



**SUBPROJECT INITIATION MISSION REPORT FOR
FISHERIES DATA AND INFORMATION SYSTEMS
LICENSING AND REGISTRATION SYSTEMS (WBS 1.1.2 and 1.1.4)**

by

L. Paul Fanning
CARICOM Fisheries Management Unit
P.O. Box 642, Belize City, Belize

ABSTRACT

This document reports the activities and findings of the CFRAMP subproject initiation missions for the Data Collection and Information Systems (WBS 1.1.2) and the Licensing and Registration (WBS 1.1.4) subprojects. The missions were conducted in September and October 1991 and visited all 12 CFRAMP participating countries.

In each country meetings were held with officials of the Fisheries Departments, representatives of Cooperatives and fishers organisations, and others. The meetings were used to investigate each countries existing circumstances in the fisheries, current structure of data collection and fisheries registration, data processing and management capacity, and personnel capacity.

A program of activity to prepare for the subproject specification workshop, scheduled for June 1992, is proposed, based on the findings of the missions.

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INTRODUCTION

During the periods September 9 – 21, 1991, and October 6 – 28, 1991, staff of the CARICOM Fisheries Resource Assessment and Management Program visited participating countries (*Appendix I*). Staff members were Dr. Ward Falkner, Program Director; Dr. Robin Mahon, Senior Resource Assessment Leader; and Mr. Paul Fanning, Data Manager. Mr. Peter Murray, Data Manager at the OECS Fisheries Unit joined CFRAMP staff during October 15 – 26, 1991. In each country, meetings were held with Government Fisheries staff and, where possible, with the Permanent Secretary responsible for fisheries.

The primary objective of the mission was to meet fisheries staff and discuss the first three subprojects to be implemented under CFRAMP. These subprojects are Fishery Management Planning (WBS 1.1.1), Data Collection (WSB 1.1.2), and Licensing and Registration (WSB 1.1.4).

Discussions on each subproject addressed the following:

Data Collection Systems

- The status of fisheries data and information systems in each country
- The types of fisheries data which will be required
- The extent to which CFRAMP can utilize or build upon the approach taken in OECS FISHERY REPORT No. 2 titled "FISHERY DATA COLLECTION - SYSTEMS FOR EASTERN CARIBBEAN ISLANDS"⁽²⁾
- Anticipated problems or difficulties with establishing or enhancing a national fishery data collection system

Licensing and Registration Systems

- The status of licensing and registration systems in each country
- The fisheries and fishing units for which licensing and registration will be required
- Other aspects of licensing and registration which you would like to see incorporated into the plans
- Anticipated problems and difficulties with implementing or enhancing a fishing license and registration system

Information collected will serve as the basis for planning activities leading up to the CFRAMP sponsored workshops for each of these subprojects.

GENERAL OBSERVATIONS

Data and Information Systems

The countries reviewed fell into two groups, those that had participated in the in Fisheries Data Collection Workshop⁽²⁾, and those that had not. The workshop produced data collection plans for all the participants based on a consistent approach to identifying data collection needs and the means of addressing them. It should be noted that, in many countries, progress in implementing the data collection systems designed in the workshop has been minimal. While most of the countries which did not participate in the workshop have a fisheries data collection system in place, they would probably benefit from a review using the same consistent approach employed in the workshop.

Licensing and Registration Systems

The situation regarding licensing and registration varied widely, from no license or registration requirement, through to computerised vessel registration and fishing license systems. Although there has been no regional workshop or other activity on licensing and registration, the OECS Fisheries Unit has been considering the problem, and has recommended adoption of a modification of the FAO specifications given in "The Report of the Expert Consultation on the Technical Specifications For the Marketing of Fishing Vessels"⁽¹⁾.

SUMMARY OF FINDINGS¹

Data Collection Systems

1. Regardless of past participation in the fisheries data collection workshop⁽²⁾, the data collection systems are, with a few exceptions, still in a relatively preliminary state. Those countries that did participate in the workshop have designed systems, but for the most part have been unable to fully implement them, primarily due to insufficient staff numbers and training. The non-participating countries collect some data, however they may not capture complete information, or may miss some important product pathways. A review of the data collection needs in those countries, following the approach taken in the workshop, should be undertaken before developing the balance of the CFRAMP plans.

There are two countries in special circumstances regarding data collection systems. In Trinidad and Tobago, there is a UNDP/FAO project to implement data collection systems and fishery management plans for that country, This is resolving many of the problems that CFRAMP would otherwise have to deal with. In St. Vincent. CIDA has established a data collection enhancement project which has been implementing the data collection system designed for that country in the fisheries data collection workshop⁽²⁾

¹ Details of findings for each country are provided in Appendix 3.

2. The primary type of data sought is catch and effort, with various refinements to deal with fleet types, or other factors. Some countries are also collecting, or plan on collecting economic and biological data, particularly length frequencies. This is placed at a lower priority than the basic catch and effort. The need to collect vessel characteristics, as part of the routine monitoring of fisheries, depends upon the completeness of the data collected by the licensing and registration system.
3. All countries agreed with the premise of proceeding from the methods and results of the Fisheries Data Collection Workshop¹. Countries that had participated in the workshop saw CFRAMP as the means to continue implementation of previously designed plans. Other countries will need to review specific needs and design data collection systems prior to implementation.
4. The most frequently anticipated difficulty was the lack of resources, especially personnel, to take on an expanded role. Many Fisheries Divisions are already understaffed for their present commitments and are concerned about maintaining a system that requires the additional staff available through CFRAMP. Another of ten-mentioned concern was verifying the accuracy of data that was submitted by data collectors. Causes of inaccuracy include incomplete coverage of the fishery, inadequate technique or training of the collector, and fabrication of data by unsupervised data collectors. Most of the problems concerning accuracy can be addressed by CFRAMP during implementation of this subproject.

Computer repairs and upgrades were needed in several countries to make use of the equipment that they already had. CFRAMP should provide such repairs or upgrades that will provide a back-up capacity in case of a system failure by the primary systems, to be supplied by CFRAMP.

Licensing and Registration Systems

1. Licensing and Registration systems exist in most countries, but the requirements of the system, and the compliance by fisherpersons, varied considerably. Only Barbados has an operational, computerized system in place. Other countries have paper-based registers of fishing vessels, fisherpersons, or both. The requirement for a fishing license, in addition to registration, is in the process of being introduced in several countries.
2. In most cases, all fishing vessels are included in the registration but the license requirements vary between fisheries.
3. Few specific suggestions for inclusion in a licensing and registration system were presented. It was noted that a fee should be included, both to offset costs and to ensure that the requirement was not seen, by fisherpersons, as a minor issue to be ignored.
4. The major difficulty identified was that of obtaining compliance of fisherpersons with

new requirements for registration or licensing. The greatest problem, in this respect, was seen to be Jamaica. Other countries will have similar difficulties but the scale of the problem is much smaller.

WORKSHOP PLANS

Data Collection Systems and Licensing and Registration Systems

The next phase of implementing the CFRAMP Data Collection Systems and Licensing and Registration Systems Subprojects is to bring two officers from each participating country together in a pair of combined workshops for these two topics in the latter part of June 1992. The workshops are scheduled as two consecutive sessions with the same participants. This is feasible as, for most countries, responsibility for both areas falls to the same individuals. The provision for two attendees from each country should alleviate any problems where this is not the case.

CFRAMP Workshop Preparations

On Behalf of Participating Countries

1. Produce proposal and rationale for review by Technical Committee or Program Review Committee for distribution of computer hardware and software.
2. After review, acquire the necessary computer equipment and arrange for delivery and set up at each Fisheries Division. This will be simplified greatly where adequate local support can be arranged through companies or consultants identified by the Fisheries Division.
3. After review of proposed participants and their degree of computer expertise, arrange any necessary basic computer training needed prior to the workshop.

Data Collection Systems

1. Prepare proposal for production of species guides suitable for identifying fish in the field. This will be reviewed at the Workshop and appropriate consultancies initiated afterward.
2. Arrange consultant to visit each country and review data collection systems, in preparation for workshop participation. In countries that participated in the Fisheries Data Collection Workshop⁽²⁾ this will require review of changes which arose since the workshop, and progress and problems in implementing the data collection systems designed in the workshop. Countries that did not participate in the previous workshop may require more assistance for preparation of frame surveys, fish product pathways and other background material required to design a data collection system.
3. Organise the workshop including accommodation, consultants, computer support, and

program. Travel arrangements will be made by participants and expenses paid directly by CFRAMP.

Licensing and Registration

1. Engage a consultant to program a prototype database for fishing vessel registration, fishermen registration and fishing licenses. There are several in use now that need to be reviewed as models.

Workshop Agenda

It is recognised that not all countries are at the same point in development of Fisheries Data Collection systems. In particular, the participants in the 1987 Fisheries Data Collection Workshop⁽²⁾ have already designed data collection systems that are appropriate for their individual cases. To account for this, the workshop is planned in two parts. Countries not participating in the 1987 workshop will begin with 3 ½ days to evaluate current data collection approaches and apply the process used in the 1987 workshop. The second part of the workshop will involve all 12 participating countries for three days. First, there will be a review of all the data collection systems and any progress made in implementation of them. Secondly, an implementation plan and schedule for the next three years will be established for each country. This will include utilisation of the resources contributed through CFRAMP.

The workshop session for the Licensing and Registration Subproject is scheduled for the final three days. It is planned to review the status of Licensing and Registration in each country, determine the needs, from the point of view of data collection (fishery, economic and social), and design a computer-based system which can be customized to meet those needs.

The dates planned for the various sessions of the workshop are as follows:

<u>Session</u>	<u>Dates</u>	<u>Participants</u>
Data Collection (Pt. I)	June 17 – 20	Countries not in 1987 W/S
Data Collection (Pt. II)		All CFRAMP participants
- Review	June 22	
- Implementation plan	June 23 – 24	
Licensing and Registration	June 25 – 27	All CFRAMP participants

Because the focus of these workshops is on actual implementation and running of the two types of systems, it is emphasised that the participants should be the Fisheries / Data Officers responsible for the day to day operation of the systems. As there is provision for two attendees per country, the second person should be whomever is most likely to be actually using the computer system as part of these operations.

There is provision for regional experts to attend the workshops. In this case, Mr. Peter Murray, Data Manager for the DECS Fisheries Unit, should be invited.

During the initial CFRAMP missions for the Data Collection Systems Subproject, and subsequently during the GCFI meeting in November, contact was made with Ms. S. Gold of US NMFS and Mr. S. Meyers of the Caribbean Fisheries Management Council, who have collaborated and produced a program called TIP (Trip Interview Program) for the computer entry of fisheries data. As TIP provides a substantial start towards the data management needs for CFRAMP, consideration has been given to adopting it, with modification, as the basis of the data management system. This will be reviewed in the workshop.

In-country Workshop Preparations

Required preparatory activities by each country are:

1. Identify the individuals who will be attending from each country. This requires a statement outlining all the responsibilities of each individual, and indicating the degree of computing expertise (if any) they may have. This additional information will help in planning training sessions that will form part of the workshop program.
2. Identify one or more local companies or consultants which CFRAMP could engage to provide computer technical support, to the Fisheries Divisions. Also, identify opportunities for training in computer basic and applications, either commercial or institutional.

BIBLIOGRAPHY

- (1) Food and Agriculture Organization. 1986. Report of the Expert Consultation on the Technical Specifications For the Marking of Fishing Vessels. Rome, 16-20 June 1986. FAO Fish. Rep. 367: 74 p.
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APPENDICES

APPENDIX 1: Itinerary of First and Second CFRAMP Missions to initiate Fishery Management Planning, Data Collection and Information, and Licensing and Registration Subprojects

FIRST MISSION

September 1991

Sunday	8	Travel to Guyana
Monday	9	Guyana
Tuesday	10	Guyana
Wednesday	11	Guyana
Thursday	12	Travel to Trinidad and Tobago
Friday	13	Trinidad
Saturday	14	Trinidad
Sunday	15	Rest Day
Monday	16	Trinidad
Tuesday	17	Tobago
Wednesday	18	Travel to Jamaica
Thursday	19	Jamaica
Friday	20	Jamaica
Saturday	21	Jamaica

SECOND MISSION

Sunday	6	Travel to St. Kitts and Nevis
Monday	7	AM – Meet with OECS Fisheries Unit Staff
Tuesday	8	St. Kitts and Nevis
Wednesday	9	Nevis
Thursday	10	Antigua and Barbuda
Friday	11	Antigua and Barbuda
Saturday	12	Antigua and Barbuda
Sunday	13	Rest Day - Dominica
Monday	14	Dominica
Tuesday	15	Dominica
Wednesday	16	St. Lucia
Thursday	17	St. Lucia
Friday	18	Barbados
Saturday	19	Barbados
Sunday	20	Free Day – Barbados
Monday	21	Grenada
Tuesday	22	Grenada
Wednesday	23	St. Vincent and the Grenadines
Thursday	24	St. Vincent
Friday	25	St. Vincent – OECS Fisheries Unit
Saturday	26	Montserrat
Sunday	27	Return to Belize
Monday	28	Belize

APPENDIX 2: Specifications for basic computer system to be provided by CFRAMP for Data Collection Systems and Licensing and Registration Subproject

Item	Specifications
1 386 – based PC	25 – 33 MHz Clock 4 MB RAM 60 – 80 MB Hard disk 3.5” and 5.25 HD floppy drives
2 Colour VGA Monitor	1024 Resolution
3 Internal FAX / Modem	9600 send / rec. and 2400 baud
4 132 Column printer	24 pin letter quality
5 UPS	450 – 600 watt capacity
6 Diskettes and box	30x1. 44Mb 3.5” diskettes
7 Software	DOS 5.0 WordPerfect 5.1 Lotus 123 Fox Pro Procomm Fastback+

APPENDIX 3: Country-Specific Observations

This section of the report is organised by country for the purpose of reviewing what has been done and the status of the activity. The situation relevant to each subproject is described as well as general information such as staff numbers and training, computer and other facilities (including air conditioning), and any other items of interest. Specific recommendations to be dealt with in the workshops are also provided.

Antigua and Barbuda

There are presently 3 professional staff in the Fisheries Division, the Chief Fisheries Officer, and 2 Graduate Assistants as well as a vacant position of Fisheries Officer. The data collection, resource assessment and fisheries research mandates all fall to one of the Graduate Assistants.

Data Collection Systems

While the data collection system designed in the fisheries data collection workshop⁽²⁾ has been used as a model, the system, as a whole, has not been implemented. The elements of data collection that have been implemented may or may not be generating accurate statistics. Data is being collected and entered onto the computer but there is no way to cross check the data and there is strong suspicion that some data collectors are fabricating data without visiting the beach. There are eight part-time data collectors who each sample one landing site. Other landing sites are not monitored at all. The sampler in St. John's always samples the same 16 vessels and hence is operating as an index fishing program, useful as an indication of fishing success, but they cannot be used for complete catch estimation.

It is intended to introduce a logbook program for the sloops in January 1992. It was also noted that the sport fishing boats should be amenable to carrying logbooks. The forms for logbooks and for processing plant records are still being designed.

It is proposed to strengthen the staff of the Fisheries Division by three people who would be assigned to operate the data collection and resource assessment programs.

Licensing and Regulation

The new regulations under the Harmonized Fisheries Act came into effect in May 1991. Under the new regulations fishing licenses are required and vessels are inspected prior to being licensed. There has been some resistance to paying the fee, which has been seen as a new tax. License applications have been taken to the landing sites and are processed on site. To date about 100 of approximately 300 boats have been licensed. Coast Guard patrol boats have carried Fisheries Division staff to monitor licensing compliance and warnings have been issued. The warnings have caused a spurt of license applications, however

Antigua and Barbuda

Prosecution may be necessary to induce the remaining owners to apply for licenses. A modification of the FAO specification is being used with a format of V2-A-99 where A designates a landing site and 99 is vessel number within landing site. In cases where a radio is on a vessel the radio call sign is used rather than the FAO specification.

Computers

There is an air conditioned room with the PS/2-25 which was provided by the OECS fishery data enhancement project.

Conclusions and Recommendations

Data Collection

1. Assign one CFRAMP-funded data collector in a supervisory role to monitor sampling and recording practices of existing data collectors. This will require mobility, possibly by public transport, to routinely visit the sampled landing sites. Additional training and upgrading of samplers should be provided by this individual.
2. Assign one CFRAMP-funded data collector to sample landing sites that are currently not sampled at all. This will also require mobility
3. Extend coverage in St John's to cover all the vessels landing there. The present sampling of a constant subset of vessels yields biased estimates of catch, effort and catch rate.

Licensing and Registration

4. Complete the process of licensing fishing boats that is now under way.
5. Implement a computerized system to maintain licensing information.
6. During renewals of the fishing licenses, modify the license numbers to the FAO-specification of V2-999(-A), where the alphabetic landing site designation is optional at the discretion of the Fisheries Division, but is not an integral part of the license number.

Computers

7. CFRAMP to supply one complete basic system (Appendix 2) to the Fisheries Division.

Barbados

Data Collection Systems

One key point in the collection of data at the markets is that the personnel on site are not under the employ of the Fisheries Division but rather the Markets Division. The statistics are collected for each landing however the Fisheries Division only receives a summary by day which is prepared by the market clerks. If the Fisheries Division is to obtain disaggregated data it will require obtaining copies of the daily ledger records from the markets. This could be achieved by using a duplicate ledger with carbon paper or by placing photocopying the books each month. If the Market Division wished, they could receive summaries, by day or month, from the Fisheries Division.

Licensing and Registration

The Fisheries Division already has a computerized Registration system in place. The system does not use the FAO specifications but could be easily adapted. There is a requirement that the registration number be painted on the roof in letters legible from the air. A new registration number may have to be truncated to fit on the roof. An obvious means would be to drop the country prefix from the number painted on the roof.

Computers

There are two micro computers in place now which are primarily used to maintain the registration database. There is a shortage of computer expertise and most of the personnel involved are self-taught.

Conclusions and Recommendations

Data Collection

1. Disaggregated catch and effort data are available in the Market Clerks ledger books and should be captured from there by carbon or photocopy.
2. A time series of disaggregated data should be produced by working backward in time through the existing market ledgers.
3. Use one of the CFRAMP-funded data collection positions to provide data entry of the data sheets coming in from the markets and the backlog of past market ledgers.

Barbados

Licensing and Registration

4. Adopt the FAO specifications for the registration system and revise existing registration numbers as renewals are issued.
5. The rooftop numbers can be maintained at their current size if the country prefix is not included on the roof. As Barbados is the only country in the vicinity employing rooftop numbers there is little problem with ambiguity foreseen.

Computers

6. CFRAMP to supply one complete basic system (Appendix 2) to the Fisheries Division.

Belize

The Fisheries Division in Belize has worked closely with fisheries cooperatives for many years. More recently, work on a Coastal Zone Management Plan has been initiated, resulting in the involvement of other sectors in marine issues. Consequently, the Fisheries Division has received a broader mandate and additional staff.

Data Collection System

Fisheries Cooperatives form the basis of the data collection system in Belize. The majority of fisherpersons engaged in the predominantly export-oriented fisheries for lobster, conch and shrimp are members of cooperatives. The co-op records, on purchase slips, the landings by each fisherperson, including area fished, number of days fished, fishing method, and price. The co-ops also produce production summaries by month. There are also export permits required for exporting fish products. These permits provide records of amounts exported by species.

A weakness in the present data collection system is the lack of records for finfish catches destined for domestic consumption. Finfish fishermen are primarily independent fisherpersons who do not land their catches through the co-ops, and there is no method of recording catches not channeled through co-ops. At least one data collector is needed to monitor finfish catches by visiting landing sites and markets. There is a detailed frame survey which was recently completed as part of an academic program which contains much of the information needed to design an effective data collection system for the independent fishermen.

Belize

Licensing and Registration

Until recently, fishing licenses were issued for five years. Presently, licenses are only been issued for a one-year period. There is also a complete registration of fisherpersons and fishing vessels. Boats are required to carry their registration number on the hull, however the FAO specifications are not employed.

Computer

The Fisheries Division in Belize City has two 286 PC's with hard disks and printers and one Compaq transportable. There are UPS's and there is an air-conditioned office for the computers however the space is quite restrictive.

Conclusions and Recommendations

Data Collection

1. Develop a sampling system to record landings, particularly finfish, made by independent fisherpersons. Assign one CFRAMP-funded data collector to sample landings in and around Belize City.
2. Review information collected by the Cooperatives, particularly with respect to measures of effort.

Licensing and Registration

3. Complete conversion of existing licenses to an annual system.
4. Implement a computerized system to maintain licensing information.
5. During renewals of the fishing licenses, modify the license numbers to the FAO specification of V3-999(-A), where the alphabetic landing site designation is optional at the discretion of the Fisheries Division, but is not an integral part of the license number. The sequential numbering of vessels is continuous for the entire country.

Computers

6. CFRAMP to supply one complete basic system (*Appendix 2*) to the Fisheries Division.

Dominica

The Fisheries Division in Dominica has been very successful in sensitizing persons occupying senior administrative and political positions to fisheries issues. There is a strong will inside and

outside Government to preserve and conserve marine resources. Both marine areas and fisheries have been identified as needing management.

Data Collection Systems

A data collection system was initiated in 1984 and run until 1986 with assistance from an OAS development project. There were data collectors at all landing sites but this was too expensive to sustain when the OAS funding terminated. The system was suspended in 1986 and a new system initiated in 1987, sampling 4 major sites.

Since 1987 new data collectors have been added each year to bring the current total up to 11 and 3 more are projected in the next year. Data collectors are now covering 15 of 42 identified landing sites. The data collectors fill out a notebook and then transfer the data to a data form which is submitted monthly. The data is entered in the computer by fisheries technicians who are able to check for gross inconsistencies.

Landing sites are categorized as low, intermediate and high intensity usage. The sampling plan aims for complete census of landings at all high intensity areas. This is feasible since there are few such areas and they are in close proximity. There is also a large random sample of the intermediate sites and smaller samples from the low intensity areas. Only catch and effort are collected, however, there is interest in extending data collection to include biological sampling, particularly length frequencies.

There is funding in the Fisheries Division for three training seminars for all the data collectors per year. The training seminars are video taped to allow review and improvement of the course materials. The training sessions also include field trips for practical application of the sampling techniques taught.

Licensing and Registration

A licensing and registration system is being implemented at this time. Each vessel is registered and a number is assigned using a variation of the FAO specifications. The numbers are assigned as J7-999-AAA where AAA is an alpha code for landing site and the digits are assigned sequentially within landing site. The registration number is unique to the fisherperson and can be moved from boat to boat if the owner changes vessels. Twelve landing sites have been done to date. There is also a licensing of individual fisherpersons under way to complement the vessel registration.

Dominica

Computers

The Fisheries Division has one functional PC available now which is being used to enter catch and effort data. There is an air conditioned computer room which is presently undergoing repairs. When repairs are completed this room will accommodate at least one more PC system.

There are plans to move all the fisheries staff into a new facility, however the timing of this move is uncertain.

Conclusions and Recommendations

Data Collection

Dominica is currently implementing an effective data collection system. No specific needs were identified during the missions visit there.

Licensing and Registration

1. Complete the registration of fishers that is under way.
2. Inclusion of the landing site designation as part of the vessel registration number should be removed. Sequential numbering should be continuous for the entire island. The landing site designation can be retained on the vessel if required, but should not be an integral part of the registration number.

Computers

3. CFRAMP supply one complete basic system (*Appendix 2*) to the Fisheries Division.

Grenada

Data Collection System

The primary means of collecting data in Grenada is through the market centres. Market clerks weigh all fish to assess tolls for the market usage. Market clerks record the day's landings for each fisherman by species in a market log, and issue receipts to the fishermen indicating the catch and the tariff assessed. The log books are tallied for daily totals by species and further summarized into weekly landings of each species at the market. The weekly summary that is sent to the Fisheries Division includes the number of boat days in the landings. The market clerks do not collect any biological data beyond the species composition. There have been some length frequency data collected in the past as well as a Grenada frame survey of numbers and types of vessels at landing sites. There is a sampling program for large tunas that collects length frequencies and sex (from tissue samples). The catch of the boats from landing sites with markets is completely recorded in that the markets will stay open until the last of the boats return each day.

The beach seine fishery is poorly recorded by the market system since much of the catch is sold on the beach and as perhaps only half may be seen in the market. The market supervisor in Gouyave records beach seine catches in that area based on information given to him after the fact by fishermen.

Lobster and conch are not felt to be recorded by the existing system with any degree of reliability as most of the landings are at sites without markets. There is also considerable trans-shipment of these species and reef finfish to traders going to Martinique.

Licensing and Registration

Fishing vessels have been registered since the 1970's but a license was only introduced four years ago. There is a specific registration for fishing vessels which records the ownership, principal dimensions and description of the vessel. It also requires a seaworthiness inspection. The registration number now in use is of the form 9-999 where the first digit indicates area and the remaining numbers are the sequential vessel number. There is no requirement in the existing regulations that the vessel registration number be displayed on the vessel. The fishing license is issued annually and the fee is based on the size of the vessel, with vessels over 50 feet paying \$50.00.

Computers

The PS/2-25 computer supplied through the OECS fisheries information project is working and is the only computer available now. There is no air-conditioned space for the computer in the Fisheries Division offices.

Conclusions and Recommendations

Data Collection

1. The data, as now collected, is aggregated by the market clerks into daily and weekly totals. Since the information is collected by the clerk on a landing by landing basis, the desegregated data could be forwarded to the Fisheries Division. This could be done by using carbon paper in the market clerks ledger or borrowing and photocopying the ledgers. The summaries would then be compiled by computer.

Grenada

2. A system to collect landings from the beach seine fishery is needed. Assign one CFRAMP-funded data collector to record landings from beach seines and any other landings that are not brought through the markets. This will require some provision for mobility on the part of the data collector.
3. The market clerks ledgers contain a large backlog of data that should be acquired and computerised. Assign one CFRAMP-funded data collector to review and enter the historical data available in the market records.

Licensing and Registration

4. Introduce a vessel registration requirement that includes displaying the assigned number on the vessel according to the FAO specifications. Continue the process of annual fishing licenses introduced four years ago.
5. Implement a computerised database to maintain the licensing and registration information.
Computers
6. CFRAMP to supply one complete basic system (Appendix 2) to the Fisheries Division.

Guyana

Data Collection Systems

A data collection system has been designed to capture much of the necessary information, however, it has not been documented or reviewed. Emphasis should be placed on obtaining and checking results from the artisanal fishery. This can only be achieved by improving access to the landing sites by data collectors. There are presently numerous, unfilled positions in the Fisheries Division which, if filled, should provide adequate personnel for data collection.

Industrial Fleet

Data are currently collected from the industrial fleet using logbooks from the vessel and production records from processors. Both types of records are submitted to the Fisheries Division by the processors. These records cover both shrimp and finfish catches. The logbooks record catch by species in pounds live weight, effort in hours fished and the total

Guyana

Number of tows made on a daily basis. This collection system covers 80-85% of the trawler fleet (about 120 vessels). A means of verifying logbook data, such as sea-going observers, is needed. The private local trawlers (not associated with the larger processors) carry logbooks but the production records may not exist if the fish was sold to local wholesalers. To capture these data, the private local vessels are required to submit monthly production summaries. Two major processors in Georgetown (Marine Food Products Ltd, BEV Enterprises), are export-oriented with prawns and sea-bob as their major products. Both companies are increasing their involvement in finfish processing as they are developing export markets. Export licensing requires reporting of total weights of product by species which can be a cross check on the landings and production figures reported.

Artisanal Fleet

A monthly logbook submission is required for vessels in the artisanal fleet but the system has not been effective. Fishermen have been reluctant to enter data and the Fisheries Division does not have the resources, in personnel or vehicles, to travel to the landing sites and solicit completion

of the logbooks. The recent installation of seven (soon to be eight) artisanal fisheries complexes, managed by fishermen's cooperatives, may provide focal points for collection of data from the artisanal fleets. The cooperatives account for about 70% of the artisanal vessels and should be able to collect logbooks routinely for submission to the Fisheries Division for that fraction of the artisanal fleet. Additional vessels, not members of the cooperatives can purchase supplies and ice at the fisheries complex and could be required to submit logs at the same time.

The composition of the-artisanal fleet is monitored on a multi-year basis in a frame survey, last conducted in 1987-88 and due again in 1992). Details regarding the numbers and categories of vessels at each landing place are combined with average catch estimates by gears to calculate total estimated catches for various species.

Licensing and Registration

All fishing vessels are registered and details of the dimensions, capacity and propulsion are recorded. Prior to registration vessels must be inspected for compliance with safety regulations. Vessels are re-registered if ownership changes and a new registration number issued. The present system does not permit tracking a given vessel through changes of name and ownership.

Fishing licenses are issued annually upon application. The fees vary according to the size of the vessel and the fishery being conducted. Licenses can be withheld to obtain logbook records from artisanal fisherpersons however it is recognized that this is unlikely to produce accurate data, especially in the case where no data has been submitted for an entire year.

Guyana

Export licenses are required to ship fish out of Guyana and are available on an annual basis for processors engaged in regular exportation of fish. They are also available on a per shipment basis for infrequent export shipments.

Processing plants are licensed and information on the size, location, facilities and capacity of the plant is collected.

Fisherpersons (jackmen) licenses are required for all crewmen on fishing vessels. There are also separate licenses for fisherpersons engaged in the aquarium trade.

Computers

The Fisheries Division currently has no computer capability. All existing record keeping systems are maintained on paper. There is essentially no computer expertise available either. Furthermore, persons responsible for data processing have little knowledge regarding computers.

The provision of electrical power for computers is particularly complex in Georgetown. Discussions with the Data Processing Manager at CARISEC, Mr. Michael Griffiths, indicated that electricity in different areas of the city operates on at least three different standards, both

frequency and voltage, and that UPS's are particularly susceptible to the wrong frequency. It is important to ensure that the UPS supplied to the Fisheries Division be of the appropriate type. The Fisheries Division will need to provide an air-conditioned space to house the computers.

Conclusions and Recommendations Data Collection

1. Review the existing data collection system for completeness and effectiveness
2. Computerisation of the logbook system is needed to improve timeliness and accuracy and to free staff for other work.
3. Review existing logbooks and data collection forms for adequacy of the data collected to meet management needs.
4. Assign one CFRAMP-funded data collector to visit co-ops to monitor collection of data by them and to provide training where data collection is inadequate.

Guyana

5. Assign one CFRAMP-funded data collector to interview and collect data from independent fisherperson.

Licensing and Registration

6. Computerise the licensing and registration of fishing vessels.
7. Modify the registration system to conform to the FAO specifications including the use of the national radio call sign prefix (8R). The registration of a vessel should allow tracking of that vessel through changes in ownership.
8. Fishing licenses can be issued with conditions that require more frequent renewals for individuals who re delinquent in submission of logbook records.

Computers

9. CFRAMP to supply two complete basic systems (*Appendix 2*) to the Fisheries Division.

Jamaica

The fisheries of Jamaica are primarily artisanal with about 10,000 fisherpersons, most using canoes of a range of sizes. There are only about eight large vessels, which are participating in joint ventures on conch with Jamaican companies.

Data Collection .Systems

There presently exists a significant network of data collectors working for the Department of Agriculture. There are 3 or 4 Agricultural Data Collectors in each parish, parish supervisors, and regional supervisors. In a separate system, 18 Fisheries Instructors are based around the island. Their primary role is to enter data into gas books, which form the basis of a subsidy system. They sell gasoline and collect information on catch and effort from the fisherperson. Data is usually collected at the gasoline sales point rather than actually on the landing beach. There is also a number of the fishing vessels which do not have motors, and hence have no need for gasoline. Because of this, considerable amounts of catch may not enter the system.

The Data Bank and Evaluation Division of the Ministry of Agriculture is presently conducting a survey of fishing activity, last conducted in 1981. The survey will sample all beaches with more than 100 registered boats (see next section) and 10% of beaches with fewer than 100 registered boats. When a beach is sampled all fisherpersons landing during

Jamaica

the sample period are to be interviewed. The survey is conducted in 2 modules, one to provide data on the fisherperson themselves (education, income, fishing gear and marketing), and one to survey landings by species and gear, prices and effort.

The conch fishery on Pedro Bank is the only industrial fishing in Jamaica. There are approximately eight large vessels which make trips up to two weeks long, primarily on Pedro Bank and SCUBA dive for conch. Most of the Conch catch is brought in to Kingston and landed at the processing/exporting plants. Landings of other species are brought into Kingston by packer and carrier boats and land at the plants or the Artisanal Fishport Complex, which was constructed by the government. Landings from the packers and carriers could be monitored for total landings but fishing effort would not be possible to determine.

There are some fishermen's co-operatives, however, they involve only a small percentage of the artisanal fishermen and none of the large vessels. There appears to be little potential for the co-operatives to act as a data collection system. There is however, some industry-based data collection from "senior" fisherpersons, but how such data can be used will require further clarification.

Licensing and Registration

All the artisanal vessels, primarily canoes, must be registered and licensed by the Fisheries Division. The registration records the size, horsepower and brand of engine, and the number of crew. The number of crew must be displayed on the side of the vessel. The area of operation is also specified. The fishing license requires annual renewal however it is estimated that 60-75% of the licensees are delinquent. Foreign registration of larger vessels is accepted but they must still be licensed by the Marine Board in order to fish.

Fisherpersons are also registered and are required to carry a identification card while at sea. License and registration requirements are monitored by the Marine Police inshore and the Coast Guard offshore.

Computers

There is one computer system available in the Fisheries Division offices although the printer was malfunctioning at the time of the visit. There is air conditioning and an adequate UPS in the computer room.

The Ministry of Agriculture also has a Data Bank and Evaluation Division which operates an IBM System 38, 17 terminals and support staff.

Jamaica

Conclusions and Recommendations

Data Collection

1. The first priority is to obtain some means of data collection from the fishing boats operating on Pedro Bank. An approach to do this needs to be worked out and this is the area towards which the CFRAMP-funded data collection should be directed.
2. Consideration should be given to linking the Fisheries Instructors into the Agricultural Data Collection system and use this data reporting network.
3. Fisheries Instructors, or other data collectors, should expand their activity to include visiting the landing beaches to collect information from the non-motorized vessels.
4. The Frame survey, being completed now, should be analyzed to determine priorities for landing site data collection.
5. The Data Bank and Evaluation Division should be consulted on their ability to support an ongoing data collection system for fisheries data. If this is possible, this division should become the computing centre for fisheries data collection.

Licensing and Registration

6. Computerise the licensing and registration data sets
7. Modify the vessel registration system to be consistent with the FAO proposed guidelines, using the national radio call sign prefix (6Y).
8. Enforce license requirements for fishing vessels, or modify requirements on fleet sectors which are unenforceable.

Computers

9. CFRAMP supply one complete basic system (*Appendix 2*) to the Fisheries Division.

The computer needs of the Fishery Division are difficult to assess until the role to be played by Data Bank and Evaluation Division is defined. There are three possible scenarios that may arise. The Data Bank may provide the data entry and repository for both the fishery data and the licensing and registration data, just the fishery data, or neither. In the event that the Data Bank is not involved there may be a requirement for an additional computer, depending on the amount of data being obtained.

Montserrat

Data Collection System

There is a data collector who records the catches landed in Plymouth by total weight and list of species caught, area fished and time fished. This is in conjunction with selling ice at the Fisheries Division building. The other landing sites are only sampled on a spot check basis at present although the data collection system designed in the Fisheries Data Collection Workshop²¹ identified the need for a data collector or regular sampling, at Carr's Bay. Information has been collected from selected local fishermen which may be useful as an index. There is an annual frame survey which records the numbers and types of vessels at each landing site and is checked against the local knowledge of the fisherperson responsible for maintaining the lockers at the landing sites. Because there is little distribution of fish, most being sold at the landing site, and no exports, the landing sites are essentially the only possible place to obtain the data.

Licensing and Registration

There is no licensing or registration of fishing boats in Montserrat now. There are plans to introduce a fishing vessel registration system in January 1992. There is no requirement for inspection of vessels under the current regulations although there will be when the new regulations are enacted.

Computers

The Fisheries Division has a PS/2-25 provided by the OECS data collection project. The OECS fisheries database is not being used. The office space in which it is located is air-conditioned.

Conclusions and Recommendations

Data Collection

1. Continue data collection in Plymouth by the data collector / ice seller.

2. Assign one CFRAMP-funded data collector to sample landings at Carr's Bay and other landing sites, this will require transportation for several days per month.

Licensing and Registration

3. Implement planned registration of fishing vessels as soon as possible. The numbers should be assigned according to the FAO specifications including the national radio call sign prefix. This is unknown for Montserrat at this time.

Computers

4. CFRAMP to supply one complete basic system (*Appendix 2*) to the Fisheries Division.

St. Kitts and Nevis

The situation in St. Kitts and Nevis regarding division of responsibility for fisheries is complex as a result of the high degree of autonomy between the two federated states. For purposes of reviewing the data collection systems they are treated separately in the following.

Data Collection System

Presently, there is no functioning fisheries data collection system in place in St. Kitts. The system designed during the Fisheries Data Collection Workshop⁽³⁾ has not been implemented because of personnel constraints. The Fisheries Division has only three staff according to the baseline survey responses. It is not clear whether that applies to St. Kitts only or St. Kitts and Nevis. The fact that the harmonised regulations have not been enacted has been seen as an impediment to both data collection and licensing systems, however there is probably adequate provision for both under the old regulations which remain in effect. There have been a variety of ad hoc data sets collected but nothing has been sustained. There is an additional objective in the Fisheries Division to ensure that data collected on fisheries can be contributed to the common agricultural database maintained by the Central Planning Unit.

There is a need for a data collector funded by CFRAMP in St. Kitts. The Fisheries Officer indicated (confirmed by the PS) that to ensure continuity in data collection after the CFRAMP funding expires it is preferred that CFRAMP use a tapered funding approach where 100% of the salary was paid the first year, and decreasing amounts over several subsequent years. This allows the government to phase in the salary but also required some level of commitment from the government prior to the end of CFRAMP funding.

St. Kitts and Nevis

Nevis

There has been effort directed at collecting catch, or catch and effort, data using the system designed in the OECS workshop for Nevis. The elements of the system that have been initiated are catch records at the Charlestown Fisheries Complex, export permits, purchase slips for hotels and restaurants, and some direct collection from fisherpersons. The effectiveness of each data collection element is unknown at present. All data collection is carried out by the Fisheries Officer. There are no data collectors. The Nevis Fishermen's Co-operative operates the Charlestown Fisheries Complex, however, very little catch is marketed. While about 75% of the fisherperson are co-op members, it is estimated that only 10-33 percent of the landings go through the Complex. Export permits are used for the lobster and conch except for that sold to local hotels and restaurants. The proportion of hotel and restaurant being reported by purchase slips is variable, depending on the establishment. There is no program to collect any biological data, however, an M.Sc. thesis on queen conch was recently completed.

While the Fisheries Officer in Nevis is on training leave, the data collection is being continued by the Co-operatives Officer on a part-time basis.

Licensing and Registration (St. Kitts and Nevis)

There is no specific registration for fishing vessels. All vessels are registered through the Customs Service with ownership, name and colour of the vessel recorded. The registration numbers are assigned chronologically with a C or N prefix for the two islands. During discussions on landing sites there was willingness expressed on the part of fishermen to enroll in a licensing system as a means of dealing with pot-stealing.

Computers

St. Kitts

There is an Apple IIC in the Fisheries Division but this has no utility in terms of CFRAMP needs. The space in the present Fisheries Division building is inadequate for the computer CFRAMP anticipates providing. The planned addition of a second floor in the building will be required for a computer room. It is strongly recommended that this room be air conditioned. The computer (PS/2-25) provided by the OECS fisheries project has not functioned for over a year. Computers that are available are all located in the Ministry of Agriculture building and not at the Fisheries Division.

St. Kitts and Nevis

Nevis

There is air conditioned space in the Fisheries Division office in Nevis which currently has two operating PC's and an inoperable PS/2-25 from the OECS fisheries project. The space would require some enlargement to accommodate a third PC.

Conclusions and Recommendations Data Collection

1. Assign one CFRAMP-funded data collector in each of St. Kitts and Nevis to conduct sampling at the landings sites. There will be a need for transportation in both islands.
2. Review requirements for data to be contributed to the common agricultural database of the Central Planning Unit, and revise data collection system as necessary to comply with these requirements.
3. Revise purchase slips to reflect species composition and effort.

Licensing and Registration

4. Implement a vessel registration system using the FAO specifications including the national radio call sign prefix (V4). The island designation could be included as an additional character at the end of the numbers, but not form part of the registration number. The sequential numbering should be continuous for both islands.

Computers

5. CFRAMP to supply one complete basic system (Appendix 2) to the Fisheries Division in each of St. Kitts and Nevis.

St. Lucia

Data Collection Systems

There are nine data collectors who gather catch and effort and length frequencies at 10 landing sites. When the system started in 1984 it was estimated to cover about 55% of the landings however it has grown to where there is now over 90⁺% coverage, based on the number of sampler days available. There are still two major sites which do not have samplers as well as six minor sites. The sampling scheme being used allows extrapolation of observed landings to obtain daily totals. The data is entered into an Rbase database, however it is not the database developed by the OECS Fisheries Unit.

The major concern of the Fisheries staff is the need to upgrade the data collectors, both in training and in salary, which is seen as a means of increasing commitment to the job. One means

of providing training and supervision may be to establish positions of data collection supervisor and data manager. A further concern was the anticipated departure of the data entry person in November 1991. Improvement in the data collection situation is seen as an immediate priority.

Licensing and Registration

The Licensing and Registration system is in the initial stages of being revised. The previous system only registered fishing boats. The proposed system would assign a variation on the FAO specification in the format J6-AA99 where the AA is a two letter landing site code and the digits are vessel number within landing site. In the case of vessels equipped with radios, the international radio call sign would be the vessel registration number. The fisherperson registration numbers would follow a similar approach using a landing site and fisherpersons number but no country code.

Computers

There are two functional computer systems and an air conditioned office in the Fisheries Division.

Conclusions and Recommendations

Data Collection

1. One CFRAMP-funded data collection position should be utilized to provide training and monitoring of the existing data collectors.

Licensing and Registration

2. The proposed registration scheme should be modified to meet the proposed FAO guidelines, which do not include a landing site designation in the registration number. The landing site code could be included on the vessel, appended to the registration number but not form part of it. The digits should number continuously for the entire island.

St. Lucia

Computers

3. CFRAMP supply one complete basic system (*Appendix 2*) to the Fisheries Division.

St. Vincent and the Grenadines

Data Collection System

St. Vincent is presently the recipient of a substantial CIDA-funded data collection enhancement project which will replace the existing system. The data collection system designed for St. Vincent and the Grenadines in the Fisheries Data Collection Workshop⁽²⁾ is being revised, refined and implemented. The use of Purchase Slips for recording purchases of fish by hotels is not included in the initial system but will be implemented at a later date.

The new data collection system is based on six data collectors, each responsible for a different area. The collectors will be responsible for visiting all landing sites in their area. There is a new series of forms being used. The primary data forms include catch by species, effort, and price from a single landing. There is a second form to record a length frequency or other biological information when required. The initial phase will see the data forms forwarded to the Fisheries Division for entry onto a computer database. It is intended that TIP be used as the data entry program. There is a plan to introduce a radio-based data communications system to allow data collectors to enter the data at home and transmit it to the Fisheries Division.

Licensing and Registration

There is no vessel registration or fishing license required in St. Vincent. There has been a statement of intent on the part of the Ministry of Agriculture to introduce a licensing and registration system in the near future.

Computers

The CIDA project has recently provided two 386 computers for data collection and basic data analysis. They are each equipped with a laser printer, plotter and UPS. The Fisheries Division offices are air-conditioned and include a dedicated computer room. There is also a 286 and a PS/2-25 used primarily for word processing and office support, and a Toshiba 1200 laptop which needs repair.

St Vincent and the Grenadines

Conclusions and Recommendations

Licensing and Registration

1. A computerised fishing vessel registration system, based on the FAO specifications should be implemented.

Trinidad and Tobago

Data Collection Systems

The data collection systems for Trinidad have been reviewed and enhanced by past development projects and the ongoing work of the Fishery Division staff. Presently there is a system of beach collectors assigned to collect landings, effort and biological data from beach landings by the artisanal vessels. The industrial fleet is monitored through records kept by the processing plant (National Fisheries Co.), as well as considerable biological sampling of the shrimp landings at National Fisheries conducted by staff from the Fisheries Division offices. There is a substantial amount of computing equipment and expertise already on site at the Trinidad Fisheries Division.

Currently, there is an FAO sponsored project to review and further the implementation of data collection and data processing capability in the Fisheries Division. This is the first part of a project to develop Fisheries Management Plans for the fisheries of Trinidad and Tobago

Industrial Fleet

The industrial fleet in Trinidad includes large and medium trawlers and medium sized multipurpose boats concentrating on shrimp, and large longliners fishing for large pelagic. There is no log book system in place. All of the large vessels are assumed to land at National Fisheries in Port of Spain and the company collects landings data on a trip-by-trip basis and submits it to the Fisheries Division as monthly summaries. The shrimp landings are graded and recorded by size category and species. The by-catch is recorded by species. Collection of catch and effort information has been left primarily to the company and the Fisheries Division has concentrated on biological sampling, particularly length frequencies, from the industrial fleet.

Trinidad and Tobago

Artisanal

The artisanal fleet landings are sampled by data collectors located at 14 beaches. They are required to obtain catch by species for each vessel landing by either visual estimate or by asking the fishermen or buyers for weights. Although the data collection form includes time of departure and return, effort is taken to be a trip and the amount of gear fished is not recorded. The returns from each beach collector are summarised into a monthly return for each gear on each beach and the catch per unit effort (C/E) and value per unit effort (V/E) are calculated for the entire months catch and effort. The monthly reports are further summarised for to total landings and value by species and beach. The entire process is conducted manually under the present system. The Fisheries Division is going ahead, in parallel with both the FAO project referred to above and CFRAMP, and implementing a data entry system in ORACLE running under the UNIX operating system on a 486-based computer (HP Vectra). The system being implemented duplicates the present paper-based system in inputs and products.

Licensing and Registration

Presently, all vessels require registration under the Shipping Act but responsibility is delegated to the Fisheries Division in the case of fishing vessels. Registration is required, when a vessel is built or changes hands. The vessel specifications, engine specifications, home county and fishing gear are recorded.

Individual fisherpersons are registered on a voluntary basis, however registration as a fisherpersons entitles individuals to duty-free purchase of engines and rebates on the purchase of fuels for fishing. There is no charge to register either a fishing vessel or as a fisherperson although introduction of a fee is proposed.

There is a license program for foreign (joint venture) fishing vessels with licenses issued annually. Implementation of an annual fishing license for domestic vessels would require a change in fisheries legislations.

Recreational fishing vessels are not required to register as fishing boats and they do not, as a rule, provide catch records to the Fisheries Division. They may comprise a substantial portion of the pelagic catch and are legally able to sell their catch.

Computer

The Fisheries Division in Trinidad has 5, or more, 386-based PC's and 1 486-based HP Vectra, running UNIX. The office in Tobago does not have any computers available now, although the data collection system being designed under the FAO project may provide one or more there. Both offices already have air-conditioned space for computers.

Trinidad and Tobago

Conclusions and Recommendations Data Collection

1. Review progress implementing the data collection system developed under the FAO project in 1991.

Licensing and Registration

2. Introduce a vessel registration scheme that requires the registration number be displayed on the vessel, following the FAO specifications.

Computers

3. CFRAMP supply one complete basic system (*Appendix 2*) to the Fisheries Division in Tobago, if that has not been done under the FAO project.