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CetAMBICion

**Coordinated Cetacean Assessment,
Monitoring and Management Strategy
in the Bay of Biscay and Iberian Coast subregion**

Workpackage 1

Drafted by:



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Coordinated Cetacean Assessment, Monitoring and Management Strategy in the Bay of Biscay and Iberian Coast subregion (CetAMBICion).

The CetAMBICion project, coordinated by the Spanish National Research Council (CSIC) and which includes 15 partners from Spain, France and Portugal, aims to strengthen collaboration and scientific work between the three countries to estimate and reduce the bycatch of cetaceans in the Bay of Biscay and Iberian Coast subregion, in close collaboration with the fishing industry. Until 2023, the project will work to improve scientific knowledge on population abundance, incidental bycatch and on mitigation measures.

The project is part of the European Commission's DG ENV/MSFD 2020 (Marine Strategy Framework Directive) call, and its objectives are aligned with the Habitats Directive and the Common Fisheries Policy.



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LIST OF ACRONYMS

ABI	Bay of Biscay and the Iberian Coast
ABIES-NOR	Northern subdivision in Spanish ABI waters (Demarcación Noratlántica)
ABIES-SUD	Southern subdivision in Spanish ABI waters (Demarcación Sudatlántica)
ACCOBAMS	Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area
ASCOBANS	Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas
ATL	North-East Atlantic
Biodiversity EN	Biodiversity Expert Network
CEMP	Coordinated Environment Monitoring Programme
CFP	Common Fisheries Policy
CI	Confidence Interval
CIS	Common Implementation Strategy
CMS ¹	Convention on the Conservation of Migratory Species of Wild Animals
COM	European Commission
DCF	Data Framework Collection
DG ENV	Directorate-General Environment
EEA	European Environmental Agency
EEZ	Exclusive Economic Zones
Eionet	European Environment Information and Observation Network
ES	Spain
ET	Environmental Targets
EU	European Union
ETC/BD	European Topic Centre on Biological Diversity
FR	France
FRP	Favourable Reference Population
FRR	Favourable Reference Range
FRV	Favourable Reference Value
GES	Good Environmental Status
GES Decision	Commission Decision 2017/848, of May 2017
HD	Directive 92/43/EEC (Habitats Directive)
IA	Intermediate Assessment
ICES	International Council for the Exploration of the Sea

¹ or Bonn Convention

IUCN	International Union for Conservation of Nature and Natural Resources
JRC	Joint Research Centre
MM	Marine mammals
MoP	Monitoring Programme
MRU	Marine Reporting Unit
MTE	Ministerio para la Transición Ecológica
MVP	Minimum viable population
MS	Member States
MSFD	Marine Strategy Framework Directive
MSP	Maritime Spatial Planning
MUs	Management Units
OMMEG	OSPAR Marine Mammals Expert Group
OOAO	One-Out-All-Out
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
OSPAR IA	OSPAR Intermediate Assessment
PBR	Potential Biological Removal
PELGAS	<i>Suivi des petits poissons PELagiques dans le golfe de GAScogne</i>
PoM	Programme of Measures
PT	Portugal
PVA	Population viability analysis
QSR 2023	OSPAR Quality Status Report to be published in 2023
RLA	Removals Limit Algorithm
RSC	Regional Sea Convention
SCI	Site of Community Importance
TV	Threshold Values
WG GES	Working Group on Good Environmental Status
WG DIKE	Working Group on Data, Information and Knowledge Exchange
WKDIVAGG	Workshop on MSFD biodiversity of species D1 aggregation

GLOSSARY

Aggregation	combining of data and/or assessment information across space and time for one assessment aspect (e.g., a criterion).
Assessment area	the area within which an assessment of the environmental status of an ecosystem, or ecosystem component and a pressure element takes place. The assessment area is specified based on the geographic scale of assessment described in the GES Decision. For MSFD reporting purposes, the results for an assessment area are reported for a particular Marine Reporting Unit.
Assessment unit	assessment units can be understood as assessment areas and are defined areas for the purpose of carrying out assessment. The shape and size of assessment units will vary by assessment (OSPAR Agreement 2019-02).
Criteria element	elements of an ecosystem, particularly its biological elements (species, habitats and their communities), or aspects of pressures on the marine environment (biological, physical, substances, litter and energy), which are assessed under each criterion.
Ecosystem-based approach	is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. The goal of ecosystem-based management is to maintain an ecosystem in a healthy, productive and resilient condition so that it can provide the goods and services humans want and need (COM 2020 (259) final: pp. 3).
Ecosystem elements	relevant ecosystem elements: species groups of birds, mammals, reptiles, fish and cephalopods (Descriptor 1), pelagic habitats (Descriptor 1), benthic habitats (Descriptors 1 and 6) and ecosystems, including food webs.
Electronic report (e-report)	MSFD (xml) webforms submitted by Member States under Articles 8, 9, 10, 11 and 13, and available on Eionet repository ² .
Favourable Reference Population	population size (abundance) in a given biogeographical region considered the minimum necessary to ensure the long-term viability of the species; favourable reference value must be at least the size of the population when the Habitats Directive came into force.
Favourable Reference Range	range within which all significant ecological variations of the habitat/species are included for a given biogeographical region and which is sufficiently large to allow the long-term survival of the habitat/species; the favourable reference value must be at least the range (in size and configuration) when the Habitats Directive came into force
Feature	the ecosystem components and characteristics, the anthropogenic pressures, and the uses and human activities listed in MSFD Annex III tables

² <https://cdr.eionet.europa.eu/>

Impact	Adverse effects on the environment which are caused by pressures from human activities (i.e. resulting from these pressures) and by implication can be measured as changes in environmental state.
Indicator	in general, consists of one or several parameters chosen to represent ('indicate') a certain situation or aspect and to simplify a complex reality; for the legal purposes of the MSFD, the term 'indicator' refers only to environmental targets (Article 10), where they are used to monitor progress and guide management decisions achieve these targets (MSFD Annex IV: (7)); for the reporting purposes of MSFD the 'indicator' schema is applicable to indicators used for Article 8 assessments (including pressure and socio-economic indicators) and to indicators related to Article 10 targets (to show progress towards achievement of the targets)
Integration	combining of assessment information across different assessment aspects (e.g., combining information from two or more criteria or underlying indicators).
Marine Reporting Units	geographical areas defined in the context of reporting obligations under the Marine Strategy Framework Directive in order to link the implementation of the different articles to specific marine areas. MRUs can be of varying sizes, according to the appropriate scale for the different reports as indicated in the GES 2017 Decision. (e.g. region, subregion, regional or subregional subdivision, Member State marine waters, WFD coastal waters, etc.),
Marine Waters	waters under MS sovereignty or jurisdiction in accordance with MSFD Article 3(1).
Minimum viable population	minimum viable population size refers to the minimum population size at which a population is likely to persist over some defined period of time with a given probability of extinction (Bijlsma et al, 2019).
Parameter	Physicochemical, biological or ecological characteristics monitored and assessed to estimate an indicator.
Pressure	Pressure, in the sense of the Driver-Pressure-Impact-State-Response (DPSIR) framework and MSFD, is an input, alteration or extraction, in relation to natural conditions, of physical, chemical or biological elements or properties which results directly from human activities. The pressure can be measured at its source (i.e. close to the activity generating it) or away from its source in the different parts of the environment (land, air, water, sea). When the pressure is sufficiently intense, widespread or frequent it can lead to environmental impacts (adverse effects) on particular aspects of natural ecosystems.
State	in the context of the DPSIR framework and MSFD, refers to the quality/condition of species/habitat/ecosystem elements. This can be determined through measurements in the environment of relevant parameters for such elements; such measurements, by definition, will reflect any impacts (individual and cumulative) to which the element has been subjected.

Threshold value	value or range of values that allow(s) for an assessment of the quality level achieved for a particular parameter, thereby contributing to the assessment of the extent to which good environmental status is being achieved.
Text report	written report submitted by a Member State under Articles 8, 9, 10, 11 and 13, and available on Eionet repository.

EXECUTIVE SUMMARY

The analysis of the Marine Strategies of Portugal (PT), Spain (ES) and France (FR) for the Bay of Biscay and Iberian Coast (ABI) subregion in **chapter 3** allowed the identification and understanding of the approach of each Member State (MS) to the assessment and conservation of cetaceans, as indicators of GES, in each Marine Strategy Framework Directive (MSFD) implementation step. Regarding **Article 8** (GES assessment), the analysis shows considerable overlap of the species reported, with five **species** selected by all three MS. PT and FR reported on more species than ES, selecting, to a great extent, the same species but PT and ES both reported on the status of Cuvier's beaked whale despite the lack of data, while FR did not report this species due to insufficient data to assess abundance and distribution. Despite the good overlap between MS, this shows a different approach between the MS: PT and ES included those species selected as indicators of Good Environmental Status (GES) even if data were insufficient to perform an assessment, while FR reported only those species for which enough data was available to provide an assessment. This difference becomes more evident when analysing the reported **criteria** by species. FR only reported criteria that could be assessed in a quantitative way, reporting all other criteria as *not assessed*. Also PT reported all criteria that could not be assessed as in good or bad status as *not assessed* (usually due to insufficiency of data) while ES, reported all criteria for which no assessment could be provided as *unknown*. PT assessed D1C1 (bycatch) for all species selected, except Risso's dolphin, ES provided an assessment for harbour porpoise, common dolphin, bottlenose dolphin and long-finned pilot whale, reporting bycatch of Cuvier beaked whale and fin whale as *unknown*, and FR assessed this criterion only for the species with highest bycatch numbers, namely, common dolphin and harbour porpoise. The criterion most assessed across species and MS was D1C4 (distribution) followed by D1C2 (abundance) but the parameters and/or methodologies underlying the assessment of these criteria were different, particularly for D1C4. Most data, however, are collected using the same method (distance sampling). The least assessed criterion, on the other hand, was D1C3 (demography). PT, did not report at all on this criterion (including for species assessed in bad status), while FR only assessed this criterion for common dolphin, and ES for harbour porpoise and killer whale, although providing data on several parameters for other species. Finally, FR did not assess D1C5 (habitat) for any of the reported species due to the lack of a methodology while PT and ES assessed this criterion for some species relying on existing evidence and expert judgement. Regarding **integration**, the analysis showed that integration across parameters was not relevant for most criteria in all three MS. At the species level, PT and ES applied the Habitats Directive (HD) evaluation matrix, while FR applied the One-Out-All-Out (OOAO) integration method to the criteria assessed. Finally, PT did not integrate across species and both ES and FR applied the OOAO method to assess groups of species. The approach to **Article 9** (GES determination) was less coherent across the three MS and shows a lack of common understanding about what and how to report in Article 9. ES provides a description of each D1 criteria *as per* the GES Decision, FR provides the description of D1 *as per* the MSFD, while

PT provides a description of how species were assessed based on criteria D1C1, D1C2, D1C4 and D1C5. Also, the lack of assessment methodologies or data was reported under 'Justification Delay' by FR, 'Justification No Use' by PT, and ES provided no justification for not providing a quantitative GES determination.

Regarding **Article 10** (environmental targets), specific **environmental targets** were established for bycatch by all three MS, although with different ambition levels and timeframes. Under **Article 11** (monitoring programme) a similar approach to **monitoring** is proposed, both in terms of parameters and methodologies, by all three MS. In the future, data on MSFD criteria (D1C1, D2C2 and D1C4), including to assess OSPAR common indicators (M4 and M6) are expected to be available. Harmonization of frequency for aerial campaigns should be considered. No specific programme is foreseen for D1C5 (habitat). Different implementation stages of MS 2nd cycle Marine Strategies precluded a comparative analysis of **Article 13** (programme of measures).

In **chapter 4**, a review of **guidance** on the assessment of cetaceans under the Common Implementation Strategy (CIS), HD, Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR), International Council for the Exploration of the Sea (ICES) and other guidance is provided to further support the work to be developed under WP2 on a coordinated subregional monitoring, assessment, and GES determination for each group of species: small toothed cetaceans, deep-diving toothed cetaceans and baleen whales. Given the reference list produced by JRC and those included in the draft Article 8 MSFD assessment guidance (OSPAR IA, 2012 and Evans et al., 2021), as well the cetacean assessment units agreed under OSPAR, the species to be considered in the ABI subregion are: harbour porpoise, common dolphin, bottlenose dolphin, striped dolphin, white-beaked dolphin, long-finned pilot whale, Risso's dolphin, killer whale, sperm whale, Cuvier's beaked whale, fin whale and minke whale. These species, except for the harbour porpoise Iberian population, are distributed beyond the ABI subregion. Parameters and assessment methodologies to assess bycatch (D1C1), abundance (D1C2) and distribution (D1C4) have been agreed at OSPAR but may not be appropriate for the species less frequently sighted, such as Cuvier's beaked whale. Under the HD, parameters on abundance, range and habitat must also be assessed but for most marine species Favourable Reference Values have not been established for neither abundance nor range and are reported as *unknown* for most species. The review showed that the assessment results under the MSFD for D1C2, D1C4 and D1C5 are, in many cases, different from the assessment results reported under the HD for the equivalent criteria, due to differences in the parameters used and/or underlying assessments methodologies. It remains unclear how to assess both D1C5 and D1C3. For D1C5 parameters related to habitat quality, namely, contaminants, noise and prey availability for which parameters have been developed or are under development under other MSFD descriptors could inform D1C5 and support an integrated assessment. To assess D1C3, age distribution and other data collected from strandings could be considered for some species, particularly for the species at risk from bycatch. It must be investigated if sufficient data are available for these species. The

integration method most frequently applied is the One-Out-All-Out. This method has been agreed at OSPAR for the Quality Status Report (QSR) 2023, for both the integration of indicator results to assess species, and for the integration of species results to assess group of species. The lack of guidance about how the other integration methods available (e.g. weighted averages and conditional rules) could be applied specifically to assess cetacean species and groups of species limits their use. The direct use of HD species assessments, as well as OSPAR assessments, for MSFD purposes must be discussed at the criteria and species level.

1 Introduction

The Marine Strategy Framework Directive

The Marine Strategy Framework Directive³ (MSFD), in force since 2008, introduced a new and challenging legal framework, requiring Member States (MS) to establish Marine Strategies for their marine waters to maintain or achieve the Good Environmental Status (GES) of the marine environment, through the application of an ecosystem-based approach to the management of human activities. The implementation of the MSFD Marine Strategies is achieved through adaptive cycles of six years⁴, and includes five steps:

1. The assessment, comprising an analysis of the essential features and characteristics, predominant pressures and socioeconomic use of marine waters (Article 8);
2. The determination of GES based on the 11 qualitative descriptors⁵, set out in MSFD Annex I, which cover the health of ecosystems and the human pressures and impacts affecting them (Article 9);
3. The establishment of Environmental Targets (ET, Article 10);
4. The establishment and implementation of a Monitoring Programme (MoP, Article 11);
5. The establishment and implementation of a Programme of Measures (PoM, Article 13).

These steps must be implemented at the level of national waters, but given the transboundary nature of the marine environment as well the diverse conditions, problems and needs of the various European marine regions or subregions (**Figure 1**), regional coordination among MS⁶ is needed, and is to be achieved using existing cooperation structures, namely Regional Sea Conventions (RSC).

The 1st MSFD cycle took place from 2012 to 2018 and allowed a better understanding of the pressures from human activities potentially impacting marine ecosystems, in particular, non-indigenous species, marine litter and underwater noise, which were addressed more systematically than ever before. Regardless, many challenges / shortcomings were identified, namely, the need for regional cooperation to influence national implementation processes and not the other way around), discrepancies between bordering MS in the elements used to assess the status of marine ecosystems, and lack of available and comparable information across MS (COM (2020a) 259 final).

The 2nd MSFD cycle formally started in October 2018 and runs until 2024. Portugal (PT) Spain (ES) and France (FR) have already concluded the update of Articles 8, 9, 10, and 11

³ Directive 2008/56/EC of the European Parliament and of the Council, of 17 June 2008, amended by Commission Directive (EU) 2017/845 of 17 May 2017.

⁴ MSFD Article 17.

⁵ Biological diversity (D1), food-web structure (D4) and sea-floor integrity (D6) are maintained, while the impacts from non-indigenous species (D2), fishing (D3), excess nutrients (D5), changes in hydrographical conditions (D7), contaminants in the environment (D8) and in seafood (D9), marine litter (D10) and underwater noise (D11) do not adversely alter the marine ecosystems.

⁶ MSFD Articles 4, 5 and 6.

and are currently focused on submitting their update of the PoM, designed to achieve or maintain GES in the marine subregion of the Bay of Biscay and Iberian Coast (ABI).

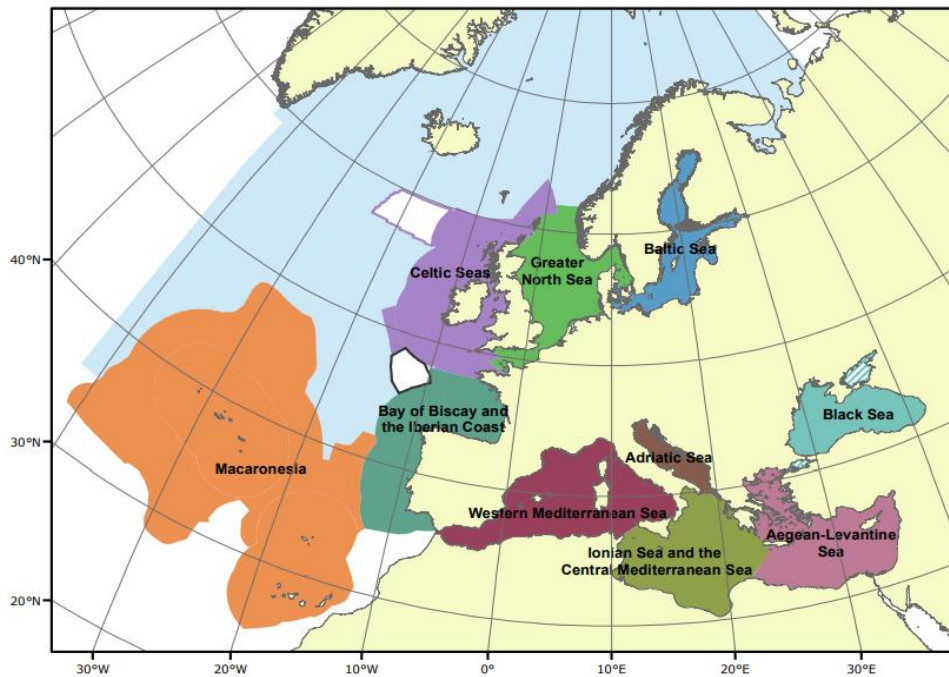


Figure 1 - MSFD marine regions and subregions (EEA, 2017)

The Biodiversity Descriptor

MSFD Descriptor 1 (D1) provides a definition of GES concerning biological diversity. For species, there are three aspects to consider according to the criteria lay down by the Commission Decision 2017/848, of May 2017 (hereafter ‘GES Decision’), namely:

- Pressures on the species, which may affect their state: D1C1 (bycatch), and other pressure criteria that may be relevant (e.g., contaminants, litter, noise);
- State of species in the marine environment: D1C2 (abundance), D1C3 (population demographic) and D1C4 (distributional range);
- State of the supporting habitats for species: D1C5.

These criteria provide a framework for MS to determine GES (under Article 9) and perform the species assessments (under Article 8) of each group of species of marine birds, **marine mammals (MM)**, marine turtles and marine fish and cephalopods. For MM the GES Decision defines four groups of species: small toothed cetaceans, deep-diving toothed cetaceans, baleen whales and seals. Further aspects, including lists of species to be assessed, threshold values (TV), which define the quality to be achieved for certain criteria, and integration methods, have to be agreed through regional or subregional cooperation.

CetAMBICion Task 1 objective

Challenges and shortcomings regarding the assessment of D1-MM in the ABI subregion include data gaps, difficulties in integration among different policies and limited subregional coordination for the establishment of common lists of criteria elements,

threshold values, and methodological standards. To understand how these difficulties were, or not, tackled by the three MS in the 2nd cycle and provide an overview of the current situation of the MSFD implementation, as well as an appraisal of the state-of-the-art for the assessment of MM in different *fora*, is the objective of **Deliverable 1.01** of CetAMBICion project.

This review aims to inform the work of CetAMBICion work package 2 (WP2), focused on the development of a common approach for the assessment and monitoring of cetaceans, and WP3, concerning a proposal of coordinated subregional assessment, GES determination and monitoring of cetacean bycatch.

2 Structure and Methodology

This report provides an analysis on how the Marine Strategies of each MS within the ABI subregion address the assessment and conservation of cetaceans ([chapter 3](#)), as well as a review of the available guidance on the subject produced under the: i) MSFD Common Implementation Strategy (CIS) process; ii) Habitats Directive (HD) iii) Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR); iv) International Council for the Exploration of the Sea (ICES); v) Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS); and vi) Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS) ([chapter 4](#)). Based on both reviews, an initial set of conclusions is provided ([chapter 5](#)) to be further considered, discussed and agreed under WP2 Tasks 2.2⁷ and 2.3⁸.

For the analysis of the Marine Strategies, the reports submitted by PT, ES and FR to fulfil the reporting requirements of the MSFD (text-based reports and, if available, e-reports), were reviewed to identify the main similarities and differences in the approaches adopted by each MS in relation to Articles 8 (GES assessment), 9 (GES determination), 10 (Environmental Targets), 11 (Monitoring Programme) and 13 (Programme of Measures), focusing on the most updated versions of each. However, at the time of this analysis, only Articles 8, 9, and 10 had been updated and reported to the European Commission (COM) by the three MS. To review the 2nd cycle MoP of each MS, public consultation versions had to be considered for both PT and FR, as only ES had already finalized the reporting of its MoP to the COM, and for the analysis of the PoM, only for FR an updated PoM could be considered as the update of Article 13 is still ongoing in both ES and FR. The final text and electronic reports reviewed are publicly available at the European Environment Information and Observation Network (Eionet) platform via the following links:

- PT:
 - 2018 Reporting - Articles 8, 9 and 10:
https://cdr.eionet.europa.eu/pt/eu/msfd_art17/2018reporting
 - 2020 Reporting - Article 11:
https://cdr.eionet.europa.eu/pt/eu/msfd_art17/2020reporting/
 - 2015 Reporting - Article 13 (text-based report only)⁹:
<https://cdr.eionet.europa.eu/pt/eu/msfd mp/>
- ES:
 - 2018 Reporting - Articles 8, 9 and 10:
https://cdr.eionet.europa.eu/es/eu/msfd_art17/2018reporting/
 - 2020 Reporting - Article 11:
https://cdr.eionet.europa.eu/es/eu/msfd_art17/2020reporting/

⁷ Establishing a subregional list of species, indicators and scale of assessment

⁸ Common approach to threshold values, GES determination and integration rules

⁹ Portugal submitted the MoP and PoM jointly in 2014; the link is for the joint document submitted

- 2015 Reporting - Article 13:
https://cdr.eionet.europa.eu/es/eu/msfd_pom/
- FR:
 - 2018 Reporting - Articles 8, 9 and 10:
https://cdr.eionet.europa.eu/fr/eu/msfd_art17/2018reporting/
 - 2020 Reporting - Article 11:
https://cdr.eionet.europa.eu/fr/eu/msfd_art17/2020reporting/
 - 2015 Reporting - Article 13:
https://cdr.eionet.europa.eu/fr/eu/msfd_pom

To double-check the analysis of the e-reports, the information provided in the platform WISE-marine was also accessed. WISE-marine¹⁰ is a web-based management system that shows the efforts made across the EU on the implementation of the MSFD and the current state of the marine environment in relation to GES, based on the information reported under Article 8. It is how the Environmental European Agency (EEA) and the COM communicate the main results to the public. Also, the Joint Research Centre (JRC) report “*MSFD - Review and analysis of EU Member States’2018 reports*” (Palialexis et al., 2021a) was taken into account for the analysis of MS 2018 reports, as it includes an analysis of the consistency, comparability and adequacy of the reported criteria elements, criteria, parameters, thresholds and integration rules applied by MS and (sub)region. The COM assessment report on the update of the first steps in the implementation of the MSFD, in accordance with Article 12, was not yet available at the time of this analysis.

In chapter 4, the existing guidance concerning the assessment and monitoring of cetaceans is reviewed, focusing on abundance, distribution, habitat and demographic characteristics, as bycatch is specifically addressed under CetAMBICion WP3. Particular focus is given to the documents produced under the MSFD CIS process, a programme of coordination set up in 2009 to improve the coordination amongst MS and yield coherence and efficiency in the implementation of the MSFD. Under this programme, a number of groups have been established to develop guidance on different aspects of the Directive. For D1, a network of experts, the **MSFD Biodiversity Expert Network** (MSFD Biodiversity EN) led by the JRC, was set up to deliver scientific and technical support. It contributes to the guidance produced by the JRC, concerning the different steps of the assessment process for D1, which currently includes:

- JRC’s reference list of MSFD species and habitats (Palialexis et al., 2018)
- Indicators for status assessments of species, relevant to MSFD Biodiversity Descriptor (Palialexis et al., 2019)
- Species thresholds: review of methods to support the EU Marine Strategy Framework Directive (Palialexis et al., 2021b)

¹⁰ <https://water.europa.eu/marine>

- Integration methods for Marine Strategy Framework Directive’s biodiversity assessments (Dierschke et al., 2021) – focused on marine birds and fish

Furthermore, the MSFD Biodiversity EN provides input and feedback as relevant to the work developed by other groups of the MSFD CIS programme, such as the Working Group on Good Environmental Status (WG GES) and the Working Group on Data, Information and Knowledge Exchange (WG DIKE). Reports most relevant for the present review include:

- Reporting on the 2018 update of Articles 8, 9 & 10 for the Marine Strategy Framework Directive (European Commission, 2018);
- Article 8 MSFD Assessment Guidance (draft version).

Both the directive and the GES Decision envisage a GES assessment and determination at (sub)regional level, through regional institutional cooperation structures, namely Regional Sea Conventions (RSC). The RSC which covers the waters included in the ABI subregion is the OSPAR Convention (**Figure 2**) and the work on monitoring and assessment of cetaceans is taken forward by the **OSPAR Marine Mammal Expert Group (OMMEG)**. This group is currently engaged in the assessment of cetaceans and seals for the OSPAR Quality Status Report to be published in 2023 (QSR 2023), a report aiming to assess the environmental status of the North-East Atlantic (ATL).



Figure 2 - The OSPAR maritime area and the OSPAR regions (I to V) agreed for assessment and management purposes (source: OSPAR, 2021¹¹).

There are additionally two agreements for the conservation of cetaceans established under the auspices of the Convention on the Conservation of Migratory Species of Wild Animals

¹¹ <https://www.ospar.org>

(CMS or Bonn Convention) that cover the waters of the ABI subregion: ASCOBANS (**Figure 3**) and ACCOBAMS (**Figure 4**). Portugal, Spain and France are parties of the ACCOBAMS agreement, although for France this is not relevant with regard to the ABI subregion since the agreement only covers French waters of the Mediterranean region. France is also party to the ASCOBANS agreement, while Portugal and Spain are Non-Party Range States¹². A Joint ACCOBAMS/ASCOBANS Working Group on the MSFD has been established to ensure that cetacean conservation issues are adequately considered in the framework of the ongoing work related to the MSFD.

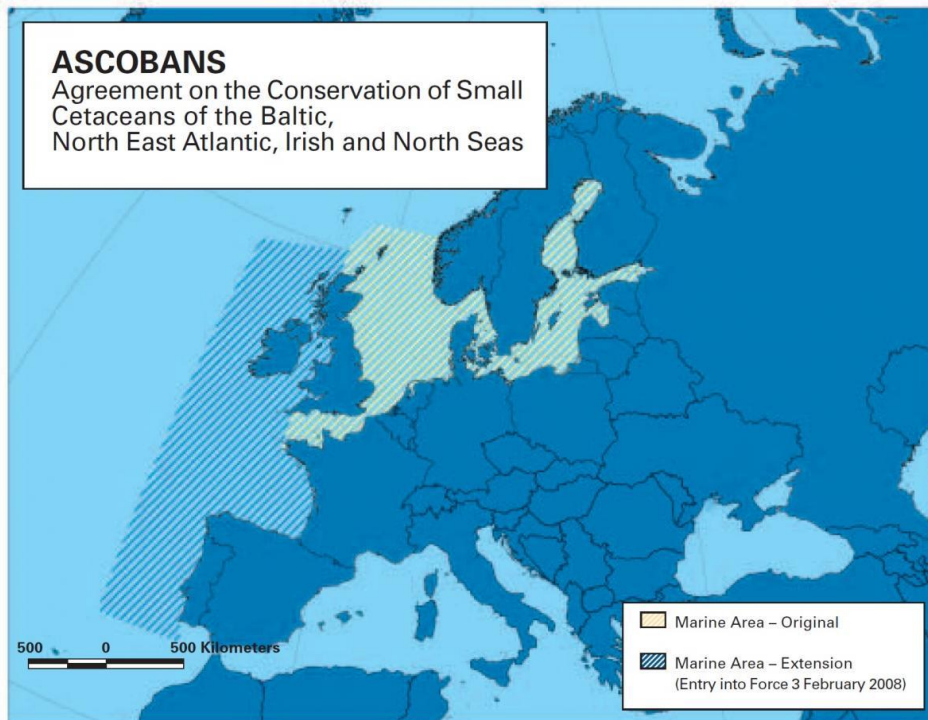


Figure 3 - ASCOBANS agreement marine area (source: ASCOBANS, 2021¹³).



Figure 4 - ACCOBAMS agreement marine area (source: ACCOBAMS, 2022¹⁴)

¹² Portugal, Spain and Ireland waters, not included in the original agreement area, were included by the extension of the area in 2008 but the three countries have not so far ratified, or acceded to, ASCOBANS.

¹³ <https://www.ascobans.org>

¹⁴ <https://accobams.org>

At the International Council for the Exploration of the Sea (ICES), the **Working Group on Marine Mammal Ecology** (WGMME) examines and reviews information on population size, distribution, population/stock structure and management frameworks for marine mammals in the North Atlantic. Its latest report was reviewed to identify any relevant information for the assessment and monitoring of cetaceans for MSFD purposes in the ATL.

Finally, since the GES Decision recommends that assessments under the HD should be used for the MSFD, the assessment and reporting requirements under the HD Article 17 are described considering two main documents:

- Reporting under Article 17 of the Habitats Directive: Explanatory Notes and Guidelines for the period 2013-2018 (DG ENV, 2017) and
- Defining and applying the concept of Favourable Reference Values for species and habitats under the EU Birds and Habitats Directive (Bijlsma et al., 2019).

In the HD, marine regions have also been defined for reporting and assessment purposes, the limits of which have been revised to better adjust to the boundaries of marine regions and subregions agreed under the MSFD (**Figures 5 and 6**). To improve cooperation and coordination between MS in each HD biogeographical region the COM launched, in 2011, the Natura 2000 Biogeographical Process, a multi-stakeholders' co-operation process, via seminars, workshops and cooperation activities. A brief account of the Marine Natura 2000 Biogeographical Process and of the methodology to assess HD species at EU biogeographical area (EEA, 2020) are included in Annex 2 and chapter 4, respectively, to highlight differences in the cooperation processes established under each Directive.

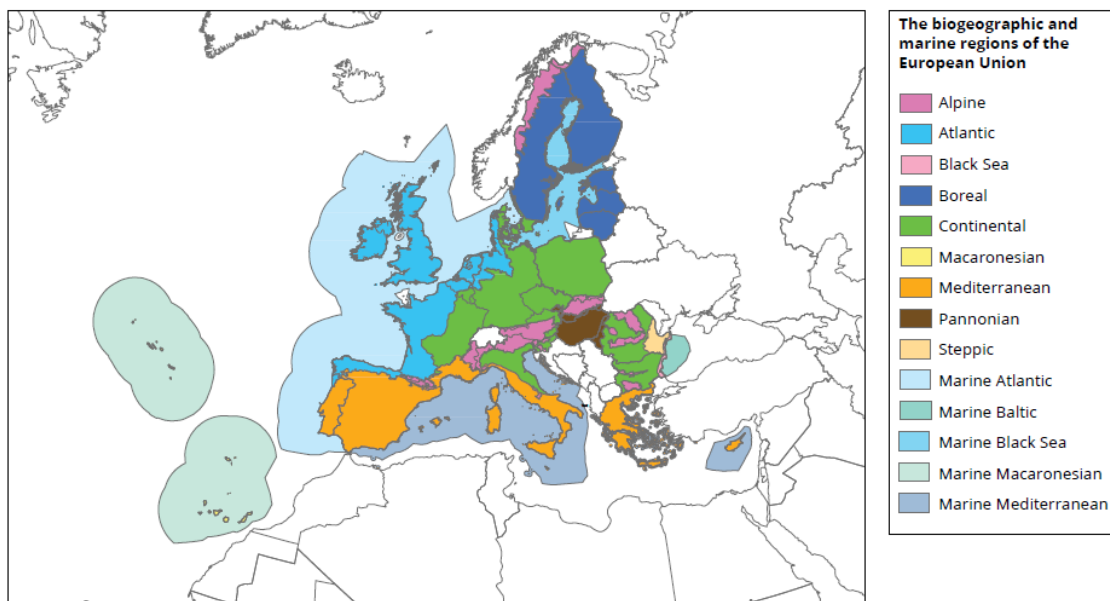


Figure 5 - Habitats Directive biogeographical and marine regions (source: EEA, 2015)

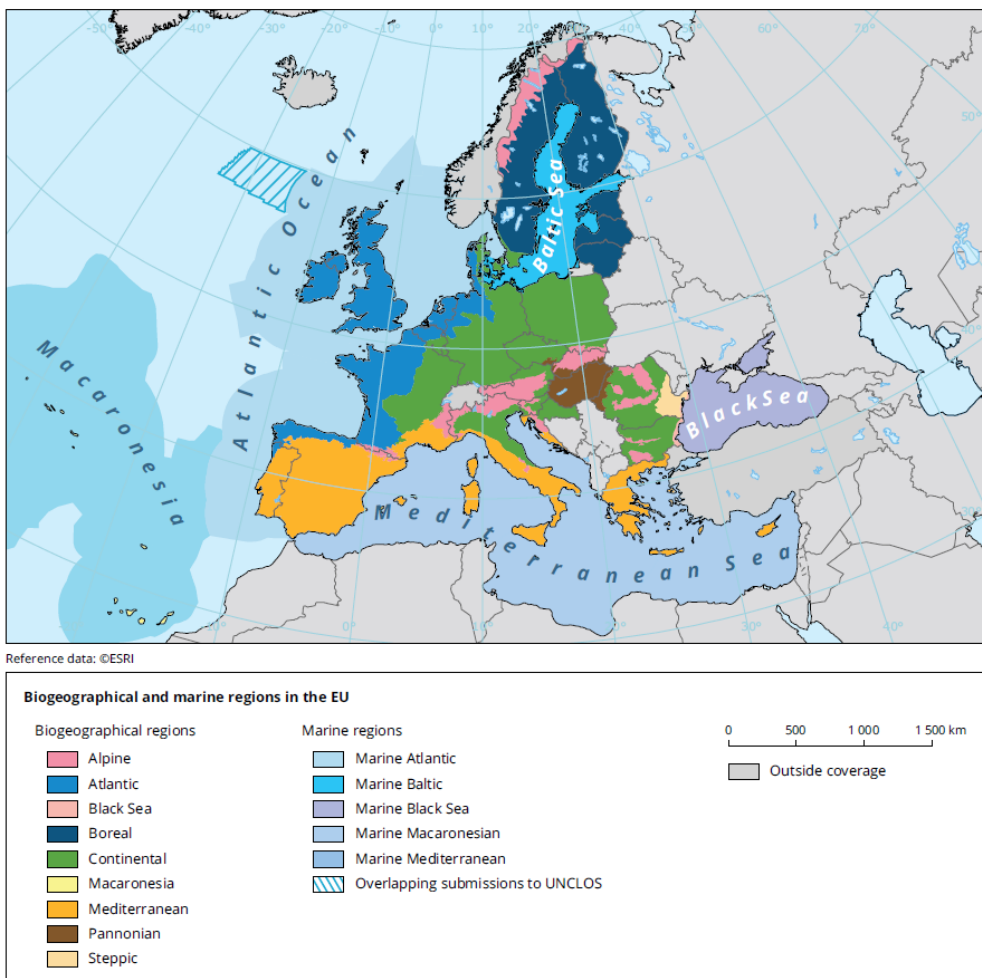


Figure 6 - Habitats Directive biogeographical and marine regions (source: EEA, 2020)

3 Comparative Analysis of the Marine Strategies of Member States in the Bay of Biscay and the Iberian coast subregion

3.1 Marine Reporting Units

Marine Reporting Units (MRUs) are the areas defined by the MS to notify the Commission regarding the extent to which GES has been achieved (Article 8), GES determinations (Article 9), and adopted environmental targets (Article 10), monitoring programmes (Article 11) and programmes of measures (Article 13). MRUs are mostly a tool for communication purposes, providing a set of areas that, as far as possible, should not be changed between cycles so that results are comparable over time and trends in GES for each MRU can be communicated to the public and decision-makers.

One to several MRUs may be established under each descriptor and are a different concept from assessment areas, which are the areas where data are collected and parameters assessed (see also [chapter 3.2.](#)). Under D1, and particularly for cetaceans, the distribution of species is typically wide, comprising the marine waters of several MS, and thus to report the status of groups of species, MS usually define a single MRU for each MSFD (sub)region. Accordingly, both FR and PT defined a single MRU to assess cetacean groups of species. In ES, however, given considerable differences in terms of biodiversity and management, and also jurisdictional discontinuity, two MRU were defined: one comprising the northern waters (from the border with PT in the north, to the border with FR: ABI-ES-SD-NOR) and other comprising the southern waters (from the border with PT in the south, to the border with the Mediterranean region: ABI-ES-SD-SUD) (**Figure 7**).

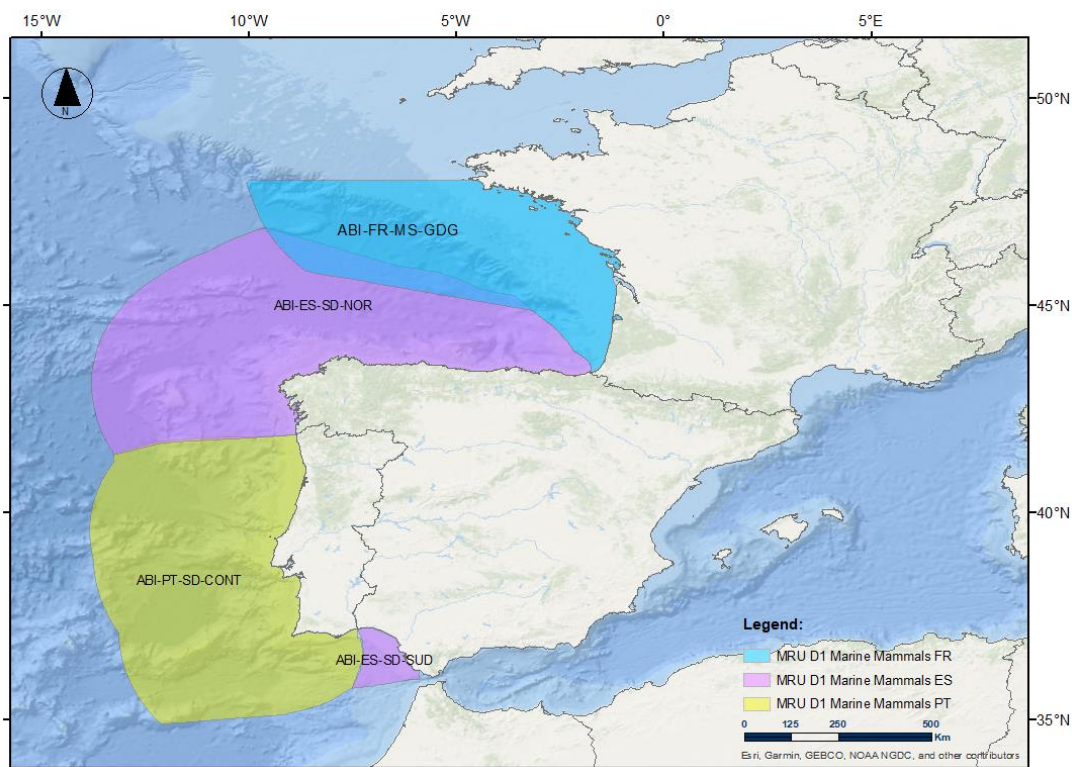


Figure 7 - Marine Reporting Units established for D1-Marine Mammals in the Bay of Biscay and Iberian Coast by Portugal, Spain and France (marine borders as defined by each MS) .

3.2 Article 8: GES Assessment

3.2.1 Selected species

For the ecosystem element “marine mammals”, the GES Decision establishes the need to assess four groups including three groups of cetacean species: **small toothed cetaceans**, **deep-diving toothed cetaceans** and **baleen whales**, providing, furthermore, guidance regarding the selection of species within each group. As per the GES Decision, MS must agree on a list of species through regional or subregional cooperation, taking into consideration Annex II of Directive 92/43/EEC (HD), and other EU legislation or international agreements, such as RSC, as well as the scientific (ecological relevance) and practical criteria laid down in the decision. Additionally, the GES Decision clearly indicates the need to assess the mortality rates from incidental bycatch of species at risk from bycatch in the region or subregion, taking into account the list of species in Table 1D of the Annex to Commission Implementing Decision (EU) 2016/1251¹⁵. This list, however, includes all cetacean species occurring in EU MS marine waters, therefore providing little insight regarding the species that each MS should consider.

As no regional list has yet been agreed for the ABI subregion, PT, ES and FR reported the species selected at national level. **Table 1** provides an overview of the species reported by each MS and shows that five species were selected by all three MS in the ABI subregion: **common dolphin** (*Delphinus delphis*), **harbour porpoise** (*Phocoena phocoena*), **bottlenose dolphin** (*Tursiops truncatus*), **long-finned pilot whale** (*Globicephala melas*) and **common fin whale** (*Balaenoptera physalus*). Three other species were considered by both PT and FR: **striped dolphin** (*Stenella coeruleoalba*), **Risso’s dolphin** (*Grampus griseus*) and **minke whale** (*Balaenoptera acutorostrata*); and, both PT and ES included the **Cuvier’s beaked whale** (*Ziphius cavirostris*) in its reports. Finally, **killer whale** (*Orcinus orca*), was selected by ES for its ABI southern subdivision (ABI-ES-SD-SUD), and will also be included in future assessments by PT as explained below.

The criteria considered by each MS to select species at the national level were slightly different (see section below) but, as data availability strongly limited the species which could be reported, these are, for the most part, the species with the most data available.

¹⁵ replaced by Table 1D of the Commission Delegated Decision (EU) 2019/910 of 13 March 2019 establishing the multiannual Union programme for the collection and management of biological, environmental, technical and socioeconomic data in the fisheries and aquaculture sectors

Table 1 - Cetacean species reported for the Bay of Biscay and Iberian Coast subregion by Member State [NOR = MRU ABIES-NOR; SUD = MRU ABIES-SUD; UG = *Unidades de Gestion*] in brackets: number of species assessed].

Species Group	Species	Member State			
		Portugal (N=10)	Spain		France (8)
			NOR (N=6)	SUD (N=4)	
Small toothed cetaceans	Common dolphin	x	x (UG9)	x (UG10)	x
	Harbour porpoise	x	x (UG1)		x
	Striped dolphin	x			x
	Bottlenose dolphin	x	x (UG2&UG3)	x (UG4)	x
	Killer whale	³		x (UG28)	
Deep-diving toothed cetaceans	Long-finned pilot whale ¹	x	x (UG13)		x
	Risso's dolphin ¹	x			x
	Pygmy sperm whale	x ²			
	Cuvier's beaked whale	x	x (UG16)		
Baleen Whales	Minke whale	x			x
	Fin whale	x	x (UG21)	x (UG22)	x

¹ species reported by PT in the small toothed cetaceans group.

² species currently not included in PT national list of species to assess Good Environmental Status.

³ species not reported but currently included in PT national list of species to assess Good Environmental Status

- **Portugal**

In total, 30 species have been described to occur in PT ABI waters (Vingada and Eira, 2018 and Correia et al., 2022), of which 10 species were selected to assess GES considering occurrence and distribution, and in particular, residency patterns in national waters. Of these species, eight are Odontoceti: common dolphin, harbour porpoise, striped dolphin, bottlenose dolphin, long-finned pilot whale, Risso's dolphin, pygmy sperm whale (*Kogia breviceps*) and Cuvier's beaked whale); and two are Mysticeti: the fin and minke whales. These baleen whales, although migrants, use PT mainland waters both as breeding and calving grounds. Recently it was decided to exclude the pygmy sperm whale from PT list of species, due to the fact that sightings are insufficient to estimate abundances. On the other hand, the killer whale (*Orcinus orca*) was included due to the recent increase in sightings of this regular visitor.

- **Spain**

In ES ABI waters, 24 species have been described, the most frequently occurring being: common dolphin, bottlenose dolphin, harbour porpoise and striped dolphin, which are

present year-round; and long-finned pilot whale, Risso's dolphin, sperm whale (*Physeter macrocephalus*) and fin whale, which are present seasonally (Ministerio para la Transición Ecológica, 2019). The final ES list of species was, however, established considering the following four criteria:

- Representativeness of different ecological habitats (coastal, slope, deep waters)
- Availability and robustness of absolute abundance estimates
- Common reporting needs with other EU legislation (e.g., Habitats Directive Annex II)
- Relevance to assess anthropogenic pressures

In light of these criteria, some species were excluded from the final list (striped dolphin, Risso's dolphin and sperm whale), while Cuvier's beaked whale and killer whale were added to assess deep-diving toothed cetaceans in ABI-ES-SD-NOR subdivision, and small toothed cetaceans in the ABI-ES-SD-SUD subdivision, respectively.

In ES, the concept of Management Units (MUs) has been adopted for both assessment and monitoring purposes. MUs are based on the understanding of the structure of biological populations and ecological differences within such populations, but also considering political boundaries and/or management limits. Accordingly, in ES, MUs (*Unidades de Gestión - UG*) were defined for each species, considering the assessment units discussed in the ICES WGMME (described in ICES 2014 advice), but also the limits of ES subdivisions. For most species, single ATL wide populations are currently recognized, and therefore the MUs simply concern the animals that use ES waters within each subdivision. This is the case for the common dolphin (UG9 and UG10) and fin whale (UG21 and UG22), for which ES considers two units, one for the northern waters and another for the southern waters. For the harbour porpoise, ES considers specifically the Iberian harbour porpoise using ES waters and for the bottlenose dolphin, ES considers the following three MUs (see also **Figure 7**):

- UG2: **resident** MU in coastal waters of southern Galicia (ABIES-NOR)
 - UG3: **coastal** MU, in the northern and north-western platform waters (ABIES-NOR)
 - UG4: **coastal** MU, in the platform waters of Gulf of Cádiz (ABIES-SUD)
- **France**

FR established a list of 14 representative species relevant to assess marine mammals groups of species within the ABI subregion: harbour porpoise, common dolphin, striped dolphin, bottlenose dolphin, Risso's dolphin, long-finned pilot whale, sperm whale, pygmy sperm whale, Cuvier's beaked whale, Sowerby's beaked whale (*Mesoplodon bidens*), northern bottlenose whale (*Hyperoodon ampullatus*), minke whale, fin whale and humpback whale (*Megaptera novaeangliae*). However, only those that could be assessed given the available data were considered in the 2018 update of Article 8, namely, the common dolphin, harbour porpoise, striped dolphin, bottlenose dolphin, Risso's dolphin, long-finned pilot whale, minke whale and fin whale.

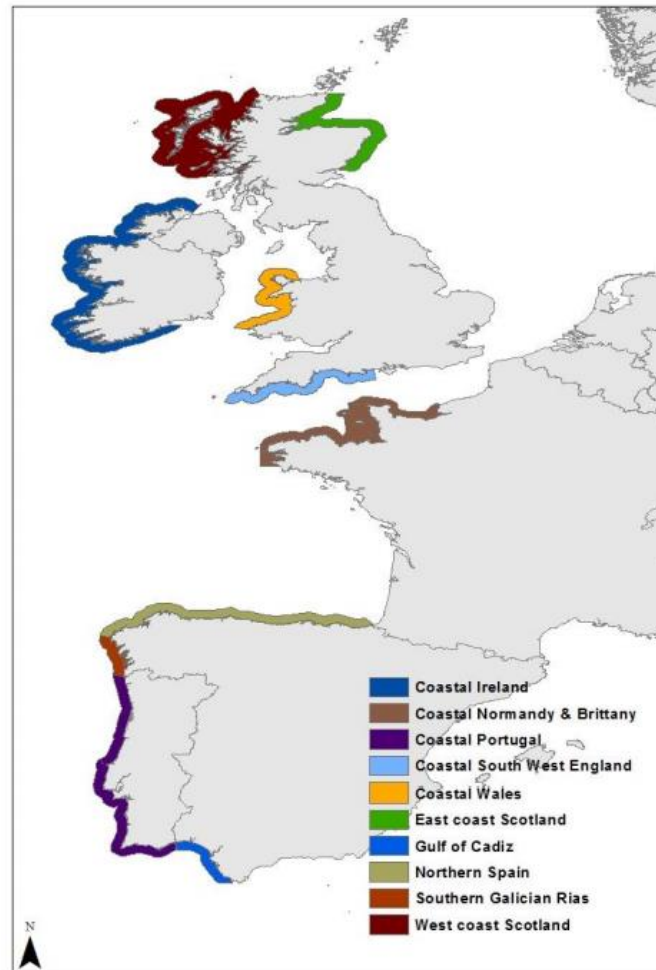


Figure 8 - Bottlenose dolphin coastal assessment units as advised by ICES (ICES, 2014).

Highlights

The three MS reported five species in common: three small toothed cetacean species (common dolphin, harbour porpoise and bottlenose dolphin), one deep-diving toothed cetacean species (long-finned pilot whale) and one baleen whale (fin whale). PT and FR reported more species than ES, reporting, to a great extent, the same species (eight). The main difference between these two MS concerns pygmy sperm whale (now also excluded from PT national list for the ABI subregion) and Cuvier's beaked whale, (reported by PT, but not by FR due to lack of data, a criterion that PT did not consider to be, by itself, an excluding factor). ES, as PT, however, reported on the status of Cuvier's beaked whale showing that, despite the good overlap of species between MS, a different approach was in fact adopted, as PT and ES included in the assessment the species selected as indicators of GES even if there were insufficient data to perform an assessment, while FR reported only those species for which enough data were available to provide an assessment.

Joint Research Centre Analysis

In its review of MS 2018 reports (Palialexis et al., 2021a), the JRC identifies, as a starting point, which species were reported, or not, by each MS at the subregion level. For that analysis the JRC considered the species in its MSFD species reference list (Palialexis et al., 2018) which occur in MS water (not abundance nor data availability). Therefore, the list of species considered for the subregion includes species with records in ES and/or PT waters, but with low or unknown frequency of occurrence, such as, short-finned pilot whale (*Globicephala macrorhynchus*), spotted dolphin (*Stenella frontalis*), rough-toothed dolphin (*Steno bredanensis*), dwarf sperm whale (*Kogia simus*), Gervais' beaked whale (*Mesoplodon europaeus*), Sowerby's beaked whale (*Mesoplodon bidens*), True's beaked whale (*Mesoplodon mirus*) and Blainville's beaked whale (*Mesoplodon densirostris*). As a result, the analysis performed by JRC, considered a number of species that were not reported in the ABI subregion by PT, ES or FR¹⁶. Data availability is however a key criterion to assess species according to the 2017 GES Decision, i.e., considering threshold values, which furthermore shall be consistent with the Favourable Reference Values under Directive 92/43/EEC. Therefore, the species to be considered are likely to be fewer than those identified by JRC. A report on defining and applying the concept of Favourable Reference Values for species under the HD identifies 15 species that could be assessed based on such values in EU MS marine waters (Bijlsma et al., 2019)¹⁷. On the other hand, the sperm whale (*Physeter macrocephalus*), a species which, within the ABI subregion, is considered to be occasional in PT and present seasonally in ES and FR, was not included. Also, JRC considered Cuvier's beaked whale as not relevant for FR, but the species is included in the FR list of species to assess GES (although, in the end, the species was not reported due to insufficient data).

JRC's analysis also checks whether the species considered in the OSPAR 2017 Intermediate Assessment (IA) were reported, but does not provide details at the MS or subregion levels. The species for which abundance and distribution were assessed in OSPAR 2017 IA¹⁸ but not by MS within the ABI subregion were: the striped dolphin and the minke whale by ES; and killer whale by both PT and FR. Still, it must be noted that, in OSPAR 2017 IA, data to assess abundance and distribution trends were sufficient for only three species (white-beaked dolphin, minke whale and harbour porpoise), and then only for the North Sea, while for the other species, the data available were considered insufficient.

Finally, the analysis of JRC to the tables of species in its report, is to some extent, inaccurate for the ATL: regarding baleen whales, PT and FR reported two species and ES only one; and the Risso's dolphin was reported by both FR and PT.

¹⁶ JRC is developing a risk-based approach for selecting species at the (sub)regional level which may support a clearer list of species to assess GES.

¹⁷ *Delphinus delphis*, *Grampus griseus*, *Phocoena phocoena*, *Stenella coeruleoalba*, *Tursiops truncatus*, *Globicephala melas*, *Physeter macrocephalus*, *Ziphius cavirostris*, *Balaenoptera acutorostrata*, *Balaenoptera physalus*, *Orcinus orca*, *Megaptera novaeangliae*, *Hyperoodon ampullatus*, *Lagenorhynchus acutus*, *Lagenorhynchus albirostris*.

¹⁸ *Delphinus delphis*, *Phocoena phocoena*, *Stenella coeruleoalba*, *Tursiops truncatus*, *Globicephala melas*, *Physeter macrocephalus*, *Lagenorhynchus albirostris*, *Orcinus orca*, *Balaenoptera acutorostrata*, *Balaenoptera physalus*.

3.2.2 GES Criteria, parameters and threshold values

GES criteria

To assess the ecosystem elements of Descriptor 1 (species groups of marine mammals, sea birds, marine turtles, and fish and cephalopods), the GES Decision established five criteria:

- D1C1 – Mortality from incidental bycatch
- D1C2 – Population Abundance
- D1C3 – Demographic characteristics
- D1C4 – Distribution range and pattern
- D1C5 – Habitat

According to the GES Decision, D1C2 is primary for all the species groups, while D1C4 and D1C5 are primary criteria only for the species covered by Annexes II, IV or V of the HD, which is the case of all cetacean species (the infraorder *Cetacea* is fully included in Annex IV to HD). Therefore, to assess cetaceans all criteria are primary, except for D1C3, which is a secondary criterion. i.e., only to be used if deemed necessary to complement the primary criteria and particularly when there is the risk of not achieving or maintaining GES (for example, if the species is at risk from bycatch). Criterion D1C1 is, however only to be assessed for those species at risk of bycatch taking into account the list of species in Table 1D of the Annex to Commission Implementing Decision (EU) 2016/1251 (later replaced by Table 1D of the Commission Delegated Decision (EU) 2019/910 of 13 March 2019¹⁹) which, as mentioned previously, includes all cetacean species occurring in EU MS marine waters, providing no insight regarding which species are considered to be most at risk from bycatch. According still to the GES Decision, MS may consider one or more primary criteria not appropriate (Article 3) and therefore, in conclusion, each species must be assessed based on the primary criteria considered appropriate by experts to assess GES in the subregion, with a justification provided in case a primary criterion is not deemed suitable, and D1C3 in case the species is at risk.

To assist MS with the 2018 reporting obligation, the COM issued the MSFD guidance document: *Reporting on the 2018 update of articles 8, 9 & 10 for the Marine Strategy Framework Directive*, according to which criteria are to be reported as **Good, Good based on low risk, Not good, Unknown OR Not assessed** (COM, 2018b). The reporting guidance, however, did not provide definitions for these different *status* options which led to different interpretations/uses by MS. More recently, in the revised Article 8 Assessment guidance, it is recommended to indicate status as 'unknown', if lack of knowledge prevents an assessment; and 'not assessed' if a decision was made not to assess a particular element or criterion).

¹⁹ Commission Delegated Decision establishing the multiannual Union programme for the collection and management of biological, environmental, technical and socioeconomic data in the fisheries and aquaculture sectors.

Table 2 identifies the criteria reported, and which were assessed (status: *good* or *not good*²⁰) and not (status: *unknown* or *not assessed*). The table shows that both ES and FR included all five criteria (primary and secondary) in their e-reports, while PT did not report on D1C3, as no data were available to assess this secondary criterion. **Table 2** also shows that in many cases the criteria were not assessed, particularly for deep-diving cetaceans. The common dolphin, on the other hand, was the species for which most criteria were assessed. Below, the main differences between how the criteria were reported, and which were assessed, are highlighted:

- **PT**, assessed, for most species, the criteria equivalent to the HD criteria, i.e., population size (D1C2); distribution area (D1C4); and habitat (D1C5), and also criterion D1C1. For deep-diving species however, most criteria could not be assessed due to insufficient data. In its e-reports, PT reported as *not assessed* the criteria for which an assessment (*good* or *not good*) could not be provided.
- **ES** reported most criteria as *unknown*, except for D1C4 which was assessed for most species (in either *good* or *bad* status) and D1C1 which was assessed in the ABI-ES-SD-NOR MRU for harbour porpoise, common dolphin and bottlenose dolphin, and in the ABIES-SD-SUB MRU for killer whale. Also, D1C5 was assessed in the ABIES-SD-NOR MRU for harbour porpoise and in the ABIES-SD-SUB MRU for bottlenose dolphin, killer whale and common whale. Like PT, no distinction was made between criteria *not assessed* and *unknown*; all criteria were reported as either in *good* or *not good* status or *unknown* (although most of the parameters were reported as *not assessed*).
- **FR** did not assess criterion D1C5, considering that no appropriate methodologies are available. Also, D1C1 was assessed for only two species (common dolphin and harbour porpoise) and D1C3 for only one (common dolphin). Therefore, for most species, only D1C2 and D1C4 criteria were assessed. All criteria not assessed as *good* or *not good* status were reported as *not assessed*.

²⁰ The status *good based on low risk* was not reported by PT, ES or FR for any criterion.

Table 2 - Criteria and assessment reported by each Member State in the Bay of Biscay and Iberian Coast per species. [in **bold**: criteria assessed (status reported in *good* or *not good*); *italic* (status reported as *unknown*); ~~strikethrough~~ (status reported as *not assessed*); n.a.: not applicable; UG2: resident unit in coastal waters of southern Galicia; UG3: coastal unit in the northern and north-western platform waters; UG4: coastal MU, in the platform waters of Gulf of Cádiz].

Species Group	Species/Management units	Member State			
		Portugal	Spain		France
			Northern waters	Southern waters	
Small toothed cetaceans	Common dolphin	D1C1; D1C2; D1C4; D1C5	D1C1; D1C2; D1C3; D1C4; D1C5	<i>D1C1; D1C2; D1C3; D1C4; D1C5</i>	D1C1; D1C2; D1C3; D1C4; D1C5
	Harbour porpoise	D1C1; D1C2; D1C4; D1C5	D1C1; D1C2; D1C3; D1C4; D1C5	n.a.	D1C1; D1C2; D1C3; D1C4; D1C5
	Striped dolphin	D1C1; D1C2; D1C4; D1C5	n.a.	n.a.	D1C1; D1C2; D1C3; D1C4; D1C5
	Bottlenose dolphin Atlantic management unit	D1C1; D1C2; D1C4; D1C5	n.a.	n.a.	D1C1; D1C2; D1C3; D1C4; D1C5
	Bottlenose dolphin (coastal management unit UG2-TT)	n.a.	<i>D1C1; D1C2; D1C3; D1C4; D1C5</i>	n.a.	n.a.
	Bottlenose dolphin (coastal management unit UG3-TT)	n.a.	<i>D1C1; D1C2; D1C3; D1C4; D1C5</i>	n.a.	n.a.
	Bottlenose dolphin (coastal management unit UG4-TT)	n.a.	n.a.	<i>D1C1; D1C2; D1C3; D1C4; D1C5</i>	n.a.
Deep-diving toothed cetaceans	Long-finned pilot whale	D1C1; D1C2; D1C4; D1C5	D1C1; D1C2; D1C3; D1C4; D1C5	n.a.	D1C1; D1C2; D1C3; D1C4; D1C5
	Risso's dolphin	D1C1; D1C2; D1C4; D1C5	n.a.	n.a.	D1C1; D1C2; D1C3; D1C4; D1C5
	Pigmy sperm whale	D1C1; D1C2; D1C4; D1C5	n.a.	n.a.	n.a.
	Killer whale	-	n.a.	D1C1; D1C2; D1C3; D1C4; D1C5	n.a.
	Cuvier's beaked whale	D1C1; D1C2; D1C4; D1C5	<i>D1C1; D1C2; D1C3; D1C4; D1C5</i>	n.a.	n.a.
Baleen Whales	Minke whale	D1C1; D1C2; D1C4; D1C5	n.a.	n.a.	D1C1; D1C2; D1C3; D1C4; D1C5
	Common whale	D1C1; D1C2; D1C4; D1C5	<i>D1C1; D1C2; D1C3; D1C4; D1C5</i>	<i>D1C1; D1C2; D1C3; D1C4; D1C5</i>	D1C1; D1C2; D1C3; D1C4; D1C5

Parameters and assessment methodologies

To assess each criterion, MS can use from one to several parameters, which, according to the GES Decision, should be assessed quantitatively through threshold values (TV), except for D1C5. **Table 3** summarizes, by MS, which parameter(s) were estimated to assess each criterion and how. Below a small description of the data used and assessment method applied is provided (more information on available data on D1C1 is provided on Deliverable 3.1 and on abundance and distribution on Deliverable 2.1a and Deliverable 2.3)

- **D1C1** was assessed in PT, ES and FR. The three MS reported estimates of **mortality rates from fishing**, but ES also reported the percentage of animals stranded with signs compatible with bycatch (such data were also provided in PT text reports but not included in its e-reports). Provided estimates are, however, based on different data collection and analyses methodologies: PT provides estimates based on data collected by onboard observers and via electronic devices, logbooks, interviews and strandings; FR uses a model to estimate mortality rates at sea from stranding data; and ES estimates are based on models considering data collected from strandings including biological parameters.

To assess this criterion, both PT and FR applied the ASCOBANS agreed threshold of 1.7% (for total anthropogenic removal and not the interim ASCOBANS precautionary value of 1% for bycatch), while ES used species-specific model-based TVs when available, 0.7% for the common dolphin and 1.4% for the bottlenose dolphin (Saavedra, 2017). Both FR and ES considered, as best values, the mean values of available abundance estimates, while PT considered the highest estimate available.

- **D1C2** was assessed in PT, ES and FR based on **abundance** estimates applying the distance-sampling methodology. In PT, dedicated surveys (aerial census) took place over a period of 5 years (2011-2015) under project LIFE+MarPro²¹, and in 2016 under SCANS III, allowing the assessment of trends for some species by comparing recent results with those reported under HD in 2013 (based on aerial census under the EEAGrants project SAFESEA and a boat census in 2011 under project LIFE+MarPro); in ES, a number of targeted surveys have taken place (e.g., SCANS II and III, CODA, PHOCOEVAL) but estimates are not comparable²². Additionally, estimates based on data collected during the annual spring PELACUS (PELagic ACoUStic) surveys, the primary aim of which is the assessment of small pelagic fish stocks, and the autumn JUVENA acoustic surveys that target juvenile anchovy, have provided abundance estimates for some cetacean species. In FR, the data collected during the PELGAS (*Pélagiques Gascogne*) surveys data surveys (with a survey design comparable to PELACUS surveys) allowed the modelling of density and assessment of

²¹ Results available at: <http://www.marprolife.org/index.php?q=relatorios&hl=pt>

²² CODA covered only an offshore area, and SCANS II and IV, applied different methodologies in the coastal area (boat vs aircraft), and in the oceanic area the attraction was not taken into account; PHOCOEVAL applied yet a different methodology.

changes between the 2011 and 2016. The OSPAR abundance indicator M4b_abundance and distribution of cetaceans (IA 2017), although considered, was not reported due to insufficient data. To assess this criterion, all three MS assessed trends, but PT and ES did not define a TV corresponding to an unacceptable percentage of change, while FR assess its abundance indicator considering OSPAR IA 2017 guidelines. FR assessed the indicator in good status if the differential within the assessment period (2011-2016) did not show a decline of more than 3% (0.5% per year), provided the Confidence Interval (CI) at 80%, included the 0%, and the mean of the indicator was centred at 0% (Spitz et al, 2018).

- **D1C3** was not reported by PT as no assessment was deemed possible, but data on the percentage of stranded animals that were sexually immature females are provided in the text reports; ES reports include available estimates for a number of **biological or demographical parameters** based on data from stranded animals but no assessment was possible; and in FR, this criterion was assessed only for the common dolphin, based on the maximum **number of strandings in extreme events** (mass strandings during or after big storms) and considering that if the number of strandings observed over 3 days exceeds the upper limit of the CI at 95% of the monthly threshold (predicted from the previous cycle) more than one month for two years of the current cycle, D1C3 is not in good status (Bouchard et al, 2019).
- **D1C4** was assessed in PT considering **distribution** area changes relative to the HD report in 2013, based on expert judgement and information from the aerial and boat surveys undertaken between 2010-2015, and the SCANS III survey in 2016. In ES this criterion is also assessed considering expert judgement and data collected in dedicated surveys and from platforms of opportunity. For FR, as for D1C2, changes in distribution are assessed using data from PELGAS surveys but in this case modelling **occupancy** and assessing changes between the 2011 (the reference year) and 2016 estimates.
- **D1C5** was assessed in PT considering the distribution area (equivalent to D1C4) or potential habitat extent for those species. In ES, to assess the "quality of the habitat", several parameters were reported, concerning pollutants, litter and microplastics in stomach contents, noise, but also species distribution; the assessment is limited to a description of this information thus in most cases the status reported is "unknown", due to insufficient data and lack of definition of a criterion. FR did not assess this criterion due to a lack of available indicators.

Table 3 – Parameters as identified in e-reports and related assessment methodology (including thresholds values applied) by Member State [in bold: parameters included in the e-reports] to assess D1 criteria.

Criteria	Portugal		Spain		France	
	Parameters	Assessment Methodology	Parameters	Assessment Methodology	Parameters	Assessment Methodology
D1C1	Mortality rate from fishing (F)	Anthropogenic removal rate < 1.7%; and expert judgment based on stranding data	Mortality rate from fishing (F)	Anthropogenic removal rate: <ul style="list-style-type: none"> • < 0.7% (Dd) • < 1.4% (Tt) • < 1.7% 	Mortality rate from fishing (F)	Accidental capture mortality rate is < 1.7% of the abundance with a probability > 80% and the CI at 80% of the average mortality rate by capture is < 1.7%
			Percentage of animals stranded with signals compatible with bycatch		Harbour porpoises bycatch (obtained with on-board observer data) (M6_ OSPAR IA 2017)*	<i>No assessment</i>
D1C2	Abundance (number of individuals)	No decline in relation to HD 2013 report	Abundance (number of individuals)	No significant decrease	Relative abundance within community (short term)	Percentage of the mean annual difference in the relative abundance of a species does not decline by more than 0.5% per year, is centered at 0%, for CI at 80%, including 0%
					Distribution and abundance of cetaceans (M4b_ OSPAR IA2017)*	<i>No assessment</i>
D1C3	-	-	1) Age distribution 2) Fecundity rate 3) Sex distribution 4) Survival rate 5) Growth rate 6) Breeding interval 7) Size (length) 8) Natural mortality rate 9) Annual gestation rate 10) Life expectancy 11) Temporal emigration probability (TEP)	<i>No assessment</i>	Maximum number of strandings	Number of strandings observed over 3 days does not exceed the upper limit of the CI at 95% of the monthly threshold (predicted from the previous cycle) more than one month for two years of the current cycle)

Criteria	Portugal		Spain		France	
	Parameters	Assessment Methodology	Parameters	Assessment Methodology	Parameters	Assessment Methodology
D1C4	Distribution (spatial)	No decline in relation to HD 2013 report	Distribution (spatial) Distribution (range)	No decline in relation to initial assessment	Distribution (spatial)	The upper limit for the CI at 80% of the average annual percentage difference in the PAO over the assessment cycle must be > 0%
D1C5	Extent	No decline in relation to HD 2013 report	1) concentration in liver (Hg, Cd) 2) concentration in fat (Hg) 3) concentration in other (Hg, Cd, PCB, PBDE, HBCD) 4) Indirect values of contaminants available 5) Duration (impulsive sound in water) 6) Habitat condition 7) Extent	Based on expert judgement	-	-

* Indicators initially considered for the subregion, but not assessed (due to insufficient data) in this cycle

Joint Research Centre Analysis

The overview of criteria conducted by the JRC shows that, within the ATL, the three species for which more criteria could be assessed as in *good* or *not good* status via thresholds are harbour porpoise, bottlenose dolphin and common dolphin, which could be explained by the high detectability and abundance of these species (hence availability of data for the assessment). Data are available primarily to assess D1C2, D1C4, but also D1C1, and to a lesser extent D1C5. D1C3 is the criterion for which fewest data are available (including data needed to establish TVs).

JRC finds that, within the ATL, the species which are best assessed mirror OSPAR IA results but that does not hold true for MS of the ABI subregion, where the assessments relied mostly on national assessments and methodologies.

Drop-down lists are considered useful for ensuring reporting consistency and easing the work of MS. Our analysis suggests, however, that such consistency may be misleading as MS may select the same criteria or parameters but are in fact reporting very different data (not comparable), i.e., the recommendation to fit parameters to default categories may limit reporting accuracy. The importance of reporting assessed values and thresholds may allow a clearer evaluation of the assessment result, as highlighted in the JRC report, but it is insufficient to understand the adopted assessment methodology by each MS and therefore to assess coherence within a (sub)region. Additional entries, for example, for data collection methods could be important for a better understanding of the results.

Highlights

The combined analysis of the MS electronic and written reports has shown the adoption of different approaches between MS, both for assessment and on reporting. While FR clearly took an approach of reporting only those parameters for which data were sufficient to provide a quantitative assessment applying statistical thresholds to assess estimated parameters, ES reported several parameters, based on scientific literature, but which could not be assessed, while PT assessed most primary criteria, considering evidence, trends and also expert judgement. These different approaches also explain the fact that in the text reports, additional parameters and data are provided, which are not made available in e-reports. In FR, for example, 2017 IA OSPAR indicators (M4 and M6) were also considered to assess cetaceans in FR ABI waters but as data were insufficient to reach an assessment, these indicators were not included in FR e-reports. The analysis showed the difficulty of assessing deep-diving toothed cetaceans but estimates could be provided based on other data, such as acoustic data. Such a species-specific approach is rarely applied to assess either criteria or species, but when the various species in a taxonomic group are very heterogeneous in terms of abundance, ecology and the state of knowledge, it may be required. ES, for example, considered species-specific thresholds for mortality due to bycatch and FR developed a national parameter to assess D1C3 for the common dolphin in the ABI subregion (MM_EME).

3.2.3 Scales of assessment and assessment areas

Scales of assessment

Cetaceans are highly mobile species with distributions that cross MS marine waters and beyond. Ideally, these species ought to be assessed at the population level, but, in practice, the population structure of most is still poorly known, and the data available at adequate spatio-temporal scales are very limited. Therefore, and despite the need to assess cetaceans at an appropriate ecologically relevant scale, according to the GES Decision (see **Table 4**), MS, to a great extent, still report assessments made at the national scale, considering national data only. The assessment of cetacean species in the ABI subregion was no exception, with each MS undertaking its assessments separately and independently and, for the most part, considering data collected exclusively in national waters. Efforts to gather data and assess the abundance and distribution of cetaceans on a larger scale have, however, been put in place in the last few decades. These initiatives include the SCANS – Small Cetaceans in European Atlantic waters and the North Sea (SCANS, SCANS II and SCANS III)²³ and CODA²⁴ projects. Also, RSC and agreements have paved the way towards, and continue to support, wider assessments. The lack of a dedicated funding framework, however, undermines the implementation of surveys and analyses with appropriate temporal and spatial coverage.

Table 4 - Scale of assessment per species group in the North-East Atlantic provided by the 2017 GES Decision.

Species Group	Scale of assessment
Small toothed cetaceans	Subregion: <ul style="list-style-type: none"> • Greater North Sea (ANS) • Celtic Seas (ACS) • Bay of Biscay and Iberian Coast (ABI) • Macaronesia (AMA)
Deep-diving toothed cetaceans	Region: North-East Atlantic Ocean (ATL)
Baleen Whales	Region: North-East Atlantic Ocean (ATL)

Assessment areas

The parameters used to assess the indicators are based on data collected using different monitoring methods, often at different spatial scales and may, therefore, regard different “assessment areas”. These assessment areas may be smaller or larger than MRUs ([chapter 3.1](#)). As the largest possible MRU concerns MS marine waters in each region or subregion, if data are collected and assessed across MS waters, then assessment areas will be larger than the MRU; on the other hand, MS may conclude on whether GES is achieved or not for a larger

²³ Surveys conducted in 1994 (SCANS), 2005 (SCANS II) and 2016 (SCANS III)

²⁴ Survey conducted in 2009

MRU based on assessments for smaller areas. Within the geographical scope of CetAMBICion, the assessment areas for the different parameters considered did not include, in most cases, areas beyond the borders of national Exclusive Economic Zones (EEZ). Only in FR, when deemed relevant for a better assessment, some parameters were assessed in areas which also included neighbouring MS waters and data collected in those MS, even if from a different subregion. The assessment areas considered for each indicator were made explicit in FR reports through maps, but were also described in both PT and ES text reports.

Figure 9 shows the assessment areas considered for the abundance estimates of harbour porpoise (marine waters up to 20 nm away from shore) and the other cetacean species assessed in PT ABI waters (marine waters up to 50 nm away from shore). **Figures 10 to 12** identify the assessment areas for estimating bycatch, abundance, and maximum number of strandings indicators, respectively, in FR. In ES, various methods and assessment areas have been considered for each species.

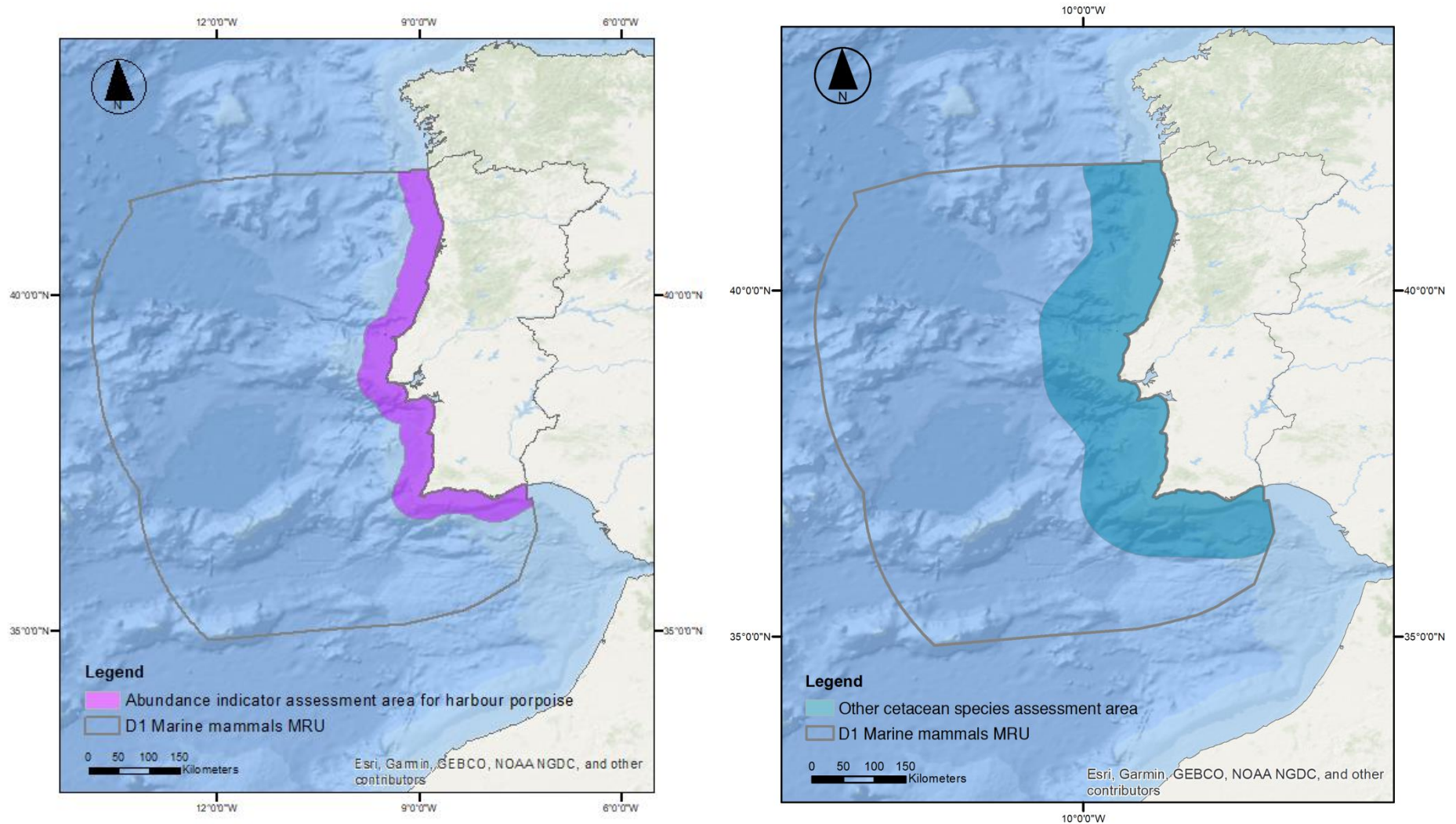


Figure 9 - Assessment areas to estimate **abundance** for the harbour porpoise (A) and other cetacean species (B) in the Portuguese waters of the Bay of Biscay and the Iberian Coast subregion.

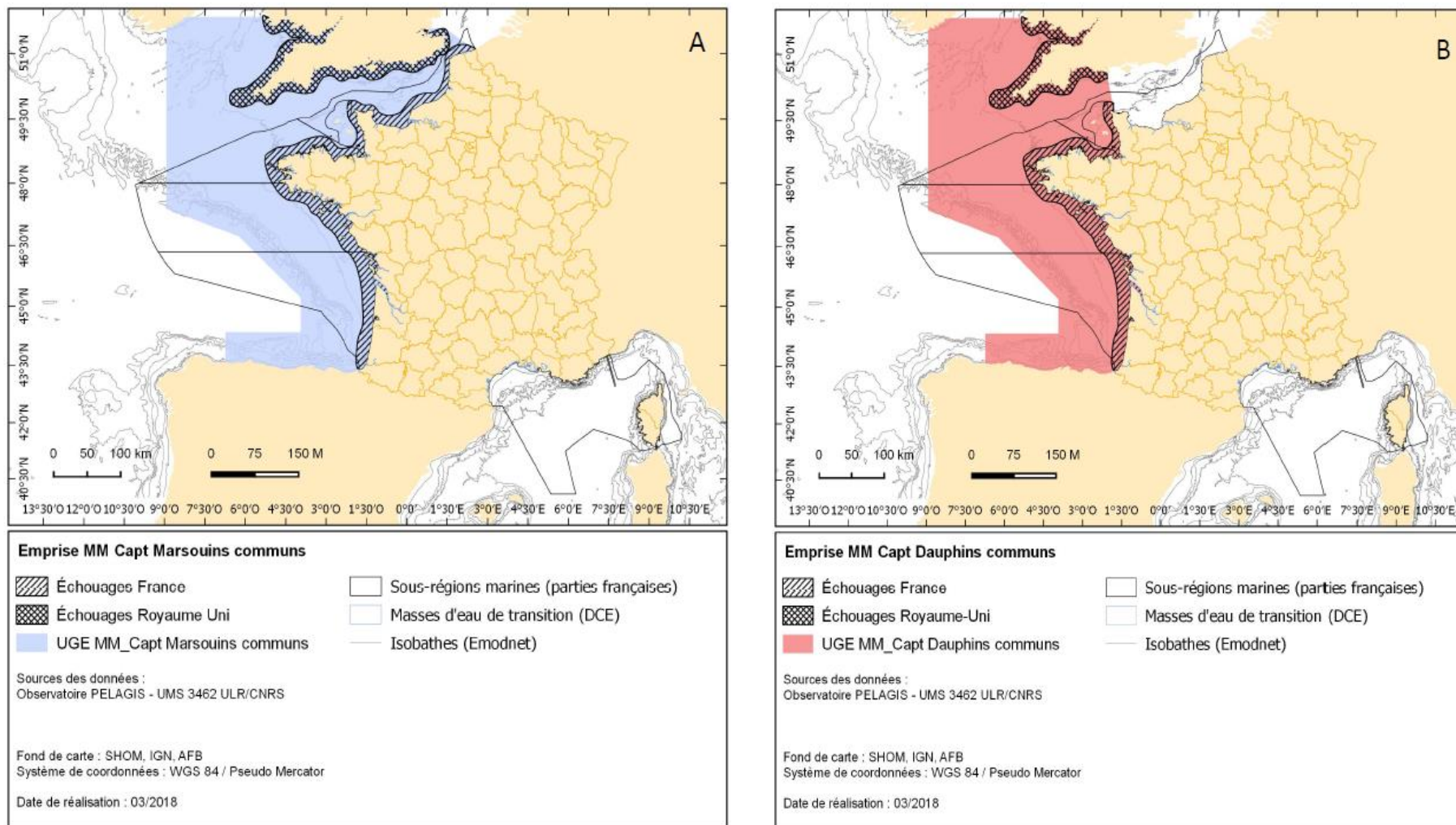
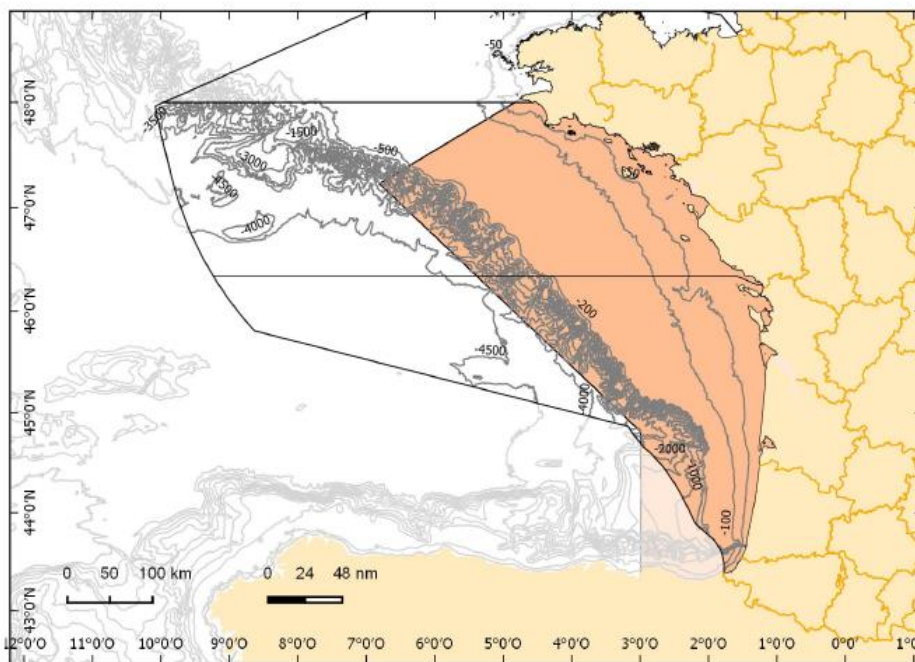


Figure 10 - Assessment areas to estimate **bycatch** for the harbour porpoise (A) and common dolphin (B) species in the French waters of the Bay of Biscay and the Iberian Coast subregion.



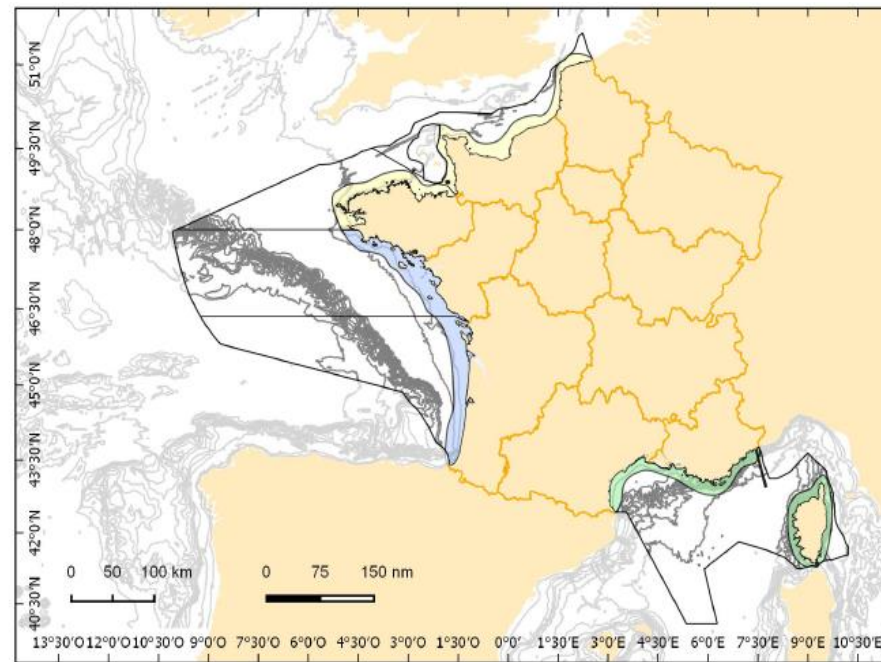
Emprise MM Abond

Emprise MM Abond

Sources des données :
Observatoire PELAGIS - UMS 3462 ULR/CNRS

Fond de carte : SHOM, IGN, AFB
Système de coordonnées : WGS 84 / Pseudo Mercator

Date de réalisation : 09/2017



Emprise MM EME

echouages GdG
echouages MMdN_MC
echouages MO

Sources des données :
Observatoire PELAGIS - UMS 3462 ULR/CNRS

Fond de carte : SHOM, IGN, AFB
Système de coordonnées : WGS 84 / Pseudo Mercator

Date de réalisation : 09/2017

Figure 11 - Assessment area to estimate relative **abundance** of cetaceans in the waters of the Bay of Biscay and the Iberian Coast subregion.

Figure 12 - Assessment area to estimate **maximum number of strandings** in FR waters.

3.2.4 Integration across criteria and species

Once each of the selected parameters is assessed, MS must integrate results to assess each criterion and subsequently each species and group of species.

In the ABI subregion, MS reported more than one parameter only for a few criteria, but as no assessment is provided for most, either no integration was required at the criterion level (*not relevant*), or the assessment of the criterion relied on **expert judgement**.

At the next integration level, MS assess each element (species) considering the assessment results of both primary and (if assessed) secondary criteria. According to the GES Decision, the integration at species level should be as established by the HD, under which the conservation status of a species is: Favourable, Unfavourable-inadequate, Unfavourable-bad, or Unknown, as shown in **Table 5**.

Table 5 - Evaluation matrix for assessing conservation status of a species according to the Habitats Directive (FRP: Favourable Reference Population; FRR: Favourable Reference Range) (COM, 2017b).

Criteria	Favourable	Unfavourable-inadequate	Unfavourable-bad	Unknown
Population (D1C2)	Population(s) not lower than FRP AND reproduction, mortality and age structure not deviating from normal (if data available)	Any other combination	Large decline: equivalent to a loss of more than 1% per year within the period specified by the MS AND below FRP OR More than 25% below favourable reference population OR Reproduction, mortality and age structure strongly deviating from normal (if data available)	<i>No or insufficient reliable information is available</i>
Range (D1C4)	Stable (loss and expansion in balance) or increasing AND not smaller than the FRR	Any other combination	Large decline: equivalent to a loss of more than 1% per year within the period specified by the MSOR more than 10% below FFR	<i>No or insufficient reliable information is available</i>
Habitat (D1C5)	Area of habitat is sufficiently large (and stable or increasing) AND habitat quality is suitable for the long-term survival of the species	Any other combination	Area of habitat is clearly not sufficiently large to ensure the long-term survival of the species OR Habitat quality is bad clearly not allowing the long-term survival of the species	<i>No or insufficient reliable information is available</i>
Future prospects	Main pressure and threats to the species not significant; species will remain viable on the long-term	Any other combination	Severe influence of pressure and threats to the species; very bad prospects for its future, long-term viability at risk	<i>No or insufficient reliable information is available</i>
Conservation status	all criteria favourable or three favourable and one unknown	one or more unfavourable-inadequate criteria but no unfavourable-bad criteria	one or more criteria unfavourable-bad	two or more unknown combined with favourable criteria or all unknown



In the ABI subregion, to assess the status of each element, PT applied the methodology of the HD, as suggested in the GES Decision, considering that the element was in:

- ‘good status’ if all primary criteria were assessed to be in good status or all criteria were assessed to be in good status except one assessed as unknown;
- ‘not good status’ if any criteria were assessed as being in not good status [One-Out-All-Out (OOAO) rule];
- ‘not assessed status’ (rather than ‘unknown’) if two or more primary criteria were not assessed due to no or insufficient data.

Table 6 summarizes the criteria and status assessment reported by PT for the ABI subregion. As mentioned above, PT reported as ‘not assessed’, those criteria that could not be assessed as in good or not good status. PT did not integrate beyond the species level, and has not, therefore, provided an assessment for the groups of species. The groups, as proposed by the GES Decision, cluster species with different ecological features, and were not considered appropriate to inform about the GES of mainland PT marine waters.

Table 6 - Assessment for each criterion, for species and groups of species assessments, in Portuguese waters of the Bay of Biscay and the Iberian Coast subregion [in green - criteria assessed as in good status; in red - criteria assessed in not good status; in white – not assessed;].

Criteria	Small toothed cetaceans						Deep-diving toothed cetaceans		Baleen whales	
	Harbour porpoise	Common dolphin	Bottlenose dolphin	Striped dolphin	Risso’s dolphin	Long-finned pilot whale	Cuvier’s beaked whale	Pygmy sperm whale	Minke whale	Fin whale
D1C1	Not good	Not good	Not good	Good	Not assessed	Not assessed	Not assessed	Not assessed	Not good	Good
D1C2	Not good	Not good	Not good	Good	Not assessed	Not assessed	Not assessed	Not assessed	Not good	Good
D1C3	Not assessed	Not assessed	Not assessed	Not assessed	Not assessed	Not assessed	Not assessed	Not assessed	Not assessed	Not assessed
D1C4	Good	Good	Good	Good	Not assessed	Not assessed	Not assessed	Not assessed	Good	Good
D1C5	Not good	Good	Good	Not assessed	Not assessed	Not assessed	Not assessed	Not assessed	Good	Good
Species	Not good	Not good	Not good	Good	Not assessed	Not assessed	Not assessed	Not assessed	Not good	Good
GES (group of species)	Not assessed						Not assessed		Not assessed	

ES also applied the HD evaluation matrix, but elements were assessed as ‘unknown’ (as foreseen in the HD, rather than ‘not assessed’) if more than one criterion could not be assessed due to no or insufficient data (see Tables 7 and 8) and no criterion was assessed in not good status. In its e-reports, ES, however, reported using the One Out All Out (OOAO) integration method in the case of primary criteria and expert judgement for the secondary criterion (D1C3). To assess each group of species, ES also applied the OOA0 integration method, i.e., if one species was assessed as in not good status, the group was assessed in not good status.



Table 7 - Assessment for each criterion, for species and groups of species assessments in the Spanish subdivision: ABIES-NOR waters [in green - criteria assessed as in good status; in red - criteria assessed in not good status; in grey - unknown].

Criteria	Small toothed cetaceans				Deep-diving toothed cetaceans		Baleen whales
	Harbour porpoise UG1	Common dolphin UG9	Bottlenose dolphin UG2	Bottlenose dolphin UG3	Long-finned pilot whale UG13	Cuvier's beaked whale UG16	Fin whale UG21
D1C1	Red	Red	Grey	Red	Red	Grey	Grey
D1C2	Grey	Green	Grey	Grey	Grey	Grey	Grey
D1C3	Red	Grey	Grey	Grey	Grey	Grey	Grey
D1C4	Grey	Green	Green	Green	Green	Green	Green
D1C5	Red	Grey	Grey	Grey	Grey	Grey	Grey
Species	Not good	Not good	Unknown	Not good	Not good	Unknown	Unknown
GES (group of species)	GES not achieved				GES not achieved		Unknown

Table 8 - Assessment for each criterion, for species and groups of species assessments in the Spanish subdivision: ABIES-SUD waters [in green - criteria assessed as in good status; in red - criteria assessed in not good status; in grey - unknown].

Criteria	Small toothed cetaceans		Deep-diving toothed cetaceans	Baleen whales
	Common dolphin UG10	Bottlenose dolphin UG4	Killer whale UG18	Fin whale UG22
D1C1	Grey	Grey	Green	Grey
D1C2	Grey	Grey	Red	Grey
D1C3	Grey	Grey	Red	Grey
D1C4	Grey	Grey	Grey	Grey
D1C5	Grey	Red	Red	Grey
Species	Unknown	Not good	Not good	Not good
GES (group of species)	GES not achieved		GES not achieved	GES not achieved

In FR, element status was assessed by applying the OOA0 rule to the criteria assessed. FR considered an element to be in *not good* status if any parameter was assessed to be in *not good* status and considered an element to be in good status, if at least one criterion was assessed to be in good status and none were assessed to be in *not good* status. As a result, despite not assessing a number of criteria, FR assessed all selected elements as being either in good status or *not good* status (see **Table 9**). At the subsequent integration level (across species), FR again applied the OOA0 integration method, as suggested by the Article 8 assessment guidance.



Table 9 - Assessment for each criterion, for species and groups of species assessments in the French waters of the Bay of Biscay and the Iberian Coast subregion (in green - criteria/species assessed as in good status; in red - criteria assessed in not good status; in white – not assessed).

Criteria	Small toothed cetaceans				Deep-diving toothed cetaceans		Baleen whales	
	Harbour porpoise	Common dolphin	Striped dolphin	Bottlenose dolphin	Long-finned pilot whale	Risso's dolphin	Minke whale	Fin whale
D1C1								
D1C2								
D1C3								
D1C4								
D1C5								
Species	Not good	Not good	Good	Good	Good	Good	Good	Good
GES (group of species)	GES not achieved				GES achieved		GES achieved	

Although not required by the GES Decision, FR also included in its e-reports an assessment at the ecosystem component level (marine mammals) applying again the OOA0 rule.

Table 10 summarizes the approach to integration at the different level by each MS in the ABI subregion.

Table 10. Approach to integration at the different levels as reported by Member State in the Bay of Biscay and the Iberian Coast subregion (*not relevant* = an integration method was not used/needed).

Integration level	Portugal	Spain	France
parameters to criteria	<i>not relevant</i>	<i>not relevant</i>	<i>not relevant</i>
criteria to species	HD evaluation matrix	OOAO	OOAO
species to species group	<i>(no assessment)</i>	OOAO	OOAO

Joint Research Centre Analysis

According to the JRC analysis, for the integration of parameters, most MS reported using the 'OOAO' method or not using an integration method ('not relevant'). JRC identifies FR as a MS which reported using both the 'OOAO' method and 'not relevant' in the NEA, but in fact FR has reported 'not relevant' for the ABI subregion, and 'other' for the Greater North Sea and the Celtic Seas. For the integration rules across criteria also either 'OOAO' or 'not relevant' were reported by most MS. PT, perhaps due to reporting later, was not included in the analysis but did not report any integration method across parameters and reported 'Other' and a reference to the HD integration method for the integration across criteria.



Table 11 summarizes the status of the elements (species) considered in each MS and shows that both harbour porpoise and common dolphin were assessed as being in *not good* status by the three MS, while both minke whale and bottlenose dolphin were assessed as being in *not good* status by PT and ES, but in good status by FR. However, the parameters and assessment methodologies used were, as explained above, different amongst MS.

Table 11 - Element status per Member State in the Bay of Biscay and Iberian Coast (NOR: subdivision ABIES-NOR; SUD: subdivision ABIES-SUD; n.a. not applicable).

Species	Portugal	Spain		France
		NOR	SUD	
Common dolphin	Not good	Not good	Unknown	Not good
Harbour porpoise	Not good	Not good	n.a.	Not good
Striped dolphin	Good	n.a.	n.a.	Good
Bottlenose dolphin Atlantic unit	Bad	n.a.	n.a.	Good
Bottlenose dolphin (UG2-TT)	n.a.	Unknown	n.a.	n.a.
Bottlenose dolphin (UG3-TT)	n.a.	Not good	n.a.	n.a.
Bottlenose dolphin (UG4-TT)	n.a.	n.a.	Not good	n.a.
Long-finned pilot whale	Not assessed	Not good	n.a.	Good
Risso's dolphin	Not assessed	n.a.	n.a.	Good
Pygmy sperm whale	Not assessed	n.a.	n.a.	n.a.
Killer whale	n.a.	n.a.	Not good	n.a.
Cuvier's beaked whale	Not assessed	Unknown	n.a.	n.a.
Minke whale	Not good	n.a.	n.a.	Good
Fin whale	Good	Unknown	Unknown	Good

Highlights

In both PT and FR only one parameter was considered in the assessment of criteria and therefore no integration across parameters was applied, and in ES, although several parameters were considered for some criteria, as no assessment was possible for most, integration was also not needed. Both PT and ES applied the HD evaluation matrix to assess species, as for both these MS, the species could not be assessed as in good status if more than one criterion was assessed as unknown (ES) or not assessed (PT). However, while PT reported this integration method in its e-reports, ES reported using the OOA method (see **Table 10**). FR applied and reported the OOA method. Although in all three MS, if one criterion was assessed to be in *not good* status the species was assessed in *not good* status (i.e., all three applying the OOA method), the difference between approaches lies in the fact that in FR the assessment only considered the criteria assessed (the OOA method is not explicit regarding how to consider the criteria not assessed, while the HB evaluation matrix is) and therefore 'not-assessed' or 'unknown' criteria did not prevent FR to assess species in 'good status' in cases in which only one criterion was assessed in 'good status'.



3.3 Article 9: GES Determination

The MSFD requires MS to determine what is the GES of each descriptor, at the level of the marine region or subregion (Article 4), and according to the criteria and methodological standards established by the Commission (Article 9). For marine mammals, the GES decision currently in place establishes that GES is to be determined at the level of each group of species, considering the criteria described in the previous chapter. According to the GES Decision it is also under Article 9 that MS are required to justify why a primary criterion was not used (Article 3). All three MS reported articles 8 and 9 jointly, PT in 2020, and ES and FR in 2019

In PT, as stated above, the assessment at the species group level was not considered appropriate to inform about the GES of mainland marine waters. Therefore, under Article 9 and highlighting that GES had not yet been agreed at the (sub)regional level, PT provided the determination used to assess species status: *mortality due to bycatch (D1C1) is below 1.7% of the best population abundance estimate available and the abundance (D1C2), distribution area (D1C4) and population habitat (D1C5) have not decreased.*

In ES, although an assessment at the level of the group of species is provided under Article 8 report, under Article 9, the GES determination includes the description of each criterion provided in the GES Decision: **D1C1**-*The mortality rate per species from incidental bycatch is below levels which threaten the species, such that its long-term viability is ensured;* **D1C2**-*The population abundance of the species is not adversely affected due to anthropogenic pressures, such that its long-term viability is ensured;* **D1C3**-*The population demographic characteristics (e.g., body size or age class structure, sex ratio, fecundity, and survival rates) of the species are indicative of a healthy population which is not adversely affected due to anthropogenic pressures;* **D1C4**-*The species distributional range and, where relevant, pattern is in line with prevailing physiographic, geographic and climatic conditions;* **D1C5**-*The habitat for the species has the necessary extent and condition to support the different stages in the life history of the species.*

Finally, FR (as ES) assessed each group of species under its Article 8 report but in its Article 9 report FR provided a GES determination that mirrors D1 description: *'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 climatic conditions'* and not the GES determination applied to assess each group of species.

PT considered all primary criteria but reported under '**Justification No Use**' that, due to lack of data, some criteria could not be assessed. ES also considered all primary criteria but although an assessment was not provided for a considerable number of criteria (most criteria were assessed as *unknown*) no justification was reported under '**Justification No Use**' or '**Justification Delay**'. Finally, FR, for most species did not assess several criteria, reporting under '**Justification Delay**' the following: **D1C1**- *no indicator is available for the evaluation of criterion D1C1 for 6 species of mammals;* **D1C2**- *could not be assessed for*



*harbour porpoise, common dolphin and fin whales due to lack of data; **D1C4**- could not be assessed for harbour porpoise and common dolphin due to lack of data; **D1C5**- is not provided for any species due to the lack of adequate data on the habitats of the assessed species, (adding that) sometimes, data exist but require a significant research effort to define the favourable habitat for each of the species assessed and to develop robust indicators indicating changes in their extent. The methodological standards relating to criteria D1C1, D1C2, D1C4 and D1C5 for marine mammals will be specified following additional studies.*

Joint Research Centre Analysis

JRC addresses the analysis of Article 9 by exploring the level at which MS reported Article 9. According to this analysis, PT reported GES at the species group level, ES at the criteria level and FR at the descriptor level. JRC finds that there is no consistency across MS, including a lack of a common understanding of the level at which GES should be determined. It is noted that work to achieve consistency and coherence has so far focused on the harmonization of methodologies and there is a need to work on GES determination at the (sub)regional level, based on the assessment flow of Article 8 and to develop the reporting tool accordingly, so that if a quantitative GES determination is agreed, the units for it (e.g., percentage) are made available as a drop-down list.

Highlights

As the JRC analysis concludes, there is a lack of common understanding about what and how to report in Article 9. ES provides a description of each criterion as per the GES decision, FR provides a description of D1 as per the MSFD, and PT a description of how each element (species) was assessed under Article 8. Both ES and FR, however, provided an assessment of the group of species under Article 8. The fact that some criteria were not assessed, either due to no data or because no parameters and/or thresholds have yet been established, have prevented these MS from providing a quantitative GES determination in this cycle. PT reports the same (lack of data and thresholds), highlighting the need for a regional effort moving forward to agree elements and assessment methodologies. It also seems to be unclear for MS what is to be reported under 'Justification Delay' and 'Justification No Use'.



3.4 Article 10: Environmental Targets

Following the assessment of the environmental status of marine waters (MSFD Article 8) and the determination of GES (MSFD Article 9), MS develop a set of environmental targets (ET), and associated indicators, (MSFD Article 10) that will steer the progress towards the achievement of GES.

According to the MSFD definition, ET should be established, in the context of the (sub)region, as a qualitative or quantitative statement on the desired levels of, or necessary changes to, environmental pressures and impacts, which will result in the achievement of GES. ET should be reported for the descriptors/elements that are not in GES, and be associated with appropriate indicators so that they can be measurable. These indicators should be able to quantify the degree to which the ET is being achieved according to the established timetable.

As noted in the European Commission Staff Working Document (SWD(2020) 62 final) if GES has not been achieved, the priority is to identify the pressure or pressures causing the impact and implement actions focused on managing and reducing those pressures. Taking direct action on the environment itself (e.g., to actively restore a species or habitat) is technically more complex and generally more costly. The precautionary principle should be applied to reduce pressures in situations where GES is not yet achieved, even if threshold values are not available. In cases where it is not possible to identify if the element is, or not, in GES the eventual follow-up actions depend on the limitation of the individual case but can rely on risk assessment, development of improved assessment methods, more monitoring or complementary research (SWD(2020) 62 final).

MSFD implementation guidance (COM, 2011) defines four types of ET to achieve GES:

- I. **State-based targets** - Indicate as to the physical, chemical or biological condition of the environment that would be observed when GES is achieved. These targets are particularly relevant for state Descriptors such as D1;
- II. **Pressure-based target** - Can be used to articulate the desired or acceptable level of a particular pressure which would not prevent the achievement of GES. They can be much more easily related to management measures and are often easier and more cost effective to monitor;
- III. **Impact-based targets** – Describe an acceptable level of impact on components of the marine environment arising from a particular pressure or range of pressures;
- IV. **Operational targets** - Describe the nature of management action without directly establishing the specific measures themselves.

For the 2nd cycle, the three MS established a total of 29 targets (FR: 5; PT: 4; ES: 20) for D1 – marine mammals *feature* (see [Annex 1](#)). Part of these ET (FR: 1, PT: 1, ES: 18) consisted of management actions (operational targets) such as the development of management plans, legislative initiatives, knowledge acquisition studies and dissemination activities. For



simplification purposes and considering that, for biodiversity GES achievement, ET on reducing impacts from pressures arising from human activities are the most effective and measurable, the present analysis will focus strictly on target types I, II and III (see **Table 12**).

Joint Research Centre Analysis

The broad analysis made by JRC (Palialexis *et al.*, 2021) to the ET established in MSFD 2nd cycle, does not provide specific insights on the ABI subregion, since no detailed analysis by ecosystem component, feature and/or subregion was developed. Also, PT ET were not considered in this analysis due to a delay in the e-reports submission.

In general, JRC refers that more effort is required for a common understanding of the scope of the targets and harmonisation in the reporting, to obviate the shortcomings found, including discrepancies in the way targets are assigned to GES components and criteria and poor report of measurable targets. A guidance document, to be produced by WG GES, is suggested. Prioritizing linkages between targets and measures, key pressures and indicators is also recommended by JRC. Finally, regional cooperation across MS, to further harmonise regional targets, is highlighted as particularly relevant for mobile species and widely distributed key pressures.

Table 12 - Environmental targets (ET) established by Portugal (timeframe: 2024); France (timeframe: 2026) and Spain (timeframe: 2024) relevant for cetaceans in the Bay of Biscay and the Iberian Coast subregion. (NOR = MRU ABIES-NOR; SUD = MRU ABIES-SUD)

MS	ET Code	Environmental Target	Indicator	Objective
Portugal	ABIPT-T1-D1Cont	Reduce cetacean mortality from bycatch for <i>Delphinus delphis</i> , <i>Tursiops truncatus</i> and <i>Balaenoptera acutorostrata</i>	Mortality rate from bycatch	Reduce 10% (<i>no scientific justification but a political commitment</i>)
	ABIPT-T1-D1Cont_Phocoena phocoena	Reduce cetacean mortality from bycatch for <i>Phocoena phocoena</i>	Mortality rate from bycatch	Reduce 15% (<i>no scientific justification but a political commitment</i>)
Spain (NOR/SUD)	A.N.3 & A.S.3	Maintain or restore the natural balance of the populations of key species for the ecosystem	Trends in the populations of the species used as evaluation elements, corresponding to various trophic levels	Stable or upward trend of indicators used for the evaluation of food webs
	C.N.3 & C.S.3	Reduce the main causes of mortality and decline in populations of non-commercial species groups at the top of the food chain	I. Mortality of populations of species groups.	I. Downward trend
			II. Number of initiatives (legislative, technical and operational) to reduce the main anthropogenic causes of mortality.	II. -
			III. Percentage of species or groups of species included in specific regulations that address causes of mortality identified in the initial assessment.	III. -
			IV. Mortality due to accidental captures of indicator species, especially in the species evaluated as “non-GES” in criterion D1C1.	IV. Downward trend
			V. Mortality from other causes identified as the main cause: contamination (Northern subdivision) and contamination and collisions (Southern subdivision).	V. Downward trend

MS	ET Code	Environmental Target	Indicator	Objective
France	D01-MT-OE01	Limit anthropogenic disturbance of marine mammals	Percentage of whale watching activities operators complying with a good practice approach	Upward trend
	D01-MT-OE02	Reduce incidental captures of marine mammals, in particular for small cetaceans	I. Mortality rate by accidental capture (harbour porpoises and common dolphin)	I. Decrease to less than 1% of the best population estimate ²⁵
			II. Apparent bycatch mortality rate by species (number of strandings observed with traces of accidental capture / total number of strandings) (other marine mammals)	II. Decrease by one-third ²⁶
	D01-MT-OE03	Reduce collisions with marine mammals	Apparent mortality rate from collision of cetaceans as identified by stranded marine mammals	Downward trend
D11-OE02	Maintain or reduce the level of continuous noise produced by human activities, especially from marine traffic	Low frequency anthropogenic noise in the water	The spatial median of year-to-year differences in the maximum levels is zero or negative	

²⁵ Target set at 1% (ASCOBANS recommendation), is assessed based on absolute mortalities (absolute estimate of the size of the populations and the number of possible deaths by capture) (MM, MTE, 2021a; MM, MTE, 2021b)

²⁶ Target based on the current impossibility of obtaining an absolute value of the number of incidental catches for species other than the common dolphin and the harbour porpoise in the Atlantic. The apparent rates (number of strandings observed with traces of capture / number of total strandings) are therefore used and a 2026 reduction objective is accepted at 1/3, after consultation with the DPMA and the scientific pilot. (MM, MTE, 2021a; MM, MTE, 2021b)

Highlights

- For the 2nd cycle, specific, measurable, and time-bound targets were established by all MS for the main anthropogenic threats in the subregion, bycatch in particular;
- For bycatch, quantitative yet distinct objectives were defined:
 - PT target was established for species not in GES and considering the high bycatch estimates, particularly in gill and trammel nets, but also in purse and beach seine fishing nets, and the need to significantly reduce these numbers to meet the 1,7% TV established by the ASCOBANS (total anthropogenic removal of the best available estimate of abundance);
 - FR target to decrease mortality rate due to bycatch to less than 1% of the best population estimate for harbour porpoises and common dolphins, is aligned with the interim value recommended by ASCOBANS. A specific bycatch ET for other species, based on stranding (individuals observed with traces of capture *VS* number of total stranding) was established and supported by expert judgment (reduction by 1/3 in relation to the previous MSFD cycle);
 - ES target is less specific and defined as the reduction of bycatch considering the previous MSFD assessment.
- Trend targets for whale watching activities (ES), contaminants (ES) and ship strikes (ES, FR) were also established, and associated with MM mortality.
- A quantitative reduction target was also set by FR for continuous noise resulting from shipping activities, with no associated D1 parameter.
- One of the main differences is that PT only established ET for species that were considered as not achieving GES and only for the most important threat identified in PT ABI waters (bycatch).
- Different timeframes were used. PT and ES selected 2024 as deadline, the end of MSFD 2nd cycle; while FR set on 2026 (six years after the ET establishment). It is important to harmonize this aspect in the future.
- The selection of operational targets might be justified by the need for further information on the biological aspects and the level of impact on the ecosystem components from a specific pressure, before establishing further tangible state and impact-based targets. However, the significant difference between the number of operational ET established by ES, compared to PT and FR, suggests a discrepancy in the interpretation of the objectives of the MSFD targets.

3.5 Article 11: Monitoring Programmes

MSFD Article 11 requires the establishment and implementation of a Monitoring Programme (MoP) for the ongoing assessment of marine waters status and distance to GES. The objective of the MoP is to provide sufficient evidence to demonstrate the extent to which targets established have been met, to guide MS to new measures, if needed, and to allow a robust assessment of progress towards achieving GES, every 6 years.

These programmes shall be compatible (coherent and coordinated) within marine (sub)regions and, simultaneously, build upon relevant provisions for assessment and monitoring already foreseen in Community legislation, including the HD, Marine Spatial Planning (MSP), etc., or under international agreements. The subregional compatibility must be assured through (MSFD Article 11(2)):

- Consistent monitoring methods to facilitate comparability of monitoring results;
- Considering relevant transboundary impacts and transboundary features.

The first MoP documents were established in 2014 (MSFD 1st Cycle), and reviewed in 2020 for the 2nd Cycle. The current status of the MS reports is:

- PT MoP text report (MM, SRMP, SRMAR, 2022) and e-reports were concluded in January and March 2022, respectively, and are available at: [Eionet - CDR - PT](#);
- ES MoP text report was concluded in December 2020 (Ministerio para la Transición Ecológica y el Reto Demográfico, 2020) and the e-reports submitted in April 2021. Both available at: [Eionet - CDR - ES](#);
- FR MoP text report (MM, 2021) was concluded in November 2021 and the e-reports submitted in December 2021. Both are available at: [Eionet - CDR - FR](#).

In the present chapter, we deliver a summary and brief analysis, *per* MS, of the three 2nd cycle MoP based on the documents available, and highlighting the objective, parameters and frequency of monitoring, temporal and spatial scope and methodologies. Annex 3 includes a summary / comparative table of the three MS MoP.

It is relevant to mention that the structure for the report layout, which was agreed upon at the COM MSFD working groups, includes two new concepts (EC, 2020):

- Monitoring Strategies: each strategy describes the overall approach to monitoring for marine mammals and collects information on the coverage of GES criteria, targets and measures, as well as any gaps identified in the monitoring and plans considered to fill them.
- Monitoring Programmes: gathers information on the practicalities of monitoring, reflecting different monitoring types, methods, spatial and temporal scope, etc.

In the light of these concepts, each MS established a MM Monitoring Strategy that will be executed through the correspondent monitoring programmes, summarized below.

- **Portugal**

The Portuguese monitoring MM Strategy relies on four specific objectives (MM, SRMP, SRMar, 2021):

- Monitor the species assessed as “not GES”, as well as the established targets;
- Monitor the effectiveness of measures established under the MSFD 1st cycle;
- Monitor descriptors considered at risk of not achieving GES, with focus on the relevant pressures (incidental bycatch and noise);
- Increase the level of confidence in the assessment, targeting monitoring efforts to elements/criteria not assessed in the 2nd cycle, or for which there were few data and/or low confidence in the assessment.

The MM Strategy is supported by four monitoring programmes, one dedicated to the collection of data on abundance and distribution, two regarding human activities, pressures and impacts, and one programme to gather and analyse other sources of data and information. The details are summarized in **Table 13**.

The abundance and distribution programme (MO-D1-MM), for coastal and oceanic populations, consists of:

- Dedicated aerial census to be undertaken every two years. The programme foresees surveys covering greater oceanic area (most of PT mainland EEZ area) using the distance sampling methodology than previous SCANS and MARPRO surveys;
- On-board observers at data collection framework (DCF) scientific campaigns coordinated by PT scientific teams (PELAGO, MDPO - HOM, DEPM – PIL), or by Spanish teams (IBERAS), occurring annually or every three years. These surveys, although not specific for MM, may inform about relative abundance trends of different MM species.

Regarding the monitoring of apparent causes of death, the PT stranding network (MO-Arrojamentos) will provide information on D1C1 and D1C2, although data systematization can be a challenge. Due to logistic constraints no analyses of tissue samplings are foreseen to inform about the presence and impacts of contaminants (MSFD Descriptor 8) or marine litter (MSFD Descriptor 10).

To monitor bycatch (MO-D1-BYC), data will be collected by:

- On-board fishery observers of DCF surveys in seine, trawl and polyvalent fleets (using gill and trammel nets along with other gears),
- Dedicated bycatch monitoring with observers on high-risk fleets and areas (such as sites of community importance);
- Fishing logbooks and voluntary reporting.

Additional data (MO-D1-Additional) resulting from ongoing projects (e.g., using platforms of opportunity and acoustic data), will be collected to complement information on MM relative abundance and distribution.

Table 13 - Portugal MSFD 2nd cycle monitoring programmes relevant for cetaceans, in the Bay of Biscay and Iberian Coast.

Monitoring Programme (Code/Name)		Main cetacean species	Criteria	Parameters monitored	Monitoring method	Frequency	Status
MO-D1-MM	Marine mammals monitoring in continent subdivision	Common dolphin Harbour porpoise Striped dolphin Bottlenose dolphin Long-finned pilot whale Risso's dolphin Cuvier's beaked whale Minke whale Fin whale	D1C2, D1C4 D1C5	Abundance (number of individuals) Relative abundance Distribution (range)	Dedicated aerial surveys (distance sampling methodology)	Every two years	Not implemented
					Oceanographic DCF campaigns (distance sampling methodology)	Annual	Ongoing
MO-Arrojamentos	Stranding networks	All	D1C1 D1C2	Number of strandings Apparent causes of mortality	Subregional protocol	Continuous	Ongoing
MO-D1-BYC	Monitoring mammals, reptiles, seabird and fish bycatch	All	D1C1	Number of incidental captures	Fisheries observers program (DCF) Dedicated bycatch monitoring observer on high-risk fleets and areas Administrative data collection (logbooks)	Continuous	-
MO-D1-Additional Data	Additional data collection for assessment of the status of sea mammals, sea reptiles and sea birds	All	Not applicable	Abundance (number of individuals) Relative abundance Distribution (range)	Visual observation Administrative data collection	Continuous	2020 (ongoing)

- **Spain**

ES designed a Monitoring Strategy aimed at MM and sea turtles (ES-MT), with the following objectives:

- Provide data to allow the assessment of the environmental status of cetaceans and sea turtles based on GES Decision criteria;
- Evaluate compliance with ET and the PoM established for Descriptor 1.

This strategy includes five monitoring programmes in both ABIES subdivisions summarized in **Table 14**) which are specific for the selected MUs.

The Monitoring Strategy foresees two distinct programmes for the collection of data on abundance, demographic characteristics, and range of distribution: one for coastal populations (MT-1); and another for oceanic populations (MT-2). Both complemented by information provided by the “Additional Data” programme (MT-6).

For coastal populations (MT-1) the methodologies depend on the extension of the area to be monitored, the size of the populations and the degree of residence of the individuals, and comprises:

- Boat or aircraft survey campaigns, along predefined linear transects and applying the “distance sampling” methodology;
- Mark-recapture technique using natural marks based on the photo-identification of individuals and following a “Robust Design Approach”. This will be the methodology used to monitor resident or small populations, as is the case for the bottlenose dolphin resident population in the coastal waters of southern Galicia (UG-2) and the bottlenose dolphins (UG-4) and killer whales (UG-18) in the Gulf of Cádiz.

For oceanic populations (MT-2), the MUs selected in ABIES-NOR and ABIES-SUD will be monitored through survey campaigns that will be carried out from vessel or aircraft (according to accessibility and financial criteria), along predefined linear transects, and applying the “distance sampling” methodology, as for some of the coastal populations. As these campaigns will also cover the continental shelf and coastal areas, but distinguishing between coastal and oceanic transects, joint campaigns can be carried out to address both programmes (as for FR and PT).

Regarding interaction with fisheries, the monitoring programme (MT-4) has been designed as a pilot study, and includes steps to address MM bycatch through:

- Risk assessment, to determine where (fleet segments/areas/periods) the monitoring effort should focus;
- Collection, from different sources, of information on the level of interaction (artisanal fleet interviews, collaboration with the DCF observer programme, incidents reported through the fishing logbooks);
- On-board dedicated observers, and electronic devices, such as video cameras, to cover a greater percentage of the fishing effort in high-risk fleet segments.

Data on impacts from different anthropogenic pressures will be collected through the existing stranding networks (MT-5), at the Spanish autonomous communities level, to obtain information on incidental capture rates, affected species, sex, size, etc. and, if possible, other types of evidence, such as signs of collisions with ships, ingestion of plastics, levels of contaminants and underwater noise effects. The programme includes a consistent response protocol to stranding and the collection and analysis of samples.

Finally, ES MoP includes a programme (MT-6) dedicated to collect, analyze, review and integrate the additional information being collected from platforms of opportunity (ferries, recreational boats, fishing boats, surveillance aircraft, coastal observations, etc.) which, due to their nature, do not follow any sampling protocol. Data from additional technologies, such as satellite images, analysis of genetic material, fatty acids, isotopes and contaminants (population and individual differentiation), and passive acoustic monitoring techniques, will also be considered.

Table 14 - Spain MSFD 2nd cycle monitoring programmes relevant for cetaceans, in the Bay of Biscay and Iberian Coast.

Monitoring Programme (Code/Name)		Main cetacean species	Criteria	Parameters monitored	Monitoring method	Frequency	Status
ES-MT-1_ MamTortCosteros	Abundance of coastal cetacean species	Common dolphin: UG9 and UG10	D1C2 D1C3 D1C4	Abundance Distribution pattern	Dedicated aerial or boat surveys (distance sampling methodology)	Every three years	2015 (partially)/ Ongoing
		Harbour porpoise: UG1			Non-dedicated vessel campaigns, including oceanographic DCF campaigns	Annual	
		Bottlenose dolphin: UG2, UG3 and UG4			Mark-Recapture through photo-identification: UG2, UG3, UG4 and UG18	Annual	
ES-MT-2_ MamTortOceanicos	Abundance of oceanic cetacean species	Killer whale: UG18	D1C2 D1C3 D1C4	Abundance Distribution pattern Reproduction Survival and mortality rates	Dedicated aerial or boats surveys (distance sampling methodology)	Every three years	2015 (partially)/ Ongoing
		Fin whale: UG21 and UG22			Observers on DCF campaigns	Annual	
		Secondary: Long-finned pilot whale: UG13			Trawl hydrophones	Not defined	
ES-MT-4_ InteraccionPescaMamTort	Interaction of cetaceans with fisheries	All	D1C1 D1C3	Capture rate per fishing method Fishing effort Interactions with fishing methods	Risk analysis DCF fisheries observers program Fishing logbooks Camera monitoring systems Interviews (fishermen and skippers) Dedicated observers (ABI-NOR subdivision) ²⁷	Routine sampling, according to the fishing method	2015 (partially)/ Ongoing

²⁷ Implemented from September 2020, constitutes an update to the reported 2nd cycle MoP.

Monitoring Programme (Code/Name)		Main cetacean species	Criteria	Parameters monitored	Monitoring method	Frequency	Status
ES-MT-5_Varamientos	Strandings network	All	D1C1 D1C3 D10C4	Geographical location Body size (length) Sex, age and size distribution Mortality rate from fishing Spatial distribution Survival rate Blubber thickness Signs of anthropogenic interaction, e.g. collisions Body condition Marine litter ingestion Mass (of marine litter)	National protocol	As required	2015 (partially)/ Ongoing
ES-MT-6_DadicionalesMamTort	Additional data	All	D1C2, D1C3, D1C4, D8C1		Opportunistic platforms (ferries, recreational and fishing boats) Regular coastal observations Satellite positioning tracks Biopsies Passive acoustic methods	As needed	2015

- **France**

French MM Monitoring Strategy²⁸ focuses on obtaining sufficient data to assess the ecological state of populations of marine mammals (abundance, demographic characteristics, spatial distribution, habitat use); assess the impact of the anthropogenic pressures; and understand the structure and functioning of marine ecosystems and the food web.

Three (sub)programmes were established for the ABI subregion. In **Table 15** a summary of the FR MoP for the subregion is provided.

The abundance and spatial distribution of offshore MM populations (SP3) are monitored using three methods:

- Dedicated aerial surveys - conducted under French SAMM II programme (Aerial Monitoring of the Marine Megafauna II) and through SCANS surveys. The monitoring protocol is distance sampling. The inclusion of High Definition photo systems is under consideration.
- Optimized DCF campaigns (MEGASCOPE) - consists of annual monitoring of marine megafauna, floating litter and human activities, in the scope of PELGAS- Monitoring of small PELagic fish in the Bay of Biscay (April-May) and EVHOE- Evaluation Halieutique Ouest de l'Europe (October-November) surveys. The MEGASCOPE protocol entails two on-board observers and the “distance sampling” method. These campaigns complement aerial observations by providing spatio-temporal trends, at shorter time scales and finer spatial resolutions. High Definition photos are planned to support species ID and group sizes determination.
- Monitoring campaigns from ship platforms of opportunity - to complement the information obtained at optimized DCF scientific campaigns, Megascopé protocol is applied on platforms such as passenger ferries or surveillance actions.

Marine pressures and impacts, especially mortality due to incidental bycatch, and behavioural changes due to disturbance related to whale watching activities, will be monitored through SP4 – Stranding network (already in place) and SP5 – Interactions with human activities (partially in place) programmes. Bycatch monitoring under SP5 is still in development, but it will be supported by the DCF system “Observation of catches at sea (ObsMer)”, consisting of observations on board voluntary fishing vessels of more than 12m length. These ad hoc data will feed the assessment of fishing impacts on the state of populations, in addition to data collected under SP4. An increase of 5% on the observation effort in fisheries is planned for higher risk metier types and seasons. Additional techniques, complementary to the on-board observers, will also be tested (e.g., automatic cameras on board).

²⁸ MCPPML, DIRM SA. (2021a). MM, MTE (2021a).

Table 15 - France MSFD 2nd cycle monitoring programmes relevant for cetaceans in the Bay of Biscay and Iberian Coast.

Monitoring Programme (Code/Name)		Main cetacean species	Criteria	Parameters monitored	Monitoring method	Frequency	Status
SP3	Offshore marine mammals and sea turtles	Common dolphin Harbour porpoise Striped dolphin Bottlenose dolphin Long-finned pilot whale Risso's dolphin Cuvier's beaked whale Minke whale Fin whale	D1C2 D1C4	Presence and distribution Migration routes Abundance	Dedicated aerial surveys (distance sampling and High Definition photos).	Every six years	Not implemented
					Oceanographic DCF campaigns (distance sampling and High Definition photos).	Annual	Ongoing
					Non-dedicated vessel campaigns: platforms of opportunity.	Several times a year	
SP4	Strandings of marine mammals and sea turtles	All	D1C1 D1C2 D1C4 D8C1	Number of strandings Health status and demography Diet Population structure Apparent cause(s) of mortality	Sampling and necropsy of stranded animals from different species along the coastline. National protocol.	Continuous	Ongoing
SP5	Interactions between human activities, marine mammals and sea turtles	All	D1C1 D1C2	Causes of mortality Fishing effort Number of incidental captures Species caught (identification) Depredation Demographic and ecological impact of fishing on populations	Voluntary observation and sampling on-board fishing vessels (> 12m).	Continuous	Under development
					Surveys with whale watching operators	One-off	Ongoing

Highlights

- The objectives, structure and content of the three MoP are aligned, and some level of coordination can be expected, namely on ship and aerial surveys, considering OSPAR M4 (abundance and distribution of cetaceans) Coordinated Environment Monitoring Programme (CEMP) guidelines and the use of international standardized methods, and on data collection by observers on fishing fleets to assess OSPAR M6 indicator (bycatch). This may, therefore and, depending on the level of implementation accomplished in each MS, provide coherent and consistent information for OSPAR QSR, which may be used to support reporting obligations under MSFD article 8.
- Dedicated aerial campaigns to collect data on abundance (D1C2) and distribution (D1C4), are foreseen in all three MoP. However, there are differences in the periodicity proposed for these campaigns: every two years (PT), every three years (ES), and every six years (FR). A subregional coordinated execution of these surveys would, most certainly, reduce resources allocation burden and funding constraints, and ensure coherent data availability;
- Information collected by on-board observers, on DCF scientific surveys and platforms of opportunity, is also referred to in the three MoPs, and can complement the abundance and distribution data collected through dedicated surveys, provided that common methodologies are applied, to support data aggregation.
- None of the monitoring programmes explicitly foresse primary criterion D1C5 (species habitat), except for ad-hoc studies;
- Different implementation statuses for these programmes may be observed when comparing among MS, which is a drawback that should be overcome, and it may prevent data availability for future comparable assessments in the ABI subregion.

3.6 Article 13: Programmes of Measures

The last step of each MSFD cycle is the planning and execution of a Programme of Measures (PoM) in national waters, aiming at achieving, or maintaining, GES in the marine (sub)region (MSFD Article 13). Where urgent action is needed, MS in the same (sub)region, should endeavor to agree on a plan of action including the earlier entry into operation of a PoM. However, MS are not required to take specific steps where there is no significant risk to the marine environment, or where the costs are disproportionate taking into account the risks to the marine environment (Article 14.4). In the development of the PoM, the following definitions are relevant (COM, 2020):

- Measure: “any action on a national, regional, European or international level which is intended to help achieve or maintain GES and to achieve the environmental targets.”
- Programme of Measures: “a set of measures that the Member State is responsible for implementing, put into context with each other, referring to the environmental targets they address. The PoM includes existing and new measures.”

The starting point for PoM is, therefore, the ET established under Article 10 (provided they are objective and measurable), and the appraisal of relevant existing measures adopted under the scope of other UE or national policies (e.g., HD, CFP, MSP, etc.) that contribute to their achievement (defined as category 1.a and 1.b²⁹). ET not efficiently addressed by existent measures will require new “MSFD measures” (defined as category 2.a. and 2.b³⁰). Only “MSFD measures” will be addressed in the tables below.

Presently, the process of 2nd cycle PoM elaboration, to be notified to the EC until March 2022, is ongoing in the three MS, but in different development stages:

- **Portugal** - the update process is at a very early stage. The current programme in place is 1st cycle PoM³¹ available at: [EIONET-CDR-PT](#)
- **Spain** - the update process is ongoing, with a public consultation document expected by the first half of 2022. The 1st cycle PoM³² is available at: [EIONET-CDR-ES](#)
- **France** - public consultation process for the FR 2nd cycle PoM is completed (May to October 2021). The documents can be accessed at: <https://www.merlittoral2030.gouv.fr/content/sud-atlantique-5166> and

²⁹ Category 1.a: Measures relevant for the achievement and maintenance of GES under the MSFD, that have been adopted under other policies and implemented; Category 1.b: Measures relevant for the achievement and maintenance of GES under the MSFD that have been adopted under other policies but that have not yet been implemented or fully implemented (EC, 2021).

³⁰ Category 2.a: Additional measures to achieve and maintain GES which build upon existing implementation processes regarding other EU legislation and international agreements but go beyond what is already required under these; Category 2.b: Additional measures to achieve and maintain GES which do not build on existing EU legislation or international agreements (EC, 2021).

³¹ MAM, SRMCT, SRA (2014).

³² MAGRAMA (2015).

<http://www.dirm.nord-atlantique-manche-ouest.developpement-durable.gouv.fr/saisine-de-l-autorite-environnementale-sur-les-a1212.html>.

The analysis hereby presented is not time-aligned between the three MS. Regardless, we consider that an overview of the actions being implemented (or already implemented) in the subregion may elucidate on MS efforts and eventual coordinated initiatives to tackle relevant common pressures, particularly considering that PT and ES 2nd cycle PoM are, presently, under elaboration.

The present analysis builds on the programmes mentioned above and takes into consideration the following documents:

- MS interim reports on the implementation of the PoMs, made under MSFD Article 18, reported by ES in 2018, FR in 2019 and PT in 2020³³;
- Assessment made by the EC on MS PoM, in 2018, under MSFD Article 16, and related staff working documents³⁴;
- MSFD Guidance Document 12, on reporting on MSFD PoMs and exceptions³⁵.

Tables 16 to 18 include a description of the MSFD measures adopted, targets addressed and timeframe for the implementation, including, in the case of PT and ES, the status of the implementation, the expected date for implementation, the delay expected and respective reasons. Also, based on the four types of measures identified by the 1st cycle COM assessment³⁶ of MS PoM, the measures indicated in the Tables are typified as:

- **Direct measures:** legal or technical intervention, directly help to reduce the pressure. These entail, for example, technical solutions (e.g. less noisy ship engines) or restrictions to the spatial scope of certain activities (e.g., through licensing procedures);
- **Indirect measures:** measures that indirectly help to address the pressure in question, including, governance actions, awareness-raising or communication campaigns;
- **Knowledge acquisition studies:** where the MS do not have sufficient knowledge about a particular pressure (e.g., non-indigenous species, underwater noise), they have identified the need for further research to better inform future measures and/or put in place further monitoring.
- **Spatial protection measures:** measures meant to create coherent and representative networks of marine protected areas, including special conservation areas and sites of community importance (Habitats Directive), special protection areas (Birds Directive) or other protected areas agreed within regional or international agreements (COM, 2018a).

³³ Reported xml. files available at: CDR (europa.eu)

³⁴ COM (2018) and SWD(2018) 393 final.

³⁵ EC (2018). available from: <http://cdr.eionet.europa.eu/help/msfd>

³⁶ COM (2018) 562 final.

- **Portugal**

The 1st cycle PoM was developed in 2014, and addressed in one measure “MedMamíferos” the two ET established for MM in 2012: “Maintain the distribution and abundance indices of cetacean species at the values indicated in the report of Article 17 of the Habitats Directive for the period 2007 – 2012”; and “Contribute to the protection of harbour porpoise (*Phocoena phocoena*) and bottlenose dolphin (*Tursiops truncatus*) populations” (cfr. **Table 16**). Relevant horizontal measures for knowledge acquisition, raising awareness and spatial protection were also included in the table below.

MarPro project has contributed to the implementation of MSFD measure “MedMamíferos”, including a set of actions to address knowledge gaps on fishing pressure impacts. This measure is not fully implemented, namely in what concerns the understanding of cause-effect relationships between degrading factors of GES and the status of MM populations. This task will benefit from the implementation of the monitoring actions foreseen in the PT MoP (Chapter 3.5). Although no specific ET was established, in 2012, for bycatch, MedMamíferos also included actions to test mitigation measures and good practices in fishing fleets, operating in the new Site of Community Importance (SCI)³⁷ designated to protect harbour porpoise and bottlenose dolphin.

Other measures proposed were indirectly relevant to MM GES, and included spatial protection actions, data management and raising public awareness. Two of these measures are still under implementation.

³⁷ Maceda-Praia da Vieira (<https://files.dre.pt/1s/2019/01/01600/0047400475.pdf>)

Table 16 - PT list of measures concerning D1-MM, in ABI-PT-SD-CONT subdivision, for MSFD 1st cycle (MAM, SRMCT, SRA, 2014).

Measure (Code/Name)		Objective	Implementation status	Implementation year → delay (obstacles)	Type of measure ³⁸
ABI-PT- ME13-D1	MedMamiferos Protection measures for cetacean populations on Portuguese mainland waters	<ul style="list-style-type: none"> - Use cetaceans as sentinel species for GES assessment - Designate Sites of Community Importance (SCI) for cetaceans; - Address impacts from fishing sector 	Implementation started	2017→+ 4 years	Indirect measures
ABI-PT- ME01-DV	DesignAMP Establish Marine Protected Areas in the Portuguese maritime space	Build a coherent and representative MPA network	Implementation started	2020→+ 2 years	Spatial protection measures
ABI-PT- ME06-DT	DQEM Data Implement and manage a network platform on monitoring data	Data management and coordination	Implementation started	2020→ unknown (technical implementation)	Indirect measures
ABI-PT- ME09-DV	EduMar Educate and raise awareness about the marine environment	Stakeholder involvement and raising public awareness	Implementation ongoing	2020→ unknown	Indirect measures
ABI-PT- ME14-DV	SOPHIA Knowledge for the management of the Marine Environment	Communication, stakeholder involvement and raising public awareness	Implemented	2017	Indirect measures

³⁸ Typification proposed by the authors in the scope of the present analysis.

- **Spain**

Currently, the PoM in place is the one established in the MSFD 1st implementation cycle and, therefore, the objectives and targets addressed are those established in 2012. The measures highlighted in **Table 17** concern ES biodiversity targets, such as increase species protection; prevent and mitigate incidental bycatch; reduce human activities impacts on species and habitats; and support knowledge acquisition. Relevant measures regarding the fishing sector, established for MSFD Descriptor 3 (species commercially explored), and measures targeting horizontal objectives were also included.

Most of the measures established (eight) concerned the reduction of bycatch, half of them being already implemented, particularly indirect measures and knowledge acquisition studies. The remaining measures are ongoing, except for the “quality stamp for recreational activities on the observation of cetaceans (including the touristic fishing activity)”, due to sector acceptance issues. BIO8 “Risk assessment for bycatch” has been included under the scope of the 2nd cycle - monitoring programme ES-MT-4 (see Chapter 3.5).

The collaboration between the fishing sector and the scientific community has been enforced through measure EC5, implemented since 2016.

Table 17 - ES MSFD 1st cycle list of measures concerning D1-MM, in ABIES-NOR and ABIES-SUD subdivisions (MAGRAMA, 2015)

Measure NOR/SUD subdivisions (Code/Name)		Objective	Implementation status	implementation year reported → current expected year for implementation → delay (obstacles)	Type of measure ³⁹
BIO3	Strategies/Plans for the reduction of the accidental capture of protected vertebrates (birds, turtles, marine mammals and elasmobranchs) in fishing gears	Prevent and mitigate accidental bycatch	Implemented	2017→2021→ (+4 yrs) (financing and data availability)	Indirect measures
BIO8	Risk analysis on the incidental catch of protected turtles, cetaceans and sea birds and elasmobranchs		Implementation started	2016→2024→ +8 yrs (national mechanism for implementation)	Knowledge acquisition
BIO9	Demonstration projects for the mitigation and reduction of the incidental catches of protected turtles, birds, mammals and elasmobranchs and other non-targeted species by the different fishing gears		Implementation started	2019	Knowledge acquisition
BIO10	Fisheries regulations to reduce incidental catches (on the basis of BIO8 measure and the existing data)		Implementation started	2019→2020 (+1 yr)	Direct measure
BIO12	Establishing protocols to improve the post-catch survival for different fishing gears and to ensure their implementation		Implementation started	2016→? (technical implementation)	Direct measure
BIO19	Update of the Fisheries Electronic Logbook to standardise the bycatches data gathering		Implemented	2018 → (+3 yrs)	Indirect measure
H10	Training programs aimed at fishermen, observers on-board, personnel of branch networks, and training of managers and the administration		Implementation started	2016 → continuous	Indirect measures

³⁹ Typification proposed by the authors in the scope of the present analysis.

	Measure NOR/SUD subdivisions (Code/Name)	Objective	Implementation status	implementation year reported → current expected year for implementation → delay (obstacles)	Type of measure ³⁹
H11	Awareness programmes aimed at beach users and marine tourism companies, as well as the fisheries and agriculture sectors and society in general		Implementation started	2017 → continuous	Indirect measures
BIO7	Conservation plans of threatened marine species	Increase habitats and species protection	Implementation started	2018 → 2025 (+7 yrs)	Indirect measures
BIO47	Promoting a quality stamp for recreational activities on the observation of cetaceans (including the touristic fishing activity)	Reduce human activities impacts on species and habitats	Withdrawn	(Cost-effectiveness)	Indirect measures
EC5	Encouragement of collaboration between scientists, fishermen and fish farmers	Increase knowledge	Implemented	2016 → continuous (financing)	Indirect measures
EMP	<p>EMP1 - RAMPE (Spanish Network of MPAs) Master Plan</p> <p>EMP2 - Drafting and launch of the management plans for the Natura network SCIs under the competence of the State⁴⁰</p> <p>EMP12 - Drafting studies for the demarcation of future MPAs</p> <p>EMP13 - Declaration of new MPAs (as identified under EMP12)</p> <p>EMP17 - Development and implementation of management tools for protected areas (other than those referred to in EMP2, and EMP4)</p>	Increase habitats and species protection	<p>- EMP1: Implementation started</p> <p>- EMP2: Implementation started</p> <p>- EMP12: Implementation started</p> <p>- EMP13: Not started</p> <p>- EMP17: Implementation started</p>	<p>EMP1: 2016 → 2022 (+6 yrs)</p> <p>EMP2: 2016 → 2023 (+7 yrs)</p> <p>EMP12: 2018 → 2023 (+5 yrs)</p> <p>EMP13: 2020 → 2025 (+5 yrs)</p> <p>EMP17: 2016 → (continuous)</p>	Spatial protection measures

⁴⁰ as identified in INDEMARES

- **France**

In 2021, FR presented its 2nd cycle PoM (“Action Plan”) for the South Atlantic *façade*⁴¹ and the North Atlantic *façade*⁴², which include the rational adopted and measures proposed for each area. These areas (*façades*) together cover the French part of the ABI subregion (MRU: ABI-FR-MS-GDG) and, despite some differences in the methodology, common measures were proposed for the North and South Atlantic *façades* to tackle MM environmental targets.

The measures proposed, and presented in **Table 18**, are grouped into three strategic areas, namely (MM, MTE, 2021):

- Protection of species and their habitats;
- Reduction of pollution;
- Reduction of anthropogenic pressures.

Horizontal measures that contribute indirectly to MM GES, and that concern FR strategic objectives, are also relevant and therefore included in this analysis.

For the 2nd cycle, four measures for anthropogenic pressures reduction (collisions, disturbance and bycatch) will be implemented until 2027. These are aligned with the ET established in the 2018 report and derive from (or in some cases complement) the actions included in the FR Action Plan for Protection of Cetaceans⁴³, published in 2020.

On the pressure resulting from fishing activities (especially for bycatch, but also pollution and disturbance), a risk analysis methodology for species of Community interest will be developed, build on the methodology published in 2020 for Natura 2000 habitats and professional fishing activities⁴⁴. However, given that the life cycle of mobile species is not limited to the Natura 2000 sites, measure D01-OM-OE01-AN1 objective is to develop the analysis at a broader biogeographic scale. This will allow for the identification of the most significant risks and the adoption of “direct measures” for significant risk scenarios. At least one pilot study for mammals will be performed on mitigation methods (being developed in the scope of CetAMBICion WP4).

An administrative measure, concerning ET for impulsive noise, is proposed aiming at the collection and dissemination of monitoring data of impulsive sound generated by anthropogenic activities.

Several cross-cutting measures, not directly related to MM targets, are foreseen: raise awareness (AT2); provide access to information (AT3); and enforce administrative protection and control mechanisms for reducing anthropogenic pressures in marine

⁴¹ MCPPML, DIRM SA (2021).

⁴² MM, MTE (2021).

⁴³ MAA, MTES, 2020.

⁴⁴ French Environment Code determines that professional fishing activities are exempt from the Natura 2000 impact assessment provided they are subject to risk analysis of undermining Natura 2000 conservation objectives. If a risk cannot be excluded, the fishing activities concerned must be the subject of regulatory measures.

protected areas (AT-1 and AT-4). A specific Life project (AT-6) for mobile species, from 2023 onwards, is foreseen to implement the PoM (partly or fully, depending on the individual actions timeframes).

Table 18 - FR list of measures for D1-MM, in ABI-FR-MS.GDG subdivision, for MSFD 2nd cycle (MCPPL, DIRM SA, 2021; MM, MTE, 2021).

Measure (Code/Name)		Objective	MSFD ET	Actions	Timeframe	Type of measure ⁴⁵
D01-MT-OE01-AN1	Strengthen the supervision and regulation of outdoor sports and recreational activities and marine mammal observation activities	Reducing anthropogenic pressures	D01-MT-OE01	<ul style="list-style-type: none"> - Limit the potential impact on marine mammals from outdoor sports and recreational (including nautical events) and ecotourism commercial activities by regulatory means. - Public awareness for good marine mammal observation practices by educational guides and other awareness actions. 	2020-2027	Direct measure
D01-MT-OE03-AN1	Identify and reduce risk of collision between marine transport and marine mammals		D01-MT-OE03	<ul style="list-style-type: none"> - Arrange a database for the International Whaling Commission for collisions. - Install a device for sharing the positions of cetaceans to avoid collisions. - Provide training content. - Supporting and accelerating the development of technologies for the real-time detection of cetaceans. 	2021-2025	Indirect measure
D01-OM-OE06-AN1	Strengthen regulations and authorizations of marine activities on the aspects concerning marine species sensitivity to disturbance (birds, mammals and turtles)		-	<ul style="list-style-type: none"> - Map and synthesize digitally the spatial and temporal information available on the sensitivity of species to disturbance and loss of functional habitats. - Develop guides for each activity. Provide training. - Spatial protection measures based on activities and sensitivity environments. 	2019-2027	Direct measure

⁴⁵ Typification proposed by the authors in the scope of the present analysis.

Measure (Code/Name)		Objective	MSFD ET	Actions	Timeframe	Type of measure ⁴⁵
D01-OM-OE01-AN1	Identify and reduce the risks of incidental capture for each species of community interest		D01-MT-OE01	<ul style="list-style-type: none"> - Develop a national method of analyzing risk of not achieving GES for species of community interest; - Perform a risk analysis for all species of community interest. Strengthen the observation effort on the most relevant fisheries and periods; - Test and deploy reduction measures on pilot sites and encourage the implementation of innovative actions; - Adopt the appropriate regulatory measures to reduce bycatch, including, when necessary, through a procedure at EU level (PCP article 11). 	2022-2027	Knowledge acquisition
D11-OE01-AN1	Collect and disseminate impulsive noise data resulting from industrial operations	Reducing pollution	D11-OE01	<ul style="list-style-type: none"> - Compulsory data collection on impulse noise, for the following activities: blasting from air guns, boomers and sparkers, pile driving, single beam echosounders, multibeam echosounders, civil sonars, pingers; - Ensure data storage and dissemination. 	2022-2027	Indirect measure
AT-01	Develop the network of strong protection zones and strengthen its control	Reducing anthropogenic pressures	Cross-cutting	<ul style="list-style-type: none"> - Develop the network of protection zones and set up a monitoring system; - Strengthen the control of protected areas, including their priority in marine environment control plans. 	2022	Spatial protection measures
AT-04	Improve the control system for the marine environment			<ul style="list-style-type: none"> - Improve the identification of environmental issues to make the control guidelines more reliable; - Continue the effort to train field agents, in particular through educational support (to be created or existing); - Strengthen “inter-service” cooperation to improve surveillance operations; - Strengthen relations between decentralized administrations and judicial services. 	2022-2027	Indirect measure
AT-02	Develop the network of marine educational areas (MEA)	Raising awareness		<ul style="list-style-type: none"> - Enforce MEA project on educational and eco-citizen knowledge for young audiences; - Develop and experiment with the concept for older students. 	2020-2027	Indirect measure

Measure (Code/Name)		Objective	MSFD ET	Actions	Timeframe	Type of measure ⁴⁵
AT-03	Develop an integrative application of the regulations and information related to areas, intended for navigation of pleasure	Access to information		<ul style="list-style-type: none"> - Produce an inventory on the approaches developed in other territories and of the data useful to make available to users; - Setting up national mobile applications (or locally); - Encourage the development of digital services to facilitate access to yachting. 	2020-2027	Indirect measure
AT06	Submit and implement a Life project “Mobile marine species”	Protection of species and their habitats		<ul style="list-style-type: none"> - Setting up and filing of a Life Project “Mobile marine species”; - Implementation of the Life project “Mobile marine species”. 	2021-2027	Indirect measure

Highlights

- Different implementation stages for MS Marine Strategies preclude a comparative analysis of the PoM (PT: public consultation in september-october 2022; ES: public consultation in july-august 2022; FR: public consultation in 2021). However, undoubtedly, common pressures have been prioritized and measures are being considered: bycatch in PT, ES and FR; and disturbance in ES and FR.
- Adoption of subregional coordinated and coherent measures can be addressed under OSPAR Implementation Plan⁴⁶ which contains specific tasks to be delivered collectively by Contracting Parties to achieve OSPAR Objectives for 2030⁴⁷, including one operational objective on bycatch (OO n.º S7.06).
- Eventual future MSFD measures on bycatch, depending on studies results and CetAMBICion outputs, could address more selective fishing gear or / and recreational fishing (e.g Belgium established national requirements that go beyond CFP to improve data collection and help with the regulation, in a more targeted manner, of certain fishing activities (EC, 2018)).
- COM assessment report on 1st cycle PoM (COM, 2018) highlighted that insufficient links were made between MM measures and anthropogenic pressures such as noise, contaminants and litter. In this regard, a medium-priority action identified by ASCOBANS (2019), was to understand and develop mitigation measures for the risks of anthropogenic sound. It follows, from the present report, that noise (MSFD Descriptor 11) is extensively addressed in the 2nd cycle Marine Strategies, with the establishment of ET, monitoring specific programmes and measures (in the FR case). Linking sound to impacts will probably need additional data collection and the results of the work being developed under COM and OSPAR technical groups⁴⁸ for common assessment methods and exposure thresholds values. It is worth mentioning that, for Spanish 2nd cycle PoM, a set of measures aimed at noise reduction and the improvement of the knowledge on underwater noise sources are foreseen. On contaminants (Descriptor 8) and litter (Descriptor 10), the effective identification of impacts and assessment of levels of new emerging contaminants is still challenging. Regardless, screening and assessment of the occurrence and the effects of contaminants in MM is included in MoP, but only for ES and FR (through stranding networks).
- Other measures to curb the negative impacts of pressures on the marine environment, contributing to improve the state of marine biodiversity, are included in the scope of other Directives (measure types 1.a or 1.b) or addressed under D8 and D10 sections of the PoM.

⁴⁶ Available at <https://www.ospar.org/convention/strategy/implementation-plan>.

⁴⁷ NEAES 2030 Strategy.

⁴⁸ CIS Technical Group on Noise (TG Noise) and OSPAR Intersessional Correspondence Group on Underwater Noise (ICG Noise).

- The identification of significant risks to MM GES, in the ABI subregion, is a relevant measure already foreseen in knowledge acquisition studies being developed in the scope of D1 and other relevant descriptors (e.g., D11). This is an essential step to decide on effective and costs-proportionate MSFD measures, which face several implementation obstacles as identified under **Tables 16 to 17**.



4 MSFD Common Implementation Strategy, OSPAR and other *fora* guidance

In the draft Article 8 MSFD Assessment Guidance, it is suggested to approach Article 8 (1a)⁴⁹ and (1b)⁵⁰ assessments in a given sequence to enable integrated assessments. Considering the primary criteria established by the GES Decision, the Guidance highlights the pressure criteria **D11C1** and **D11C2** and the impact criterion **D1C1**, as particularly relevant to assess the environmental status of species (criteria D3C1 and D9C1 apply only to commercial fish species). **Figure 13** illustrates how the proposed integrated assessment framework would inform the assessment of cetaceans. The importance of making sure that assessments (including TV) are aligned and that spatial and temporal assessment scales compatible are key on such integrated assessment.

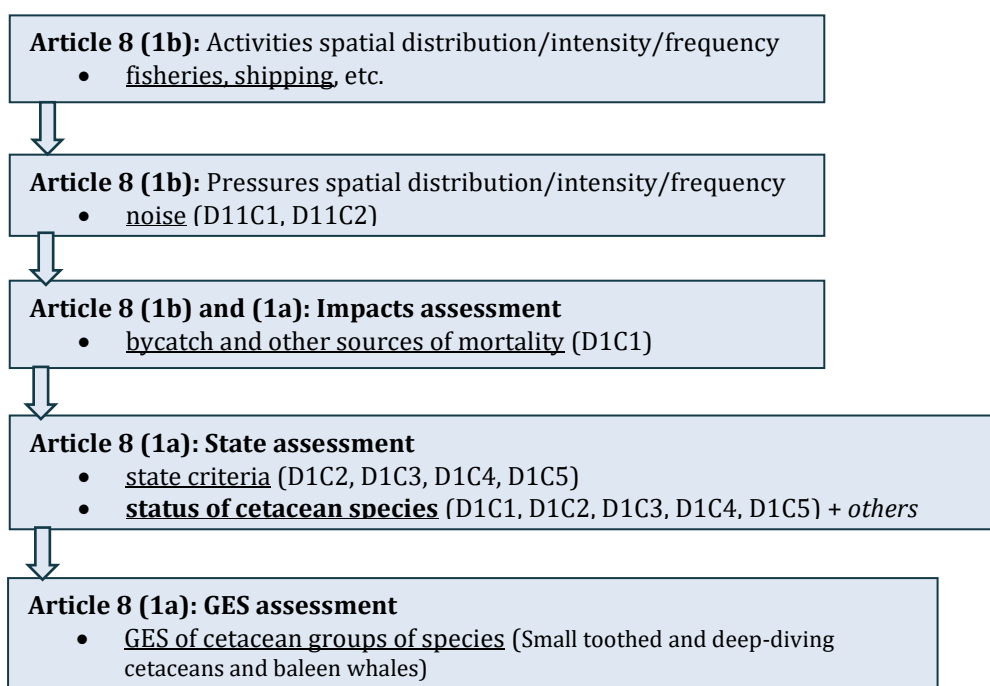


Figure 13 - Integrated assessment framework for cetaceans (adapted from draft Article 8 MSFD Assessment Guidance).

For the assessment of each descriptor the guidance also suggests a step-by-step decision process which, for the assessment of ecosystem elements under D1, is illustrated in **Figure 14**. This process is explored in the following sections considering the reports and guidance developed within the CIS process. JRC in particular, working with the MSFD Biodiversity EN, has published several reports on each assessment step: species and parameters selection, threshold setting and integration rules. In this chapter the main conclusions of these reports are reviewed considering the ABI context.

⁴⁹ Article 8(1a) MSFD – Descriptors 1, 4, 6 (and state aspects of D3).

⁵⁰ Article 8(1b) MSFD – Descriptors 2, 5, 8, 9, 10 and 11 (and pressure aspects of D3, D6 and D7).

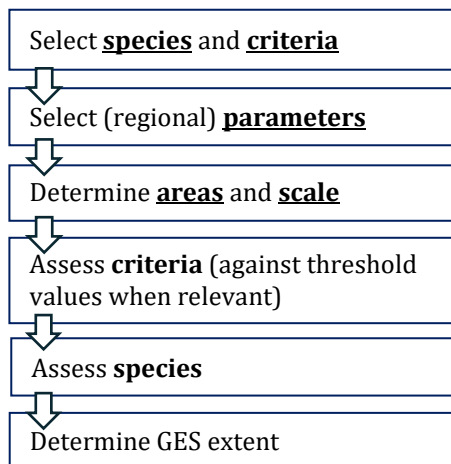


Figure 14 - Steps to assess the environmental status and extent to GES (source: draft Article 8 MSFD assessment guidance).

Beyond the CIS process, the other main relevant *fora* (at expert level) for the implementation of the MSFD and the GES Decision regarding cetaceans are:

- **OSPAR**, through the OSPAR Marine Mammals Expert Group (OMMEG)
- **ICES**, through the Working Group on Marine Mammal Ecology (WGMME) and the Working Group on Bycatch of Protected Species (WGBYC)
- Joint **ACCOBANS/ASCOBANS** working group on the MSFD

The work developed under these expert groups, as well as the guidance available under the HD to assess species conservation status, is included in the following sections, as relevant, to further identify the topics for which agreement has been achieved or, instead, discussions are still ongoing. This chapter focuses mostly on criteria D1C2, D1C3, D1C4 and D1C5 and less on D1C1 as this criterion is specifically addressed under WP3.

Species to assess (criteria elements)

MS are required to establish lists of elements through regional and subregional cooperation, but two cases may justify a national deviation from an established list of criteria elements to be assessed (draft Article 8 MSFD Assessment Guidance):

- an element occurs only locally where it is relevant for determining GES but is not of subregional relevance;
- an element occurs in a large area but in national waters is not relevant for determining GES.

In 2018, JRC produced a reference list of species (Palialexis et al., 2018) that identified all mammal' species included on (by order of importance):

1. MS MSFD electronic reporting under Articles 8, 9, 10 and 11;
2. Habitats Directive Annexes II and IV;
3. RSC assessments (OSPAR IA 2017) or part of RSC lists of species (OSPAR list of threatened or declining species)



4. IUCN list of mammals for the European seas, ACCOBAMS list of cetaceans, Bonn convention and CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora).

This list was developed to facilitate MS reporting through the development of drop-down lists in the Eionet MSFD reporting platform and to provide a reference list for MS and RSC to select species from. In this work, JRC also proposed to allocate the resulting lists of species to the relevant MSFD (sub)regions and species groups but for cetaceans, with wide distributions and varying feeding behaviours, the final list only identified cetacean species either on the baleen whales group (**Mysticeti**) or the toothed cetaceans (**Odontoceti**) group. Considering OSPAR work and MS reporting in the North-East Atlantic, JRC highlighted the following species:

- **Baleen whales:** fin whale, minke whale, blue whale,
- **Toothed cetaceans:** harbour porpoise, common dolphin, bottlenose dolphin, striped dolphin, white-beaked dolphin, long-finned pilot whale, Risso's dolphin, killer whale, sperm whale, Cuvier's beaked whale, Sowerby's beaked whale, Blainville's beaked whale

To be considered if relevant for MSFD purposes, JRC also identified: northern bottlenose whale (*Hyperoodon ampullatus*), Fraser's dolphin (*Lagenodelphis hosei*), Atlantic white-sided dolphin (*Lagenorhynchus acutus*), Gervais' beaked whale, True's beaked whale, pygmy sperm whale, dwarf sperm whale, spotted dolphin, short-finned pilot whale, melon-headed whale (*Peponocephala electra*) and Bryde's whale (*Balaenoptera edeni*).

More recently, in the draft Article 8 MSFD Assessment Guidance, under the section on elements under D1-Mammals, it is suggested that all species of marine mammals occurring regularly on MS marine waters should be considered and Evans et al. 2021 and OSPAR Intermediate Assessment 2017 (OSPAR IA 2017) are mentioned as indicative lists for the ATL (only cetaceans considered here):

- **OSPAR IA 2017:** harbour porpoise, common dolphin, bottlenose dolphin, (coastal and offshore units), striped dolphin, white-beaked dolphin, killer whale, long-finned pilot whale, sperm whale, beaked whales, minke whale and fin whale (M4b-abundance and distribution of cetaceans) .
- **Evans, et al. (2021):** harbour porpoise, common dolphin, bottlenose dolphin, striped dolphin, white-beaked dolphin, Atlantic white-sided dolphin, killer whale, Risso' s dolphin, pilot whale, sperm whale, minke whale, fin whale.

These lists do not include all the species occurring regularly in the North-East Atlantic but rather those more frequently sighted. Differences between the two lists regard only two species: Risso's dolphin and Atlantic white-sided dolphin. In fact, both echo the species previously highlighted by JRC although excluding blue whale and Sowerby's and Blainville's beaked whales, considered in the OSPAR IA together as "Beaked whales". The guidance also

highlights that if a species occurs in an assessment area with two or more populations, these are to be assessed individually, noting also that the International Whaling Commission (IWC) recommends ‘unit to conserve’ as the preferred terminology (IWC, 2003)⁵¹. Under the HD, it has also been recommended to set assessment values for management units, populations which may be demographically, if not genetically, distinct. ICES, on the other hand, has advised that “assessment unit” is a more appropriate term than “management unit” for subdivisions of the range of marine mammals under consideration by OSPAR (ICES, 2014). At OSPAR, the term “assessment unit” is used across work areas and concerns the area for which an assessment is delivered. To assess cetacean species, the assessment units agreed take into account genetic and ecological data, but also management boundaries as can be depicted in **Figures 16 to 22** regarding the assessment units under consideration for QSR 2023. For most selected species only one assessment unit is considered as individuals are considered to belong to a single population (e.g. common dolphin), but for harbour porpoise, bottlenose dolphin and fin whale several units will be assessed in the QSR 2023 considering genetic but also ecological available data for these three species.

What to assess (existing and candidate parameters)

To decide on what to assess, MS must select the criteria considered relevant to assess the species and then select the parameters that will be measured or estimated to assess the selected criteria. While it is clear that D1C1 must be assessed for the species considered at risk from bycatch, and D1C3 when primary criteria indicate that the species is at risk, it is not clear in the GES Decision what may justify excluding from the assessment of certain species the primary criteria D1C2, D1C4 and D1C5. According to the draft Article 8 MSFD Assessment Guidance, if a MS decides not to use a primary criterion, it must justify it in its Article 9 report, under the field ‘Justification No Use’.

Good parameters for MSFD should (Zampoukas et al, 2014):

- in case of state indicators respond to anthropogenic pressures in a predictable way, notably with simultaneous monitoring of pressures (i.e. ensure a linkage to PoM);
- be statistically robust and have a quantitative threshold level or a range of values indicating GES;
- be cost-efficient (e.g. monitoring costs vs. acquired information, integration of monitoring with other monitoring, good repeatability and confidence, etc.);
- be coordinated with neighbouring MS in order to obtain comparable assessment products considering regional differences.

⁵¹ The list of characteristics to define the unit to conserve may include genetics, life history characteristics, behaviour or morphology. In particular, behaviour has been recognised as an important way to define units for cetaceans with a strong fidelity to specific areas.



OSPAR

The draft Article 8 MSFD Assessment Guidance recommends the use of scientific indicators developed through EU and regional cooperation to assess cetacean species. The common indicators of OSPAR are based on information from monitoring programmes described in the Coordinated Environment Monitoring Programme (CEMP) appendices. Detailed descriptions, including method descriptions for the indicator calculations, are included in CEMP Agreements. The indicators for cetaceans currently adopted by OSPAR include:

- **M6-Marine mammal bycatch**⁵²
- **M4-Abundance and Distribution of Cetaceans at the relevant spatio-temporal scale of cetaceans regularly present**

As stated in M4 CEMP guidelines (Agreement 2018-9), updated in 2022, M4 does not explicitly monitor the effects of anthropogenic activities on cetacean abundance and distribution but it is understood that population size and distribution may change in response to pressures resulting from human activities. For most species, M4 abundance estimates are to be based on data from dedicated line transect (sightings) surveys, preferably large scale and taking place every six years, complemented with results from national surveys using the same standardised methodology. Such design-based estimates may be supplemented with model-based estimates to include more frequent but smaller scale surveys. For bottlenose dolphins and killer whales, estimates are more commonly based on mark-recapture analysis of photo-identification data.

ACCOBANS/ASCOBANS

In its 2019 report, the Joint ACCOBANS/ASCOBANS working group on the MSFD noted the lack of OSPAR pressure indicators to help interpret changes in population status (Murphy, 2019). However, OSPAR has, in the meanwhile, adopted impact indicators for bycatch (M6)⁵³ and impulsive noise (Merchant et al. 2018), and is developing an indicator to assess blubber Σ PCB and other persistent chemicals, particularly in three species: harbour porpoise, bottlenose dolphin and killer whale. The report identified the following additional national indicators as indicated by MS:

- **D1C3: Recurrence of unusual mortality events** (FR);
- **D1C3: Age distribution** (DE);
- **D1C3: Survival rate** (PT and ES);
- **D1C4: Trends in occupancy** (FR)
- D1C1: Long-term trend in the percentage of bycaught porpoises amongst stranded porpoises is decreasing (BE);
- D1C1: Bycatch mortality rate assessed from strandings data (FR);
- D1C1: Number of drowned mammals and waterbirds in fishing gear (HELCOM);

⁵² To be considered under Cetambicion WP3

⁵³ M6 results for harbour porpoises were presented in OSPAR 2017 IA, but no assessment was delivered due to lack of agreement on how to assess.



- D1C1: Mortality from ship strikes (PT and ES);
- D1C1: Mortality rates caused by pressures e.g. accidental catches, boat collisions, ingestion of marine litter, pollution and overfishing (ES);

Habitats Directive

The GES Decision also recommends that assessments under HD should be used under MSFD, establishing that criteria D1C2 and D1C3 are equivalent to the HD parameter '**population size**', D1C4 to '**range**' and D1C5 to '**habitat for the species**'.

Population size in the HD refers to the total population in the biogeographical (marine) region of the MS concerned using the relevant reporting unit, in this case **individuals**. It can be reported as an interval and/or best available value (DG ENV, 2017). Minimum and maximum values may represent confidence limits or minimum and maximum values from repeated surveys. For estimating population size, complete surveys, statistically robust estimates, extrapolation from limited amount of data or expert opinion with very limited data, are the foreseen methods depending on data availability. For wide-ranging highly mobile marine species the DG ENV guidelines recommend using population estimates from i) regional marine agreements such as ACCOBAMS and ASCOBANS, ii) regional sea conventions such as OSPAR, or any other estimates resulting from cooperation between MS sharing the same population, but each MS should report the results for its waters. No data or estimated values on age structure, mortality and reproduction are required but it may be included in an 'additional information' field and be considered for the assessment of the status of the population (see next section). **Range** is defined as 'the outer limits of the overall area in which a species is found at present'. The total **surface area** (in km²) of the current range may be estimated based on the map of distribution, which should provide information about the occurrence of the species (DG ENV, 2017). This map usually consists of a 10x10km grid but maps using a 50x50km grid may be submitted for widely ranging for poorly known cetaceans according to the HD guidelines for reporting under Article 17. **Habitat for the species** refers to the resources necessary at all stages in the life cycle of the species (breeding, foraging, etc.). To assess habitat for a species. MS must report sufficiency of **habitat area** and **quality** (e.g. prey availability), again based on surveys, statistically robust estimates, modelling or extrapolation from a limited set of data or expert opinion. In the HD MS must yet report one additional parameter, '**Future prospects**', which must be considered to assess species but is not considered relevant for MSFD purposes in the GES Decision.

International Union for Conservation of Nature

International Union for the Conservation of Nature (IUCN) criteria to assess species risk of extinction also consider observed, estimated, inferred or suspected changes on **population size** or **extent of occurrence** or **area of occupancy**, with an understanding of the existing **threats** accounted for in certain cases.

Table 19 summarizes the parameters identified to assess criteria D1C1 to D1C5.

**Table 19** - List of identified parameters to assess criteria D1C1 to D1C5 (*secondary criterion).

Criteria	Parameters	
D1C1	OSPAR	M6-Marine mammal bycatch (for harbour porpoise and common dolphin)
	Habitats Directive	-
	Other	Long-term trend in the percentage of bycaught porpoises amongst stranded porpoises is decreasing Bycatch mortality rate assessed from strandings data Number of drowned mammals and waterbirds in fishing gear
D1C2	OSPAR	M4-Abundance and Distribution of Cetaceans at the relevant spatio-temporal scale of cetaceans regularly present
	Habitats Directive	Population size (number of individuals)
	Other	Relative abundance
D1C3*	OSPAR	-
	Habitats Directive	Population size (reproduction, mortality and age structure)
	Other	Recurrence of unusual mortality events Age (class) distribution (strandings) Sex distribution/ratio (strandings) Survival rate (adult, juvenile) Calf production
D1C4	OSPAR	M4 - Abundance and distribution at the relevant spatio-temporal scale of cetacean species regularly present
	Habitats Directive	Range (present range; suitable habitat; occupancy)
	Other	Trends in occupancy Extent of occurrence
D1C5	OSPAR	<i>Blubber \sumPCB and other persistent chemicals in cetacean's species (OSPAR indicator under development-not yet operational)</i> <i>Impulsive noise risk of impact</i>
	Habitats Directive	Habitat for the species
	Other	Habitat quality Threat level (effects of pathogens, pollutants or parasites)

It is clear that to assess species status in all conservation policies and *fora*, key parameters are: **population size** and **distribution**. Existing pressures are also given explicit consideration both in the HD and IUCN, and in the MSFD, under which the assessment of bycatch levels (the main identified pressure for several marine species, and cetaceans in particular) is required. While there seems to be broad agreement on which parameter(s) to apply and how to assess D1C1, D1C2 and D1C4, this is less clear for D1C3 and D1C5 and numerous parameters could be considered.



Where to assess (assessment scale and areas)

For some assessments, the scale for assessing elements is the same as the scale at which elements are combined for feature assessments. In other cases, where multiple elements are used to assess a feature, scales may be different (draft Article 8 MSFD Assessment Guidance).

As stated previously, according to the GES Decision, cetacean groups of species are to be assessed either at the regional or subregional scale and such joint assessments across MS are to be accomplished via the RSC whenever possible. Some MS have reported OSPAR IA 2017 assessment results under Article 8 but not in the ABI subregion as no assessments were possible. The need to report national level results, if regional assessments are used, is under discussion in WG DIKE.

For the QSR 2023, it was agreed to assess OSPAR indicators at the relevant ecological scale while integrated assessments (feature level) should be provided at the subregional scale for small toothed cetaceans and at regional scale for baleen whales and deep-diving toothed dolphins if possible (OSPAR Agreement 2019-02, updated in 2021). The assessment units agreed for QSR 2023 is as illustrated in **Figures 17 to 23**.

Under the HD, MS report national results for each marine region (Atlantic, Baltic Sea, Black Sea, Macaronesia and Mediterranean Sea). As shown in **Figures 15 and 16** besides the fact that the Macaronesia is considered a subregion within the ATL in the MSFD, while in the HD it is considered a separate region, the main difference between Directives concerns the limits of the Atlantic region between the two Directives. Under the MSFD, the ATL region follows the limits of the OSPAR maritime area, while the Marine Atlantic (MATL) region as defined by the HD, does not. This difference reflects a different approach to cooperation between the Directives. While the MSFD relies greatly on RSC to develop methodologies and provide assessments at regional scales, the assessment of species at EU biogeographical level is typically performed by the EEA based on MS assessments and data (see subchapter [Defining GES](#) below). However, for certain species, including cetaceans, regional/joint assessments are recommended also in the HD (DG ENV, 2017). If a joint regional assessment of the conservation status is available it may be provided instead of the MS level assessment in the HD Article 17 reporting field: “transboundary assessment” (DG ENV, 2017).

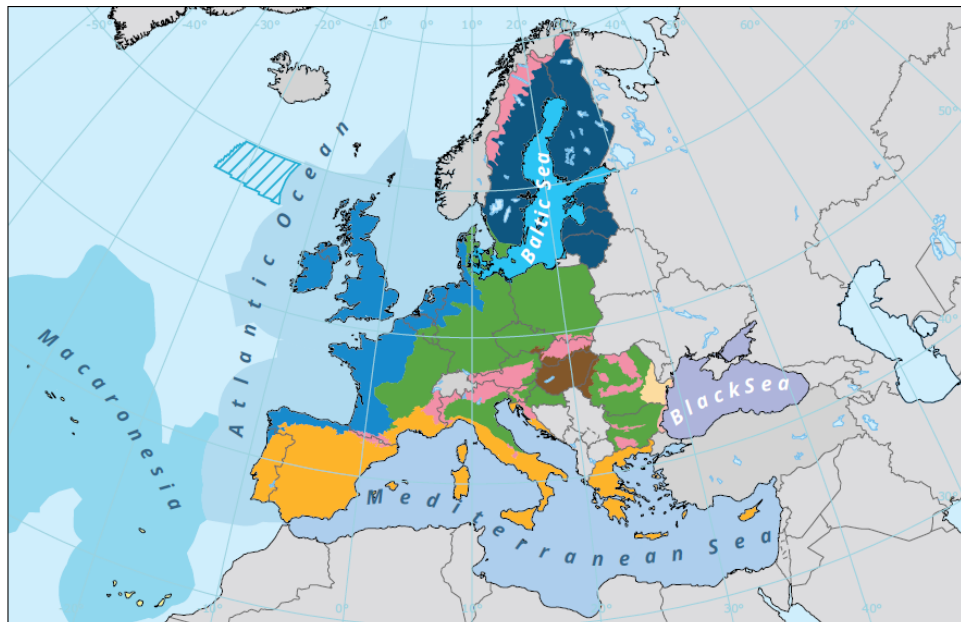


Figure 15 - HD marine regions (source: EEA, 2019)

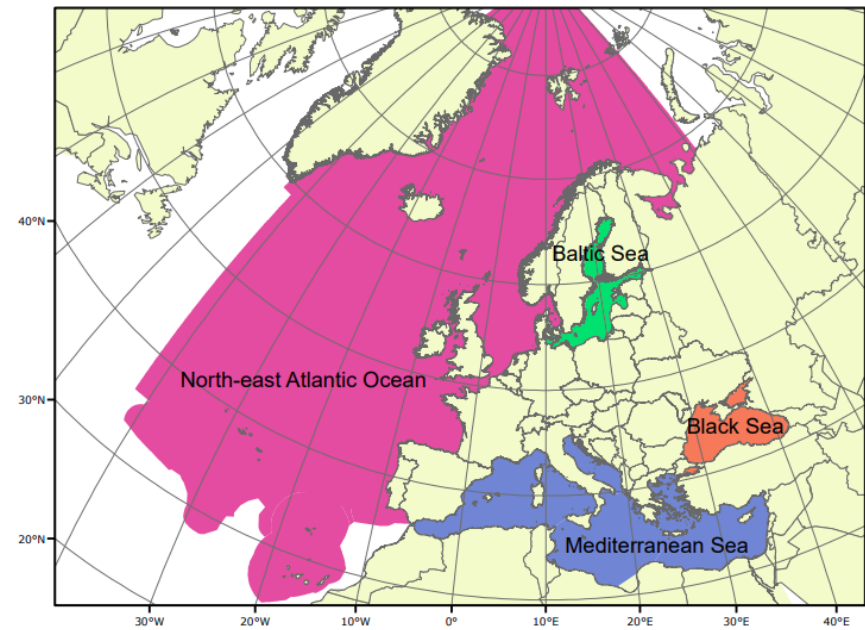


Figure 16 - MSFD marine regions (source: EEA, 2017)

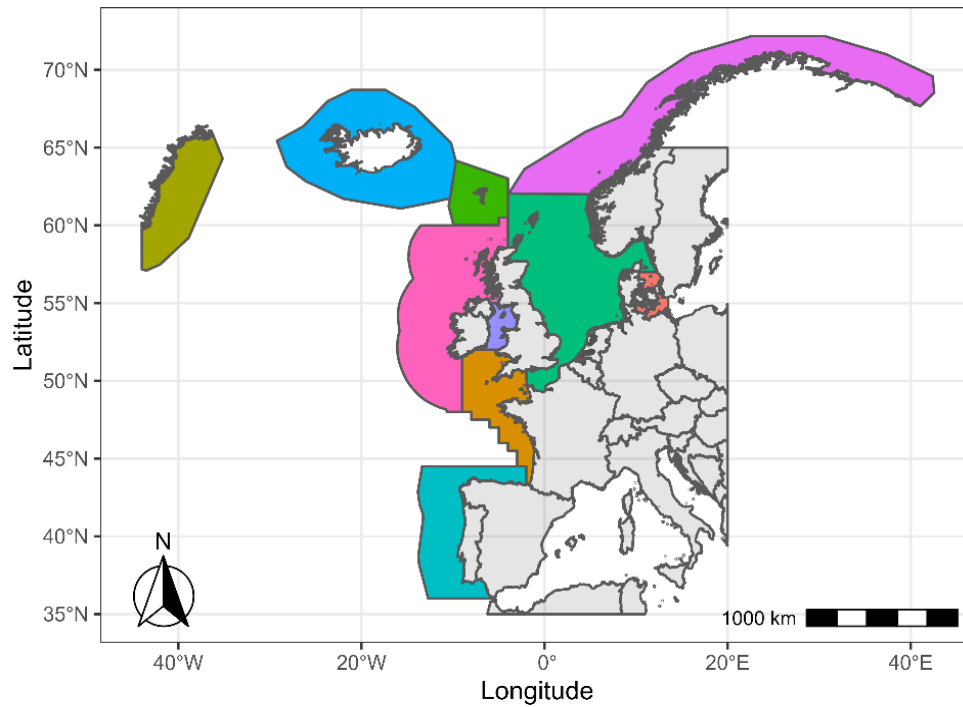


Figure 17 - QSR 2023 assessment units for the harbour porpoise.

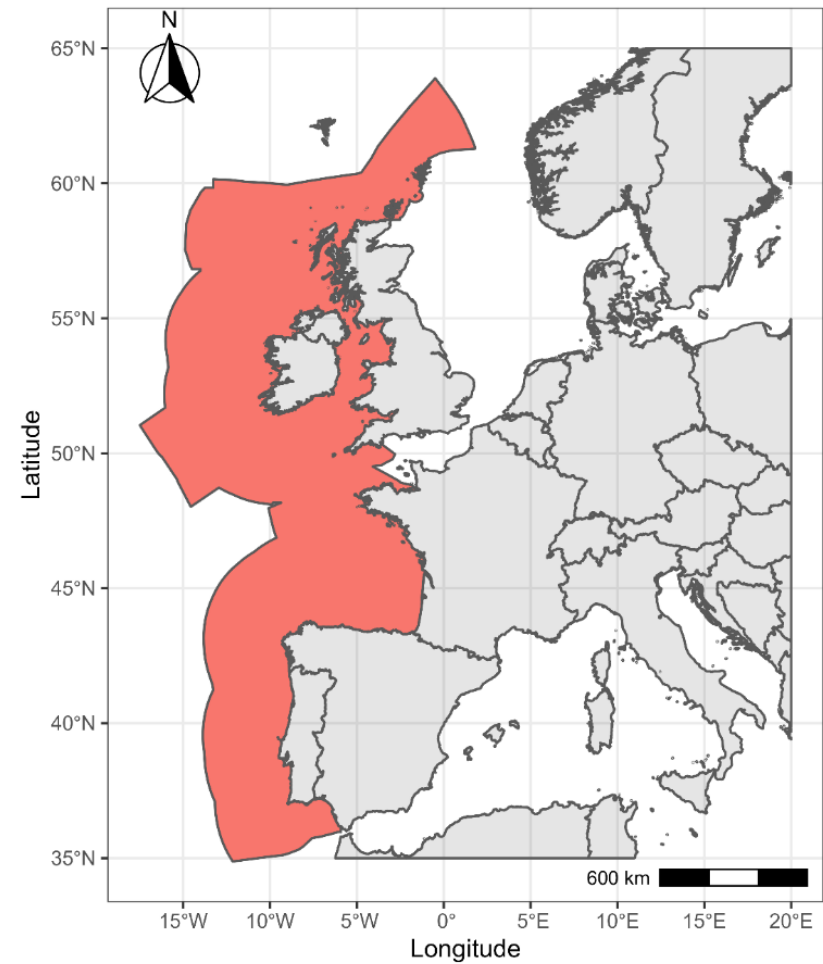


Figure 18 - QSR 2023 assessment unit for the common dolphin

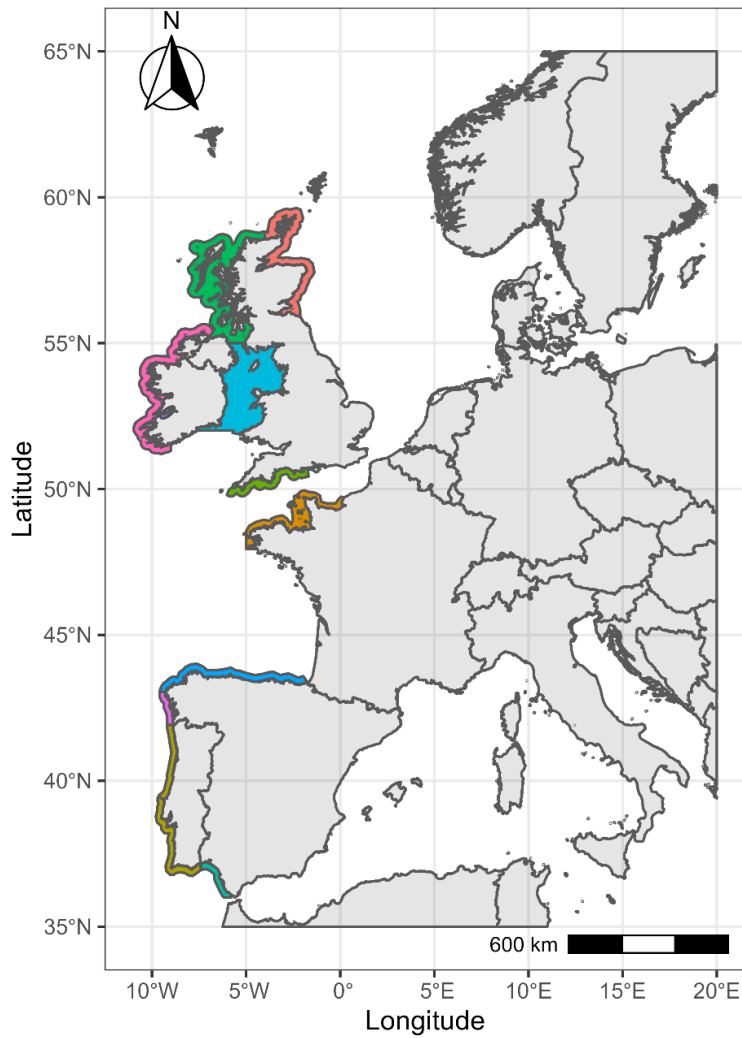


Figure 19 - QSR 2023 assessment units for the coastal bottlenose dolphin

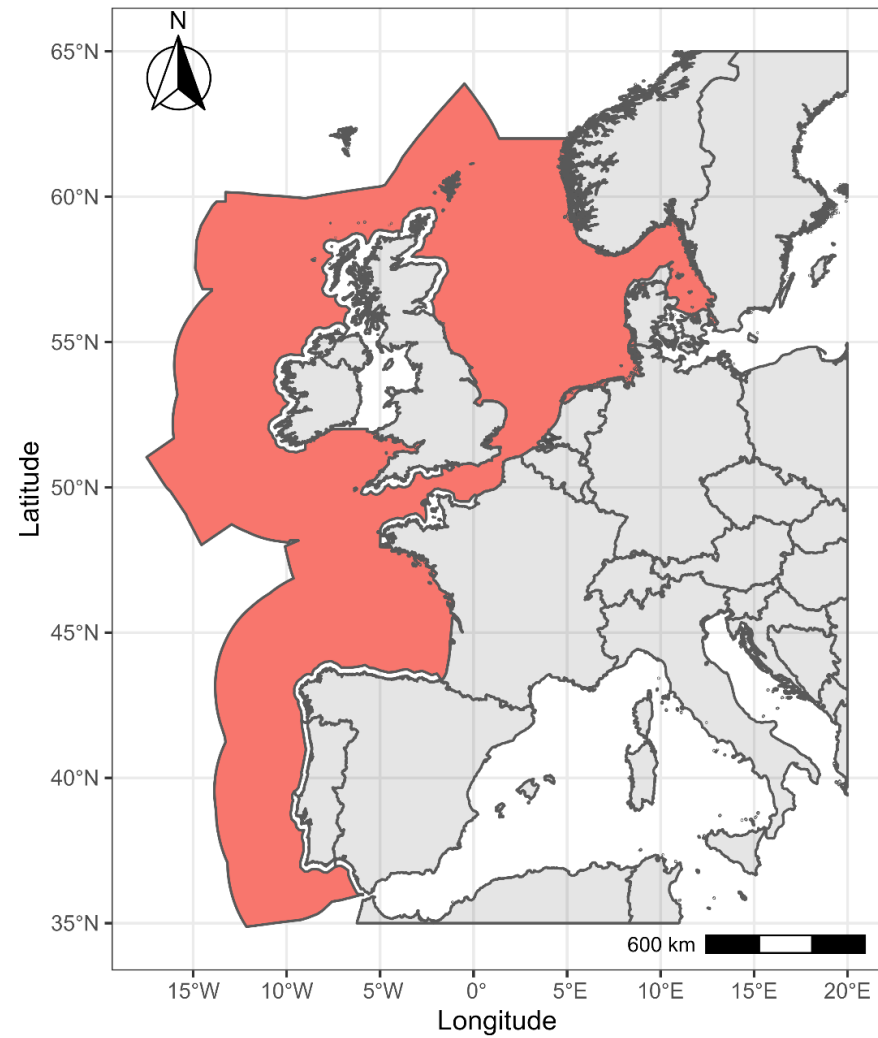


Figure 20 - QSR 2023 assessment unit for the offshore bottlenose dolphin

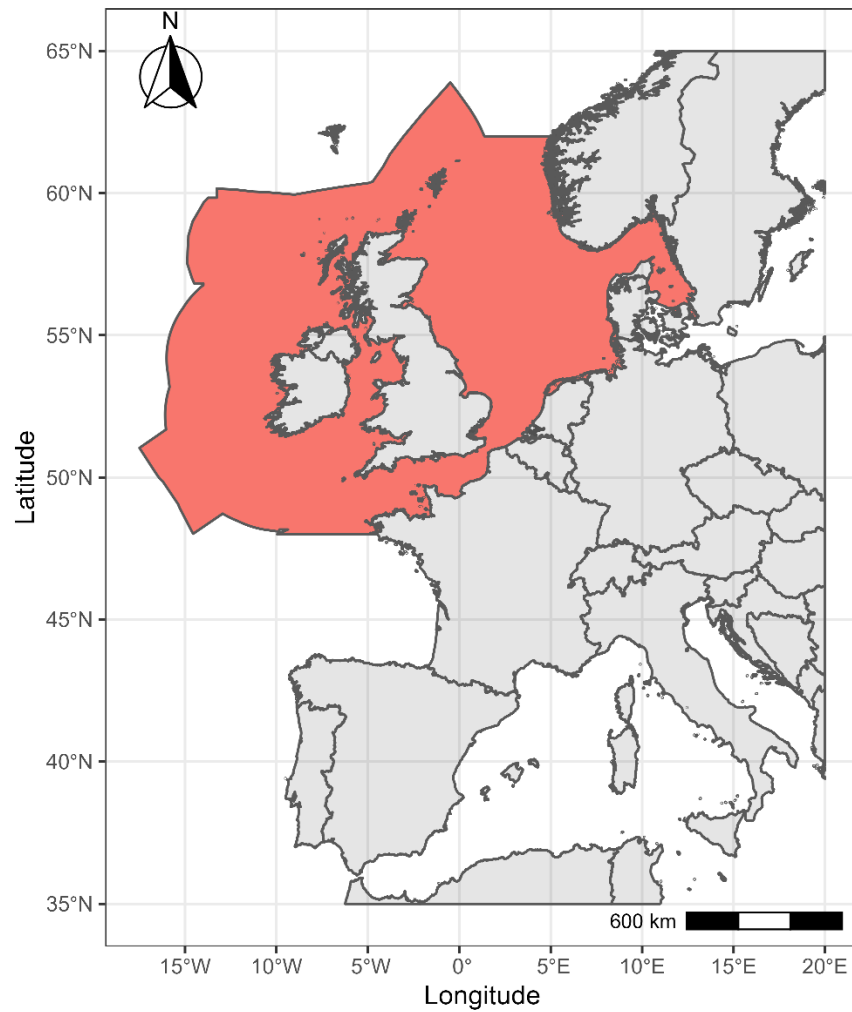


Figure 21 - QSR 2023 assessment unit for the white-beaked dolphin.

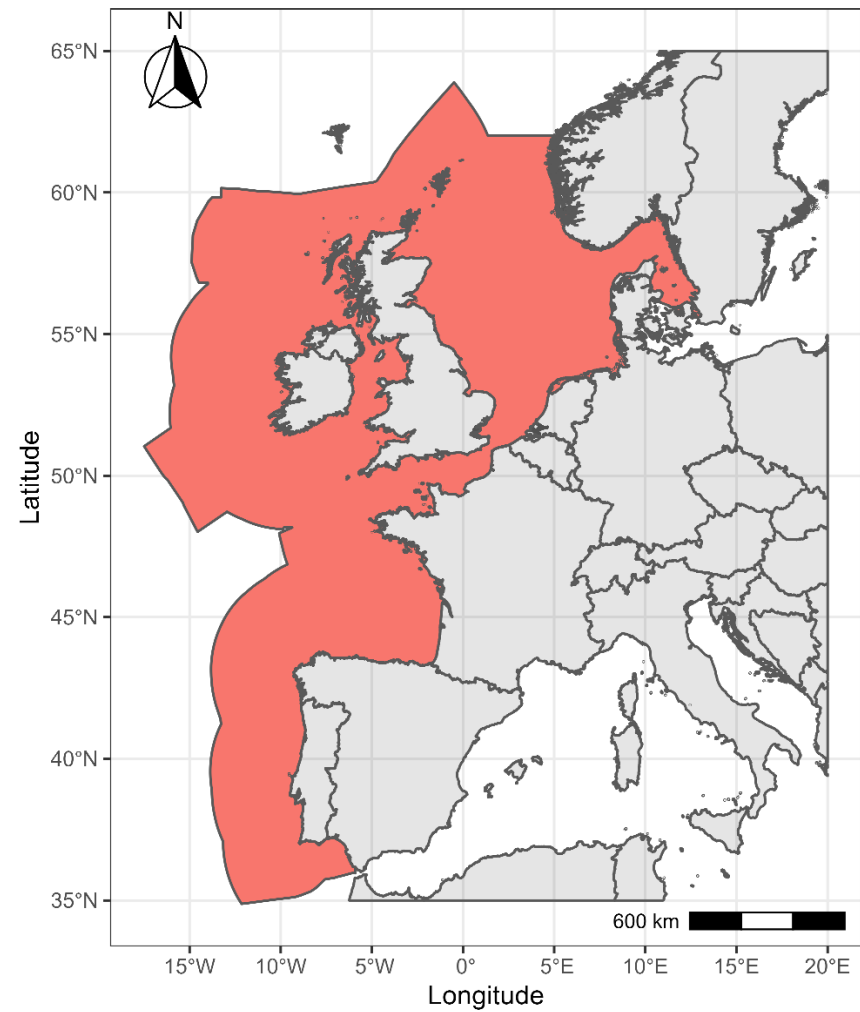


Figure 22 - QSR 2023 assessment unit for the minke whale

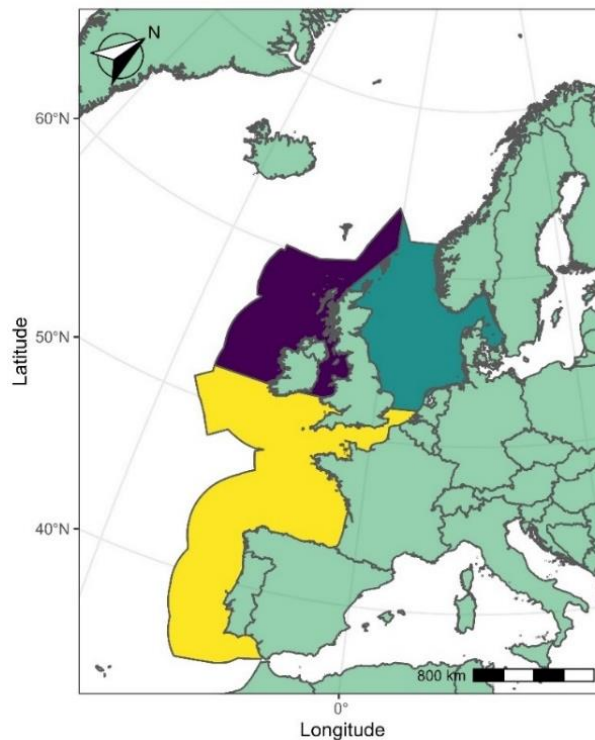


Figure 23 - QSR 2023 assessment units for the fin whale

How to assess (assessment methodologies including thresholds)

According to the GES Decision, threshold values (TV) need to be established for all criteria, except for D1C5, and must be set at the geographic scales of assessment. The lack of consistency in the approaches to set TV amongst MS in the 1st cycle has led to the delivery of two reports by JRC on methods to set TV for D1 ecosystem elements (marine mammals, seabirds, marine reptiles, fish and cephalopods): Palialexis et al. 2019 and Palialexis et al. 2021b.

The process to set thresholds requires defining a baseline in relation to which the threshold value is set, and defining the threshold value itself as the acceptable deviation from the reference condition. The main types of baselines include:

- **Reference condition:** an environmental state which is considered not to be impacted by pressures from human activities or where such impact is only very minor. The use of a reference condition is the preferred option for baselines across descriptors in the context of setting threshold values.
- **Past state:** a known state in the past, such as first data points in a time series which are considered the least impacted state of the time series. The approach is generally robust as it is based on data time-series and should indicate the change of the state of a feature over time. To avoid the effect of interannual variability, the past state can also be a mean of several years at the beginning of the data series. Unless a reference condition can be derived, this approach is recommended for different criteria under Descriptor 1

- **Current state:** set at the date of inception of a particular environmental policy or the first assessment of state. The intention is to prevent any further deterioration from the current state but is not recommended for use in threshold value setting.
- **Potential future state:** desired future state with or without an end-point. An approach with an end-point is to model a future condition, possibly a reference condition. An approach without an end-point is to use directional / trend-based objectives, i.e. the desired trend in the state in relation to the chosen baseline, or a continuous improvement in state.

TV methods may be considered under three main categories (Palialexis et al., 2019 and 2021b):

- **Reference-based:** TV are set in relation to a baseline or range of values (usually historical) and parameters are assessed against these as in **Figure 24**.

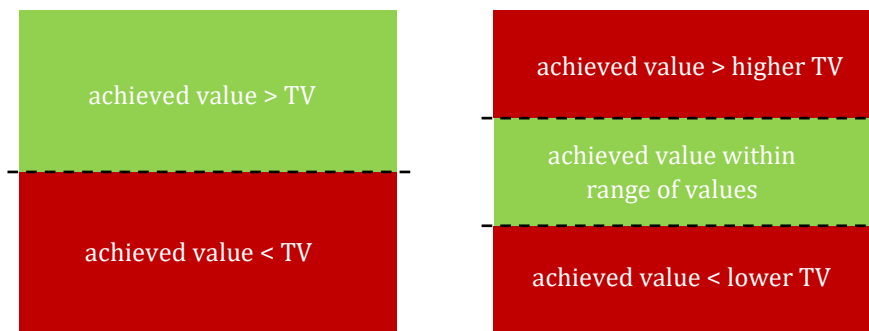


Figure 24 - Schematic assessment of an indicator according to the **reference-based approach**: on the left the threshold is set according to the baseline, on the right the TVs are set according to a % around the baseline (source: Palialexis et al., 2021).

- **Trend-based:** TV are set as a % of positive or negative change in relation to a starting point (in good or not good status) as in **Figure 25**.

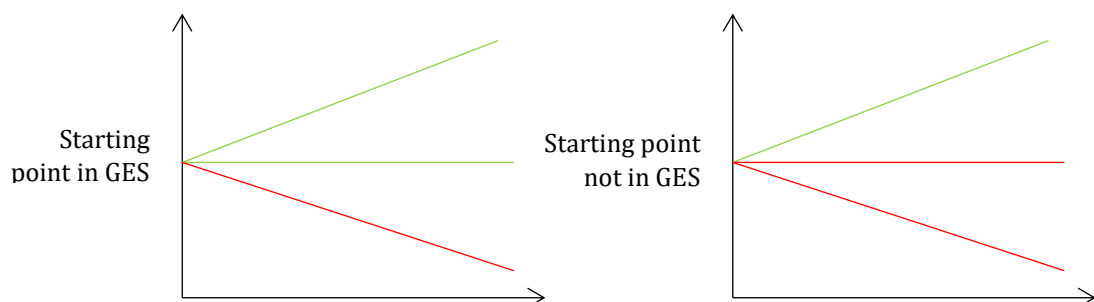


Figure 25 - Schematic assessment of an indicator according to the **trend-based approach**: on the left the indicator is assessed in bad status if a decreasing trend from a starting point in GES while on the right the indicator is assessed in bad status if a stable or decreasing trend from a starting point considered not to be in GES (source: Palialexis et al., 2021).

- **Model-based:** TV are estimated by sophisticated models (e.g. population models) as in **Figure 26**. Population viability analysis (PVA) is a quantitative model-based method that uses species-specific information such as genetic, demographic and

abundance data and incorporates threats to population survival to estimate probability of extinction and/or loss of genetic variation (Biljsma et al, 2019). Which factors are important to consider in a PVA will depend on the species (biology, threats, etc.) and a range of values may be applied if field data is lacking but PVA is always data demanding. Minimum viable populations (MVP) can be derived from PVA and generalised genetic rules (for the HD is has been noted that Favourable Reference Population size must be higher than MVP). Potential-range methods use distribution modelling to estimate TV within the potential range.

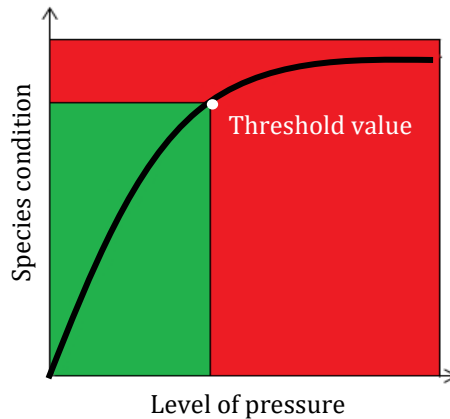


Figure 26 - Schematic assessment of an indicator according to a **model-based approach** in which a TV is estimated from models (source: Palialexis et al., 2021).

Other approaches for TV include:

- Margins and bands within which the TV is to be located but cannot yet be set due to limitations in knowledge / data;
- Use existing and proven TV even if they represent only parts of a criterion or element.
- Use a pragmatic value based on best knowledge and expert judgement at the time. Ensure regular adjustment and updating of TV based on further development and improved knowledge;
- Use direction of trend, related to baseline or final aimed state, while developing a TV at EU or regional level.

In the Workshop on MSFD biodiversity of species D1 aggregation (WKDIVAGG) it was acknowledged that the principles to set values are not always the same across species, as some may be based on historical reference periods and others take into account climate change effects or other precautionary buffers (ICES, 2018a). It is important to note that different approaches at the level of parameters may affect criteria assessments and therefore the results for species and groups of species.



OSPAR

Under OSPAR, to assess **bycatch** of harbour porpoise and common dolphin in Region IV, bycatch thresholds have been proposed based on a modified Potential Biological Removal (mPBR) (BDC, 2022)

To assess **abundance** a trend assessment has been agreed derived from the IUCN criterion, i.e., to detect a 30% decline over three generations (see **Table 20**). As it is only possible to assess trends with three or more abundance estimates, so far it has not been possible to assess most species at the OSPAR scale. The method is also reference-based using as baseline the beginning of the data time series.

Habitats Directive

Under the HD, similarly to MSFD, there is a requirement to set Favourable Reference Values⁵⁴ (FRV) for population and range, although in the HD these values, i.e., the **Favourable Reference Population (FRP)** and **Favourable Reference Range (FRR)**, are to be applied at the level of the biogeographical region within a MS, whereas in the MSFD, TV need to be agreed at the (sub)regional level and therefore at a different scale. It has however, already been recognized in the HD that some species (namely resident or migratory species with large home ranges and one or few populations at supranational level) require FRV to be set at a supranational level (at the scale of a biogeographical region or larger). Nevertheless, for the purpose of reporting under Article 17, FRV must be reported at the national-biogeographical level, using a proportion based on distribution and/or size within the biogeographical region (Bijlsma et al, 2019). Regional transboundary values for range and population size can be provided in the 'Additional information' fields. The assessment of population and range in the HD does not, however, fall exclusively in assessment values. To assess **population size**, it is required to report **trend direction** over two reporting cycles (12 years or period as close as possible) as **stable**, **increasing**, **decreasing**, **uncertain** (if some data are available but is not enough to accurately determine direction) or **unknown** (no data available). It is possible to report trend magnitude as a percentage but it is an optional field and the same applies for long-term trends (over four reporting cycles - 24 years or period as close as possible). It is also required to assess FRP, the population in a given biogeographical region needed to ensure the long-term viability of the species. The two main methods to set FRP are model-based (e.g., population viability analysis) or reference-based (e.g., historical baseline) depending on data availability and quality but must be at least the size of the population when the Directive entered into force. However, as in many cases it is not possible to estimate a value, it is possible to report it as 'greater than' (>), 'much greater than' (>>), 'lower than' (<) or approximately equal to (\approx) the current value (DG ENV, 2017).

⁵⁴ Favourable Reference Values are not mentioned in the Habitats Directive itself, as thresholds are not mentioned in the Marine Strategy Framework Directive.



To assess **range**, as for population size, it is required to report **trend direction** over two reporting cycles as **stable, increasing, decreasing, uncertain** or **unknown** and possible (but not compulsory) to report trend magnitude and long-term trends. It is also required to report the FRR, the range needed for the long-term survival of the specie, but, as for population size, according to the HB reporting guidelines (DG ENV, 2017) it is recognised that this value may be difficult to estimate and therefore it is possible, as an alternative, to report whether, according to the available data and knowledge, FRR is 'approximately equal to' (\approx), 'greater than' ($>$) or 'much greater than' ($>>$) than the current value. Both the reported trend and FRR are needed to assess this parameter (**Table 20**).

According to the EEA database from Article 17 reports (for the period 2007-2012) real values of FRR and FRP were only reported for 2% and 5% of species respectively. To address this, a study was commissioned by the COM. According to the delivered report, (Bijlsma et al. 2019), expert opinion has been a main basis for setting FRV or at least included at some stage, while population viability analysis (PVA), and the concept of minimum viable population (MVP), are used to a much lesser extent. Setting FRV will be subject to data availability and knowledge (whether data on current and historical distribution and ecology is available). If data are not available, current values can be assumed for common and widespread species. If data are available and no negative trends have been reported nor problems can be tackled by increasing population size, current values can also be assumed to represent FRV. Otherwise, FRV should be determined (Bijlsma et al., 2019). Setting FRV for non-reproductive populations requires different approaches and methods from reproductive populations.

The report has a dedicated chapter to selected groups of species, including cetaceans, in which it is suggested that FRV are set only for 15 species, those considered common or regular in Europe⁵⁵. For FRP, the report suggests to use genetics as an indicator of population health and decline for species with little past information on population parameters. Genetic analysis using RAD (restricted site associated DNA) sequencing allows to investigate genetic variability and provide measures of effective population size to understand the extent to which present day population have experienced contraction in size and loss of diversity. To assess the characteristics of a FRP, measures of life history parameters (age structure, age at sexual maturity, pregnancy rates and calving intervals) may also be compared over time. While PVA is recommended too, it is noted that such analyses are few for cetacean species due to lack of input data. For FRR, historic ranges are not known for most species although there is evidence that populations of bottlenose dolphins have declined in a number of coastal estuaries and semi-enclosed bays around Europe, and that harbour porpoises have experienced declines in several parts of Europe in the 1960s and 1990s (Bijlsma et al., 2019). Present range and habitat modelling are

⁵⁵ *Delphinus delphis*, *Grampus griseus*, *Phocoena phocoena*, *Stenella coeruleoalba*, *Tursiops truncatus*, *Globicephala melas*, *Physeter macrocephalus*, *Ziphius cavirostris*, *Balaenoptera acutorostrata*, *Balaenoptera physalus*, *Orcinus orca*, *Megaptera novaeangliae*, *Hyperoodon ampullatus*, *Lagenorhynchus acutus*, *Lagenorhynchus albirostris*.

suggested to better assess FRR as well as occupancy particularly for those species where robust estimates of population sizes and trends are not available.

For the parameter **habitat of the species** the trend direction must be reported. As both area and quality are to be considered, the trend is to be reported as: **stable** if both area and quality are stable⁵⁶; **increasing** if one or both trends are increasing or stable⁵⁷; **decreasing** if one or both trends are decreasing⁵⁸; **unknown** if at least one trend is unknown⁵⁹. It is not required to set assessment values for this parameter (Palialexis et al., 2019). A decision-tree has also been suggested to facilitate the assessment (**Figure 27**).

In **Table 21**, the assessments under MSFD Article 8 (2018) in the ABI subregion, and under HD Article 17 (2019) in the ATL by PT, ES and FR, are shown for the harbour porpoise, common dolphin, bottlenose dolphin and fin whale, to illustrate how assessment results between the Directives may be different given the differences in the underlying assessments methodologies.

International Union for Conservation of Nature

The quantitative values presented in IUCN criteria to distinguish between the different categories (critically endangered, endangered, vulnerable and near threatened) are set at what are generally judged to be appropriate levels, even if no formal justification for the values exists (IUCN, 2012). These values are somehow equivalent to the FRV of the HD and the TV of the MSFD but meant to be applicable more broadly with different values for more widely distributed and larger populations and for small (criterion C) and very small or restricted (criterion D) populations (**Table 22**).

⁵⁶ Area stable and Quality stable.

⁵⁷ Area increasing and Quality increasing *or* Area increasing and Quality stable *or* Area stable and Quality increasing.

⁵⁸ Area decreasing and Quality decreasing *or* Area decreasing and Quality stable *or* Area decreasing and Quality unknown *or* Area stable and Quality decreasing *or* Area unknown and Quality decreasing.

⁵⁹ Area unknown and Quality unknown *or* Area unknown and Quality increasing *or* Area unknown and Quality stable *or* Area increasing and Quality unknown *or* Area increasing and Quality decreasing *or* Area decreasing and Quality increasing.

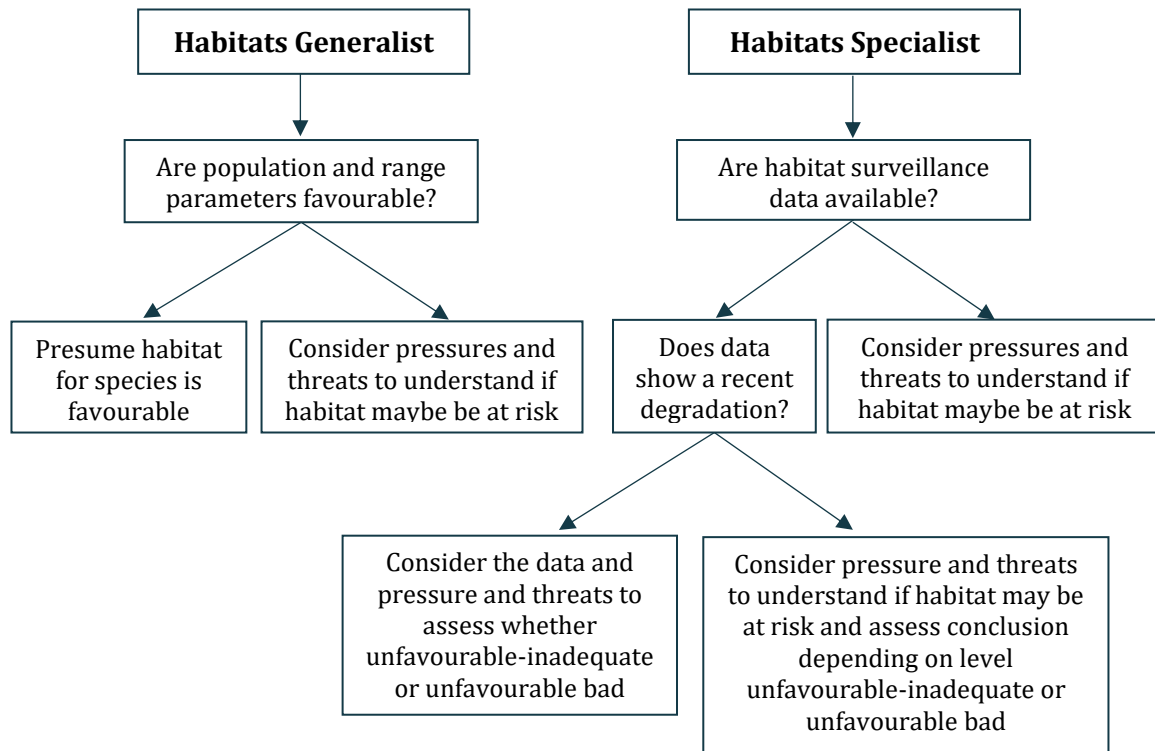


Figure 27 - Decision tree for the assessment of Habitats Directive parameter 'habitat for the species' (adapted from Palialexis et al. 2019).

Table 20 - Assessment methodologies of OSPAR and Habitats Directive parameters.

Criteria	Assessment methodology		
		OSPAR	Habitats Directive
D1C1	M6-Marine mammal bycatch	Model-based assessment: modified Potential Biological Removal (mPBR) and a Removals Limit Algorithm (RLA). For the assessment units relevant for the Bay of Biscay and Iberian Coast the method applied is the mPBR	-
D1C2	M4 - Abundance and Distribution of Cetaceans at the relevant spatio-temporal scale of cetaceans regularly present	Trend assessment: no absolute decrease of >30% and a rate of decrease no greater than 30% over three generations. Species-specific thresholds are converted to an annual scale (i.e., x% change per year instead of generation times ⁶⁰).	Population size not lower than the Favourable Reference Population (FRP) determined by MS AND reproduction, mortality and age structure not deviating from normal (<i>if data available</i>)
	M4- Abundance and Distribution of killer whales (OSPAR 2017 IA)	(no assessment)	
D1C3	-	-	-
D1C4	M4- Abundance and Distribution of Cetaceans at the relevant spatio-temporal scale of cetaceans regularly present	(no assessment) <i>an analysis of changes in distribution for the most common cetacean species from collated survey datasets (2005-2020) was carried out for QSR 2023 using Density Surface Models</i>	Population range is stable (loss and expansion in balance) or increasing AND not smaller than the Favourable Reference Range . No decline means no loss of range (loss of more than 1 % per year and any surface area below favourable reference range represents decline)
	M4- Abundance and Distribution of killer whales	(no assessment)	
D1C5	<i>Impulsive noise risk of impact</i>	<i>no methodology yet defined</i>	Area of habitat is sufficiently large (and stable or increasing) AND habitat quality is suitable for the long-term survival of the species
	<i>Blubber ΣPCB and other persistent chemicals in cetaceans species</i>	<i>no methodology yet defined</i>	

⁶⁰ Generation times for cetacean species were taken from Taylor et al. (2007) and updated with the best available evidence by either OMMEG or WGMME. Assessment values per species as follows: minke whale: -0.5; fin whale: -0.5; sperm whale: -0.4; long-finned pilot whale: -0.5; Risso's dolphin: -0.6; beaked whales: NA; killer whale: -0.5; bottlenose dolphin: -0.5; striped dolphin: -0.5; white-sided dolphin: -0.7; white-beaked dolphin: -0.7; common dolphin: -0.9; harbour porpoise: -1.6.

Table 21 - Marine Strategy Framework Directive (MSFD) 2018 Article 8 D1 criteria assessments and Habitats Directive 2019 Article 17 conservation status parameters assessments in the Bay of Biscay and Iberian Coast by Portugal, Spain and France for the harbour porpoise, common dolphin, bottlenose dolphin and fin whale [(1) assessments in the ABIES-SD-NOR; *: assessment for the coastal management unit in the northern and north-western platform waters].

Species	Criteria	Portugal		Spain		France	
		Marine Strategy Framework Directive	Habitats Directive	Marine Strategy Framework Directive (1)	Habitats Directive	Marine Strategy Framework Directive	Habitats Directive
Harbour porpoise	D1C1	Bad	-	Bad	-	Bad	-
	D1C2	Bad	Bad	unknown	Unfavourable-Inadequade	unknown	unknown
	D1C3	not assessed	-	Bad	-	not assessed	-
	D1C4	Favourable	Favourable	unknown	Unfavourable-Inadequade	unknown	Favourable
	D1C5	Bad	Bad	Bad	unknown	not assessed	unknown
Common dolphin*	D1C1	Bad	-	Bad	-	Bad	-
	D1C2	Bad	Favourable	Favourable	unknown	Favourable	unknown
	D1C3	not assessed	-	unknown	-	Favourable	-
	D1C4	Favourable	Favourable	Favourable	unknown	Favourable	Favourable
	D1C5	Favourable	Unfavourable-Inadequade	unknown	unknown	not assessed	unknown
Bottlenose dolphin	D1C1	Bad	-	Bad*	-	not assessed	-
	D1C2	Bad	unknown	unknown*	unknown	Favourable	Unfavourable-Inadequade
	D1C3	not assessed	-	unknown*	-	not assessed	-
	D1C4	Favourable	Favourable	Favourable*	unknown	Favourable	Favourable
	D1C5	Favourable	Favourable	unknown*	unknown	not assessed	unknown
Fin whale	D1C1	Favourable	-	unknown	-	not assessed	-
	D1C2	Favourable	Favourable	unknown	unknown	unknown	unknown
	D1C3	not assessed	-	unknown	-	not assessed	-
	D1C4	Favourable	Favourable	Favourable	unknown	Favourable	Favourable
	D1C5	Favourable	unknown	unknown	unknown	not assessed	unknown

Table 22 - IUCN Red List Categories and Criteria (n.a. not applicable; *whichever is longer) (IUCN, 2019; Palealexis, 2019).

A: Population size reduction (measured over the length of 10 years or 3 generations) based on any of A1 to A4			
	Critically Endangered	Endangered	Vulnerable
A1.	≥90%	≥70%	≥50%
A2, A3, A4	≥80%	≥50%	≥30%
A1. Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible AND understood AND ceased	Based on any of the following: <ul style="list-style-type: none"> ▪ Direct observation (except A3) ▪ Index of abundance ▪ Decline in area of occupancy, extent of occurrence or quality of habitat ▪ Actual or potential levels of exploitation ▪ Effects of introduced taxa, pathogens, pollutants, competitors, parasites or hybridization 		
A2. Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction may have not ceased or may not be understood or may not be reversible			
A3. Population reduction projected, inferred or suspected to be met in the future (up to 100 years)			
A4. An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to 100 years) and where the cause of reduction may not be understood OR may not be reversible			
B: Geographic range in the form of either B1 (extent of occurrence) and/or B2 (area of occupancy)			
	Critically Endangered	Endangered	Vulnerable
B1. Extent of occurrence	<100 km ²	<5 000 km ²	<20 000 km ²
B2. Area of occupancy	<10 km ²	<500 km ²	<2 000 km ²
And at least two of a-c			
a. Severely fragmented or number of known locations is:	1	2-5	6-10
b. Continuing decline in any of the following: i) extent of occurrence; ii) area of occupancy; iii) area, extent or quality; iv) number of locations or subpopulation; v) number of mature individuals			
c. Extreme fluctuations in any of the following: i) extent of occurrence; ii) area of occupancy; iii) number of locations or subpopulation; iv) number of mature individuals			
C: Small population size and decline			
	Critically Endangered	Endangered	Vulnerable
Number of mature individuals	<250	<2 500	<10 000
And either C1 or C2			
C1. An observed, estimated or projected continuing decline	25% in 3 years or 1 generation	20% in 5 years or 2 generation	10% in 10 years or 3 generation
C2. An observed, estimated or projected continuing decline and one of the following:			
a. i) Number of mature individuals in largest subpopulation	≤50	≤250	≤1 000
ii) proportion of population in one subpopulation	90-100%	95-100%	100%
b. Extreme fluctuations in number of mature individuals			
D: Very small or restricted population			
	Critically Endangered	Endangered	Vulnerable
D1. Number of individuals	<50	<250	<1 000
D2. Restricted area of occupancy or number of locations with a plausible threat to drive taxon to CR or EN	n.a.	n.a.	<20 km ² or number of locations 1-5
E: Quantitative analysis			
	Critically Endangered	Endangered	Vulnerable
Indicating probability of extinction in the wild to be:	≥50% in 10 years or 3 generations *	≥20% in 20 years or 5 generations *	≥10% in 100 years

Defining GES (integrating parameters, criteria and species)

The JRC Technical Report on *Integration methods for Marine Strategy Framework Directive biodiversity assessment* focuses on bird and fish groups of species reasoning that, according to the GES Decision, marine mammals and reptiles are covered by the integration method proposed under the HD (see **Table 23** below). The HD, however, does not require integration to species group level and therefore an integration method, at this level still needs to be agreed upon.

Available integration methods (ICES, 2018a, 2018b and Dierschke et al., 2021) include:

1. **One out, all out (OOAO):** all assessments (parameters, criteria or species), must be in good status for the species to be assessed in ‘Good’ status, and the species group to achieve GES. All assessments have equal weight, hence no differentiation between parameters (to assess criteria), primary and secondary criteria (to assess species), or species (to assess a group of species) occurs, but no early warnings for adverse effects are missed. The WKDIVAGG noted that the OOAO rule should not be applied to integrate parameters or criteria for which assessment are not yet well developed or if a large number of parameters are considered, as measurement errors and uncertainties (including on TV), may affect in an unreasonable way the assessment outcomes, and, accordingly that it could provide an incentive to limit the number of criteria measured and therefore was not recommended for integrating criteria to species level. For the integration of species, it may be appropriate if there are few species and all are considered to be well monitored.
2. **Proportional method:** a percentage or proportion (set by expert judgement or probabilistic methods) of assessments must be in good status for the integrated assessment to be considered in good status and GES to be achieved. It allows for natural variability and the possibility that some assessments are not in good status. It is appropriate when a large number of parameters (or species) are considered and lowers the possibility of “false alarms”, particularly when there is uncertainty in parameters estimates, including on TV, and around pressure-state relationships, natural variability or climate change may be driving changes in parameters.
3. **Averages:** average across assessments providing a direct measure of distance to target. There is no differentiation between primary and secondary criteria and masking of parameters in bad status may occur. Averages allow for the possibility of a decrease in one assessment to be compensated by an increase in another but then this method should only be used if it is considered appropriate that the good status of one or more of the selected parameters can compensate poor status of others and all measurements have similar errors. Also, if integrating across parameters, it will be important to ensure the comparability of scales and therefore normalization may be required. Not considered appropriate to integrate species to species group.



4. **Weighted averages:** different weights are applied to the assessments according to perceived importance, the area covered, precision and accuracy, and the results averaged. An advantage is that uncertainties may be directly taken into account. When integrating species to groups of species, species with a larger amount or more certain data may receive a higher weighting but on the other hand vulnerable species for which less information exists become less important despite concerns. It depends, however, on how weights are applied, but no scientific advice is readily available.
5. **Conditional rule:** different combinations of assessments are allowed. Scenarios “If...then...” may be developed according to the parameters considered, including, parameters that are not assessed. The scenarios may weight criteria differently but no average is estimated to assess species environmental status. This approach is tailor-made to reflect relevance and number of elements.

When selecting and applying an integration method, WKDIVAGG noted that due consideration should be given to avoid both false and missed alarms (particularly in case of low confidence, high measurement error), the importance of patterns, and data-poor species. To address these issues, it was considered that a combination of OOA, weighted averaging and probabilistic methods seemed most appropriate for integration within D1 (ICES, 2018a). CeTAMBICion experts have however highlighted that the applicability of other methods than OOA still lacks scientific validation.

Integrating criteria to species

The GES Decision requires MS, to “assess the status of each species individually, on the basis of the criteria selected for use, and that these shall be used to express the extent to which GES has been achieved for each species group”. It also states that the overall status of species covered by the HD shall be derived using the method provided under that Directive. Considering the differences between the two Directives (namely on criteria and potentially underlying parameters) it is worth exploring if the integration method proposed under the HD is appropriate for the MSFD. According to the HD, species may be assessed as: ‘favourable’, ‘unfavourable-inadequate’, ‘unfavourable-bad’ and ‘unknown’ based on the assessment of all HD criteria, while in the MSFD species are assessed as in GES or not (or unknown) on the basis of the criteria selected for use.

The HD integration method follows the OOA rule in accordance with HD Article 1(i) which establishes that the conservation status of a species will be taken as ‘favourable’ when:

- **population dynamics** data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats; **and**
- the **natural range** of the species is neither being reduced nor is likely to be reduced for the foreseeable future; **and**
- there is, and will probably continue to be, a sufficiently large **habitat** to maintain its populations on a long-term basis.

The HD evaluation matrix, however, also sets conditions regarding the “Favourable” status assessments, not allowing that a species is assessed favourably if more than one criterion is not assessed (i.e., assessed as ‘unknown’). In the WKDIVAGG report (ICES 2018a) this difference in the treatment of missing information between the Directives is well acknowledged. **Table 23** shows how the rules to assess conservation status in the HD might translate to the MSFD, highlighting that the criteria considered in the MSFD may not be the same as in the HD. Such difference means that, as a result, conclusions on species status will likely be different, particularly, due to the possibility of not taking in consideration some criteria in the MSFD (lowering the chances of an ‘unknown’ status outcome), but also the effect of directly considering bycatch.

Table 23 – Integration method under the Habitats Directive and its translation to MSFD according to MSFD terminology and GES Decision requirements.

		Status			
		'Favourable'	'Unfavourable-inadequate'	'Unfavourable-bad'	Unknown
HD		all criteria (population, range, habitat, future prospects) are 'favourable' or three 'favourable' and one 'unknown'	one or more 'unfavourable-inadequate' criteria but no 'unfavourable-bad' criteria	one or more criteria 'unfavourable-bad'	two or more unknown combined with 'favourable' criteria or all 'unknown'
MSFD		'Good'	'Not good'		Unknown
		all selected criteria are in 'Good' or 'Good based on low risk'. No or only one criteria 'unknown'	one or more selected criteria 'Not good'		two or more selected criteria are 'Unknown' combined with 'Good' criteria or all 'unknown'

Table 24 shows how the last species status assessments under MSFD (in 2018) reported by PT, ES and FR for the ABI subregion compare to the species assessments under the HD for the ATL region by these MS in 2019, and at EU biogeographical level⁶¹ (EEA, 2020).

⁶¹ MS and EU level assessments available at: <https://nature-art17.eionet.europa.eu/article17/>

Table 24 - Marine Strategy Framework Directive 2018 Article 8 assessments and Habitats Directive 2019 Article 17 assessments by MS and at EU level for the Marine Atlantic Region (MATL), of the species selected to update MSFD Article 8 in the Bay of Biscay and Iberian Coast waters of Portugal, Spain (NOR: northern subdivision; SUD: southern subdivision) and France [n.a.- not applicable (species or unit not considered for the MSFD assessment in the Member State)].

Species	Portugal		Spain		France		MATL	
	Marine Strategy Framework Directive	Habitats Directive	Marine Strategy Framework Directive		Habitats Directive	Marine Strategy Framework Directive	Habitats Directive	Habitats Directive
			NOR	SUD				
Common dolphin	Bad	Unfavourable-Inadequate	Bad	Unknown	Unknown	Bad	Unfavourable-Inadequate	Unknown
Harbour porpoise	Bad	Unfavourable-Bad	Bad	n.a.	Unfavourable-Inadequate	Bad	Unfavourable-Inadequate	Favourable
Striped dolphin	Good	Unknown	n.a.	n.a.	Unknown	Good	Unknown	Unknown
Bottlenose dolphin Atlantic unit	Bad	Unknown	n.a.	n.a.	Favourable	Good	Unfavourable-Inadequate	Unfavourable-Inadequate ⁶²
Bottlenose dolphin (UG2-TT)	n.a.		Unknown	n.a.	n.a.	n.a.		n.a.
Bottlenose dolphin (UG3-TT)	n.a.		Bad	n.a.	n.a.	n.a.		n.a.
Bottlenose dolphin (UG4-TT)	n.a.		n.a.	Bad	n.a.	n.a.		n.a.
Long-finned pilot whale	<i>Not assessed</i>	Unknown	Bad	n.a.	Unknown	Good	Unknown	Unknown
Risso's dolphin	<i>Not assessed</i>	Unknown	n.a.	n.a.	Unknown	Good	Unknown	Unknown
Pygmy sperm whale	<i>Not assessed</i>	n.a.	n.a.	n.a.	Unknown	n.a.	Unknown	Unknown
Killer whale	n.a.	Unknown	n.a.	Bad	Favourable	n.a.	Unknown	Unknown
Cuvier's beaked whale	<i>Not assessed</i>	Unknown	Unknown	n.a.	Unknown	n.a.	Unknown	Unknown
Minke whale	Bad	Unfavourable-Inadequate	n.a.	n.a.	Unknown	Good	Unknown	Unknown
Fin whale	Good	Unknown	Unknown	Unknown	Unknown	Good	Unknown	Unknown

⁶² The Atlantic assessment of the bottlenose dolphins in European waters does not take into account the small localised populations (which status is lost in the overall assessment of the species) and a more dispersed wider-ranging offshore group (Bailly et al, 2015)

It is worth noting that the report on the State of Nature in the EU 2020 (as in 2015) highlights that all marine regions, except the Marine Baltic region, have high percentages of unknown assessments, reflecting the general lack of marine population data.

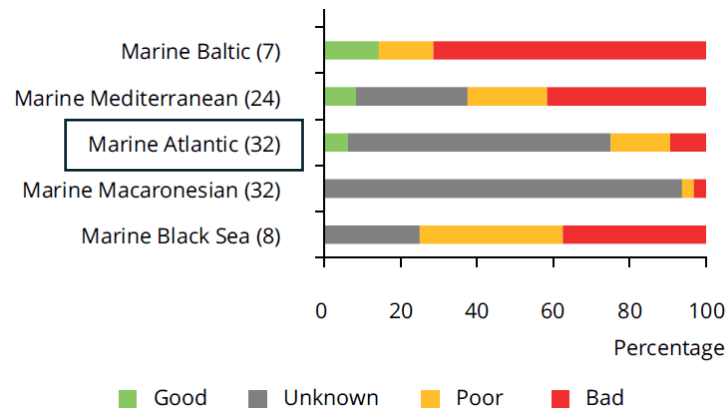


Figure 28 - Conservation status of species under the Habitats Directive, for each marine region at EU level. Statistics are based on number of EU species assessments. The number of assessments per region is indicated in parentheses. (source: EEA, 2020)

The assessments of species at EU biogeographical level are carried out by experts from the EEA and the European Topic Centre on Biological Diversity (ETC/BD) either by i) directly using MS reported conclusions (if species occurs in one MS only or MS within a region reported the same assessment); or ii) aggregating data from MS reports for each parameter; or iii) calculating the weighted average of the conservation status of individual parameters to reflect the status and proportion of the species present in each MS and marine region; or iv) calculating the weighted average of MS overall conservation status assessments (if species occurs in two or more MS in a region with varying assessments). For methods ii) and iii), the four parameters are assessed individually, and then combined to provide a regional assessment using the evaluation matrix (EEA, 2020 and EEA-ETC/BD). Where weighting is required, the final classification for each region is based on thresholds applied in the same way for all the parameters (**Table 25**).

Table 25 - Criteria for classification of weighted parameters at EU biogeographical level (source: adapted from Röschel et al. 2020).

	Conservation Status
proportion of a habitat/non-bird species reported as 'bad' is greater than or equal to 25%	Unfavourable-bad (Bad)
proportion of a habitat/non-bird species reported as 'good' is greater than or equal to 75%	Favourable (Good)
proportion of a habitat/non-bird species reported as 'unknown' is greater than or equal to 25%	Unknown
any other combination applies	Unfavourable-inadequate (Poor)

In Annex 2, a summary of the Marine Process, in the framework of the Natura 2000 Biogeographical Process, is provided for further consideration in WP2.

IUCN red lists follow a slightly different approach, as IUCN criteria were developed to provide an assessment of the level of risk based on any of the criteria (**A**: Reduction in population size; **B**: Geographic range in the form of either B1 (extent of occurrence) and/or B2 (area of occupancy); **C**: Small population size and decline; **D**: Very small and restricted population or **E**: Quantitative analysis)⁶³. This major difference between the IUCN approach and the HD and MSFD, results from the fact that IUCN red lists are based on a volunteer expert effort, which main goal is to assess extinction risk levels considering the available data. IUCN criteria, therefore, explicitly foresee a number of situations, which are known to be of risk, and is less strict regarding number of criteria to be considered. Still, in IUCN as well, if either population size, decline, or range meet the values agreed for each threatened category the species is directly assessed accordingly.

Integrating species to groups of species

To integrate species assessments to assess each group of species, the most applied method, and so far, considered the most appropriate, is the OOA method given the usual low number of species numbers in each group (five or less). A proportional method may be appropriate in case a larger number of species is considered (ICES, 2018a). While this level of integration is required by the GES Decision, WKDIVAGG highlights the risk for false alarms under the OOA method, resulting from the uncertainty of assessments, and for the risk of masking problems at the species level if the proportional method is applied. To improve the communication of results at this level, it was noted the importance of at least showing the proportion of species in bad and good status in both methods.

The integration of groups of species to ecosystem component (in this case MM), although not required by the GES Decision, has been suggested in the draft Article 8 MSFD Assessment Guidance and considered in WKDIVAGG. MS, such as FR and Germany, have communicated results at that level by applying the 'OOA' method reasoning it conveys clearly and succinctly the results of the assessments. However, when integrating species into groups of species, the importance of identifying the groups and number of species in good and bad status has been highlighted for a clearer understanding of the results.

⁶³ <http://www.iucnredlist.org/documents/RedListGuidelines.pdf>

5 Main Conclusions and Next Steps

The review undertaken has allowed to identify aspects concerning the assessment and conservation of cetaceans that require further coordination between MS in the ABI subregion to improve the consistency and coherence of MSFD implementation in the subregion. Such analysis, together with the review of adopted approaches and ongoing discussions at different *fora*, aims to support discussions in CetAMBICion, namely in WP2, WP3 and WP4, under which the following may be considered:

Elements and assessment scales: considering the reference lists included in the MSFD Article 8 Guidance, as well as the assessment units agreed at OSPAR, the following species need to be considered in the ABI subregion: common dolphin, harbour porpoise (Iberian Peninsula and Celtic seas populations), striped dolphin, bottlenose dolphin (coastal and offshore units), killer whale, long-finned pilot whale, Risso's dolphin, Cuvier's beaked whale, sperm whale, minke whale and fin whale. Of these 11 species in total, five species were reported by the three MS: three small toothed cetacean species (common dolphin, harbour porpoise and bottlenose dolphin), one deep-diving toothed cetacean species (long-finned pilot whale) and one baleen whale (fin whale). On the other hand, none of the MS reported on sperm whale. PT included all the remaining species, except killer whale. FR did not include killer whale and Cuvier's beaked whale, and ES did not include striped dolphin, Risso's dolphin and minke whale. Under WP 2, besides the list of species, it must be discussed if different management units should be considered and reported separately. That seems to be the case, at least for bottlenose dolphin and harbour porpoise. It is clear, however, that the populations of most species, including small toothed cetaceans, span beyond the ABI subregion, which raises the issue of assessing this group of cetaceans at the subregional level as required by the GES Decision. The possibility of assessing certain parameters at a subregional level may be discussed to address this issue. In any case, for the 2018 update of Article 8, all three MS considered national data only. The use of OSPAR assessments for national reporting, to allow assessments at a more ecologically relevant scale, may be discussed, but OMMEG, at the time of this analysis has already indicated that most species cannot yet be assessed at the OSPAR scale.

Some species which may not be appropriate to assess GES under D1, namely, *Stenella frontalis* and *Globicephala macrorhynchus*, could be considered to assess climate change effects in the distribution of species in the future.

Criteria and parameters: it is clear that **population size** (D1C2) is considered a key criterion to assess species status in all conservation policies but depending on the species it may be important to discuss for which absolute estimates based on distance sampling data are feasible and for which alternative data will need to be considered to estimate relative abundance or density. From the list of species reported, FR could not estimate abundance for harbour porpoise and fin whale, PT for long-finned pilot whale, Risso's dolphin, Cuvier beaked whale and pygmy sperm whale and ES only provided an abundance assessment for the common dolphin. **Distribution** (D1C4) too, is considered a key parameter under the

MSFD, the HD, OSPAR and IUCN and it was the most assessed criterion across species and MS in the ABI subregion. FR assessed this criterion for all the species reported, except for harbour porpoise. ES too provided an assessment for all species in its northern subdivision, except, as FR, for harbour porpoise, but in its southern subdivision no assessment status could be provided for any of the species reported. PT also assessed this criterion for most species, again with exceptions falling mostly under the deep-diving toothed group of species, namely, Cuvier's beaked whale and pigmy sperm whale, but also long-finned pilot whale. It must be noted however that MS relied on different assessment methodologies. To assess species distribution, the appropriateness of assessing range as suggested by the HD or instead occupancy or other metric must be discussed at the species level. The feasibility and relevance of assessing this criterion in the ABI subregion may also not be appropriate for certain species. In Macaronesia, under the MISTIC SEAS projects, it was agreed that criterion D1C4 would be difficult to monitor and assess changes even for coastal cetacean populations as studies have shown that such populations range widely and move between the archipelagos (Saavedra, 2018). At the moment it remains unclear how to assess the **habitat of the species** (D1C5) but parameters related to habitat quality on contaminants, noise, prey availability and other known pressures to each of the species considered, as proposed in ES Article 8 update report, could be considered and promote integrated assessments across descriptors. For the above mentioned criteria (abundance, distribution and habitat) the direct use of HD assessments for the equivalent criteria (abundance, range and habitat) for MSFD purposes or vice-versa must be discussed and whether such approach meets each directive requirements. Finally, while the assessment of D1C1 will be specifically addressed under WP3, parameters related with the **demographic characteristics** (D1C3) of species, such as age distribution are important to assess D1C1, and should therefore be considered particularly for the species at risk of bycatch, which are thus at risk from not achieving good status.

Integration criteria to assess species: to apply the HD integration method to assess species (while respecting the possibility in the MSFD to not assess certain criteria if justified) it is important to agree on which criteria are appropriate and relevant for each species. If OSPAR assessments are to be considered together with MS assessments, it must be, however, discussed how to integrate potentially conflicting results. Given the lack of guidance on the applicability of integration methods other than OOA0, these have not been applied, but its use has not been identified as a potential deterrent of considering or assessing a wider number of parameters. For example, the importance to assess certain pressures, such as contaminants in cetaceans, is broadly agreed upon, but effects at population level are largely unknown. How to integrate such information on assessments without raising false alarms on entire groups of species, needs to be discussed and considered carefully, particularly in the case the OOA0 method is used across all levels.

Environmental Targets: specific and quantifiable targets were established for bycatch, although with different objectives and timeframes. Discrepancies in targets definitions

(quantitative objectives, timeframes) may be clarified within discussions on common assessment methodologies and TV.

Monitoring programmes: a similar approach is proposed by the three MS regarding monitoring parameters and methodologies. In the future, data on MSFD criteria (D1C1, D2C2 and D1C4), namely to assess OSPAR common indicators (M4 and M6) is expected to be available, depending on the implementation success of each of the MS MoP. Harmonization of frequency for aerial campaigns should be considered. Since no programme is foreseen for D1C5 (species habitats), the contribution/relevance of this criterion for Article 8 in ABI may be pertinent to discuss in the following WP.

Programmes of measures: only FR submitted the PoM for the 2nd cycle, although common pressures have been prioritized (1st and 2nd cycles). For FR measures on bycatch and disturbance were included. The ET established by PT and ES, for the 2nd cycle, anticipates subsequent measures to address bycatch, eventually more concern-oriented considering, if time-feasible, the results from WP3 and 4 of CetAMBICION.

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7 Annexes

Annex 1: Environmental Targets for Marine Mammals in the Bay of Biscay and Iberian Coast subregion

Table A. 1 - MSFD 2nd cycle environmental targets for marine mammals established by Portugal.

Target code	Target	Feature	Timescale	Associated parameter (from e-reports)	Progress assessment
ABIPT-T2-D1Cont	Improve the conservation status of the Iberian population of <i>Phocoena phocoena</i> until 2030	Small toothed cetaceans	12/2030	Distribution range (DIST-R)	Develop an action plan targeted for <i>Phocoena phocoena</i>
ABIPT-T3-D1Cont	Increase the knowledge available on the biology of species, abundance and population structure, habitat use and distribution at the level of the Bay of Biscay and the Iberian Coast subregion, with the purpose of elaborating conservation measures, until 2024	All mammals (Priority species - <i>Delphinus delphis</i> ; <i>Phocoena phocoena</i> ; <i>Tursiops truncatus</i> ; <i>Balaenoptera acutorostrata</i>)	10/2024	Other (acquired knowledge)	I. Number of projects implemented at the subregion level II. Number of census III. Percentage of stranded animals analysed for the entire coast
ABIPT-T1-D1Cont	Reduce cetacean mortality from bycatch by 10% until 2024 for <i>Delphinus delphis</i> , <i>Tursiops truncatus</i> and <i>Balaenoptera acutorostrata</i>	Small toothed cetaceans Baleen whales	11/2024	Mortality rate (incl. from fishing - F)	Execution indicator - Mortality rate from bycatch (D1C1)
ABIPT-T1-D1Cont_Phocoenaphocoena	Reduce cetacean mortality from bycatch by 15% until 2024 for <i>Phocoena phocoena</i>	Small toothed cetaceans	12/2024	Mortality rate (incl. from fishing - F)	Execution indicator - Mortality rate from bycatch (D1C1)

Table A. 2 - MSFD 2nd cycle environmental targets for marine mammals established by Spain

Target code	Target	Feature	Timescale	Associated parameter (from e-reports)	Progress assessment
A.N.3 & A.S.3 ⁶⁴	Maintain or restore the natural balance of the populations of key species for the ecosystem	D1,D3,D4	12/2024	-	I. Trends in the populations of the species used as evaluation elements, corresponding to various trophic levels II. Indicators used for the evaluation of food webs
A.N.6 & A.S.6	Improve coordination of the monitoring programmes of species at the international level, especially for the species with wide geographical distribution (for example, fish, cetaceans and reptiles)	D1,D3,D4	12/2024	-	Number of international initiatives and working groups in which ES participates
A.N.7 & A.S.7	Improve the coordination and standardization of habitat and species monitoring programmes at the national level	D1 and D4	12/2024	-	I. Existence of common methodologies/guides/protocols. II. Number of meetings held to update the monitoring programmes III. Existence of a common access database for the experts responsible for the monitoring programmes
A.N.8 & A.S.8	Improve the coordination of monitoring and response to events of bycatch and strandings, including monitoring the accidental capture of turtles, mammals and seabirds on fishing boats	D1 and D4	12/2024	-	I. Approval and application of coordination systems at the national level (protocols, common data collection templates, common methodologies, common database) to address the monitoring and response to these events. II. Percentage of the fleet that collaborates in the monitoring of accidental capture (logbooks, specific actions ...)

⁶⁴ The N and S in the target code refers to the northern or the southern subdivision. ES has similar targets for both subdivisions, whenever there is a difference a distinction is made.

Target code	Target	Feature	Timescale	Associated parameter (from e-reports)	Progress assessment
C.N.3 & C.S.3	Reduce the main causes of mortality and decline in populations of non-commercial species groups at the top of the food chain (marine mammals, reptiles, seabirds, pelagic and demersal elasmobranchs)	D1 and D4	12/2024	-	<p>I. Mortality of populations of species groups at the top of the food chain</p> <p>II. Number of initiatives (legislative, technical and operational) to reduce the main anthropogenic causes of mortality in populations of groups of species at the top of the food chain.</p> <p>III. Percentage of species or groups of species included in specific regulations that address causes of mortality identified in the initial assessment.</p> <p>IV. Mortality due to accidental captures of indicator species of birds, reptiles, mammals and elasmobranchs, especially in the species evaluated as “non-GES” in criterion D1C1</p> <p>V. Mortality from other causes identified as main cause in the DMNOR: entanglement in nets and entanglement in fixing ropes (turtles), introduced predators (birds), contamination (birds and cetaceans) and overfishing (elasmobranchs)</p> <p>&</p> <p>Mortality from other causes identified as main cause in the DMSUD: entanglement in nets and accidental capture (turtles), introduced predators (birds), contamination and collisions (birds and cetaceans) and overfishing (elasmobranchs)</p>
C.N.8 & C.S.8	Promote, through the Maritime Spatial Plan in the North Atlantic Region for each subdivision, or other tools of spatial planning, that human activities are developed in a sustainable way and do not compromise the achievement of GES	All marine ecosystem elements	12/2024	-	Number of human activities contemplated in the MSP

Target code	Target	Feature	Timescale	Associated parameter (from e-reports)	Progress assessment
C.N.4 & C.S.4	Reduce disturbances to wildlife caused by touristic-recreational activities	D1, D4 and D6	12/2024	-	I. Number of eggs laid by potentially affected species (in the case of turtles and birds) II. Number of protection measures established/initiatives to reduce pressure on these populations
A.N.5 & A.S.5	Promote integration and study of marine species in regional, national and international lists of threatened species	D1,D4	202412		<ul style="list-style-type: none"> Number of marine species that are included/excluded from the lists and catalogs of threatened species, whose category is modified. Number of studied species.
A.N.6 & A.S.6	Improve the coordination of species tracking programmes at an international level, especially for species with wide geographic distribution (for example, fish, cetaceans and reptiles).	D1, D3, D4	202412		<ul style="list-style-type: none"> Number of international initiatives and work groups participated.
A.N.7 & A.S.7	Improve coordination and standardization at the national level of habitat and species monitoring programmes.	D1 and D4	202412		<ul style="list-style-type: none"> Existence of common methodologies/guides/protocols. Number of meetings held to update the Follow-up Programmes. Existence of a common access database for monitoring programmes
A.N.8 & A.S.8	Improve the coordination of tracking and response to accidental capture and drifting events, including the tracking of accidental capture of turtles, mammals and marine birds in fishing boats	D1 and D4	202412		Approval and application of coordination systems at national level (protocols, common data collection tables, common methodologies, common data base) to address the follow-up and response to these events. • Percentage of the fleet that collaborates in the tracking of accidental capture (fishing diaries, specific actions...)
A.N.10 & A.S.10	Ensuring compliance with regulations • Surveillance estimate in hours • Identified infractions vs. imposed sanctions • Human resources available for surveillance and materials available	All marine ecosystem elements	202412		Surveillance estimate in hours <ul style="list-style-type: none"> Infringements identified vs imposed sanctions Human resources available for surveillance and materials available.

Target code	Target	Feature	Timescale	Associated parameter (from e-reports)	Progress assessment
B.N.14 & B.S.14	Promote studies, initiatives and scientific projects on the impacts of the introduction of substances, resources and energy in the marine environment, in order to address the knowledge gaps detected in the Initial assessment and the following phases of the Marine Strategies.	All marine ecosystem elements	202412		<ul style="list-style-type: none"> • Knowledge gaps related to impacts produced by the introduction of substances, litter and energy in the marine medium, which are addressed by studies and scientific projects
B.N.15 & B.S.15	Integrate in decision-making and in the management of the marine environment the results and knowledge resultant from studies, initiatives and scientific projects on the impacts of the introduction of substances, litter and energy in marine waters.	All marine ecosystem elements	202412		<p>Criteria evaluated according to results obtained in scientific projects/studies.</p> <ul style="list-style-type: none"> • Objectives and management measures established taken into consideration results of scientific projects/studies.
C.N.6 & C.S.6	Ensuring social participation in the marine strategy through dissemination, awareness-raising, voluntary environmental education and involvement of interested sectors in the marine environment.	All marine ecosystem elements	202412		Number of social participation initiatives and evaluation of their results
C.N.7 & C.S.7	Achieve an adequate coordination of public administrations, institutions and sectors in the subdivision that develops work related to the marine environment, in order to avoid duplications and take advantage of synergies	All marine ecosystem elements	202412		<p>Number of coordination initiatives, projects, and meetings</p> <p>Number of subjects for which coordination initiatives are established</p>

Target code	Target	Feature	Timescale	Associated parameter (from e-reports)	Progress assessment
C.N.15 & C.S.15	Improving access to the information available on the marine environment, particularly regarding GES descriptors, pressures and impacts and the socio-economic aspects, as well as ensuring the quality of this information, both for public administrations and marine institutes, as for the general public	All marine ecosystem elements	202412		<ul style="list-style-type: none"> • Available platforms for accessing and exchanging information on marine ecosystem to facilitate management • Access channels available and quality of information on marine environment for general public • Number of publicly available metadata
C.N.16 & C.S.16	Assure that scientific studies and projects adress the knowledge gaps identified in the initial assessment on the effect of human activities on marine and coastal ecosystems	All marine ecosystem elements	202412		<ul style="list-style-type: none"> • Number of studies and scientific projects promoted by public administrations that address these matters. • Knowledge gaps addressed by scientific studies and projects.
C.N.17 & C.S.17	Improving knowledge regarding climate change effects in marine and coastal ecosystems, with a view to transversally integrating the variable of climate change in all phases of Marine Strategies	All marine ecosystem elements	202412		<ul style="list-style-type: none"> • Number of studies and scientific projects promoted by public administrations that address this issue • Number of follow-up indicators that address aspects of climate change • Percentage of phases of Marine Strategies that account for climate change
C.N.18 & C.S.18	Consider, in decision-making and in the management of the marine environment, the results and knowledge acquired through studies, initiatives and scientific projects on the effect of human activities on habitats, species, populations and communities	All marine ecosystem elements	202412		<ul style="list-style-type: none"> • Criteria for whose evaluation and follow-up have been used to estimate results of scientific projects/studies (considering the references in the documents) • Objectives and management measures designed used to report the results of scientific projects/studies

Table A. 3 - MSFD 2nd cycle environmental targets for marine mammals established by France.

Target code	Target	Feature	Timescale	Associated parameter (from e-reports)	Progress assessment
D01-MT-OE01	Limit anthropogenic disturbance of marine mammals	All mammals	12/2026	Other	Percentage of operators practicing whale, dolphin or seal watching activities, that have adhered to and comply with a good practice approach <u>Objective:</u> Upward trend
D01-MT-OE02	Reduce incidental captures of sea turtles and of marine mammals, in particular for small cetaceans	All mammals	12/2026	Mortality rate (incl. from fishing - F) ⁶⁵ & Abundance (number of individuals) ⁶⁶	I. Harbour porpoises and Common dolphins : Mortality rate (absolute mortality) by accidental capture and by species <u>Objective:</u> Decrease to less than 1% of the best population estimate (ASCOBANS 2000) for each species II. Other marine mammals : Apparent bycatch mortality rate by species (number of strandings observed with traces of accidental capture / total number of strandings) <u>Objective:</u> Decrease the apparent bysubcatch mortality rate for each species by one-third
D01-MT-OE03	Reduce collisions with sea turtles and marine mammals	All mammals	12/2026	Mortality rate (incl. from fishing - F)	Apparent mortality rate from collision of stranded sea turtles and marine mammals <u>Objective:</u> Downward trend
D11-OE01	Reduce the noise level linked to impulsive emissions with regards to the risks of disturbance and mortality of marine mammals	All mammals	12/2026	Other ⁶⁷ Extent ⁶⁸	I. Rate of projects that generate impulsive emissions that present a risk of disturbance and mortality to marine mammals (following the environmental assessment) that are implementing measures to reduce the acoustic impact <u>Objective:</u> 100% of projects authorized since the adoption of the MSFD II. Percentage of the subdivision with spatial influence of recorded events in the “strong” to “very strong” range <u>Objective:</u> Defined, concerted and adopted in the subdivision simultaneously with the MSP action plan

⁶⁵ Corresponds to the I. and II. Indicators of progress

⁶⁶ Corresponds to the III. Indicator of progress

⁶⁷ Corresponds to the I. Indicator of progress

⁶⁸ Corresponds to the II. Indicator of progress

Target code	Target	Feature	Timescale	Associated parameter (from e-reports)	Progress assessment
D11- OE02	Maintain or reduce the level of continuous noise produced by human activities, especially from marine traffic	All mammals	12/2026	Level of sound (continuous)	Low frequency anthropogenic noise in water (maximum level and spatial extent) (D11C2) <u>Objective:</u> Decrease (i.e., the spatial median of year-to-year differences in the maximum levels is zero or negative per subdivision)

Annex 2: Monitoring Programmes for Marine Mammals in the Bay of Biscay and Iberian Coast subregion

Table A. 4 - MSFD 2nd cycle monitoring programmes by Portugal, Spain and France comparative table.

Monitoring objective	Portugal		Spain		France	
	MoP	Frequency	MoP	Frequency	MoP	Frequency
Abundance	Dedicated aerial surveys (distance sampling methodology)	Every two years (not implemented)	Dedicated aerial or boat surveys (distance sampling methodology)	Every three years (partially ongoing)	Dedicated aerial surveys (distance sampling and HD photos).	Every six years (ongoing)
	Oceanographic DCF campaigns	Annual (ongoing)	Oceanographic DCF campaigns	Annual (ongoing)	Oceanographic DCF campaigns (distance sampling and HD photos).	Annual (ongoing)
			Capture-Mark-Recapture through photo-identification (UG2, UG4 and UG18) – coastal species	Annual (ongoing)	Non-dedicated vessel campaigns: opportunity platforms for marine mammal sightings.	Several times a year (ongoing)
			Trawl hydrophones – oceanic species	Not defined		
Interaction with human activities / Bycatch	Fishery observers program (DCF and others)	Continuous (ongoing)	Risk analysis Fishery observers program (part of DCF) Fishing logs (possible camera systems on board) Interviews (fishermen and skippers)	Routine sampling, according to the fishing method (partially ongoing)	Voluntary observation and sampling on-board fishing vessels (> 12m) - winter-trawlers and gill nets. Fishery observers program (part of DCF)	Continuous (in the Winter - effort increases)
	Administrative data collection (logbooks)		Dedicated on-board observers (from September 2020)	Routine	Surveys with whale watching operators	One-off (ongoing)

Monitoring objective	Portugal		Spain		France	
	MoP	Frequency	MoP	Frequency	MoP	Frequency
Strandings	National protocol	Continuous (ongoing)	National protocol	As required (partially ongoing)	Sampling and autopsy of stranded animals from different species along the coastline. National protocol.	Continuous (ongoing)
Additional data	Visual observation	As needed (ongoing)	Opportunistic platforms (ferries, recreational and fishing boats)	As needed (ongoing)		
	Administrative data collection		Regular coastal observations			
		Satellite positioning tracks				
		Biopsies				
			Passive acoustic methods			

Annex 2: Natura 2000 Marine Process

In 2011, the European Commission launched the Natura 2000 Biogeographical Process, a multi-stakeholders' co-operation process, via seminars, workshops and cooperation activities, at the biogeographical level, to identify and define common solutions and develop cooperative actions. The Marine Process, has included so far, a '**kick-off seminar** (2015), a **second marine seminar** (2018), and more recently an **introductory seminar** (2021) to address the EU 2030 Biodiversity Strategy targets (all documents available at the Natura 2000 Communication Platform [Library](#))⁶⁹.

In the 'kick-off' seminar (EU, 2015), a working group focused on 'Conservation objectives for highly mobile species', agreed the main conclusion and next steps:

- adopt appropriate spatial and temporal scales for monitoring, combining site monitoring with wider scale surveillance. Ensure by power analysis that sufficient data are collected to detect trends;
- produce a matrix of guidelines to standardise methodologies for data collection for different species and set the appropriate scale of monitoring for each (workshop to agree common monitoring tools targeting different species);
- share data and information on highly mobile species across their range between Member States;
- improve cooperation (e.g. on a regional scale) and define common objectives covering whole range of the species population
- refer to Species Action Plans as a useful tool to define conservation objectives for highly mobile species and for measures on the whole species population range.

The second marine seminar (Goriup et al. 2018) took place after the Fitness Check of the Nature Directives, and addressed three main themes⁷⁰. Each theme was discussed by habitats and species working groups with the aim to review the possibility for setting favourable reference values for selected habitats and species on the regional scale and identify priorities for future work. The **Atlantic and Macaronesia working group on species** highlighted for Theme 2 'Setting favourable reference values (FRVs)' that:

- setting FRVs can be time-consuming, especially when data is lacking;
- there is a lack of clarity with setting FRVs within an ecosystem-based approach;
- there is a lack of scientific process to define FRVs;
- there is confusion about the actual uses of FRVs and the benefits

⁶⁹ Other events under the marine process include:

- Session on integrating Natura 2000 objectives in MPA management at the Mediterranean MPA Forum
- Workshop on fisheries management measures in Natura 2000 sites in the Mediterranean Sea
- HELCOM / Natura 2000 management workshop

⁷⁰ Theme 1: Setting conservation objectives at site, national and regional levels; Theme 2: Setting favourable reference values (FRVs); Theme 3: Developing conservation measures to achieve the conservation objectives.

As opportunities for cooperative work and follow-up work the group recommended that:

- timelines should be established by the COM for the setting of FRVs by MS;
- further guidance should be provided by the COM on how to set FRVs effectively to help alleviate ambiguity and reduce the confusion surrounding FRVs⁷¹;
- consider waiting for more data to be collected before setting FRVs to ensure they are effective. At present rushing to set FRVs will reduce their effectiveness;
- expert workshops should continue to ensure that knowledge sharing can occur on a regular basis and may be organised and supported by the European Commission, Member States, local organisations, etc.

As conclusions from the seminar on setting FRV the issues on **Table A. 4** were highlighted.

Table A. 5 - Conclusions from the second marine seminar (Goriup et al. 2018)

Challenge	Solution
• pool together the scientific data	Make scientific data freely available (MS, projects, EMODNet-Biology/impacts)
• improve understanding of and methods to set FRVs on the regional level, including addressing shifting baselines	Use existing (or form new?) national/regional expert groups and/or organise workshops to agree on common methodologies and review consistency and coherence of FRVs among MS
• address funding needs	Reflect financing needs in Priority Action Frameworks (PAFs)

⁷¹ Addressed through the publication of the Technical Report “Defining and applying the concept of Favourable Reference Values for species and habitats under the EU Birds and Habitats Directive” (Bijlsma et al, 2019)