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FIRMS PROTOCOLS AND STANDARDS
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Summary

The discussion held during the last GRSF workshop (EAB-TWG2, Rome 28 February – 2 March 2017) highlighted the need to update some of the existing FIRMS standards to make the dissemination framework better suited to accommodate the information focusing on stock status.

Revisions to the FIRMS standard descriptors of state and trend of marine resources are proposed. Such revision is deemed appropriate in anticipation of a future possible role of FIRMS in support to the SDG 14.4.1 “Percentage of fish stocks within biologically sustainable levels”.

State and trend standard indicators

- Adoption of the FAO/SOFIA values (Overfished/Fully Fished/Not Overfished or Overfished/Not overfished) as a FIRMS Standard

The current FIRMS dissemination framework establishes that the indicators of state and trend for marine resources provided by the Partners are mapped to the bi-dimensional FIRMS standard values of state and trend (based on abundance level and exploitation rate). In turn, the FIRMS standard values of state and trend are mapped to the mono-dimensional FAO/SOFIA standard values (Overfished/Fully fished/Underfished or Overfished/Not Overfished, the two categories used for communication purpose). More information is available at: http://figisapps.fao.org/FIGISwiki/index.php/FIRMS_Fishery_Resources_Standard_descriptors_f_or_State_and_trend

In some cases the FIRMS standard values for state and trend are not applicable, due to the differences in the use of similar terminology by the Partners. However, it is crucial that a stock is ultimately categorized as either Overfished or Not Overfished (e.g. to contribute to SDG 14.4.1).

PROPOSAL 1 (adoption of FAO/SOFIA standard indicators for state and trend): For the above reasons, we propose the adoption of FAO/SOFIA standard values in the FIRMS framework, giving the option to map the Partner’s values directly to the FAO/SOFIA values. In this regard, a pilot experiment has been conducted with GFCM.

- Transparency/alignment across the FIRMS database

At the moment, the FIRMS standard values for state and trend are applied upon the Partner's provision of partner-specific mapping rules. Often, the different Partners adopt different criteria and thresholds to assign a status to a stock, and this is reflected in the FIRMS database (see an example in Table 1). This implies that there is no standard framework of reference points/thresholds for the utilization of the FIRMS standard values across the FIRMS database. At the same time, it is clear that the Partners are using the best knowledge and methods available in the different cases, and that the criteria and thresholds to assign stock status are set taking into account various considerations including uncertainties in the data.

a)

Witch flounder - Southern Grand Bank (NAFO) (FIRMS factsheet - http://firms.fao.org/firms/resource/10321/en)			
NAFO Quantitative indicator	NAFO Qualitative indicator	Mapping to FIRMS standard values	Mapping to FAO/SOFIA standard values
$B/B_{msy} = 0.81$	Intermediate stock size	Intermediate abundance	Fully fished/Not overfished
$F/F_{msy} \ll 1$	None-Low Fishing Mortality	No or low fishing mortality	

b)

Sardine - Southern Alboran Sea (GFCM) (FIRMS factsheet - http://firms.fao.org/firms/resource/13635/en)			
GFCM Quantitative indicator	GFCM Qualitative indicator	Mapping to FIRMS standard values	Mapping to FAO/SOFIA standard values
$B/B_{msy} = 0.91$	Overexploited	Not applicable	Overfished
$F/F_{msy} = 0.78$	Low fishing mortality	No or low fishing mortality	

Table 1. Example of marine resources inventoried in FIRMS for NAFO (a) and GFCM (b). The two tables report qualitative and quantitative Partner's indicators of stock status as well as the FIRMS and SOFIA standard values of state and trend resulting after the application of the partner-specific mapping rules. Note how similar Partner's quantitative indicators result in a different stock status after mapping to FAO/SOFIA standard values.

QUESTION 1 (establishing a standardized framework for the use of state and trend indicators): *With the above considerations and keeping in mind the role of FIRMS, is there a need to establish a standardized framework of reference points/thresholds for the consistent utilization of the FIRMS (or FAO/SOFIA) standard values for state and trend across the whole FIRMS database? Alternatively, we would maintain the current approach of applying partner-specific mapping rules to assign the FIRMS (or FAO/SOFIA) standard values for state and trend, thus reflecting the expert and local evaluations made by the Partners. Note that in all cases the Partner's values would be displayed in the FIRMS fact sheets next to the FIRMS (or FAO/SOFIA) ones.*

PROPOSAL 2 (transparency): *Whatever approach we decide to follow, for the sake of transparency the full methodology used to assign the standard values of state and trend (including partner-specific mapping rules or standard evaluation framework) should be made readily available to the FIRMS users. In particular, there should be a section of the FIRMS website where all the mapping rules are displayed. In addition, the relevant mapping rules should be readily accessible from each fact sheet.*

Revising FIRMS controlled terms and definitions

- Catch/landing time series

Traditionally included in the FIRMS fisheries module, catch data have been included in the latest Marine Resource fact sheets produced for CCAMLR, GFCM, IOTC and CECAF, as per TWG5 recommendation number 6 (http://www.fao.org/fi/static-media/MeetingDocuments/FIRMS/FIRMS_FSC10/3e.pdf). This kind of data is an important source of information to infer on stock status in absence of stock assessment.

- Classification of marine resources

In the current FIRMS dissemination framework, marine resources are classified using the following terminology:

- Considered as a single stock = Yes/No”
- Management unit = Yes/No

The “Considered as a single stock” attribute can lead to inconsistencies in the database, as it can be interpreted as “considered as a biological stock” or “considered (i.e. assumed) as a stock for the purpose of stock assessment”.

The “Management Unit” attribute for Marine Resources so far has been used with a generic criteria: “Yes” was assigned to those marine resources that are the object of ‘at least’ some management measures. On the other hand, the “Management Unit” attribute in the FIRMS Fisheries module has been used with a stricter meaning, with “Yes” being assigned to those fisheries which are the object of a Fisheries Management Plan (FMP). Learning from the GRSF experience, we consider important to flag in the FIRMS database those marine resources that are the object of a formal FMP, in particular to meet the interest and needs of audiences concerned with sustainability, conservation and traceability issues. In addition, it is important to align this terminology between the FIRMS Marine Resources and Fisheries, as the “Management Unit” attribute constitutes an important link between the two modules.

PROPOSAL 3 (classification of marine resources): *Learning from the GRSF experience, we propose to clearly separate the concepts of biological stock and assessment unit in the FIRMS database, and to adopt a stricter definition of Management Unit. The proposed standard terminology with associated definition is as follows:*

Attribute	Definition	Values
Biological stock	A subset of a species having the same growth and mortality parameters, inhabiting a particular geographic area and showing negligible mixing with adjacent subsets of the same species (adapted from Sparre and Venema, 1998).	Yes / No / Unknown
Assessment Unit	The subset of one (or more) species that is the object of a given stock assessment. The assessment unit can coincide with the biological stock (ideally) or not. In some cases the biological stock boundaries are not known and assessment units are established on the basis of practical/political convenience. Being the focus of some assessment, the marine resources considered assessment units implicitly inform on the very likely existence of at least some management measures.	Yes / No
Management Unit	A fishery or a portion of a fishery identified in a Fishery Management Plan (FMP) ¹ relevant to the FMP's management objectives. The choice of an FMU depends on the focus of the FMP's objectives, and may be organized around biological, geographic, economic, technical, social, or ecological perspectives (FAO Term Portal)	Yes / No

¹ Fishery Management Plan (FMP) definition: An explicit arrangement (contract) between the interested parties and the fisheries management authority which makes explicit the objectives and means of management, the nature of the management authority, its powers and responsibilities, its working and consultation procedures, as well as the rights and responsibilities of the interested parties in the fishery (FAO, 1995)

- Jurisdictional distribution of stocks

In the current framework, each marine resource is assigned a jurisdictional distribution. Controlled terms for this attribute are: National, Shared between nations, highly migratory, high seas purely, straddling between high seas and EEZ, unspecified.

It is particularly important to ensure clear definitions and consistent application of these terms within the FIRMS database, as the jurisdictional distribution will play a central role into the identification of those resources potentially contributing to the computation of SDG indicator 14.4.1.

PROPOSAL 4 (jurisdictional distribution): for the reasons above, we propose a consolidation of the definitions for this attribute and relative controlled terms as follows:

Attribute	Definition	Controlled terms	Definition
Jurisdictional distribution	Typology of marine resources in regard to their spatial distribution and how it relates to marine jurisdictions	National	Resources ² distributed within the EEZ of one country
		Shared between nations	Resources whose distribution overlaps and falls within the EEZs of two or more countries
		Highly migratory ³	Resources capable of migrating relatively long distances, which are likely to occur both within EEZs and high seas ⁴
		High seas purely ⁵	Resources that are not found in the EEZs ⁴
		Straddling between high seas and EEZ	Resources whose distributions overlaps the EEZ and adjacent areas beyond national jurisdiction ⁴

² Resources could be biological stocks and/or assessment units and/or management units

³ The list of highly migratory species is provided as Annex 1 of the United Nations Convention on the Law of the Sea (UN, 1982)

⁴ Adapted from Maguire et al., 2006

⁵ High seas = areas beyond national jurisdiction (ABNJ)

To be noted: the controlled terms are not mutually exclusive. In particular, the “Shared between nations” and “Straddling between high seas and EEZ” might be used in combination for those stocks whose distribution overlaps two or more EEZs as well as areas beyond national jurisdiction.

Actions by FSC10

FSC10 is kindly requested to:

- Approve/modify the Proposals 1, 2, 3 and 4
- Provide advice on Question 1 (establishing a standardized framework of reference points/threshold for the use of state and trend indicators)

References

FAO Term Portal. <http://www.fao.org/faoterm/en/>

FAO 1995, Guidelines for responsible management of fisheries. In Report of the Expert Consultation on Guidelines for Responsible Fisheries Management, Wellington, New Zealand, 23-27 January 1995. FAO Fisheries Report, 519

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