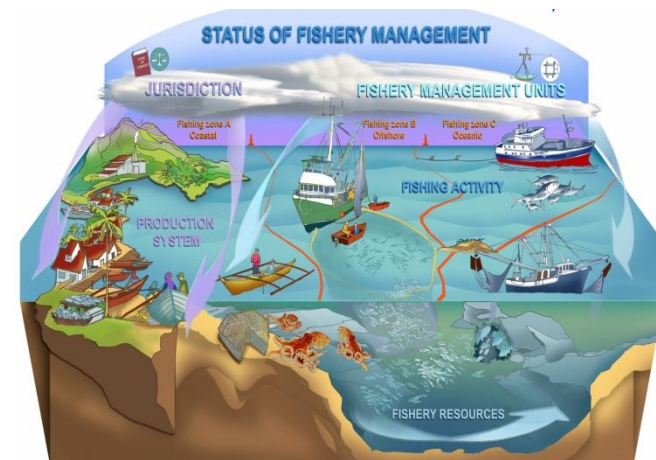


The Resources-to-Fisheries continuum - or seeking the right compromise between information management constraints, and an intuitive user interface

<http://firms.fao.org/firms>

1. A bit of history
2. New issues
3. Solutions - Options

Marc Taconet
FAO Fisheries and Aquaculture Department



Marine resources

Fisheries

FIRMS with founding partners

Fishing activity

Fishery resource

Shark fisheries - Thailand

Fishery Fact Sheet
 Status and trends of sharks fisheries in South-East Asia 2004
Thailand Shark Fisheries, 2004
Chi Lam

Overview: Main fishing gears landing shark and rays in Thailand are otter board trawler and pair trawler, according to sharks and rays fisheries statistics for year 1995-2005.

Location of Thailand Shark Fisheries **APPROACH: FISHERY RESOURCE**

Harvested Resource
 Fishery Area: Thailand
 Captured Species: Brownbanded bamboo shark, Grey bamboo shark, Slender bamboo shark ... more
 Fishery Indicators
 Catch

Geographic reference: Thailand
 Spatial Scale: National

Table of Contents
 Overview - Harvested Resource - Post Harvest - Management - Source of information - Bibliography

ICES – Haddock - Rockall

Marine Resource Fact Sheet
 ICES Advice 2009
Haddock - Rockall, 2008
Haddock In Division VIIb (Rockall)

Owned by International Council for the Exploration of the Sea (ICES)

Species: *Merlangius aeglefinus*

Fao Names: en - Haddock, f - Eglefin, es - Eglefino

Geographic extent of Haddock - Rockall

Main Descriptors
 Considered a single stock: Yes Spatial Scale: Sub-Regional
 Considered a management unit: Yes

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Main Descriptors
 Considered a single stock: Yes Spatial Scale: Regional

Stock

HarvRes
...
Management

HarvRes
EcosystAsst
Management
↳ AsstSummary

Fishery management unit

Exploitation
BiologAsst
Management

S&T
↳ StatusDescriptor

NEAFC – NorthEast Atlantic Rockall haddock fisheries

Fishery Fact Sheet
 Management report 2009
NorthEast Atlantic Rockall haddock fisheries, 2009
Demersal trawlers fishing for Rockall haddock

Owned by North-East Atlantic Fisheries Commission (NEAFC)

Overview: Rockall haddock is fished by demersal EU trawlers inside and outside EU Waters and by larger Russian trawlers in the NEAFC Regulatory Area. There is no management plan for the fishery.

Location of NorthEast Atlantic Rockall haddock fisheries **APPROACH: FISHERY MANAGEMENT UNIT**

Harvested Resource
 Target Species: Haddock
 Fishery Area: Atlantic, Northeast ... Atlantic
 Northeast ... Atlantic, Northeast ...

Geographic reference: NorthEast Atlantic
 Spatial Scale: Regional

Table of Contents
 Harvested Resource - Overview - Management - Source of information

First issue – co-existence of Marine resource and fisheries concepts question website usability

I am still confused about the difference between resources and fisheries in FIRMS.

Do I understand correctly that there is NO single point of entry where I can enter a species item name and get a list of all stock assessment documents, with respective URL, that contain that name? Because this is what we want.

I can not believe that there are 6,000 stock assessments available. Worm et al. came to about 350, if I remember right. ICES has about 54 with reference points.

I checked a number of stocks in FIRMS, and while I found some new reports (thanks), I also noted a number of missing reports, especially at the national level, but also of FIRMS members. See for example

<http://firms.fao.org/firms/resource/13375/en>

which says status 'Uncertain/not assessed' when instead there is a nice assessment report

http://www.ccamlr.org/pu/e/e_pubs/fr/07/appJ.pdf

Marine Resource Fact Sheet Search Print XML

Stock status report 2009
Patagonian Toothfish - South East Atlantic, 2009
Patagonian Toothfish Citation

Owned by South East Atlantic Fisheries Organisation (SEAFO) More

Related observations Locate in inventory

Species: *Dissostichus eleginoides*

Fao Names: en - Patagonian toothfish, fr - Lég negra

FISHERY REPORT: *DISSOSTICHUS ELEGINOIDES* SOUTH GEORGIA (SUBAREA 48.3)

1. Details of the fishery

1.1 Reported catch (time series)

At its 2004 meeting, WG-FSA recommended the subdivision of Subarea 48.3 into areas, one containing the South Georgia–Shag Rocks (SGSR) stock and other areas, to the north and west, that do not include the SGSR stock. Within the SGSR area, the Commission defined three management areas (A, B and C) (Conservation Measure 41-02/A).

Figure 1: Definition of the SGSR stock area, with its three management areas A, B and C.

First issue – co-existence of Marine resource and fisheries concepts question website usability

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http://www.ccamlr.org/pu/e/e_pubs/fr/07/appJ.pdf

Summary of issues

- 2 entry points for searching resources status reports
- Not able to distinguish easily actual Stock assessments from other resources assessments
- Had no clear idea about actual owner of report
- There are gaps in reporting

First issue – co-existence of Marine resource and fisheries concepts question website usability

Fishery Resources Monitoring System



Français [Site map](#) [Email us](#)

[Search](#) [Print](#)

Fishery Results List.

Results for: *owner* contains CCAMLR - *approach* contains management.
Found in all domains: Fishery: 7

Showing: 1-7

Dataset	Description	Relevance
Fishery	Southern Ocean Toothfish fishery - BANZARE Bank (Division 58.4.3b) : 2008	☆☆☆☆☆
Fishery	Southern Ocean Toothfish fishery - Eastern Ross Sea (Subarea 88.1) : 2008	☆☆☆☆☆
Fishery	Southern Ocean Toothfish fishery - Elan Bank (Division 58.4.3a) : 2008	☆☆☆☆☆
Fishery	Southern Ocean Toothfish fishery - High Latitude, Eastern Indian Ocean (Division 58.4.1) : 2008	☆☆☆☆☆
Fishery	Southern Ocean Toothfish fishery - High Latitude, Western Indian Ocean (Division 58.4.2) : 2008	☆☆☆☆☆
Fishery	Southern Ocean Toothfish fishery - Southeast Atlantic (Subarea 48.6) : 2008	☆☆☆☆☆
Fishery	Southern Ocean Toothfish fishery - Western Ross Sea (Subarea 88.2) : 2008	☆☆☆☆☆

Showing: 1-7

Home

- About FIRMS
- Concepts & Definitions
- Search Tools
 - Resource inventory
 - Marine Resource fact sheets
 - State & Trend Summaries
 - Browse Fisheries
 - Fishery fact sheets
- Information
- Contacts

Logon name

Password

Marine resources

Fisheries

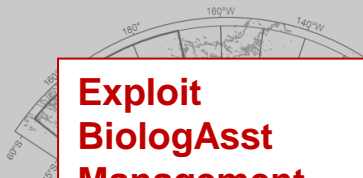
Gaps in reporting

Fishing activity

Fishery resource

CCAMLR Toothfish – Eastern Ross Sea

FISHERY REPORT: EXPLORATORY FISHERY FOR
DISSOSTICHUS SPP. IN SUBAREAS 88.1 AND 88.2



Exploit
BiologAsst
Management

...

S&T

↳ **StatusDescriptor**

Stock

CCAMLR Toothfish – Eastern Ross Sea

Fishery Fact Sheet

Resource report 2009

Southern Ocean Toothfish fishery - Eastern Ross Sea (Subarea 88.1), 2008

Fishery for Toothfish in Subarea 88.1

Owned by Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) more>>

Overview: The fishery is in an exploratory phase and is limited to CCAMLR Member countries who have provided advanced notification of their intentions to participate in the fishery. The main species caught is *D.* more>>

Location of Southern Ocean Toothfish fishery - Eastern Ross Sea (Subarea 88.1) APPROACH: FISHERY MANAGEMENT UNIT

↳ Jurisdictional framework



Map legend 4/1

Geographic reference: Southern
Spatial Scale: Regional

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...

Management

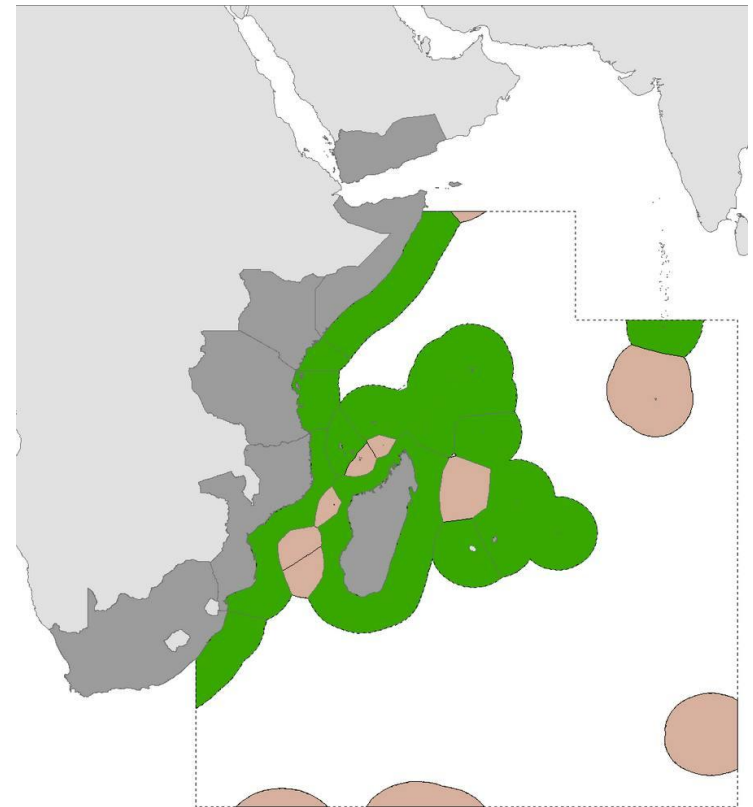
↳ **AsstSummary**

Fishery management unit

Second issue – inventories in data poor areas call for a continuum

In data poor areas, the developing scientific assessment process clearly reflects a gradient of knowledge, ranging from expert judgment based on fisheries information, to actual biological assessments

Development of SWIOFC inventory



Fishery inventories validation status

Validated
No Data

Second issue – SWIOFC

<i>Species/Complexes/ Groups</i>	Stock	Trans- boundary/ Straddling/ EEZ	Current catch (t) 2009	% change from preceding year	Measure of Abundance	Stock status	<u>Unfished</u> Biomass MSY (t)	Annual Management plan	Management Measure(s)
<u>Emperors</u> (<u><i>Lethrinus mahsena</i></u>)	<u>Saya de Malha and Nazareth Banks</u>	Straddling and within EEZ	2248	22 % ↑	CPUE Relative abundance	R	B = 40 000 MSY= 4 200		Limited entry Quota system based on TAC
<u>Lethrinids, Siganids, Scarids, Mulletts, Others</u>	<u>Mauritius Lagoon and outer-lagoon</u>	Within EEZ	820	20% ↑	CPUE	R	MSY = 1750	✖	Close season Close areas Gear restriction
<u>Coastal Tunas and related Species</u>	<u>Mauritius waters (coastal FAD's)</u>	Within EEZ	390	82 % ↑	CPUE	M		✖	
<u>Prawns</u>	<u>Kenia shallow waters (artisanal)</u>	Within EEZ	153	63 ↓		?			
<u>Boat based hand-line fishery targeting multi-species finfish resources</u>	<u>South African coastal waters (to 100m)</u>	Within EEZ	1757	2 ↑	Variable	O-D		TAE limits	

Marine resources

Fisheries

SWIOFC inventory

Lethrinids, Siganids, Scarids,
Mulletts, Others - Mauritius
lagoon waters

Emperor - Saya de
Malha and Nazareth
Banks

Stock

Fishing
activity

Boat based hand-line fishery
targeting multi-species
finfish resources

Fishery
resource

Prawns – Kenia Shallow
waters (artisanal)

Coastal Tunas and related
Species - Mauritius waters

The Committee ... requested that information to be added in the FIRMS inventory **should express levels of uncertainty associated with the assessments**, together with the methods used (including e.g. “based on expert judgement”)

Fishery
management
unit

Increasing knowledge / awareness /
management action

Facts

- 2 fundamental concepts distinguished in FIRMS
 - Marine resources: biological view
 - Fisheries: human view
- Distinct data structure elaborated between 2 modules
- Partners contributions are “a priori” classified against one concept, however
 - Clear-cut turns out to be not so obvious

Issues – inadequate System design ?

- FIRMS is designed according to “discrete” concepts while reality is a continuum
- Current data model doesn’t cater for this continuum
 - No biological State descriptor allowed in Fisheries module
 - Information on Fishery Management unit cannot substitute Stocks information (currently OK for NEAFC / ICES , not for CCAMLR)
 - Status of a number of Marine resources is not known from biological assessment, but only through fishery indicator trends, or more simply expert Judgment – in relation with Quality assurance
- Current user interface doesn’t cater for this continuum
 - Users are confused
 - Information sounds incomplete

NEEDS

- USERS view point:
 - access comprehensive knowledge
 - distinguish quality levels on assessments
 - extract consistent summaries
- SYSTEM ARCHITECTURE view point
 - adapt the data model
 - keep it sound – but flexible

Solutions – option 1

- Physical merging of Marine resource and fishery concepts - one single data model

Pros:

- in principle, a conceptual simplification
- In certain situations (CCAMLR) no need for enforcing what might be perceived as “duplicating” fact sheets

Cons:

- Is it feasible? Would require a complex system refactoring (costly)
- Prone to confusing use by contributors of the underlying data model
 - Removing the physical split between human and biological concepts might end-up with meaningless disseminated information
 - Fishery data model extends also to Jurisdiction and Production systems

Solutions – option 2

- maintain two concepts with better data structure alignments, and
- enable virtual merging at interface level

Solutions – option 2 – Data model

- maintain two concepts with better data structure alignments, and
- enable virtual merging at interface level

Accept some flexibility

- A Marine resource can be described as Fishery resource, and
- A Fishery resource can be understood as Marine resource

Enforce some distinctive rules

- Bio-assessment, and State descriptors, remain exclusive attribute of Marine resource / stock

Align better the two concepts where status/trends of (M)(F)resource

- essentially derived from simple fishery indicators
- expressed as “empirical assessment”

Develop **Trends** indicators, more suitable to fishery based “empirical” assessments

Marine resources

Fisheries

Align better the two concepts

Fishing activity

Fishery resource

HarvRes
...
Management

Exploit
BiologAsst
Management

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↳ StatusDescriptor

Stock

FisheryBasedEmpiricalAsst

Fishery management unit

HarvRes
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↳ AsstSummary

Increasing knowledge / awareness / management action

Marine resources

Fisheries

Align better the two concepts

Fishing activity

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Exploit
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BiologAsst Management
...
S&T
↳ StatusDescriptor

HarvRes
↳ FisheryBasedEmpiricalAsst
EcosystAsst Management
↳ AsstSummary

Fishery management unit

Increasing knowledge / awareness / management action

Solutions – option 2 – user interface

- maintain two concepts with better data structure alignments, and
- enable virtual merging at interface level

Fact sheets search interface

- Single extraction for Marine resource, Fishery resources, Fishery management units
- Layout enables distinction of various concepts

Status trends summaries search interface

- Extract also all above concepts allowing distinctions for various quality levels
- Distinction is driven by combination of:
 - Bio-assessment model x stock status descriptors
 - Fishery based Empirical assessment x Trends

Solutions – option 2 – Pros and Cons

- maintain two concepts with better data structure alignments, and
- enable virtual merging at interface level

Pros

- Response to highlighted issues
- Feasible

Cons

- ?? Enforce the use of Stock fact sheets in situation where actual stock assessments are produced

Requirements

- Work on suitable data model for fishery based empirical methods
- Implement the model (before massive loads of fact sheets)
- Adapt the user interface

Hope it was not too complex

Anyway

Thanks for your attention

And Now, for discussion !