MARSP
Macaronesian Maritime Spatial Planning

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"ECOLOGICALLY OR BIOLOGICALLY SIGNIFICANT MARINE AREAS (EBSAS)"

MarSP Deliverable:

D.3.2. List of areas of ecological and biological significance (EBSAs) or Vulnerable Marine Ecosystems (VMEs)

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Summary

The MarSP project aims to develop concrete actions for the European Union Member States (Portugal and Spain) to build the necessary capacities and tools for the implementation of the EU Directive on MSP (Directive 2014/89/EU) in the Macaronesian region, including mechanisms for cross-border cooperation.

This report delivers the information contributing to the development of Deliverable 3.2. "Technical", developed under MarSP's Work Package 3 "Defining potential marine uses in Macaronesia, dealing with constraints and conflicts while assuring the Good Marine Environmental Status", namely Task 3.1 "Filling knowledge gaps - Biophysical characteristics of the selected area".

Even if more areas were registered for the purpose of EBSAS in Macaronesia Region, it was agreed among the partners of this project, that only the areas near or within the exclusive economic zone of the Madeira archipelago would be represented.

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ABNJ	Marine Areas beyond National Jurisdiction
CBD	Conference of the Parties to the Convention on biological Diversity
EBSAs	Ecologically or Biologically Significant Marine Areas
EEZ	Economic Exclusive Zone
FAO	Food and Agriculture Organization
IMO	International Maritime Organization
MPA	Marine Protected Area
MSP	Maritime Spatial Planning
NEAFC	North East Atlantic Fisheries Commission
SCI	Site of Community Importance
VME	Vulnerable Marine Ecosystems
WP	Work package

1. Scope

This document aims to support the MarSP project regarding the maritime spatial planning (MSP) process in the European archipelagos of the Macaronesia region (Azores, Madeira and Canary), contributing to build capacities and conditions to implement the European Union (EU) MSP Directive 2014/89/EU and the respective national and regional legislation in this regard.

This report is developed under Work Package (WP) 3 *Defining potential marine uses in Macaronesia, dealing with constraints and conflicts while assuring the good marine environmental status*, which assess the definition of potential uses and activities, based on the existing knowledge and gathering of information achieved within the two years of MarSP project. They correspond to the deliverable *3.2. List of areas of Ecological and Biological Significance (EBSAs)* or *Vulnerable Marine Ecosystems (VMEs).*

2. Introduction

This report aims to intend to represent the current ecological and biological significance (EBSAs).

These areas were chosen because of the geologic importance and because of the species present are considered of great vulnerability, present low productivity, sustain low exploitation rates and the recovery can be slow and uncertain. In this way, if the best decisions are not taken, we will assist to the destruction of these habitats which results in a continuing loss of marine biodiversity.

Even if more areas were registered for the purpose of EBSAS in Macaronesia Region, it was agreed among the partners of this project, that only the areas near or within the exclusive economic zone of the Madeira archipelago would be represented.

Regarding the vulnerable marine ecosystems (VMEs), doesn't register any VME in the Macaronesia area.

3.Ecological and biological significant marine areas (EBSAs)

3.1. Concept of EBSAs

Healthy and productive oceans are essential for the wellbeing of the planet's inhabitants: they are vital for the cycling of carbon, oxygen, water and nutrients. For humans, our seas provide an important source of food, support livelihoods and economic growth, and promote cultural wellbeing.

Increasingly, the oceans are facing human pressures that threaten their natural balance, including habitat destruction, unsustainable fishing practices, pollution, climate change and ocean acidification. In this way, the recognition of EBSAs can inform decision-makers when prioritizing areas for management and identifying effective marine management measures (Secretariat of the Convention on Biological Diversity ,2014; Dustan *et al.*, 2016).

The Ecologically or biologically significant areas (EBSAs) encompass many different types of marine ecosystems in different regions and refer to areas that have been shown to hold the greatest richness of species and productivity of living organisms, possess rare or endemic species, or are home to unique communities of fauna and flora (Appiott *et al.,* 2016).

In the following table is a description of what is or are not an EBSA.

Table 1 – Description of an ecologically or biologically significant area. Source: Appiott *et al.,* 2016.

EBSAS are…	EBSAs are not…
•Areas with high ecological or biological value; •Focused solely on ecological and biological characteristics; •Described through CBD regional workshops or relevant national processes by applying the CBD EBSA criteria based on the best available scientific information and expert knowledge; •Varied, describing both large ocean areas, groups of features or individual features, and can be static or move with seasonal variations; •Found in all areas of the oceans, from nearshore and coastal to remote deep-sea habitats.	• Specific recommendations for any types of management measures or restrictions of human activities (e.g., fisheries closures); • Marine protected areas (MPAs) or other area-based management measures; • Related to jurisdictional issues and, as such, are found both within and beyond areas of national jurisdiction.

EBSAs can assume different forms. They can address large ocean areas or individual features. They can be static or move with seasonal variations in certain oceanographic features. But they all, in one way or another, have been described as important in the context of one or more of the seven EBSA criteria (Secretariat of the Convention on Biological Diversity ,2014).

Benefits of the EBSA

An EBSA can generate ecological, economic or social effects. Also provide useful scientific information for policy makers. In the following table is presented some of the benefits that an EBSA can provide.

Table 2 – Benefits of the EBSA. Source: *Appiott et al.,* 2016.

Ecological benefits	• EBSAs can enable policy makers to focus their management efforts to better protect and sustainably use oceans and their biodiversity
Economic benefits	• EBSAs can help secure the delivery of key ecosystem services and support the sustainable growth of ocean-based economic activities and wellbeing of local communities that depend on marine ecosystems. • A transparent and evidence-based approach to describing EBSAs can give industry clarity for its planning of marine-area based business activities. • Targeted and appropriate management interventions by competent authorities can ensure sustainability of various economic activities affecting the marine ecosystems that they depend upon
Social benefits	• EBSAs can help maintain the ecosystem services that the ocean delivers to people • Appropriate management interventions in EBSAs can contribute to food security and sustainable livelihood
Process benefits	• EBSAs can support ecosystem-based and integrated management of oceans • EBSAs can support evidence-based approaches to marine spatial planning processes and/or environmental impact assessments and strategic environmental assessments • EBSAs can provide scientific and technically credible, evidence-based information for all sectors to improve understanding of the ecological and biological values of the oceans. They can inform the selection of appropriate responses to support these values and achieve goals for conservation and sustainable use of marine biodiversity, in particular the Aichi Biodiversity Targets and Sustainable Development Goals • EBSAs can facilitate scientific collaboration and partnerships and provide information about areas that may require enhanced research and monitoring • EBSA information can enable competent authorities to better fulfill their respective mandates

3.2. Criteria for designation of EBSAs

In 2006, the Conference of the Parties to the CBD called for the convening of an expert workshop *to refine and develop a consolidated set of scientific criteria for identifying ecologically or biologically significant marine areas in need of protection in open-ocean waters and deep-sea habitats, building upon existing sets of criteria used nationally, regionally and globally* (CBD COP 8, Decision VIII/24) and following the conclusions (UNEP/CBD/SBSTTA, 2007) adopted in 2008 seven scientific criteria for the identification of EBSAs in need of protection in open-ocean waters and deep-sea habitats (CBD COP 9) together with scientific guidance for selecting areas to establish a representative network of MPAs, including in open-ocean waters and deep sea habitats (Druel, E., 2012; Appiott *et al.,* 2016).

In 2008, the Conference of the Parties to the Convention on Biological Diversity (CBD) adopted a list of seven scientific criteria for the identification of EBSAs in need of protection in open-ocean waters and deep-sea habitats (COP 9; CBD decision IX/20 Annex 1).

The seventh scientific criteria adopted are:

Table 3 - List of seven scientific criteria for the identification of EBSAs. Source: COP 9; CBD decision IX/20 Annex 1.

Criteria	Definition	Rationale
Uniqueness or rarity	Area contains either (i) unique ("the only one of its kind"), rare (occurs only in few locations) or endemic species, populations or communities, and/or (ii) unique, rare or distinct, habitats or ecosystems; and/or (iii) unique or unusual geomorphological or oceanographic features.	• Irreplaceable • Loss would mean the probable permanent disappearance of diversity or a feature, or reduction of the diversity at any level
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive	Various biotic and abiotic conditions coupled with species-specifi c physiological constraints and preferences tend to make some parts of marine regions more suitable to life-stages and functions than other parts.
Importance for threatened, endangered or declining species and/or habitats	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species	To ensure the restoration and recovery of such species and habitats
Vulnerability, fragility, sensitivity, or slow recovery	Areas that contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery.	The criteria indicate the degree of risk that will be incurred if human activities or natural events in the area or component cannot be managed effectively or are pursued at an unsustainable rate.

Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity	Important role in fuelling ecosystems and increasing the growth rates of organisms and their capacity for reproduction
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity	Important for evolution and maintaining the resilience of marine species and ecosystems
Naturalness	Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation	• To protect areas with near natural structure, processes and functions • To maintain these areas as reference sites • To safeguard and enhance ecosystem resilience

The CBD has highlighted that identification of EBSAs is a scientific and technical exercise and does not imply an economic or legally protected status. The identification of EBSAs and any appropriate conservation measures are solely the responsibility of States and intergovernmental organisations in accordance with international law (Druel,2012; Secretariat of the Convention on Biological Diversity, 2014; Appiott *et al.,* 2016).

As such, Parties and other competent authorities may choose to apply the EBSA criteria within their national jurisdiction and beyond and can use the identification of EBSAs to assist in the implementation of conservation and management measures, including establishing a network of officially designated marine protected areas (Druel,2012).

In 2010, at its tenth meeting, the CBD adopted a new *10-year Strategic Plan for Biodiversity*, including *20 Aichi Biodiversity Targets*. A number of these targets focus specifically on marine and coastal biodiversity, including targets to achieve sustainable fisheries and protect at least 10 per cent of the world's marine and coastal areas by 2020 (Druel,2012; Appiott *et al.,* 2016).

Workshops

The regional workshops are a scientific and technical exercise focusing solely on scientific information. They do not address, assess or prescribe any specific management measures or approaches. The use of ecologically or biologically significant area information and the selection of conservation and management measures is a matter for States and competent intergovernmental organizations, in accordance with international law, including the United Nations Convention on the Law of the Sea (Druel,2012; Appiott *et al.,* 2016). The descriptions of EBSAs prepared by these workshops can inform States and competent organizations in their

efforts towards conservation and sustainable use of marine biodiversity, including prioritization of future research and monitoring activities to address knowledge gaps.

These workshops have the finality to experts jointly source, gather and analyse relevant datasets. These include information that could support the application of the EBSA criteria, such as the abundance and distribution of species, locations and extent of ecosystem features and habitats, and the presence of oceanographic features.

As of March 2018, 14 workshops have taken place in the following regions, collectively covering over 74% of the world's oceans:

- Western South Pacific
- Wider Caribbean & Western Mid-Atlantic
- Southern Indian Ocean
- Eastern Tropical & Temperate Pacific
- North Pacific
- South-Eastern Atlantic
- Arctic
- North-West Atlantic
- Mediterranean
- North-East Indian Ocean
- North-West Indian Ocean and adjacent Gulf areas
- Seas of East Asia
- Black Sea and Caspian Sea
- Baltic Sea

Co-existence between the EBSA process and other process leading to the identification of areas in need of protection

EBSAs are not an isolated process: there are other identification processes conducted today in the oceans and seas.

Beyond the CBD, other organisations have developed their own sets of criteria in order to identify vulnerable areas or areas that may require enhanced protection with the final aim of ensuring a more effective implementation of existing legal duties towards marine biodiversity.

This is true at the national level, where conventions for example have developed their own sets of criteria for the development of networks of MPAs. At the international level, organisations such as the Food and Agriculture Organisation (FAO) and the International Maritime Organisation (IMO) have also established their own sets of criteria to identify areas that may require enhanced protection (Druel, 2012).

Therefore, the application of these criteria should not be seen as a competing but rather as a complementary exercise to the one already carried out under the auspices of the CBD. They do not contradict each other, but can serve different purposes (for example, the identification of areas subject to a specific threat linked to human activities, such as fisheries for VMEs) (*Idem, ibidem*). In fact, the CBD SBSTTA noted in 2010 that "there are no inherent incompatibilities between the various sets of criteria that have been applied nationally and by various United Nations organisations (e.g. FAO, the International Maritime Organisation, the International Seabed Authority) and NGOs (e.g. BirdLife International and Conservation International). Consequently, most of the scientific and technical lessons learned about application of the various sets of criteria can be generalised (*Idem, ibidem*).

3.3. EBSAS

EBSA Madeira- Tore (Portugal)

The EBSA Madeira-Tore includes a total of 17 submarine hills. The submarine hills are hotspots of marine life and represent areas of high productivity, especially when compared to surrounding abyssal areas.

This potential EBSA comprises a total area of 197431 km², with depths varying between 25meters (top of the Gettysburg seamount) and the 4930 m (base of the Tore). The area includes a Site of Community importance (SCI), the Gorringe bank, the Josephine Seamount (water column). All the structures included in EBSA Madeira-Tore meet four or more of the seven scientific criteria of EBSA. A total of 965 species is present in this EBSA, being 7% protected by international or regional agreements or legislation.

The 17 submarine mounts included in the EBSA are (Ampere, Ashton, Coral Patch (northern part), Dragon, Erik, Gago Coutinho, Gorringe Bank, Hirondelle II, Josephine, Lion, Pico Pia, Tore, Seine and Unicorn). All structures have particular characteristics that make the area eligible as an EBSA complying with the scientific criteria EBSA-criteria of the Azores.

The submarine hills are widely studied and recognized as "hotspots" of marine life and represent areas of high productivity. It is common to develop oceanographic phenomena around them, which promote the outcrop of nutrients, resulting in high concentrations of chlorophyll (Coelho & Santos, 2003). As a consequence of this primary productivity, in these structures an increase in abundance and biodiversity is given, such as suspensory filters, cold water corals or deep-sea sponges, tuna, marine mammals and other predatory organisms that feed on species with greying behavior. The submarine hills are biologically distinct habitats of the environment that surrounds them, since its productivity works as attractive to the surrounding marine life, aggregating it, as it happens, for example, with pelagic fish, even larger caliber species, including top predators such as sharks, marine mammals and turtles.

The proposal of EBSA Madeira-Tore is based on the analysis of 220 scientific articles containing relevant information on the proposed area. The area comprises different submarine hills, noting that the information about them is unequal to the level of the number of studies of

geological and biological nature, and the structures with the most studies are the Gorringe Bank and the Mount submarine Josefine.

About 7% of the 965 species identified in the EBSA is under some kind of legal protection or threat status of CITES, IUCN Red List, EU Habitats and birds' directives, Berne Convention and OSPAR Convention.

In 2010 the Ministerial meeting of the OSPAR Commission adopted the OSPAR 2010/5 decision establishing a marine protected area of high seas in the overlying water column of the submarine Mount Josephine. Subsequently, in 2015, Portugal designated the Gorringe Bank as a SCI.

In the purpose of this area to EBSA was used the followed criteria:

- Uniqueness or rarity - the Gorringe Bank is situated along the Azores-Gibraltar fracture zone, which separates the African Euro-Asian plate. The bank consists mostly of ultrabasic rocks from the mantle. The Coral Patch Submarine Mount has a unique composite structure. It is based on a pre-existing sedimentary structure extending to the depth of-2500m, while the upper part of the bank is of volcanic origin.

  The submarine Mount Josephine represents the westernmost point of the series of banks in the East-West direction separating the plains of the Tagus from the Abissal Horseshoe (horseshoe).

  The Ampere, Gorringe, Josephine and Seine Submarine Hills has particular habitats: hard substrates at depths where the continental slope is usually covered by silt and clay of the continent, and sand bioclastical formed by the bark of pelagic organisms on the plateau of these submarine hills.

- Special importance for stages of the life cycle of species - in certain areas of EBSA there is an aggregation of species with transient greasing behavior, i.e. species of great mobility (e.g. birds and cetaceans) Attracted by resident species.

  The particularity in this dynamic is that the peculiarity of the habitat can alter specific behaviors of transitory to resident. There are several records of stop and "Residence" of migratory species for food, reproduction and growth in these areas, making them of importance for stages of the life cycle of the species.

- Importance for threatened species and/or habitats, endangered or declining - as mentioned, about 7% of the species identified in EBSA Madeira-Tore is under some kind of legal protection or statute: CITES, list Red of the IUCN, EU Habitats directive and Birds Directive.

- Vulnerability, fragility, sensitivity or slow recovery - One of the major vulnerabilities in the area is the existence of a high pressure of anthropogenic origin on these very sensitive, fragile and slow-recovery habitats.

- Biological productivity - The underwater Mountains "work" in the deep ocean as obstacles to the free movement of currents, whether they are deep or superficial. This physical "obstacle" is a precursor to different types of oceanographic disturbances, such as: increased velocity of maritime currents, outcrops, turbulence and formation of vortices. These effects promote biological production through the outcropping of nutrients such as nitrates and phosphates, critical to the growth and survival of phytoplankton. There is a transport of the same deep water where they are in large concentrations to waters of lower depth where they are "consumed" in the photic zone, promoting the increase of primary production in open ocean. Some of the studies conducted in the area focusing on high primary production are: Ampere, Ashton, Dragon, Gorringe, Josephine, Seine, Tore and Unicorn.

- Biological diversity - as in most subsea hills, those understood by EBSA act as islands welcoming a high biodiversity with high biomass. There are in this EBSA 965 register species, some of which are new to science.

- Naturalness - naturalness is assessed by the level of pressure existing in the area. In this case, anthropogenic pressures are those with greater expression and relevance, namely fishing. Of a total of 17 submarine hills, 5 have records of the visit of fishing fleets (Ampere, Gorringe Bank (Gettysburg and Gorringe), Josephine and Unicorn), while the remainder do not have official information on on-the-spot fisheries.

Fisheries in the submarine hills have proved difficult to investigate and manage sustainably. Many commercial deep-water species have characteristics that generally make them more vulnerable to fishing pressure than less deep-water species.

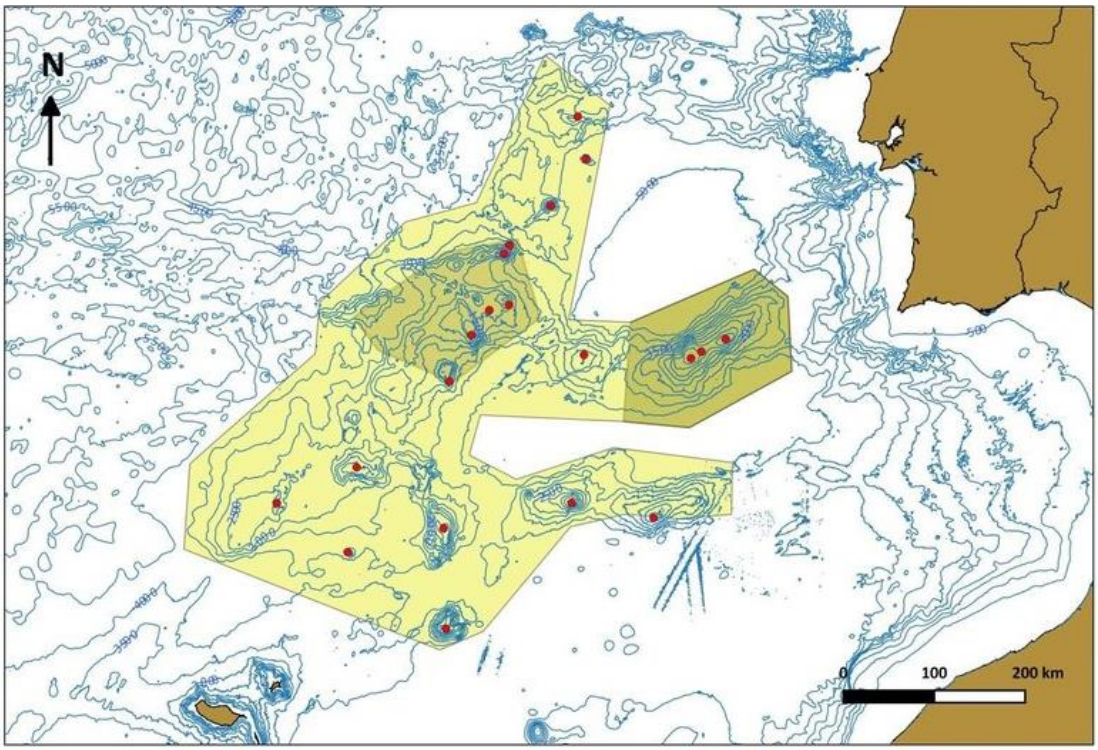

Figure 1 – Proposal of an EBSA – Madeira – Tore.

- Conservation Objectives: Underline the ecological and biological significance of a set of important habitats and ecosystems for resident and migratory species, as well as the marine communities associated with 17 Atlantic Subsea Hills located in the west of the Strait of Gibraltar , in the region of the geological complex Madeira-Tore, located between Cabo de S. Vicente (at the SW end of the Iberian Peninsula) and the Madeira archipelago.

5. Conclusion

The maritime spatial planning emerges as a fundamental element to dynamize the economic activity related to the sea, through the delimitation of uses and activities in the maritime

space. In a first phase, it´s important to identify the uses and activities in the maritime space, in particular the current ones. Some potential uses or activities must be also identified.

In this way, this report will contribute to the delimitation of some uses and activities in the maritime space through the representation of all protected areas.

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