FIRMS Technical Working Group Meeting
Second Session
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Resource Module: Status and plans for implementation of FSC4 decisions
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Purpose of this document

A number of recommendations and decisions were made about the FIRMS website and its working system during the last three FIRMS meetings (TWG1 in Dec 2005, FSC3 in March 2006, FSC4 in Feb 2007). Modifications requested by FSC3 on the FIRMS website were all implemented before the launch of FIRMS website. More challenging, all substantial recommendations made by TWG1 (including the usability test exercise) concerning the FIRMS working system have now been taken on-board: consistency of the terminology used, improvements and additional features for the Workflow Management System, dynamic mapping, reliability and robustness of the system, multilingual handling.

This document therefore focuses on the status of implementation of the decisions and recommendations of FSC4, concerning:

- *Stock status,*
- *Reporting year,*
- *Statistical graphs,*

and strives to provide some solutions in order to implement these recommendations.

Status and plans for implementation of FSC4 decisions

Stock status

Concerning the descriptors of stock status (abundance level and exploitation rate), it was agreed that partners could use their own system of classification for describing the status of stock. The FIRMS standard descriptors which are listed below will be used only for search purposes in order to facilitate extraction of data. In order to make this extraction possible, Partners' classifications should therefore be mapped with FIRMS descriptors.

FIRMS descriptors for Abundance level

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

FIRMS descriptors for Exploitation rate

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

For the time being, 2 partners (NAFO and ICES) did provide a mapping between FIRMS descriptors and their own classification.

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:

Stock abundance status		**Exploitation rate** status	
FIRMS descriptors	**ICES** descriptors	**FIRMS** descriptors	**ICES** descriptors
Pre-exploitation biomass or high abundance	N/A	No or low fishing mortality	N/A
Intermediate abundance	Full reproductive capacity	Moderate fishing mortality	Harvested sustainably
Low abundance	At risk of suffering reduced reproductive capacity	Moderate fishing mortality	At risk of being harvested unsustainably
Depleted	Suffering reduced reproductive capacity	High fishing mortality	Harvested unsustainably
Uncertain/Not assessed	Undefined	Uncertain/Not assessed	Undefined

Following FSC4 recommendations, the two website search interfaces ("resource fact sheets search", and "status & trends summaries search"), will be modified in order to enable users to search (in addition to existing search criteria) the status of resources using the FIRMS controlled terms available for the "Abundance level" and "Exploitation rate" categories. The category "Exploitation state" won't be searchable.

Implications and impacts

Solutions discussed here are in line with FIRMS Information Management Policy (IMP), in particular on the following aspects:

- FIRMS takes into account the existence of standards at Partners levels;

- Partners are responsible for the information they contribute to FIRMS; this includes a responsibility for Partners to implement and maintain the correspondence between their standards and FIRMS standards, and to ensure reliability in their information contributions;

- to the extent possible, FIRMS Secretariat provides tools which assist Partners in fulfilling their tasks.

FIMES schema: The proposed solution is to have both Partners' and FIRMS' descriptors contained within the same XML report file. In other words, rather than in a central database, the mapping is implemented at XML report file level for each observation. In addition to controlled terms, it will be possible to use free text in the "abundance level", "exploitation rate" and "exploitation status" fields. A modification will have to be made on the FIMES Marine resource schema in order to consider Partner's classifications. This modification will take into account the need for minimizing the impact on the current data model, and the possibility for "local" schemas building from the FIMES data dictionary while catering for local needs.

Some schema technical solutions are in the process of being validated by FIRMS secretariat and different options will be discussed with partners as part of Agenda item 7.

FIRMS data base:

The content of XMLs files already loaded into the FIRMS database should be backward updated with partner's classifications as well as with FIRMS corresponding terms. Where those terms were edited consistently, FIRMS Secretariat will be able to implement batch processes in order to update the XMLs already present in the FIRMS system. Where such processes cannot be automated, Partners will be responsible for manual editing.

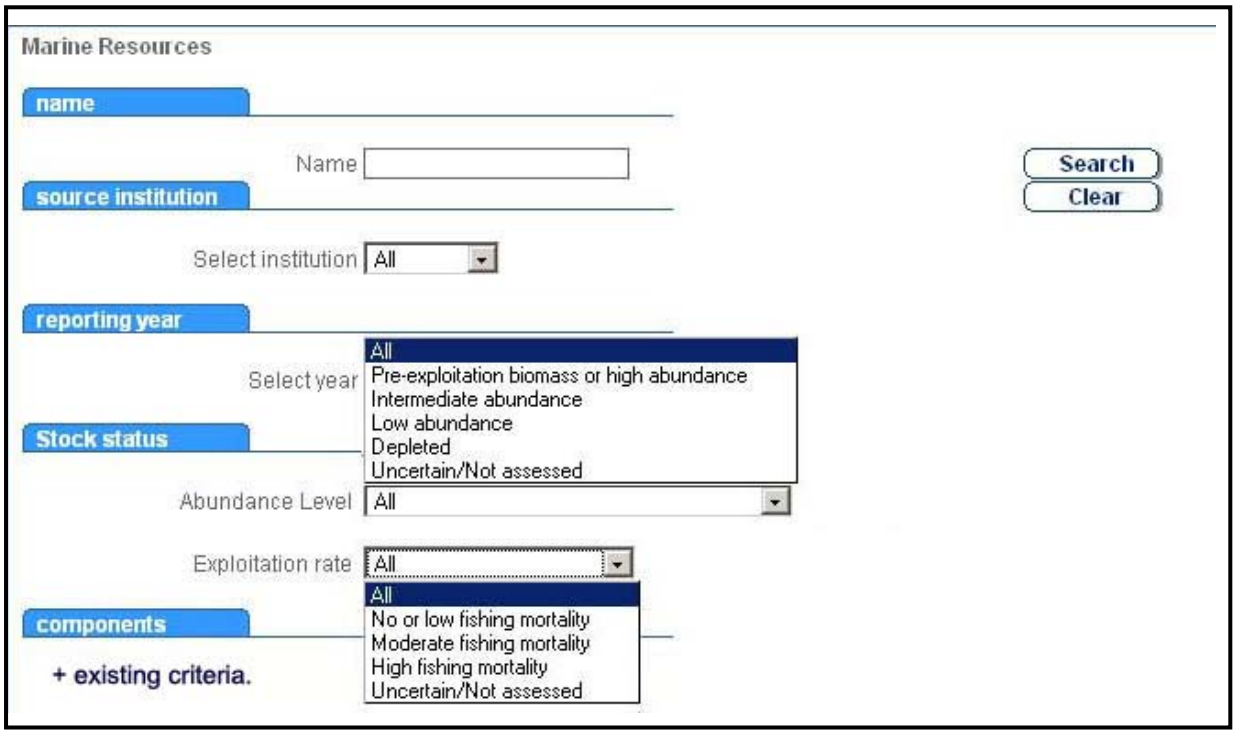
For new XMLs, Partners will be asked to provide systematically their stock status descriptors from their internal classification and the equivalence in the FIRMS classification according to the established mapping.

Workflow supporting tools: automating the addition of FIRMS terms given Partners' terms in XML reports can be taken care of in upstream converter tools, and FIRMS Secretariat will upgrade XML converter tools accordingly. It is also anticipated that "Fishery ontology" services developed as part of the NeOn project (Networked Ontologies) could assist for a decentralized maintenance of terms mapping between Partners and FIRMS descriptors, and for automating the addition of FIRMS terms given Partner's terms in upstream converter tools and in on-line editing processes.

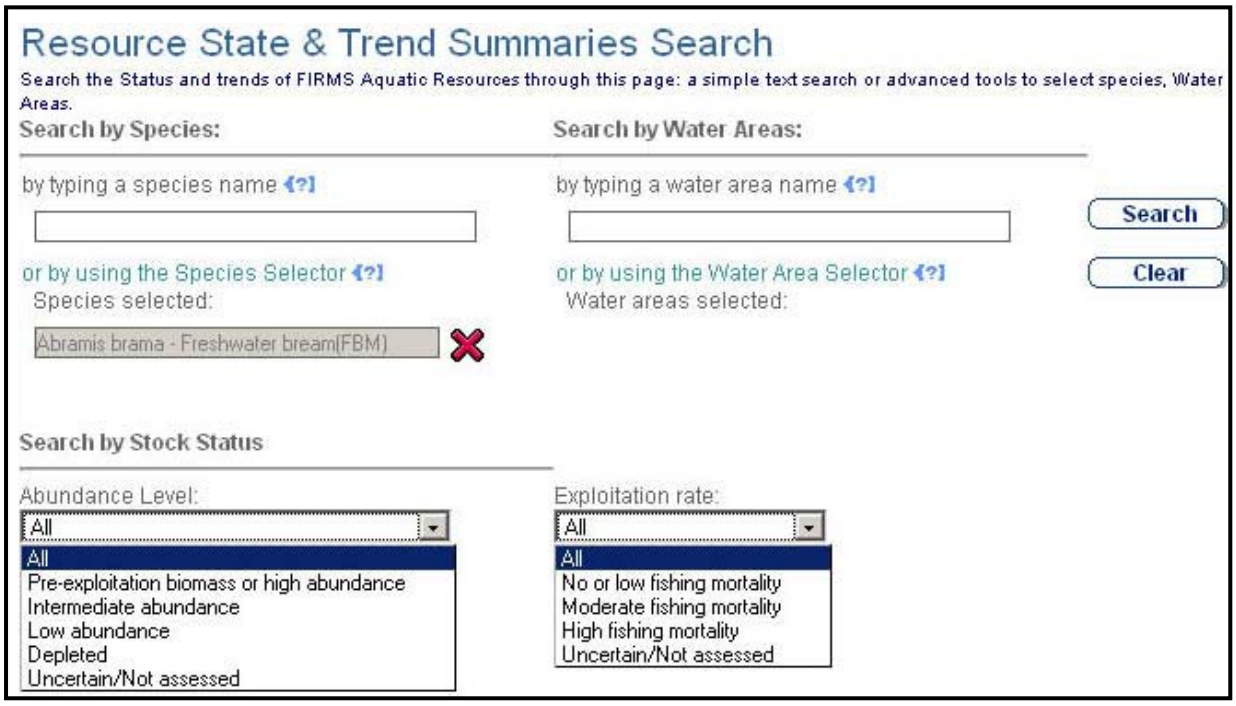
Search engine and search results: FIRMS Secretariat will update the search tools by exploiting the mapping (contained in XML report files) between FIRMS' and partners' descriptors in order to search corresponding partner's fact sheets. This technical choice eases mechanism and improves the performance of the tools by the presence of both classifications in the same observation.

Website search interface: The 2 search interfaces will integrate 2 new search fields (Abundance level and Exploitation rate) based on FIRMS classification.

New interface for the facts sheets search



New interface for Status and trends summaries search



Fact sheets layout:

In the fact sheet, the information which will be displayed will be the information provided by the partner according to Partners' selected terminology. This terminology could be either controlled terms from Partner's classification, FIRMS controlled terms if the Partner has decided to adopt the FIRMS classification, or/and free text.

Currently, when no information is available for one of the descriptors (Abundance level, Exploitation rate, and Exploitation state,) in the published fact sheets, the system displays "Not provided" next to the term. Following FSC4 decisions, this strategy won't be followed anymore: if a descriptor does not contain a value, it won't be displayed at all in the fact sheet.

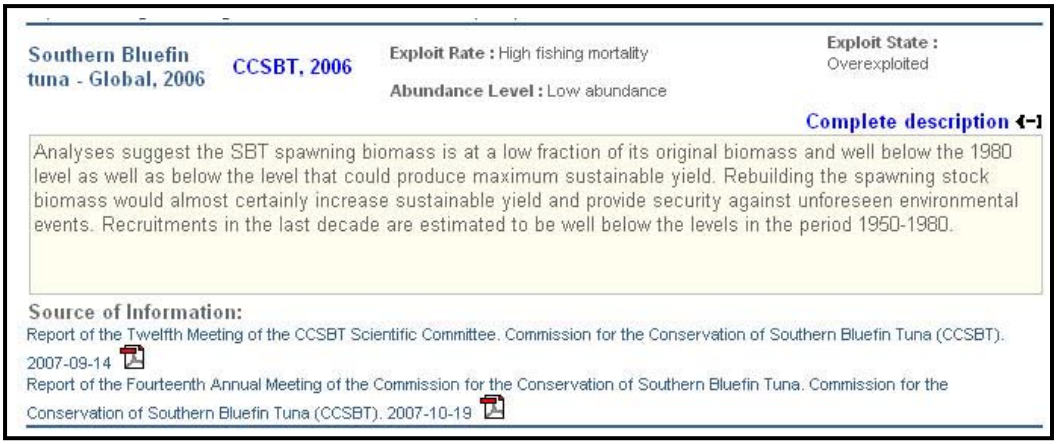
However, in order to facilitate the understanding of Stock status reports, Abundance level and Exploitation rate descriptors should be considered as a pair which cannot be dissociated. It is therefore proposed that if information for one of these 2 categories is available, the second term will be displayed as well even if empty.

On the other point, by extension, a fact sheet won't be searchable if information is unavailable in both abundance level and exploitation rate categories.

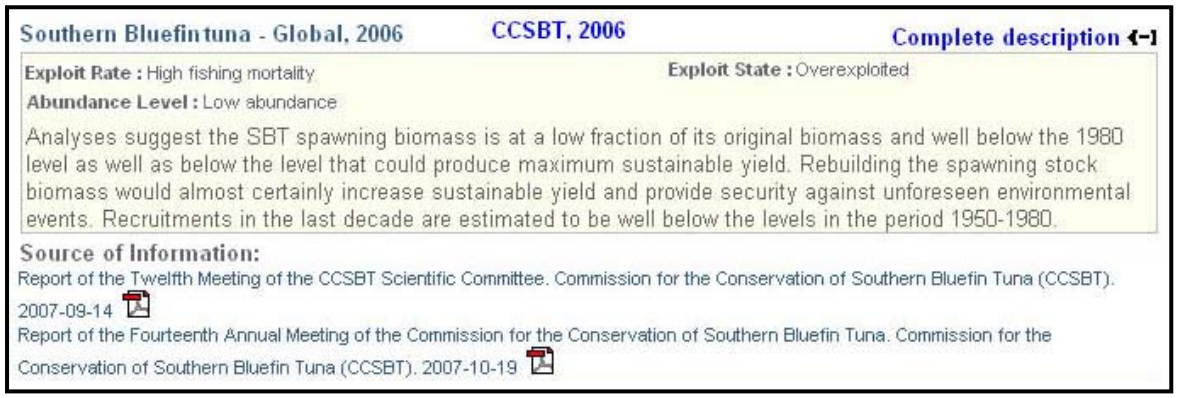
Search result interface for status and trends summaries

About the search result interface as requested during the FSC4, the 3 stock status categories will be moved to the "complete description" section and will be visible only by expanding this section.

Current version



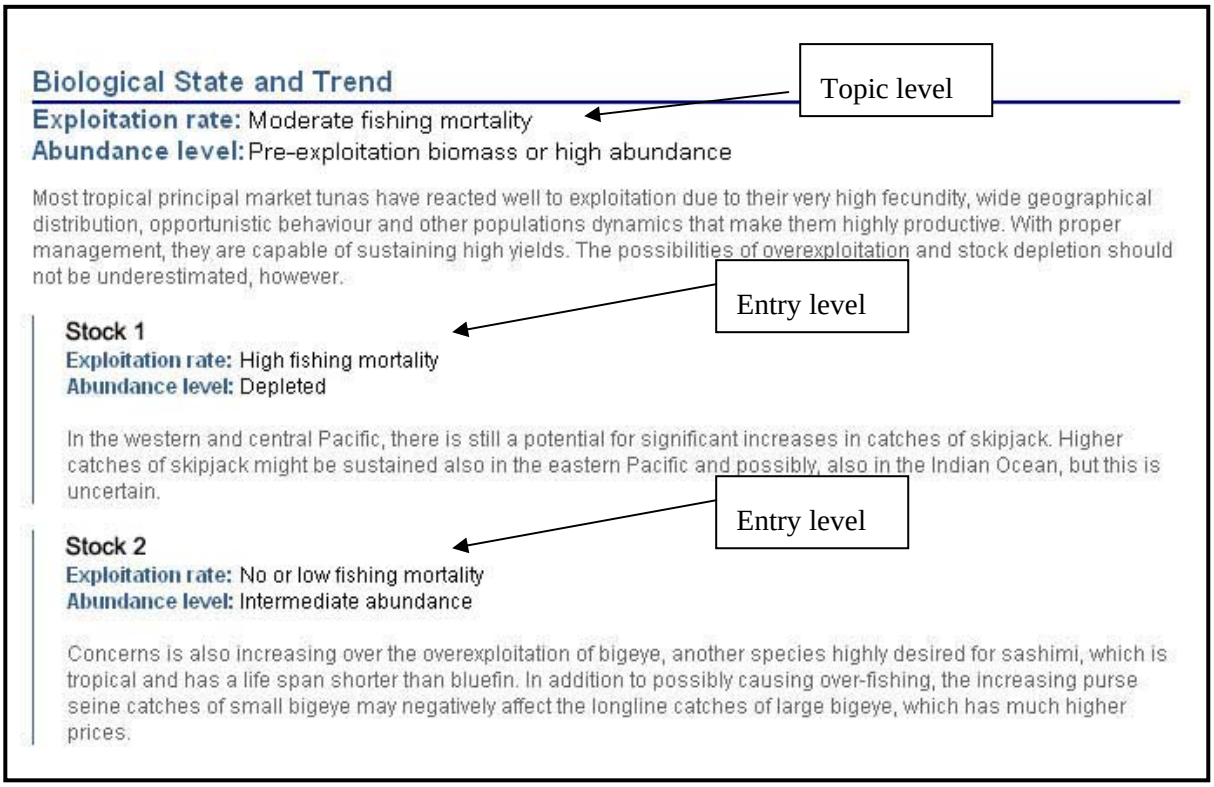
New version



Status and trends entries in fact sheet

The FIRMS schema allows to provide information on the status and trends through the use of entries (an entry is a sub-division of the Status and Trends topic). Depending on the resource described, the stock status descriptors can be provided at the “Status and Trends” topic level, at the “entry” level or both.

Example of entries in the status and trends section in a fact sheet



Stock status descriptors at topic level are used to describe the status and trend of the global resource.

Stock status descriptors at entry level are used for each instance of a status or trend statement, in case distinct statements applying to different aquatic resources under review are included in the resource.

Providing stock status descriptor at entry level can improve the understanding on a resource when displayed in a fact sheet: in this configuration, the stock status descriptors apply only to a sub-part of a resource.

Concerning the display of status and trends entries in the search result pages of the Status and trends summaries, the fact of nesting the content of the whole status and trends section of the fact sheet within the “Complete description” section will ease the display and users understanding.

But this could have adverse impacts in other views offered by the system such as misunderstanding when browsing search result pages: for example, by searching for resources containing the controlled term Abundance level = “Depleted”, the resource corresponding to the above fact sheet will be listed. The user could then consider that the whole resource if effectively depleted while this controlled term applies only to a sub stock of this global resource.

One way to avoid this situation would be not to search controlled terms in the stock status entries. However, this solution is not adequate in the case of fact sheets containing stock status descriptors only at entry level. In that case, these fact sheets would not be retrieved, involving a lack of relevance in the search result page.

Considering the search result page, the weighting of a result would be different whether the controlled term is at topic level or at entry level and would, in that way, facilitate the readability of the search result page.

This has to be understood that the search engine logic increases the relevance of a record in search result when the searched term is recurrent in this record.

Strategy

In order to implement the mapping between partner classification and FIRMS descriptors, the strategy will be:

1. Stopping the loading of new data for partners for which the mapping has been established during the implementation of the following steps 2, 3, 4.
2. Converting the existing data in the FIRMS system/database through PL/SQL queries in order to update XML elements with mappings between partners and FIRMS classifications.
3. Modifying the search tools and result interfaces by adding 2 new search fields "Abundance level" and "Exploitation rate".
4. Updating the converter tools (Word to XML and Excel to XML) for taking into account the status and trends mappings.
5. Developing status and trends mappings with all FIRMS partners.

Actions requested from TWG2

Technical solution proposed:

Partners are invited to review, comment, and make recommendations to FSC5 regarding the proposed solutions and outstanding issues.

Implementation conditions:

Given the above solutions, TWG should advise as to the condition which should be met (in number of Partners, or percentage of published information, or ...) before the new search feature can be implemented. It is suggested that if FIRMS was to implement the solution with only two Partners such as NAFO and ICES having proposed their mapping, then the search interface should inform users about the scope covered by the new feature.

Reporting year

During the last FSC, FIRMS Secretariat reported that some discrepancies were found in how the Reporting year is interpreted by different partners. It must be added that in the Excel template distributed to Partners for the initial bulk upload of the database, the label intended for *Reporting year* was displayed as *Year of observation* adding to the confusion.

This table is summarizing the different interpretations of the different concepts.

	Last year for which data exists in the assessment	*Year when the assessment is conducted*	*Year of the most recent review of catches and status and trends*	*Year of the Meeting reviewing executive summaries*	*Year of publication*
Year of observation	IOTC ICES	ICCAT			
Reporting Year		NAFO IOTC IATTC	IATTC	ICCAT (SCRS meeting)	
Year of observation +1					NAFO

FSC4 recommended that in order to facilitate the understanding of this date, each partner should submit information on three year types:

- *Reference year*: "The year in which the scientific meeting (or equivalent scientific validation process) reviewed the status of the stock pertaining to the fact sheet".
- *Publication year*: "the year of publication of the scientific report where detailed information on the fact sheet is found".

- *Last year of data*: “the most recent year for which data is available in the assessment pertaining to the fact sheet”.

Implications and impacts

Definitions: For the current facts sheets available in the system, each partner will be requested to define which of the three years described above, the current date available in their fact sheets corresponds to. From that point, each partner will provide definitions to generate automatically the 2 other missing years (e.g.: The current year available in the fact sheet corresponds to the Reference Year. The 2 other years are: “publication year= reference year+1” and “last year of data=reference year”.)

This is the draft with examples of the table that partners should feed in order to define the 3 years:

Partner	Current year in FS	Ref year	Pub Year	Last year
NAFO	☐ Pub | ☑ Ref | ☐ Last	=	+1	=
ICES	☐ Pub | ☐ Ref | ☑ Last	+1	+2	=
ICCAT	☐ Pub | ☑ Ref | ☐ Last	=	+1	-1
IATTC	☐ Pub | ☐ Ref | ☐ Last			
...	☐ Pub | ☐ Ref | ☐ Last			

FIMES schema: the marine resources schema will have to be slightly modified in order to make the three year types mandatory.

Data model: As explained to FSC4, the current Reporting year is a key identifier for unique identification of an Observation. FSC4 accepted the fact that for internal data management needs, one Year type should be favoured to fulfil this unique Id role. FIRMS Secretariat proposes the *Reference year* to be the identifying year for an observation. This implies that for all technical matters implying temporal identifier such as observations presented within the Content Management System, the clone functionality, or synoptic views, the “Reference year” will be systematically used for dating purpose.

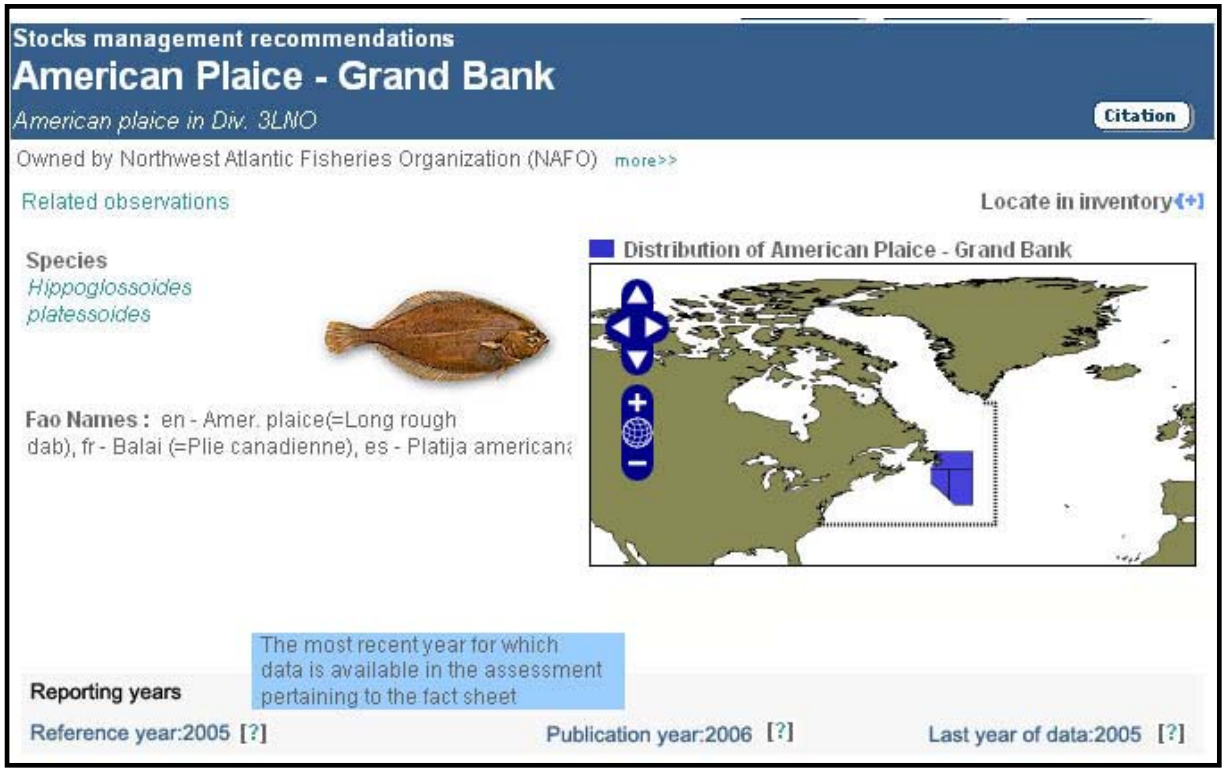
FIRMS database:

Database update: based on indications provided by partner, FIRMS secretariat will develop some batch scripts in order to update automatically for each partner the content of its fact sheets currently available in the FIRMS system. It implies that during this process, no more observations could be loaded.

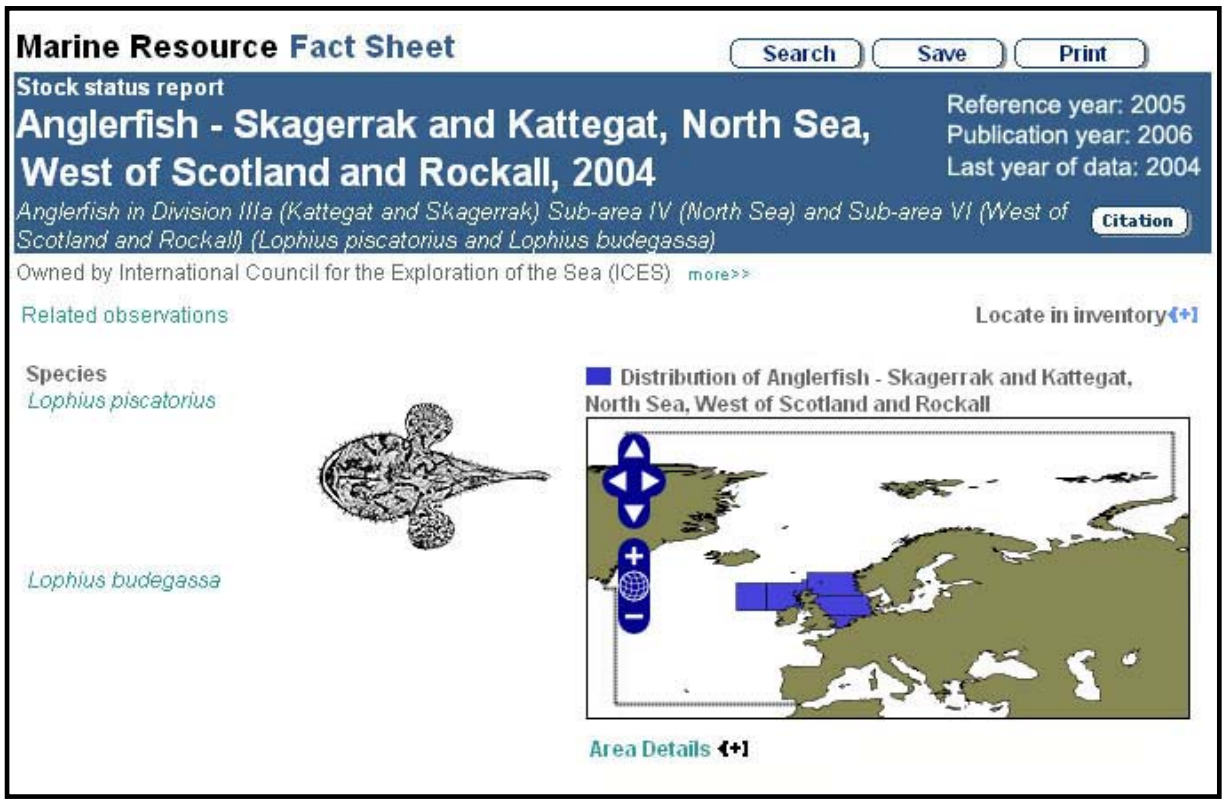
For the new XMLs, the partner will have to provide systematically the 3 years. For partners using tools to generate XMLs such as the Word to XML converter, the tools will be updated and the generation of the 3 years could be supported automatically.

Fact sheet layout: following the FSC4 requirements, the year will be removed in the search result pages and in the title of the fact sheets. Instead, the various year types will be displayed side to side. Two options are proposed:

Mock up option 1 for fact sheet with 3 different years: in the body of the fact sheet.



Mock up option 2 for fact sheet with 3 different years: right side of header



Search result interfaces: Considering the FSC requirements, as noticed previously, the year will be removed from the fact sheet search page:

Current result page: the year provided by the partner is systematically attached to the resource

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Marine Resource Results List.

Results for: *institution* contains NAFO.
Found in all domains: Resource: **19**

Showing: 1-15 Next 4 >>

Dataset	Description	Relevance
Resource	American Plaice - Flemish Cap : 2006	★★★★★
Resource	American Plaice - Grand Bank : 2005	★★★★★
Resource	Atlantic cod - Flemish Cap : 2006	★★★★★
Resource	Atlantic cod - Grand Bank : 2005	★★★★★
Resource	Atlantic cod - Northeast Newfoundland Shelf and Northern Grand Bank : 2001	★★★★★

New search result list: the year will be removed.

Marine Resource Results List.

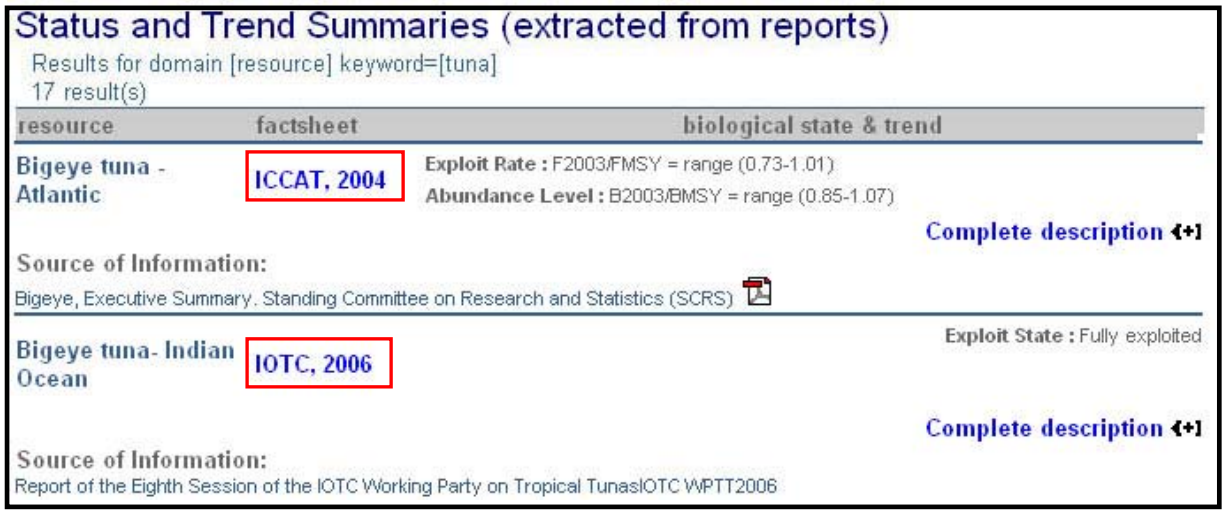
Results for: *institution* contains NAFO.
Found in all domains: Resource: **19**

Showing: 1-15 Next 4 >>

Dataset	Description	Relevance
Resource	American Plaice - Flemish Cap	★★★★★
Resource	American Plaice - Grand Bank	★★★★★
Resource	Atlantic cod - Flemish Cap	★★★★★
Resource	Atlantic cod - Grand Bank	★★★★★
Resource	Atlantic cod - Northeast Newfoundland Shelf and Northern Grand Bank	★★★★★

However, considering the Status and trends search result, it appears inconsistent to remove the year in the “fact sheet” column, since this is a key information to the understanding of the summary information describing the status of a resource.

The reference year should remain present in the result page as shown below.



Actions requested from TWG2

Partners are invited to review, comment, and endorse a resolution for implementation and/or make recommendations to FSC5.

Partners are invited to discuss possible issues evolved from removal of the identifying year in the search results.

Dynamically nested statistical data

Concerning the statistical graphs dynamically generated from FAO statistical databases, it was agreed that each partner will decide if and in which fact sheets, dynamically created graphs should be included and which data source they should be linked to.

According to the input given by partners, FIRMS secretariat will develop implementation of such functionality. It could be via a property file if the generation of statistical graphs is concerning all fact sheet owned by a partner within a collection or at XML report level if these dynamic graphs should be present only in some specific fact sheets.

Actions requested from TWG2

Partners willing statistical graphs dynamically generated in their fact sheets should indicate it to the FIRMS Secretariat with description of the characteristics of the graph to be implemented

OTHER OUTSTANDING ISSUES

Regional and local common names for species:

It was highlighted during the last FSC that the search tools should enable to search for regional and local common names for species. Integration of local classifications/standards and metadata will be discussed during agenda item 7.

Dynamic maps inside fact sheets:

FIRMS Secretariat is currently in the process of re-engineering the FIGIS mapping system in order to overcome performance and feature bottlenecks observed with the current system. This new system will be based on the GeoNetwork suite of tools, and prototype implementations will be presented and discussed during TWG2.