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THE FISHERY RESOURCES MONITORING SYSTEM (FIRMS)



WCPFC-SC5-2009/GN-WP-18

The Fishery Resources Monitoring System (FIRMS), a formal Information Partnership arrangement launched in February 2004 which currently brings together 13 International Organizations, has been introduced to WCPFC at its third SC regular session (more at <http://firms.fao.org/firms> and in annex 1). WCPFC currently has an Observer status in FIRMS. Considering progress achieved, the 5th FIRMS Steering Committee meeting (FSC5, Halifax, July 2008) established that it was time to encourage more RFB institutions to become FIRMS Partners. A statement to encourage other International Organizations to join FIRMS was delivered at the March 2009 meeting of the RFB Secretariats network.

This document intends to foster WCPFC discussions towards a possible decision by WCPFC to join FIRMS. It provides a brief update on the status of FIRMS, recent developments and current initiatives, and puts forward the benefits which WCPFC might expect from becoming a FIRMS member.

1. Status of FIRMS, recent developments and current initiatives

FIRMS aims to provide its users/clients with an integrated web-based system for monitoring the status and trends of world fishery resources and their management, using authoritative sources of information. FIRMS is built on an extensive database of fishery information and interrelated modules which may be viewed using web-based tools and reports. The FIRMS database currently contains about 1000 fishery stocks, of which 40% have information available on status and trends. 2007 web trend statistics tell that FIRMS is as popular as the renown FAO species identification fact sheets. Most of the information is currently contained in the Marine Resource Module. A Fisheries Module has just been released and additional modules will be developed in due course to address other key topics such as ecosystem-based fishery management.

The development of FIRMS is guided by a Steering Committee (FSC) which is formed by the partners. At its fifth meeting (FSC5 in July 2008), the Steering Committee agreed that the web-based software is now sufficiently developed and stable to support full-scale access to FIRMS. FSC5 endorsed:

- a) The implementation of a web interface to allow users to search the Marine Resources Module using standard status descriptors (Exploitation rate and Abundance level, based on standard terminology recently approved by FIRMS); and
- b) The public release of the Fisheries Module which will provide information on fishing activities, management actions and socio-economic performance.

FSC5 also agreed that intersessional efforts should now be directed towards completing and updating Partners' contributions to the Marine Resource and Fisheries modules, and to invite additional RFBs to join the partnership in order to fulfil information gaps.

2. Benefits for WCPFC and its member countries of reporting to FIRMS

at a political level:

FAO member countries through COFI, and UN members through the UN General Assembly, have made commitments to the Strategy-STF¹ and their willingness to adhere to principles of good fisheries governance based on the best scientific knowledge available. Reporting status and trends of resources and fisheries demonstrates countries' compliance with such commitment, and FIRMS offers an enabling framework.

As well, the 2006 UN Review Conference on Straddling and highly migratory Fish Stocks recommended that States individually or collectively through RFMOs should cooperate with FAO in the implementation and further development of the Fisheries Resources Monitoring System (par. 18j)"

at a strategic level:

WCPFC is part of the Network of Tuna Agencies and Programs ("Tuna network"), one goal of which is to foster sharing and dissemination of information on Tuna resources and fisheries, including their status and trends. Of the major Tuna bodies, WCPFC is the only one not yet FIRMS member, notwithstanding the fact that it covers the area with highest tuna catches. By accessing to FIRMS and adopting its information exchange standards, WCPFC would at the same time enable FAO (with reference to "FAO regional review on the state of Marine resources") and the "Tuna network" to achieve complete and systematic reporting on world Tuna resources and fisheries. In this regard, the FIRMS process and products could facilitate "Tuna network" dissemination goals.

FIRMS RFB partners have understood the benefits of FIRMS reporting mechanisms. Fact sheets are communication products which:

- provide essential information, while for full details link to electronic sources;
- allow better searchability on the internet including through full text and controlled terms; a presence in FIRMS increases the profile of RFB reports, as well as the visibility of their work on the internet;
- can be merged and enriched with other sources of information such as catch statistics, or multidisciplinary maps;
- constitute a dynamic reporting featuring ability to maintain time series of reports as information becomes available;
- enable the development of new products, such as maps, statistics, or synoptic views (eg Status and Trends summaries)

Technically, a number of FIRMS RFB partners have understood that information management options behind the FIRMS system are worth adopting as part of their own ICT² framework. This technology opens perspectives of recycling information products contributed to FIRMS within RFB's branded products, thus serving primarily data owners interests. ICES, GFCM, ICCAT, NAFO and IATTC have during the past 18 months requested and received from FIRMS Secretariat training on XML related technologies. As hinted above, the "Tuna network" and its website could benefit from these technical solutions for a comprehensive reporting on status and trends of world Tuna resources and fisheries.

Although the Partnership has not yet been open to National partners, FSC5 agreed that national level reporting can be channelled and encouraged through relevant FIRMS RFB members. These national level contributions are accepted provided some peer review process and quality assurance rules are applied at RFB level. Such process has already been initiated with CECAF, GFCM, SWIOFC, SEAFDEC. Therefore there is scope for RFBs to combine national level reporting required as part of the regional mechanisms, and FIRMS reporting.

The expansion of FIRMS to national members is a question under regular review by the FSC and is something which has been agreed in principle: the main driver to this expansion lies in FIRMS aspiration to be a global monitoring system, implying that it should be able to cover resources and fisheries within national jurisdictions and in areas where regional fishery bodies do not exist. The FSC has recently

¹ FAO Strategy-STF: FAO strategy for improving information on status and trends of capture fisheries

² ICT: Information and Communication Technologies

approved that national level reporting on status and trends can be channelled and encouraged through FIRMS Regional Partners..

Conclusion:

By becoming a FIRMS member, WCPFC will have obligations to fulfil: contribute to FIRMS information on status and trends of Pacific Tuna resources and/or fisheries under its monitoring and management mandate; participate to the FIRMS decision making process, by attending FIRMS Steering Committee meetings (generally organized back to back with CWP meeting, ie once every two years), and by participating to its related Technical Working Group meetings. About one FIRMS meeting is organized per year on average. These commitments will be done at its own expenses.

However, with a strengthening Partnership, a more comprehensive knowledge base, a broadening thematic scope, a mature technology and tools constantly enhanced to improve streamlining of workflow, there is an increasing pay off to these obligations. FIRMS will hold its next FSC meeting in the Pacific (Hobart, Feb. 2009, hosted by CCAMLR), an ocean yet poorly covered by FIRMS. Seeing on this occasion one RFB partner from the Pacific area joining the partnership would be of particular significance and satisfaction to FIRMS partners.

Annex 1: What is the Fishery Resources Monitoring System (FIRMS)

FIRMS is a formal Information Partnership arrangement launched in Feb. 2004 which currently brings together 13 International Organizations (see members map in annex 1). FIRMS's objective is to provide information users with a better means to monitor the status and trends of world fishery resources and their management, based on authoritative information sources. Being a formal arrangement, partners make commitments for the provision of information and the governance of the system assured by the FIRMS Steering Committee (FSC). FAO provides the FIRMS Secretariat.

During the developmental phase, the partnership has been limited to regional fishery organizations and other inter-governmental organizations. However FIRMS's long-term vision is to include national institutions in its partnership. The main driver to this expansion lies in FIRMS aspiration to be a global monitoring system, implying that it should be able to cover resources and fisheries within national jurisdictions and in areas where regional fishery bodies do not exist. However,

The FIRMS website <http://firms.fao.org> is the visible outcome of the FIRMS information sharing work. This website was launched in May 2006 during a side event of the UN Review Conference on Straddling and Highly Migratory Fish Stocks. Currently, FIRMS disseminates through its Marine resource module information for about 1000 stock units. This module hosts scientific knowledge about the biotic component of the fishery system: structure of marine resources populations, habitat and biology of concerned organisms, stock units, stock assessments, resources status and trends. The FIRMS web based system is powered by the Fisheries Global Information System (FIGIS) and benefits from its content management system and information exchange protocol features.

Progressively elaborated by the FSC, an Information Management Policy (IMP) defines the principles and conditions governing the sharing of information contributed by the various Partners within FIRMS, including quality assurance issues, data ownership, dissemination rules, streamlined workflow mechanisms, information standards. FIRMS information sharing mechanisms are in particular based on two fundamental tools:

- the inventories constitute the backbone of the FIRMS system. Each partner enumerates the list of Resources and Fisheries under its monitoring and/or management mandate, and the system organizes the reporting on status and trends according to these lists and related data ownership; The system displays all inventoried units, also when information is not sufficient to provide a fact sheet; the absence of fact sheet provides an indication of potential knowledge and monitoring gaps.
- the information standards are developed to ensure consistency and common understandings of the information shared, and include classifications, controlled terms, concepts and their definitions, and the Metadata which drives the template for the presentation of fact sheets. These standards are necessary to enhance the overall authoritative value and quality of the information shared in FIRMS and provides de facto a global framework for fostering information exchange on status and trends of resources and fisheries. Recent developments in these standards include a bi-dimensional set of Stocks status descriptors (for both Exploitation rate, and Abundance level), and a reporting template for fishery fact sheets.

Fact sheets and other FIRMS products: as a result of these sharing mechanisms, the FIRMS information products are web-based fishery reports formatted following a standard template, tagged with the agreed controlled terms for status and trends description, and presented in the form of homogeneous Resources or Fisheries fact sheets. The knowledge thus collated and organized might be exploited in many ways to present synopses on the state of resources, or to enable clever searches, as anyone would expect from a database.

FIRMS Fisheries module: new horizons offered for knowledge exchange:

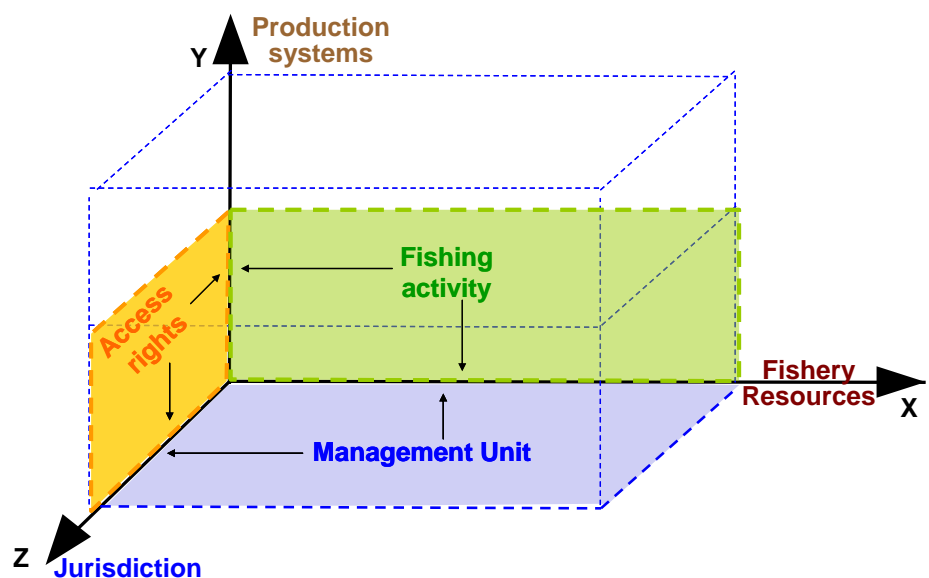
The initial priority of the core FIRMS partners was for a Marine Resource module able to disseminate their regional level fish stock assessments. Since the release of this module in 2006, the FIRMS efforts have been directed to the development of the Fisheries module which will satisfy Partners' needs related to the monitoring of the human component of the fishery system.

The design of the Fisheries module was approved by the FIRMS Steering Committee in July 2008, and the first Fishery fact sheets are currently being published on the internet. The two following CCAMLR fact sheets are example of these fishery fact sheets

- Southern Ocean Toothfish fishery - Eastern Ross Sea (Subarea 88.1), 2008
<http://firms.fao.org/firms/fishery/345>
- Southern Ocean Toothfish fishery - Western Ross Sea (Subarea 88.2), 2008
<http://firms.fao.org/firms/fishery/465>

The design of the Fisheries module encompasses the inherent complexity of the multifaceted approach to fisheries, as suggested by the conceptual model represented in Figure 1: the 3 dimensional diagram helps visualise the various perspectives/perceptions people have on fisheries. Three fundamental approaches, represented on the main axes of the diagram, are proposed as the Fishery resource approach (biological view), the Production systems approach (socio-economic view), and the Jurisdictional approach (legal view); other perspectives at the cross-road of these main ones are represented on the plans of the diagram: a Management unit approach, a Fishing activity approach (with proxy concepts of Operational Unit³, or Métier⁴), an Access rights approach. FIRMS Partners believe that most existing definitions of fisheries can be mapped to this standard framework, without pre-empting the possibility to extend the standard framework if required.

Figure 1: Conceptual model of the multifaceted approach to fisheries



This model gives insights to FIRMS efforts to organize and structure the information so that it is comparable, and to enable linkages and interactivity between the approaches. FIRMS Partners believe that such a model encompassing multiple views can contribute to and eventually support the Ecosystem Approach to Fisheries (EAF), as this vision leads to strong and integrated information and management system for aquatic resources and environments and their usage.

³ The concept of Operational Unit: "For the sake of managing fishing effort within a Management Unit, an Operational Unit is the group of fishing vessels practising the same type of fishing operation, targeting the same species or group of species and having a similar economic structure. The grouping of fishing vessels may be subject to changeover time and depends on the management objective to be reached." (GFCM/SCSA, provisional definition)

⁴ The concept of Métier: "A métier is usually defined by the use of a given fishing gear in a given area, in order to target a single species or group of species, e.g. inshore shrimp trawling, offshore flatfish trammel netting ... (Mesnil and Shepherd, 1990; Laurec et al., 1991).

Figure 1: FIRMS membership - Area and species coverage

Figure 1a: current list of non tuna-RFBs contributing information to FIRMS

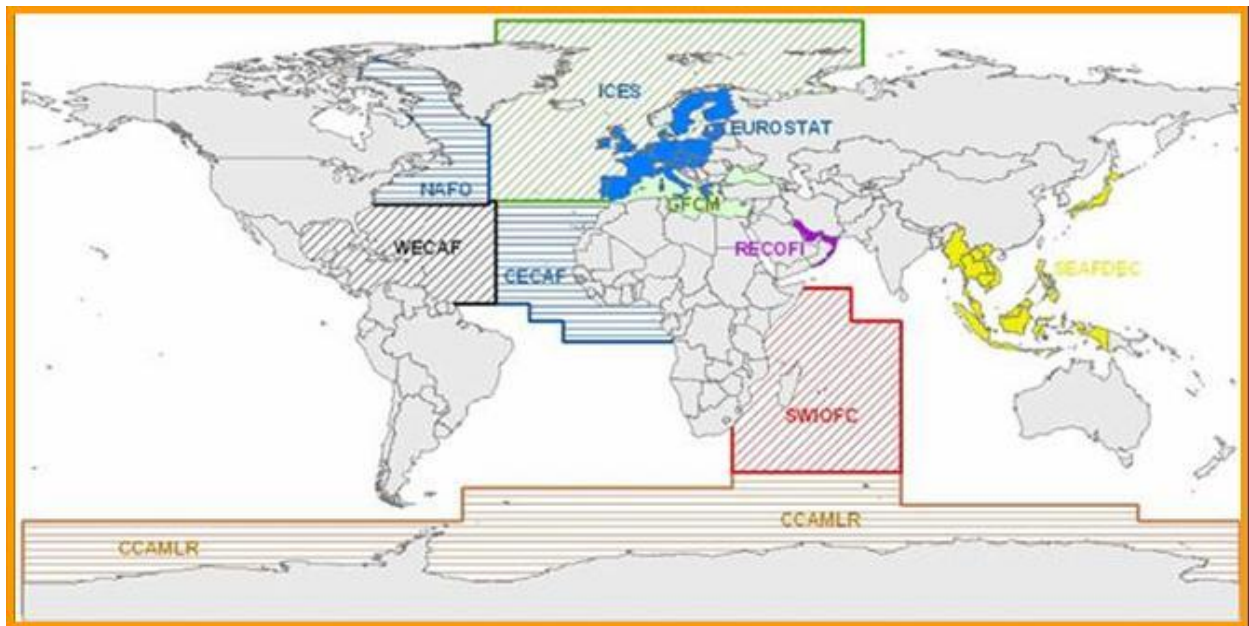


Figure 1b: current list of tuna-RFBs contributing information to FIRMS

