



D1.1

MSFD Review:  
Implementation and management in France  
December 2020



### **Disclaimer**

MAREOS is funded by the National Center for Space Studies in the framework of the action FPA 2018-2-05 - COPERNICUS USER UPTAKE – Caroline HERSCHEL.

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## List of acronyms

**EC** - European Commission

**EU** - European Union

**CIS** - Common Implementation strategy

**GES** - Good Environmental Status

**MoP** - Monitoring Programme

**MS** - Member States

**MSFD** - Marine Strategy Framework Directive

**PoM** - Programme of Measures

**RBMP** - River Basin Management Plans

**WFD** – Water Framework Directive

## 1. Introduction

The MAREOS project (2020-2022), related to the Framework Partnership Agreement - FPA 2018-2-05, aims at a better integration of Copernicus data in the European regulatory framework, and particularly for the implementation of the Marine Strategy Framework Directive (MSFD).

In brief, MAREOS reviews the existing monitoring protocol and strategy currently in place for the MSFD (marine waste, contaminants and hydrographic conditions...) on the French territory, to ultimately define how Copernicus data could provide solutions to support and/or improve its implementation.

This current document is part of work package 1 “MSFD analysis and identification of Copernicus data opportunities” which aims at identifying conducive areas to the integration of Copernicus data and mapping French and European capabilities that can benefit from the implementation of MSFD.

Deliverable D1.1, entitled “MSFD Review: Implementation and management in France”, describes the main objectives and implementation of the MSFD and in particular how the Directive is managed and organized in France.

Marine and coastal spaces are the stage for a multitude of human activities: maritime transportation, production of renewable energies, extraction of raw materials, fishing, aquaculture, tourism, etc. The integrated management of these activities consists in using a global approach to the different uses of marine and coastal space, both fragile and in demand. The ecological status of marine waters is also linked to land-based human activities (agriculture, industry, demographic growth, etc.).

The Marine Strategy Framework Directive (MSFD) pursues three main goals:

- > To ensure the protection and the conservation of marine ecosystems and prevent their deterioration. In areas of high deterioration, ecosystem functioning must be restored,
- > To prevent and progressively eliminate pollution,
- > To contain the pressure of human activities (fishing, use of diverse services, etc.) on the marine environment within levels compatible with the achievement of good environmental status. Ecosystems must have the capacity to react to various natural and human-induced changes while enabling the sustainable use of the marine environment for future generations (*e.g.* Common Fisheries Policy).

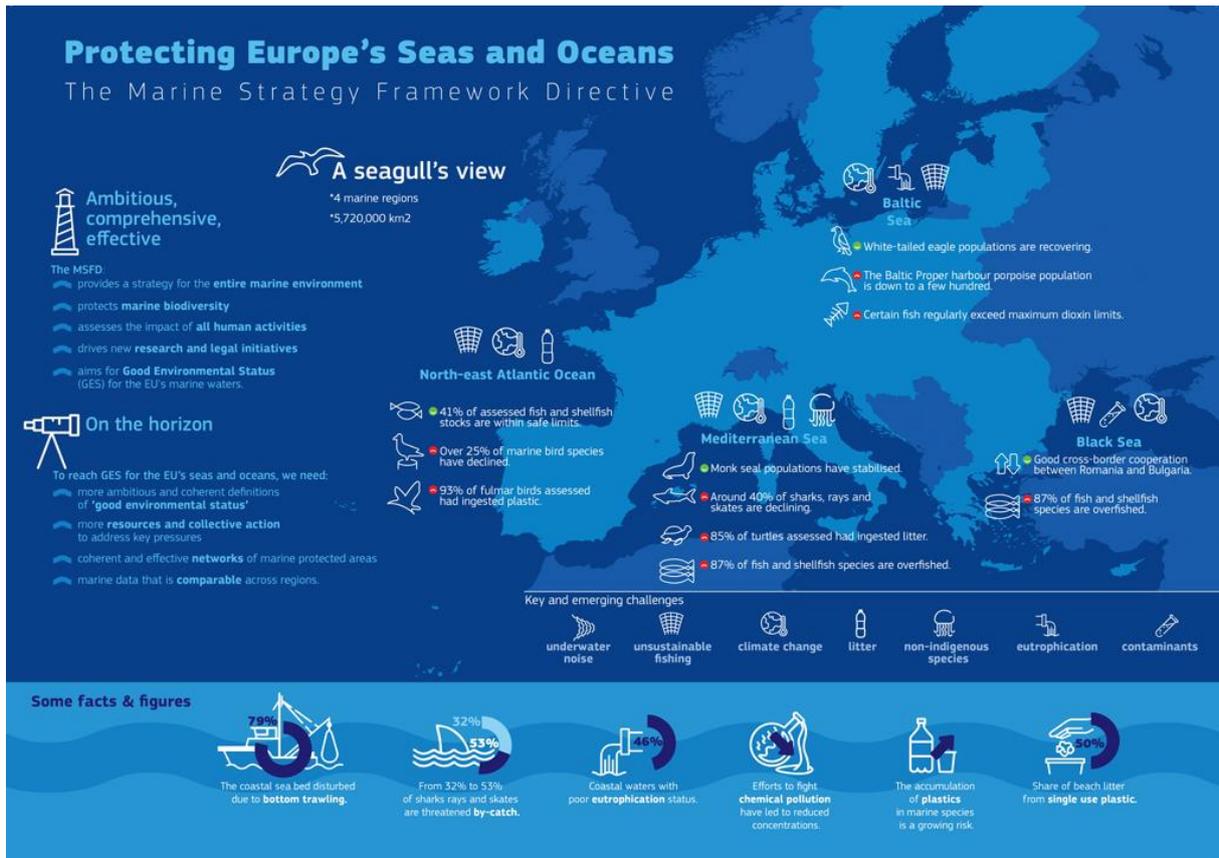


Figure 1 : Marine Strategic Framework Directive main outlines (Source: European Commission)

## 2. Marine Strategy Framework Directive: A review

### 2.1 Objectives

The MSFD is an integrative directive of a set of European regulatory texts that concern the marine environment: Water Framework Directive (WFD), Habitat-Fauna-Flora Directive (HFFD), Birds Directive (BD), Common Fisheries Policy (CFP), etc. The integrated approach to the management of the marine environment is based on a large number of existing actions at the national, European and international levels, which aims to federate and amplify in a coherent manner.

While previous directives (*e.g.* the Habitats-Fauna-Flora Directive) generally have an approach limited to one ecosystem component (habitats, species or a sector of activity), the MSFD develops an innovative ecosystem approach consisting of taking into account all components of the marine ecosystem in the management of human activities.

Finally, the MSFD requires Member States sharing the same marine region or sub-region to cooperate and strive for a common approach, notably through cooperation within the Regional Seas Conventions (including Oskar, Barcelona). Where relevant, the work carried out in the framework of the Regional Seas Conventions is considered as an integral part of the work to implement the MSFD.

The overall objective of the MSFD is to protect the marine environment across Europe while allowing the continuation of sustainable uses of the sea. It requires EU Member States (MS) to establish national marine strategies to achieve or maintain Good Environmental Status (GES) in their marine waters by 2020.

“Good environmental status (GES) means the environmental status of marine waters where these provide ecologically diverse and dynamic oceans and seas which are clean, healthy and productive within their intrinsic conditions, and the use of the marine environment is at a level that is sustainable, thus safeguarding the potential for uses and activities by current and future generations [...]”.

*(extract from Article 3(5) of the MSFD)*

GES is determined at the level of the marine region or sub-region on the basis of eleven qualitative descriptors. These relate to biological diversity, non-indigenous species, commercially exploited fish and shellfish, food webs, human-induced eutrophication, sea floor integrity, hydrographical conditions, contaminants, contaminants in fish and other seafood, marine litter and introduction of energy (including underwater noise). It is the responsibility of Member States to identify ways of measuring each descriptor and determining a baseline, targets and indicators.

The MSFD mainly applies to marine waters and may influence activities such as navigation dredging and new construction. It is possible that Member States will require consideration of MSFD as part of Environmental Impact Assessments for large projects thereby forming part of the consenting process potentially including mitigating measures and monitoring programmes.

The key requirements of the Directive, which apply on a six yearly cyclical basis, are:

- > An assessment of the current state of Member States seas,
- > A detailed description of what GES means for Member States waters, and associated targets and indicators,

- > The establishment of a monitoring programme (MoP) to measure progress toward GES,
- > The establishment of a programme of measures (PoM) for achieving GES.

The MSFD does not seek to replicate existing legislation rather to build upon it and fill in any gaps that may exist. It will not, for example, seek to replicate the efforts of the Water Framework Directive (WFD) or the Common Fisheries Policy (CFP) or indeed to undermine any regulations put in place by the International Maritime Organization (IMO).

## 2.2 Difference with the Water Framework Directive (WFD)

The EU Water Framework Directive 2000 (WFD) was transposed into law in EU Member States at the end of 2003 establishing a holistic and integrated approach for managing the water environment across Europe. This Directive requires measures to be taken to encourage the sustainable use of water and to protect and improve rivers, lakes, estuaries and coastal waters with the aim of achieving good ecological and chemical status. The WFD can have significant implications for recreational boating, both for ongoing activities such as dredging and disposal, and for new development proposals.

The WFD calls for a management plan to be developed for each river basin district. Following several years of preparatory work, the first WFD river basin management plans were published in most Member States between late 2009 and mid-2010. These plans set out the ‘Programme of measures’ which are required to achieve good ecological and chemical status in water bodies ‘at risk’ of failing to meet these targets. The first ‘Programme of Measures’ to achieve good status (or potential) had to be in place by 2012 with the intention of achieving the objectives by 2015. Progress with WFD implementation is reviewed on a six-yearly basis and there are two further WFD planning cycles – up to 2021 and 2027.

MSFD applies to marine waters *i.e.* the waters, the seabed and subsoil on the seaward side of the baseline from which the extent of territorial waters is measured. MSFD therefore applies to coastal waters as defined by the WFD and therefore there is overlap, but MSFD only applies for the practical aspects of environmental status that are not addressed through the WFD. The scope of MSFD is broader than that of the WFD, covering a greater range of biodiversity components and indicators such as marine mammals and seabirds. In other words, where both directives apply in coastal waters, the MSFD covers those aspects of good environmental status not covered by the WFD such as litter, noise and marine mammals.

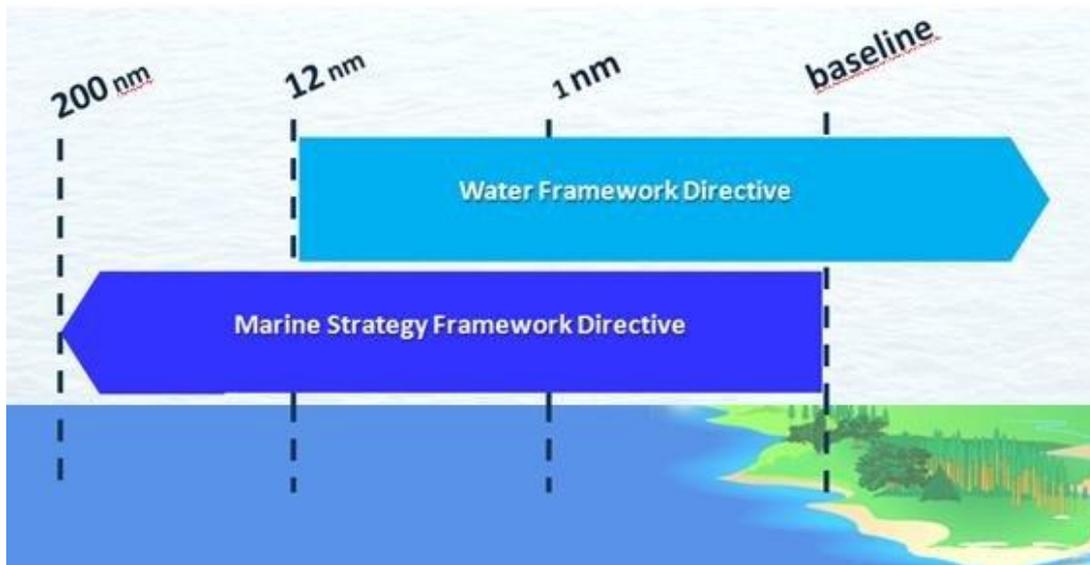


Figure 2 : Spatial range of the WFD and the MSFD (source: Altvater & al.)

The MSFD should therefore make as much use as possible of existing measures and agreements within the WFD because many of the measures to meet the objectives of the WFD will also deliver MSFD targets. This is of particular relevance to the contaminants descriptor where source control in riverine and coastal waters may have significant positive consequences for marine waters. The implications of the extensive geographical overlap with the WFD are also relevant for several other descriptors (e.g. biodiversity, eutrophication, hydrographical conditions).

### 2.3 Implementation

As established in article 17, Member States (MS), must develop and implement a marine strategy for their marine waters, every six years, through a series of 5 steps:

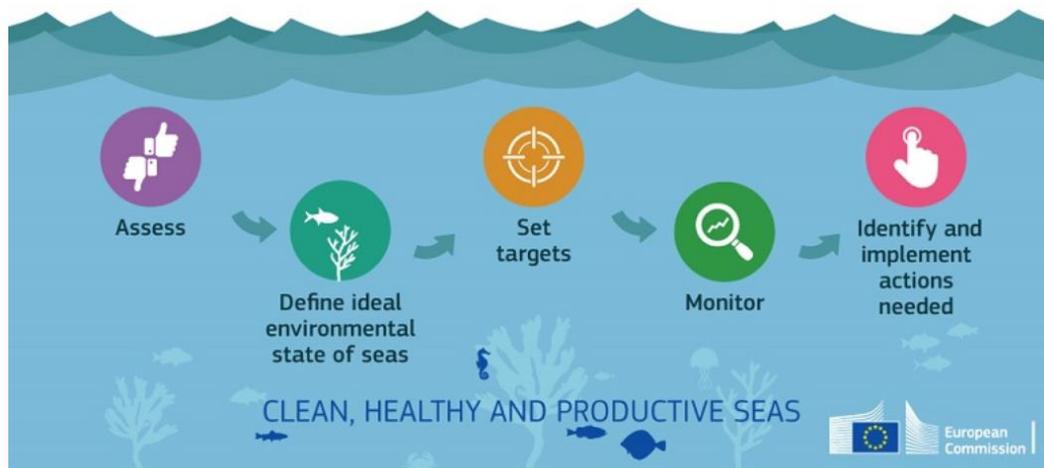


Figure 3 : How EU Member States develop marine strategies (Source: European Commission)

More precisely, those steps consist in the actions described in the following figure:

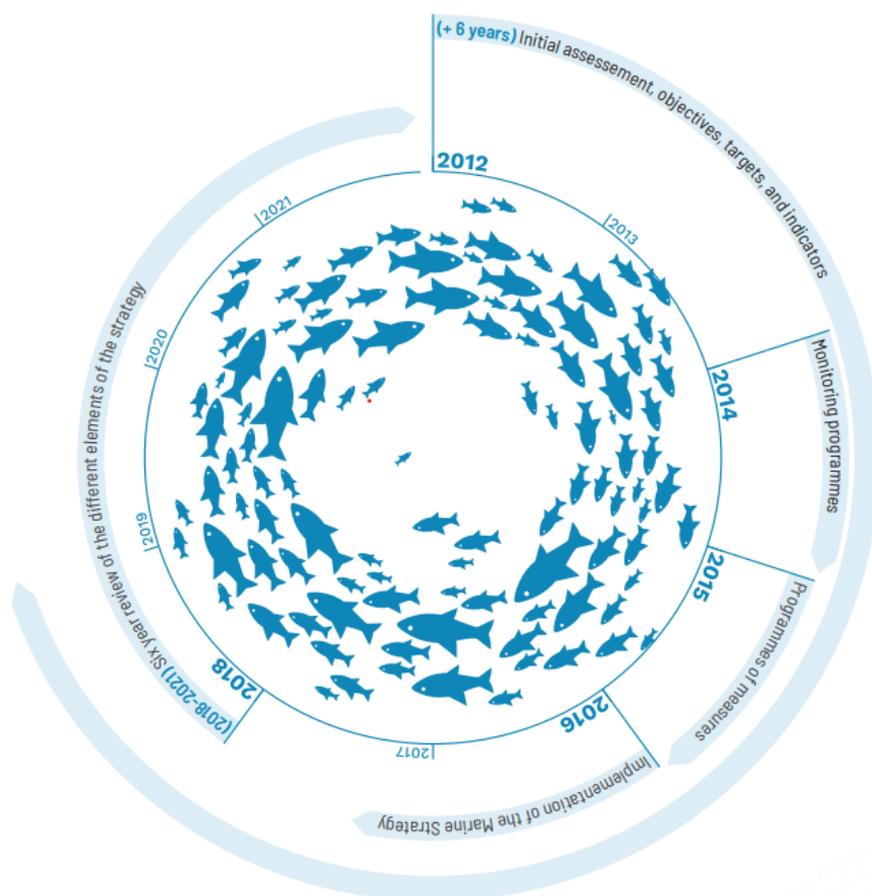


Figure 4 : MSFD's six-year implementation cycle (source: RAGES project)

The first three steps of the MSFD comprise an assessment of the environmental status of the waters and the environmental impact of human activities (article 8), the determination of GES (article 9) and the setting of environmental targets (article 10). The fourth step requires MS to develop a monitoring programme to assess the environmental status of marine waters and progress towards the achievement of environmental targets (article 11), and, finally, in the fifth step, MS establish a programme of measures to achieve or maintain GES (article 13).

### 2.3.1 Step 1 - Initial assessment

The assessment of the ecological status of marine waters and the environmental impact of human activities on these waters is the first step in the implementation of the MSFD (art. 8). It is prepared at the level of each marine sub-region and reviewed every 6 years.

It is composed of three components:

- > An analysis of the specificities and essential characteristics and the ecological status of these waters,
- > An analysis of the main pressures and impacts, notably due to human activity, on the ecological status of these waters,

- > An economic and social analysis of the use of these waters and the cost of the degradation of the marine environment.

The first two elements constitute the assessment of the ecological status. The GES of the marine environment is defined, within each descriptor, according to methodological standards and criteria harmonized at the European level and specified at the French level in a specific decree.

The economic and social analysis of the use of marine waters is broken down into 23 sectors of activity described in particular according to socio-economic indicators and which interact with the marine environment (*including* transport, fishing, aquaculture, MRE, Etc.) This interaction may result in the direct use of the sea or its resources by the sector, in pressures caused to the environment by the sector or in the dependence of the sector on the good state of the marine environment.

### 2.3.2 Step 2 – Good Environmental Status (GES) definition

Good ecological status corresponds to the proper functioning of ecosystems (at the biological, physical, chemical and health levels) allowing for the sustainable use of the marine environment. Eleven qualitative descriptors (Annex 1 of the MSFD), common to all Member States of the European Union, are used to define good environmental status.



Figure 5: Good Environmental Status' descriptors (source: EMODNET)

The Directive establishes 11 qualitative descriptors, on which three are state related (D1/D4/D6), eight are pressure related (D2/D5/D5/D7/D8/D9/D10/D11) and one is both (D3):

#### State Descriptors that characterise marine biodiversity :

- > **D1** – Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climate conditions.
- > **D4** - All elements of the marine food webs, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity.

- > **D6** - Sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected

**Pressures descriptors that relate to human-induced pressures:**

- > **D2** - Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystem.
- > **D5** - Human-induced eutrophication is minimised, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algal blooms and oxygen deficiency in bottom waters.
- > **D7** - Permanent alteration of hydrographical conditions does not adversely affect marine ecosystems.
- > **D8** - Concentrations of contaminants are at levels not giving rise to pollution effects.
- > **D9**- Contaminants in fish and other seafood for human consumption do not exceed levels established by Community legislation or other relevant standards.
- > **D10** - Properties and quantities of marine litter do not cause harm to the coastal and marine environment.
- > **D 11** - Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment.

**One descriptor is both a state and pressure descriptor as it related to aspects such as the level of fishing activity (pressure) and population age, size distribution and biomass indices (state):**

- > **D3** - Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.

The following table shows some of the criteria used to assess each descriptor.

Descriptor	Primary/secondary criteria
D1 - Biodiversity - Benthic habitats	<b>D6C4</b> : Loss of Benthic Habitat Type extent <b>D6C5</b> : Adverse effects on the status of benthic habitat type extent
D1 - Biodiversity - Pelagic habitats	<b>D1C6</b> : Characteristics of pelagic habitat type
D1 - Biodiversity - Mammals	<b>D1C1</b> : By-catch mortality rate <b>D1C2</b> : Population Abundance <b>D1C3</b> : Demographic Characteristics of Populations <b>D1C4/D1C4</b> : Spatial distribution of populations <b>D1C5/D1C5</b> : Species Habitat
D1 - Biodiversity - Birds	<b>D1C1</b> : By-catch mortality rate <b>D1C2</b> : Population Abundance <b>D1C3</b> : Demographic Characteristics of Populations <b>D1C4/D1C4</b> : Spatial distribution of populations <b>D1C5/D1C5</b> : Species Habitat
D1 - Biodiversity - Fish & D1 - Biodiversity - Cephalopods	<b>D1C1</b> : By-catch mortality rate <b>D1C2</b> : Population Abundance <b>D1C3/D1C3</b> : Demographic Characteristics of Populations <b>D1C4/D1C4</b> : Spatial distribution of populations <b>D1C5/D1C5</b> : Species Habitat
D1 - Biodiversity - Turtles	<b>D1C1</b> : By-catch mortality rate <b>D1C2</b> : Population Abundance <b>D1C3</b> : Demographic Characteristics of Populations <b>D1C4/D1C4</b> : Spatial distribution of populations <b>D1C5/D1C5</b> : Species Habitat

D2 - No-indigenous species	<b>D2C1</b> : Newly introduced non-native species <b>D2C2</b> : Established non-native species <b>D2C3</b> : Adverse effects due to the presence of non-native species
D3 - Population of commercial fish/shellfish	<b>D3C1</b> : Fishing mortality rate <b>D3C2</b> : Spawning stock biomass <b>D3C3</b> : Population Distribution by Age/Size
D4 - Elements of marine food webs	<b>D4C1</b> : Trophic Guild Species Diversity <b>D4C2</b> : Abundance in Trophic Guilds <b>D4C3</b> : Trophic Guild Size Distribution <b>D4C4</b> : Trophic Guild Productivity
D5 - Eutrophication	<b>D5C1</b> : Nutrient concentrations <b>D5C2</b> : Chlorophyll-a concentration <b>D5C3</b> : Harmful Algal Blooms <b>D5C4</b> : Seal limit (transparency) of the water column <b>D5C5</b> : Dissolved oxygen concentration <b>D5C6</b> : Abundance of Opportunistic Macroalgae <b>D5C7</b> : Macrophyte communities in benthic habitats <b>D5C8/D5C8</b> : Macrofaunal communities in benthic habitats
D6 - Sea floor integrity	<b>D6C1</b> : Physical loss of the seabed <b>D6C2</b> : Physical disturbance of the seabed <b>D6C3</b> : Adverse effects due to physical disturbances
D7 - Alteration of hydrological conditions	<b>D7C1</b> : Permanent change in hydrographic conditions <b>D7C2</b> : Adverse effects due to permanent change in the hydrographic conditions
D8 - Concentration of contaminants	<b>D8C1</b> : Contaminants in the environment <b>D8C2</b> : Effects of Contaminants on Species and Habitats <b>D8C3</b> : Significant episodes of acute pollution <b>D8C4</b> : Effects of significant acute pollution episodes
D9 - Contaminants in fish/seafood for human consumption	<b>D9C1</b> : Contaminants in Seafood Products for Human Consumption <b>D9C2</b> (national criteria): Pathogenic microbiological contamination
D10 - Marine litter	<b>D10C1</b> : Waste (excluding micro-waste) <b>D10C2</b> : Micro-waste <b>D10C3</b> : Ingested wastes <b>D10C4</b> : Adverse effects of waste
D11 - Introduction of energy including underwater noise	<b>D11C1</b> : Anthropogenic impulsive noise <b>D11C2</b> : Low-frequency anthropogenic continuous noise

Figure 5 : GES descriptors' evaluation criteria (source : IFREMER)

Given the nature of the marine environment, for each of these descriptors, GES must be determined at the marine region or subregion levels. In fact, according to article 5, and in line with the ecosystem-based approach guiding the MSFD, although marine strategies are to be applied to national waters, also the development of targets, monitoring programmes and programmes of measures, must take into account the marine (sub)region.

On the basis of methodological standards defined by the European Commission, GES was specified at the national level and notified to the Commission at the end of December 2012. Each Member State must adapt or even complete the standards harmonized at the European level in view of its territory and the scientific advances at its disposal. The definition of GES is thus revised every 6 years.

### 2.3.3 Step 3 - Environmental objectives

Environmental objectives aim to reduce the pressures exerted by human activities on the marine environment to levels consistent with maintaining and achieving GES of marine waters by the end of the current MSFD cycle. Thus, the environmental objectives adopted by the coordinating authorities of the seafront in 2019 should make it possible to reduce the pressures exerted by activities between now and 2026.

Environmental objectives are proposed either for the entire perimeter of the seafront or for geographically localised ecological issues and/or areas particularly concerned by high levels of pressure.

In order to be assessable, the environmental objectives come along with quantitative indicators (threshold value or trend) and have defined targets. These are proposed with a view to achieving or maintaining GES of marine waters. In other words, the environmental objectives are levers for achieving or maintaining the GES. Their definition takes into account existing public policies.

#### *2.3.4 Step 4 - Monitoring Programme (MoP)*

The monitoring program defines the monitoring necessary for the ongoing assessment of the marine environment and describes all the systems for collecting or producing data to meet the objectives set by the Directive. It must be updated every 6 years.

In particular, it is intended to allow :

- > The analysis of the characteristics of the ecosystem and of the pressures and impacts that make it possible to carry out the analysis of the ecological status under Article 8 of the MSFD,
- > The evaluation of the achievement of GES,
- > The assessment of the achievement of environmental objectives as defined in the corresponding **Marine Action Plans (MAP)**
- > The evaluation of the effectiveness of the measures implemented under the programme of measures;
- > The construction of the GES descriptors and those associated with the environmental objectives.

Each MoP is structured into 13 thematic programmes, each corresponding to a MSFD descriptor, except for the descriptors related to biodiversity for which monitoring is organized by compartment or ecosystem component.

The MoPs adopted in 2015 will be revised in 2021 through the adoption of monitoring systems for strategic facade documents.

#### *2.3.5 Step 5 – Programme of measures (PoM)*

The programme of measures shall include all the concrete and operational actions to be implemented in order to achieve or maintain GES in marine waters by 2020. They shall be based on an analysis of the adequacy of existing measures under other policies with regard to environmental objectives and shall identify on this basis complementary measures for the achievement of these objectives.

The PoMs include national measures, some of which can however be implemented at the local level, and measures specific to the challenges of the marine sub-regions.

In the PoM adopted in April 2016 under the 1st cycle of MSFD implementation, the measures concern the following themes:

- > Marine biodiversity,
- > Integrated management of the land-sea interface,
- > Development and supervision of the planning of specific activities that may impact the marine environment;
- > Communication, awareness and training,

- > Two emerging topics: non-native species and underwater noise.

### 2.3.6 MSFD's implementation cycles

The first 6-year cycle ended in 2020 and the first step of the second cycle has then started.

- > First Cycle: 2012 – 2018
- > Second Cycle : 2018 – 2024
- > Third Cycle : 2024 – 2030

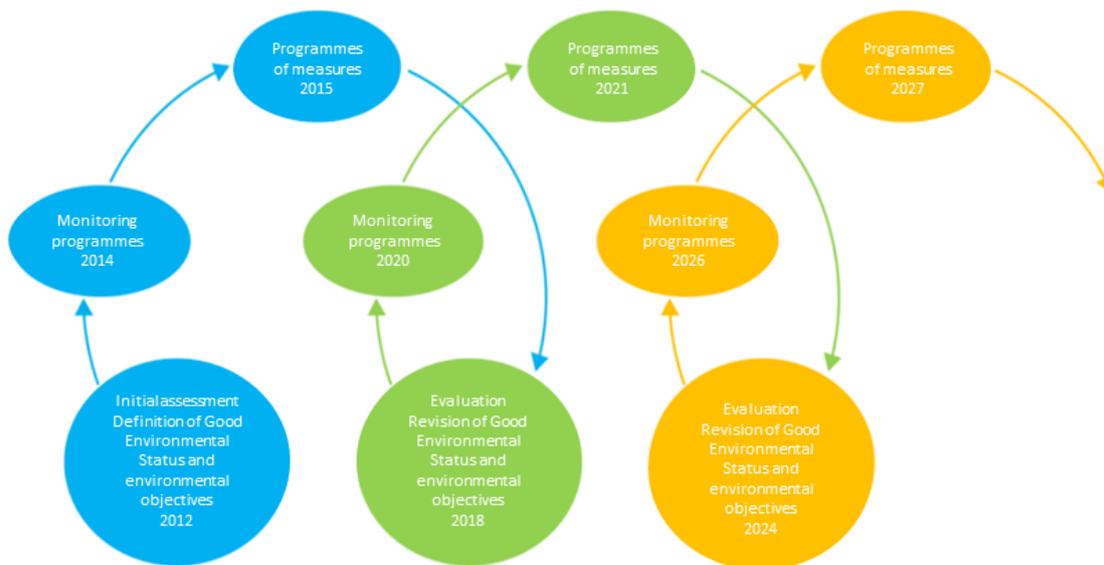


Figure 6 : MSFD's implementation cycles (source : MilieuMarinFrance)

As a result of the assessment made during the first cycle, the Commission made some recommendations to be taken forward at different levels. To improve adequacy and coherence of GES, proposed actions at the EU level included the revision and strengthening of the Commission decision on criteria and methodological standards on GES and further developing common understanding on the obligations under article 9 (including GES assessment methods, scales and aggregation rules) to allow a pan-European assessment of marine ecosystems.

At the regional level, the Commission highlighted the need to enhance regional cooperation, namely, in the context of Regional Sea Conventions. The purpose is to ensure that MS and the EC work together towards a systematic identification of gaps in knowledge that prevents a more ambitious risk-based setting of GES. The ambition is to collaborate to close those gaps and further develop region or ecosystem specific criteria to determine and assess GES, ensuring regional work benefits from progress at the EU level. These elements will be revised during the second cycle.

All the results of the work carried out during the first cycle are available on the EC's website<sup>1</sup>.

<sup>1</sup> [https://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/implementation/reports\\_en.htm](https://ec.europa.eu/environment/marine/eu-coast-and-marine-policy/implementation/reports_en.htm)

## 2.4 Generic responsibility for EU Member States

The MSFD requires that Member States must cooperate with each other and in particular when they share a marine region (or subregion). This is to ensure that each element of their marine strategies is coherent and coordinated across the concerned marine region (or subregion).

The Directive splits Europe's waters into 4 marine regions and associated sub-regions:

- > Baltic Sea (No Sub-regions),
- > The North East Atlantic Ocean (The Greater North Sea including the Kattegat and the English Channel; The Celtic Seas; The Bay of Biscay and the Iberian Coast; The Macaronesian Biogeographic region (the waters surrounding the Azores, Madeira and the Canary Islands),
- > The Mediterranean Sea (The Western Mediterranean Sea; The Adriatic Sea, The Ionian Sea and the Central Mediterranean Sea, The Aegean-Levantine Sea),
- > The Black Sea (No Sub-regions).

A suitable implementation of the Directive requires, both, a good understanding of the relationships between activities, pressures and the ecosystems, and the cooperation and coordination of MS at a regional and sub-regional level, in order to (1) assess possible cumulative impacts and the state of the marine ecosystem and (2) set targets and measures accordingly.



Figure 7 : MSFD's marine regions & sub-regions (source: European Commission)

In order to facilitate the work, the coordination is being carried out through a series of working groups led by the European Commission known as the Common Implementation Strategy (CIS). The CIS is composed of the following working groups:

- > **Marine Directors:** Highest level political group focused on ensuring the overall implementation of the Directive;
- > **Marine Strategy Coordination Group:** Link between Marine Directors and Working Groups, preparing material for the Marine Directors and overseeing the work of the Working Groups. This group (and its subgroups) is a Commission expert group within the meaning of Commission decision C(2016)3301;
- > **The Working Group on GES:** It focuses on issues concerning the characteristics of GES and the associated targets and indicators, with the aim of ensuring comparable approaches are taken across the EU;
- > **The Working Group on Economic and Social Analysis:** It supports Member States in meeting the economic and social assessment requirements of the Directive, with the aim of ensuring comparable approaches are taken across the EU.
- > **The Working Group on Data, Information and Knowledge Exchange:** It has been set up to develop a coordinated MSFD information and data reporting process. The working group is developing proposals for reporting Programme of Measures. It will also address the development of the data infrastructures that are needed to facilitate the implementation of the Directive at European- and Member State-level, working as far as possible to use existing data initiatives and to remove duplication of reporting with related Directives.



Figure 8 : MSFD's coordination groups (source: European Commission)

There are also four European technical subgroups, on marine litter (Descriptor 10), noise (Descriptor 11), seabed and data, which have a remit to review monitoring methodologies and develop proposals for new monitoring; provide a platform for sharing best practice on the development of GES characteristics, targets and indicators; and recommend proposals for further research.

The EC also relies on the work of the European Environment Agency (EEA), the Joint Research Centre (JRC) and the International Council for the Exploration of the Sea (ICES) to advance knowledge and to provide technical support to its on-going work.

### 3. MSFD in France

#### 3.1 Procedures

In France, the Marine Strategy Framework Directive applies to metropolitan areas under French jurisdiction, divided into 4 marine sub-regions: the English Channel-North Sea, the Celtic Seas, the Bay of Biscay and the Western Mediterranean.

In order to achieve the objectives set for 2020, France has decided to implement the requirements of the MSFD through Marine Action Plans (MAP). Each MAP corresponds to a metropolitan marine sub-region and is made up of the 5 steps of the MSFD implementation.

The content of the MAPs is defined by the coordinating authorities (Prefectures) of the four metropolitan marine sub-regions, in consultation with the stakeholders concerned who are members of each Maritime Councils (representatives of socio-economic sectors, scientific experts, researchers, NGOs, elected officials, ...).

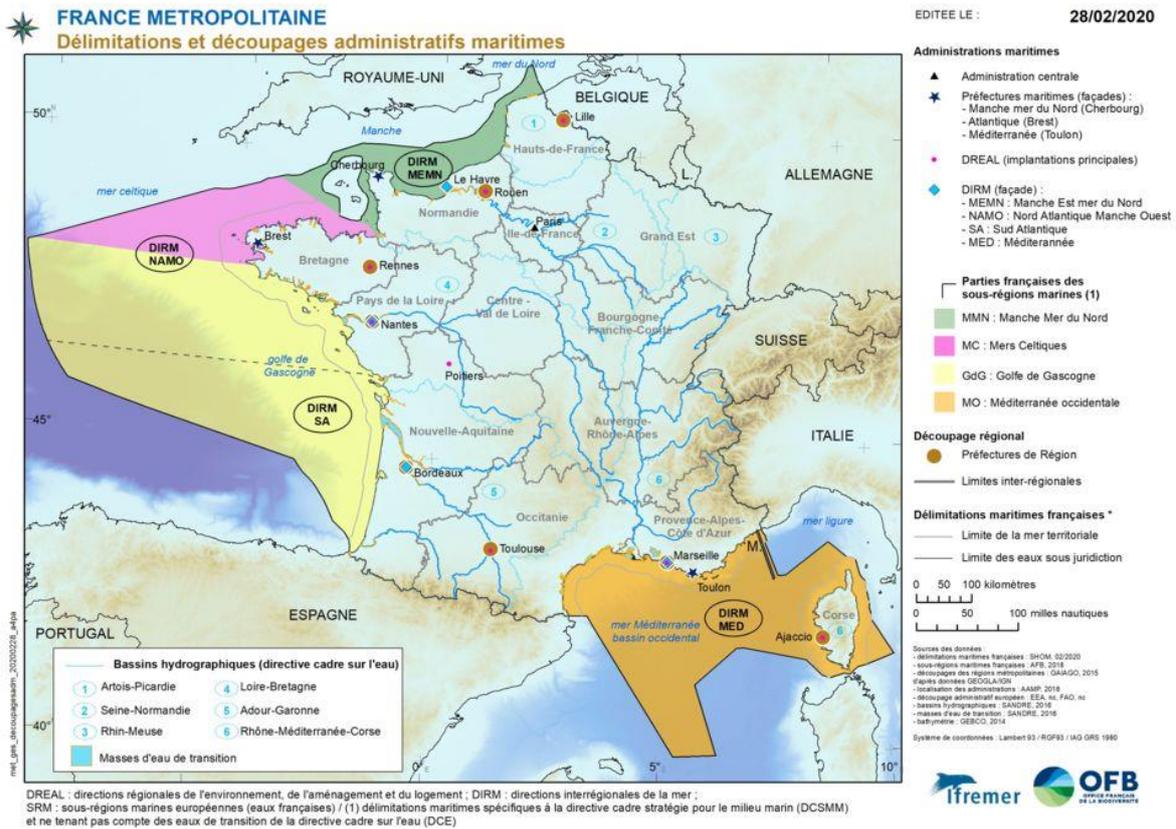


Figure 9 : French waters limitations for MSFD (source: IFREMER & OFB)

### 3.2 Governance

The governance of the MSFD is based on competent administrative authorities at the national level - the Ministry in charge of the Environment (Directorate of Water and Biodiversity) and at the level of each marine sub-region (Prefectures coordinating seafronts).

Within each seafront, the coordinating authorities rely on the coordinating role of the interregional directorates of the East Channel-North Sea, North Atlantic-West Channel, South Atlantic and Mediterranean.

The implementation of the MSFD is also carried out in close consultation with the actors of the maritime field gathered within the Maritime Councils of the coasts.

The competent authorities shall draw on the scientific and technical work carried out by a wide network of partners to develop and revise the various elements of the Marine Action Plans.

In particular, the French Biodiversity Office (OFB) and the French National Institute for Ocean Science (IFREMER) are in charge of the MSFD implementation and provide technical and scientific support.

All elements of the Marine Action Plans are notified to the European Commission. The Commission assesses their conformity with the requirements of the Directive and their consistency within the marine sub-regions and the Community as a whole.

For the second cycle of implementation of the MSFD, the Marine action plans (MAP) have been integrated into the Strategic Maritime Fringe Document (DSF), of which they constitute the environmental component (Decree No. 2017-724 of May 3, 2017). Each element of the MAP is therefore included in one of the elements of the DSF.

The integration of the MAPs in the DSF has confirmed the strong need for scientific and technical support to the implementation of the DSF as well as the need to implement marine policies in an integrated manner.

### 3.3 Operators

At the national and local levels, the stakeholders of the MSFD implementation are the government services and public establishments, public institutions, territorial authorities, maritime economy actors, scientists and NGOs.

Detailed and respective roles are described in the following table.

	Thematic responsible	Monitoring Responsible
D1 - Biodiversity - benthic habitat	UMS PatriNat (OFB)- Dinard / Ifremer	OFB Brest – OFB Granville
D1 - Biodiversity - pelagic habitats		OFB Brest
D1 - Biodiversity - Mammals	UMS 3462 PELAGIS, La Rochelle	OFB Brest
D1 - Biodiversity - Birds	MNHN - Station marine de Concarneau	OFB Brest
D1 - Biodiversity - Fish & D1 - Biodiversity - Cephalopods	Ifremer, Nantes - UMS PatriNat (OFB), Dinard	Ifremer, Nantes - UMS PatriNat (OFB), Dinard
D1 - Biodiversity - Turtles	MNHN	OFB Brest
D1 and D2 - International Biodiversity Coordination	MNHN	
D2 - No-indigenous species	UMS PatriNat (OFB) – Station marine d’Arcachon	UMS PatriNat (OFB) – Station marine d’Arcachon
D3 - Population of commercial fish/shellfish	Ifremer Port en Bessin - Ifremer Nantes	Ifremer Nantes
D4 - Elements of marine food webs	-	-
D5 - Eutrophisation	Ifremer, Boulogne sur Mer	OFB Brest
D6 - Sea floor integrity	BRGM Orléans - BRGM	BRGM Orléans - BRGM
D7 - Alteration of hydrological conditions	SHOM Brest	SHOM Brest
D8 - Concentration of contaminants	Ifremer Nantes	Ifremer Nantes
D9 - Contaminants in fish/seafood for human consumption	ANSES	ANSES
D10 - Marine litter	Ifremer Bastia - Ifremer La Seyne sur Mer - CEDRE Brest	OFB Brest
D11 - Introduction of energy including underwater noise	SHOM Brest	SHOM Brest

Figure 10 : French structures involved in the MSFD implementation (source: IFREMER)

To further investigate, a set of interviews were planned to better understand the complex implementation of the MSFD and to clearly identify who is doing what.

Below is the list of agencies that were interviewed, along with the interview date and internal referent:

Organisation	Contact	Date	PMBA's referent
IFREMER	Lucile Delmas	01/10	Phil Monbet
OFB	Dorothee Vincent	16/11	Nolwenn Beaume
CEDRE	Camille Lacroix	19/11	Anais Turpault
CEDRE	Loic Kerambrun	19/11	Anais Turpault
CREOCEAN	Denis Valance	20/11	Phil Monbet
CREOCEAN	Sébastien Thorin	20/11	Phil Monbet
IFREMER	Francois Galgani	20/11	Anais Turpault
BRGM	Olivier Brivois	23/11	Anais Turpault
SHOM	Emilie Tew-Kai	25/11	Nolwenn Beaume
SHOM	Valerie Cariou	25/11	Nolwenn Beaume
MNHN	Francoise Claro	25/11	Juliana Carvajal
MNHN	Fanny Girard	25/11	Juliana Carvajal

<i>OFB</i>	Benjamin Guichard	25/11	Juliana Carvajal
<i>La Rochelle Université / CNRS</i>	Matthieu Authier	26/11	Juliana Carvajal
<i>La Rochelle Université / CNRS</i>	Auriane Virgili	26/11	Juliana Carvajal
<i>OFB</i>	Muriele Chevrier	27/11	Nolwenn Beaume
<i>OFB</i>	Julie Charmasson	27/11	Nolwenn Beaume
<i>OFB</i>	Sophie Beauvais	27/11	Nolwenn Beaume
<i>IFREMER</i>	Alain Lefebvre	02/12	Nolwenn Beaume
<i>IFREMER</i>	David Devreker	02/12	Nolwenn Beaume
<i>IFREMER</i>	Antoine Huguet	02/12	Nolwenn Beaume
<i>MNHN</i>	Laurent Guerin	04/12	Juliana Carvajal
<i>MNHN</i>	Marine Delesalle	04/12	Juliana Carvajal
<i>MNHN</i>	Pierre Thiriet	04/12	Juliana Carvajal
<i>MNHN</i>	Anthony Acou	04/12	Juliana Carvajal

Figure 11 : List of interviews carried out in the framework of MAREOS

While most of the responses provided an understanding of the MSFD implementation and have enabled the writing of this report, it should be noted that all of the structures interviewed were in line saying that the coordination in France is running well as the ministry is deeply involved in the overall process. It is also getting better and better as each structure wants to reach the same objective and is taking advantage of the lessons learned during the first implementation cycle.

*“For the first reporting cycle, each involved entity was working on its own, they were some discussion but not so much. For the second cycle (the current one), the idea is to work closely and involve as many people as possible. The coordination of the 11 descriptors have the same baseline and methods to evaluate the environmental criteria.”*

**Muriel Chevrier, OFB, MSFD French coordination team**

However, relations with others MS are almost non-existent for thematic and monitoring responsible. Only ministries are working together within the various working groups. This is certainly something that will have to be modified during the second implementation cycle since it is part of the Commission's recommendations.

*“In the EC working groups, there is a wish to work closely all together, to harmonize the monitoring processes and procedures and to work jointly on some descriptors.”*

**Lucile Delmas, IFREMER, MSFD French coordination team**

These interviews were also and primarily conducted to identify how to align/use the substantial capabilities of Copernicus for the MSFD and to inventory in which agencies in charge Copernicus is used and if not, what are the reasons why (inputs to be found in MAREOS D1.2).

## 4. Conclusion

The analysis of the actions launched under the first MSFD implementation cycle shows that, even though considerable efforts have been made or will be accomplished in the near future, in most Member States additional action is needed to ensure reaching GES. More progress needs to be made to ensure that approaches are comparable across Member States and to make sure the monitoring programmes are improved so they constitute an appropriate framework that meets the MSFD requirements.

Part of the response to these bottlenecks could certainly be found in existing initiatives and programmes such as Copernicus.

Indeed, as the European Union's Earth Observation Programme is composed of several tools that present numerous advantages regarding surveillance and monitoring that could help the implementation of the MSFD.

## Appendix 1

### Interviews

Structure	IFREMER	
Date	1, October 2020 – 17:30 CET	
Duration	1h	
Place	Microsoft TEAMS	
Attendees	IFREMER <ul style="list-style-type: none"> <li>• Lucile Delmas</li> </ul>	PMBA <ul style="list-style-type: none"> <li>• Anais Turpault</li> <li>• Philippe Monbet</li> <li>• Nolwenn Beaume</li> </ul>

### Introduction: Roundtable / MAREOS presentation / Context

Lucile DELMAS is the first person to be interviewed. Lucile is working for IFREMER (French Research Institute for Exploitation of the Sea) and she is part of the MSFD French coordinating team, along with OFB representative.

This report describes and sums up the main points discussed during the interview.

### Good Environmental Status (GES) and descriptors

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Lucile gave us a general presentation of the MSFD and explained the eleven descriptors which describe what the environment will look like when GES has been achieved.

- Descriptor 1. Biodiversity is maintained
- Descriptor 2. Non-indigenous species do not adversely alter the ecosystem
- Descriptor 3. The population of commercial fish species is healthy
- Descriptor 4. Elements of food webs ensure long-term abundance and reproduction
- Descriptor 5. Eutrophication is minimized
- Descriptor 6. The sea floor integrity ensures functioning of the ecosystem
- Descriptor 7. Permanent alteration of hydrographical conditions does not adversely affect the ecosystem
- Descriptor 8. Concentrations of contaminants give no effects
- Descriptor 9. Contaminants in seafood are below safe levels
- Descriptor 10. Marine litter does not cause harm
- Descriptor 11. Introduction of energy (including underwater noise) does not adversely affect the ecosystem

Along with this description, Lucile provided the institutions that are in charge of each of these descriptors (IFREMER, SHOM, OFB, etc).

Her insights and information will be included in deliverable D1.1 “MSFD review”.

### Follow-up at national level

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Lucile explained how the MSFD is implemented in France and how it is supervised/monitored.

In France, the Ministry for the Ecological Transition oversees the monitoring the Directive and must report every 6 years the advancements and state of the art for each descriptors and incentives. A dedicated team of policy officers is in place to follow up on these aspects.

The last report was issued in 2018 and a new one is expected in 2024. Descriptor representatives must report to the Ministry two years prior to the publication date in order for them to prepare the report in due time (in this case, reports to be sent to the Ministry by the end of 2022).

On a day-to-day basis, each descriptor is monitored by a two-person team to fully implement what is expected: a thematic representative and a monitoring representative.

Each teamwork is built upon what was already implemented and listed for each descriptor, the idea being optimizing what already exists and not start from scratch. However, some new parameters and processes are being tested in order to be more efficient and accurate.

### **Follow-up with other European countries**

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Lucile stated that working groups are in place at European levels to see how each country is implementing the MSFD.

There is a wish to work closely all together, to harmonize the monitoring processes and procedures and to work jointly on some descriptors.

### **Feedback on COPERNICUS data**

---

Lucile heard about COPERNICUS but never actually used its data or knows if it is commonly used for the MSFD implementation.

She thinks that one of the reasons why scientists and/or supervisors don't use COPERNICUS data is because they have their own solution that is internally designed, so there's no need for them to use COPERNICUS data.

However, there seems to have a ignorance about the subject that should be interesting to further investigate.

**End of the meeting**

Structure	OFB	
Date	16, November 2020 – 10:00 CET	
Duration	1h	
Place	Microsoft TEAMS	
Attendees	OFB <ul style="list-style-type: none"> <li>Dorothee Vincent</li> </ul>	PMBA <ul style="list-style-type: none"> <li>Nolwenn Beaume</li> </ul>

## Introduction: Roundtable / MAREOS presentation / Context

### Questions

#### What is your role in the implementation of the MSFD?

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Dorothee is working for OFB (French Office for Biodiversity) and she is the French monitoring representative for two descriptors: Descriptor 1 Biodiversity – Pelagic habitats and Descriptor 5 - Eutrophication.

#### What descriptor(s) are you working on?

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Descriptor 1 Biodiversity – Pelagic habitats and Descriptor 5 - Eutrophication.

#### What geographical area are you working on?

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She works for all four French metropolitan marine regions: Channel / North Sea, Celtic Seas, Gulf of Gascogne and Occidental Mediterranean

#### What is your work on this topic?

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She coordinates all actions related to monitoring for these two descriptors: identification of needs, proposition of schedules and orientations prior to the operational deployments (technical feasibility, sampling protocols, spatiotemporal strategies, etc), analysis of required adjustments for current follow-up processes, launch of R&D programs/projects and financial follow-up.

She works closely with involved stakeholders and scientists (Agences de l'eau, decentralized services of the French government, operators, etc) to ensure a smooth and efficient monitoring of the marine environment. Together, they organize and plan the implementation of the MSFD and share the tasks to be done, they come up with scientific and technical specifications for the everyday monitoring and host thematic workshops.

Dorothee also participates in various national meetings regarding Descriptor 1 and 5: national scientific and technical committee, working groups, RESOMAR workshops, etc). She organizes

informative sessions and technical meetings for the scientific community, the operators and the technical secretariat of each French marine regions.

In addition, she ensures that the MSFD is in line with national policy programs (linked to the Marine Protected Areas and Natural Marine Parks), European programs (Water Framework Directive, Nitrates directive) and regional programs (OSPAR, Barcelone).

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**Which actors do you work with to carry out your mission?**

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Mostly scientific operators represented by the thematic responsables (researchers, engineers, etc).

Strong involvement of the French Ministry involved in Biodiversity and Environment (supervising the MSFD in France).

Support from the façade managers, working for the “Secrétariat technique pour le plan d’Action du Milieu Marin (STPAMM)” and the “agences de l’eau”.

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**How are you dealing with the reporting part?**

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The reporting to be done for these descriptors is supervised by the monitoring program representatives, who rely on the monitoring representatives. A synthesis of studies and measurements has been done during the first reporting cycle (critical analysis of the monitoring programme) for each descriptor.

It aimed at classifying the monitoring tools in various categories, ranking from “operational” (what is actually working), “non-operational” (to be developed to be fully operational) and “candidates” (which could work but needs more reflexion/analysis) and will be used as a baseline for the second cycle of reporting (writing of the strategic document in process).

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**Do you have direct links with the Ministry of Ecological Transition? What is the Ministry's day-to-day involvement?**

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Dorothee stated that the policy officers working for the Ministry are quite active and ask for a weekly follow-up of the actions.

They take part in various monitoring and supervising meetings and are well aware of the actions that are going on within each descriptor.

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**Are you familiar with Copernicus? if yes do you use this kind of data for your actions linked to MSFD?**

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She is fairly familiar with Copernicus and its data. She didn’t know what Copernicus was offering and the diversity of its data before participating to a training session about Copernicus data and services.

She uses CMEMS mostly for modelisation and hydrodynamic simulation. When available, her team used in-situ data for the monitoring reporting and uses Copernicus data if a campaign at sea cannot be done, if the data are not treatable or if they need more heterogeneity.

For D10 there is not much of interest since the descriptor is based on samples collection. But perhaps there could be some input.

### **In your view, why don't people use Copernicus data?**

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For her, one of the main drawbacks of Copernicus data is that the scale cannot be lowered as much as the team would need it.

The data that can be extracted from the platform is not well filtered, there is work to be done afterwards.

She thinks that operators don't use Copernicus for many reasons:

- They have their own system in-house
- They are not aware of what the Copernicus program has to offer in terms of data and services
- They think it is very complicated to extract data from it
- They think that the platform isn't intuitive

An effort has to be made by Copernicus supervisors to better advertise their data and tools, to reach more audience.

### **Could you provide us with contacts that would be of interest for this survey?**

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- Lisette Enserink (RBINS Royal Belgium Institute For Natural Sciences)
- Giacomo Montereale Gavazzi (RBINS Royal Belgium Institute For Natural Sciences)
- MSFD in Portugal & Spain → iFADO partners
- Agences de l'eau
- Secrétariat technique pour le plan d'Action du Milieu Marin (STPAMM)
- RESOMAR
- OSPAR

**End of the meeting**

Structure	CEDRE	
Date	19, November 2020 – 15:30 CET	
Duration	50mn	
Place	Microsoft TEAMS	
Attendees	CEDRE <ul style="list-style-type: none"> <li>• Camille Lacroix</li> <li>• Loic Kerambrun</li> </ul>	PMBA <ul style="list-style-type: none"> <li>• Anais Turpault</li> <li>• Juliana Carvajal</li> </ul>

## Introduction: Roundtable / MAREOS presentation / Context

### Questions

#### What is your role in the implementation of the MSFD?

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CEDRE is thematic co-representative for descriptor 10 on marine waste together with the French Institute for Marine Studies (IFREMER).

CEDRE deals with coastal waste and IFREMER with waste in the open sea.

Other structures are also involved in the impacts section: the French Biodiversity Office (OFB) and the National Museum of Natural History (MNHN).

#### What descriptor(s) are you working on?

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CEDRE also contributes to descriptor 8 on contaminants.

#### What geographical area are you working on?

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Regarding D10, the entire metropolitan coastline is concerned.

For D8, the surveillance concerns the coastline (illegal and accidental discharges) and the deep sea (pollution related to maritime transport).

#### What is your work on this topic?

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For D10, CEDRE is in charge of the management of the monitoring network “coastline, riverbanks and estuaries”.

This involves piloting the implementation of monitoring protocols for macro-waste assessment.

4 times a year, waste collection operations on 100m coastal strips are carried out by operators who have signed an agreement with the CEDRE.

The waste is then classified by type and analyzed in terms of quantity and composition. The monitoring network is made up of 45 sites.

For micro-waste, the network is less deployed with only 5 or 6 operational sites. It is not yet complete.

Micro-waste are collected and sent to laboratories for analysis.

For D8, the role of CEDRE consists in analyzing data related to the reporting of accidental or illegal pollution (pollution reports POLREP).

This implies to list them and to work on models, on drift estimation for example, with the objective of improving prevention and warning.

### **Which actors do you work with to carry out your mission?**

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Many actors are involved in those actions especially in relation with the monitoring network as it relies on several structures which are in charge of the samples collection.

These structures are for example: marine protected areas, environmental associations, cooperative societies, local authorities...

For the D8, CEDRE works with the different CROSS for example.

### **Do you have direct links with the Ministry of Ecological Transition? What is the Ministry's day-to-day involvement?**

---

The Ministry is deeply involved in the management of the MSFD implementation. The Ministry participates in discussions, makes arbitrations when necessary, brings information down from Europe and ensures reporting.

The thematic and monitoring representatives meet as a steering committee at the Ministry about 5 times a year. It is the occasion to discuss with structures involved in other descriptors.

In addition to this, descriptors meetings are organized (once a year for D10 for example)

The Ministry also leads coordination groups on good ecological status and state of knowledge.

### **Could you provide us with contacts that would be of interest for this survey?**

---

Many contacts at the Ministry, all different according to the thematic and the services provided.

The list of contacts can be provided if necessary.

### **Are you familiar with Copernicus ? if yes do you use tis kind of data for your actions linked to MSFD?**

---

Fairly unfamiliar with Copernicus and earth observation data.

For D10 there is not much of interest since the descriptor is based on samples collection. But perhaps there could be some input.

Concerning D8, when there is a marine pollution, particularly related to an oil spill, a satellite image is obtained in order to have an aerial view of the area. However, the image is not processed or analyzed at this stage. It is only used to feed the report into the POLREP database.

**In which context do you think such data could be useful and relevant?**

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What could be interesting is to have a more systematic detection of marine pollution and to develop an analyzing and qualifying system for these pollutions in terms of thickness or surface area in particular.

This is perhaps something that is already being done by CLS or other companies. It needs to be checked.

Work should be done on the treatment of occurrences and analysis capacities.

**End of the meeting**

Structure	IFREMER	
Date	20, November 2020 – 15:30 CET	
Duration	1h	
Place	Microsoft TEAMS	
Attendees	IFREMER <ul style="list-style-type: none"> <li>• François GALGANI</li> </ul>	PMBA <ul style="list-style-type: none"> <li>• Anais Turpault</li> </ul>

## Introduction: Roundtable / MAREOS presentation / Context

### Questions

#### What is your role in the implementation of the MSFD?

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Thematic responsible for the D10 descriptor:

- > Floating waste (opportunistic counts)
- > Waste on funds
- > Microplastics
- > Impacts - waste and effluent management / impacts on turtles...

François Galgani is also involved in the Mission Oceans.

Of Horizon Europe's 84 billion euro budget, 10 billion euros are dedicated to the mission, which makes 2 billion per mission approximately. In addition to this, there are structural funds, which provide a total of about 3 billion euros for the Mission Ocean.

One of the objectives of the Mission Ocean's programme "Starfish" is zero pollution (many proposed actions: marking of fishing nets, zero disposable plastic).

Mission Océan was piloted by Pascal Lamy so the mission worked actively on the recovery plan with proposals (for example 50 factories to recycle plastic...).

Everything is linked because it serves the MSFD's D10.

#### What descriptor(s) are you working on?

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D10 exclusively.

#### What geographical area are you working on?

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Regarding D10, the entire metropolitan coastline is concerned.

#### Which actors do you work with to carry out your mission?

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CEDRE is responsible of the beach monitoring. OFB is monitoring responsible.

For the D10, everything happens very quickly. Born in 2010, now more than fifty laboratories are involved.

For example, the Directive Zero single-use plastic happens very fast. Basically it came out of the MSFD.

**Do you have direct links with the Ministry of Ecological Transition? What is the Ministry's day-to-day involvement?**

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If the development of the indicators is done at the community level, each state is sovereign in the coordination of these actions.

The GES group representing member states' environment ministries. This group proposes new indicators every 6 years.

Plenty of dedicated technical groups including one on marine waste (which proposes new indicators and new thresholds...) composed of scientists, representatives of the Ministry of Environment and of the Ministry of Fisheries. Other groups: marine litter / noise, data...

The Marine strategy coordination group above that endorses the whole, that validates everything at the DG Mare level.

**Could you provide us with contacts that would be of interest for this survey?**

---

If necessary do not hesitate to ask.

**Are you familiar with Copernicus ? if yes do you use tis kind of data for your actions linked to MSFD?**

---

There are things that are being done in relation to plastic pollution with satellite techniques led by ESA or Universities in Greece regarding plastic detection by satellite

Clear interest in large lost objects such as containers that are pollution, or large drift nets or that kind of thing.

There are links to be made with Copernicus to ease some processes.

For now, we take advantage of the institutionalized campaigns, particularly for the monitoring of the fisheries which are financed by the DCF (data collection framework) to collect waste at sea. This allows the Commission to capitalize on existing initiatives.

Moreover, MSFD data are for now stored in EMODNET. Within the framework of Horizon Europe, the DOT aims to make the link between EMODNET and Copernicus articulation of the two databases.

In 2018 there were a campaign of aerial photos for detection of plastic waste. This could probably be done by satellite techniques.

**In which context do you think such data could be useful and relevant?**

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Hereunder are some examples for which such solutions could be interesting:

- > To know where the waste accumulation areas are, for example monitoring on beaches
- > Maybe also work on currents
- > Modelling waste transport is of interest to everyone
- > There is an indicator on the ingestion of waste by turtles, so the monitoring of turtles is interesting to define areas at risk.

Big stakes: remote sensing is a very important issue for objective 14 of the Ocean Decade (Preserve and sustainably use the oceans, seas and marine resources).

Advances in technology, satellites and processing algorithms to help with this descriptor. As it stands it seems complicated.

**End of the meeting**

Structure	BRGM	
Date	23, November 2020 – 10 :00 CET	
Duration	55mn	
Place	Microsoft TEAMS	
Attendees	BRGM <ul style="list-style-type: none"> <li>Olivier BRIVOIS</li> </ul>	PMBA <ul style="list-style-type: none"> <li>Anais Turpault</li> </ul>

## Introduction: Roundtable / MAREOS presentation / Context

### Questions

#### What is your role in the implementation of the MSFD?

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BRGM is responsible for one of the 3 criteria of Descriptor 6, the 2 others are managed by IFREMER and the MNHN (Physical pressure/ Impact of disturbances on benthic habitats...).

BRGM also works on the Barcelona Convention. The indicators that composed the assessment of the convention are fairly close to the MSFD for the non-European countries of the Mediterranean area (Maghreb and Near East).

He specified that the Thematic Managers are responsible for the evaluation (indicators/criteria).

Those in charge of monitoring are responsible for the systems that enable the acquisition of data and knowledge.

#### What descriptor(s) are you working on?

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BRGM is also involved in D1 and D7.

The French working groups D1, D6 and D7 meet approximately every quarter to discuss the progress decided at WG Seabed.

France has 2 representatives at TG Seabed to discuss indicators in particular (all Member States must be represented). It is IFREMER which sits for France (appointment by the Ministry).

#### What geographical area are you working on?

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The zone concerned is the French Metropolitan EEZ (in the WFD the overseas departments are included).

#### What is your work on this topic?

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The main subject dealt with is Physical Losses and Disturbances induced by anthropogenic activities.

We obtain existing data on these activities (bottom fishing, artificialization, moorings, shellfish farming, dredging, extraction of aggregates...) and then we have to concatenate the whole.

There is no global database because the activities are very different. Sometimes there is not even a national database but only local ones.

What is needed above all are in situ, field data to be able to evaluate the real pressure. The work focuses on the recovery of this type of data.

BRGM and other actors have been asking for several years for workshop zones but this is not the priority of the Ministry's Water and Biodiversity Directorate, which finances BRGM.

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**Which actors do you work with to carry out your mission?**

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IFREMER/OFB/MNHN

There is no real meeting anymore where everyone meets but we work globally with everyone.

BRGM is working with SHOM for the D7, with the benthic teams at IFREMER.....

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**Do you have direct links with the Ministry of Ecological Transition? What is the Ministry's day-to-day involvement?**

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Meetings are held every year to discuss budgets and other matters.

There are some issues that are directly related to the Department and do not require coordination.

Basically they do not intervene for the too technical parts but they are very involved only from an organizational point of view...

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**Are you familiar with Copernicus ? if yes do you use tis kind of data for your actions linked to MSFD?**

---

He knows a little bit about Copernicus, there is a lot of data on the Ocean.

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**In which context do you think such data could be useful and relevant?**

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Data on winds and waves for example would be interesting. We need very fine data and close to the coast. Then you have to be able to process and analyze them.

The priority for the D6 is to have data on the activities. Then, in a second stage, we need environmental data that will allow us to evaluate the impacts of these activities. To be fully in place for the acquisition of activity data, it will take at least another 10 years.

The data is scattered everywhere and at all scales: local, departmental, regional, national, seafront and European.

Within the framework of the IFREMER habitat classification, environmental conditions are nevertheless taken into account to some extent (sedimentology, etc.).

In particular, IFREMER will produce a new indicator on the number of times the nets scrape the seabed.

**End of the meeting**

Structure	SHOM	
Date	25, November 2020 – 10:00 CET	
Duration	50min	
Place	Phone call	
Attendees	SHOM <ul style="list-style-type: none"> <li>• Emilie Tew-Kai</li> </ul>	PMBA <ul style="list-style-type: none"> <li>• Nolwenn Beaume</li> </ul>

## Introduction: Roundtable / MAREOS presentation / Context

### Questions

#### What is your role in the implementation of the MSFD?

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Emilie Tew-Kai is working at SHOM (Naval Hydrographic and Oceanographic Service) and is a thematic co-responsible (along with Valérie Cariou from SHOM) of Descriptor 7, Alterations of Hydrographical Conditions.

The duo is responsible for elaborating the indicators for the MSFD and the Descriptor 7 and its monitoring, for developing the evaluation and strategy plan and engaging in networking activities within the Descriptor.

Emilie has been involved in the MSFD implementation for 7 years.

#### What descriptor(s) are you working on?

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Descriptor 7: Alterations of Hydrographical Conditions

#### What geographical area are you working on?

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She works for all four French metropolitan marine regions: Channel / North Sea, Celtic Seas, Gulf of Gascogne and Occidental Mediterranean.

#### Which actors do you work with to carry out your mission?

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She works with the Ministry of Ecological Transition and especially its department “Water and biodiversity”.

The link between the Ministry is done by the two national coordinators: Ifremer (Good Environmental Status) and OFB (Monitoring program).

Her team is closely working with almost all descriptors and their respective French representatives, since Descriptor 7 is quite transversal.

MSFD is the first European regulation to integrate physical characteristics and to put a high priority on all items to be monitored. All descriptors are more or less linked with Descriptor 7, which act as a focal point.

---

**Do you have direct links with the Ministry of Ecological Transition? What is the Ministry's day-to-day involvement?**

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Emilie has regular contacts with the Ministry of Ecological Transition, the flow of contacts depends on the MSFD cycle (a lot of contacts during reporting periods for instance).

There are different people and departments in charge of the MSFD in the Ministry, depending on the cycle steps, the subject or the period.

A lot of working groups are organized throughout the 6-year cycle with the various Ministry departments involved in the MSFD but also other Ministries, such as energy and climate.

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**Are there synergies with other European countries for the MSFD implementation?**

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Emilie stated that there is almost no collaboration within Europe among Descriptor 7 and other Descriptors.

It is hard to have a list of European representatives, so the collaboration is quite limited. Apart from the monitoring reports, it is difficult to know how the other European countries deal with the MSFD implementation.

All French national and regional key players are well known but it is complicated to get a data base from other countries. It is even more problematic regarding European funding, since French Descriptor 7 struggles to set-up new European projects since they don't know exactly works for the MSFD Descriptor 7 outside of France.

An analysis of the last MSFD evaluation occurred a few months ago and France has great scores regarding the MSFD implementation, and especially Descriptor 7. However, Descriptor 7 isn't the priority for most European countries that don't treat Descriptors on the same level, there is an important heterogeneity on this aspect.

Most countries that put a high priority in this Descriptor are countries with important EEZ.

---

**Are you familiar with Copernicus? if yes do you use this kind of data for your actions linked to MSFD?**

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Emilie and her colleagues from Descriptor 7 are heavy users of Copernicus services CMEMS. All people involved in physical oceanography are familiar with Copernicus and use its data for forcing purposes.

They used it for the MSFD latest reporting cycle, for post production of the monitoring programme. SHOM has a hydrodynamic model but she uses Copernicus large scale data for forcing purposes and to introduce limit conditions. All these data are coupled with Météo France models.

For validation processes, she works with the Copernicus In Situ pack along with the CORA data (Coriolis Ocean Dataset for Reanalysis) in order to efficiently validate her models.

She sees a great asset in the Copernicus services, which is the access to data from various sources and the durability of this access. She experienced some difficulties with national incentives, since they are subject to financing that can be stopped the next day. If there is no financing, there is no data.

Emilie stated that CMEMS is listed in the latest documentation of Descriptor 7, as a data provider for the monitoring programme.

### **In your view, why don't people use Copernicus data?**

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In her opinion, some people see Copernicus portal as something which is time consuming and seem to be very technical. People who are not used to coding or to large data can feel lost.

It seems time consuming because the user has to register, search for the data, download it and analyze the data.

She thinks that Copernicus should provide the data along with a pre-coding, so that people can easily read the data and analyze them, especially if they are not used to code.

### **Could you provide us with contacts that would be of interest for this survey?**

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Emilie mentioned that she has been interviewed by the Commissariat General Au Developpement Durable (General Commissariat for Sustainable development) about MSFD, but more on the institutional aspect.

It good be a good idea to talk with them and see if there are synergies here.

**End of the meeting**

Structure	MNHN - OFB		
Date	25, November 2020 – 17:00 CET		
Duration	59mn		
Place	Microsoft TEAMS		
Attendees	MNHN <ul style="list-style-type: none"> <li>• Françoise Claro</li> <li>• Fanny Girard</li> </ul>	OFB <ul style="list-style-type: none"> <li>• Benjamin Guichard</li> </ul>	PMBA <ul style="list-style-type: none"> <li>• Juliana Carvajal</li> </ul>

## Introduction: Roundtable / MAREOS presentation / Context

### Questions

#### How is the MSDF managed in France?

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The MSFD is highly centralised in France and is managed by the Ministry of Ecological and Solidarity Transition. For the first cycle, France is one of the countries most invested in this directive, it seems that there are countries that have done almost nothing.

In France is a little bit complex, because it involves a lot of actors, organisations, associations, it's an elaborate structure and that's why it's difficult to answer this question, also because we are involved in a small aspect of the MSFD, surveillance and monitoring of marine mammals and turtles. The coordination of surveillance is ensured by the ministry and the French Office for biodiversity (OFB).

The French institute for the marine exploitation is highly involved in the coordination of the MSFD in France

- <https://dcsmm.milieumarinfrance.fr/>

- IFREMER sextant: MSFD: Marine and coastal geographic data infrastructure

#### What is your role in the implementation of the MSFD?

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Mr. Guichard: I am in charge of surveillance and monitoring of marine mammals and turtles and Mrs. Françoise Claro is the thematic manager for marine turtles. I am in charge of collecting all the data that will then be sent for evaluation by the thematic managers.

Claro&Girard: once we receive the data, we assess the state of marine turtle populations in relation to the various entropic pressures that are exerted on these populations, to know whether the measures taken by France are giving good results and are gradually moving towards a good ecological status.

The thematic manager for the marine mammal, Jérôme Spitz from the PELAGIS observatory, University of "La Rochelle-CNRS".

The thematic managers carry out the entire scientific assessment of the ecological status of all populations and species based on the data collected by the surveillance and monitoring programme.

In the first cycle, we set up a framework and we evaluated the GES (Good Ecological Status). Now, we are working in the final steps of an improved proposal for the surveillance and monitoring programme for the second cycle 2021-2026, in particular on turtles and marine mammals. The aim is to add, modify

or eliminated some elements of the surveillance and monitoring that will be set up for the evaluation of GES in France for the 2nd cycle.

It will be very difficult, if not impossible, to include aspects of satellite technologies now in the 2021-2026 monitoring programme.

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**What descriptor(s) are you working on?**

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Mrs. Claro&Girard: D1 Biodiversity and D10 Marine waste

Mr. Guichard: D1 mainly, but with interactions with other descriptors;

D8 Contaminants = Search of contaminants in marine mammals and sea turtles

D11 Underwater noise = Interaction of these pressures on marine mammals and turtles

D10 marine waste

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**What geographical area are you working on?**

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The entire French MSFD zone

Z2E of France hexagonal

The 4 marine sub-regions: Manche Channel - North Sea, Celtic Sea, Bay of Biscay, Western Mediterranean.

We are working on all of the French parts of these sub-regions.

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**What is your work on this topic?**

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Mrs. Claro: Development of the evaluation methods, participation and organisation of experts' groups and testing of methods in order to be able to define the criteria and the indicators that will allow the evaluation of the GES concerning the sea turtles, which will be carried out afterwards.

Also, I do specific reports for different expert opinion requests from the Ministry at European level.

Mr. Gichard is in charge of collecting all the data that will then be sent for evaluation.

Both: opinions and recommendations

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**Which actors do you work with to carry out your mission?**

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The Ministry of Ecological and Solidarity Transition

Le réseau national d'échouage (RNE) / The national stranding network : Mammals : (RNE)

Le Réseau Tortues Marines de Méditerranée Française (RTMMF) / The French Mediterranean Marine Turtle Network

Le Réseau Tortues Marines Atlantique Est (RTMAE) / The East Atlantic Marine Turtle Network

The actors for data collection:

For mammals, turtles and birds, there are many associative actors and some research institutes.

So many, Naturalist associations, volunteers, so it is difficult to mention all the structures associated with this data collection. But some of them are: Protected marine areas, marine parks, private structures: the networks of stranded marine turtles in La Rochelle/ Aquarium de la Rochelle, associations by species and others.

The surveillance and monitoring programme is divided into 5 sub-programmes:

3 on marine turtles & mammals

Offshore marine mammals and sea turtles, sea turtle and marine mammals strandings, anthropic pressures on sea turtles and marine mammals.

2 on marine mammals

coastal cetacean populations, coastal seal populations

### **What are your methods for carrying out surveillance activities?**

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Within the 3 Sub-programme for marine turtles:

#### Marine turtles/offshore population

- Observation by plane
- Observation by boat: telemetry

#### Strandings: sea turtle strandings

- Recovering animals that run aground or are recovered by fishermen: we write the protocols for managing strandings.
- If they are dead, carry out autopsies and various analyses.
- If they are alive, telemetry, X-rays, check interaction with fishing, protocols on contaminant analysis

Concerning, satellite data, we believe that in the analysis of offshore observation data or even by telemetry, specialists in the analysis of these data will be able to cross-reference animal movement data with environmental data to make habitat models, leading to distribution models and population movement forecasts. These habitat models can be fed by satellite data: temperature, depth, water colour, concentration of elements (chlorophyll, bloom plankton), risk analysis: collision, maritime traffic, etc.

EO4WILDLIFE: <http://eo4wildlife.eu/> -> H2020 Project (2015-2018)

The objective of the project was to develop a platform that would simplify access to data from sentinel satellites for marine wildlife information.

The private partners did not find a favourable economic model for this kind of platform, so the project did not lead to anything concrete.

Today, habitat modelling specialists use American data, because it is simpler, easy to access and free of charge. For example, the researchers can request data sets with geographical coordinates and a

range of dates, and they receive the satellite data. The problem with Copernicus data was that the information was very difficult to retrieve.

From our side, the OFB teams have been carried out a few projects to evaluate the use of satellite photos to locate large mammals.

### **How do you ensure the reporting part?**

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The assessment of good ecological status must be reported once per cycle by each thematic manager. This is once every 6 years, but it takes a lot of time to prepare, the next one is due in 2022 and we have already advanced on some parts of this report.

Each state must give an update of its work.

### **What kind of data do you report back to the Ministry?**

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Just the data analysis and never report the raw data.

Depending on the indicators that already exist, either numbers, for example, the number of turtles caught over the period, the number of individuals that collided, the abundance of this or that species by area/region. We measure the indicators values that can be compared from one period to the next one to see if things are moving in the right direction-> GES.

We do different analysis with all the information collected and then we submit it to the Ministry.

### **Do you have links with other actors involved in MSFD?**

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Yes, The Ministry, IFREMER, OFB, MNHN, PatriNat, amongst others.

### **Do you have direct links with the Ministry of Ecological Transition? What is the Ministry's day-to-day involvement?**

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Yes, almost weekly/daily requests. There is a direct follow-up between the Ministry and the thematic and monitoring managers.

We have also, links with the Ministry of the Sea, the Directorate of Fishing.

### **Could you provide us with contacts that would be of interest for this survey?**

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Concerning to satellite data within the Ministry, there is a General Commission for Sustainable Development/ Commissariat général au développement durable (CGDD).

Audrey Pellet : [audrey.pellet@developpement-durable.gouv.fr](mailto:audrey.pellet@developpement-durable.gouv.fr) -> Person in charge of the Satellite Applications Plan 2018-2022

Website: <https://www.applisat.fr/>

**Are you familiar with Copernicus ? if yes do you use this kind of data for your actions linked to MSFD?**

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Claro&Girard : No

Guichard: Yes, a glimpse, but not really, I did not have access. I know it through the EO4WILDLIFE project, but there was not any further action. So, my knowledge about this is quite light.

**If not, why not? Where are the obstacles (access, lack of expertise, etc...)?**

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Difficult access, no resources, lack of awareness.

**In which context do you think such data could be useful and relevant?**

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In relation to the satellite data, it could be interesting for monitoring of marine mammals and sea turtles, if the satellite images have a high resolution/definition, we can imagine being able to count dolphins/turtles.

**End of the meeting**

Structure	<b>UNIVERSITE DE LA ROCHELLE- PELAGIS-CNRS</b>	
Date	26, November 2020 – 10:00 CET	
Duration	67mn	
Place	Microsoft TEAMS	
Attendees	PELAGIS <ul style="list-style-type: none"> <li>• Matthieu Authier</li> <li>• Auriane Virgili</li> </ul>	PMBA <ul style="list-style-type: none"> <li>• Juliana Carvajal</li> </ul>

## Introduction: Roundtable / MAREOS presentation / Context

### Questions

#### How is the MSDF managed in France?

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The PELAGIS structure has been integrated into the management of the MSFD in France from the very beginning, they know most of the actors, so they know it well, the details of the texts of the articles, such as the good ecological status, the monitoring plan, etc. Nevertheless, the MSFD is very complex, there are other components in which PELAGIS does not interact too much, such as the measurement programme, for example.

The MSFD is managed by the Ministry of ecological transition and solidarity and coordinated by the IFREMER and the OFB. PELAGIS is involved in coordination works at a higher level, regional seas conventions and the participation of regional forums.

#### What is your role in the implementation of the MSFD?

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Our role is to develop indicators to measure the good ecological status for marine mammals in France. It is a rather technical role, but also one of guidance, of choice, through the participation of international forums.

We are sometimes contacted by other animal/species groups, but particularly in the role of data providers.

Auriane is not directly involved in the management of the MSFD, but rather in an important preliminary stage, which is the habitat modelling, she works with environmental variables in order to develop models for marine mammals.

#### What descriptor(s) are you working on?

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Mainly D1

In a more peripheral way:

D4 for trophic networks

D8 for contaminants in marine mammals

D10 impact of waste on marine mammals

D11 the impact of noise on marine mammals

### **What geographical area are you working on?**

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All metropolitan waters under French jurisdiction. This includes overseas, but the MSFD is not yet in place for overseas (DOM-TOM). PELAGIS are nevertheless carrying out certain analyses on these areas.

### **What is your work on this topic?**

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PELAGIS has a role of expertise for the Ministry of ecological transition and solidarity on all aspects of marine mammals in French waters.

The objective is to study the habitats of marine mammals, to know how they are distributed in space, what mechanism will influence this distribution? temperature, currents, depths, etc., the different influences that can exist on this distribution of species. Knowing that we can use statistical models to link the observations made by boat and plane (during scientific campaigns) with environmental variables. They establish relationships in order to be able to make predictions of population distribution, make populations/species maps, identify the conditions in which there is a greater concentration of mammals and possibly propose conservation areas to limit the negative impact of human activities.

Evaluate the abundance and distribution of animals, determine if there are any changes, and the dynamics over time, towards a positive or a negative GES.

### **Which actors do you work with to carry out your mission?**

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They have expertise on marine mammals on a national scale, so we are contacted by various structures on this regard.

- Ministry of ecological transition and solidarity
- CNRS
- IFREMER
- NGOs - e.g. WWF, for data collection
- Green & Blue associations
- FEM : France énergies marines
- NATURAL PARKS: data collection, development of management protocols
- PREFECTURE MARITIME DE FACADA : On MSFD in relation to environmental objectives
- DIRECTION GENERAL DEL ARMAMENT- DGA/ FRENCH NAVY: For data collection, because marine mammals are impacted by military active sonar. Whales and cachalots.

### **What are your methods for carrying out surveillance activities?**

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They do the data: collection, validation and provision.

This means, for example, monitoring of the French coastline for marine mammal strandings, distribution, abundance, etc.

They are involved in:

- the IFREMER fishing campaigns, to have a someone in charge of all the aspects concerning marine mammals. Collection of these data simultaneously with the data for fishes.

- Air campaigns/planes dedicated to marine mammals/ marine megafauna: the name of these campaigns is SAM.
- Programme for collecting pollutant data on marine mammals
- Demography programmes

They centralise most of the data, the other data on marine mammals are managed by associations, they host their own data, this associations are in frequent contact and discussion with PELAGIS. But this corresponds to very specific cases or species, PELAGIS is the main actors for marine mammals management of the data.

### **How do you ensure the reporting part?**

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A main report for good ecological status (GES) must be submitted every 6 years.

One report was done for 2018, the marine mammal part was written in connection with the national coordination.

There are specific requests for reports and the frequency varies:

- Stranding report
- Campaign reports (boat, plane)
- Report by geographical area
- Report by project (thesis, masters, internships, etc.)

### **What kind of data do you report back to the Ministry?**

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Stranding report: annual

End of Campaign Report: every 2 years

Report analyses, modelling, maps, recommendations, it depends.

### **Do you have links with other actors involved in MSFD?**

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Yes, we work with the thematic managers of the descriptor 1 (D1), mainly sea turtles and seabirds, as well as the OFB surveillance managers.

IFREMER, for certain fish species.

Those responsible for pressure indicators (noise, waste).

SHOM: for the use of some of their oceanographic products, to integrate them into the marine mammals models.

### **Do you have direct links with the Ministry of Ecological Transition? What is the Ministry's day-to-day involvement?**

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.PELAGIS is funded by the ministry, so they have strong and direct links with them. They represent France in international working groups, Vincent RIDEAU is involved in these actions within PELAGIS.

Currently, they are in contact with several ministries in relation to a problem of cetacean fishing by fishermen.

Nevertheless, in general, they have a regular / weekly / daily contact with the ministry of ecology on different subjects and therefore they have different interlocutors, even if they have privileged interlocutors.

They work a lot with the department of water and biodiversity within the ministry.

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**Could you provide us with contacts that would be of interest for this survey?**

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Their colleagues in charge of sea birds, sea turtles. Antoine Chavreleau and Gaelle Termon.

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**Are you familiar with Copernicus? if yes do you use this kind of data for your actions linked to MSFD?**

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Matthew: Yes, he said that they usually don't know the product details. They know about the Copernicus initiative, but it's very brief.

Auriane: Yes, she said she knows it since 2014.

Yes, she used CMEMS at the beginning of her researches to do habitat modelization, she needs to extract environmental variables, such as sea surface high, movements around the globe, to identify eddies/vortices.

And this was difficult to access, now, she said that it is easier to extract the different environmental variables: temperature, currents, depths, chlorophyll concentration, amongst others.

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**If yes, over what geographical coverage?**

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It depends on the project: North Atlantic Ocean, Dunkirk, Mediterranean, Europe, etc.

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**Are there any obstacles, barriers (access, lack of expertise, etc...)?**

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Matthieu: In 2015, the access was quite difficult, the navigation was long and the user only had access to raw data. This was not what they were looking for, they wanted for derived products to be able to use them by integrating them directly into their analyses.

Also, there is not enough information about it and there is free data and easy access in North America.

Auriane: Before it was very complicated to extract the data, she thinks they have made improvements and now it is quite simple.

Now, she can choose the time scale, the different geographical areas, amongst other and notably the variables that interest her.

The problem is that Copernicus send a link and the user has to download all the layers, this is not practical, the user cannot see clearly the information.

Auriane and Matthieu have written a script on R (software) that allows them to search directly on Copernicus for the data they are interested in.

This initiative to develop a script on R to be able to extract Copernicus data more easily was born out of discussions between PELAGIS and European colleagues. Because before it was used a lot of NOA (North America) data.

Now what they might be interested on Copernicus data on human activity variables or indicators. Products which could reflect the density of maritime traffic, fishing and noise. This could be extremely interesting for MSFD analyses on marine mammals.

Together with our European colleagues, they want to use the same tools, to standardise their collection and modelling approaches, so it would be good to be able to use MAREOS to achieve this harmonisation.

### **Areas for improvement**

There is no notion of pressure.

The EMODNET tool (anthropic pressures), allows the extraction of pressure data and it would be simpler to integrate it with COPERNICUS: To have the information centralised.

And improve the spatial resolution: sometimes they need a higher resolution.

They would like to know more about Copernicus services.

Access to products in 3 dimensions, parameters at different depths.

Development of codes to be able to extract data on different computer media/languages: R software, python, etc.

Simplify the way in which they show their services, simpler cards, a simplified catalogue of products

**End of the meeting**

Structure	OFB	
Date	27, November 2020 – 9:00 CET	
Duration	1h	
Place	Microsoft Teams	
Attendees	OFB <ul style="list-style-type: none"> <li>Muriel Chevrier</li> </ul>	PMBA <ul style="list-style-type: none"> <li>Nolwenn Beaume</li> </ul>

## Introduction: Roundtable / MAREOS presentation / Context

### Questions

#### What is your role in the implementation of the MSFD?

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Muriel Chevrier is a MSFD project officer for OFB (French Office for Biodiversity) since 2016.

She is part of the MSFD French coordination team and supervises the contributions made by her OFB colleagues and French key players.

At OFB, there is a team of 20 people working for the MSFD and all its components: thematic monitoring representatives (Eutrophication, pelagic habitat, marine birds, marine mammals, waste), evaluation of the environmental status (GES by Ifremer, socio-economic aspects by OFB, description of water uses and degradation costs by UMR AMURE), compliance of environmental objectives (OFB coordinates this aspect for this reporting period).

Muriel is responsible for ensuring that the evaluation process is going well, that people meet the deadlines to report on their dedicated descriptors and for coordinating all involved institutes.

For the MSFD implementation, France decided to align its requirements with the Directive on Maritime Spatial Planning (DMSP). The DMSP works also on socio-economic aspects so it was decided to work in synergy to make sure that both directives have the same approach.

#### What descriptor(s) are you working on?

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All of them, as Muriel is part of the MSFD French coordination team.

#### What geographical area are you working on?

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She works for all four French metropolitan marine regions: Channel / North Sea, Celtic Seas, Gulf of Gasconne and Occidental Mediterranean.

#### Which actors do you work with to carry out your mission?

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For the first reporting cycle, each involved entity was working on its own, they were some discussion but not so much.

For the second cycle (the current one), the idea is to work closely and involve as many people as possible. The coordination of the 11 descriptors have the same baseline and methods to evaluate the environmental criteria.

Apart from obvious collaboration with Ifremer, SHOM, AMURE and other French key players, OFB also works with the DIRMs (Interregional Directorates for the Sea) of the four French maritime facades and local institutions for field work and application of the MSFD.

Muriel and her team efficiently work with scientific partners on upcoming deadlines and work distribution is done according to thematic and emergencies. They meet regularly to keep each other informed on the work done and to be done.

Regular meetings between Ifremer, OFB and the Ministry are organized but the frequency can vary depending on the period and the evaluation cycle. These meetings are not systematically occurring, which is a drawback to have an efficient monitoring of the actions.

Other thematic representatives can attend these meetings, depending on the subject to be discussed.

All these links have to be maintained to ensure that the MSFD is well implemented and coordinated in France.

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**Do you have direct links with the Ministry of Ecological Transition? What is the Ministry's day-to-day involvement?**

She has regular contacts with the Ministry. She is in close contact with the person in charge of socio-economic aspects at the Ministry, since OFB is leading this subject.

Depending of the period and the cycle phase, she has everyday contacts with key people of the Ministry to publish the reports in due time.

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**Are there synergies with other European countries for the MSFD implementation?**

There are no direct synergies with the other European countries, all contacts are made through working groups or through participating to interregional initiatives or conventions, such as The Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR).

Some French scientific representatives are invited to meetings organized by the EC and/or other ministries depending on the subject discussed, in case experts are required to debate.

The French Ministry is the main contact point at the European level, it is the only one dealing with other European representatives. French key players are seen as a support to the Ministry, writing reports or synthesis notes to “defend” the point of view of the country and its methodology.

There is no directory listing all European contacts working within the MSFD, as Ministries remain the main contact point for each country. As a result, it is difficult to know how the other countries deal with the MSFD implementation and how they work.

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**Are you familiar with Copernicus? if yes do you use this kind of data for your actions linked to MSFD?**

Muriel is quite familiar with Copernicus services.

Its data are used as a support to the monitoring activities, and especially for eutrophication and pelagic habitats.

For the other subjects related to the MSFD, the use of these data is not “direct” or automatic (for benthic habitat or marine birds for instance), as they will not address the problematics and will not characterize the status of these habitats.

One interesting discussion point could be the potential of Copernicus for other descriptors. It could be interesting to discuss with key players involved in Descriptors that don't use Copernicus data and see how these data could be of use to them. A working group on this aspect would be a good starting point and would increase the number of users for Copernicus services.

It could also be interesting to see how Copernicus could help other European directives, not only the MSFD.

**End of the meeting**

Structure	Ifremer	
Date	2, December 2020 – 14:30 CET	
Duration	1h	
Place	Microsoft TEAMS	
Attendees	Ifremer <ul style="list-style-type: none"> <li>Alain Lefebvre</li> </ul>	PMBA <ul style="list-style-type: none"> <li>Nolwenn Beaume</li> </ul>

## Introduction: Roundtable / MAREOS presentation / Context

### Questions

#### What is your role in the implementation of the MSFD?

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Alain Lefebvre is the thematic responsible for Descriptor 5 Eutrophication.

His everyday job consists of preparing everything that is going to be needed for the definition of the Good Environmental Status (GES) for his descriptor, for the French four marine regions. He works closely with Dorothée Vincent from OFB to identify all packages of data collections and data flux.

He oversees the development and optimization of everything related to the evaluation process and methods. He follows the guidelines given by the various European directives, including MSFD, and also by OSPAR. The aim is to make sure all work done within these directives are harmonized and homogeneous to have an efficient evaluation system, from the coast to offshore seas.

He takes part in working groups for Descriptor 5, for the Water Framework Directive and or OSPAR (Alain is the lead of the French delegation on eutrophication).

#### What descriptor(s) are you working on?

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Descriptor 5 – Eutrophication

#### What geographical area are you working on?

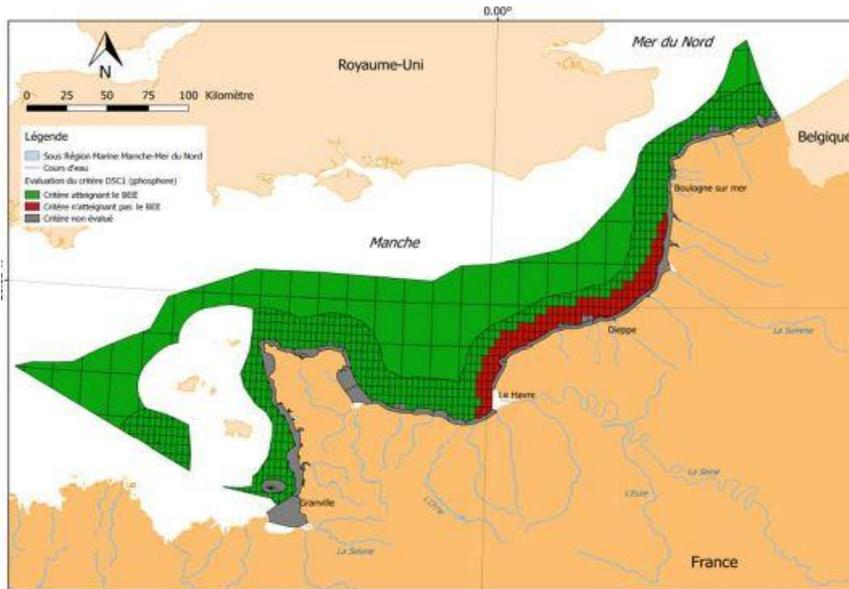
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He works for all four French metropolitan marine regions: Channel / North Sea, Celtic Seas, Gulf of Gascogne and Occidental Mediterranean.

#### What is your work on this topic?

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The idea is to provide elements on Good Environmental Status (GES) for Descriptor 5. For the 2018 evaluation, all four French metropolitan marine regions were divided into squares and each square were given a color: either green (GES confirmed) or red (GES not assured). Below is an example for phosphate evaluation from 2010 to 2015 in the Channel and North Sea area.



2018 - Final results of D5C1 criteria evaluation (Phosphate) (© Ifremer/A.Lefebvre)

In case one of the squares is red, an effort has to be made to identify the problem and find a solution with local actors. The same work will be done in 2024, with data from 2015 to 2020. Eutrophication data mostly comes from the Quadrigé database. To manage coastal surveillance data, Ifremer has developed the Quadrigé data base, which combines tools for interpreting and developing information

products. The main mission of the Quadrigé thematic bank is the management and use of data from the surveillance networks implemented by Ifremer.

**Which actors do you work with to carry out your mission?**

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He mostly works with OFB but also with all French actors involved in OSPAR and the Water Framework Directive.

**Are there synergies with other European countries for the MSFD implementation?**

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There are numerous working groups (from technical to institutional ones) on several topics along with changing contact persons which makes it difficult to have the relevant contact person in each country and in each subject and to know who is doing what.

Each evaluation report is written in each country mother tongue, so it makes it hard to build on what is done at the European level on the different descriptors.

However, thanks to the OSPAR network, it is easier to get contacts in the involved countries and to know who to talk to on this matter. People involved in OSPAR are willing to work in synergy and come together.

**Are you familiar with Copernicus? if yes do you use this kind of data for your actions linked to MSFD?**

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Alain is quite familiar with the services offered by Copernicus. He uses satellite data and modelling to complete the data that is missing.

Despite the campaigns at sea, some data can be missing (for instance, campaigns cover some seasons but not all of them) and not all data are compatible with the modelling process. The idea is to use satellite data and models to cover all seasons and get more frequent data (monthly basis).

For the Mediterranean area, the current model is not operational, so Copernicus services are really important to gather the right information/data.

### **In your view, why don't people use Copernicus data?**

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In his view, people don't use Copernicus data and services because they ignore what the portal has to offer and the data which is available.

Among MSFD descriptor actors, everyone has its own data base, its own method and evaluation. This results in difference in terms of conclusions and divergence.

Among the OSPAR community, it has been decided that the common data base to be used for the evaluation process would be the hOMe data base, operated by the International Council for the Exploration of the Sea (ICES). The ICES is an intergovernmental marine science organization, meeting societal needs for impartial evidence on the state and sustainable use of our seas and oceans.

The ICES will be responsible for doing the evaluation for all European countries involved in OSPAR to ensure a harmonization of data and analysis. The ICES aligns its evaluation phase with the MSFD one (QSR – Quality Status report due in 2023), so something could be done with Copernicus for the next evaluation phase.

A good starting point would be to automate the data access: we should be able to access a globe representation, zoom in on France, and see the data of various elements such as chlorophyll and see the source of these data (in situ, satellite based, model, etc).

Another aspect would be to harmonize the data format or at least use a format with which everyone feels comfortable (csv for instance), so that people who are not experts and/or who don't have the proper software can still use the data.

**End of the meeting**

Structure	UMS PatriNat (MNHN, OFB, CNRS)	
Date	04, December 2020 – 10:00 CET	
Duration	45mn	
Place	Microsoft TEAMS	
Attendees	UMS PatriNat <ul style="list-style-type: none"> <li>• Laurent Guerin</li> </ul>	PMBA <ul style="list-style-type: none"> <li>• Juliana Carvajal</li> </ul>

## Introduction: Roundtable / MAREOS presentation / Context

### Questions

#### How is the MSDF managed in France?

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The MSFD in France is managed by the Ministry of Ecological Transition, the Water and Biodiversity Department and more particularly the Marine Environments Office (ELM3). These structures mandate and finance several organisations: UMS PatriNat, IFREMER, SHOM, among others. The coordination is in charge of IFREMER and OFB.

It is a very complex directive, many working groups, actors, data, etc., so it is not very simple to coordinate, but, UMS PatriNat has been involved since 2010-2011 and the work is quite fluid, they manage to work well together, the scientific experts know each other well and they learn to work smoothly by doing.

#### What is your role in the implementation of the MSFD?

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Laurent is based at the Dinard marine station in the PatriNat service which depends on the MNHN, OFB and CNRS. Within this service, they are 5-6 people working directly with the MSFD.

- Responsible for coastal fish
- Seabed
- Introduced species

Laurent: my role is the international scientific coordination. I'm specialised on the seabed and introduced species, but I am also involved in other themes related to biodiversity (marine mammals, turtles, etc.).

I take part in the working groups of the OSPAR and Barcelona regional seas conventions. These are conventions that bring together all the member states present in the same sea, so there is the North-East Atlantic for France and the Mediterranean. I take part in working groups on biodiversity, I follow up with the experts according to the thematic, birds, mammals, funds, etc. in order to guide national work and promote national work outside.

In conclusion, my role is to make the link between what is done in at international level, the standards, the insights of the working groups at the evaluation of the indicators and the feedback from what is done at national level.

I work on the link between the regional sea conventions and the MSFD, each state has to report on what it is doing at the national level, it is recommended to work in cooperation and in a compatible way with other countries and the concrete structure to do this are the regional conventions. This is where we pool our work and develop common strategies.

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**What descriptor(s) are you working on?**

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D1 and D2 essentially, but there are links with other descriptors because the idea is not only to monitor ecological status but to see the impacts of anthropic pressures, so, working with the teams of all the other descriptors, they develop more and more assessment methods that are intra-descriptor.

D5, D6, D7, for example.

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**What geographical area are you working on?**

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North East Atlantic and Mediterranean, maritime area OSPAR convention and Barcelona convention.

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**What is your work on this topic?**

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International scientific coordination. Back and forth between international and national working groups.

Promote the biodiversity work carried out at national level in these international groups and, conversely, bring the standards and work developed within the international groups down to the national teams, to provide a framework of standardized methodologies that are compatible, exchanges of documents, proofreading of work, etc.

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**Which actors do you work with to carry out your mission?**

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Scientific and academic actors, managers, equivalent colleagues from the international scientific coordination of other member states. Ministry, IFREMER, SHOM, BRGM, PELAGIS, omigeom and gisome.

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**What are your methods for carrying out surveillance activities?**

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Laurent: Within the framework of my actions I am not directly involved in pure monitoring activities or data collection. I make the link to establish the data formats needed for regional seas assessments.

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**How do you ensure the reporting part?**

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Author or co-author, he contributes to the scientific reports that will help to make the assessment of good ecological status and that will be submitted to the more political management committees. Then there is an exchange with them in order to take their comments into account and write summaries of these reports.

Every 6 years for the GES assessment (2012-2018), and the monitoring review (2015-2021).

**What kind of data do you report back to the Ministry?**

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Field data: zero

Analytical data: reports, summaries, recommendations for new indicators, etc.

**Do you have links with other actors involved in MSFD?**

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The Ministry, IFREMER, SHOM, BRGM, PELAGIS. In general, the same interlocutors over the year, but this can vary over the 6-year period.

**Do you have direct links with the Ministry of Ecological Transition? What is the Ministry's day-to-day involvement?**

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Yes, negotiation of the roadmap and budgets for each year. Fairly regular exchanges of information, at least once a week.

**Could you provide us with contacts that would be of interest for this survey?**

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Benjamin Guichard, Dorothée Vincent, Sophie Beauvais, Emilie Tewkai, Alain Lefevre, Felipe Artigas (Université littoral côte de pal – Boulogne-sur-mer), Olivier Brivois (BRGM), Jérôme Spitz (PELAGIS).

**Are you familiar with Copernicus? if yes do you use this kind of data for your actions linked to MSFD?**

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Laurent: Slightly, I thought it was an IFREMER initiative. I don't use it directly, but I have colleagues who use it.

CNRS, IFREMER, BRGM and SHOM: mainly colleagues who work on hydrology and biodiversity aspects and physic-chemical aspects and the seabed. Involved in the physical pressures of the seabed, coastal evolution.

A good contact for you could be [ILICO](#): The Coastal and Coastal Research Infrastructure (ILICO), that aims to observe and understand coastal and marine environments and ecosystems in their whole. Thus, ILICO brings together a set of observation devices for collecting samples and deploying various measuring instruments by federating 8 observation services, known as "elementary networks", which are : COAST HF, CORAIL, DYNALIT, MOOSE, PHYTOBS, ReefTEMPS, SOMLIT and SONEL (and BenthOBS, for which the SNO label is currently being applied for).

**What are there any obstacles, barriers (access, lack of expertise, etc...)?**

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No direct need on his tasks and not adapted to his actions.

**End of the meeting**

Structure	UMS PatriNat (MNHN, OFB, CNRS)	
Date	06, December 2020 – 10:00 CET	
Duration	60mn	
Place	Microsoft TEAMS	
Attendees	UMS PatriNat <ul style="list-style-type: none"> <li>Marine Delasalle</li> </ul>	PMBA <ul style="list-style-type: none"> <li>Juliana Carvajal</li> </ul>

## Introduction: Roundtable / MAREOS presentation / Context

### Questions

#### How is the MSDF managed in France?

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The MSFD is supervised by the Ministry of Ecological and Solidarity Transition and is divided into 5 different parts:

- Action plan for the marine environment
- The monitoring programme: acquiring knowledge/data for evaluation
- Evaluation of good ecological status: every 6 years, definition of indicators
- National Coordination PDS - OFB
- National coordination for the evaluation - IFREMER

There are 11 descriptors and each descriptor has a referent structure associated with the competences and/or expertise on the particular descriptor. For example, SHOM, IFREMER, BRGM, OFB, etc. There is a lot of exchange between scientists and coordinations.

#### What is your role in the implementation of the MSFD?

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In relation to the MSFD, they deal with the descriptor D1-PC, the coastal fish theme; this descriptor is shared between IFREMER and UMS PatriNat. They are responsible for the theme, which means that they provide scientific expertise on the fish and are in charge of the evaluation and definition of indicators within the framework of the MSFD.

More specifically, Marine is in charge of surveillance and supporting the thematic programme.

The purpose of the monitoring programme is to acquire the data to enable the evaluation that will be carried out.

They are in charge of data acquisition and analysis through scientific expertise. They develop indicators and thresholds of the good ecological status.

As for coastal fish, there was very little existing monitoring data, so the team developed devices to acquire data, but these devices are fairly recent (less than 10 years), so it is not simple because the long-term notion is missing, indicators must be integrated, adapted and their relevance assessed.

And ways to acquire the data in the long term.

### **What descriptor(s) are you working on?**

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D1: Coastal fish - UMS

D1: Fish - IFREMER: loose and wide coastal environment

Currently, they do not work with other descriptors, but interaction with other descriptors becomes indispensable in the analysis. For example, D2: Introduced species, habitat and pressure descriptors.

Interaction with other devices, in charge of other descriptors, in order to look for synergies and data that could be integrated in the fish assessment. For example, the CALME device: acoustic characterisation of the Mediterranean coastline and its ecosystems, more used by the D11.

### **What geographical area are you working on?**

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On a national level: all French facades, North Sleeve, Bay of Biscay, Celtic Sea and Mediterranean Sea (manche-mer du nord, golfe de Gascogne, mer celtique et méditerranée).

European level: in the Mediterranean, they are trying to develop a visual counting system by diving, with Spain and Italy.

### **What is your work on this topic?**

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Scientific support for the MSFD, this consists of scientific expertise, being able to provide data for GES assessments. Developing indicators, thresholds that will allow a coherent assessment and determine whether the different species are in good ecological status or not.

### **Which actors do you work with to carry out your mission?**

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They share the fish theme with IFREMER, but the management is not quite the same. IFREMER has historical data from oceanic and other campaigns; the PatriNat team, up to now, has done qualitative analysis, based on bibliographical data because they do not have quantitative data. This is why, the work of the two structures has been carried out separately.

The idea is to get these quantitative data, thanks to the developments of their structure and then they could work in coordination with IFREMER on the integration of qualitative/quantitative data.

The other actors are:

The Ministry of Ecological and Solidarity Transition, the Marine Protected Areas (MPAs), the OFB, diving centres, ACAPPELLA (Hydro-acoustics), Natural Zone 2000, others.

### **What are your methods for carrying out surveillance activities?**

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Concerning coastal fish, there are few operational devices that produce data and have established indicators.

Today all the PatriNat coastal fish devices are either candidate or non-operational. The PatriNat team conducted a survey of existing devices in order to assess their relevance to MSFD coastal fish objectives.

There were gaps in fish monitoring, surveillance, unmonitored environments, quantitative data, pelagic and environmental monitoring, which is why they are now developing devices to fill these gaps.

They are also working on researching protocols, developing networks and also on harmonising existing protocols used for the devices/actors already in place.

### **How do you ensure the reporting part?**

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They carry out the assessment mandated by the MSFD, under national coordination, which provides the framework for the GES assessment, the expected elements, the format, etc.

As for the reports on the fish theme, it is a report based on bibliographical data, so for the moment the report is at national level, but not at European level because the quantitative data is missing.

### **What kind of data do you report back to the Ministry?**

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Bibliographical data, expert opinions, they were based on the IUCN (International Union for Conservation of Nature) and DHFF (Habitat-Fauna-Flora Directive) assessments.

### **Do you have links with other actors involved in MSFD?**

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#### Italy

Léonardo TUNESI, Institute for Environmental Protection and Research (ISPRA)

Paolo GUIDETTI, UNICE

#### Spain

Gabriel LAMESA

David DIAZ VIÑOLAS, Centre Oceanografic de les Balears (Spanish Institute of Oceanography, IEO)

### **Do you have direct links with the Ministry of Ecological Transition? What is the Ministry's day-to-day involvement?**

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Yes, with Cyrielle ZANUTTINI on monitoring/surveillance and Laure Ducommun on European aspects. E-mail exchanges, several times a month, telephone exchanges.

### **Could you provide us with contacts that would be of interest for this survey?**

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Antoine HUGUET - IFREMER, in charge of data collection for the MSFD's GES assessment.

**Are you familiar with Copernicus? if yes do you use this kind of data for your actions linked to MSFD?**

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Yes, but very briefly.

**In which context do you think such data could be useful and relevant?**

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Currently, they don't use Copernicus data, they don't need it now, but maybe it will be interesting for them later on.

Concerning to Copernicus, they don't use environmental data that can be collected, but they will have to lead to it. Because today their work is relatively recent and in order to be able to develop indicators and thresholds of good ecological status they will have to rely on a spatial approach, they do not have the historical data to have a temporal approach that would allow them to develop thresholds, their data are too recent.

They would like to have the spatial environmental data and have an approach on gradients, temperature, chlorophyll A, salinity, turbidity of the environment, enough environmental data to define these environmental gradients. For the moment, they are collecting these environmental data thanks to the POCOROCHÉ device, which has a visual counting follow-up during diving, and which is integrated on the DATARMOR platform (Stéphanie d'Agatha). They are therefore looking for new tools for the acquisition of environmental data, to see what exists and what could meet their needs.

**Are there any obstacles, barriers (access, lack of expertise, etc...)?**

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Lack of awareness of everything that exists, the data, products and services associated with the Copernicus initiative.

Lack of need, before they did not need quantitative data, so they were not interested in these tools.

**Comments**

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They are now looking for tools to be able to measure and quantify environmental data, such as temperature, chlorophyll A concentration, salinity, PH; they are seeking to know the different tools, proposed data, definition and resolution of the tools.

**End of the meeting**