbox"/>
Nasas de alambre	<input type="checkbox"/>	Chinchorro de ahorque	<input type="checkbox"/>
Línea y anzuelo	<input type="checkbox"/>	Chinchorro de arrastre	<input type="checkbox"/>
Cala	<input type="checkbox"/>	Balsas	<input type="checkbox"/>
Luz	<input type="checkbox"/>	Arpón	<input type="checkbox"/>
Palangre vertical	<input type="checkbox"/>	Folas	<input type="checkbox"/>

- | | | | |
|---|--------------------------|-----------|--------------------------|
| Palangre vertical | <input type="checkbox"/> | Veneno | <input type="checkbox"/> |
| Patíbulo | <input type="checkbox"/> | Dinamita | <input type="checkbox"/> |
| Buceo a pulmón con las manos (lambí) | <input type="checkbox"/> | Trasmallo | <input type="checkbox"/> |
| Buceo a pulmón (con arpón) | <input type="checkbox"/> | | <input type="checkbox"/> |
| Buceo a pulmón con gancho (pulpo y langosta) | <input type="checkbox"/> | | <input type="checkbox"/> |
| Buceo a pulmón con gancho | <input type="checkbox"/> | | <input type="checkbox"/> |
| Other (specify)..... | | | |

9a. Is there any fishing gear you now use that you did not use five years ago?

- Yes No

Which?

9b. Is/Are there any fishing gear you used five years ago that you now do not use?

- Yes No

Which?.....

10. Which of these do you catch on a regular or seasonal basis?

- | | |
|----------------------|--------------------------|
| Peces arrecifales | <input type="checkbox"/> |
| Peces del hondo | <input type="checkbox"/> |
| Peces migratorios | <input type="checkbox"/> |
| Peces de acuario | <input type="checkbox"/> |
| Delfines | <input type="checkbox"/> |
| Ballenas | <input type="checkbox"/> |
| Pulpo | <input type="checkbox"/> |
| Langostas | <input type="checkbox"/> |
| Camarones | <input type="checkbox"/> |
| Lambí / Lambío | <input type="checkbox"/> |
| Ostras | <input type="checkbox"/> |
| Calamares | <input type="checkbox"/> |
| Erizos de Mar/huevos | |
| Tortugas | |
| Manatíes | |
| Other, specify..... | |

11. Which of the above is your main catch?

12. If you catch finfish, which of the following do you catch on a regular or seasonal basis?

- | | |
|-------------------------------------|--------------------------|
| Tiburones | <input type="checkbox"/> |
| Pargos y meros | <input type="checkbox"/> |
| Atunes y Agujas | <input type="checkbox"/> |
| Carite, Macarela, Guatapaná, Dorado | <input type="checkbox"/> |
| Pelágicos costeros (cojinúa) | <input type="checkbox"/> |
| Peces demersales | <input type="checkbox"/> |
| Peces voladores | <input type="checkbox"/> |
| Peces arrecifales | <input type="checkbox"/> |
| Other,specify..... | |

13. Are you a member of a fishing organisation ?

- Yes No

14. If yes, please name it.

15. If yes, what services does your organization provide?
- Credit (loans)
 - Duty-free gasoline
 - Education and training
 - Fishing equipment sales
 - Lobby government
 - Marketing
 - Other, specify.....

Section 2

Current Resource Management Practices

1. To whom, do you mainly sell your fish? (*Tick all that apply*)
- | | | | |
|----------------------|--------------------------|--------------------------------------|--------------------------|
| Co-operative | <input type="checkbox"/> | Government marketing company | <input type="checkbox"/> |
| Fish vendors | <input type="checkbox"/> | Private marketing company (local) | <input type="checkbox"/> |
| The public | <input type="checkbox"/> | Private marketing company (export) | <input type="checkbox"/> |
| Hotels | <input type="checkbox"/> | Public institutions (e.g. hospitals) | <input type="checkbox"/> |
| Restaurants | <input type="checkbox"/> | | |
| Other, specify. | | | |

2. Where do you sell your fish? (*Tick all that apply*)
- At the landing site
 - In the market
 - On the roadside
 - Take to customer
 - Other, specify.....

3. When fishermen from this location fish, do they have a particular area in which to fish or can they fish anywhere in the sea in your country?
- Particular area
 - Can fish anywhere

If particular area, do fishermen defend this territory against encroachment by outsiders?
 Yes No

4. Do you know of any conflicts between fishers?
 Yes No
- If yes, what kind of conflicts?**
-
- If yes, how did this come about?
-
- If yes, how do fishermen resolve these conflicts?
-

5. Do you know of any conflicts between fishers and any other resource using groups?
 Yes No
- If yes, which groups?
-
- What kind of conflicts?
-
- How are they resolved?

-
6. Are there any traditional conservation measures? (*N.B. not the official closed season, if any*)

Yes No

What?

Seasons during which they avoid fishing	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
Areas where they avoid fishing	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
Size of type of fish which they do not catch	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
Catch and Release because of size	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
Build artificial shelters for young fish	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
Type of gear which they do not use	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
Other, specify				

Section 3

Perception of issues, needs, and Priorities

Fish

1. Are you **concerned** about the **population** of fish in the sea?

Yes No

2. Over the last five years has the average fish catch weight per trip,

Decreased?
 Increased?
 No change

If decreased, what do you think is the reason that the catch **weight** has decreased?

.....

3. Over the last five years has the average fish catch **size**

Decreased?
 Increased?
 No change

If decreased, what do you think is the reason that the catch **size** has decreased?

.....

4. Over the last five years have the kinds of fish caught in this area greatly changed?

Greatly changed
 Slightly changed
 No change

If changed, what do you think is the reason that the catch **composition** has changed?

.....

5. Over the last five years has the location of fish changed?

Changed
 No change

If changed, in what way has the location of the fish changed?

.....

If changed, what do you think is the reason that the fish location has changed?

.....
.....

6. Are there fishing grounds that you know of which used to have a lot of fish, but which now have few fish?
 Yes No

If yes, where?

.....
.....

7. What do you think can be done to improve the fish catch?.....

Lobsters

8. Are you **concerned** about the **population** of lobster in the sea?
 Yes No

9. In the last five years has the average lobster catch **weight**:

Decreased
No change

If decreased, what do you think is the reason that the catch **weight** has decreased?

.....
.....

10. In the last five years has the average **size** of each lobster:

Decreased
No change

If decreased, what do you think is the reason that the catch **size** has decreased?

.....
.....

11. Over the last five years has the location of the lobster caught changed?

Changed
No change

If changed, how has the location changed?

.....

If changed, what do you think is the reason that the lobster location has changed?

.....
.....

12. Are there lobstering grounds that you know of which used to have a lots of lobsters, but which now have few lobsters ?
 Yes No

If yes, where?

.....

13. What do you think can be done to improve the lobster catch?.....

.....

Conch

14. Are you **concerned** about the **population** of conch in the sea?
 Yes No

15. In the last five years has the average conch catch **weight**:
Decreased?
No change

If decreased, what do you think is the reason that the catch **weight** has decreased?
.....
.....

16. In the last five years has the average **size** of each conch:
Decreased?
No change

If decreased, what do you think is the reason that the catch **size** has decreased?
.....
.....

17. Over the last five years has the location of the conch caught changed?
Changed?
No change

If changed, how has the location changed?

If changed, what do you think is the reason that the conch location has changed?
.....
.....

18. Are there conch grounds that you know of which used to have a lots of conch, but which now have few conch?
 Yes No

If yes, where?

19. What do you think can be done to improve the conch catch?.....
.....

20. Do you think it is possible for human beings to abuse the sea and cause it to produce less ?
 Yes No

21. If you feel that less fish are being caught, some people believe that the amount of fish caught is decreasing because of problems with the fish, some believe that it is because of problems with the fishermen. What do you believe?
Fish
Fishers
Both
Neither

22. Which of the following do you think cause a reduction in the amount of fish caught?
The change in the weather
Pollution from farms

- Too many sharks
- Too many fishermen
- Too many sports fishermen
- Too many industrial fishermen
- Pollution from sewage
- Pollution from Hotels and tourism
- Fish getting smarter
- Too many nets
- Net mesh too big
- Net mesh too small
- Pollution from factories
- Too many local thieves
- Foreigners fishing illegally
- Not enough markets
- Not enough credit finance
- Destruction of mangroves
- Fish caught too young
- The use of dynamite

23. What do you understand by "Fisheries Management Plan" ?

- Yes No

24. Who should manage the fisheries?

- The government alone
- The fishermen alone
- The government and the fishermen
- Other, specify.....

25. Who do you believe is taking Fisheries Management decisions **now** in your territory?

- The government alone
- The fishermen alone
- The government and the fishermen
- The government and all stakeholders
- Other, specify.....

26. Fishery Management Plan. Which of the following strategies would you support in a Fisheries Management Plan?

- | | | | | |
|---|--------------------------|-----|----|--------------------------|
| Every fisherman must have a license and must keep it up to date | <input type="checkbox"/> | Yes | No | <input type="checkbox"/> |
| Persons fishing without a license should be fined | <input type="checkbox"/> | Yes | No | <input type="checkbox"/> |
| The number of fishermen should be limited/controlled | <input type="checkbox"/> | Yes | No | <input type="checkbox"/> |
| The quantity of fish caught should be limited/controlled | <input type="checkbox"/> | Yes | No | <input type="checkbox"/> |
| Establish fish sanctuaries for the fish to breed | <input type="checkbox"/> | Yes | No | <input type="checkbox"/> |
| Establish "Closed Seasons" for certain species (e.g. shrimp) | <input type="checkbox"/> | Yes | No | <input type="checkbox"/> |
| Net mesh should be made wider | <input type="checkbox"/> | Yes | No | <input type="checkbox"/> |
| Protect the small fish from being caught | <input type="checkbox"/> | Yes | No | <input type="checkbox"/> |
| Protection of mangroves and sea grass beds | <input type="checkbox"/> | Yes | No | <input type="checkbox"/> |
| Heavy fines and punishment for dynamites | <input type="checkbox"/> | Yes | No | <input type="checkbox"/> |
| Limiting the number of large boats | <input type="checkbox"/> | Yes | No | <input type="checkbox"/> |
| Banning some types of gear | <input type="checkbox"/> | Yes | No | <input type="checkbox"/> |

27. If yes, for **banning some type of gear**, suggest which type of gears should be banned?

.....

28. In your opinion:

- | | | | | |
|---|--------------------------|-----|----|--------------------------|
| Should fishermen be involved in managing the fish resources? | <input type="checkbox"/> | Yes | No | <input type="checkbox"/> |
| Do you think fishermen should take a leading role in managing the fish resources in the sea? | <input type="checkbox"/> | Yes | No | <input type="checkbox"/> |
| Would fishermen unite together to manage the resources in the sea? | <input type="checkbox"/> | Yes | No | <input type="checkbox"/> |

- If fishermen were given the **authority** they would report persons fishing without a **license**? Yes No
- If fishermen were given the **authority** they would report persons fishing in “**No fishing areas**”? Yes No
- If fishermen were given the **authority** they would report **dynamiters**? Yes No

29. I want to remind you of the meaning of the expression “Fisheries Management Plan”. “Fisheries Management Plans” refers to plans to organize the fishing industry so that the fish population can remain healthy for many years to come.

What do you think that people need to know in order to take good fisheries management decisions?.....

.....

.....

.....

30. Does your government have any laws governing fishing in this area?

- Yes No

If yes, what are these?.....

.....

.....

31. If yes, are these laws observed?

- Yes, usually
- Yes, sometimes
- Only sometimes
- No, occasionally
- No, usually
- Other, specify.....

Section 4

Biographical Data

1. How old were you on your last birthday?
2. What is your date of birth (day/month/year) / /
3. Gender Male Female
4. Do you have any source of income other than fishing?
 Yes No

Please list all sources of income:

- i.
- ii.
- iii.
- iv.
- v.
- vi.

5. Level of education (Tick all that apply)

- Primary school/Elementary – not completed
- Primary school/Elementary – completed
- Secondary School – not completed
- Secondary School – completed
- Tertiary / vocational / professional – not completed
- Tertiary / vocational / professional – completed

University – not completed
 University – completed
 Other (specify).....

6. Did you receive any training after leaving school?
 Yes No

If yes, what training?

Why are you not practicing your skill or trade?

7. How well are you able to read?

Can manage
 Read a little
 Can't manage
 Other, Specify.....

8. Did either of your parents catch fish for a living?

Mother
 Father
 Both
 Neither

9. Did either of your parents sell fish for a living?

Mother
 Father
 Both
 Neither

10. Were any other relative involved in fishing?

Yes No

If yes, which?

11. Are any of your children fishermen?

Yes No

If yes, how many?.....

12. Do you have a radio at home? (Not VHF) Yes No

13. Do you have a radio with you on the shore/wharf? Yes No

14. Do you take a radio with you while you fish? Yes No

15. Do you have a television at home? Yes No

16. How often do you read the newspapers?

- Daily (6-7 days per week)
- 3-5 days/week
- 1-2 days/week
- Rarely
- Never

17. Do you own any of the following?

- | | | | | |
|-------------------------|--------------------------|------------|--------------------------|-----------|
| Colour Television | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| Video Cassette Recorder | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| Bicycle | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| Motorcycle | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| Motor car, van, truck | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| Any other..... | | | | |