



STRATEGY FOR IMPROVING INFORMATION
ON STATUS AND TRENDS OF CAPTURE
FISHERIES



Fisheries Inventory: Method and Guidelines

Management Summary		
Authors	Marc Taconet, Alexis Bensch, Elena Balestri, Aureliano Gentile, Joel Prado	
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16 May 2007	E. Balestri M. Taconet	Revision of the inventory structure as evolving from the design of the internet based fisheries module and the need to systematically map data fields between Excel template and Fisheries schema. <small>This revision is stored in FisheriesInventoryGuidelines 04-07.doc</small>
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INTRODUCTION

This document describes the rationale, method and the template used to inventory marine fisheries in a specific area of the world. The delicate aspect of an inventory of fishery is to acquire and fix a good understanding of the scope, level of granularity and meaning of the fishery units to identify, and thereof to organize and structure the information in a consistent way. The present guidelines intend to provide the required background.

This inventory is connected (however not subordinated) to the developments taking place as part of the Fishery Resources Monitoring System¹ (FIRMS) initiative. In FIRMS, fisheries are inventoried for reporting purpose, and the inventories constitute the backbone of the FIRMS system. Each partner enumerates the list of Resources and Fisheries under its monitoring and/or management mandate, and the system organizes the reporting on status and trends according to these lists.

The inventory is implemented using an Excel format for initial data input where each row of the excel file describes an inventoried Fishery unit (see annex 2a). This fishery information is afterwards loaded using the FIGIS system and disseminated as a web fact sheet format (see annex 2b, 2c). The columns of the inventory provide the various FIRMS standard descriptors for each Fishery unit (e.g. fishery title, area names, area codes, species scientific name, various controlled terms for categorizing the fishery, ...), and a number of attributes such as catches, number of vessels, management overview, bibliographic reference, etc... Descriptors and attributes found as columns of the Excel file are a subset of the Metadata elements which FIRMS is developing as standards for the description of each reporting field. These standard terms are found in the FIRMS data dictionary which enables to structure the information in fact sheets.

This document is intended to be a practical instrument to fill in or validate the inventory table (the excel file).

- Chapter I explains the rationale underlying inventory of Fisheries.
- Chapter II aims to clarify the concept of Fishery and other related key criteria driving the identification of fishery units in an inventory, in order to allow the reader to draw meaningful list of fisheries and structure them in a consistent way. This section assists in understanding the nature of the rows of the Excel file.
- Chapter III describes the Excel template by providing working definitions for each field/attribute of the inventory. This section assists in understanding the columns of the Excel file.

I RATIONAL

Fisheries should be managed and the first step to sound management is to ensure that all fisheries are enumerated, identified and categorised. The present inventory

¹ see FIRMS at <http://firms.fao.org/firms>

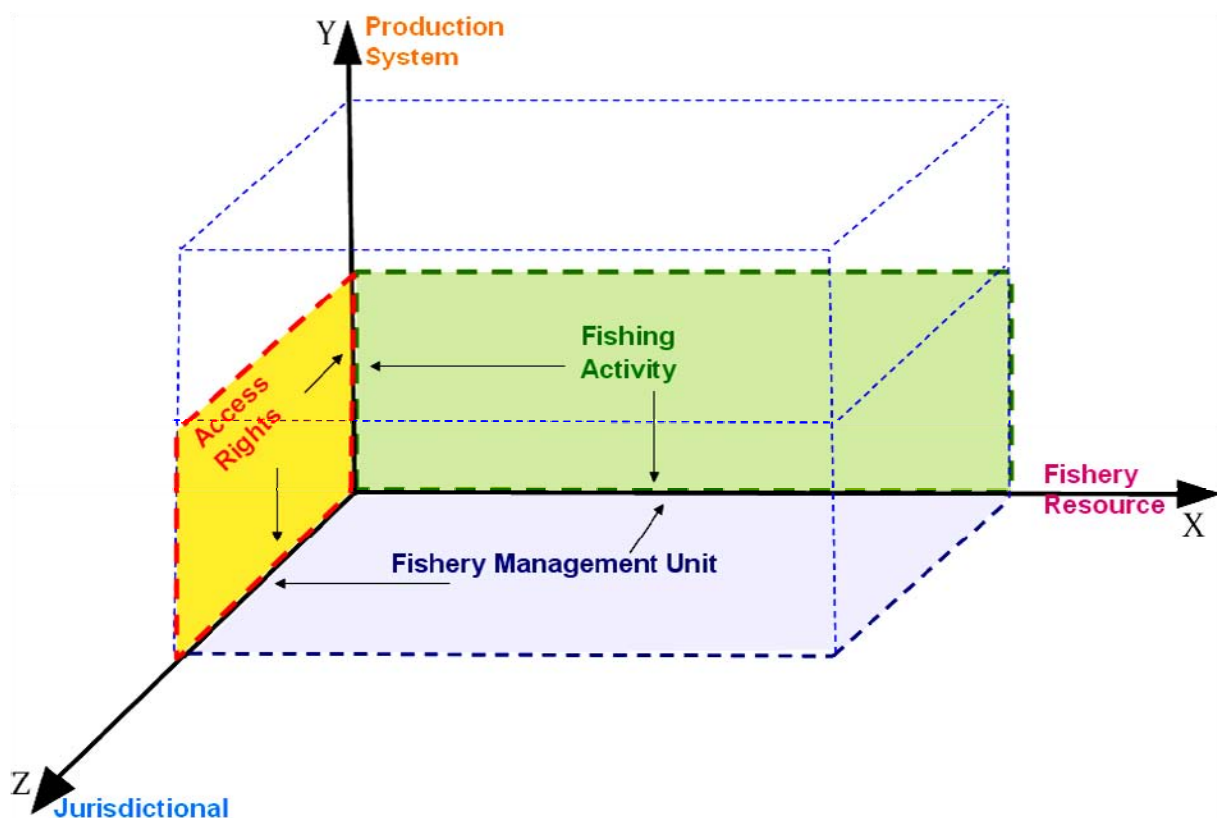
fulfils this primary goal. Subsequent steps to sound fisheries management are to ensure that fisheries status and trends are monitored through relevant indicators. This inventory also supports this role considering that fisheries enumerated here constitute a reporting backbone.

II CONCEPTS AND DEFINITIONS

Depending on the situations and needs, fisheries are identified through various methods including surveys with professionals, statistical analyses, literature, management practices, etc. An inventory of fisheries would consist of drawing a list of fishery units from those gathered through those various methods.

However, the concept of fishery encompasses an inherent complexity also referred as “multifaceted”, owed to the various perspectives/perceptions people have on fisheries. The 3 dimensional diagram represented in Figure 1 helps to visualise these various perspectives/perceptions: three fundamental approaches, represented on the main axes of the diagram, are proposed as the Fishery resource (biological view), the Jurisdictional approach (legal view), and the Production system approach (socio-economic view); other perspectives at the cross-road of these main ones are represented on the plans of the diagram: a Management unit approach, a Fishing activity (métier) approach, an Access rights approach. FIRMS Partners believe that most existing definitions of fisheries can be mapped to this standard framework, without pre-empting the possibility to extend the standard framework if required.

Figure 1: Conceptual model of the multifaceted approach to fisheries



II.1 Definitions:

Fishery inventory: “A **Fishery Inventory** is a comprehensive list of fishery units identified at an agreed scale and within a defined scope, including consideration of Geographic reference, thematic approach, and purpose”. Geographic reference, thematic approach, and purpose are the main criteria driving the identification of fishery units in an inventory.

Fishery: “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 geographic reference enables for example to discriminate highly aggregated world fisheries reported by FAO at global level, from North West Atlantic fisheries reported by NAFO (a Regional Fishery Body) at regional level.

Examples of geographic references are *Western Central Pacific Ocean* (an SPC regional geographic reference), *Senegal* (a national geographic reference), or *Florida* (a USA sub-national geographic reference).

The geographic reference is a key factor of the level of granularity for identification of a fishery.

Purpose: “The **purpose** puts emphasis on the end-usage of the inventory (FIRMS 2008)”.

The purpose might be to organise information for input to an analytical process (for example stock assessment, which would e.g. distinguish fleet segments having different fishing mortality), to a management process, for reporting on Status and Trends, or simply for grouping items within an organized list. Purpose is a key factor in the final validation step.

Thematic Approach: “The **thematic approach** highlights the disciplinary viewpoint prevailing in the identification of fishery units (FIRMS 2008)”.

Species or harvested resources, sea beds, 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, six thematic approaches have been recognized: Fishery resource, Jurisdictional, Production system, Fishery Management unit, Fishing activity, and Access rights. The thematic approach plays a key role in the definition of a fishery, and accordingly in setting the key descriptors required for its identification. The next section develops definitions for each of the main thematic approaches.

Definitions for Main thematic approaches

The Thematic approaches presented in this paragraph are meant to represent the main classes of fisheries, and the definitions provided should assist users of these guidelines to map their “local Fisheries” to one or more of the thematic approach(es).

This mapping will help to structure a global report of fisheries allowing the comparison among similar fishery units (i.e. fisheries pertaining to same classes).

With reference to the diagram represented in figure 1, three fundamental thematic approaches are represented on the main axes:

X axis	<p>a Fishery Resource approach refers to elements of natural aquatic resources (biotic element) which can be legally caught by fishing; <u>example:</u> "Deep-sea shrimp fishery", where reference is made to the resources of shrimps in deep-sea waters off Angola <u>example:</u> "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 Tobago waters</p> <p>Note: the fishery resource approach would correspond to the Marine resource concept already released as part of FIRMS;</p>
Y axis	<p>a Jurisdictional approach emphasises geopolitical and institutional boundaries which provide legitimacy for development of Management systems; as such, it describes the set of governing rules agreed within a recognized legal framework for the management of a fishery or group of fisheries; <u>example:</u> "Commonwealth fisheries" (Australia), where reference is made to Australian fisheries operated within Australian Commonwealth waters and managed at federal level (as opposed to those occurring within state territorial waters and managed at state level) <u>example:</u> "Alaska fisheries", where reference is made to the USA Alaskan fisheries operated within the NPFMC management system. <u>example:</u> "Municipal fishery - Philippines", where reference is made to the Philippines fisheries occurring within a jurisdiction area of 15 km coastal waters strip, and managed by local municipal and city government under municipal management systems.</p>
Z axis	<p>a Production System approach identifies homogeneous segments of means of production (eg vessel type, fleet segments, or fishers communities) including through consideration of their enterprise or livelihood strategies, and focuses on the description of their socio-economic aspects; <u>example:</u> "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 <u>example:</u> "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</p>

In addition of the fundamental approaches represented along the axes, other main approaches can be derived by combining these fundamental ones on the plans of the cube.

X-Y plan	<p>a Fishery Management Unit approach highlights those harvested fishery resources under management considerations; a Fishery Management unit evolves from a Resource focus, while taking into account the jurisdiction within which this Resource is managed; this concept is closely related to the formal settlement of a Fishery Management Plan. <u>example:</u> "Northeast Atlantic Deep-sea species fisheries" where reference is made to the harvested deep-sea species under NEAFC management responsibilities</p>
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X-Z plan	<p>a Fishing activity² approach stresses the fishing activity component and identifies classes of fishing activity implemented by a fishing fleet or fishermen community; this approach is positioned at the crossroad of the production system approach and the Resource;</p> <p>example: " offshore flatfish trammel netting", where reference is made to the fishing practice making use of trammel net for catching flatfish in offshore waters of French continental shelf</p>
Y-Z plan	<p>an Access rights approach identifies Means of production authorized to operate within a jurisdiction;</p> <p>example: " European industrial fisheries", where reference is made to the european fishing fleet authorized to operate in Senegalese waters under Senegal-EU fisheries agreement.</p>

II.2 Stepping into the inventory

What follows dissects concepts which could be more or less intuitive for the production of a fisheries inventory.

A first step into the inventory would be to identify the purpose of the end-usage of the inventory itself which firstly helps the selection and the choice of the concerning information. Whatever the purpose, a main issue to be kept in mind is that data must be organized in a way which ensures the consistency and the possibility of updates on a periodical basis; this issue leads to the choice of the most appropriate reporting level. Once sources of fisheries information have been collected, the typology of data at hands will orientate the choice of the thematic approach which will prevail (i.e. will "dominate") in structuring the inventory and enumerating the fishery units in a structured list.

Hierarchical organization:

Once the prevailing thematic approach to an inventory has been identified, the fisheries list would first enumerate items flatly. An analysis of this (often long) flat list leads to consider a hierarchical structure and a possible breakdown of fishery units into sub-levels. The criteria for such hierarchical organization can range from *enhanced readability* (by creating higher levels (or groups) to better organize the inventory), to a *necessary discrimination among various types of fisheries* (by highlighting distinct thematic approaches at each stage of the breakdown process).

See Figure 2 as the summary of the fishery inventory workflow and Table 1 for an example.

² The concept of Métier: "A métier is usually defined by the use of a given fishing gear in a given area, in order to target a single species or group of species, e.g. inshore shrimp trawling, offshore flatfish trammel netting ... (Mesnil and Shepherd, 1990; Laurec et al., 1991).

Figure 2: Fishery inventory workflow

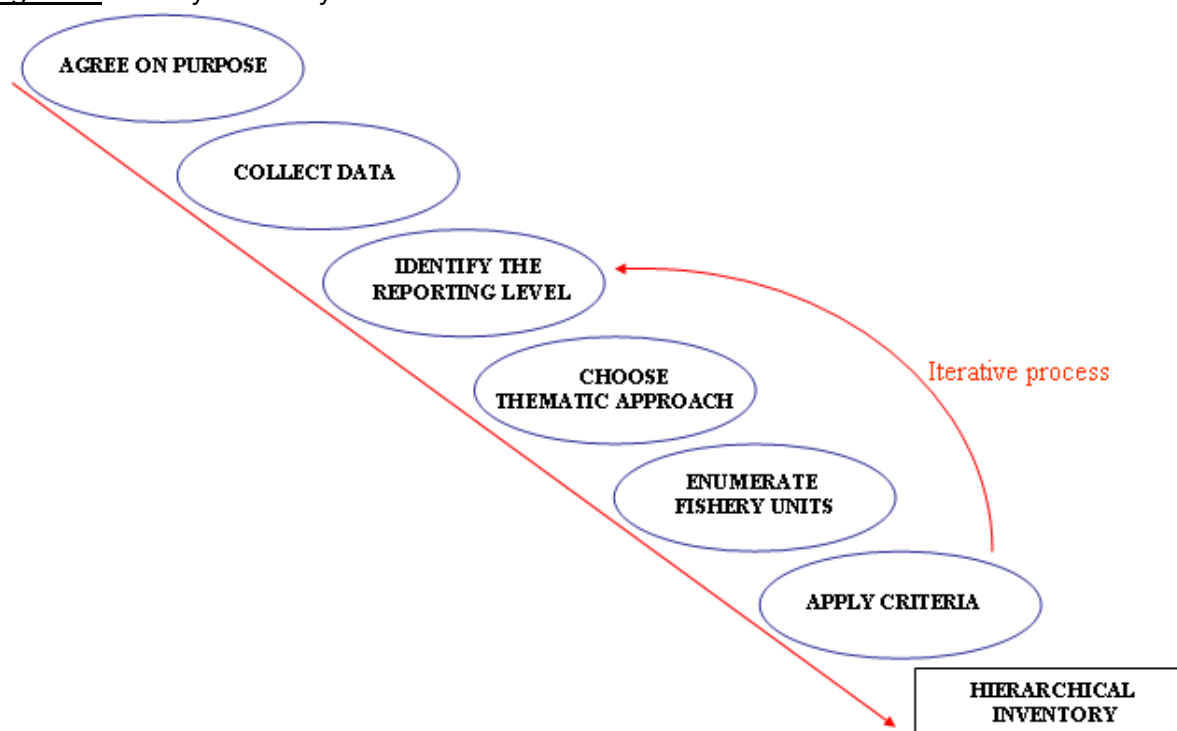


Table 1: example of a hierarchical inventory

Thematic Approach	Enumeration of Fishery Units in a flat list	Criteria applied	Hierarchical Inventory
	All fisheries Northwest Africa		All fisheries – Northwest Africa
	All fisheries - Morocco	Geographical scale	All fisheries - Morocco
Fishery Resource	Demersal resources fishery - Morocco Atlantic coast	Vertical distribution	Demersal resources fishery - Morocco Atlantic coast
Fishery Resource	Demersal fish fishery - Morocco Atlantic coast	Taxonomic	Demersal fish fishery - Morocco Atlantic coast
Fishing Activity	Artisanal gillnet fishery - Morocco Atlantic coast	Métier	Artisanal gillnet fishery - Morocco Atlantic coast
Fishing Activity	Artisanal hooks and lines fishery - Morocco Atlantic coast	Métier	Artisanal hooks and lines fishery - Morocco Atlantic coast
Fishery Resource	Pelagic resources fishery - Morocco Atlantic coast	Vertical distribution	Pelagic resources fishery - Morocco Atlantic coast
	All fisheries - Mauritania	Geographical scale	All fisheries - Mauritania
Fishery Resource	Demersal fishery - Mauritania	Vertical distribution	Demersal fishery - Mauritania
Fishery Resource	Demersal fish fishery - Mauritania	Taxonomic	Demersal fish fishery - Mauritania
Fishing Activity	Bottom Trawler fishery - Mauritania	Métier	Bottom Trawler fishery - Mauritania
Fishing Activity	Artisanal pot and hooks and lines demersal fish fishery - Mauritania	Métier	Artisanal pot and hooks and lines demersal fish fishery - Mauritania

Yellow shades: higher levels (or groups) added to better organize the inventory for an enhanced readability.
 Grey text: fishery units produced by a cyclic identification of approaches driven by the application of criteria.

In conclusion: *“the inventory is generally presented as a list organizing fishery units in 2 or 3 hierarchical levels, presented with indentations”*

Additional guidance for the inclusion of fisheries in the inventory:

- Distant or migratory fisheries should be included in the inventory, either from the point of view of the country of origin (the Flag State) and/or from the point of view of the coastal state where the fishing operations take place (with/without fishing agreements).
- IUU fisheries (Illegal, Unregulated, Unreported) should in principle be included so long this can be supported with some verifiable information

Relationships among fisheries

Relationships among fisheries can be established within the same branch of the inventory (1) or among different branches (2).

1) The hierarchical organization developed in the previous paragraph implies “parental” or “sibling” relationships among fisheries:

- Using the metaphor of a tree, a “parental” relationship occurs between a parent fishery (the trunk) and the children fisheries (the branches); children fisheries correspond to the notion of sub-component, e.g. sub-fleet segment, or sub-geographical scale; the fishery units linked by a parental relationship can have the same approach or not (see loop in the workflow);
- A “sibling” relationship occurs within fishery units of the same hierarchical level and usually identified according to the same thematic approach.

2) The concept of “Related fisheries” enables to link fisheries together beyond the hierarchical relationships defined above..

Two or more fisheries are related if can be attributable to the following categories:

- Fisheries switching activity seasonally
- Fisheries switching gear during the fishery lifecycle
- Fishing activities targeting the same stock or operating in the same fishing ground
- The same fishing activity (usually distant fleet activities) described by different reporting countries
- Fishing activities managed under the same management unit or being ruled by the same fishing agreement

The web of relationships gathered through various inventories authored by different teams working at different scales and following different thematic approaches, provides a great perspective of interactive navigation between logically related fisheries added in the system.

For example the “Fiji Deep water snapper fishery” (Fishery Resource approach) inventoried by biologists will be related to the “Fiji Inshore fleet” and “Fiji Offshore fleet” fisheries identified by socio-economists through a “Production System” approach.

III FISHERY DESCRIPTION INSTRUCTIONS (EXCEL TEMPLATE)

In order to facilitate the integration of the inventory in the FIRMS system, each fishery identified in the inventory is described as one row in an Excel table following the instructions provided for each attribute in table 2 below. Annex 2 visually illustrate how a Fishery unit thus described through one row under Excel format (annex 2a) is then transposed for web dissemination as a FIRMS fact sheet format (annex 2b).

For some of the attributes, a standard terminology is used. Lists of Standard terms are available in the file **FR_ReferenceTerms.xls**. If no term matches, new terms or a combination of standard ones can be proposed.

If the inventory of Marine resources in the same region is available, the user of these guidelines should ensure good cross-referencing between column **Target marine resources** of the Fisheries inventory and column **Exploiting Fisheries** of the Marine Resources inventory.

Table 2: Guidelines for the compilation of a Fishery inventory record

The following table provides instructions to describe fisheries inventoried using the template **FR_Templates.xls (Excel file, each row identifying one fishery)** and the full list of standard descriptors **FR_ReferenceTerms.xls**. Some cells filled in with **light grey shade** are for internal use.

ATTRIBUTE		DESCRIPTION
FISHERY REFERENCE	FIRMS ID	For internal use. Unique numeric code which identifies the fishery in the database.
	Inventory identifier	A unique alphanumeric code must be assigned to any fishery inserted in the inventory. Use an alphanumeric code: 3alpha + a minimum of 2 digit numbers. The 3 alpha may be the country code (Use the country 3-alpha code - see FR_ReferenceTerms.xls) or any appropriate code (Gear, Species, Regional Fishery Body, etc).
	Parent Fishery	Inventory identifier of the parent fishery, for fisheries subject to hierarchical relationships in the inventory. Using the metaphor of a tree, a "parent" fishery can be assimilated to the trunk and the children fisheries to the branches; children fisheries correspond to the notion of sub-component, e.g. sub-fleet segment, or sub-geographical scale; the fishery units linked by a parental relationship can have the same approach or not (see loop in the workflow). See examples of hierarchical inventory in Table 1.
	Related Fisheries	For Fishing activities
For Management		Inventory identifiers of those other fisheries related to the one described within a management framework. Definitions and examples of related fisheries are available in the above paragraph <u>Relationships among fisheries</u> . If more than one, use comma as separator.

ATTRIBUTE		DESCRIPTION	
FISHERY TITLE	Local title	Title	Name usually given to the fishery in the area. Multiple titles in different languages can be submitted in order to facilitate the fishery identification, If multiple local titles are provided, use comma as separators.
		Language	Language in which the local title is expressed - see language codification (ISO 639) in FR_ReferenceTerms.xls. If multiple local titles are provided, the corresponding language codes will be provided as comma separated list (i.e. EN, FR, AR). More examples and details are available in Annex 1.
	English Title		Name of the fishery in English.
	FIRMS standard title		For internal use. Name of the fishery has to be established in English following FIRMS naming conventions. Fishery titles should be indented to highlight the hierarchical relationships between the fisheries inventoried.
PERSPECTIVE	Geographic Reference		For internal use. <i>The geographic frame[work] from which fisheries are considered for inclusion in the inventory.</i> It is composed of a Land Area, or Water area. The Area should be a name.
	Reporting Spatial Scale		For internal use. Geographic scale associated with the Geographic reference. See standard terms in Area of distribution sheet.
	Thematic approach		<i>The thematic approach highlights the disciplinary viewpoint prevailing in the identification of the fishery unit.</i> Use the standard term for the approach: Fishery Resource, Jurisdictional, Production System, Fishery Management Unit, Fishing Activity, Access Rights (see point II.1 of the Guidelines).
FISHERY AREA	Fishery area name		Name of the area where the fishery takes place, independently from the names indicated in the geo-references sections. Generally is the one which will appear in the FIRMS Fishery Title. In case the concerned area is based on legal boundaries (e.g. RFB competence area, or EEZ, or zonation described in regulations), please note that it must be also submitted in the Management section/Fishing Activity Related Measures.
	Primary Georeferences	Georeferencing System Name	Primary geographic classification system chosen for describing the area(s) in which the resource is identified - see Area of Distribution sheet. Systems other than those listed in the Area of Distribution sheet can be used provided relevant information is supplied (system name, codes, limits of the areas, shape files, maps, etc.).
		Area Codes in this system	Specify the code of the area in this codification system. If more than one, use comma as separator.

ATTRIBUTE			DESCRIPTION
	Other Georeferencing System	Georeferencing System Name	Other geographic classification system chosen for describing the area(s) in which the resource is identified - see Area of Distribution sheet. Systems other than those listed in the Area of Distribution sheet can be used provided relevant information is supplied (system name, codes, limits of the areas, shape files, maps, etc.).
		Area Codes in this system	Specify the code of the area in this codification system. If more than one, use comma as separator.
CHARACTERISTICS OF THE FISHING GROUND	Geoform		Type of sea floor physiography in which the fishery is conducted. Use a standard term (see list in Fishing Ground – Marine Habitat sheet). If more than one use comma as separator.
	Depth zone		Bathymetric depth range in which a fishery is conducted. Use a standard term (see list in Fishing Ground – Marine Habitat sheet). If more than one, use comma as separator.
	Horizontal distribution		Inshore to offshore range in which the fishery is conducted (e.g. littoral, neritic, oceanic ...). Use a standard term (see list in Fishing Ground – Marine Habitat sheet). If more than one, use comma as separator.
	Vertical distribution		Type of sea bottom related habitat characterizing the fishery's fishing ground. Use a standard term (see list in Fishing Ground – Marine Habitat sheet). If more than one, use comma as separator.
	Bottom type		Type of bottom substratum characterizing the fishery's fishing ground. Use a standard term (see list in Fishing Ground – Marine Habitat sheet). If more than one, use comma as separator.
	Climatic zone		Type of climate prevailing in the area where the fishery is conducted. (see list in Fishing Ground – Marine Habitat sheet).
	Fishing ground description		Free text to describe all the biotic and abiotic characteristics of the fishing ground.
HARVESTED RESOURCES	Exploited marine resources	Inventory ID	Marine resource(s) exploited by the fishery. Enter the marine resources inventory identifier if the Marine Resources inventory is available. If more than one marine resource is exploited, use comma as separator.
		Extended name or description	Name of the marine resource exploited in case the Marine Resources inventory is not available, or in case the considered Marine resource is not part of the inventory, and any additional description/information.

ATTRIBUTE		DESCRIPTION		
	Captured species	Name	Name (s) of the captured species ³ . The list of items should be structured with the following layout: <Scientific name> (<English common name (When available use ASFIS name (See FR_ReferenceTerms.xls)>). Or, if the local name is available: <Scientific name> (<English common name (When available use ASFIS name (See Species Sheet))> / <local common name>) Remarks: - for scientific name, put the lowest known taxonomic level (species, genus, family, order) - If there are more than one species, use comma as separator. Example: <i>Parapenaeus longirostris</i> (Deep-water rose shrimp / Crevette rose du large), <i>Xiphopenaeus kroyeri</i> (Atlantic seabob/Camarón blanco)	
		Description	Additional description on Species or group of species with particular emphasis on biological/physiological status or relevant information: Take care of connecting comments with sub-set of species: Migrating (tunas), Adults(swordfish).	
	Target species	Name	Name (s) of the target species ⁴ . The list of items should be structured with the following layout: <Scientific name> (<English common name (When available use ASFIS name - See FR_ReferenceTerms.xls)>). Or, if the local name is available: <Scientific name> (<English common name >/ <local common name>) Remarks: - for scientific name, put the lowest known taxonomic level (species, genus, family, order) - If there are more than one species, use comma as separator. Example: <i>Parapenaeus longirostris</i> (Deep-water rose shrimp / Crevette rose du large), <i>Xiphopenaeus kroyeri</i> (Atlantic seabob/Camarón blanco)	
		Description	Additional description on Species or group of species with particular emphasis on biological/physiological status or relevant information: Take care of connecting comments with sub-set of species: Migrating (tunas), Adults (swordfish).	
	By-catch ⁵	Associated species ⁶	Name	Use common names if possible together with scientific names, when available use ASFIS classification (See FR_ReferenceTerms.xls). Please adopt same formatting rules as above (Target species).
			Description	Additional description on Species or group of species with particular emphasis on biological/physiological status or relevant information: take care of connecting comments with sub-set of species: Migrating (tunas), Adults (swordfish).

³ Captured Species: Those species considered part of the catch, according to the criteria used in the concerned fishery. These criteria would usually refer to the on board retained catch, including possible protected species.

⁴ Target Species: Those species that are primarily sought by the fishermen in a particular fishery. The subject of directed fishing effort in a fishery. There may be primary as well as secondary target species.

⁵ By-catch: Part of a catch of a fishing unit taken incidentally in addition to the target species towards which fishing effort is directed. Some or all of it may be returned to the sea as discards, usually dead or dying.

⁶ Associated Species: Commercial species caught with the main target ones.

ATTRIBUTE			DESCRIPTION
	Discarded species ⁷	Name	Use scientific names if known, otherwise common names ¹ . If more than one use comma as separator. ¹ When available, use ASFIS name (See FR_ReferenceTerms.xls)
		Description	Additional description on Species or group of species with particular emphasis on biological/physiological status or relevant information: Take care of connecting comments with sub-set of species: Migrating (tunas), Adults(swordfish).
	Protected species ⁸	Name	Use scientific names if known, otherwise common names ¹ . If more than one use comma as separator . ¹ When available, use ASFIS name (See FR_ReferenceTerms.xls)
		Description	If available, information about assessment of these species can be listed here.
MEANS OF PRODUCTION	Type of production system		Standard terms (see list <i>Production system type</i> in FR_ReferenceTerms.xls). The combination of standard terms is allowed. In case of type built on combined terms (example: commercial-small scale) put them together without using a comma. Instead use comma as separator in case of list of multiple values. (example: Artisanal Small Scale, Commercial Small Scale, Semi-industrial).
	Fishing Vessel	Vessel type	Types of fishing vessel(s) used in this fishery, with reference to the ISSCFV classification (see list of <i>Vessel types</i> in FR_ReferenceTerms.xls). If more than one code use comma as separator.
		Description	Free text to describe all the characteristics of the vessel: material, size (Length, Tonnage), power, capacity and all other information available.
		On-board processing facilities	Description of on-board facilities (freezer, etc).
		Average range of crew size	Number, or average range of persons, which composes the crew.
		Flag State	Nationality of vessels. Use country 3-alpha code (see FR_ReferenceTerms.xls). If more than one code, use comma as separator.

⁷ Discarded Species: Those species, including for specific life stages, released or returned to the sea, dead or alive, whether or not such organisms are brought fully on board a fishing vessel.

⁸ Protected Species: Species (marine mammals, seabirds etc.) caught accidentally with the main target ones.

ATTRIBUTE		DESCRIPTION	
	FLEET SIZE	Vessel or Fishing Unit	Indicate if the quantity represents Vessels "V" or Fishing Units "FU". The year or timeframe corresponding to this value will be in parenthesis. If the year is omitted, the <i>Reference year</i> will be considered. Example: V(1999-2004), V(2007), V(2010).
		Quantity	<i>Number of vessels or fishing units</i> according to what has been chosen in the previous cell; If more than one class (i.e. Vessel and Fishing Unit) has been entered, submit quantity values reflecting the above order. Example: 300, 30-35, ~50. More examples and details are available in Annex 1.
		Quantitative value	For internal use
	Involved community or group	Community practicing the fishery (name of ethnic group, nationality, etc.). If available, insert the number of persons involved and the year corresponding to this value between parentheses. If the year is omitted, the <i>Reference year</i> prevailing for the entire fishery record will be considered.	
Estimated number of fishermen	Number of fishermen and their nationalities in parenthesis, plus the year or timeframe corresponding to this value in parenthesis. Example: 50(JPN, KOR)(2001-2003). If the year is omitted, the <i>Reference year</i> prevailing for the entire fishery record will be considered.		
MEANS OF PRODUCTION / EXPLOITATION	OTHER LOCAL CLASSIFICATION (Fleet segment, Métier, Operational Unit, ...)	Type	Type of local classification used for segmenting the fleet or its activity (e.g. Fleet segment, Métier, Operational Unit ...).
		System name	Name of the local classification system used for segmenting the fleet or its activity. Please give the system name and within parenthesis the related acronym (if any). Detailed information on the submitted classification systems should be provided as side documentation.
		Code	Specify the code(s) of the concerned fleet/activity segment according the local codification system. If more than one use comma as separator.
		Description	Free text to describe all the characteristics of the fleet/activity segment.
EXPLOITATION	FISHING GEAR	Gear Type	Type of fishing gear(s) used in this fishery, with reference to the ISSCFG classification (see list of <i>Gear types</i> in FR_ReferenceTerms.xls). If more than one code use comma as separator.
		Description	Free text for characteristics of the fishing gear (local name, length, mesh size, number of hooks, etc.).

ATTRIBUTE		DESCRIPTION	
	Fishing season	Seasons or months of the year during which this fishery operates. Examples: "Spring and autumn"; "All year"; "May to September"; "January and June".	
	Environmental limitations	Environmental factors that interfere, periodically or occasionally, with the activity of the fishery. Examples: spawning aggregation, fish migration, monsoon, el niño, etc.	
	Port (s) / Landing site (s)	Indication of the port or landing site from which the fleet operates. If more than one code, use comma as separator.	
	Trip duration	Average duration of fishing trip specifying in which unit it is expressed (hour, day, week, and month).	
	Catches	Catches or Landings	Annual catches or landings. Indicate if the quantity represents catch "C" or Landing "L ". Indicate also in parenthesis the year or time frame corresponding to this quantity. Examples: C(2000), L(1999-2001), C(2003). If the year is omitted, the <i>Reference year</i> prevailing for the entire fishery record will be considered.
		Quantity	Quantity in tonnes of Catch or Landings according to what has been chosen in the previous cell; if other units are used please specify. If more than one class (i.e. Catches and Landings) has been entered, submit quantity values reflecting the above order. An average annual quantity should be provided if time frame covers more than one year. As first priority, the Total (all species included) should be provided, and where relevant in particular for specialized fisheries, the quantity should also be given by main target species. Example: 1000(<i>Sparus aurata</i>) 500(<i>Dentex dentex</i>), 800(<i>Dicentrarchus labrax</i>), 2500. A value without any species specifications is meant to be the total amount. More examples and details are available in Annex 1.
		Quantitative value	For Internal use
	Economic value	Production Economic Value	Indicator of the economic importance of the fishery, assessed through various possible measures of the economic value: see FR_ReferenceTerms.xls for the list of possible measures (if "Other economic value" is used, please specify in the column "Notes" the kind of measure, respecting the following convention: the label "Production Economic Value:" precedes the description of the kind of measure). Specify the year or timeframe between parentheses. Example: Landed value (2000-2004), Wholesale price (2000). If the year is omitted, the <i>Reference year</i> prevailing for the entire fishery record will be considered.
		Quantity	Quantity value and unit. If more than one value, use comma as separator and add between parentheses the species to which the value is referring. Example referring to the description column: 18 000 \$/year (<i>Sparus aurata</i>), 15 \$/Kg (<i>Dicentrarchus labrax</i>). More examples and details are available in Annex 1.

ATTRIBUTE			DESCRIPTION		
		Quantitative value	For internal use		
POST-HARVEST USE	Commodities derived from the fishery		Description of all commodities derived from the catches.		
	Market of destination		List of places (city, country, etc.) where commodities are merchandized. Use the country name or the corresponding 3-alpha code (see FR_ReferenceTerms.xls). If more than one use comma as separator.		
MANAGEMENT	Management system		="Yes" if the fishery provides the basis/platform for the set-up of a management system. In this case, the concerned fishery can be considered itself a Management System. And it will be categorized according to the "Jurisdictional" Thematic approach.		
	Management unit		="Yes" if the fishery is considered a management unit formally settled as part of a Fishery Management plan. In this case, it will be categorized according to the "Fishery Management Unit" Thematic approach. A reference to the Fishery Management Plan should be provided together with a brief description in the "Management overview" field.		
	Legal definition		Term defining the fishery from a legal viewpoint. Please provide the legal definition when the fishery is duly identified in the code of fishing. Example: <<"Municipal" for "Municipal fishery - Philippines": in this case the term "municipal" "is defined in Presidential Decree 704 (PD 704) as referring to fishing that utilizes boats of three gross ton (GT) or less or uses gear not requiring the use of boat. Municipal fishing areas include not only streams, lakes, and tidal waters within the municipality, but also marine waters within three nautical miles of the municipal coastline.>>		
	Management	Management Authority(ies)/ Body(ies)		Fishery management institution(s) (Authority or Body) involved in the management of that fishery at national, regional or supra-national level (e.g. EC).	
		Code/Acronym/ Title related to Management Authority/Body		For internal use	
		Mandate/Competence / Role	Standard Value	Functions fulfilled by management body or authority within its jurisdiction area (see list of <i>Mandate</i> standard values in FR_ReferenceTerms.xls). If more than one use comma as separator.	
Free Value			Free text defining the functions fulfilled by management body or authority within its jurisdiction area.		
	Jurisdiction Area	Maritime Area	Definition of maritime area under the jurisdiction of the management authority. Use standard terms (see list in FR_ReferenceTerms.xls) or free values if more appropriate. If more than one use comma as separator.		

ATTRIBUTE		DESCRIPTION	
		Exclusive Economic Zone (EEZ)	If relevant, specify EEZ (or list of EEZs) delimiting the jurisdiction area for the fishery. Use the country 3-alpha code (see FR_ReferenceTerms.xls). If more than one code, use comma as separator.
		Other Georeferencing System Name	Other georeferencing system may be used to describe jurisdiction areas (e.g. Regional Fishery Body competence area). Please give the name and provide, annexed to this inventory, all the information related to this other system: codes, limits of the areas, map, etc.
		Area Codes in this system	Specify the codes of the areas in this codification system. If more than one, use comma as separator.
	Management overview		Overview of Management (kind of policy, rules, status, existence of co-management, etc.) specifically referring to the concerned fishery. A general reference to the national code of fishing should be provided. If applicable, a reference to a formally settled Fishery Management Plan should be provided together with a brief description.
	Management Methods	Title	Title of the Management methods (e.g. Conservation and management measure, Compliance measure)
		Type	Specify if the set of measures is "Binding" or "Not binding"
		Focus	Focus of Management methods. If compatible, use suggested terms (see list <i>Management Method focus</i> in FR_ReferenceTerms.xls). Free values or extended descriptions are allowed if more appropriate. If more than one use comma as separator.
		Description	Free text describing the management methods and introducing the measures.
		Aquatic species-related measures	Measures related to the target species. Use standard terms (see list <i>Aquatic species related measures</i> in FR_ReferenceTerms.xls). If more than one use comma as separator.
		Gear-related measures	Measures related to the fishing gears. Use standard terms (see list <i>Gear-related measures</i> in FR_ReferenceTerms.xls). Free values or extended descriptions are allowed if more appropriate. If more than one use comma as separator.
Vessel-related measures		Measures related to the vessels. Use standard terms (see list <i>Vessel-related measures</i> in FR_ReferenceTerms.xls). Free values or extended descriptions are allowed if more appropriate. If more than one use comma as separator.	
Fishing activity-related measures	Measures related to the fishing activity. Use standard terms (see list <i>Fishing activity-related measures</i> in FR_ReferenceTerms.xls). The reference to fishing zones should be provided in this field. Free values or extended descriptions are allowed if more appropriate. If more than		

ATTRIBUTE		DESCRIPTION
		one use comma as separator.
Trend of the fishery		Important changes in the fishery, such as technological innovations, temporary closure, substantial effort changes, modification of trend, etc. If possible provide chronological references (year into parenthesis): Declining(2003); Temporary closure(2005).
FISHERY LIFECYCLE	Start/End Year	Provide a date for the opening and/or the closure of the fishery. This indeed applies to fisheries authorized under fishing agreements, but is not limited to this case. Please use the following format: S(opening date) or E(end/closing date). If multiple dates of opening and/or closure are entered, use comma as separator. Please note that a new opening of the same fishery implies that no descendants are envisaged. Example: S(2002) E(2009), S(2011)
	Ancestor Fisheries	Indicate any Ancestor fishery from which the current one maybe evolved. Please use the following format: A(Ancestor Inventory Identifier)]. Example: A(ESP042). More examples and details are available in Annex 1.
	Descendant Fisheries	Indicate any Descendant fishery in case any other fishery evolved from the current one. Please use the following format: D(Descendant Inventory Identifier)]. Example: D(ESP087). More examples and details are available in Annex 1.
REFERENCES	Bibliography	Bibliographic references of literature consulted and used for identifying and documenting the fisheries inventoried. For each bibliographic reference, a code must be defined and used in the inventory sheet. The code has to be explicit but short, 15 characters maximum, and should not include blank. The bibliographic reference has to be described in the sheet "Source of Information". If more than one code, use a comma as separator between the codes. Sort the codes from the most relevant to the less relevant bibliographic reference.
	Link to Bibliography	URL of bibliographic reference(s) if available. If more than one use " " as separator.
	Source	Bibliographic reference of the source publication for a specific sub-set of data included in the inventory. Please follow the same compilation rules described in the above Bibliography field.
	Link to Source	URL of source document(s) if available. If more than one use " " as separator.
	Reference year	<i>The Reference year is defined as the year for which the status of the Fishery has been evaluated. For closed fisheries, the Reference Year indicates the year in which the fishery was closed. Reference Year is mandatory for each fishery.</i>
	Reporting year	<i>Reporting year is defined as the year in which the scientific meeting (or equivalent scientific validation process) reviewed the status of the fishery inventoried. Reporting Year is not mandatory.</i>

ATTRIBUTE		DESCRIPTION
Ownership	Inventoried by	For internal use
	Collection identifier	For internal use
	Cover page identifier	For internal use
Brief description of the fishery		Short text to describe main characteristics of the fishery
Notes		Any comment regarding the inclusion of this fishery in the inventory. Please specify to which field(s) the note is referring.
Fact Sheet Language		For internal use

Annex 1

The use of the comma as separator for the submission of multiple values is accepted and suggested across the whole inventory. Nevertheless, in some cases of use of this convention, it's important to establish the logical relationships among data stored in adjacent fields. The generic example here below is to explain better this concept. The position of the components of the lists stored in CELL A (ValueA, ValueB, ValueC) and CELL B (Value1, Value2, Value3) are strictly correlated. ValueA is related to Value1, as ValueB to Value2 and ValueC to Value3

CELL A	CELL B
Value A, Value B, Value C	Value 1, Value 2, Value3

In the fishery template, a number of cases require compliance with this rule:

Local Title	Language
Small-scale fisheries, การประมงขนาดเล็ก	EN, TH
First local title in English (EN) , second one in Thai (TH).	

Vessel or Fishing Unit	Quantity
V(2001), V(2003-2005), FU(2010)	21, ~18, 30
It means that in 2001 we have a value of 21 fishing vessels, during the period between 2003 and 2005, there is an average of 18 vessels, while in 2010 the value is of 30 fishing units.	

Catches or Landings	Quantity
C(2005), C(2007), L(2010)	150, 230, 2
It means that Catches have been: 150t in 2005, 230t in 2007 and 2t of landings in 2010.	

Production Economic Value	Quantity
Landed value (2000-2004), Wholesale price (2000)	18 000 \$/year (<i>Sparus aurata</i>), 15 \$/Kg (<i>Dicentrarchus labrax</i>)
It means that Landed value for <i>Sparus aurata</i> has been of 18.000 \$/year in the period from 2000 to 2004 and that the Wholesale price for <i>Dicentrarchus labrax</i> in 2005 had a mean value of 15 \$/Kg	

Start/End Year	Ancestor Fisheries	Descendant Fisheries
S(2002) E(2009)	A(ESP042)	D(ESP087)
S(2001) E(2007), S(2009)	A(ESP011, ESP012)	
First example: It means that the fishery started in 2002, evolving from an Ancestor already identified in the inventory as ESP042. Furthermore, it ended in 2009 giving as Descendant a fishery identified as ESP087;		
Second example: It means that the fishery started in 2001 evolving from an Ancestor already identified in the inventory as ESP011. The same fishery has been closed in		

2007 and reopened in 2009. Please note that the presence of a further starting date implies the absence of a descendant.

Annex 2a: example of Fishery unit inventoried as a row in excel format

FISHERY REFERENCE			FISHERY TITLE					PERSPECTIVE			FISHERY AREA		
Inventory Identifier	Parent Fishery	Related Fisheries	Local title		English Title	Fishery standard title	Geographic reference	Reporting Spatial Scale	Thematic approach	Fishery area name	Primary Georeferences		Other Georeferences
			Title	Language							Georeferencing System Name	Area Codes in this system	
ATA12			Fishery for Toothfish in Division BB 1			Toothfish fishery - Eastern Ross Sea Southern Ocean (Subarea BB 1)		Regional	Fishery Management Unit	Eastern Ross Sea	fac_area		BB 1
CHARACTERISTICS OF THE FISHING GROUND								HARVESTED RESOURCES					
Geomorph	Depth zone	Horizontal distribution	Vertical distribution	Bottom type	Climatic zone	Fishing ground description	Exploited marine resources	Captured species		Target species		Associated species	
								Name	Description	Name	Description	Name	Description
							009-0001			Dissostichus eleginoides (Patagonian Toothfish); Dissostichus mawsoni (Toothfish)			
MEANS OF PRODUCTION													
Type of production system	FISHING VESSEL					LOCAL FLEET SEGMENT			FLEET SIZE			Involved community or group	Estimated fishery yield
	Vessel type	Description	On-board processing facilities	Average range of crew size	Flag State	System name	Fleet segment units	Description	Vessel or Fishing Unit	Quantity	Quantitative value		
EXPLOITATION											POST-HARVEST USE		
FISHING GEAR		Fishing season	Environmental limitations	Port (s)	Trip duration	CATCHES			Economic value			Commodities derived from the fishery	Market of destination
Gear Type	Description					Catches or landings	Quantity	Quantitative value	Type of Economic value	Quantity	Quantitative value		
MANAGEMENT													
Management system	Management unit	Legal definition	Management entity					Management overview	Management method type	Aquatic species-related measures	Gear-related measures		
			Management Authority(ies)/Body(ies)	Code(Acronym/Title related to Management Authority/Body)	Competence/Role	Jurisdiction Area							
						Jurisdiction area type	Exclusive Economic Zone (EEZ)					Other Georeferencing System Name	Area Codes in this system
				1. Scientific advice	High seas				ccamlr_00	mp	CCAMLR		
Trend of the fishery	REFERENCES					Ownership			Brief description of the fishery	Notes			
	Bibliography	Source	Reporting unit	Existence of sub levels	Reference year	Reporting year	Inventoried by	Collection identifier			Cover page identifier		
		Source 1			2009	2008		11		16		Managed by CCAMLR - fishery targets both D. eleginoides and D. mawsoni.	

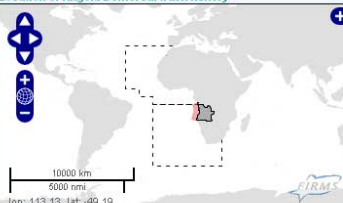
Annex 2b: example of an inventoried fishery unit presented as a FIRMS fishery fact sheet

Search Print XML
Fishery Fact Sheet
CECAF Fisheries Reports 2010
Angola Demersal trawl fishery, 2009
Arrasto demersal Citation

Owned by Food and Agriculture Organization (FAO) [more>>](#)

Overview: *The Angolan demersal fishery is generally multispecific, directed to a wide specific group caught together. Fish, crustaceans and other invertebrates (cephalopods) are included in this fishery.* [The](#) [more>>](#)

Location of Angola Demersal trawl fishery



Map legend

Geographic reference: Angola
Spatial Scale: National

APPROACH: FISHING ACTIVITY

Fishing Activity
 Fishing Gear: Bottom otter trawls
 Type of production system: Industrial
 Fishery Area: Angola; Cape Palmeirinhas
 Seasonality: Closed season ... [more>>](#)

Harvested Resource
 Target Species: Shallow-water Cape hake; Benguela hake; Geelbek croaker ... [more>>](#)
 Associated species: Deep-water rose shrimp; Striped red shrimp; Common cuttlefish ... [more>>](#)

Means of Production
 Vessel Type: Stern trawlers

Fishery Indicators
 Fleet size: Number of vessels
 Employment: Number of fishermen
 Participation: Involved community...
 Catch: Landed Volume

Table of Contents
[Overview](#) - [Fishing Activity](#) - [Post Harvest](#) - [Management](#) - [Source of information](#)

Fishing Activity


Type of production system: Industrial

Fishery Area
 Climatic zone: Tropical. Bottom type: Soft bottom gravel-sandy. Depth zone: Shelf - Upper shelf (up to 100 m); Shelf - Edge of shelf; Shelf - Deep shelf (100 m - 200 m); Slope - Upper slope (200 m - 500 m); Slope - Deep slope (500 m - 1000 m). Horizontal distribution: Neritic; Oceanic. Vertical distribution: Demersal/Benthic. Sea floor physiography: Unspecified.

Geo References for Angola Demersal trawl fishery

Resources Exploited
 Grouper - Gabon, Congo and Angola
 Croakers - Cameroon, Gabon, Congo and Angola

Target Species

Merluccius capensis
 Fao Names : en - Shallow-water Cape hake, fr - Merlu côtier du Cap, es - Merluza del Cabo 


Merluccius polli
 Fao Names : en - Benguela hake, fr - Merlu d'Afrique tropicale, es - Merluza de Benguela

Atractoscion aequidens
 Fao Names : en - Geelbek croaker, fr - Téraglin, es - Corvinata prieta

Argyrosomus regius
 Fao Names : en - Meagre, fr - Maigre commun, es - Corvina


Umbrina canariensis
 Fao Names : en - Canary drum(=Bardman), fr - Ombrine bronze, es - Verrugato de Canarias

Pseudotolithus typus
 Fao Names : en - Longneck croaker, fr - Otolithe nanka, es - Covina bosoro


Pseudotolithus senegalensis
 Fao Names : en - Cassava croaker, fr - Otolithe sénégalais, es - Covina casava 

Dentex macroththalmus

Associated species (Bycatch)

Parapenaeus longirostris
 Fao Names : en - Deep-water rose shrimp, fr - Crevette rose du large, es - Gamba de altura 

Aristeus varidens
 Fao Names : en - Striped red shrimp, fr - Gambon rayé, es - Gamba listada

Sepia officinalis
 Fao Names : en - Common cuttlefish, fr - Seiche commune, es - Sepia común 

Illex coindetii
 Fao Names : en - Broadtail shortfin squid, fr - Encornet rouge, es - Pota voladora

List of fishery indicators

Fishery Indicators

Type	Measure	Value	Unit	Time period
Fleet size	Number of vessels	48		
Employment	Number of fishermen	40 (OHA, ESP, GRC, PRT)		
Participation	Involved community or groups	Indigenous (local Angolans) = 60% on vessels with balance foreign crews. No exact numbers given		
Catch	Landed Volume	105 000	†(estimated)	2005

Vessel Type

Stern trawlers

Mostly otter trawlers undefined. Purpose built commercial vessels > 20 m.

Catch Handling and Processing Equipment

On board processing facilities

Freezers and wetfish

Crew

Up to 60 crew on range of vessels (Un. Sov. Soc. Rep. Angola, Spain) and other undefined.

Flag State

Angola

Fishing Gear

Bottom otter trawls

Bottom (stern) trawl with otter boards vessels 20-90 m length 80 mm cod end.

Seasonality

Closed season July to September.

Ports

Cabinda, Luanda, Porto-Amboim, Mocamedes, Lobito, Alexandre, Baia-Farta

Trip duration

Varies from daily to >40 days (freezers)

Post Harvest

Commodities derived from the fishery:

Fresh fish, dried fish, salted and dried

Markets

Mostly local consumption.

Management

Management unit: Yes

Jurisdictional framework

Management Body/Authority: Ministry of Fisheries (Angola)

Mandate: Management, Control and Surveillance, Scientific Advice.

National Fisheries management, Research, Surveillance, Administration and Funding support

Area under national jurisdiction: Angola

Maritime Area: EEZ.

Ministry of Fisheries (Angola) includes National Fisheries Directorate (DNP) and National Surveillance Directorate (DNF), Artisanal Fisheries Development Institute (IPA), Marine Research Institute (IM), National Institute for the Support of Fisheries Industries (INAIPI) and Fund for the Support of the Development of Fisheries Industries and Fisheries Schools (FAdepa)

Management Methods

Management method type

Aquatic species-related measures

TAC (no other details).

Gear-related measures

Gear type, Gear dimension, Mesh size.

Vessel-related measures

Access Control : Vessel type and Vessel Size.

Fishing activity-related measures

Access by nationality, licenses, vessel number, gear number, TAC, no fishing closer than 4 nautical miles.

Source of information

K.K. Nsingi - "Inventory of the Angola's fisheries in the CECAF Region".

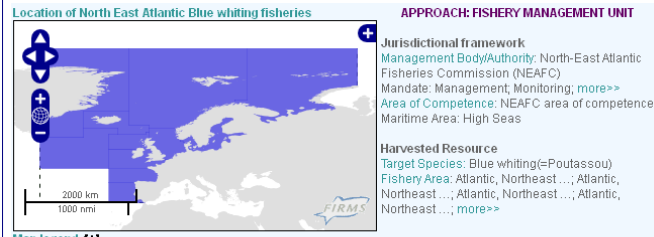
Annex 2c: example of a FIRMS fishery fact sheet. This enriched version is the outcome of an enhanced workflow which combines information from the inventory and with other source data.

Fishery Fact Sheet Search Print XML

Management report 2009
North East Atlantic Blue whiting fisheries, 2009
 Blue Whiting Citation

Owned by North-East Atlantic Fisheries Commission (NEAFC) [more>>](#)

Overview: *The main pelagic stocks in the NEAFC Regulatory Area are exploited by large trawlers-purse seiners from all the Contracting Parties of NEAFC. The fleets move with the season between the three main* [more>>](#)



Map legend ↔

Geographic reference: North East Atlantic
Spatial Scale: Regional

Table of Contents

[Overview](#) - [Harvested Resource](#) - [Ecosystem Assessment](#) - [Management](#) - [Source of information](#)

Harvested Resource

Type of production system: Industrial

Target Species
Micromesistius poutassou
 Fao Names : en - Blue whiting(=Poutassou), fr - Merlan bleu, es - Bacaladilla 

Fishery Area
 Climatic zone: Temperate; Polar. Vertical distribution: Pelagic.

Geo References for North East Atlantic Blue whiting fisheries ↔

Fishing Gear
 Purse seines
 Midwater otter trawls
 Midwater pair trawls

Fleets
 The main pelagic stocks in the NEAFC Regulatory Area are exploited by large trawlers-purse seiners from all the Contracting Parties of NEAFC. The fleets move with the season between the three main stocks and the waters under national jurisdiction and the Regulatory Area.

Seasonality
 All year round.

Ecosystem Assessment
 ENVIRONMENTAL IMPACT OF FISHERIES

The four main fisheries in the Regulatory Area - pelagic fishery for redfish, Norwegian spring spawning (Atlanto-Scandian) herring, mackerel and blue whiting - are unique with respect to their impact on ecosystems. These pelagic fisheries are pursued with pelagic trawls or purse seines that do not affect demersal habitats. They are - for all practical purposes - clean fisheries, where target species account for close to 100 % of the catches. They are pursued by large vessels, run by companies under market conditions. Three of them are assessed as being fished at precautionary, sustainable levels of fishing mortality.

If the fisheries are managed according to the precautionary approach, the risk of over fishing is low - with a correspondingly low risk of irreversible or slowly reversible effects on ecosystems. This applies in most cases both to target and non-target species.

These large pelagic stocks play an important role by transporting energy from plankton into fish assemblages in other areas and in deep waters.

Management

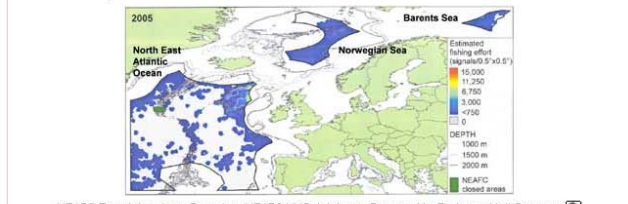
Management unit: Yes
 The fishery is regulated under NEAFC jurisdictional framework / management regime.


History
 A detailed history of management is found in Appendix III and IV in the Report of the NEAFC Performance Review (NEAFC 2006).

Jurisdictional framework

Management Body/Authority: North-East Atlantic Fisheries Commission (NEAFC)
 Mandate: Management, Monitoring, Control and Surveillance.

Area of Competence: NEAFC area of competence
 Maritime Area: High Seas.



NEAFC Regulatory Area. Based on NEAFC VMS database. Prepared by Dr Jason Hall-Spencer. 

Management system
 This fishery is managed as part of the management system described in Northeast Atlantic NEAFC high seas fisheries.

Status of Management

Assessment Summary
 At NEAFC's Annual Meeting in 2008 ICES noted that spawning stock biomass in all the three large pelagic stocks, Norwegian spring spawning (Atlanto-Scandian) herring, blue whiting and mackerel, are all in good shape, above precautionary levels, but there was concern of the low level of recruitment for blue whiting recently, which would drive the stock down if TACs were not significantly reduced.

Resources Assessed
 Blue whiting - Northeast Atlantic

Negotiation Process
 Coastal States - NEAFC

Management Resolutions
 Recommendation II: 2009

RECOMMENDATION BY THE NORTH-EAST ATLANTIC FISHERIES COMMISSION IN ACCORDANCE WITH ARTICLE 5 OF THE CONVENTION ON FUTURE MULTILATERAL COOPERATION IN NORTH-EAST ATLANTIC FISHERIES AT ITS ANNUAL MEETING IN NOVEMBER 2008 ON CONSERVATION AND MANAGEMENT MEASURES FOR BLU WHITING IN THE NEAFC CONVENTION AREA IN 2009

1. NEAFC takes note of the Agreed Record of Conclusion of Fisheries Consultations between the Faroe Islands, the European Community, Iceland and Norway on the Management of Blue Whiting in the North-East Atlantic in 2009 signed in London, 11 November 2008.

2. NEAFC further notes that by way of the said Agreed Record, the aforementioned Parties agreed to restrict their fishery on the Blue Whiting Stock in 2009 according to a total catch limitation of 543,043 tonnes.

3. The Contracting Parties recommend the following measures:
 a. In order to ensure consistency and compatibility with the said Agreed Record, the Contracting Parties hereby establish an allowable catch limitation of 65,786 tonnes of Blue Whiting for 2009 in waters beyond the areas under national fisheries jurisdiction of the Contracting Parties.
 b. This allowable catch limitation shall be allocated as follows:

- Denmark in respect of:
 Faroe Islands 10,047 tonnes (*)
 Greenland 3,194 tonnes
 European Community 11,947 tonnes (*)
 Iceland 6,788 tonnes (*)
 Norway 10,047 tonnes (*)
 Russian Federation 43,763 tonnes

(*) Catches taken under these allocations shall be deducted from quotas allocated to Parties to the Agreed Record referred to in paragraph 2.

4. The Contracting Parties agree that the relative shares established under paragraphs 2 and 3 are fixed for the future management of blue whiting in the NEAFC context. In addition to these fixed shares, the Russian Federation is granted a quantity of 16,237 tonnes for 2009. This quantity will be reduced in 2010 to 8,000 tonnes and in 2011 to 4,000 tonnes. There will be no additional quantity available in 2012.

5. The national quotas referred to in Annex I of the Agreed Record referred to in paragraph 2 may be fished in the areas defined in paragraph 3 a.

6. Quotas that are transferred to a Contracting Party to be fished within national waters of another Contracting Party may be fished in the areas defined in paragraph 3 a, subject to agreement between the Contracting Parties concerned.

Management Problems
 Change in distribution (herring and mackerel). Shift in recruitment level blue whiting

Management Regime

Management Methods

CONSERVATION AND MANAGEMENT MEASURES

- BINDING
 - Effort control: This fishery is regulated by TACs and allocations.

COMPLIANCE MEASURES

- BINDING
 - The fishery is monitored and controlled according to "The NEAFC Joint Scheme of Control and Enforcement", as introduced in the Northeast Atlantic NEAFC high seas fisheries.

Source of information

- NEAFC Secretariat "NEAFC Fisheries status report 1998 - 2007". 2009-06-01.
- "Report of the 27th annual meeting of the North-East Atlantic Fisheries Commission 10-14 November 2008" North East Atlantic Fisheries Commission 
- "Recommendation by the North East Atlantic Fisheries Commission: Blue Whiting." North East Atlantic Fisheries Commission. 2009-01-01 