منظمة الأغذية والزراعة للأمم المتحدة | 联合国粮食及农业组织 | Food and Agriculture Organization of the United Nations | Organisation des Nations Unies pour l'alimentation et l'agriculture | Organización de las Naciones Unidas para la Agricultura y la Alimentación

WECAFC-FIRMS Data workshop

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Regional Database Requirements

Introduction

This document aims to outline the functional needs for a WECAFC database.

Background

At the WECAFC 14 (February 2012) it was noted that reliable and sufficient fisheries data are a critical component of sound fisheries management. Further to improve the state of fisheries data and reduce the gaps and deficiencies in data collection and capacity it was noted that it would be required to carry out a regional workshop on data collection and statistics.

This need was reiterated again during WECAFC 15 (March 2014) and hence it was decided to dedicate one of the four technical Focus Areas in the WECAFC Strategic Plan (SAP) for 2014-2020 to this subject, with the support of the current Programme of Work which includes activity 2.4 "Improved fishery and aquaculture data collection, analysis and dissemination at regional and national level".
As a result, in the same meeting in 2014, the WECAFC Commission further endorsed the Fisheries and Resources Monitoring System (FIRMS) partnership following the partnership proposal and arrangement formulated during the WECAFC-FIRMS Workshop on Marine Resources and Fisheries Inventories (November 2013).

The partnership with FIRMS would enable WECAFC to tap into the knowledge and experience from a well-established, cost-effective system for the monitoring of fisheries resources status and fisheries activities. FIRMS will play a catalytic role in the development of a regional database in support to the regional fishery management plans. The Commission expressed the need for capacity building on the use of FIRMS and emphasized that the work should concentrate initially on those fisheries and stocks that are commercially most important to the membership. The pilots selected for support by this project are the three priority regional fishery management plans, spiny lobster, flying fish, and Queen conch. In addition

other information can contribute to the FIRMS inventories including billfishes, shrimp and groundfish of Guianas-Brazil shelf as part of the CLME Strategic Action Programme (SAP) and its CLME+. Finally, through the WECAFC-FIRMS partnership, the development of a regional database, focusing on data and capacity improvements, data sharing and dissemination will be driven.

Needs for a RDB

- **Introduction**

Regional fisheries database is needed to support the management and the monitoring of regional management plans for fisheries resources of high importance (high economical value or critical fisheries for local community food security).

What a regional database does is collect or collate data from different national and possibly regional sources, harmonize this information for aggregation and comparison to feed regional indicators needed to monitor fisheries and support policy making.

Building a regional database has several challenges:

- Common definitions have to be agreed upon to define the scope and objectives of this database:
  - What are the stocks or resources targeted in this database?
  - What are the types of information managed in the database?
  - How is this information defined (data ownership, data source, data processing etc.…)?
  - How is this information harmonized from the different sources (agreement on common reference data, definition of harmonization mechanism etc.…)?
  - Etc.
- An institution agreement has to be obtained with the contributing parties to the regional data base on system management and hosting, and related costs; on data feeding from contributing parties (data exchange agreement, defining format and frequency of exchanges to centralize and harmonization); on data sharing and dissemination policies.

This being said, let's try to see more in depths what is required to build a WECAFC regional database.

- **WECAFC RDB objective**

Collaboration between WECAFC and FIRMS outlined more precisely the WECAFC RDB objective: it should be built in support to the **regional fishery management plans (FMP)**. **Species of high economics** values are targeted here.

The RDB scope for the time being is limited to 3 species and will be further extended later on. We can reasonably consider that once established the system could also be extended to other fisheries monitoring needs (fisheries development, creation of new fisheries for new markets etc…).

The main characteristic of this RDB is to be scalable to other species and other indicators. This has mainly an impact on the chosen technologies and the system architecture (and cost).

Supporting regional fishery management plan is a vast and ambitious program: for RDB definition purposes, what's behind fishery management plan support must be clearly and precisely described. It means that first, fishery management plan support must be defined: is it supporting the creation and development of new FMP, or monitoring existing FMP to assess its efficiency and adapt them to new challenges?
Once the FMP support is clearly defined, data and information needs for this support must be defined.

- **WECAFC RDB data and information**

We are focusing on the major species in terms of economic value. Indicators such as catch values, import/export values are important. The system would be monitoring food security, more complex indicators would be needed like the percentage of fish in diet / income of local community.

We can propose the following indicators:

  - Creation / development of new FMP
  - Catches / effort / CPUE per species per fishing area and per fishing unit=> trend in fisheries exploitation per stock and fishing unit
  - Stock status
  - Export / import per species/fishing products
  - ….
  - Monitoring of existing FMP
  - Same as above? More?

- **Need for regional reference data**

The structure of these indicators must be defined: dimension (year, month, species, fishing areas, fishing unit, Vessel type/gear type etc.) and indicator (quantity in lbs or ton, values in $)

Regional definition of dimension must be agreed upon to have a common understanding at regional level of what we are talking about: is the Bahamas crawfish the same species as the Martinique *langouste*?

These regional classifications (reference data) are absolutely crucial at regional level to be able to harmonize data coming from different national sources.

- **Source of information**

Once these indicators are defined, source of information must be listed. It is commonly acknowledged that the national level plays a crucial role as the primary (if not unique) source of reliable information on fisheries exploitation.

So national source of information must be listed, reference data used identified and mapping with regional classification done.

- **WECAFC RDB technical requirements**

The WECAFC RDB as mentioned above should be scalable and flexible on the long terms. An open source based software would be preferable than a proprietary solution (which is usually a closed piece of software with a high cost when evolution is required).

A RDB needs a Database Management System. The most well-known are MySQL, SQL Server or Oracle. Again, an open source solution would be preferable as the needs in terms of volume of data and transactions do not require costly solutions as Oracle. Large communities of MySQL or PostgreSQL users exist ensuring that these open sources solutions are sustainable on the long run.

Hosting is a particular need that must be addressed early in the RDB discussion. Two solutions are usually presented: local hosting vs outsourced (cloud) hosting.

Local hosting has impacts on the hosting institution: it needs to have dedicated IT staff, dedicated white room as server farm (secured and safe power supply, AC, restricted access) and dedicated high broadband. It implies human and financial resources availability. All the infrastructure initial investment (server, server farm, generator etc.) can be supported by a project, but the institution should not forget residual cost of maintenance and staff.

Cloud hosting is hosting the RDB in a dedicated cloud server for which the institution will pay a monthly / annual fee. There is no need for dedicated staff, no need for dedicated infrastructure. But the data is not hosted locally which could be a problem for confidential data given IT policies. The choice of the cloud provider is the key to success and security.

Public e-infrastructure like i-Marine could be a solution as it is not privately owned and public institutions (like EU) are behind such an infrastructure ensuring availability of services on the long term. But a monthly / yearly fee is required which can usually not be supported by a project.

All these elements must be discussed prior to select one of the 2 options.

We would recommend here to go for a cloud hosting solution, possibly based on public e-infrastructure.