FIRMS Information Management Policy

Management Summary

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Feb. 2005	FIRMS Secretariat	Version 1 of the Information Management Policy Document adopted at the FSC2 meeting
Dec. 2006	FIRMS Secretariat	Draft of IMP version 2 as per revisions of FSC3
March 2008	FIRMS Secretariat	Draft of IMP version 2.1 for review by FIRMS TWG2 Standard FIRMS Stock status descriptors Updates of the Marine Resource Data Dictionary
July 2008	FIRMS Secretariat	Draft of IMP version 2.2 for review by FSC5 same as version 2.1 with some improvements
February 2010	FIRMS Secretariat	Draft of IMP version 2.3 for review by FSC6 Updates of the Fishery module and addition of the Fishery Data Dictionary
January 2013	FIRMS Secretariat	Draft of IMP version 2.4 for review by FSC8 Updates of Marine Resource and Fishery Data dictionary (updated section in yellow highlight)

FIRMS Information Management Policy

01/12/06

Preamble

The FSC formulates and revises as necessary the Information Management Policy. Various parts of this Policy may be at various stages of elaboration, according to the needs and issues to be addressed.

FIRMS is powered by FIGIS, and will be guided by the same principles as FIGIS. The FIGIS is a FAO system for disseminating information provided by many different partners, each holding data in different databases (or otherwise). Data in the FIRMS system will be loaded and maintained by many different organisations. In this distributed system, information remains under the full responsibility and control of data owners, and in that respect, information available through FIRMS shall be disseminated ensuring source and citations of responsible Party together with information on the nature, origins and quality of the information.

As overall guiding principles, the Information Management Policy shall encourage participation and cooperation by partners and facilitate submission of information, as well as maintain objectivity and transparency of the information presented.

Definitions

- **CWP**: the **Coordinating Working Party on Fishery Statistics** provides a mechanism to develop and promote common standards for fisheries statistics of regional fishery bodies and other inter-governmental organizations with a remit for fishery statistics.

- **FIGIS**: the **FAO Fisheries Global Information System** is a web-based information management tool that integrates fisheries information and interconnects groups of institutional partnerships to build up a network of subsystems. **FIGIS** is the tool powering the FIRMS web-site, taking care of the management and dissemination of information shared within the FIRMS partnership. Core modules handled by FIGIS for this FIRMS sub-system comprise resources and stocks, fisheries, fisheries management systems, and collections descriptions, whereas peripheral modules include species, fishing techniques, organizations descriptions.

- **FIRMS**: the **Fishery Resources Monitoring System** is a partnership drawing together international organizations, regional fishery bodies and national scientific institutes, collaborating within a formal agreement, who are willing to report and share information on status and trends of fishery resources.

- **FSC**: the **FIRMS Steering Committee** described in article 5 of the Partnership Arrangement.

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POLICY FRAMEWORK

Partners' policies regarding their publications and the dissemination of data and documents apply for the information that each Partner has submitted. Partners are responsible for informing the FIRMS secretariat of their information management policy. In practical terms, this means for FIRMS that:

- Partners' logo will be associated together with their information contributions;
- information submitted by a Partner may be withdrawn if the Partner withdraws from the Partnership;
- the Partner will be responsible for ensuring synchronisation with its own publication process;
- FIRMS will set-up mechanisms to prevent distortion of partners' published sources;
- Partner's publishing languages will be respected as far as possible.

Chapter 1 - Language handling

Notwithstanding provisions made in paragraph 1, the use of one of the 5 FAO official languages is encouraged in FIRMS. Consistently with the promotion of standards, there may be minimum language requirements for the submission of key attributes in English, such as titles or other searchable qualifiers.

Chapter 2 - Quality assurance

High quality information in FIRMS requires that information is objective, transparent, timely and consistent. Objectivity will be achieved through submission of the best scientific information, and encouraged through the development of criteria for the establishment of quality levels of partners contributions. Transparency implies that each piece of information is clearly documented and traceable. FIRMS will encourage its Partners to maintain timeliness of the information they submit consistent with their Agreements. Consistency is encouraged through standardization in data provided which in turn implies training and support to partners. Quality assurance (QA) procedures are a key part of maintaining high quality information, recognising the existence of two types of QA:

1) QA of information submitted by partners: Partners are responsible for the information submitted and the QA associated with that information. Where appropriate, information submitted by partners may include a general description of their QA protocols.

2) Minimum QA required for the sound operation of FIRMS (to be further developed by the FSC) should include, *inter alia*: identification of required information (e.g. mandatory fields), agreement on standards; use of a single harmonised layout; development of quality assurance indicators (both qualitative and quantitative, such as “risks indicators”); and indicators of reliability and timeliness in metadata.

Chapter 3 - Handling of alternate views

The presentation of alternate views and interpretations of the information is envisaged in FIRMS. Although a guiding principle is that FIRMS is an information system and not a forum for debate on interpretation of data (such forums are established through bi- or multilateral arrangements or through the regional fisheries bodies), FIRMS provides for mechanisms to identify conflicting information and resolve subsequent issues that may arise among Partners. The Information Management Policy sets the following principles:

- one Partner, or joint Partners, are recognized as primary responsible(s) for information on any Marine Resource or Fishery, as per content of Partnership Arrangement’s Annex 2;
- the role of the Secretariat is to enforce at system level this primary responsibility;
- Partners are entitled to submit alternate views on any Marine Resource or Fishery, final publishing being under the control of Partner(s) having primary responsibility over that Stock or Fishery;
- in cases where the primary responsibility is disputed between two or more partners, the FSC may decide on how to publish the alternative views.

Chapter 4 - Functionality automating analyses of the content of the system

To avoid misleading analyses, search facilities shall ensure that information on status and trends or management advice is not separated from its associated interpretative context.

Chapter 5 - Users restricted areas

FIRMS has a public domain as well as a domain to which access is restricted. FIRMS's restricted access area enables the information submission and validation process (including data integrity and consistency checking) for pre-publication reviews of that information by the FIRMS partners responsible. The Information Management Policy defines access rights by user types distinguishing editors, reviewers, approvers, system administrator, privileged users and general public. Identified inconsistencies in the contributions of partners remain under confidential private access until they are resolved.

Chapter 6 - Maintenance of historical data

The Information Management Policy will consider maintenance of history, update cycles and recovery of historical data. It will identify the requirements for archiving information and how the system will provide access to historic information.

Chapter 7 - Information Technology (IT) and Information Standards

The FIRMS Information Management Policy respects a range of **IT Standards and Information Standards** but shall primarily respect the FIRMS Partnership Arrangement on this topic. The distributed nature of FIRMS implies that FSC will not be able to set standards in a vacuum: the realities of existing standards of partners (and their system sites) will always need to be recognized, and therefore the final standards will be a major topic for resolution by the FIRMS Steering Committee. The following is a list of standards currently used within FIRMS:

FIRMS uses FIGIS IT standards that include:

- ✓ XML is the core format for data and information input, output and exchange;
- ✓ avoidance of the use of proprietary software wherever possible;

FIRMS information standards include:

- ✓ ***establishment of metadata and controlled vocabulary (thesauri) standards***: which, as a guiding principle, use existing standards including CWP, FIGIS, or other standards; however it is understood that extensions may be unavoidable. All controlled vocabulary, including metadata, might be available in three languages (English, French, Spanish);
- ✓ ***Exchange protocols of spatial information***: when presenting geo-referenced data, an individual data provider should use the appropriate geographical system. Local

organisations should make sure that the detailed maps that they might develop for their own use conform to existing map systems.

Chapter 8 - Mechanisms for the development, consolidation and validation of Metadata standards

- ✓ the FIRMS web-site present the elements of protocols to facilitate the exchange of information.

- ✓ Information standards for the various areas of FIRMS are in different stages of maturity and FIRMS' terminology reflects this process: e.g. in the early stages of development, information standards proposals are presented as "draft guidelines", they become "guidelines" once they have passed a first peer reviewing stage, and are endorsed as FIRMS standards and added as chapter of the IMP when Partners have had the opportunity to test the guidelines and the revision history shows sufficient stability. FIRMS standards are not cast in stone and the Partners will keep them under review. The guidelines and draft guidelines are not part of this document as chapters, but can be seen in Annex 1 of this document.

FIRMS INFORMATION STANDARDS

Chapter 7.1 - Citation standards

Preamble

Purpose: Users should be able to easily cite FIRMS web pages (fact sheets) in the form of bibliographic references.

Revision history: These bibliographic citation standards were initially presented to FSC2, and were accepted as guidelines after some amendments to the proposals were made.
Further discussions took place during second half of 2005 within FAO with regard the application of FAO wide harmonised standards for citations in electronic publications. By the time when TWG1 met, these [uncompleted] discussions indicated the need for changing some elements. The proposed revisions were presented to TWG1 (document TWG1/2005/4b) and supported by this group.
All proposed changes since FSC2 were recapitulated in document FIRMS FSC3/2006/5 presented to the FSC3, with an additional change essentially concerning the distinction to be brought between the creation date and the updated date, which seemed to meet the range of needs of FIRMS Partners. During FSC3 some amendments to this document were agreed: in the short citation the serial “FIRMS reports” should be displayed in both the short citation and the full bibliographic reference; the words “via FIGIS” should be replaced with the words “via FIRMS”. This document thus modified was elected as a chapter of the IMP by FSC3.

Guidelines for bibliographic citations concerning FIRMS fact sheets

Each FIRMS fact sheet needs to be univocally identified by a Bibliographic Citation. This citation is composed by the following elements:

Author(s). Date created.
Cover page Title
Title, including subtitle
Contributors
Series title
Update date. Publisher place. Publisher.
Availability (URL)

Author (s): the author can be a “personal author”, a “corporate author” or a “conference body”. The personal author(s) has always to be displayed first. The Corporate Author, if available, should also be cited in a new field. Personal authors should be cited as follows: “Surname in full, followed by a comma and the initials of both the first and middle names. If more than one author is given, they should all be cited, separating one from the other by a semicolon and a space.
e.g. Author: Adams, L.; Smith, F.J.;
e.g. Corporate Author: Species Identification and Data Programme (SIDP), Rome (Italy)

Date created: this is the date of creation of the intellectual content. It follows the personal author(s), or corporate author, on the same line, and is separated from the author by a ".". It is presented in the form of year, preceded by "c" (for copyright date) , and followed by a "-" and the current year, in the case of an electronic resource constantly updated.

e.g. c2000- in the case of a once-off report created in 2000

e.g. c2000-2006 in the case of a document created in 2000 and constantly updated

Cover page title: it includes the reference year (for FIRMS reports).
e.g.: Stock status report 2011.

Title: the title includes the main title, the subtitle, the reference year (for FIRMS reports) and eventually additional information such as volume number, part number, etc. The language of the title corresponds to the language of the content of the document.
e.g.: Cod – Baltic Sea, 2003

Contributors: if any (editors, compilers translators), they would come after Title, with the names preceded by: (edited by xxx; complied by xxx; translated by xxx.),

e.g.: edited by N. Bergamini; translated by K. Arian.

Series title: the series title according to the FAO house style should be cited italics.
e.g.: *FIRMS Reports*

Update Date: The date the document was uploaded or updated in the system should be presented in an easy and unequivocal format: "Updated Nov 21 2005".

Publisher location: according to ISO 690-2 on bibliographic references for electronic documents, the place of publication and publisher are required elements. Indicating the town means the location of the publisher, i.e. FAO, not the location of the server.
When the publisher is the same as the corporate author, there is no need to repeat it, therefore it is sufficient to mention the location.

Publisher: the name of the Publisher can be entered in full or as an acronym if it exists.
"FAO" is the default publisher for a FIRMS fact sheet.
e.g.: Rome: FAO.

Available from: introduces the URL; the role of FIGIS as the server should be mentioned in the available statement: "available via FIGIS from http://www.fao.org/ xyz.

The URL of all the language versions should be cited if available.
e.g.: Available via FIRMS from (English version):
<http://www.fao.org/figis/servlet/species?fid=2795>; French version:..

An example of a full bibliographic reference (for use by cataloguers) for a FIRMS marine resource fact sheet is provided below, according to the above mentioned guidelines:

Bibliographic citation email it text-only view

FIRMS. © 2010-2012. ICES Advice 2009. Herring - North Sea, Eastern Channel and Skagerrak, 2008. FIRMS Reports. In: *Fishery Resources Monitoring System (FIRMS)* [online]. Rome. Updated 3 May 2010. [Cited 6 February 2012]. http://firms.fao.org/firms/resource/10385/en

The corresponding short citation found at the end of a book in the list of references used (bibliography) would look like:

Short Bibliographic citation

FIRMS. c2010-2012. ICES Advice 2009. Herring - North Sea, Eastern Channel and Skagerrak, 2008. *FIRMS Reports*. Updated 3 may 2010.
<http://www.xyz/abc.xml>

Chapter 7.2 - Geo-referencing standards

Preamble

Purpose: FIRMS IMP recognizes that there are several geographic systems in use for different purposes, and that when presenting spatial data, an individual data provider should use the most appropriate geographical system. An important part of the FIRMS system are the 'shape files' associated with the use of maps, and the adoption of geographic standards are necessary for FIRMS to operate smoothly.

Geographic standards encompass GIS Meta data standards (ie description of GIS layers, ISO 19115 is used in FAO and is being adopted by several UN agencies), standards for exchange of geographic information (shape files, ...), spatial standards (ie reference layers, scales, projections, ...), and geo-referencing standards. While acknowledging that these various components would eventually all be part of the FIRMS IMP, the most pressing need is on the definition of geo-referencing standards since it is the condition for partners to contribute geo-referenced inventories to FIRMS.

Revision history: These standards were developed during 2004-2005 together with the design of the FIRMS mapping tool, and were presented to TWG1 (doc TWG1/2005/4d): The geo-referencing standards seemed to meet TWG1's needs and expectations, with the required level of flexibility. The proposed standard was experimented through inventories for some Partners (ICCAT, GFCM, IATTC) and it appeared to meet requirements. These standards have been developed in order to enable each Partner to use the most appropriate geographical system for representation of the location of the Marine Resources or Fishery on a map.

The same document (FIRMS FSC3/2006/9) was presented to the FSC3, which decided to add it as a chapter of the IMP.

1. Introduction

Geographic information is one of the key components of the domains objects managed by FIRMS: area of distribution of a marine resource, fishing zone exploited by a fishery, convention area of a management system. FIGIS Reference Table Management System (RTMS) manages geographic references used in FIRMS application to display maps and perform spatial queries.

2. Definitions

2.1 Area

An area is the elementary unit of geographic information managed by FIGIS. An area is identified by a name and a code. Its geographical boundaries are known and can be modelled in a Geographic Information System (GIS) by polygonal feature(s).

2.2 Geographical System

A geographical system is the group of areas partitioning a spatial zone. A geographical system is identified by a name and a code. By definition, there is no spatial overlap among areas belonging to the same system. Each area of a system has a distinct code and name.

3. FIGIS references for geographical systems of areas

Geographical systems and areas are referenced in the FIGIS Reference Table Management System (RTMS).

3.1. Geographical systems references

Within the RTMS, geographical systems are logically organised into geographical system groups, which can be considered as complex geographical systems, and are also given a unique code. High level water area system groups are:
- Fishing statistical areas
- Fishery management areas
- Jurisdiction areas
- Environmental areas
- RFB groups
- Reporting areas

This hierarchical organization is used by different tools of the FIRMS application to facilitate the selection of areas within a filtered sub-set of systems, or to format the table of content associated to a map displaying different geographical systems. The same system might be part of different system groups. A preliminary list of geographical systems is available in the annex 1 of this document.

The main attributes of a geographical system reference are:
- a name (in English, French and Spanish)
- an alphanumeric code
- the types of the areas part of the system (see section “Area references below”).

The system codes are established using alphabetic characters in lower case. They are composed by a maximum of 3 sequences of alphabetic characters separated by “_”. There is no strict coding convention, but in general:
- When the author of the system is an organization, the first sequence is composed by its acronym. For example, all ICCAT geographical system codes start with “iccat_”.
- The high level system group abbreviation is often part of the code (e.g. “iccat_comp” for the system representing the ICCAT competence area).
- Finally, under a same system group, the last part of the system code includes an abbreviation of the characteristic which makes it distinct from other systems of the same group (“iccat_smu_alb”: ICCAT spatial management units for albacore).

3.2 Areas references
Each area is referenced with a name, a code and a type (meta identifier) which represents the system it belongs to.

Codification of areas is usually based on the codification used by the data provider. When the system has been created especially for FIRMS, the codification of areas follows similar conventions as the ones used for systems codes.

Area reference groupings have been built in the RTMS. These groupings are used to make easier the browsing of area references. For example, it is used to model the inclusion relationship between areas of 2 different geographical systems (e.g. FAO sub-division 37.2 is displayed as a sub-area of FAO major area 37).

Chapter 7.2: Appendix 1 - Geo-referencing standards: preliminary list of water area geographical systems referenced in FIGIS

System Name	System Code
Fishing statistical areas	stat
FAO statistical areas	fao_area
FAO major areas	fao_major
FAO sub-areas	fao_sub_area
FAO statistical fishing divisions	fao_div
FAO statistical fishing sub-divisions	fao_sub_div
FAO statistical fishing sub-units	fao_sub_unit
Areal grid	grid
5 degree squares	grid_05
Fishery management areas	man
ICCAT spatial management units	iccat_smu
ICCAT management units - Albacore	iccat_smu_alb
ICCAT management units - Bigeye tuna	iccat_smu_bet
ICCAT management units - Northern bluefin tuna	iccat_smu_bft
ICCAT management units - Sailfish and Spearfish	iccat_smu_sai
ICCAT management units - Skipjack	iccat_smu_skj
ICCAT management units - Swordfish	iccat_smu_swo
ICCAT management units - Yellowfin tuna	iccat_smu_yft
ICCAT management units - Blue marlin	iccat_smu_bum
ICCAT management units - White marlin	iccat_smu_whm
ICCAT management units - Small tunas	iccat_smu_smt
GFCM geographical sub-areas	gfcm_sub_area
Jurisdiction areas	jur
RFB competence areas	rfb_comp
ICCAT competence	iccat
IATTC competence	iattc
CECAF competence	cecaf
GFCM competence	gfcm
CARPAS competence	carpas
CCAMLR competence	ccamlr
CCSBT competence	ccsbt
CIFA competence	cifa
COPESCAL competence	copescal
COREP competence	corep
CPPS competence	cpps
CTMFM competence	ctmfm
FFA competence	ffa
IBSFC competence	ibsfc
ICES competence	ices
ICSEAF competence	icseaf
IOTC competence	iotc
IPHC competence	iphc
LVFO competence	lvfo
MHLC competence	mhlc
NAFO competence	nafo
NAMMCO competence	nammco
NASCO competence	nasco

NEAFC competence	neafc
NPAFC competence	npafc
OAPO competence	oapo
OLDEPESCA competence	oldepesca
PICES competence	pices
PSC competence	psc
RCF competence	rcf
RECOFI competence	recofi
SEAFO competence	seafo
SPC competence	spc
SWIOFC competence	swiofc
SRCF competence	srcf
WCPFC competence	wcpfc
WECAFC competence	wecafc
WIOTO competence	wioto
Country exclusive economic zones	eez
Sub-national areas	ter_wat
Environmental areas	env
Inland/marine	i_m
Oceans	oce
Oceans by latitude	oce_lat
Oceans by longitude	oce_long
Large marine ecosystems	lme
RFB groups	rfb
ICCAT geo-references	iccat_geo
ICCAT spatial management units	iccat_smu
ICCAT management units - Albacore	iccat_smu_alb
ICCAT management units - Bigeye tuna	iccat_smu_bet
ICCAT management units - Northern bluefin tuna	iccat_smu_bft
ICCAT management units - Sailfish and Spearfish	iccat_smu_sai
ICCAT management units - Skipjack	iccat_smu_skj
ICCAT management units - Swordfish	iccat_smu_swo
ICCAT management units - Yellowfin tuna	iccat_smu_yft
ICCAT management units - Blue marlin	iccat_smu_bum
ICCAT management units - White marlin	iccat_smu_whm
ICCAT management units - Small tunas	iccat_smu_smt
ICCAT competence	iccat_comp
Tuna regional fishery bodies convention areas	tuna_conv
ICCAT competence	iccat_comp
IATTC competence	iattc_comp
IOTC competence	iotc_comp
CCSBT competence	ccsbt_comp
WCPFC competence	wcpfc_comp
GFCM competence	gfcm_comp
Pacific Tuna geo-references	pac_tuna_geo
Pacific tuna and tuna-like reporting areas	pac_tuna_rep
Pacific tuna east-west reporting areas	pac_tuna_ew_rep
Pacific tuna north-south reporting areas	pac_tuna_ns_rep
Pacific tuna major reporting areas	pac_tuna_maj_rep
WCPFC competence area	wcpfc_comp
SPC competence area	spc_comp

IATTC competence	iattc_comp
Reporting areas	rep
Pacific tuna and tuna-like reporting areas	pac_tuna_rep
Pacific tuna east-west reporting areas	pac_tuna_ew_rep
Pacific tuna north-south reporting areas	pac_tuna_ns_rep
Pacific tuna major reporting areas	pac_tuna_maj_rep

Chapter 7.2: Appendix 2 - Examples of applications using Geographical Information System in FIRMS

GIS facilities in the FIRMS web-based application rely on the FAO mapping engine called KIDS.
Each geographical system is stored in GIS format as an ESRI polygons shapefile. One attribute of the polygon features is the area code.
The association between a FIGIS geographical system reference and its geographical representation (polygons shapefile) is managed by the KIDS map engine.
All shapefiles are projected in the same equidistant projection. In order to make possible the display of pacific centered maps, two coordinates systems are used: one centered on Greenwich meridian, one centered on meridian 160 W.
We present here below some of the GIS tools implemented in FIRMS.

1. Marine Resources Geographical Distribution Mapping tool

The purpose of this tool is to highlight on a map the distribution area of a marine resource, based on the list of areas used to represent its distribution. In addition, FAO major fishing areas intersecting these areas can be used in the mapping process, e.g. to define the default zooming extent. This intersection is calculated using a relational table which provides the list of FAO major fishing areas for any area referenced in the RTMS.

FAO Fishing Statistical Areas
27.3.a Skagerrak and Kattegat (Division IIIa)
27.4 Subarea 27.4 - North Sea (Subarea IV)
27.7.d 0 Eastern English Channel (Division VIId)

2. Geographical areas selection tool

The purpose of this tool is to build a list of area codes which intersect a point selected by the user on a map. Examples of client applications which use this tool are (i) the elaboration of a search query string or (ii) the geographical referencing of marine resource distribution in the on-line editing. One single geographical system is displayed by default (in addition to the background continent layer) but more than one geographical system can be displayed on user request and participate in the selection process at the same time.

3. Geographical Systems mapping tool

This is an interactive mapping tool used to display (or highlight) geographical systems or groups of geographical systems. The user has the control of which geographical systems has to be displayed and highlighted.

Chapter 7.3 - Marine Resources naming standards

Preamble

Purpose: For the sake of clarity in FIRMS system, in order to have a homogeneous presentation or to facilitate search, the naming of the key concepts structuring the system (Marine Resources and Fisheries) has to follow some conventions. At the same time, data owners have their own naming conventions, which they want to be reflected within FIRMS.

This chapter presents the criteria to be used as FIRMS naming convention for Marine Resources. This presentation is based on the English name but it is assumed that it is applicable to the 5 official FAO languages.

Revision history: This chapter was presented in document (FIRMS FSC3/2006/6) to the FSC3. The document had not undergone any change since the latest modifications requested by FSC2 (and cleared by TWG1), and Partners were able to comply with the standard on their inventories of Marine Resources. Hence FSC3 decided to add it as a chapter of the IMP.

1. Objective

In FIRMS system, each Marine Resource is represented by one FIGIS Reference Object, and by the FIRMS Observation object(s) attached to each Reference Object.
The naming attributes proposed for a reference object are:

- FIRMS name in English
- FIRMS name in French
- FIRMS name in Spanish
- A local name selected by the data owner. This local name might be in any language.

The naming attributes proposed for a FIRMS observation object are:

- FIRMS name in the 5 Official FAO languages: English, French, Spanish, Arabic and Chinese.
- Local name in different languages.

2. Marine Resources

2.1 Concept

The term "Marine Resource" represents a fishery biological concept which covers all types of association between a species (or a group of species) and an area. The term stock is more restrictive. It delimits in space distinct breeding populations. According to these definitions, a stock is a particular example of Marine Resource.

2.2 Rules for naming convention

i. The name of a Marine Resource should show off both its biotic component and its area component.

ii. The biotic component of the Marine Resource name should be based on common name used by international classifications (e.g. ASFIS for taxonomic names). If the biotic component includes more than one names, the comma (“,”) is used as separator.

iii. The area component should be the name used for the area, which means that the use of codes or acronyms should be avoided, or put at the end in parenthesis. The name of

the area should refer to standard international or regional naming classifications and conventions (country names, Oceans and seas names, etc...), either from the ASFIS list of geographical terms or from CWP handbook. Consistency with the naming convention would also imply that, for contributions from partners other than FAO, the statistical area used by the partner would take precedence over the reference to FAO statistical areas. When the area component includes more than one name, they are separated by a comma (“,”).

iv. The biotic component and the area component are separated by the symbol “ – “.

Examples:

Source	Local Name	FIRMS English name
CECAF	Sparidés dans la région nord ouest africaine	Seabreams - Northwest Africa
CECAF	Pageot (Pagellus bellottii) au Maroc, Mauritanie, Sénégal, Gambie 35° 45''-12°18''	Red pandora - Morocco, Mauritania, Senegal and Gambia
ICES	North-East Arctic haddock (Sub-areas I and II)	Haddock - Barents Sea, Norwegian Sea, Spitzbergen and Bear Island
ICES	Nephrops in Division IVa, West of 2°E, excluding Management Area F (Management Area G)	Norway lobster - North Sea (Fladen)

2.3 Some particular cases

Species for which there is only one stock
When there is only one single stock for a species, the common name of the species includes sometimes the name of the area delimitating the stock. In that case, when referring to the whole stock, it is useless to include in the name a specific component for the area. Or sometimes, the name of the species, even if not including the area name is used by authors to designate the whole stock (e.g Southern Bluefin tuna, Pacific Bluefin tuna).
Example:

Source	Local Name	FIRMS English name
IATC-SPC	Pacific bluefin tuna	Pacific bluefin tuna

Resources at global scale
When referring to all the stocks of a species (or a group of species), the term “global” is used as area component of the resource name.

Example:

Source	Local Name	FIRMS English name
FAO	All Bluefin tuna species	Bluefin tuna species - Global

Different stocks of the same species within the same area

Different populations of the same species may be located in the same area at different season. In that case, the biotic component must include an additional qualifier in order to make the name of each stock unique.

Example:

Source	Local Name	FIRMS English name
ICES	Herring in Sub-divisions 22-24 and Division IIIa (spring spawners)	Spring Spawning Herring - Skagerrak and Kattegat
ICES	Herring in Sub-area IV Division VIId and Division IIIa (autumn spawners)	Autumn Spawning Herring - North Sea, Eastern Channel, Skagerrak

ANNEX 1 - FIRMS GUIDELINES

Annex 1.1 - Marine Resource Data Dictionary

Preamble

Purpose: This dictionary combines working definitions (in black italics) for Topics of the Marine resource topic tree, presented within the fact sheet layout together with corresponding XML elements (in red), and complemented with some tutorial notes (in green) and examples (in blue). It really aims at facilitating users' understanding of the semantic behind each topic, while providing insights of the layout rendering. The definitions were collated from different sources, including the FIGIS-FIRMS 2002 workshop, the FAO fisheries glossary, and metadata definitions reused from other FIGIS domains.

Revision history: an alphabetically ordered, linear version of this dictionary was presented as working document to TWG1 (TWG1/2005/4a – ftp://ftp.fao.org/fi/DOCUMENT/FIGIS_FIRMS/Technical/4a_e.pdf). The fact sheet layout version equivalent, hosted in html format in the FIRMS working site, was presented for the first time to TWG1, and the format was very positively evaluated by the group. TWG1 also noted that the accurate definition of terms, titles and references used in FIRMS should be the first priority in the short term, as well as their translation.

Following these recommendations, the definitions of the linear data dictionary were inserted in the fact sheet layout together with tutorial aspects for presentation to FSC3 in document (FIRMS FSC3/2006/7). This format of the data dictionary, primarily designed for editors working with the FIRMS system, was deemed very helpful by FSC3.

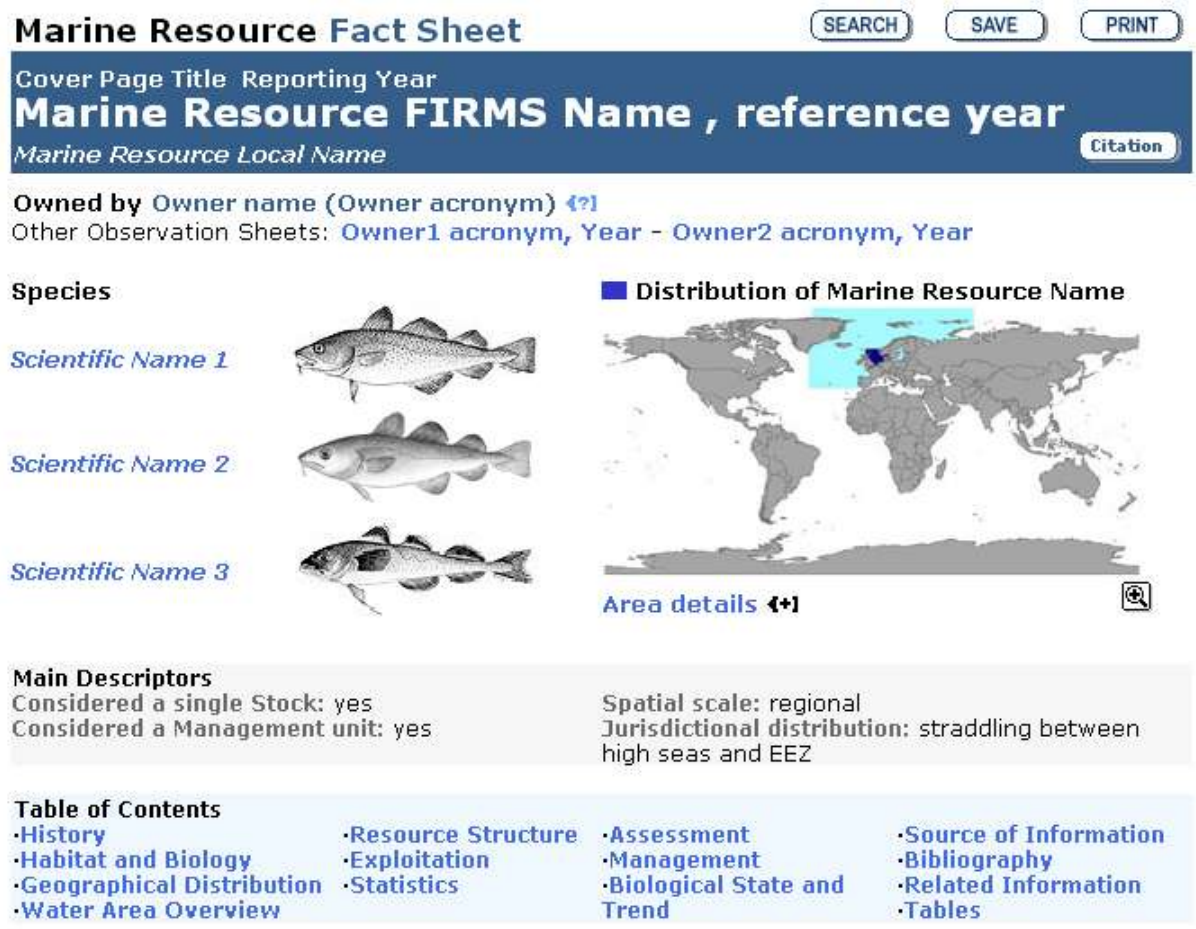
Revisions made on Reference terms standard during FSC3 caused an immediate change in the topic structure of the data dictionary: "Assessment Methods" was renamed "Assessment models" with the agreed list of reference terms as compiled in annex 1.2 (these terms do no longer include "Direct" or "Indirect"). Further, it was decided that the "Assessment model" was to be considered together with "Assessment Data".

These changes were implemented in the FSC4 version of the data dictionary.

The updated version of the Marine Resource Data Dictionary was submitted to FSC5 with some more definitions (reference year, reporting year, horizontal distribution, vertical distribution, depth zone, climatic zone, bottom type, geoform, jurisdictional distribution, spatial scale, management unit), and approved.

During FSC6, updates were proposed concerning the citation, the mapping of FIRMS State & Trend standard descriptors and the addition of standard terms for Bottom type and Horizontal distribution.

FSC6 then FSC7 debated and decided the addition of the new definitions for Monitoring and related sub concepts. The data model and the fact sheet layout were updated accordingly.



MarineResource (<fi:AqRes>*):* According to the FAO Fisheries Glossary, "Biotic element of the aquatic ecosystem, including genetic resources, organisms or parts thereof, populations, etc. with actual or potential use or value (sensu lato) for humanity. Fishery resources are those aquatic resources of value to fisheries".

Reference Year (<fi:ReferenceYear>*):* the year for which the status of the target object (e.g. Marine Resource, Fishery...) has been evaluated." *The y*ear might be eventually followed by an index (e.g. 1999a).

Reporting Year (<fi:ReportingYear>*):* the year in which the scientific meeting (or equivalent scientific validation process) reviewed the status of the target object (e.g. Marine Resource, Fishery...) of the Fact Sheets." The year might be eventually followed by an index (e.g. 1999a).

Monitoring (<fi:Monitoring>*):* A wrapper element containing monitoring aspects of a Marine resource. Use the sub-element "Range" to indicate the range of years (start and/or end) during which a Marine resource is monitored. Use "Monitoring Evolution" to indicate any ancestor or descendant Marine resource in the Monitoring life cycle.

Start/End Monitoring Year (<fi:Range>*):* The year when the Marine resource started to be monitored or when the monitoring has ended or been suspended.

Monitoring Evolution (<fi:MonitoringEvolution>): A sub-element to indicate ancestors and/or descendants in the Marine resource monitoring life cycle. Use the attribute Type to indicate if the Marine Resource References (AqResRef) are Ancestor or Descendant of the current one.

Ancestor/Descendant Monitored Resource: Marine Resources that were originally monitored or that originate from the current unit.

Example

Monitoring period *This marine resource is reported in FIRMS up to 2009.*
Subsequently monitored as: Angler - Bay of Biscay and Iberian Basin, Blackbellied angler - Bay of Biscay and Iberian Basin.

History <fi:History>

Historic information related to the element which contains fi:History. e.g. an historical review of the Stock or Resource exploitation, management regimes over time and their effect, and trends.

Habitat and Biology <fi:HabitatBio>

Climatic zone: e.g. polar **Depth zone:** e.g. coastal (0 m – 50 m) - slope (200 m - 1000 m) **Bottom type:** e.g. soft bottom, muddy or muddy – sand **Horizontal distribution:** e.g. littoral – neritic – oceanic **Vertical distribution:** e.g. demersal/benthic - pelagic **Geoform:** e.g. seamount - canyon (see list of controlled terms)

Habitat and Biology is a container for information on the biology and ecology of a species in the area of the aquatic resource.

Climatic zone (<fi:ClimaticZone>): Type of climate prevailing in the area of distribution of the aquatic resource.
Depth zone (<fi:DepthZone>): Describes, through the use of standard terms, the depth range related water environment in which an aquatic resource is distributed.
Bottom Type (<fi:BottomType>): Type of bottom substratum in which the aquatic resource is distributed.
Horizontal distribution (<fi:HorizontalDist>):inshore to offshore range in which the aquatic resource is distributed (e.g. littoral, neritic, oceanic ...).
Vertical distribution (<fi:VerticalDist>):type of behaviour characterizing the vertical distribution of the aquatic resource (e.g. demersal, benthic, pelagic...).
Geoform (<fi:Geoform>): type of geographic morphology characterizing the sea floor in which the aquatic resource is distributed (e.g. seamount, canyon, ...). Also known as sea floor physiography.

History
(same as above)

Geographical Distribution <fi:GeoDist>

Jurisdictional distribution: e.g. transboundary (see list of controlled terms)

Information about the geographical distribution of an entity such as species, aquatic resource ...

Jurisdictional distribution (<fi:VerticalDist>): Jurisdictional qualifier (e.g. "shared", "shared - highly migratory") of the aquatic resource related with its spatial distribution.

History
(same as above)

Water Area Overview <fi:WaterAreaOverview>

Spatial scale: e.g. regional (see list of controlled terms)

"*Description of the water area in which the aquatic resource is located, including environmental characteristics, jurisdictional limits, ..."(FIGIS-FIRMS 2002 workshop). Water Area Overview might contain a reference list of areas in which a species or aquatic resource is found or employed.*

Spatial scale (<fi:SpatialScale>): Spatial scale contains a standard term such as Global, Regional (e.g. for the whole Atlantic), sub-regional (e.g. for a part of the Atlantic), national, local (for sub-national levels).

History
(same as above)

Geo References

Distribution of Marine Resource Name
The system codes/area codes listed in the following table are those listed as primary georeferencing system as part of the Marine resource identity. These codes are used for the dynamic map presented by default in the fact sheet.

ICCAT Albacore Spatial Management Unit	ALB_N: Albacore North
	ALB_S: Albacore South
	ALB_M: Albacore Mediterranean

Additional area codes <fi:WaterArearef>
The system codes/area codes listed in the following table are those listed as secondary georeferencing system as part of the Water Area overview Topic

Exclusive Economic Zone (EEZ)	THA: Thailand

More Geo References [+]

The system codes/area codes listed in the following table are dynamically retrieved from the data base on the basis that they are global (FAO areas, Large Marine Ecosystems) and are intersecting the distribution of the Marine resource.

FAO Fishing Statistical Areas	21: Atlantic, Northwest
	27: Atlantic, Northeast
	31: Atlantic, Western Central

	34: Atlantic, Eastern Central
Large Marine Ecosystem (LME)	37: Sulu-Celebes Sea
	38: Indonesian Sea

Resource Structure <fi:AqResStruct> fi:AqResRef

Considered a single Stock: e.g. yes

Information about structure of the aquatic resource. This element includes an attribute describing whether Yes or Not the aquatic resource is considered a biological Stock. It might as well introduce one or more subunit(s) of the aquatic resource under consideration (use fi:AqStockRef to positively refer a lower level of aggregation of an aquatic resource). Where possible, a short explanation should be provided to justify the existence of the sub-unit(s).

Cod - Baltic Sea

... is an example on the use of <fi:AqResRef>

History

(same as above)

Exploitation <fi:Exploit>

Information about "the exploitation of the aquatic resource, including typically the description of the various fisheries exploiting the stock, and exploitation indicators such as catches, effort parameters, size of fish caught" ..."(FIGIS-FIRMS 2002 workshop). Use fi:FisheryRef to positively reference the fisheries exploiting this aquatic resource.

Groundfishes fishery - Baltic Sea ICES, 2003

Cod fishery - Baltic Sea ICES, 2003.

... are two examples on the use of <fi:FisheryRef>

History

(same as above)

Statistics <fi:Statistics>

Contains statistics and associated information related to the exploitation of the aquatic resource.

History

(same as above)

Catch Forecast	2005	2006	2007	2008
zone A	2098	77	33	22
Zone B	7896	56	22	88

Table 1: Catch Forecast

Here an example how link to tables can be nested within text. Generally tables can be displayed "inline" in "pop up" or at the "bottom" of the fact sheet: (Table 2) text text texttext text texttext text texttext text texttext text texttext text texttext text texttext text (Table 3). text text texttext text texttext text texttext text texttext text texttext text texttext text texttext text (Table 4). text text texttext text texttext text texttext text texttext text texttext text texttext text texttext text

Assessment <fi:BioAssess>

Assessment: Table of Contents [?]

Assessment is a container for elements describing the biological assessment of the aquatic resource, such as the "description of data sources used for the assessment, the various assessment models and related methods applied with their individual results, and the overall assessment results, including possibly scientific advice" (FIGIS-FIRMS 2002 workshop).

History

(same as above)

Data <fi:Data>

Data contains "data, or information about data, used to generate the exploitation indicators, or presented to the scientific assessment for the calculation of assessment indicators" (FIGIS-FIRMS 2002 workshop).

Assessment Data: eg Fishery Catch and Effort <fi:AssessData> <fi:AssessDataType Value="Fishery Catch and Effort">

Assessment Models <fi:AssessModels>

Type: eg Age-structured (see list of controlled terms)

Assessment Models describes the various models used in performing a stock assessment. It might contain a reference list of models commonly used in stock assessments.

Assumption <fi:Assumption>

Assumption is a description of the underlying assumptions upon which stock assessments, or results are based.

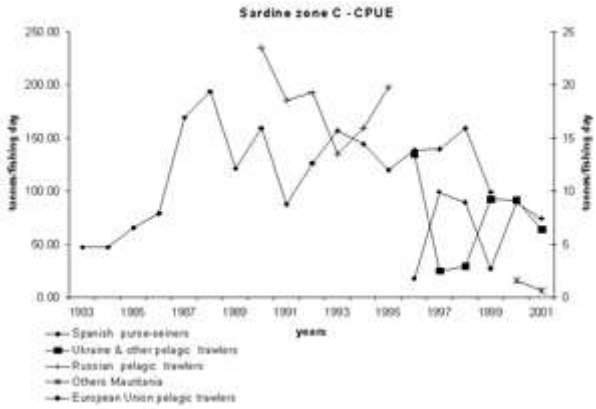


Figure 2: CPUEs of Sardine (Sardina pilchardus) from fisheries in Zone C (26°N-20°N)

Methodology <fi:Methodology>

Title

Methodology is the science behind the method: "a description of how the generic method has been applied in the context of the current assessment, considering shortcomings on the available data, expert knowledge, assumptions, ..." (FIGIS-FIRMS 2002 workshop).

Use the Title attribute in order to display the Methodology title at the start of the paragraph presenting the Methodology.

ModelEntry1 Title <fi:AssessModelEntry>

Use fi:AssessModelEntry for each model used in performing a stock assessment. "An assessment model is identified by its title, and ideally includes the description of available data, assumptions made and methodology applied, and a summary of results".

Assumption <fi:Assumption>

(same as above)

Methodology <fi:Methodology>

(same as above)

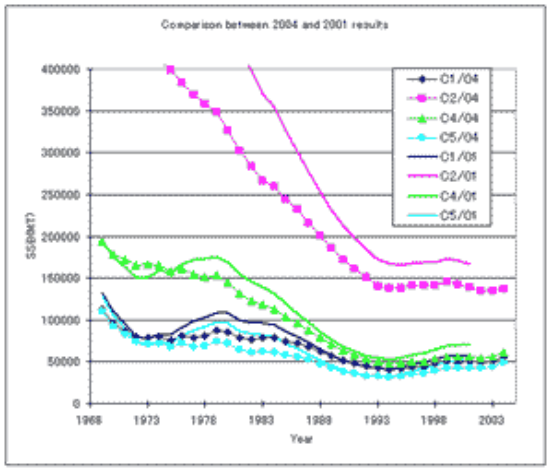
Assessment Data: eg Vessel Surveys <fi:AssessData> <fi:AssessDataType Value="Vessel Surveys">

Data contains data, or information about data, used in the context of this assessment method to generate the exploitation indicators, or presented to the scientific assessment for the calculation of assessment indicators.

Results <fi:Results>

Results is a "description of the outputs of assessment at the level of each assessment model/method. It provides quantitative and/or qualitative details for each of the noticeable assessment indicators generated during the assessment" (FIGIS-FIRMS 2002 workshop).

Figure x: text legend text legend text legend.



Assessment Indicator <fi:AssessIndicator>

Type: e.g. MSY (see list of controlled terms)

Title

Assessment Indicator contains indicator data commonly generated using stock assessment methods (e.g. fishing mortality, biomass, recruitment, abundance index). According to the FAO Fisheries Glossary, an indicator is "a variable, pointer, or index. Its fluctuation reveals the variations in key elements of a system. The position and trend of the indicator in relation to reference points or values indicate the present state and dynamics of the system. Indicators provide a bridge between objectives and action".

Use the Title attribute in order to display the Assessment indicator title (if any) at the start of the paragraph.

Projection <fi:Projection>

Projection contains stock projections and policy options.

Reference Point <fi:RefPoint>

Type: e.g. Recruitment (see list of controlled terms)

Reference Point contains reference point data for a stock or a fishery. According to the FAO Fisheries Glossary, "a reference point indicates a particular state of a fishery indicator corresponding to a situation considered as desirable (Target reference point, TRP) or undesirable and requiring immediate action (Limit reference point, LRP, and Threshold reference point, ThRP)".

ModelEntry2 Title <fi:AssessModelEntry>

(same as above, but for following iteration of assessment model(s) used)

Assumption <fi:Assumption>

(same as above, but for following iteration of assessment method(s) used)

Methodology <fi:Methodology>

(same as above, but for following iteration of assessment method(s) used)

Assessment Data: eg **Vessel Surveys** <fi:AssessData> <fi:AssessDataType Value="Vessel Surveys">
(same as above, but for following iteration of assessment method(s) used)

Results <fi:Results>
(same as above, but for following iteration of assessment method(s) used)

Here an alternative option to display tagged text without headers for Assessment Indicator, Projection and reference Point:
<fi:AssessIndic Type="MSY"> </fi:AssessIndic> *Assessment Indicator contains indicator data commonly generated using stock assessment methods (e.g. fishing mortality, biomass, recruitment, abundance index). According to the FAO Fisheries Glossary, an indicator is "a variable, pointer, or index. Its fluctuation reveals the variations in key elements of a system. The position and trend of the indicator in relation to reference points or values indicate the present state and dynamics of the system. Indicators provide a bridge between objectives and action".*. <fi:Projection> *Projection contains stock projections and policy options.* </fi:Projection>, <fi:RefPoint> *Reference Point contains reference point data for a stock or a fishery. According to the FAO Fisheries Glossary, "a reference point indicates a particular state of a fishery indicator corresponding to a situation considered as desirable (Target reference point, TRP) or undesirable and requiring immediate action (Limit reference point, LRP, and Threshold reference point, ThRP)".* </fi:RefPoint>

Assessment Models <fi:AssessmentModels>

Type: eg Age-structured (see list of controlled terms)
Next instance presenting a distinct assessment using different type of Model. The same topic structure presented above would apply here.

Assumption <fi:Assumption>
(same as above)

Methodology <fi:Methodology>
(same as above)

ModelEntry1 Title <fi:AssessModelEntry>
(same as above)

Assumption <fi:Assumption>
(same as above)

Methodology <fi:Methodology>
(same as above)

AssessmentData: eg **Remote Sensing** <fi:AssessData> <fi:AssessDataType Value="Remote Sensing">
(same as above)

Results <fi:Results>
(same as above)

Assessment Indicator <fi:AssessIndic>
Type: e.g. MSY (see list of controlled terms)
(same as above)

Projection <fi:Projection>
(same as above)

Reference Point <fi:RefPoint>
Type: e.g. Recruitment
(same as above)

[Overall] Assessment Results <fi:Results>
"As an overall synthesis of the different models/methods, Results is a description of the outputs of assessment, providing a synthesis embracing the set of assessment indicator values generated during the assessment and found meaningful to contribute to state and trends statement" (FIGIS-FIRMS 2002 workshop).

Assessment Indicator <fi:AssessIndic>
Title
(same as above)
Use the Title attribute in order to display the Assessment indicator title (if any) at the start of the paragraph.

Projection <fi:Projection>
Projection contains stock projections and policy options.

Reference Point <fi:RefPoint>
Type: Recruitment
(same as above)

Scientific Advice <fi:SciAdvice>
Advice is a container for "scientific advice provided by the scientists at completion of the assessment. The nature of the advice is of strictly scientific nature, ie clean of any management or political consideration. It may deal with the data to be provided, the assessment tools to be used, or the orientations that should be taken to allow a stock to recover, associated with types of measures, or results of simulation" (FIGIS-FIRMS 2002 workshop).

Management <fi:Management> fi:AqResRef ; fi:FisheryRef ; fi:ManageSystemRef

Management unit: e.g. yes
Information about the management of the fishery or the aquatic resource. This element includes an attribute describing whether Yes or Not the aquatic resource is considered a Management Unit. If Yes, a Jurisdiction area is required as primary or secondary georeferencing system. According to the FAO Fisheries Glossary, Management is "the art of taking measures affecting a resource and its exploitation with a view to achieving certain objectives, such as the maximisation of the production of that resource. Management includes, for example, fishery regulations such as catch quotas or closed seasons. Managers are those who

practice management".

Management Unit (<fi:managementUnit>*):* An aquatic resource or fishery is declared as [Fishery] Management Unit if it is effectively the focus for the application of selected management methods and measures, within the broader framework of a management system. According to the FAO Glossary for Responsible Fishing, "a Fishery Management Unit (FMU) is a fishery or a portion of a fishery identified in a Fishery Management Plan (FMP) relevant to the FMP's management objectives." FMU's may be organised around fisheries biological, geographic, economic, technical, social or ecological dimensions , and the makeup and attribute of a fishery management unit depends mainly on the FMP's management objectives.

History

Historic information related to the element which contains fi:History. e.g. management regimes over time and their effect, and trends.

Management Objectives <fi:Objectives>

are objectives related to missions, outputs, projects, etc. Use one fi:ObjectiveEntry for each instance of an objective. For management systems, description of main goals/objectives which the governing authority wishes to achieve within the system and strategies applied for that purpose. According to the FAO Fisheries Glossary, "a formally established, more or less quantitative target that is actively sought and provides a direction for management action".

<fi:ObjectiveEntry>

Title

Use one fi:ObjectiveEntry for each instance of an objective. For management systems, description of main goals/objectives which the governing authority wishes to achieve within the system and strategies applied for that purpose.

Use the Title attribute in order to present (if any) the Objective title at the start of the paragraph presenting the Objective entry.

Management Strategies <fi:Strategies>

Management Strategies are strategies related to missions, outputs, projects, etc. Use one instance of fi:Strategy for each instance of a Strategy.

<fi:StrategyEntry>

Title

Use one fi:StrategyEntry for each instance of a strategy.

Use the Title attribute in order to present (if any) the Strategy title at the start of the paragraph presenting the Strategy entry.

Management Methods <fi:ManagementMethods>

Management Methods describes the set of methods or measures affecting fisheries, and used to implement management strategies. Use one fi:ManagementMethodEntry for each instance of a measure.

<fi:ManagementMethodEntry>
Title
Use one fi:ManagementMethodEntry for each instance of a management method.
Use the Title attribute in order to present (if any) the management Method title at the start of the paragraph presenting the Method entry.

Management Advice <fi:Advice>
"Management advice are those recommendations generally evolving from the assessment addressed to management authorities. It evolves from biological scientific advice (found under assessment results) but takes into account a broader spectrum of issues. Advice may be proposed under different management options, each one including a risk assessment element" (FIGIS-FIRMS 2002 workshop).

Management Resolutions <fi:Resolutions>
It contains management resolutions decided upon by Management authorities.

<fi:ResolutionEntry>
Title
Use one fi:ResolutionEntry for each instance of a resolution.
Use the Title attribute in order to present (if any) the Resolution title at the start of the paragraph presenting the Resolution entry.

Problems <fi:Problems>
It contains information about management problems.

<fi:ProblemEntry>
Title
Use one fi:ProblemEntry for each instance of a problem.
Use the Title attribute in order to present (if any) the Problem title at the start of the paragraph presenting the Problem entry.

Cod - Baltic Sea (western part), ICES, 2000
North Western Atlantic: Hake fishery - Baltic Sea, ICES, 2003
... are 2 examples of the use of respectively <fi:AqResRef> and <fi:FisheryRef>

Biological State and Trend <fi:AqResStateTrend>

Exploitation Rate: e.g. **No or low fishing mortality** <fi:ExploitRate>
It contains information about the exploitation rate.

Abundance Level: e.g. **Virgin or high abundance** <fi:AbundanceLevel>
It contains information about the abundance level.

State: e.g. **Depleted** <fi:ExploitState> (see list of controlled terms)
Contains one or more standard term (e.g. "overexploited", "fully exploited") describing the state of an aquatic resource.

AqResStateTrend is a container for Aquatic Resource State and Trend information entries. "This element includes a short statement (which should be understandable by the public) summarising the current observation made on the resource or stock considered, with a focus on the state of the fish population and the trends characterising its evolution, and possibly outlooks on its future. For resources units defined at aggregated level, this topic may consist of a general

statement including a list of state and trends entries fitting each of the sub-units making up that aggregated resource" (FIGIS-FIRMS 2002 workshop).

History

Historic information related to the element which contains fi:History. e.g. an historical review of the Stock or Resource exploitation, management regimes over time and their effect, and trends.

<fi:AqResStateTrendEntry>
Title
Use an fi:AqResStateTrendEntry for each instance of a state or trend statement, in case distinct statements applying to different aquatic resources under review are included. Use the Title attribute in order to present (if any) the Title of the entry at the start of the paragraph.

Source of Information <fi:Sources>

Sources is a container for biblio entry elements. It is used to identify the source of a piece of data within an object when it is not part of a bibliography. For example, an editor inserting a table of data from a FAO dataset into the middle of an object might cite FAO using fi:Sources. Use an instance of fi:BiblioEntry for each separate citation. Use fi:BiblioEntryLink to point a source citation to an existing fi:BiblioEntry anywhere in the FIGISDoc. fi:Sources contains a list of fi:BiblioEntry. fi:Sources can be found at any level where there is not an fi:ObjectSource.
Example:
Commission for the Conservation of Southern Bluefin Tuna (CCSBT). Report of the Ninth Meeting of the CCSBT Scientific Committee. 2004-09-13.

Disclaimer:
This is an extract of the XXXX fisheries advice presenting the fish stock information. The full XXXX advice is available on http://www.XXX.XX and accounts for fisheries constraints in addition to the stock considerations.

Bibliography <fi:Bibliography>

Bibliography is a container for biblio entry elements. It is used as in a traditional print bibliography found at the end of a document, in order to cite the literature consulted and used for the creation of the document.

BiblioEntry <fi:BiblioEntry>

BiblioEntry is a container for elements that define a reference source. It is similar in spirit to the bibliographies found in traditional books. All the fields that would be expected in a Bibliographic Entry are included, as well as the possibility of tagging hyperlinks and adding free text.
<fi:BiblioEntry>
Title Author. Series. Publisher. Date.....

<fi:BiblioEntry>
Title Author. Series. Publisher. Date.....
.....

Related Information <fi:RelatedResources>

Literature of papers cited in the source text that may or may not have been used in the construction of the object , and/or are considered as 'sugggested additional reading'. It is an element for entering literature info that has no direct relation with the origin of the data in the object: it can be considered as 'additional reading' information. fi:RelatedResources contains a list of fi:BiblioEntry elements, which ARE NOT COLLECTED in the fi:Bibliography element. There can be ONLY ONE fi:RelatedResources in a given object, located at its root (This includes FIGISDoc).

BiblioEntry

(Same as above)

Tables <Table>

Table 2: Landing per month back >>

Landing per month				
3435	fff	bnnn	bnnn	bnnn
vvv	555	jhy	bnnn	bnnn

Table 3: Reference points proposed by ICES in 1999 back >>

Reference points	5	4	3	22
4	3ggfg	44	33	22
12	stat	5567	22	88
12	44	bbb	22bb	8

Table 4: Total Effort back >>

Total Effort	5	4	55	67
4	3ggfg	5	11	22
5t6	stat	33	48	88
12	789	befgrb	acc6	9

Annex 1.2 - List of reference terms for Marine Resources

Purpose: the list of reference terms included in this document reflects the current set of terms used throughout the various topics of the Marine Resource fact sheet in order to index each report (or observation) in FIRMS. These terms are dynamically extracted from the FIGIS reference table management system, are presented in the fact sheets within the topic they logically refer to, and can be used through the search page for retrieving list of stocks.

Revision history: this document was presented as background document to TWG1 which used it during its discussions on the Body content of a fact sheet (paragraph 10e, and 11 of TWG1 report). A general comment made by TWG1 was that definitions should be added together with the terms, and that terms should be translated.

Following TWG1, this document was slightly edited taking into account TWG1 contributions (notably adding FAO definitions to Status of Exploitation) and presented to FSC3 as document FSC3/2006/8. Considering the non conclusive discussion on Status and Trends terms, FSC3 decided to drop this class of terms temporarily of the list of standard reference terms. For the other classes of reference terms, the lists were generally found too detailed at first glance, and it was suggested that i) some lists of terms be organized in a hierarchical way, ii) an "unspecified" term be added at this first level, iii) where necessary authorize more than one term to be used. FSC agreed that such simplified structure would be more workable for Partners, and easier for end users. This would not hamper possibility to index inventories using more detailed levels. FSC3 went through a revision of the lists of Reference terms proposed standard terms according to these principles, as presented in the present document.
Although there was general agreement for the higher level terms of the revised list, it was agreed that some classes of terms require more work (Reference points, Assessment indicators) or confirmation that they are suitable (Jurisdictional terms).

FSC 3 decided that as far as content is concerned, the document should be considered as "guidelines".

Preliminary remark: The following list of reference terms is to be used for the development of search tools for the FIRMS database. It is understood that this is a first list of basic terms that is kept open for the addition of new terms and definition of sub-terms in future meetings of the FIRMS Steering Committee.

Climatic Zone
- Polar
- Temperate
- Tropical
- Unspecified

Bottom type
- Seagrass
- Coral reef
- Mangrove
- Soft bottom
- Hard bottom
- Unspecified

Depth Zone
- Coastal (0 m - 50 m)
- Shelf (50 m – 200 m)
- Slope (200 m – 1000 m)
- Abyssal (> 1000 m)
- Unspecified

Horizontal Distribution
- Inland waters
- Estuarine
- Littoral
- Neritic
- Oceanic
- Unspecified

Vertical Distribution
- Demersal/Benthic
- Demersal
- Benthic
- Pelagic
- Unspecified

Geoform (or 'Sea floor physiography')
- Seamount
- Estuaries
- Fjords
- Canyons
- Lagoons
- Unspecified

Spatial Scale
- Global
- Regional
- Sub-Regional
- National
- Local
- Unspecified

Jurisdictional distribution
- National
- Shared between nations
- Highly migratory
- High Seas purely
- Straddling between High Seas and EEZ
- Unspecified

Assessment Models
- Age-structured
- Size-structured

- Biomass-aggregated
- Others
- Unspecified

Assessment Data
- Fishery Catch and Effort
- Vessel Surveys
- Tagging
- Remote Sensing
- Environmental Data
- Unspecified

Reference Points
- MSY
- Others
- Unspecified

Assessment Indicators
- Biomass
- Abundance
- Exploitation rate
- SSB
- Recruitment
- Fishing mortality
- Average length
- Average weight
- Unspecified

Annex 1.3 - FIRMS Stock Status descriptors

Preamble

Purpose: Define how the Stock Status descriptors are utilized within the FIRMS fact sheets of the FIRMS web site and how these can evolve to a broader standard.

Revision history: During 4th FIRMS Steering Committee (FSC4), FIRMS partners have agreed upon a standard list of stock status descriptors for Exploitation rate, and Abundance level, as follows.

1. Exploitation Rate and Stock Abundance Descriptors

Exploitation rate status

- No or low fishing mortality
- Moderate fishing mortality
- High fishing mortality
- Uncertain/Not assessed

Stock abundance status

- Pre-exploitation biomass or high abundance
- Intermediate abundance
- Low abundance
- Depleted
- Uncertain/Not assessed

2. Usage of these descriptors

The status categories for exploitation rate and stock abundance are used strictly only as search terms. No reference is made to the standard terms in the fact sheets – unless specified by the Partner/fact sheet owner – and the headings ‘exploitation rate’, ‘abundance level’ and ‘exploitation status’1 are displayed only if some content is specified by Partner/fact sheet owner. Instead, Partners provide stock status information according to their own criteria as well as an explanation of how the search terms and symbolism translate into these criteria (the ‘mapping’). The 'Exploitation Status'[1] categories are not used as search terms.

[1] Exploitation status refers to the standard terms used by FAO in its world review of the state of marine resources

- not known or Uncertain
- Recovering
- Depleted
- Overexploited
- Fully exploited
- Moderately exploited
- Underexploited, undeveloped of new fishery

3. Mapping established by Partners between their own classification and FIRMS standard descriptors

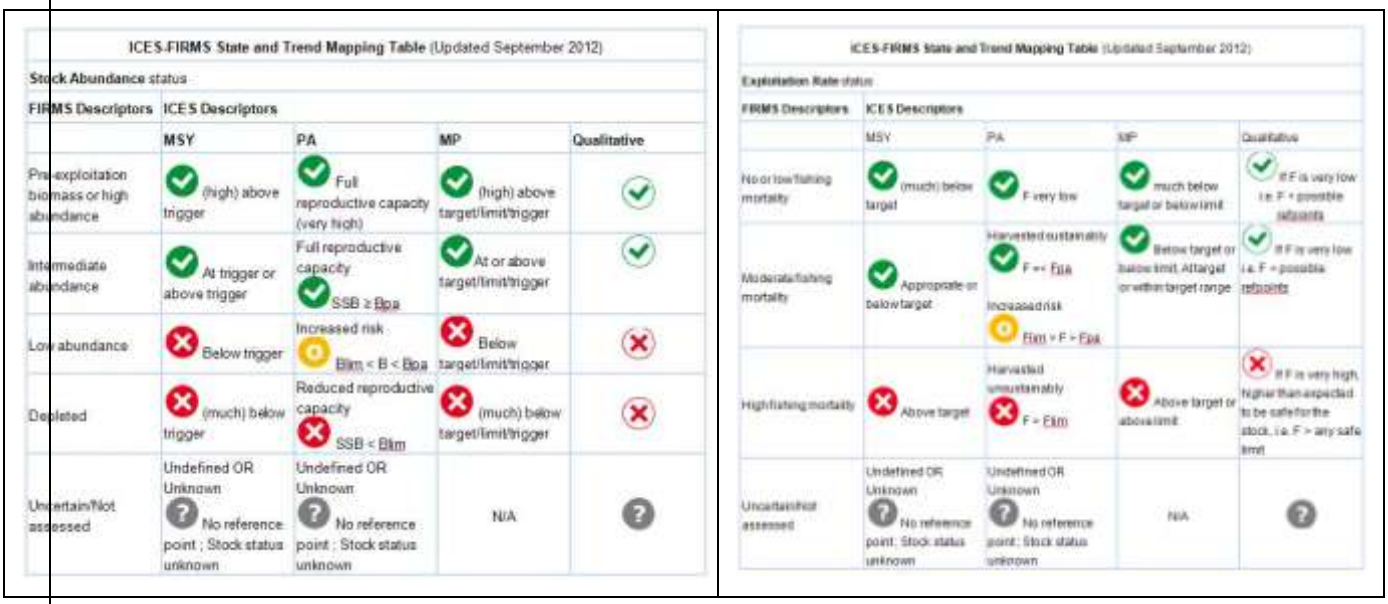
During the FIRMS TWG2 (April 2008) and during the following FIRMS SC5 (July 2008) it was agreed that Partners could use their own system of classification for describing the status of stock. The FIRMS State and Trend standard descriptors will be used only for search purposes in order to facilitate extraction of data. In order to make this extraction possible, mapping rules should therefore be established between Partners' local and FIRMS standard descriptors concerning Exploitation rate and Abundance level categories. A few examples are provided below, but updated mapping rules are available in the FIRMS Wiki at http://km.fao.org/FIGISwiki/index.php/FIRMS_Fishery_Resources_Standard_descriptors_for_State_and_trend (login required).

Mapping table for NAFO:

Stock abundance status			**Exploitation rate** status		
Code	**FIRMS** descriptors	**NAFO** Criterion	Code	**FIRMS** descriptors	**NAFO** Criterion
A	Pre-exploitation biomass or high abundance	*B >> Bbuf*	1	No or low fishing mortality	*F < Fbuf*
B	Intermediate abundance	*B > Bbuf*	2	Moderate fishing mortality	*Fbuf ≤ F ≤ Flim*
C	Low abundance	*Blim ≤ B ≤ Bbuf*	3	High fishing mortality	*F > Flim*
D	Depleted	*B < Blim*	0	Uncertain/Not assessed	
E	Uncertain/Not assessed				

Mapping table for ICES:

- S&T mapping tables according to the new format of the ICES advice (from 2011).



ICES-FIRMS State and Trend Mapping Table (Updated September 2012)

Stock Abundance status

FIRMS Descriptors	ICES Descriptors			
	MSY	PA	MP	Qualitative
Pre-exploitation biomass or high abundance	(high) above trigger	Full reproductive capacity (very high)	(high) above target/limit/trigger	
Intermediate abundance	At trigger or above trigger	Full reproductive capacity SSB ≥ Bpa	At or above target/limit/trigger	
Low abundance	Below trigger	Increased risk Blim < B < Bpa	Below target/limit/trigger	
Depleted	(much) below trigger	Reduced reproductive capacity SSB < Blim	(much) below target/limit/trigger	
Uncertain/Not assessed	Undefined OR Unknown No reference point ; Stock status unknown	Undefined OR Unknown No reference point ; Stock status unknown	N/A	

ICES-FIRMS State and Trend Mapping Table (Updated September 2012)

Exploitation Rate status

FIRMS Descriptors	ICES Descriptors			
	MSY	PA	MP	Qualitative
No or low fishing mortality	(much) below target	F very low	much below target or below limit	If F is very low i.e. F < possible reference points
Moderate fishing mortality	Appropriate or below target	Harvested sustainably F =< Fpa Increased risk Flim > F > Fpa	Below target or below limit, At target or within target range	If F is very low i.e. F < possible reference points
High fishing mortality	Above target	Harvested unsustainably F > Flim	Above target or above limit	If F is very high, higher than expected to be safe for the stock, i.e. F > any safe limit
Uncertain/Not assessed	Undefined OR Unknown No reference point; Stock status unknown	Undefined OR Unknown No reference point; Stock status unknown	N/A	

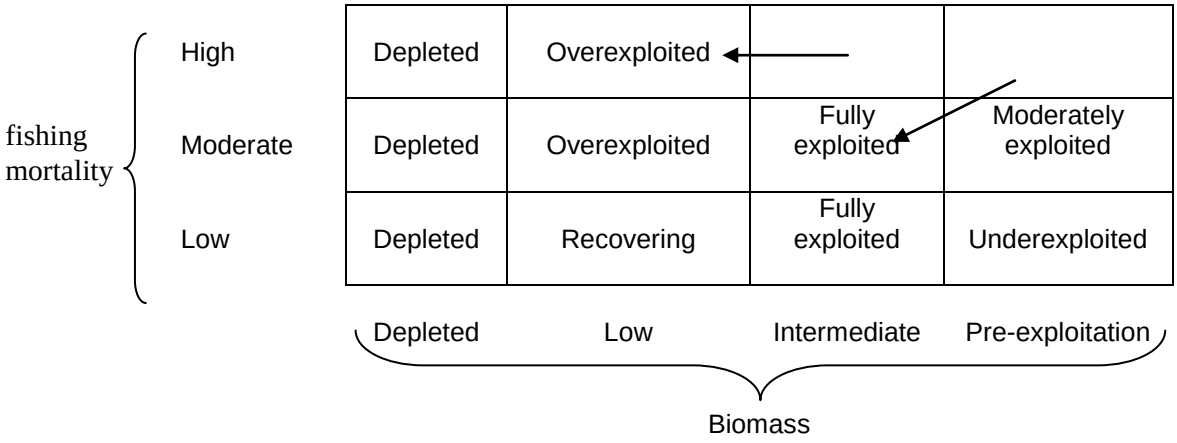
The ICES advice in beginning of summary sheet determines what stock status mapping should be used (MSY, Precautionary Approach (PA), Management Plan (MP) or Qualitative evaluation). It should be noted that up to 2010, another S&T mapping tables was applied (see FIRMS Wiki page).

Mapping table for FAO:

It was agreed that, for the short to medium-term at least, the Fisheries Management and Conservation Service (FIMF) will continue to use the descriptors of stock status that are defined in the Appendix similarly as other Partners of FIRMS continue to use their own descriptors of such status. The relationships between these two types of descriptors are shown in Fig. 1. It was noted that FIMF does not have descriptors of the stock status in the upper part of the box shown in Fig. 1. Stocks with high fishing mortality & (i) pre-exploited & (ii) intermediate biomass levels usually quickly become (i) fully & (ii) overexploited.

A full review of FIMF's present descriptors of stock status & possibly their adjustment is planned before the preparation of "Review of the state of world marine fisheries resources" for 2009 COFI.

Figure 1: The relationship of FAO/FIMF's descriptions of stock status (listed inside of the box) and those of FIRMS (listed outside the box on the left-hand side and below that box).



Annex 1.4 - Fisheries naming conventions

Preamble

Purpose: For the sake of clarity in FIRMS system, in order to have a homogeneous presentation or to facilitate search, the naming of a Fishery has to follow some conventions. At the same time, data owners have their own ways of naming fisheries, more or less formalized, which they wish to be reflected within FIRMS.
The purpose of this document is to present the criteria to be used as FIRMS naming convention for Fisheries.

Revision history: a first proposal was made at FSC2 in document (FSC2/2005/6 ftp://ftp.fao.org/fi/DOCUMENT/FIGIS_FIRMS/2005/6e.pdf). FSC2 generally accepted the proposal with some comments. A revised version based on a comprehensive review of the inventory of fisheries to date was developed for consideration at TWG1 (TWG1/2005/4c2 ftp://ftp.fao.org/fi/DOCUMENT/FIGIS_FIRMS/Technical/4c2_e.pdf). This proposal constituted a substantial revision of the standards proposed at FSC2: in addition to the Title *stricto sensu*, it introduced two additional components required for a complete name (Geo-reporting standpoint, and parent fishery title). TWG1 endorsed the general approach while recognizing that this procedure would follow a learning curve. The Secretariat also told that this document would require more thoughts and that a new version would be drafted before FSC3.

Following TWG1, a new version was reworked concurrently with the development of the functional specifications for the fishery module, and the revision of the guidelines for the inventory of fisheries. On the style, it strives to focus on the aspects directly related to the Naming convention (the other aspects being treated in the other documents). On the substance, it maintains the need for the Geo-reporting standpoint, but drops that of the parent fishery title. It is therefore a mid-way between the two versions previously presented. Therefore, paragraph 1 has been completely revised providing background for and explaining the rational behind the proposed naming conventions. In Paragraph 2 (naming conventions), sections highlighted in green represent changes in substance since last document presented to FSC2.

This post TWG1 version (thus the 3rd edition of that document within one year period) was presented to the FSC3 as document FSC3/2006/10. FSC3 decided to add this document as draft guidelines and will be kept under review as work on the fisheries module progresses. The document is to be used as a reference for the next stage of FishCode-STF inventory of fisheries.

Following TWG2, a new version was reworked concurrently with new development of the functional specifications for the fishery module, and with further revision of the guidelines for the inventory of fisheries. The Fishery module was approved by FSC5 and the first fishery fact sheets were finally published in the FIRMS web site on July 2009. With this decision, FSC5 also agreed to upgrade this section from “draft guidelines” status to “guidelines”.

1. Working definition and concepts related to the identification of Fisheries in an inventory

Understanding the fisheries inventory process whereby fisheries are identified provides a useful background to the proposed naming conventions.

1.1 Working definitions

"A *Fishery is an activity leading to the harvesting of fish, within the boundaries of a defined area. The fishery concept fundamentally gathers indication of human fishing activity, including from economic, management, biological/environmental and technological viewpoints (FIRMS 2006, modified from FAO glossary of fisheries)"*.

Geographic reference*: "The geographic frame[work] from which fisheries are considered for inclusion in the inventory (modified from FIRMS, 2008)".*

"*The **thematic approach** highlights the disciplinary viewpoint prevailing in the identification of fishery units (FIRMS 2008)"*.

1.2 Process of identifying fishery units in an inventory

Inventories are carried out at different scales (either Global, Regional, National or Sub-national), each time from a specific geographic standpoint. In a reporting system like FIRMS, this [scale x geographic] standpoint is herewith defined as the Geographic reference. Examples of Geographic reference are Western Central Pacific Ocean (an SPC2 regional Geographic reference), Senegal (a national Geographic reference), or Florida (a USA sub-national Geographic reference). This Geographic reference defines the space within which fisheries are identified during an inventory.

Species or harvested resources, seabeds, fishing practices (or métiers), vessels, people or households are the elements which people perceive as fisheries. The task of the inventory is to partition (or segment) these elements in a set of Fishery units. Depending on the disciplinary viewpoint, this partitioning process would lead to different results, and accordingly five thematic approaches have been recognized: Resource, Fishing technique, Métier, Production system and Management system. Key attributes of a fishery unit depend on the thematic approach considered during the fishery identification process. We present in table 1 the five approaches and key attributes generally encountered in each case.

Table 1: the 5 thematic approaches to fisheries identification, disciplinary view point prevailing for each thematic approach, and set of keys characterizing a fishery according to the thematic approach.

Thematic approach	**disciplinary view point**	**Set of criteria / keys** **prevailing** **possible**
- **Resource**: when focus for the definition of the fishery is on the resource (s) targeted. example: "Deep-sea shrimp fishery" *where reference is made to the resources of shrimps in deep-sea waters off Angola* example: "Shrimp and groundfish fishery – Gulf of Paria" *where reference is made to the resources of shrimps and groundfish in gulf of Paria, in Trinidad and Tobaggo waters*	biologist	Environment; Target Species; Fishing Area;
- **Fishing technique**: when focus for the definition of the fishery is on the fishing technique and related technology used. example: " Semi-industrial Mediterranean purse seining fishery ", *where reference is made to the fishing technique deployed*	technologist	Vessel type, and/or Fishing Gear, and/or Fishing technique Target Species Fishing area Exploitation form

[2] SPC: Secretariat of the Pacific Community

Thematic approach	disciplinary view point	Set of criteria / keys prevailing possible
for catching and storing fish on board medium size purse seiners in the Mediterranean context.		
- **Metier**[3]: when focus for the definition of the fishery is on the category of fishing activity implemented by a fishing fleet or fishermen community. example: " offshore flatfish trammel netting", w*here reference is made to the fishing practice making use of trammel net for catching flatfish in offshore waters of French continental shelf.*	biologist socio-economist	Vessel type, and/or Fishing Gear, and/or Fishing technique; Target Species Fishing area Exploitation form
- **Production system**: when focus for the definition of the fishery is on the socio-economic category of enterprise (for industrial / commercial fisheries) or household (for artisanal / subsistence fisheries). example: "Coastal trawlers - Italian Adriatic coast", *where reference is made to the fleet of coastal trawlers based in the various ports of the Italian Adriatic coast and operating according to same enterprise strategies* example: "family-scale fishing and rice field fisheries", *where reference is made to household communities in Cambodia basing their subsistence strategies on mixed fishing and rice culture activities*	socio-economist	Exploitation form; Vessel type or Fishermen community; Country, Province, Village Environment Fishing area
- **Management system**: when focus for the definition of a fishery is on the unit of reference for organizing a Management system, ie a set of governing rules formally agreed within a recognized legal framework for the management a fishery or group of fisheries. example: "Commonwealth fisheries" (Australia) *where reference is made to Australia fisheries managed at federal level (as opposed to those managed at state level)* example: "Alaska fisheries", w*here reference is made to the NPFMC management system for USA Alaskan fisheries* example: "Municipal fishery - Philippines", *where reference is made to the municipal management system whereby state delegates to local municipal and city government responsibility to manage fisheries within a jurisdiction area of 15 kms coastal waters strip.*	jurist, managers	Jurisdiction Other geographic area, other attributes reflecting the mode of management, eg "comanaged"

1.3 Structuring an inventory

Hierarchical organization: in many situations, it is also found that different set of criteria might be successively applied to decompose *fisheries* into fisheries of a sub-level: each partitioning stage is usually driven by a distinct *thematic approach* and the resulting set of *fisheries* constituting the inventory is organised in a tree like way, or *hierarchy* (see figure 1).

└ Fisheries title 1 (Approach: resource)
  └ Fishery title 2 (Approach: métier)
  └ Fishery title 3 (Approach: métier)
└ Fisheries title 4 (Approach: resource)

Figure 1 – Hierarchy of fisheries identified from different approaches.

[3] 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).

It should be noted that successive partitioning stages driven by distinct thematic approaches would be the cause of overlapping between fisheries, which raises issues of consistency. This issue is addressed by the software application managing the inventory in different ways, making use of knowledge of hierarchical relationships, thematic approach, reporting levels, and consistent names at each level.

2. Proposed naming conventions

2.1 Issues and objectives of naming conventions

In “naming conventions”, the term “naming” covers a broader concept than the fishery title stricto sensus. It covers the set of key identifiers which alltogether provide an unequivoc understanding of the concerned entity.

The concerns driving the development of naming conventions are ensuring manageable/presentable titles, as well as consistency through:

- unequivoc identification of a fishery thanks to a set of key naming identifiers;
- harmonised names for fisheries part of the same inventory, with regard parent relationships or/and thematic approaches;

2.2 Unequivoc identification of a fishery

In order to name a fishery unequivocally, the two following identifiers should be systematically presented together:

- its Geographic reference: it defines the space within which fisheries are identified during an inventory and is critical for the unequivoc identification of a fishery;
- a Title composed with keywords reflecting the key criteria used for the definition of the fishery;

We present herewith the naming conventions for these two components.

2.3 Naming conventions

2.3.1 for Geographic reference

i. It is composed of a Land Area, or Water area. The Area should be a name, which means that the use of codes or acronyms should be avoided, or put at the end in parenthesis. Where ever possible, the name of the Area should refer to standard international or regional naming classifications and conventions, primarily from the ASFIS list of geographical terms or from CWP handbook.

Note: as seen in section 1, the scale associated with the Geographic reference in the definition of the fishery is implied but is not part of the Fishery name.

2.3.2 for a manageable/presentable Title

As introduced in section 1, the identification of a fishery in an inventory is the result of a segmentation usually operated according to a thematic approach. Depending on this thematic approach, the segmentation criteria will differ (see table 1) and consequently the type(s) of keywords used to establish a fishery title is variable. Furthermore, when

successive segmentations are applied for the identification of a fishery, the number of keywords necessary to define a meaningful title increases.

Therefore following naming conventions are further proposed for the title:

ii. The FIRMS Title *stricto sensu* of a fishery is established as follow:
list of <*key words*> Fishery – <*Area name*>.
where Area name is optional (see point ix)

iii. In order to avoid too long fishery names, the number of <*keywords*> for a fishery should be limited to the main criteria and should not exceed 3 (excluding Area name). In addition when presenting a fishery, the software will provide a facility to display the name of the other related fisheries ("parent" fisheries, "children-fisheries"). This facility should not prevent from repeating in the child fishery title a keyword which already appears in the parent fishery title.

iv. The set of keywords used generally reflect the thematic approach prevailing for the identification of a fishery, as per table 1. These keywords (regardless of the thematic approach) should be ordered as follows:

1. Jurisdiction
2. Sea environment (habitat of the target species)
3. Production system: exploitation form, flag state, fisherman community, etc...
4. Fishing technique (vessel type, gear),
5. Target species (or [ecological] group of species).

v. When an international or regional classification is available, the keyword selected for a criterion should be taken from this classification (e.g. The International Standard Statistical Classification of Fishing Gear for fishing gears).

vi. When compatible, the keywords included in the local title should be kept in the FIRMS title.

vii. The term "Fishery" which follows the set of keywords can be replaced when more appropriate by terms such as "Management Unit", or "Operational unit", etc...

viii. The <*Area name*> describes the location of the fishery. It may be a water area if it describes the area where fishing takes place, or a land area if it describes where the production system is located. The <*Area name*> is optional since it may be redundant with the Geographic reference. It is present if it complements this Geographic reference, specifying further the location. With regard use of international or regional standard names the rule adopted for the Geographic reference also applies to the area name.

ix. Finally, in accordance with the language policy adopted in FIRMS IMP, the fishery name composed by Geographic reference and Title can be handled in the 5 Official FAO languages: English, French, Spanish, Arabic and Chinese. It is here recalled that the local name can be in any language.

Appendix 1 illustrates the application of the naming convention to different regional and national inventories.

Appendix 1 - Examples of Fisheries naming conventions

Some examples of the application of naming conventions to a set of fisheries extracted from the current global inventory of fisheries

Jamaica (national)
Mexico (national)
Western Central Pacific Ocean Tuna fisheries (regional)
Brazil (national)
Italy Adriatic sea (sub-national)
Trinidad and Tobaggo (national)
French Guyana (national)
Venezuela (national)
Morocco (national)
Mauritania (national)
Gambia (national)

Legend

R: Resource thematic approach	P: Production system thematic approach
M: Métier thematic approach	MS: Management System thematic approach
FT: Fishing Technique thematic approach	

		n/a (title)	title introduced for clarity in the inventory hierarchy (not considered as a fishery for reporting, hence naming convention non applicable)

Inventory of Fisheries – Jamaica (Source FAO)

	Original inventory Local Name	Geographic reference	FIRMS standardisation FIRMS English name	Thematic approach
1	Coastal pelagic fisheries	Jamaica	Coastal small pelagic fishery	R
2	Large pelagic fishery	Jamaica	Large pelagic fishery	R
3	Coral reefs finfish fishery	Jamaica	Coral reefs finfish fishery	R
4	Crustacean fisheries			n/a (title)
5		Jamaica	Spiny lobster fisheries	R
6	Artisanal lobster fishery	Jamaica	Spiny lobster fisheries Artisanal spiny lobster fishery	P or M
7	Industrial spiny Lobster Fishery	Jamaica	Spiny lobster fisheries Industrial spiny lobster [pots] fishery	P or M
8	Shrimp fishery	Jamaica	Shrimp fishery	R
9	Industrial Queen Conch fishery	Jamaica	Industrial queen conch fishery	R

Inventory of Fisheries – Mexico (Source FAO)

	Original inventory	**FIRMS standardisation**		
	Local Name	**Geographic reference**	**FIRMS English name**	**Thematic approach**
1	Pacific Ocean Shrimp fishery	Mexico	Shrimp fishery - Pacific Ocean	R
2	Industrial fishery	Mexico	Shrimp fishery - Pacific Ocean Industrial Shrimp fishery - Pacific Ocean	P or M
3	Artisanal fishery	Mexico	Shrimp fishery - Pacific Ocean Artisanal Shrimp fishery - Pacific Ocean	P or M
4	Purse Seine Anchovy fishery	Mexico	Purse Seine Anchovy fishery - Pacific Ocean	M
5	Artisanal abalone fishery	Mexico	Artisanal Abalone fishery - Pacific Ocean	M or P
6	Gulf of Mexico and Carribean Shrimp fishery	Mexico	Shrimp fishery - Gulf of Mexico and Carribean	R
7	Gulf of Mexico dustrial Shrimp fishery	Mexico	Shrimp fishery - Gulf of Mexico and Carribean Industrial Shrimp fishery - Gulf of Mexico	P or M
8	Gulf of Mexico Artisanal Shrimp fishery	Mexico	Shrimp fishery - Gulf of Mexico and Carribean Artisanal Shrimp fishery - Gulf of Mexico	P or M
9	Carribean Sea Industrial Shrimp fishery	Mexico	Shrimp fishery - Gulf of Mexico and Carribean Industrial Shrimp fishery - Carribean Sea	P or M

Inventory of Tuna Fisheries – Western Central Pacific Ocean (WCPO) (Source SPC)

	Original inventory	**FIRMS standardisation**		
	Local Name	**Geographic reference**	**FIRMS English name**	**Thematic approach**
1	Western Central Pacific Tuna fishery	Western Central Pacific Ocean	**Tuna fishery**	R
2	Albacore fishery	Western Central Pacific Ocean		N/a (title)
4a	Trolling line fishery	Western Central Pacific Ocean	Tuna fishery **Distant waters Trolling line Albacore fishery**	M
5a	Longline fishery	Western Central Pacific Ocean	Tuna fishery **Distant waters Longline Albacore fishery**	M
6	Offshore waters longline swordfish fishery	Western Central Pacific Ocean	Tuna fishery **Offshore waters longline swordfish fishery**	M

Inventory of Fisheries – Brazil (Source FAO)

	Original inventory	**FIRMS standardisation**		
	Local Name	**Geographic reference**	**FIRMS English name**	**Thematic approach**
1	Northern fishery	Brazil		n/a (title)
2	Industrial fishery	Brazil	Northern fishery Industrial fishery - Northern Brazil	P
3	Artisanal fishery	Brazil	Northern fishery Artisanal fishery - Northern Brazil	P
4	Pelagic fish fishery	Brazil	Northern fishery Pelagic fish fishery - Northern Brazil	R
5	Artisanal nets and lines catfish and sciaenid fishery	Brazil	Northern fishery Artisanal nets and lines catfish and sciaenid fishery - Northern Brazil	M
6	Artisanal lines snapper and grouper fishery	Brazil	Northern fishery Artisanal lines snapper and grouper fishery - Northern Brazil	M
7	Trawl shrimp fishery	Brazil	Northern fishery Trawl shrimp fishery - Northern Brazil	M
8	Crab collection fishery	Brazil	Northern fishery Crab collection fishery - Northern Brazil	R
9	Pair trawl catfish fishery	Brazil	Northern fishery Pair trawl catfish fishery - Northern Brazil	M

Inventory of Fisheries in the Adriatic Sea (Source FAO)

	Original inventory	**FIRMS standardisation**		
	Local Name	**Geographic reference**	**FIRMS English name**	**Thematic approach**
1	Italian pelagic fishery	Italy	Pelagic fishery – Adriatic Sea	R
2	Northern Adriatic midwater pair trawl fishery	Italy	Pelagic fishery – Adriatic Sea Mid water pair trawl pelagic fishery – Northern Adriatic	P or M
3	Northern Adriatic Purse seine fishery	Italy	Pelagic fishery – Adriatic Sea Purse seine pelagic fishery – Northern Adriatic	P or M
4	Italian demersal fishery	Italy	Demersal fishery – Adriatic Sea	R
5	Northern Adriatic Italian demersal fishery	Italy		n/a (title)
6	Hydraulic mec-dredge fishery	Italy	Demersal fishery – Adriatic Sea Hydraulic mec-dredge demersal fishery - Northern Adriatic	M
7	Minor gear fishery	Italy	Demersal fishery – Adriatic Sea Minor gear demersal fishery - Northern Adriatic	M
8	Bottom otter trawl fishery	Italy	Demersal fishery – Adriatic Sea Bottom otter trawl demersal fishery - Northern Adriatic	M
9	Southern Adriatic Italian demersal fishery	Italy		n/a (title)
10	etc...	Italy	Demersal fishery - Southern Adriatic etc...	M

Inventory of Fisheries in the Northern part of South America (Source FAO)

	Original inventory	**FIRMS standardisation**		
	Local Name	**Geographic reference**	**FIRMS English name**	**Thematic approach**
1	Demersal Resources of the Guianas-Brazil Continental Shelf	Trinidad & Tobago		n/a (title)
2	Artisanal Trawl Fishery of the Gulf of Paria	Trinidad & Tobago	Demersal fisheries - Guianas-Brazil Continental Shelf Artisanal Trawl shrimp and groundfish Fishery - Gulf of Paria	M
3	Semi-industrial Trawl Fishery of the Gulf of Paria	Trinidad & Tobago	Demersal fisheries - Guianas-Brazil Continental Shelf Fishery - Gulf of Paria	M
4	Artisanal Gillnet Fishery of the Gulf of Paria and Columbus Channel	Trinidad & Tobago	Demersal fisheries - Guianas-Brazil Continental Shelf Artisanal Gillnet groundfish Fishery - Gulf of Paria and Columbus Channel	M
5	Coastal Pelagic Resources of the Guianas-Brazil Continental Shelf	Trinidad & Tobago		n/a (title)
6	Artisanal Gillnet and Line Fishery for Mackerels	Trinidad & Tobago	Coastal Pelagic fisheries - Guianas-Brazil Continental Shelf Artisanal Gillnet and Line Mackerels Fishery	M
7	etc....	Trinidad & Tobago	etc...	
8	Demersal Resources of the Guianas-Brazil Continental Shelf	French Guyana		n/a (title)
9	Offshore Industrial (Trawl Fishery) - Japanese Trawlers Penaeid Shrimp Fishery	French Guyana	Demersal fisheries - Guianas-Brazil Continental Shelf Offshore Industrial Japanese Trawlers Penaeid Shrimp Fishery	M
10	Offshore Industrial (Trawl Fishery) - Local Trawlers Penaeid Shrimp Fishery	French Guyana	Demersal fisheries - Guianas-Brazil Continental Shelf Offshore Industrial Domestic Trawlers Penaeid Shrimp Fishery	M
11	Offshore Industrial (Trawl Fishery) - Seabob/Finfish Fishery	French Guyana	Demersal fisheries - Guianas-Brazil Continental Shelf Offshore Industrial Domestic Trawlers Seabob/Finfish Fishery	M

	Original inventory	FIRMS standardisation		
	Local Name	**Geographic reference**	**FIRMS English name**	**Thematic approach**
12	Inshore Artisanal (Trawl Fishery) - Pin Seine Fishery	French Guyana	Demersal fisheries - Guianas-Brazil Continental Shelf Inshore Artisanal Pin Seine Fishery	M
	etc...			
13	Demersal Resources of the Guianas-Brazil Continental Shelf	Venezuela		n/a (title)
14	Industrial Shrimp Trawl Fishery of the Atlantic Zone of Venezuela	Venezuela	Demersal fisheries - Guianas-Brazil Continental Shelf Industrial Shrimp Trawl Fishery - Atlantic Zone of Venezuela	M
15	Artisanal Shrimp Trawl Fishery of the Orinoco Delta	Venezuela	Demersal fisheries - Guianas-Brazil Continental Shelf Artisanal Shrimp Trawl Fishery - Orinoco Delta	M
16	Artisanal Beach Seine Fishery for Shrimp	Venezuela	Demersal fisheries - Guianas-Brazil Continental Shelf Artisanal Beach Seine Shrimp Fishery	M
17	Demersal Resources of Northern Venezuela	Venezuela		n/a (title)
18	Trawl Fishery of the western Zone of Venezuela	Venezuela	Demersal fisheries - Northern Venezuela Trawl Fishery - Western Zone of Northern Venezuela	M
19	Trawl Fishery of the Eastern Zone of Northern Venezuela	Venezuela	Demersal fisheries - Northern Venezuela Trawl Fishery - Eastern Zone of Northern Venezuela	M
20	Inshore Artisanal (Trawl Fishery) - Pin Seine Fishery	Venezuela	Demersal fisheries - Northern Venezuela Inshore Artisanal Trawl Pin Seine Fishery - Northern Venezuela	M

Inventory of Fisheries in the Eastern-Central Atlantic (Source FAO)

	Original inventory	**FIRMS standardisation**		
	Local Name	**Geographic reference**	**FIRMS English name**	**Thematic approach**
1	Maroc - Pêcherie de poissons démersaux	Morocco	Demersal fishery – Atlantic Ocean	R
2	Maroc - pêche artisanale de poissons démersaux à la palangre	Morocco	Demersal fishery – Atlantic Ocean Artisanal longline fishery – Atlantic Ocean	M
3	Mauritanie - Pêcherie pélagique côtière	Mauritania	Coastal pelagic fishery	R
4	Gambie - Pêcherie pélagique cotière	Gambia	Coastal pelagic fishery	R
5	Gambie - Pêche industrielle pélagique côtière	Gambia	Coastal pelagic fishery Coastal industrial pelagic fish fishery	M or P
6	Gambie - Pêche artisanale pélagique côtière	Gambia	Coastal pelagic fishery Coastal artisanal pelagic fish fishery	M or P
7	Gambie - Pêcherie de poisssons démersaux	Gambia	Demersal fish fishery	R
8	Gambie - Pêche artisanale au filet maillant à sole	Gambia	Demersal fish fishery Artisanal driftnet sole fishery	M

ANNEX 2 - FIRMS DRAFT GUIDELINES

Annex 2.1 - Fishery Data Dictionary

Preamble

Purpose: This dictionary combines working definitions (in black italics) for Topics of the Fishery topic tree, presented within the fact sheet layout together with corresponding XML elements (in red), and complemented with some tutorial notes (in green) and examples (in blue). It really aims at facilitating users' understanding of the semantic behind each topic, while providing insights of the layout rendering. The definitions were collated from different sources, including the FIGIS-FIRMS 2002 workshop, the FAO fisheries glossary, and metadata definitions reused from other FIGIS domains.

Revision history:

the first version of the dictionary is the one following the Fishery module release (in early 2009) approved by FSC5. That version evolves from the review by TWG2 of the initial proposal submitted by FIRMS Secretariat, for the finalization and approval of the Fishery module.
FSC6 reviewed the first few examples of Fishery fact sheets published by the Partners and confirmed the Fisheries module and related dictionary. FSC6 decided to expand the dictionary with fishery management measures concepts.
FSC7 decided the addition of the Fishery Life Cycle concept and related definitions. The data model and the fact sheet layout were updated accordingly.

Fishery Fact Sheet

SEARCH SAVE PRINT

Cover Page Title

GeoReference: Fishery FIRMS Name, reference year Citation

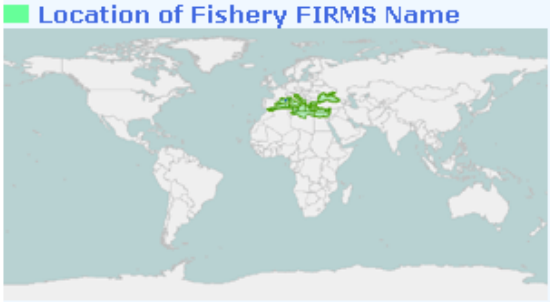
Fishery Local Name

Owned by Owner name (Owner acronym) [?]

Other Observation Sheets: Owner1 acronym, Year - Owner2 acronym, Year

Overview: here a brief description of the fishery. [+]

Location of Fishery FIRMS Name



Geographic Reference: Maroc
Scale: national

Production System Approach Locator

Means of Production

Land Base: Senegal
Type of production system: Artisanal; Industrial

Fishing Activity

Fishery Area: Mediterranean Sea
Resources Exploited: European hake - Gulf of Lions
Captured Species: Gadus morhua; Gadus ogac;
Target Species: Sardina pilchardus; Engraulis encrasicolus ; Solea spp. ... more>>
Associated Species: *Sparus aurata*
Fishing Technique: Cod Longlining
Fishing Gear: longline
Fishing Vessel: longliner

Fishery Indicators

Catch: Average weight; Average length;
Fishing Capacity: Number Vessels;
Production: Landing Value; Landing Volume;
Utilization: Domestic Human Consumption; Shared in Animal Protein;

Table of Contents

History - Harvested Resource - Socio-economic Assessment - Ecosystem Assessment - Post Harvest Use - Management - Status & Trend - Issues - Source of Information - Bibliography - Related Information - Tables

Fishery life cycle (<fi:FisheryLifeCycle>*):* A wrapper describing the evolutionary aspects of a fishery. Use the sub element "Range" to provide a date for the opening and/or the closure of the fishery. Use "Fishery Evolution" to indicate any ancestor or descendant for that fishery.

Start/End Year (<fi:Range>*):* Year for the opening and/or the closure of the fishery.

Fishery Evolution (<fi:FisheryEvolution>*):* A sub element to indicate any "Ancestor fishery" from which the current one maybe evolved, or any "Descendant" in case any other fishery evolved from the current one. Use the attribute Type to indicate if the Fishery References (FisheryRef) are Ancestor or Descendant of the current one.

Ancestor/Descendant Fishery: Fishery from which the current fishery unit "originates from" / "evolves in"

Example

Fishery life cycle *This fishery started on 2007.*
This fishery originates from: Spain Coastal purse seine sardine fishery - Moroccan Atlantic coast waters, South zones B and C.

History <fi:FisheryHistory>* fi:FisheryRef

Ancestor's Activity, Start Year - End year: xxxx-yyyy <fi:FisheryAncestor>/<fi:Range Type="Date">/<fi:Min>, <fi:Max>

Historic information related to the element which contains fi:History. *e.g.* an historical review of the Stock or Resource exploitation, management regimes over time and their effect, and trends. Fishery Ancestor, 2000

Harvested Resource <fi:FishingIndustryActivity Title="Harvested_Resource">* fi:FisheryRef

Type of production system: Commercial; Artisanal; Semi-industrial

"Fishing industry activity (as opposed to Fishing activity) describes all aspects of a human fishing industry, from fishing preparatory steps through landings. Aspects include, e.g., features of the means of production, fishing activity, and fish harvesting" (FIRMS TWG2, 2008).

History <fi:History>
(same as above)

Fishery Area <fi:FisheryArea>, fi:WaterAreaRef, <fi:FishingGround>*
Climatic zone: Polar **Horizontal distribution:** Oceanic **Vertical distribution:** Pelagic **Bottom Type:** Coral Reef **Depth Zone:** Slope

FisheryArea is a container for information about the areas in which a fishery operates.

Geo References fi:WaterAreaRef

Location of Fishery FIRMS Name

ICCAT Albacore Spatial Management Unit	ALB_N: Albacore North
	ALB_S: Albacore South
	ALB_M: Albacore Mediterranean

Additional area codes <fi:WaterArearef>

Exclusive Economic Zone (EEZ)	THA: Thailand

More Geo References [+]

FAO Fishing Statistical Areas	27.3.d.25:Southern Central Baltic West (Subdivision 25)
	27.3.d.26:Southern Central Baltic - East

	(Subdivision 26)
	27.3.d.27:West of Gotland (Subdivision 27)
	27.3.d.28:East of Gotland or Gulf of Riga (Subdivision 28)
	27.3.d.29:Archipelago Sea (Subdivision 29)
	27.3.d.30:Bothnian Sea (Subdivision 30)
	27.3.d.31:Bothnian Bay (Subdivision 31)
	27.3.d.32:Gulf of Finland (Subdivision 32)
Large Marine Ecosystem (LME)	37: Sulu-Celebes Sea
	38: Indonesian Sea

Land base <fi:LandArea>, fi:LandAreaRef

Related Fisheries <fi:RelatedFisheries>* fi:FisheryRef
"The list of fisheries with which another fishery is connected by a described link." (FIRMS TWG2, 2008). Use the attribute Type to specify which is the relation between fisheries.

Thailand Shark Fisheries, 2004

Resources Exploited: Title <fi:ResourcesExploited>* fi:AqResRef

European hake - Gulf of Lions

Captured Species: Title <fi:CapturedSpecies>* fi:SpeciesRef
Scientific Name 1

Scientific Name 2

Scientific Name 3

All the species caught by a fishery. It is a container for listing all the species caught by a fishery. Use Target species and Associated species to differentiate such catches.
**Use "Captured Species" in case specific data for the siblings "Target, Associated and Discard Species" are not known.*

Target Species: Title <fi:TargetSpecies>* fi:SpeciesRef
contains the species targeted by a geartype, vesseltype, technique, fishery or measure.

Demersal species <fi:SpeciesList>/<dc:Title>
Example: Sardina pilchardus, Engraulis encrasicolus; Solea spp.; Mullus barbatus; Mullus surmuletus, Lophius piscatorius; Lophius budegassa; Sparus aurata; Dicentrarchus

labrax; Pagellus spp.; Micromesistius poutassou; Trisopterus minutus capelanus; Eledone cirrhosa; Hemipristis elongatus; Mustelus sp.

Associated Species: Title <fi:Bycatch Type="AssociatedSpecies">* fi:SpeciesRef
"Commercial species caught with the main target ones" (Fisheries Inventory: Method and Guidelines. FIRMS, 2007).

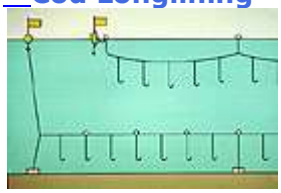
Example: *Sardina pilchardus, Engraulis encrasicolus; Solea spp.; Mullus barbatus; Mullus surmuletus, Lophius piscatorius; Lophius budegassa; Sparus aurata; Dicentrarchus labrax; Pagellus spp.; Micromesistius poutassou; Trisopterus minutus capelanus; Eledone cirrhosa; Hemipristis elongatus; Mustelus sp.*

Discard Species: Title <fi:Bycatch Type="DiscardSpecies">* fi:SpeciesRef
"Non commercial species or size caught with the main target ones" (Fisheries Inventory: Method and Guidelines. FIRMS, 2007).

Incidental Species: Title <fi:Bycatch Type="ProtectedSpecies">* fi:SpeciesRef
"Protected species (marine mammals, seabirds etc.) caught accidentally with the main target ones" (Fisheries Inventory: Method and Guidelines. FIRMS, 2007).

Fishing Technique <fi:FishTechniqueOverview> fi:FishTechniqueRef

Cod Longlining



contains high-level background information on a single instance of a fishing technique. Please use a new instance of the element for each new fishing technique.

Fleet Segment <fi:FleetSegment>
contains information about a segment of a fishing sector's fleet. Select the Key used to organise the segment. Put each instance of a vesseltype inside a new fi:VesseltypeOverview tag.

Fishing Vessel <fi:VesseltypeOverview> fi:VesseltypeRef
VesseltypeOverview contains high-level information about one instance of one vesseltype. Use a new element for each vesseltype.

Flag State <fi:FlagStateList>* fi:FlagStateRef/fi:LandAreaRef
France; Spain; Italy

Crew <fi:Crew CrewNumber="xxx">

Catch Handling and Processing Equipment <fi:CatchHandlingProcEquip>
is a container to describe the way catches are handled on board and which are the on-board processing facilities (freezer, etc).

Fishing Gear <fi:GeartypeOverview> fi:GeartypeRef
GeartypeOverview is a general description of a single fishing gear.

Fishing Vessel <fi:VesseltypeOverview> fi:VesseltypeRef
(same as above)

Fishing Gear <fi:GeartypeOverview> fi:GeartypeRef
(same as above)

Community <fi:Community>
is the container for identifying people's communities (fishermen communities, ethnic groups, ...).
Example of linking table: (Table 1)

Type of Production System **Type:** industrial <fi:ExploitForm ExploitFormType="Industrial">
the scale at which a fishery operates. It is a container for indicating the scale at which a fishery operates (e.g. Artisanal-Small Scale, Commercial- Small Scale, Semi industrial).

Example of linking table: (Table 2)

Fishery Indicator: Catch <fi:FisheryIndicator>* (<fi:FisheryIndicator Class="exploitation" Type=" catch">)

"Handles all types of indicators reflecting human action in a fishery, e.g. those related to type of exploitation, means of production, and management." (FIRMS TWG2, 2008).:
Fishery indicator is a container for the description of specific aspects of a fishing activity (e.g. Catch, Effort, Fishing capacity...). Use a combination of its attributes to qualify the indicator.

Fishery Indicator: Effort <fi:FisheryIndicator>* (<fi:FisheryIndicator Class="exploitation" Type="effort">)
(same as above)

Seasonality <fi:Season>
Season is the times of year in which a fishery is active.

Ports <fi:Ports>
is a container for the port(s) from which the fleet operates.

Trip duration <fi:TripDuration>
"Average duration of fishing trip specifying in which unit it is expressed" (Fisheries Inventory: Method and Guidelines. FIRMS, 2007).

Socio-economic assessment <fi:SocioEconomicAssessment>*

is a container for describing the socioeconomic assessment of a fishery.

Results <fi:Results>

Results is a "description of the outputs of assessment at the level of each assessment model/method. It provides quantitative and/or qualitative details for each of the noticeable assessment indicators generated during the assessment" (FIGIS-FIRMS 2002 workshop). "As an overall synthesis of the different models/methods, Results is a description of the outputs of assessment, providing a synthesis embracing the set of assessment indicator values generated during the assessment and found meaningful to contribute to state and trends statement" (FIGIS-FIRMS 2002 workshop).

Indicators <fi:FisheryIndicatorListr>*

Type	Measure	Value	Unit
Employment	Number of fishers	623500	persons
	Auxiliary employment (upstream and downstream employment)	1000000	persons
	Total employment	1623500	persons
	% women	57	% of total employment
Production	Landing Volume	528700	tonnes
	Landing Value	895	million USD
Utilization	Per Capita Consumption	52.4	kg
	Shared in Animal Protein	81.5	%
	Share of production for domestic human consumption	92	% of landings

Ecosystem assessment <fi:EcosystemAssessment>*

Ecosystem Results <fi:Results>

Results is a "description of the outputs of assessment at the level of each assessment model/method. It provides quantitative and/or qualitative details for each of the

noticeable assessment indicators generated during the assessment" (FIGIS-FIRMS 2002 workshop). "As an overall synthesis of the different models/methods, Results is a description of the outputs of assessment, providing a synthesis embracing the set of assessment indicator values generated during the assessment and found meaningful to contribute to state and trends statement" (FIGIS-FIRMS 2002 workshop).

Post Harvest Use <fi:PostHarvest>

is a container for post harvest uses information.

History <fi:History>
(same as above)

Markets <fi:Markets>
The markets (national or international) are described in terms of the final destination of the fishery products, by geographical location and type of consumers. National fish markets supplied from imported products should also be described. Price levels in the markets can be provided when available, as well as employment generated, and necessary infrastructures. Use fi:MarketEntry for each instance of a separate market.
<fi:MarketEntry>
Title
is a container for information about fishery products marketing. Use containers for more specific information. Use Tradeflow and consumption destination if desired.

Employment <fi:Employment>
is a container for one or more fi:EmploymentEntry elements.

Origin <fi:Origin>
is a container for lists of countries that are the originator for fisheries products.

Price <fi:Price>
contains information on an object's price.

End Market <fi:EndMarket>
is a container for lists of countries that are the destination markets for a fisheries product or products.

Trade <fi:Trade>
contains information about fishing trade. Use fi:Tradeflows for import/export text.

Infrastructure <fi:Infrastructure>
contains infrastructure information for the container in which it is found.

Infrastructure <fi:Infrastructure>
(same as above)

Fish Utilisation <fi:FishUtilisation>
(same as above)
<fi:FishUtilisationEntry>
Title
is a container for instances of fisheries postharvest information. Use Type to classify the post-harvest type and consumption destination if desired.

Price <fi:Price>

(same as above)

End Market <fi:EndMarket>
(same as above)

Infrastructure <fi:Infrastructure>
(same as above)

Management <fi:Management> fi:AqResRef; fi:FisheryRef;

Management unit: yes

Information about the management of the fishery or the aquatic resource. This element includes an attribute describing whether Yes or Not the aquatic resource is considered a Management Unit. If Yes, a Jurisdiction area is required as primary or secondary georeferencing system. According to the FAO Fisheries Glossary, Management is "the art of taking measures affecting a resource and its exploitation with a view to achieving certain objectives, such as the maximisation of the production of that resource. Management includes, for example, fishery regulations such as catch quotas or closed seasons. Managers are those who practice management".

History <fi:History>
(same as above)

Management Status <fi:ManagementStatus>*

The description of the latest facts and decisions on management.

Assessment Summary <fi:AssessmentSummary>
is a container for summarizing the main results of an assessment. Use AqResRef to link to the corresponding marine resource for which the assessment has been conducted.

Management Advice <fi:Advice>
"Management advice are those recommendations generally evolving from the assessment addressed to management authorities. It evolves from biological scientific advice (found under assessment results) but takes into account a broader spectrum of issues. Advice may be proposed under different management options, each one including a risk assessment element" (FIGIS-FIRMS 2002 workshop).

Negotiation Process <fi:NegotiationProcess>
the description of the process of negotiation on fishery management policy.

Management Resolutions <fi:Resolutions>
It contains management resolutions decided upon by Management authorities.
<fi:ResolutionEntry>
Title
Use one fi:ResolutionEntry for each instance of a resolution. Use the Title attribute in order to present (if any) the Resolution title at the start of the paragraph presenting the Resolution entry

Problems <fi:Problems>
It contains information about management problems.

<fi:ProblemEntry>
Title
Use one fi:ProblemEntry for each instance of a problem.
Use the Title attribute in order to present (if any) the Problem title at the start of the paragraph presenting the Problem entry.

Related Fisheries <fi:RelatedFisheries>* fi:FisheryRef
"The list of fisheries with which another fishery is connected by a described link." (FIRMS TWG2, 2008).
Use the attribute Type to specify which is the relation between fisheries.
Thailand Shark Fisheries, 2004

Management Regime <fi:ManagementRegime>*

The description of the longstanding management arrangements and features of a fishery.

History <fi:History>
(same as above)

Management Objectives <fi:Objectives>
are objectives related to missions, outputs, projects, etc. Use one fi:ObjectiveEntry for each instance of an objective. For management systems, description of main goals/objectives which the governing authority wishes to achieve within the system and strategies applied for that purpose. According to the FAO Fisheries Glossary, "a formally established, more or less quantitative target that is actively sought and provides a direction for management action".
<fi:ObjectiveEntry>
Title
Use one fi:ObjectiveEntry for each instance of an objective. For management systems, description of main goals/objectives which the governing authority wishes to achieve within the system and strategies applied for that purpose. Use the Title attribute in order to present (if any) the Objective title at the start of the paragraph presenting the Objective entry.

Management Strategies <fi:Strategies>
Management Strategies are strategies related to missions, outputs, projects, etc. Use one instance of fi:Strategy for each instance of a Strategy.

Management Methods **Type:** Effort control <fi:ManagementMethods ManagementMethodType="Effort Control" >
Management methods describes the set of methods or measures affecting fisheries, and used to implement management strategies. Use one fi:ManagementMethodEntry for each instance of a measure.
<fi:ManagementMethodEntry>
Title
Use one fi:ManagementMethodEntry for each instance of a management method.

Jurisdictional Framework <fi:Jurisdiction>
contains information about an organisation's jurisdiction and mandate for an area.
Related Fisheries <fi:RelatedFisheries>* fi:FisheryRef
"The list of fisheries with which another fishery is connected by a described link." (FIRMS TWG2, 2008). Use the attribute Type to specify which is the relation between fisheries.
Thailand Shark Fisheries, 2004

Management Body **Mandate:** Monitoring <fi:ManagementEntity>* <fi:Mandate Value="Monitoring">* fi:OrganizationRef

International Council for the Exploration of the Sea (ICES)

is a container that incorporates the sub-elements "Management body or authority" reference, and the "Competence area".

Area of Competence <fi:GeoCoverage Type=" RFB_CompetenceArea">* fi:WaterAreaRef

Maritime Area: High seas <fi:MaritimeArea Type="">

GeoCoverage is the area on which a management body or authority exerts its competence/mandatory role.

MaritimeArea is the type of area on which a management body or authority exerts its mandate.

Legal Definition **Jurisdictional:** xxx <fi:LegalDefinition Jurisdictional="xxx" >

"Legal definition defines a fishery as it is referred to within a national or an international legal framework" (FIRMS TWG2, 2008).

Management Objectives <fi:Objectives>

are objectives related to missions, outputs, projects, etc. Use one fi:ObjectiveEntry for each instance of an objective. For management systems, description of main goals/objectives which the governing authority wishes to achieve within the system and strategies applied for that purpose. According to the FAO Fisheries Glossary, "a formally established, more or less quantitative target that is actively sought and provides a direction for management action".

<fi:ObjectiveEntry>

Title

Use one fi:ObjectiveEntry for each instance of an objective. For management systems, description of main goals/objectives which the governing authority wishes to achieve within the system and strategies applied for that purpose. Use the Title attribute in order to present (if any) the Objective title at the start of the paragraph presenting the Objective entry.

Management Strategies <fi:Strategies>

Management Strategies are strategies related to missions, outputs, projects, etc. Use one instance of fi:Strategy for each instance of a Strategy.

<fi:StrategyEntry>

Title

Use one fi:StrategyEntry for each instance of a strategy.

Management Methods ol <fi:ManagementMethods >

Management methods describes the set of methods or measures affecting fisheries, and used to implement management strategies. Use one fi:ManagementMethodEntry for each instance of a measure.

<fi:ManagementMethodEntry Focus="" Type="">

Title <dc:Title>

Use one fi:ManagementMethodEntry for each instance of a management method. Use Title to specify the name of the measure and use Type and Focus attributes to qualify the measure.

ManagementMethodEntry		
Title	Type	Focus

Examples		
CONSERVATION AND MANAGEMENT MEASURES		
	Binding	Fishery Management
	Non-Binding	Ecosystem Management
COMPLIANCE MEASURES		
	Binding	Licensing Port State Controls At Sea Inspections VMS
	Non-Binding	Trade Measures

Monitoring System <fi:MonitoringSystem>

"Systematic recording and periodic analysis of information over time" (FAO Aquaculture Glossary).

<fi:MonitoringSystemEntry>

Title

Use one fi:MonitoringSystemEntry for each instance of a monitoring system.

Assessment Summary <fi:AssessmentSummary>

(same as above)

Management Advice

<fi:Advice>

(same as above)

Negotiation Process <fi:NegotiationProcess>

(same as above)

Management Resolutions <fi:Resolutions>

(same as above)

Legal Definition **Jurisdictional:** xxx <fi:LegalDefinition Jurisdictional="xxx" >

(same as above)

Monitoring System <fi:MonitoringSystem>

(same as above)

Management Objectives <fi:Objectives>

(same as above)

Management Strategies <fi:Strategies>

(same as above)

Management Methods **Type:** Effort control <fi:ManagementMethods ManagementMethodType="Effort Control" >

(same as above)

Problems <fi:Problems>

(same as above)

Fishery Status and Trends <fi:FisheryStatusTrend Status FreeValue="over exploited"

State: over exploited
contains status and trend information about a fishery.

Issues <fi:Issues>

is a container for information about the fisheries issues with which an organisation is concerned.

Action <fi:Action>
contains information about Fisheries actions.

Solution <fi:Solution>
contains an instance of a solution.

Outlook <fi:Outlook>
contains information about Fisheries Topic outlooks.

Background <fi:Background>
contains Background information on Fisheries Topics.

Source of Information <fi:Sources>

Sources is a container for biblio entry elements. It is used to identify the source of a piece of data within an object when it is not part of a bibliography. For example, an editor inserting a table of data from a FIDI dataset into the middle of an object might cite FIDI using fi:Sources. Use an instance of fi:BiblioEntry for each separate citation.
Author. Title. Series. Publisher. Date.....

Disclaimer:
This is an extract of the XXXX fisheries advice presenting the fish stock information. The full XXXX advice is available on http://www.XXX.XX and accounts for fisheries constraints in addition to the stock considerations.

Bibliography <fi:Bibliography>

Bibliography is a container for biblio entry elements. It is used as in a traditional print bibliography found at the end of a document, in order to cite the literature consulted and used for the creation of the document.
<fi:BiblioEntry>
BiblioEntry is a container for elements that define a reference source. It is similar in spirit to the bibliographies found in traditional books. All the fields that would be expected in a Bibliographic Entry are included, as well as the possibility of tagging hyperlinks and adding free text.

Title Author. Series. Publisher. Date.....

<fi:BiblioEntry>
Title Author. Series. Publisher. Date.....
.....

Related Information <fi:RelatedResources>

Literature of papers cited in the source text that may or may not have been used in the construction of the object , and/or are considered as 'sugggested additional reading'. It is an element for entering literature info that has no direct relation with the origin of the data in the object: it can be considered as 'additional reading' information. fi:RelatedResources contains a list of fi:BiblioEntry elements, which ARE NOT COLLECTED in the fi:Bibliography element. There can be ONLY ONE fi:RelatedResources in a given object, located at its root (This includes FIGISDoc).

<fi:BiblioEntry>
Title Author. Series. Publisher. Date.....

<fi:BiblioEntry>
Title Author. Series. Publisher. Date.....
.....

Tables <Table>

Table 1: Title back >>

jkhghudghuidfgh				
3435	fff	bnnn	bnnn	bnnn
vvv	555	jhy	bnnn	bnnn

Table 2: Title back >>

gdgdgdfdd	5	4	3	22
4	3ggfg	44	33	22
12	stat	5567	22	88
12	44	bbb	22bb	8

Table 3: Title back >>

dfgdghdfdh	5	4	55	67
4	3ggfg	5	11	22
5t6	stat	33	48	88
12	789	befgrb	acc6	9