

# MAIA AND OSPAR MPA DATABASES

## COMPARISON STUDY:

## COMPONENTS SECTION

Final version

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## Methodology

First, all the fields of the two databases were listed and for each one, the following are specified:

- the information capture mode (free input, predefined list, etc.),
- the type,
- the field format for the user (front),
- the field input help (definition).

Further details or questions can be added in a “comments” column.

To make the most accurate comparison of the database contents, field definition and capture modes provide valuable help. The OSPAR database only occasionally provides data capture help messages.

The levels of correspondence proposed by the AAMP are based on:

- knowledge of the requirements of the OSPAR Convention as regards MPA reporting by the AAMP team
- help available in the OSPAR MPA Access database.

➤ ***A review/validation of the correspondences proposed should be done by the ICG\_MPA.***

### Definition of the correspondence levels used in the analysis grids.

For each field-to-field comparison, one of the following six values has been assigned:

- “Conform”: the two fields match.
- “To be confirmed”: the fields match in principle, but this needs confirming.
- “Adaptable”: a simple adaptation of the data collected will make the two fields conform.
- “Query”: the information is available via a query (generally geographic).
- “Partially conform”: the fields match partly.
- “No equivalent”: the fields are not equivalent.

Except for “no equivalent”, in all the other categories, the fields can be made compatible (with varying degrees of effort).

Four objects have been studied:

- The MAIA database (Postgre SQL - Post GIS),
- The OSPAR database (Access)
- The OSPAR effectiveness of management scorecard document
- The INSPIRE data model for protected sites
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**Table I: Characteristics of the objects studied**

DATABASE/OBJECT	SOURCE	NUMBER OF FIELDS / INFORMATION	OBSERVATION
MAIA	Database conceptual model (CDM)	77	Note that the number of fields between the MAIA and OSPAR databases is roughly similar but the OSPAR fields frequently cover redundant information.
OSPAR	Access file	86	
OSPAR "effectiveness management scorecard" <sup>1</sup>	Word Document	78	OSPAR <i>effectiveness of management scorecard</i> is not a database but a guide for the assessment of MPA management. Where items were similar, they have been grouped together.
INSPIRE <sup>2</sup>	JRC Specification	39	

**Note:**

The disparity of the objects studied prevents a strict field-to-field comparison; comparisons are mainly based on the information contained in the field.

<sup>1</sup> Guidance to assess the effectiveness of management of OSPAR MPAs: a self-assessment scorecard

<sup>2</sup> D2.8.I.9 INSPIRE Data Specification on Protected sites – Guidelines

The following comparisons are done:

- OSPAR DB with MAIA DB
  - o OSPAR fields are associated with all the MAIA database fields
- MAIA DB with OSPAR DB
  - o MAIA fields are associated with all the OSPAR database fields
- MAIA DB with “effectiveness of management scorecard”
  - o MAIA fields are associated with all the OSPAR “effectiveness of management scorecard” fields
- MAIA with INSPIRE
  - o MAIA fields are associated with all the INSPIRE fields

**Note:**

The objects covered differ in the number of fields. This therefore impacts the ratios of overlap. The percentages obtained must thus be read in the light of this factor. **The values stated are relative, not absolute.**

## Data families

Five data families may be identified in each database. However, this does not necessarily mean that the data is **strictly** equivalent.

- Standard: data describing the MPA, complying more or less with international or European standards
- Management: factual data to assess whether a site is effectively managed (indicators of effective MPA management).
- Management effectiveness: usually “perceptive”-type data on assessment of the effectiveness of the site management (achievement of conservation goals, etc.)
- Status: data relative to the conservation status of the site.
- Habitats and Species: descriptive data about the presence of habitats and species under protection status on the site.

Data managed by MAIA breaks down into three categories.

- 'Standard' data
  - Data identifying and describing the Marine Protected Area in accordance with international standards (WDPA-CDDA).
  - The representation perimeter is included in the 'Standard' data (in polygon format).
- 'Management' data (Governance, Management scheme, Monitoring, Regulations, Uses and activities)
  - Data describing the management of Marine Protected Areas. This data is only factual and in principle is easily accessible to contributors. Data is collected via value lists or Boolean choices to foster optimal use of data once collected.
  - 'Perception'-type data was voluntarily disregarded during development of the MAIA tool.
- Data on 'marine species and habitats under protection status' (IUCN red list/OSPAR/Natura 2000) in the MPA (in future, it could be interesting to consider the species designated per MPA).

Table II: Distribution of data by family in the MAIA database

Data family	Data family number	Data family distribution
Standard	24	31%
<b>Management</b>	<b>51</b>	<b>66%</b>
Management effectiveness	0	0%
Status	0	0%
Habitats/Species	2	3%

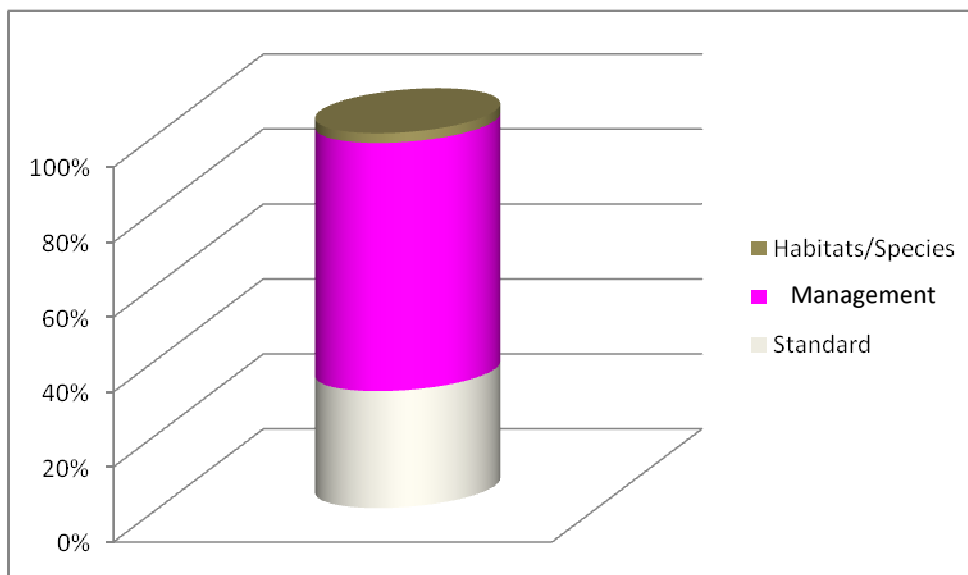


Figure 1: Diagram showing the proportion of data families in the MAIA database

The MAIA database focuses mainly on management-related data. It also includes all the standard fields required by the WDPA international model.

Data managed by OSPAR breaks down into five categories.

- Data which can be considered 'standard'. Note that only certain standard data required by international models is collected. In addition, some data collected is not in the format required by these models.
  - This data identifies and describes the Marine Protected Area.
  - The representation perimeter is **not** included in the OSPAR database (non-spatial database).
- "Management" data (site aim/human activities)
 

This data describes the management performed in the Marine Protected Areas. Note that this data is very scarce in the OSPAR database and only accounts for 9% of the four data families represented in the base.
- Data on the assessment of management. This information mainly reflects contributors' perceptions.
- Data assessing the characteristics of the MPA (ecological process, biological diversity, representativeness, sensitivity, naturalness, ecological significance, acceptance, etc.)

- This data describes the characteristics of the Marine Protected Areas compared to a certain number of criteria, justifying their designation as OSPAR Marine Protected Areas. A code scale is proposed to contributors (high, medium, low).

This data can be described as “perception” data, since the definition of the level of validity of the criterion is somewhat subjective.

- Data on ‘Habitats and Marine Species under Protection Status’ (OSPAR/Natura 2000) in the MPA.

Table III: Distribution of data by family in the OSPAR database.

Data family	Data family number	Data family distribution
Standard	39	45%
Management	8	9%
Management effectiveness	17	20%
Status	6	7%
Habitats/Species	13	15%
Other	3	3%

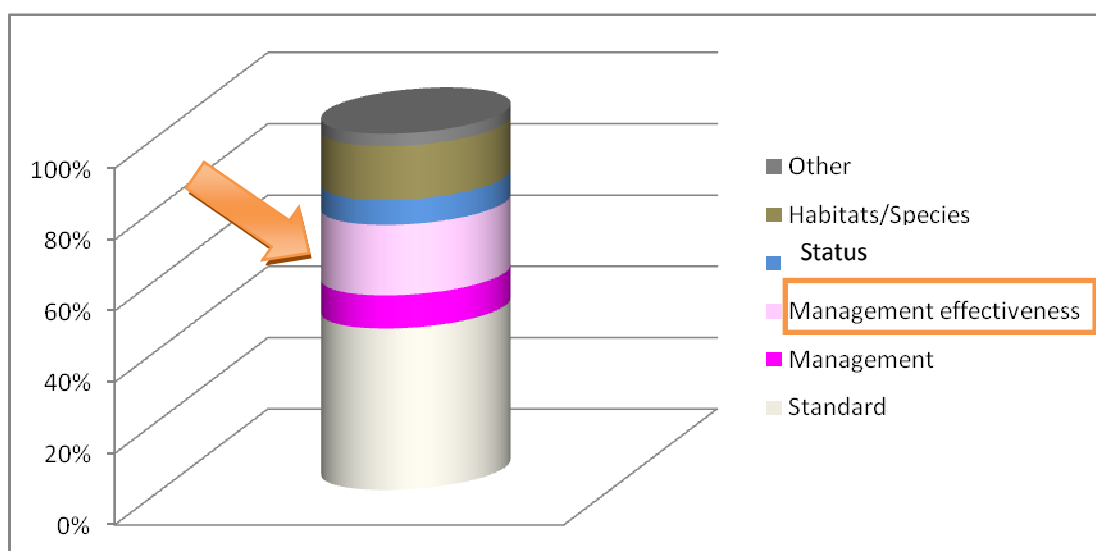


Figure 2: Diagram showing the proportion of data families in the OSPAR database.

The OSPAR database mainly focuses on the collection of data relating to management effectiveness.

Important: the high value of the “standard” data family in this case is due to the high number of redundancies of this data in the OSPAR base. In reality, the OSPAR database only collects some of the standard data required by international models.

Data collected to assess the effectiveness of OSPAR MPA management via the “effectiveness of management assessment scorecard” breaks down into three categories.

In September 2011, the OSPAR secretariat proposed a guide to the ICG\_MPA for the assessment of management effectiveness in OSPAR MPAs. This is not therefore an assessment of a database, but a review of prospects for a future database, as regards applications such as management assessment.

This guide covers the assessment of the **effective implementation of management** (*staff/facilities and equipment/management plan* etc.) but also the **assessment of the effectiveness of management carried out**. Assessing the effectiveness of management is a complex issue and difficult to weight objectively and on the basis of scientific criteria, compared to the predefined protection objectives of the MPA. The scorecard asks the management teams to answer a number of questions, most of which seem to be based on their perception of the MPA's situation. The proposed answers (giving a number of points) do not appear to be based on specific assessments of the effectiveness of management done (dedicated studies and monitoring). Contributors have no criterion or scale on which to base their answers. Some examples are provided below:

- “Conservation objectives have been achieved for most features of interest”: how/on which bases are conservation objectives considered to be achieved?
- “Have MPA objectives (if developed and agreed) been achieved?”
- “Is there communication between stakeholders and managers?” What is the basis for considering that there is communication with stakeholders?

In addition, depending on the teams answering the scorecard owing to the national category of the OSPAR MPA, the answers can vary greatly, thus affecting the overall analysis at OSPAR level and even in respect of each contracting party.

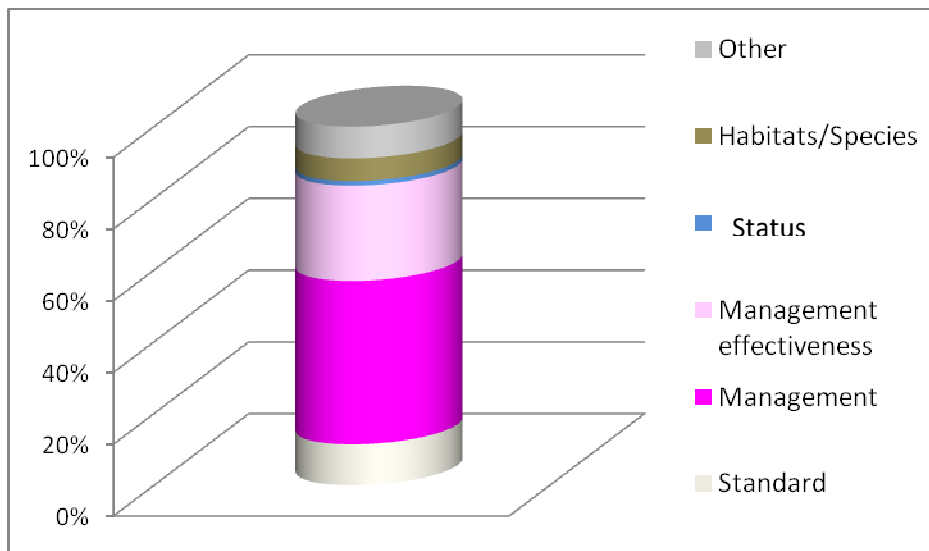
Four types of data are collected:



- Data that can be described as 'standard'. Note that only certain standard data required by international models are collected via the scorecard.
  - Data identifying and describing the Marine Protected Area.
  - The representation polygon is not included in the scorecard
- Management data (indicators of the effective implementation of MPA management).
- Data for the assessment of effectiveness of management carried out. This information is mainly based on the contributors' perception.
- 'Marine species and habitats under protection status' data
- Only one datum has been associated with the 'MPA status' data family.

**Table IV: Distribution of data by family in the OSPAR management effectiveness scorecard**

Data family	Data family number	Data family distribution
Standard	9	11%
<b>Management</b>	<b>36</b>	<b>46%</b>
Management effectiveness	21	27%
Status	1	1%
Habitats/Species	5	6%
Other	7	9%



**Figure 3: Diagram showing the proportion of data families in the OSPAR management effectiveness scorecard**

**The OSPAR management effectiveness scorecard mainly focuses on the collection of management-related information. Management effectiveness data ranks second.**

Data described by INSPIRE breaks down into five categories:

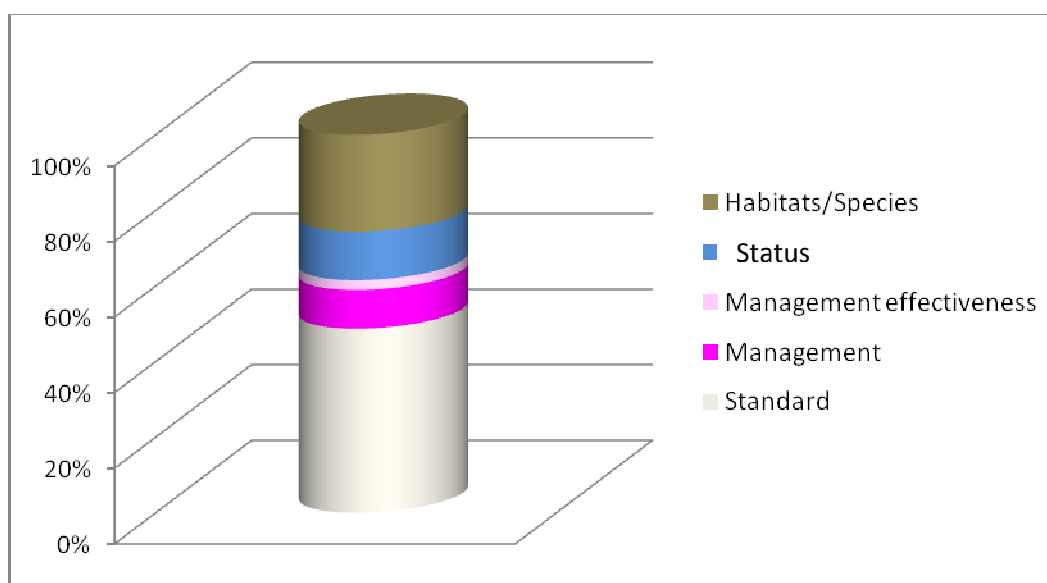
- Data which may be described as ‘standard’: data identifying and describing the protected site according to standards defined by the INSPIRE Directive.
- Management data (indicators of the effective management of MPAs).
- Management assessment data (based on scientific studies the references of which are provided).
- Data describing the ecological features of the site (habitats and biotopes, species distribution, etc.). The data collected as part of INSPIRE is particularly “Natura 2000-focused”.
- Data assessing the site conservation status (global assessment values, information on the impact of human activities carried out on the site, etc.).

Note that the INSPIRE model applies to all protected sites, whether marine or land sites.

The Directive only requires Member States to publish online the perimeter of the protected site and its identifier. Other information is optional.

**Table V: Distribution of data by family in the INSPIRE base.**

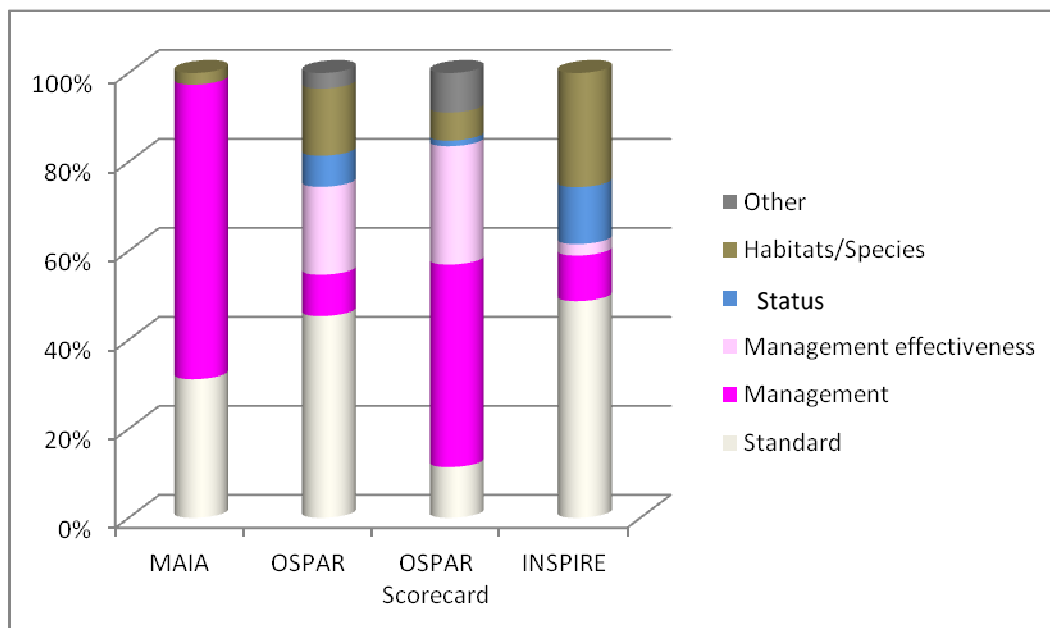
Data family	Data family number	Data family distribution
<b>Standard</b>	<b>19</b>	<b>49%</b>
Management	4	10%
Management effectiveness	1	3%
Status	5	13%
Habitats/Species	<b>10</b>	<b>26%</b>
Other	0	0



**Figure 4: Diagram showing the proportion of data families in the INSPIRE base**

The INSPIRE base mainly contains data in the “standard” family in compliance with the objectives of implementing the Directive. The second largest number of data relates to the description of habitats and species in the protected area.

## Summary of the distribution of data families in the objects studied



**Figure 5: Distribution of data families by object studied**

This document shows the initial focus given to each of the four entities studied:

- For the MAIA database, a core set of standard data and a set of factual data concerning site management, from which an assessment can subsequently be done;
- For the OSPAR database, a significant number of standard data (partly due to redundancy of information), the aim of focusing on management assessment and a substantial amount concerning MPA “content” (characteristics for the designation and habitats and species);
- The scorecard naturally focuses on management and the assessment thereof, but does not rule out the need for standard information;
- Lastly, the INSPIRE Directive naturally tends towards standard data and the rest mostly focuses on information about habitats and species.

These four entities have a lot of standard information in common, which is a potential advantage for their compatibility as we will see later. Shared management information is also a positive factor for the pooling of certain databases (objects).

## Results

### 1/ Comparison of the OSPAR MPA DB with the MAIA GIS DB

- The OSPAR fields are associated with all the MAIA database fields

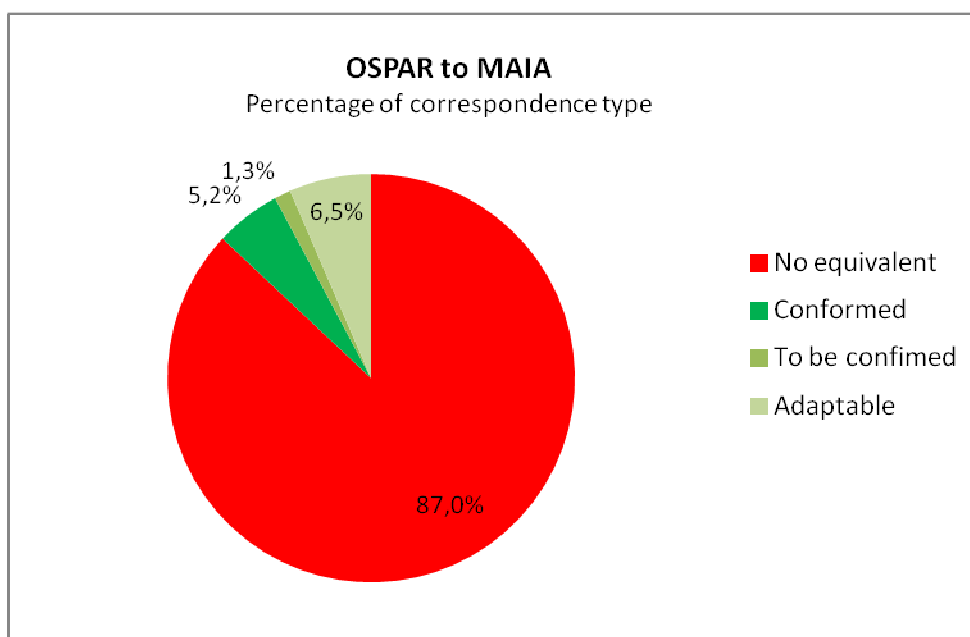


Figure 6: Distribution of correspondences between the OSPAR database fields and the MAIA database fields

The OSPAR database only has a **13% match** (conform / to be confirmed / adaptable) with the MAIA database. This low overlap rate is due to the OSPAR data model which contains numerous redundancies for a smaller amount of information than collected within the MAIA framework.

Table VI: Percentage of field overlap by data family (OSPAR fields are associated with all the MAIA database fields)

Data family and correspondence type	Number of common fields	Percentage of common fields	
Standard _ No equivalent	19	79%	
<b>Standard_Adaptable</b>	1	4%	<b>21%</b>
<b>Standard_Conform</b>	4	17%	
Management_No equivalent	48	94%	
<b>Management_ToBeConfirmed</b>	1	2%	<b>6%</b>
<b>Management_Adaptable</b>	2	4%	
HabitatSpecies_Adaptable	2	100%	

The OSPAR database only shares 21% of the standard fields and 6% of the management-related fields with the MAIA base. However, 100% of the fields relating to the presence of habitats and species under protection status are common.

## 2/ Comparison of the MAIA GIS DB with the OSPAR DB

- MAIA fields are associated with all the OSPAR database fields

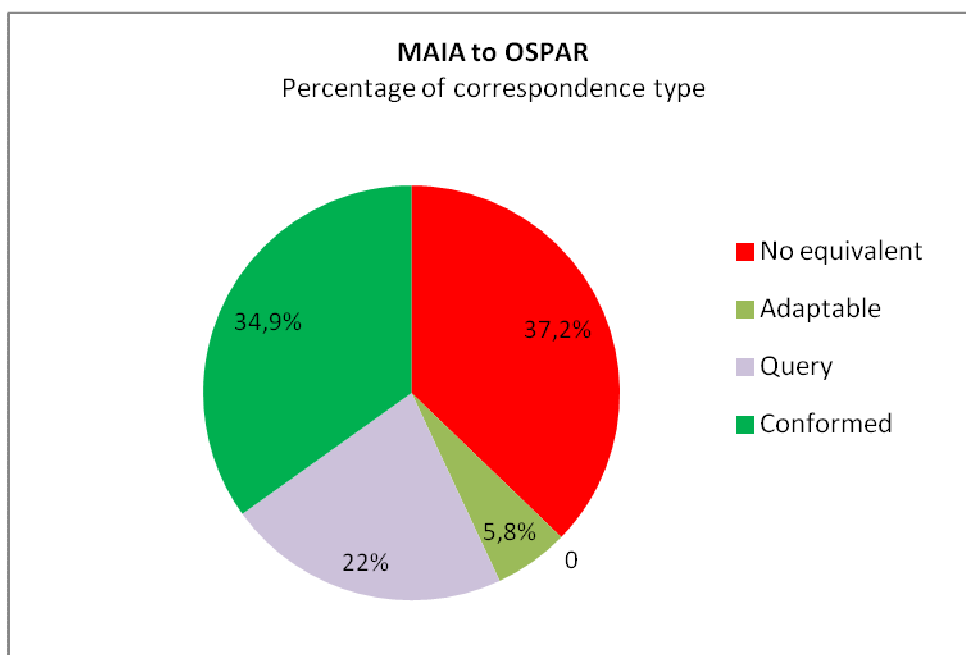


Figure 7: Distribution of correspondence between the MAIA database fields and the OSPAR database fields

When the contents of the MAIA database are compared with the OSPAR base, the match rate is **63%** (Conform / Adaptable / Queryable fields).

Table VII: Percentage of field overlap by data family (MAIA fields are associated with all the OSPAR database fields)

Data family and correspondence type	Number of common fields	Percentage of common fields	
Standard_No equivalent	3	8%	
<b>Standard_Query</b>	18	46%	<b>92%</b>
<b>Standard_Conform</b>	18	46%	
Management_No equivalent	2	25%	
<b>Management_Adaptable</b>	5	63%	<b>75%</b>
<b>Management_Conform</b>	1	13%	
Management effectiveness_No equivalent	17	100%	
Status_No equivalent	6	100%	
HabitatSpecies_No Equivalent	1	8%	
<b>HabitatSpecies_Query</b>	1	8%	<b>92%</b>
<b>HabitatSpecies_Conform</b>	11	85%	
Other_No equivalent	3	100%	

The OSPAR database shares 92% of its standard fields with the MAIA database, **75% of its management fields** and 92% of its fields relating to habitats and species under protection status. However, no field on the assessment of management effectiveness is shared with the MAIA database.



### 3/ Comparison of the MAIA GIS DB with the OSPAR effectiveness of management scorecard assessment

- MAIA fields are associated with all the “fields” of the OSPAR effectiveness of management scorecard document

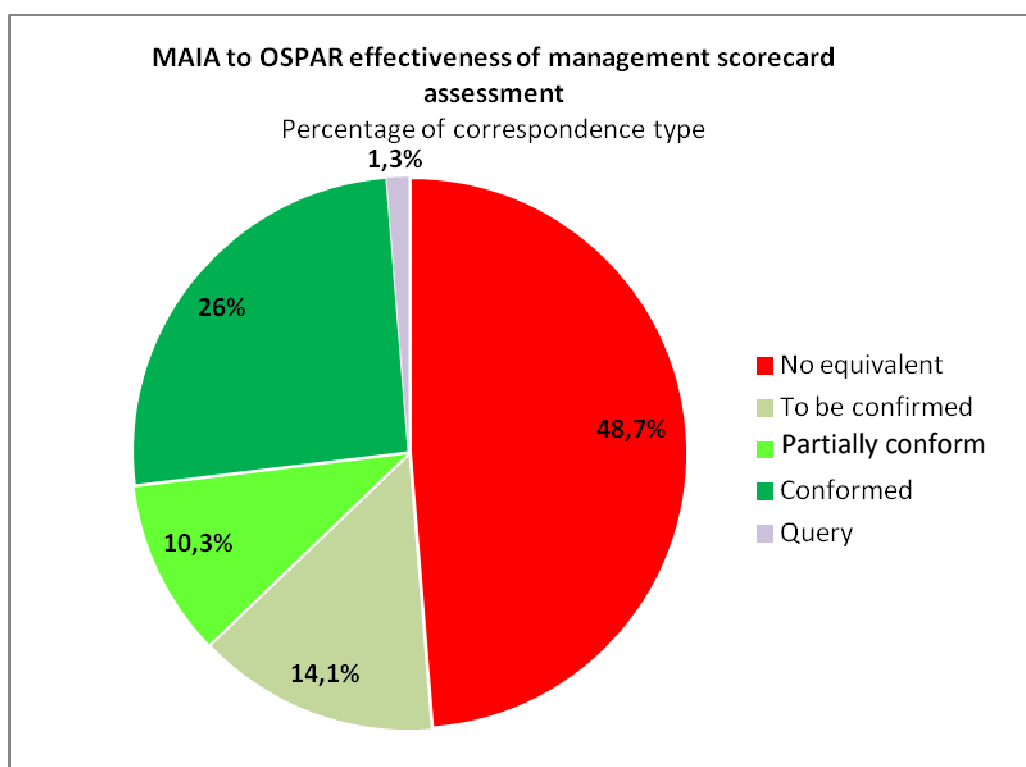


Figure 8: Distribution of correspondence between the OSPAR *effectiveness of management scorecard assessment* document fields and the MAIA database fields

The comparison of the MAIA fields with the information necessary to assess **the effectiveness of MPA management** shows a 51% match (information that is “conform”, “partially conform”, or “queryable”).

Table VIII: Percentage of field overlap by data family (MAIA fields are associated with all the OSPAR management effectiveness scorecard fields)

Data family and correspondence type	Number of common fields	Percentage of common fields	
Standard_No equivalent	2	22%	78%
Standard_Query	1	11%	
Standard_Conform	6	67%	
Management_No equivalent	8	22%	78%
Management_Adaptable	1	3%	
Management_ToBeConfirmed	6	17%	
Management_partiallyConform	8	22%	
Management_Conform	13	36%	
Management effectiveness_No equivalent	20	95%	
Management effectiveness_ToBeConfirmed	1	5%	
Status_No equivalent	1		
HabitatSpecies_ToBeConfirmed	4	80%	100%
HabitatSpecies_Conform	1	20%	

The comparison of the MAIA fields with the information collected in the OSPAR *effectiveness of management scorecard* document shows that **78% of the standard fields and management fields are shared as well as 100% of the fields relating to habitats and species under protection status.**

#### 4/ Comparison of the MAIA GIS DB with INSPIRE

- MAIA fields are associated with all the INSPIRE database fields

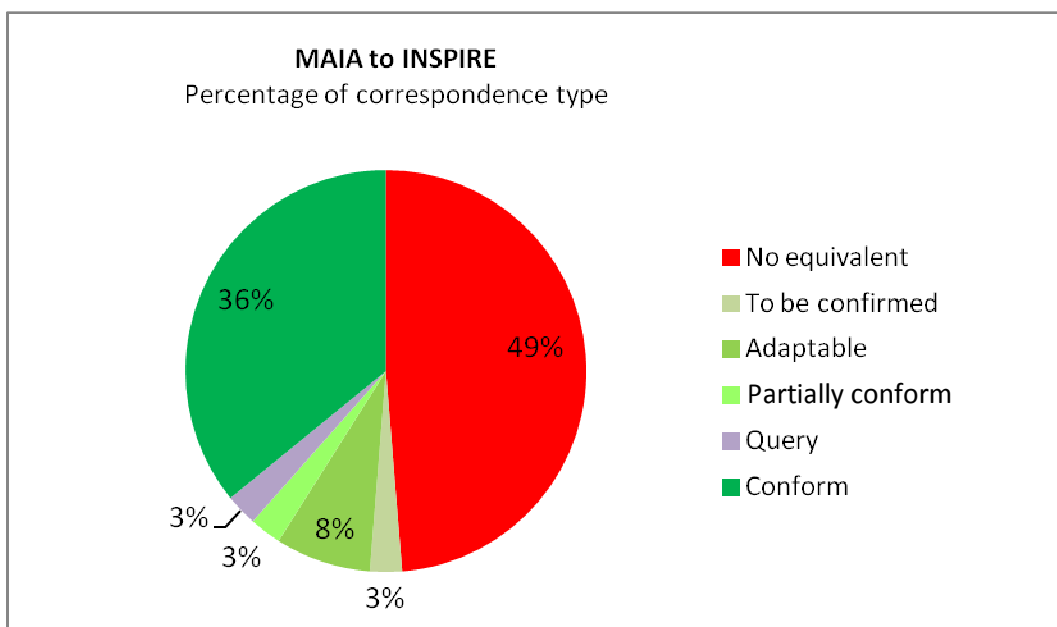


Figure 9: Distribution of correspondence between INSPIRE database fields and those from the MAIA database.

The comparison of the MAIA and INSPIRE fields shows a **51%** match (information that is conform, partially conform, to be confirmed, adaptable or queryable).

Table IX: Percentage of field overlap by data family (MAIA fields are associated with all the INSPIRE fields)

Data family and correspondence type	Number of common fields	Percentage of common fields
Standard_No equivalent	8	42%
<b>Standard_Query</b>	1	5%
<b>Standard_Adaptable</b>	1	5%
<b>Standard_ToBeConfirmed</b>	1	5%
<b>Standard_Conform</b>	8	42%
<b>58%</b>		
Management_Adaptable	1	25%
<b>Management_partiallyConform</b>	1	25%
<b>Management_Conform</b>	2	50%
<b>75%</b>		
Management effectiveness_No equivalent	1	
Status_No equivalent	5	
HabitatSpecies_No equivalent	5	50%
<b>HabitatSpecies_Adaptable</b>	1	10%
<b>HabitatSpecies_Conform</b>	4	40%
<b>50%</b>		

The comparison of the MAIA and INSPIRE fields shows that 58% of standard fields, 75% of management-related fields and 50% of fields relating to habitats and species are shared.

## Summary and proposals

Convergence between the four databases is high as regards “standard”-type fields. All the databases have a minimum of basic fields describing the MPA (name/surface area/designation).

For the other data themes, the situation is more divergent as the goals of each database differ. Nonetheless, **for the ‘management’ theme in particular, the match rate is good between the MAIA database, the OSPAR management effectiveness scorecard and the OSPAR Access database** (even though the latter only includes few management fields).

Only the MAIA and INSPIRE databases include geographical data of protected areas.

It is important that the OSPAR base be aligned with the European and international data models with regard to the standard data and include the geographical aspect of protected areas.

In the light of the goals of the OSPAR Convention as regards marine protected areas and the need to monitor/assess effective management of these MPAs, it would be appropriate to pool the contents of the MAIA and OSPAR databases (Access DB and scorecard) and possibly share them in full. Given the matches detected, the necessary convergence effort would be relatively limited. The development of a common data model between MAIA and OSPAR is feasible without completely overhauling the existing databases.

**Assessment of management effectiveness** is a common concern (institutions and stakeholders), but this necessary assessment is still difficult to implement in an operational manner. The perception parameters currently used the most for this assessment are not always satisfactory for objective analyses.

A first step involving a standardised and joint assessment of **effective MPA management** at OSPAR level would probably be a first basis for consideration and evaluation as regards the MPA network development. This is the goal pursued by the MAIA database which, for the time being, includes factual management information, and plans to subsequently assess it, but not necessarily within the database.

Work on the **assessment of management effectiveness having regard for MPA goals** using common indicators and metrics across the Atlantic arc could be a future project.

**Whatever decision is made (level of pooling), the objectives of the new database must be clearly defined and approved by the stakeholders upstream.**