



The CLME Information Management System (IMS) and Regional Environmental Monitoring Programme (REMP).

Mission Report Jamaica and Bahamas to review CARIFIS Database System DELIVERABLE 3.7

The “Sustainable Management of the Shared Living Marine Resources of the Caribbean Large Marine Ecosystem (CLME) and Adjacent Regions” is a GEF funded Project. Its main objective is the Sustainable management of the shared Living Marine Resources of the Caribbean LME and adjacent areas through an integrated management approach that will meet the WSSD target for sustainable fisheries.

This document summarizes main findings of the Mission of Mr. Paul Geerders to Jamaica and Bahamas done 15 and 16 April 2013 to review basic structure and management of the CARIFIS database system for both countries.

GENERAL

This initiative for this mission was taken by Mrs. June Masters of CRFM, during the IMS/REMP Workshop on Indicators for Decision Making held 11-13 September 2012 in Cartagena de Indias, Colombia. In the context of a general discussion on possible accompanying actions related to data and information in the context of CLME, IMS and REMP, she mentioned the continuing problems with the CARIFIS software in Jamaica and Bahamas.

Since one of the objectives of the IMS/REMP component of CLME is: assisting the CLME countries with problems related to data and information management, it was decided that the project leader IMS/REMP would further investigate this situation. In that context the conclusion was reached that a mission to Jamaica and Bahamas would be the most effective way to deal with the problems.

The plan for the mission was then further developed by e-mail between Mrs Masters and Mr Geerders, project leader of IMS/REMP. These actions resulted in a formal letter from CRFM to UNESCO-IOC requesting the assistance by Mr. Paul Geerders in this matter, in view of his experience with databases in general and with FoxPro in particular. This letter is included in Annex 1 to this report. Complementing the support provided by UNESCO-IOC, CRFM cosponsored part of the costs related to the mission.

SUPPORTING INFORMATION

Mrs. June Masters provided Mr. Paul Geerders with a copy of the CARIFIS installation disk and with a copy of the FoxPro database software installation disk. She also provided him with detailed information on the various problems that had been encountered with the CARIFIS software in the various countries, and on the solutions that had been applied in different cases.

JAMAICA

The mission to the Fisheries Division, Jamaica covered two days, 15 and 16 April 2013. During the visit, the consultant met with the following people:

Mr. Stephen Smikle, Acting Director of Fisheries
Mr. Ian Jones - Actg. Director, Marine Branch
Mrs. Anginette Murray, Marine Researcher/Analyst
Mrs. Shellene Reynolds-Berry, Acting Fisheries Officer
Ms. Marsha Reid, Acting Data Entry Operator
Mr. Nigel Stewart, Computer Applications Manager, ICT Unit
Mrs. Nickoy Wright-Lewis, Systems Analyst, ICT Unit

At first the consultant was provided with an overview of the various problems encountered with the CARIFIS software and of the actions undertaken to cope with these.

Problems identified in Jamaica and possible causes of these problems

1. New fishers and new vessels could not be added to the database.
2. Problems related to the way that numbers were being represented on the screen; the scientific E notation had caused some confusion. The letter E is often used to represent

“times ten raised to the power of” (which would be written as "x 10b") and is followed by the value of the exponent.

3. It was also observed that CARIFIS did not function properly and reliably with more recent operating systems, like Vista and Windows 7.

Due to the complexity of the internal structure of CARIFIS and the incomplete documentation of the changes applied, it was not immediately possible to identify the cause of the main problems mentioned above. However, it is likely that problem 1 is caused by uncoordinated and not documented changes in the software and the database. This cause may also lead to unreliable results from queries. Problem 2 was explained on the spot. Problem 3 is most likely caused by the lack of a proper memory management function, compatible with the modern Windows Operating Systems environment.

Short term solutions applied to the Jamaica situation

Jamaica had already started to move all data from the CARIFIS system to MS Access using in house expertise. The process was almost complete at the time of the mission. The plan was to discontinue working with CARIFIS and work with MS-Access and Excel as long as possible, adding new information and carrying out queries according to the needs. It was confirmed that for the moment, all basic information requests can be handled by the MS-Access and Excel environment, until a new solution becomes available.

It is recommended to not anymore use the CARIFIS software, as the proper performance cannot be guaranteed. It is further recommended to continue the transfer of CARIFIS contents to the MS-Access and Excel environment, and carry out a check of the contents referring to the paper records; some of this could be automated. It should be ensured that back-up copies of the database are regularly made and are being kept at a safe place outside the Fisheries Division.

Furthermore it was recommended to document/save as pictures the input and output screens of CARIFIS as a basis for inclusion in the new developments.

Long term solutions to be applied to the Jamaican situation

It was concluded that a new fisheries database system is required to replace CARIFIS.

The tables, records and fields as used by CARIFIS were in principle sufficient to cater for the database needs of Jamaica in terms of information to be archived and queries to be made, so the basic structure of CARIFIS could be used as a reference for the new system.

In the presence of representatives of the ICT unit of the Ministry, the requirements for a new fisheries database system were reviewed in general terms. These include: access through Intranet (local) and Internet (browser), as well as the sharing of certain information with third parties. Talking about options, MySQL was identified as a good solution. The ICT unit of the Ministry confirmed to have some experience with this software.

NASSAU, BAHAMAS

The mission to the Department of Marine Resources, Nassau, Bahamas covered two days, 18 and 19 April 2013. During the visit, the consultant met with the following people:

Mr. Edison Deleveaux - Deputy Director

Mr. Gilford Lloyd - Senior Fisheries Officer
Mr. Bernard Munroe - Fisheries Superintendent
Miss. Levaughen Ferguson - Fisheries Superintendent
Miss Paulette Farquharson - General Service Worker

As a first introduction, an overview was provided to the consultant of the various problems encountered with the CARIFIS software and of the actions undertaken to cope with these.

Problems identified in Bahamas and possible causes of these problems

It was noted that CARIFIS, although in principle still working, did not function properly and reliably with more recent operating systems, such as Vista and Windows 7. This related to the input of data as well as to queries, causing system halts and . Therefore, CARIFIS was only rarely used and the contents were not updated.

Although there was sufficient knowledge on the use of the CARIFIS software, there was only limited information and/or documentation available on CARIFIS, its internal structure, and its functions, including on modifications applied to the system and the database.

Short term solutions applied to the Bahamas situation

In view of the problems encountered, efforts had already been undertaken to copy the database into other formats: MS-Access tables and Excel sheets.

It was decided that the problems with the CARIFIS system of the Bahamas were too many and too complex to allow for a rapid fix. Additionally it needs to be taken into account that the FoxPro software environment of CARIFIS is not anymore supported. Therefore, it was confirmed that the best short term solution would be to export the CARIFIS database contents to MS-Access and Excel. In this way, the Fisheries Department will at least have a reliable and consistent access to the data, and cater for all basic information requests, until a new solution becomes available.

During the visit, the consultant showed members of staff the various export facilities included in FoxPro, which generate files compatible with MS-Access and Excel. Furthermore, a short course on development and use of relational databases was given. It was agreed that the export process to MS-Access and Excel will continue until the full contents of the CARIFIS database are exported. The consultant recommended that all new data should be inputted into the MS-Access and Excel environment, and no more use should be made of the CARIFIS software. Moreover, he strongly recommended a consistency check to be carried out upon the exported database contents (some of this could be automated), and also advised on regular back-up of the MS-Access and Excel files.

Furthermore it was recommended to document/save as pictures the input and output screens of CARIFIS as a basis for inclusion in the new developments.

Long term solutions to be applied to the Bahamas situation

It was concluded that a new fisheries database system is required to replace CARIFIS.

The tables, records and fields as used by CARIFIS were in principle sufficient to cater for the database needs of Bahamas in terms of information to be archived and queries to be made, so the basic structure of CARIFIS could be used as a reference for the new system.

With respect to the specific requirements in Bahamas, access and use of the database via Intranet (local) and Internet (external) should be taken into account, including sharing of some of the information in the database with third parties.

CONCLUSIONS AND RECOMMENDATIONS

The following overall conclusions were reached

The problems with the CARIFIS database system are mainly due to the incompatibility of its FoxPro software environment with current operating systems: Vista and Windows 7 and 8.

Additional problems are most likely due to the effects of changes made to the CARIFIS software and to the database itself.

The consistency of the fisheries databases in Jamaica and Bahamas cannot be guaranteed at this moment and needs to be verified.

The basic structure of the CARIFIS database system seems to meet the needs of the fisheries administration in both countries, in terms of data and information to be recorded and information to be provided.

Jamaica and the Bahamas are in need of appropriate and sustainable database systems for their respective fisheries database. In general terms both countries need a system that can provide access through intranet (local) and internet (browser), as well as the sharing of certain information with third parties.

The following recommendations are made by the consultant

In order to prevent serious problems for the consistency of the database and in the worst case even its complete loss in case of power failures, the consultant recommends that all computers linked to the fisheries data base should be provided with a UPS supply (cost roughly 300 US\$).

It was noted that besides the fisheries database, still much information is being archived in analogue/printed form. Moreover, it was confirmed that the access to this distributed information is not always easy, so the institution does not optimally profit from its in-house information. Neither of the two organizations have general institutional procedures or protocols in place for the management of their data and information, both digital and analogue. Based upon the information obtained before and during the mission, the consultant recommends the institutions to develop and implement a set of institutional procedures or protocols for the management of their data and information, in order to better profit from their in-house information.

It is recommended to undertake an in-house review of the CARIFIS structure to ensure that it still meets the requirement of the countries. The result of this review should then be transferred to the MySQL environment. The data entry forms could be reworked using MS Visual Studio or similar software and included in the MySQL user interface (front end and back end).

The development of a system based upon MySQL is recommended because of the following advantages:

- Fast
- Cheap
- Simple to use
- Fits to different operating systems
- Continuously upgraded
- Ample technical support available
- Safe (protection, access rights)
- Allows for big databases (up to 8 Terabytes if necessary and depending upon the operating system)
- Flexible

As this concerns the development of a new system to replace CARIFIS, a decision will have to be made concerning whether or not the name of the new system will continue to be CARIFIS. CARIFIS-II could be considered or something completely new such as: NewFIS (new fisheries information system).

The consultant also recommends upgrading the hardware environment, including the provision of UPS facilities, at least for the computers linked to the fisheries database. Precise numbers of equipment need to be determined in a closer review.

Furthermore he recommends the implementation of digitizing projects, meant to convert valuable data and information which is still in analogue (printed) form, to a digital form, facilitating its access and use.

He also recommends the provision of training of the relevant personnel on data and information management issues. This would include: data and information processes, quality aspects, protection and vulnerability, metadata and “search and find”, data organization, and data archive management. Also additional training will be needed when a new system is implemented.

The consultant recommends that Jamaica and the Bahamas initiate the above outlined steps as soon as possible.

The Way Forward

The recommendations provided above have various implications, in terms of know-how and of funding. Concerning the former, it could be efficient to use the practical and up-to-date knowledge for instance available at UWI. Informally a contact has already been established with UWI, which could be developed further. The development of a new fisheries database in the MySQL environment would certainly be an interesting project for students from UWI.

UNESCO-IOC, from the perspective of its commitment to and competence in data and information management, has expressed its readiness to consider proposals for provision of support to the proposed development. This support, besides funding in kind, could also include making the consultant available as project manager or advisor. In addition, this could involve the experience of IOC, IODE and ODINCARSA with various technical aspects of marine data and information management, and the related capacity building.

It has to be decided who will take the lead for the proposed development: CRFM, or (one of) the Fisheries Departments. An essential first step will anyhow be to develop a detailed assessment of the requirements for the new system.

Finally, concerning funding, it might be advisable to consider the Small Project Funds of the Netherlands Embassies in the respective countries, and the Netherlands Trust Fund with the Inter-American Development Bank, IADB.

Paul Geerdens

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