



# The Tunisia-Italy Electrical Interconnection (ELMED) Project

## Critical Habitat Assessment

Report for the European Bank for Reconstruction Development

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## Executive Summary

The European Bank for Reconstruction Development (EBRD) are supporting the development of the Tunisia-Italy electrical interconnection (ELMED) project (the “Project”). The Project comprises the construction of a new two-way High Voltage Direct Current (HVDC) submarine electrical interconnection cable between Tunisia (Cap Bon) and Italy (Sicily).

Several studies have been completed to date, including an Environmental and Social Impact Assessment, marine feasibility studies and underwater surveys. To understand compliance with Performance Requirement 6 EBRD have commissioned the undertaking a Critical Habitat Assessment, the results of which are reported in this document.

Several approaches have been taken to inform the Critical Habitat Assessment, including desk-top studies and the determination of spatial areas of analysis. As a starting point, a review of the priority features in a seascape study area was undertaken. This allowed for the establishment of EAAAs to frame the analysis of priority biodiversity features and critical habitat. A long screening list of priority features was created to inform the assessment. In addition, legally protected and internationally recognised areas of biodiversity value of relevance to the Project were identified.

Several ecoregional studies have been completed in the Mediterranean region to define the importance of the area for marine biodiversity. Some of these studies define the Mediterranean basin as a broad homogeneous seascape. However, some studies have considered the heterogeneous patterns and processes across the basin to define specific ecoregions. A review was undertaken for coastal and marine habitats and species across a broad seascape area informed by the ecoregional assessments. The aim of this review was to create a spatial context for the Critical Habitat Assessment at appropriate ecological scales. The review identified multiple habitats and species requiring assessment and established a seascape unit of conservation importance comprising the Sicilian Channel bound by deeper water zones to the west and the remaining Tunisian Plateau/ Gulf of Sidra area bound by the deeper waters of the southern Ionian Sea.

Informed by the seascape review, ecological appropriate areas of analysis were established to support the assessment of priority biodiversity features and critical habitat. Two broad coastal areas were defined on the coastlines of Tunisia and Sicily; and a broad marine EAAA was defined that encompasses the Sicilian Channel. The establishment of these areas was justified by the multiple overlapping and interconnected values identified within these areas.

The work undertaken has determined that the Project is in an important biodiversity hotspot providing a range of priority habitats that support multiple species of conservation note; and that the Project lies in area comprising critical habitat across multiple criteria. In addition to these multiple habitats and species have been defined as PBF. The project also lies within or has some potential connectivity to several legally protected areas and other areas with recognised high biodiversity values. The assessment therefore confirms that the Project lies within an area of high biodiversity importance within the

Mediterranean Sea and the Project must clearly demonstrates that the requirements of PR 6 have been met.

## 1 Introduction

The European Bank for Reconstruction Development (EBRD) are supporting the development of the Tunisia-Italy electrical interconnection (ELMED) project (the “Project”). The Project comprises the construction of a new two-way High Voltage Direct Current (HVDC) submarine electrical interconnection cable between Tunisia (Cap Bon) and Italy (Sicily). The Project will be jointly implemented by a partnership between the Italian Electricity Transmission System Operator Rete Elettrica Nazionale S.p.a (TERNA) and the Tunisian energy and electricity company Société Tunisienne de l’Électricité et du Gaz (STEG).

The overall objective of the Project is to increase the interconnection capacity, and therefore the security and sustainability of supply of the Euro-Mediterranean system by creating a link between the European and North African energy systems. The interconnection will provide an operating voltage of  $\pm 500$  kV and a net transfer capacity (NTC) of 600 MW. The Project comprises the emplacement of the cable on land and at sea, as well as consideration of Associated Facilities<sup>1</sup>. On the Sicilian coast, the cable landfall point is at Marinella. Two landfall locations have been identified on the Tunisian coastline, one located to the south of Kélibia and at Menzel Horr. The location of the proposed cable, including landing locations in Cap Bon and Sicily are provided in Figure 1.

Several studies have been completed to support the evaluation of the Project to date, including an Environmental and Social Impact Assessment (ESIA) (IDEA Consult, 2023), marine feasibility studies (RINA, 2021) and underwater surveys. The ESIA included an initial Critical Habitat Assessment (CHA) for marine habitats. This initial CHA identified features contained in areas with recognised high biodiversity values that overlap the project site and Area of Influence (AoI).

EBRD now requires a detailed Critical Habitat Assessment (CHA) to be undertaken in accordance with the PR 6 Guidance Note (EBRD, 2022). This is required to determine if the Project can achieve an outcome consistent with Performance Requirement 6 (PR 6) (EBRD, 2019). This document reports upon the CHA that has been completed for the marine and coastal landing components of the Project only in line with scope of work presented by EBRD.

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<sup>1</sup>Facilities or activities that are not financed by EBRD as part of the project but which in the view of EBRD are significant in determining the success of the project or in producing agreed project outcomes. These are new facilities or activities: (i) without which the project would not be viable, and (ii) would not be constructed, expanded, carried out or planned to be constructed or carried out if the project did not exist (as defined within EBRDs Environmental and Social Policy (2019)).



**Figure 1: Location of the submarine cable being addressed by the Critical Habitat Assessment**



## 2 Approach

The CHA has been completed according to the following steps.

### 2.1 Desk-top review of available baseline information

#### 2.1.1 Literature review

A desk-top study was undertaken to provide an understanding of the biodiversity values within the study area. This included the project site, its AoI and within the seascape area (see Section 4.1). This included a review of the following:

- Published literature available for marine biodiversity features in the seascape.
- Commercially unrestricted web-based habitat and species databases, including, for example, Ocean+ Habitats, The Global Biodiversity Information Facility (GBIF), European Marine Observation and Data Network (EMODnet), IUCN Red List of Threatened Species, State of the World's Sea Turtles (SWOT) and Birdlife Data Zone.
- Integrated Biodiversity Assessment Tool (IBAT) data acquired across a large unit of the seascape in which the cable is located. This includes information in the area of search on IUCN Red List species, KBAs and legally protected areas that are catalogued in the World Database on Protected Areas (WDPA).
- Site features listed for legally protected and internationally recognised areas of biodiversity value, including Natura 2000 viewer and standard data forms, Birdlife Data Zone, Ramsar Sites Information Service, The Web-GIS Atlas for Important Shark and Ray Areas (ISRAs), web portal for Ecologically or Biologically Significant Marine Areas (EBSAs) and the Important Marine Mammal Areas (IMMAs) E-Atlas.
- Review of features included in the appropriate Annexes of the EU Habitats Directive and Resolutions in the Bern Convention.
- Information available from national and regional Red Lists.
- A review of existing studies completed for the Project, including the ESIA, marine feasibility studies and site-specific survey information.

#### 2.1.2 Review of Google Earth imagery

A review of Google Earth imagery was undertaken to supplement the literature review with a particular focus on determining the presence of nearshore habitats along the cable corridor and adjacent areas. This information was especially used to support the determination of appropriate spatial areas of assessment in coastal areas where gaps in baseline information were evident following the review of available information in the sources listed in Section 2.1.1.

### 2.2 Determination of the spatial areas for assessment of critical habitat and priority biodiversity features

#### 2.2.1 Seascape

The PR 6 Guidance Note (EBRD, 2022) requires that, in all cases, the definition of ecological appropriate areas of analysis (EAAAs) to support CHA should consider the distribution and

connectivity of such features in the landscape/ seascape and the ecological patterns, processes and functions that support them (EBRD, 2022). The determination of critical habitat is therefore value-based rather than impact-based. It is intended as a precautionary approach that allows direct, indirect and cumulative impacts to be considered, at a scale appropriate to understanding and safeguarding features (Cousins and Pittman, 2021). The CHA has therefore grouped marine and coastal areas within a review of the seascape context.

Pittman (2018) defines seascapes as spatially heterogeneous and dynamic spaces that can be delineated at a wide range of scales in time and space. This area does not necessarily correspond to a predefined unit of geographical space. PR 6 and its Guidance Note (EBRD, 2019; 2022) do not provide a definition of seascape. However, the International Finance Corporation (IFC) Guidance Note 6 (IFC, 2019) broadly defines it as an area that might correspond to an ecoregion, a biome, or any other ecologically significant unit of space on a regional level (that is, not site- specific) (IFC, 2019).

Defining the seascape in which a project is located, including establishing the connectivity for individual species, allows biodiversity values to be considered at an ecologically appropriate scale (Cousins and Pittman, 2021). The main aim with respect to defining a project's seascape is to provide an overall broad-scale study area in which the project site and AoI is located that is sufficient to ensure that the full scope of biodiversity values and their ecological context are considered at an appropriate scale (Cousins and Pittman, 2021).

The seascape could in some circumstances form the ecologically appropriate areas of analysis (EAAAs) for the assessment of priority biodiversity features (PBF) and critical habitat; and/ or may contain smaller EAAAs that are defined for individual features or in aggregate (Cousins and Pittman, 2021).

Therefore, as a first step in the CHA process, a seascape study area was defined. Cousins and Pittman (2021) provided guidance on determining seascape areas of relevance to CHA in relation to the International Finance Corporation (IFC) Performance Standard 6 (IFC PS 6) (IFC, 2012). This has direct relevance to the requirements held within PR 6 and has been used as a guide for this CHA study. In summary, the definition of seascape has considered broad biological values (distributions, ranges, patches, edges, mosaics, productivity), ecological connectivity and influencing factors (e.g., seasonal and biogeographic variability, oceanography, bathymetry, geomorphology etc) (see Cousins and Pittman, 2021).

## **2.2.2 Screening of coastal and marine biodiversity values**

Following the seascape review, habitats and species that may comprise PBF or trigger critical habitat were identified from the review of baseline conditions in the seascape and locally around the areas where the cable is proposed to understand what features may be impacted by the Project for subsequent consideration.

As part of the desk-top review of available baseline information, a long list of features species that may trigger critical habitat was also formed for initial screening. In line with the PR 6 Guidance Note (EBRD, 2022), the aim was to determine the presence of priority

features in the study area. The criteria described in Section 3.1.3 were used to determine if a feature has potential to form critical habitat or be listed as a PBF.

### 2.2.3 EAAAs

As previously stated, to undertake an assessment of the presence of PBF or critical habitat it is necessary to define EAAAs that relate to each of the biodiversity values that need to be considered. These areas define the spatial extent of the assessment and form the spatial area for which critical habitat is determined. The scale of the EAAA needs to be ecologically justified; and should be sufficient to ensure effective conservation management of features being assessed. In almost all cases, EAAAs extends beyond a project site and its AoI.

The PR 6 Guidance Note (EBRD, 2022) states the following to inform the establishment of EAAAs:

*“In most cases that will mean the landscape-level distribution of the feature requiring study, again considering the ecological patterns, processes, and functions that are necessary to maintain it. If the feature has a patchy distribution in the landscape, it may be necessary to devise an EAAA that encompasses multiple disjunct areas. For some wide-ranging species, the EAAA may be informed by areas of aggregation, recruitment, or other specific habitat features of importance to the species. In all cases, the EAAA should consider the distribution and connectivity of such features in the landscape/seascape and the ecological processes that support them. Where it can be shown that multiple values have largely overlapping ecological requirements and distributions, a common or aggregated EAAA may be appropriate. At this stage, EAAAs will be a first approximation based on the information available. They will be further developed and refined once field work is undertaken”.*

Cousins and Pittman (2021) provided guidance on determining EAAAs in relation to the IFC PS6, which is aligned with the above statement. Using such guidance, and informed by the seascape assessment, an evaluation was undertaken to define the appropriate EAAAs relating to each feature (habitat and species) that may trigger critical habitat. This exercise was informed by the screening of coastal and marine biodiversity values that were defined during the seascape assessment (see Section 4.1).

For each feature considered as having potential to form critical habitat, EAAAs were defined. These features at these scales were taken for more detailed evaluation. The assessment was undertaken against the criteria described in Section 3.1.3 to determine if the EAAA satisfies any of the conditions for critical habitat or PBF.

## 2.3 Legally protected and internationally recognised areas of biodiversity value

PR 6 requires for legally protected and internationally recognised areas of biodiversity value to be identified so that the consequence of project activities on such areas can be assessed and managed. All such areas were identified in relation to the project's AoI, but also at a broader level to determine the presence and connectivity of features within the seascape and overlapping with the AoI and EAAAs. Whether such areas comprise critical habitat and include PBF was also assessed.

### 3 Definitions and requirements

#### 3.1 PR 6 Definitions

##### 3.1.1 PBF

PR 6 states that PBF includes the following:

- (i) threatened habitats;
- (ii) vulnerable species;
- (iii) significant biodiversity features identified by a broad set of stakeholders or governments; and
- (iv) ecological structure and functions needed to maintain the viability of PBF features described above.

##### 3.1.2 Critical habitat

PR 6 defines critical habitat as the most sensitive biodiversity features, which comprise the following:

- (i) highly threatened or unique ecosystems;
- (ii) habitats of significant importance to endangered or critically endangered species;
- (iii) habitats of significant importance of endemic or geographically restricted species;
- (iv) habitats supporting globally significant migratory or congregatory species; and
- (v) areas associated with key evolutionary processes.

##### 3.1.3 Criteria and conditions for identifying PBF and critical habitat

The PR 6 Guidance Note provides the criteria and conditions for identifying PBF and critical habitats, which are based on the EU Habitats and Birds Directives, the Bern Convention, and/or draw from IUCN's Key Biodiversity Area Standard. This is reproduced as shown in Table 1.

**Table 1: PR 6 criteria for PBF and critical habitat**

Criteria	Priority Biodiversity Feature	Critical Habitat
<b>1. Priority ecosystems</b>		
<i>Threatened ecosystems</i> (a) Habitats listed in Annex 1 of EU Habitats Directive (EU members only) or Resolution 4 of Bern Convention (signatory nations only)	(PR6 para. 12-i) (a) EAAA is habitat type listed in Annex 1 of EU Habitats Directive or Resolution 4 of Bern Convention (b) EAAA <5% of the global extent of an	(PR6 para. 14-i) (a) EAAA is habitat type listed in Annex 1 of EU Habitats Directive marked as "priority habitat type" (b) EAAA ≥5% of global extent of an ecosystem type with IUCN status of CR or EN (c) EAAA is ecosystem determined to be of high priority for



Criteria	Priority Biodiversity Feature	Critical Habitat
(b) IUCN Red-List EN or CR ecosystems	ecosystem type with IUCN status of CR or EN	conservation by national systematic conservation planning
<b>2. Priority Species and their Habitats</b>		
<i>Threatened species</i> (a) Species and their habitats listed in EU Habitats Directive and Birds Directive (EU members only) or Bern Convention (signatory nations only) (b) IUCN Red List EN or CR species (c) IUCN Red List VU species (d) Nationally or regionally (e.g., Europe) listed EN or CR species	(PR6 para. 12-ii) (a) EAAA for species and their habitats listed in Annex II of Habitats Directive, Annex I of Birds Directive, or Resolution 6 of Bern Convention (b) EAAA supports <0.5% of global population OR <5 reproductive units of a CR or EN species. (c) EAAA supports VU species (d) EAAA for regularly occurring nationally or regionally listed EN or CR species	(PR6 para. 14-ii) (a) EAAA for species and their habitats listed in Annex IV of the Habitats Directive (See EU restrictions) (b) EAAA supports ≥0.5% of the global population AND ≥5 reproductive units of a CR or EN species (c) EAAA supports globally significant population of VU species necessary to prevent a change of IUCN Red List status to EN or CR, and satisfies threshold (b) (d) EAAA for important concentrations of a nationally or regionally listed EN or CR species
<i>Range-restricted species</i>	(PR6 para. 12-ii) (a) EAAA for regularly occurring range-restricted species	(PR6 para. 14-iii) (a) EAAA regularly holds ≥ 10% of global population AND ≥10 reproductive units of the species*
<i>Migratory and congregatory species</i>	(PR6 para. 12-ii) (a) EAAA identified per Birds Directive or recognized national or international process as important for migratory birds (esp. wetlands)	(PR6 para. 14-iv) (a) EAAA sustains, on a cyclical or otherwise regular basis, ≥1 percent of the global population at any point of the species' lifecycle (b) EAAA predictably supports ≥10 percent of global population during periods of environmental stress

\*The IUCN Key Biodiversity Areas standard cites the following definition for reproductive unit: "the minimum number and combination of mature individuals necessary to trigger a successful reproductive event at a site. Examples of five reproductive units include five pairs, five reproducing females in one harem, and five reproductive individuals of a plant species."

### 3.1.4 Legally protected and internationally recognised areas of biodiversity value

In PR 6 and its Guidance Note (EBRD 2019;2022) reference is made to the to the IUCN definition of a protected areas, which is:

*“a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values.”*

In the context of the Project, legally protected areas may include national nature reserves, marine protected areas (MPAs) and Natura 2000 sites comprising Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

Regarding internationally recognised areas, the PR 6 Guidance Note states that:

*“internationally recognised areas of biodiversity value include only protected areas listed under international conventions or agreements, including, but not limited to, UNESCO Natural World Heritage Sites, UNESCO Man and Biosphere Reserves, and Ramsar sites (Wetlands of International Importance).”*

The intent for the definition of internationally recognised areas is to ensure that a project can comply with the requirements of such areas, which includes the need to be consistent with the conservation goals and the management of sites. Often, such aspects are not in place officially unless areas are protected under legislation. In the context of the Project, RAMSAR sites are relevant under this definition.

Other areas with recognised high biodiversity values that do not meet the PR 6 definition for internationally recognised areas include Key Biodiversity Areas (KBAs) encompassing Important Bird and Biodiversity Areas (IBAs), EBSAs, IMMAs and ISRAs. These areas have been considered for the assessment as they comprise areas of conservation value and may include features that enclose PBF and critical habitat.

### 3.2 PR 6 Requirements

PR 6 has a general requirement that where the assessment for a project has identified potential project related impacts to biodiversity, risks should be managed in accordance with the mitigation hierarchy and good international practice (GIP). As appropriate, the precautionary approach should be adopted, and adaptive management applied for the implementation of mitigation and management measures. Specific requirements relating to PBF and critical habitat are discussed below.

#### 3.2.1 PBF

PR 6 states that where the assessment has identified that a project could have significant, adverse and irreversible impacts to PBF, the client shall not implement any project related activities unless:

- the client can demonstrate that there are no technically and economically feasible alternatives;
- stakeholders are consulted in accordance with Performance Requirement 10 (PR 10);
- the project is permitted under applicable environmental laws, recognising the PBF; and
- appropriate mitigation measures are put in place, in accordance with the mitigation hierarchy, to ensure no net loss and preferably a net gain of priority

biodiversity features and the habitats and ecological functions that support them over the long term to achieve measurable conservation outcomes.

### 3.2.2 Critical habitat

PR states that in areas of critical habitat, the client will not implement any project activities unless the following conditions are met:

- no other viable alternatives within the region exist for development of the project in habitats of lesser biodiversity value;
- stakeholders are consulted in accordance with PR 10;
- the project is permitted under applicable environmental laws, recognising the priority biodiversity features;
- the project does not lead to measurable adverse impacts<sup>2</sup> on those biodiversity features for which the critical habitat was designated as outlined in paragraph 14;
- the project is designed to deliver net gains for critical habitat impacted by the project;
- the project is not anticipated to lead to a net reduction in the population of any endangered or critically endangered species, over a reasonable time period; and
- a robust and appropriately designed, long-term biodiversity monitoring and evaluation program aimed at assessing the status of critical habitat is integrated into the client's adaptive management program.

PR 6 further states that where a client can meet these requirements, the project's mitigation strategy will be described in a biodiversity management plan (BMP) or biodiversity action plan (BAP), wherever appropriate.

### 3.2.3 Legally protected and internationally recognised areas of biodiversity value

PR 6 requires that where the project occurs within or has the potential to adversely affect an area that is legally protected and/or is internationally recognised (as per the definitions presented in Section 3.1.4), or proposed for such status by national governments, the client shall ensure it does not compromise the integrity, conservation objectives and/or biodiversity importance of such an area. If a project identifies the potential to adversely impact the conservation objectives and integrity of the site, priority biodiversity features and/ or critical habitat within the legally protected areas or internationally recognised areas of biodiversity value, the client will seek to avoid such impacts in line with the application of the mitigation hierarchy. In addition, the client will be required to:

- demonstrate that any proposed development is legally permitted, which may have entailed that a specific assessment of the project related impacts on the protected area has been carried out as required under national law;

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<sup>2</sup> Measurable adverse impacts mean the project's direct and indirect impacts will jeopardise the persistence within the study area of any biodiversity value that triggers a critical habitat designation.

- act in a manner consistent with any government recognised management plans for such areas;
- consult protected area managers, relevant authorities, local communities and other stakeholders on the proposed project in accordance with PR 10; and
- implement additional programmes, as appropriate, to promote and enhance the conservation objectives of the protected area.

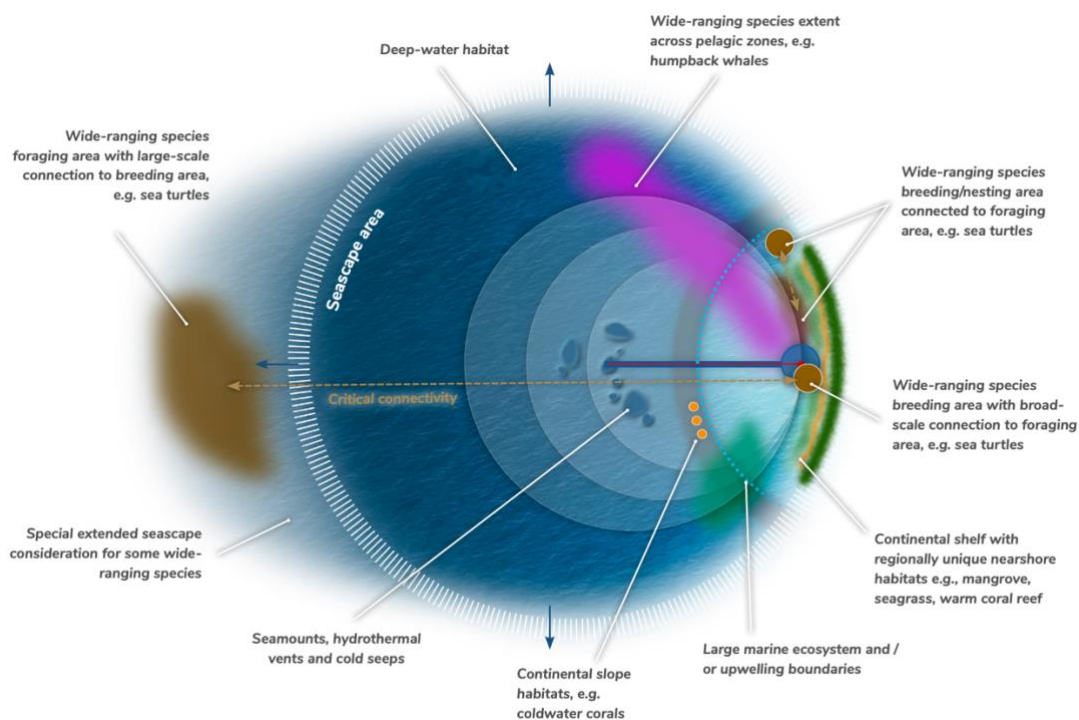


## 4 Discussion of the Biodiversity Context

### 4.1 Seascape context

#### 4.1.1 Overview

The structure and function of seascapes and the appropriate geographical extent of seascapes are defined by interlinked ecological patterns and processes, including connectivity (Cousins and Pittman, 2021). Understanding the factors that determine the distributions and behaviour of these patterns and processes can help to define a seascape area and allow for ecologically meaningful boundaries to be drawn. In general, a seascape is comprised of multiple units where different ecological processes occur, and these combine to form the structure and function of the seascape. Therefore, to define the spatial areas for assessing seascapes that are appropriate to the biodiversity values requires an understanding of multi-scale interconnected ecological patterns and processes. It is possible that the species range will overlap with the spatial and temporal domains for other biodiversity values that are being considered and a single seascape boundary may be determined that incorporates all important attributes. However, sometimes, wide-ranging species may be distributed more broadly, and it may be necessary to establish spatially and temporally extended seascape boundaries that help to understand species specific life-cycle functions (e.g., movement to and from breeding or foraging or nursery areas), distributions (including at subpopulation levels) and interconnectivities (Cousins and Pittman, 2021). Figure 2 provides an illustration of how a seascape area may be comprised in practice.



**Figure 2: Illustration for defining seascape in a widely interconnected marine ecosystem (Source: Cousins and Pittman, 2021)**

#### 4.1.2 Ecoregion assessments

Determining the seascape study area can be informed by existing ecoregional assessments that have considered ecological patterns and processes. A range of ecoregional studies have been completed for the Mediterranean coastal and marine area. Some of these studies are described below.

The Critical Ecosystem Partnership Fund (CEPF) defines global biodiversity hotspots as places on Earth that are both biologically rich and deeply threatened. 36 regions have been defined globally as biodiversity hotspots. This includes the Mediterranean basin hotspot (“the hotspot”), which is the second largest hotspot in the world (CEPF, 2010). The hotspot area includes the Mediterranean Sea and extends outside of this area to include a several Atlantic islands: the Canaries, Madeira, the Selvages, the Azores and Cape Verde (see Figure 3).



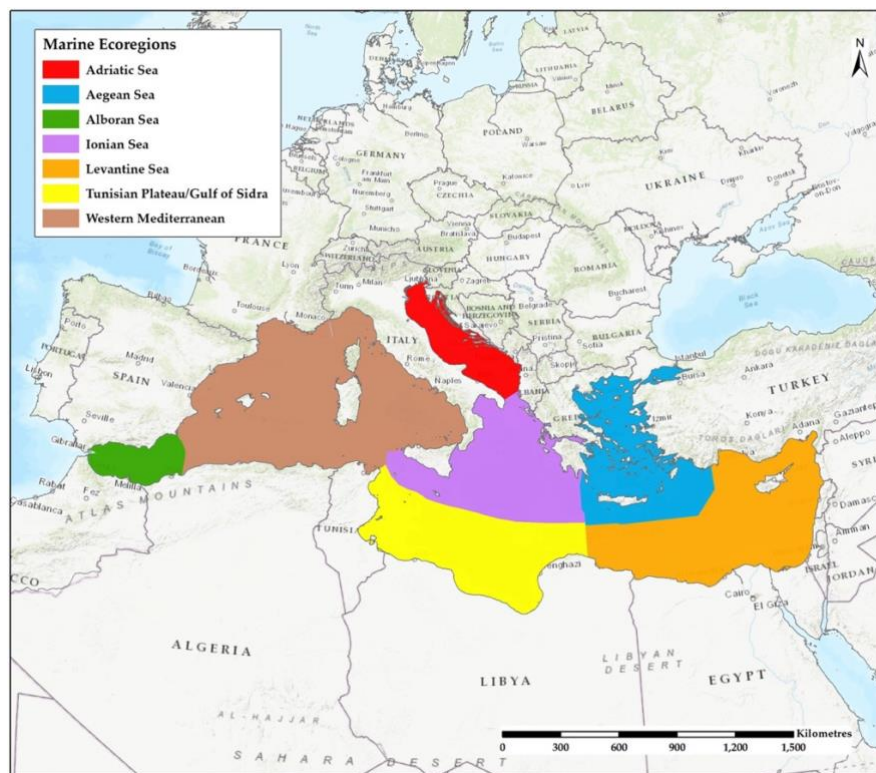
**Figure 3: The Mediterranean hotspot area (Source: CEPF, 2010)**

The hotspot area covers both land and sea as shown in Figure 3. In evaluating the ecosystem profile of the hotspot, CEPF (2010) reported that the Mediterranean Sea is a stronghold of marine biodiversity with 7.5% of the world’s marine fauna and 18% of marine flora concentrated in this region, representing an area of high diversity (CEPF, 2010). CEPF (2010) reported that there are five main marine habitat types that constitute the hotspot: seamounts, submarine canyons, seagrass beds, maërl beds and coralligenous communities. Most of the marine biodiversity is concentrated in shallow coastal areas, although there are key biodiversity elements associated with deep waters, as well as with offshore pelagic waters. The disconnect between the Mediterranean Sea and the Atlantic Ocean is only partial, with more than 50% of the Mediterranean taxa being of Atlantic origin and intense gene flow still present in some groups. However, there remains to be a high degree of endemism in the Mediterranean region estimated to be around 28% (CEPF, 2010), including restricted range and genetic distinction across species, across several taxa groups, including fishes, marine mammals, birds and sea turtles.

The WWF Global 200 project identified global ecoregions based on patterns of biodiversity (Olson et al., 2002). The analysis included an evaluation of species richness, endemic species, unusual higher taxa, unusual ecological or evolutionary phenomena, and rarity of habitats; as well as considering threats. 238 ecoregions were defined, and the Mediterranean Sea was identified as a distinct ecoregion as part of this analysis. The study identified this region as having high levels of endemism (Olson et al., 2002).

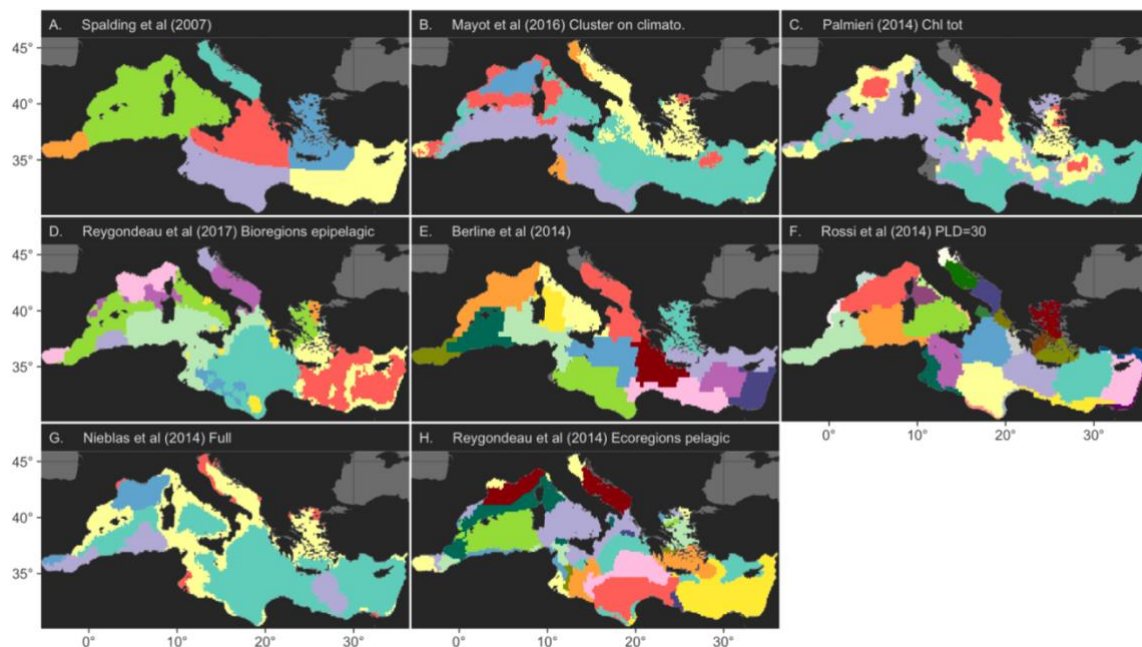
Like the Global 200 project and biodiversity hotspot assessment, and Longhurst (1998) reported that the Mediterranean Sea was distinguished from other regions based upon biogeographical conditions without further separation within the system. Several studies have been undertaken in the Mediterranean Sea to present a further regionalisation reflecting the heterogeneity within this overall area (Ayata et al., 2017; El Hourany et al. 2021).

Spalding et al. (2007) reported upon a biogeographical classification approach to define the marine ecoregions of the world. They defined ecoregions as areas of relatively homogeneous species composition, clearly distinct from adjacent systems. The identified biogeographic forcing agents that help to define the ecoregions, including isolation, upwelling, nutrient inputs, freshwater influx, temperature regimes, ice regimes, exposure, sediments, currents, and bathymetric or coastal complexity. Their work identified 12 realms, 62 provinces 232 ecoregions covering all coastal and shelf waters of the world. The Mediterranean Sea was identified as a province in the Temperate North Atlantic realm with seven ecoregions. These individual ecoregions are presented in Figure 4. In relation to this study, the Project lies in the Ionian Sea and Tunisian Plateau/ Gulf of Sidra ecoregions and is adjacent to the Western Mediterranean ecoregion.



**Figure 4: Marine ecoregions of the Mediterranean (Source: Spalding, 2007)**

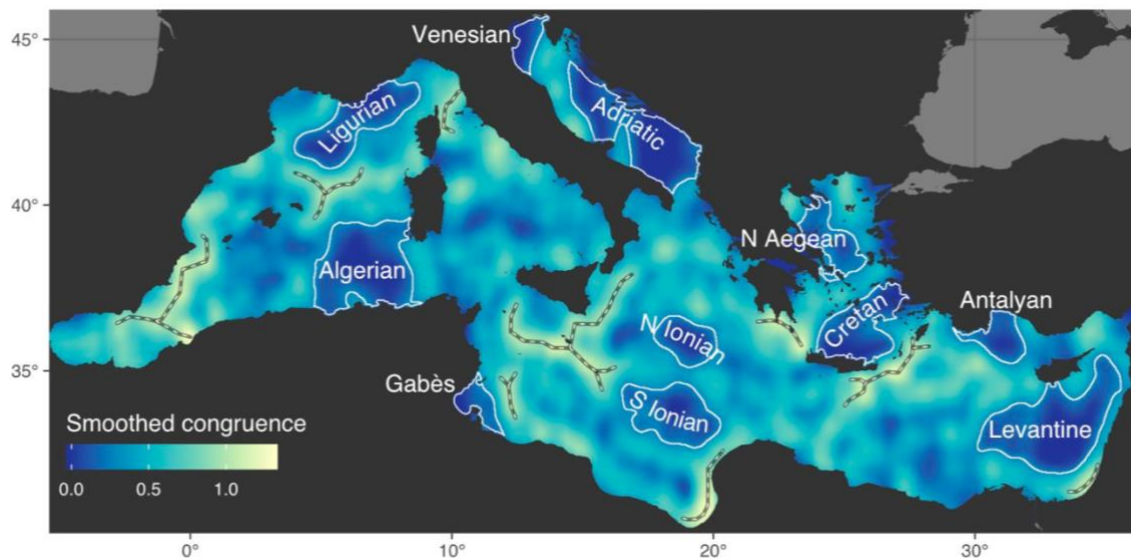
Ayata et al. (2017) and El Hourany et al. (2021) reported upon the variety of biogeographical assessments that have been completed in the Mediterranean Sea since the determination of ecoregions by Spalding et al. (2007). These studies have focused upon statistical and/or modelling review of patterns and processes, including a review of phytoplankton (Mayot et al., 2016; Palmieri, 2014), climatological averages (Reygondeau et al., 2017), hydrodynamic properties of surface waters (Berline et al., 201; Nieblas et al., 2014; and Rossi et al., 2014), and the composition of biological communities (Reygondeau et al., 2014). All these studies focused on marine patterns and processes and did not consider the coastal environment. The MERMEX project sought to synthesise the various studies that have been completed in the Mediterranean Sea to create a potential regionalisation of conditions (Ayata et al., 2017). A summary of outcomes of the different regionalisation approaches reviewed by Ayata et al. (2017) are presented in Figure 5. These show complex patterns and processes across the different components that were studied.



**Figure 5: Regionalisation of the Mediterranean Sea from various studies assessed by the MERMEX project (Source: Ayata et al., 2017)**

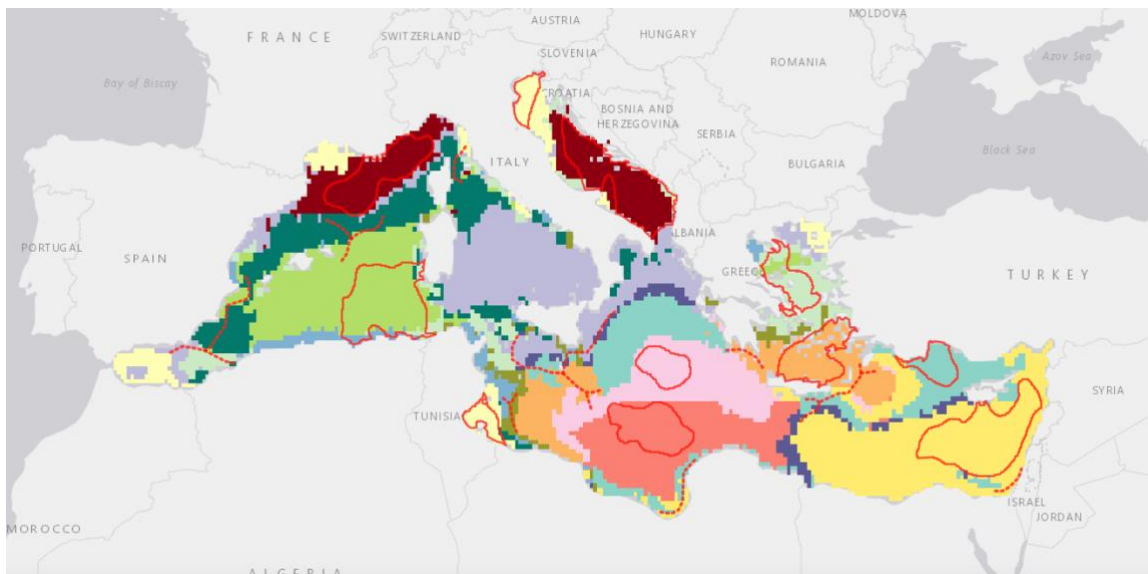
The MERMEX study identified zones 11 consensus regions and nine consensus frontiers across the studies assessed. These are presented in Figure 6. Some consensus regions are linked to strong dynamical features, even though those may not be permanent (Ayata et al., 2017). Most other consensus regions correspond to sub-basin seas or parts of these areas. Other areas are heterogenous and characterised by weak frontiers and highly dynamic conditions (Ayata et al., 2017).





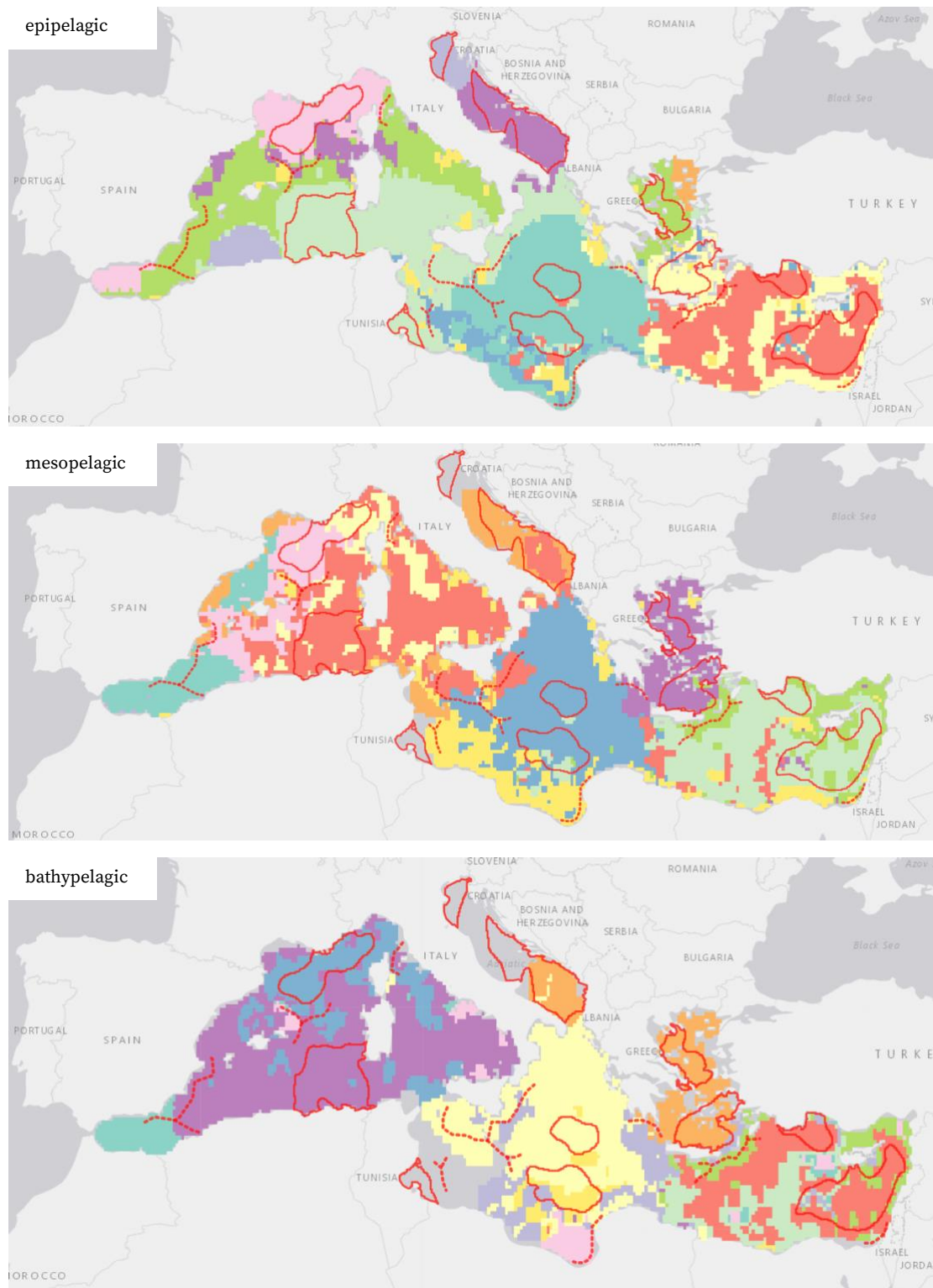
**Figure 6: Regions with consensus across the various studies assessed by the MERMEX project. Consensus regions are named within white polygons and the dashed lines represent consensus frontiers (Source: Ayata et al., 2017)**

Of all the studies reviewed, one study focused on the biological components of the Mediterranean Sea (Reygondeau et al., 2014). Reygondeau et al. (2014) reported upon a modelling approach of over 800 pelagic marine species as shown in Figure 7.



**Figure 7: Ecoregions defined for pelagic marine species as defined by Reygondeau et al. (2014). Red polygons correspond to consensus regions and frontiers defined by Ayata et al. (2017) (Source: <https://mermexregio.obs-vlfr.fr>)**

Reygondeau et al. (2017) combined the results of this work undertaken in 2014 with an assessment of biogeochemical regions. The pelagic ecoregions defined by Reygondeau et al. (2017) are presented in Figure 8.

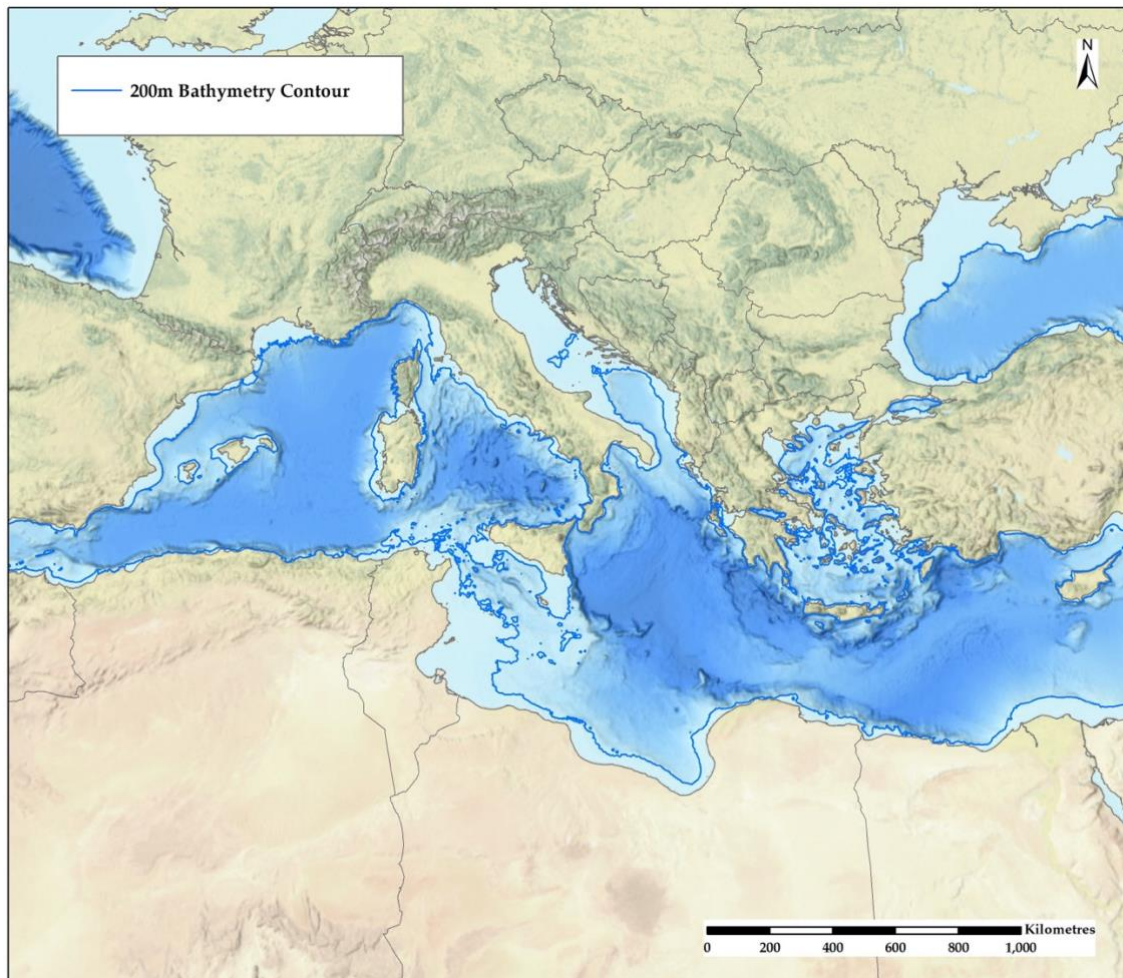


**Figure 8: Ecoregions defined for marine species across pelagic zone as defined by Reygondeau et al. (2017) (Source: <https://mermexregio.obs-vlfr.fr>)**

#### 4.1.3 Bathymetry

A coarse bathymetric map for the Mediterranean Sea is presented in Figure 9. This shows the presence of deeper water basins in the western, central and eastern Mediterranean Sea.

The Project is in the Sicilian Channel, which has a shallower water depth in comparison to adjacent waters in the western zone of Mediterranean Sea and the central Ionian Sea. This shallower zone extends across the Tunisian Plateau/ Gulf of Sidra area.



**Figure 9: Coarse bathymetric map of the Mediterranean Sea (Source: GEBCO Bathymetry Basemap)**

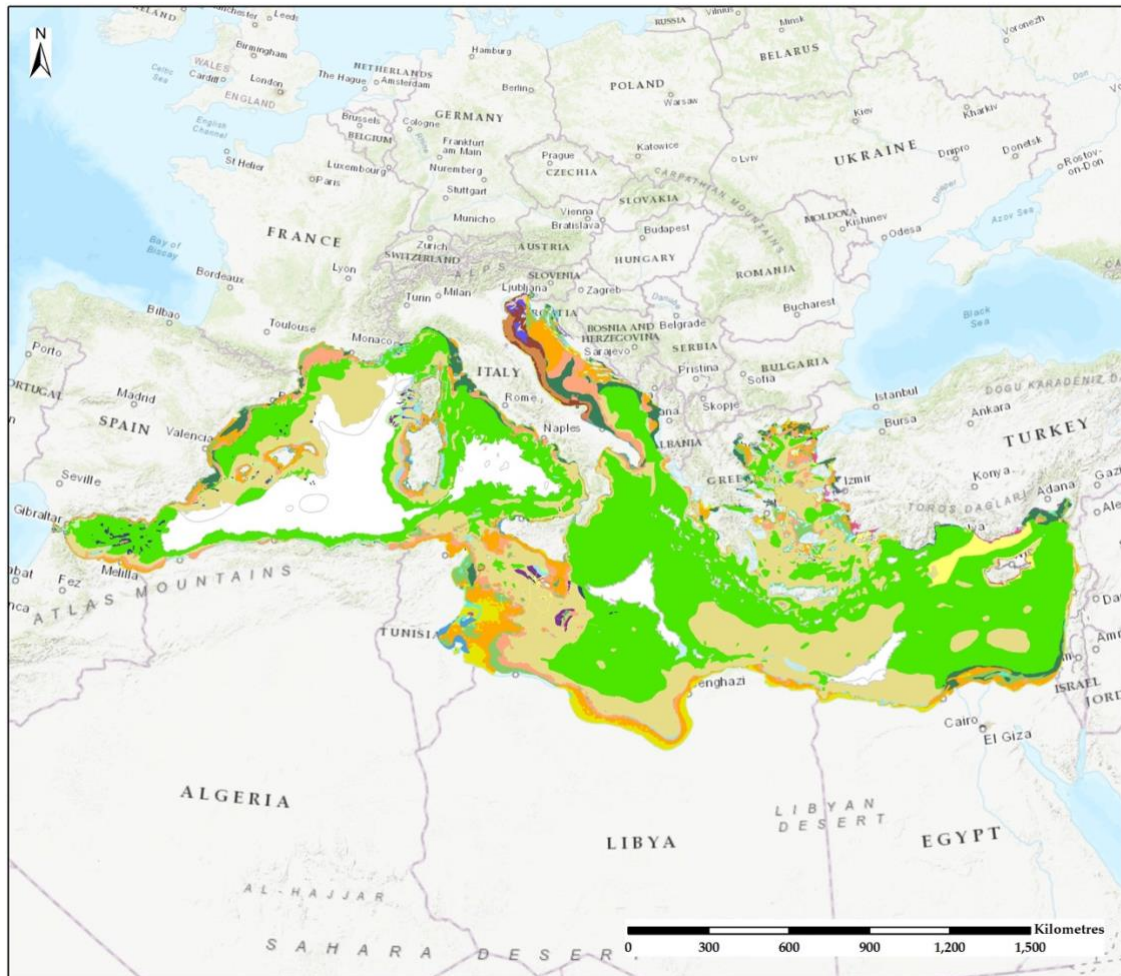
The IUCN Global Ecosystem Typology provides a classification system and framework for Earth's ecosystems comprising biomes and related functional groups. Two of the four biomes in the marine realm have a classification that is closely related to bathymetry, namely the 'marine shelf biome' and 'deep sea floor biome'. Bathymetry can therefore be used as a coarse guide to inform the presence of different broad biome classifications across seascapes. Figure 9 provides a map of coastal waters to a depth of 200 m and shows the deeper waters that exist beyond these areas across the Mediterranean Sea. As can be seen from Figure 9, the Project site and AoI extends across shallower waters of the continental shelf separated by a zone of deeper water in the centre of the Sicilian Channel.

#### 4.1.4 Benthic habitats

The European Marine Observation and Data Network (EMODnet) provides data on the benthic habitats of the Mediterranean Sea. This information allows for the understanding of benthic patches, mosaics and edges across the Mediterranean Sea (see Figure 10). The



habitat map shows a similar differentiation to the bathymetric map presented in Figure 9. It also shows some differentiation of the habitats in the Sicilian Channel with adjacent deeper water areas of the western Mediterranean basin and the Ionian Sea.



**Figure 10: Benthic habitat map for the Mediterranean Sea (Source: <https://emodnet.ec.europa.eu/geoviewer/>)**

#### 4.1.5 Priority habitats and species distributions

Where information is available, the following provides a summary of priority features that may trigger critical habitat to inform determination of seascape limits and the subsequent identification of EAAAs.

##### 4.1.5.1 Habitats

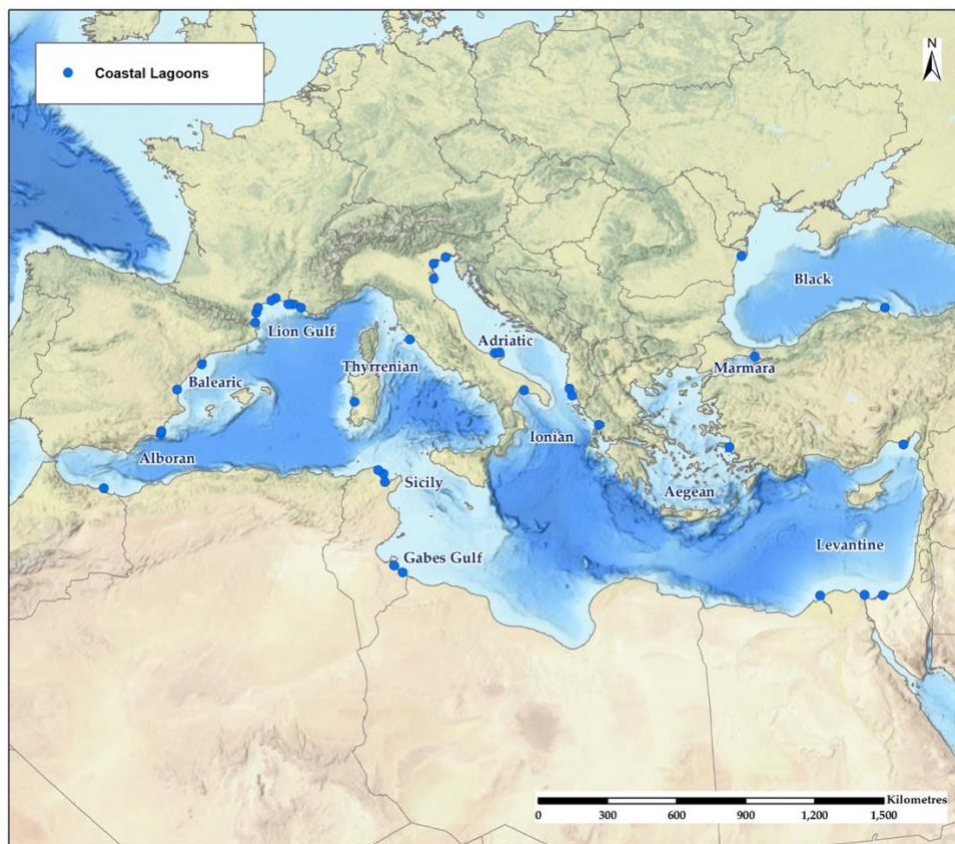
##### Coastal habitats

As defined by the European Environment Agency, coastal habitats are those “*above spring high tide limit (or above mean water level in non-tidal waters) occupying coastal features and characterised by their proximity to the sea, including coastal dunes and wooded coastal dunes, beaches and cliffs*”. The focus for the CHA is on the habitats and species present within the intertidal, supratidal, and immediately adjacent coastal zones to provide an inland limit for the determination of EAAAs. This corresponds with the extent of cable landfall area.



There is limited coastal habitat mapping across the Mediterranean at a seascape level. However, mapping is undertaken at a Natura 2000 site level in Europe. Some priority habitats in these sites that are present on the Sicilian and Tunisian coasts, include dune habitats, intertidal sandbanks, estuaries, coastal lagoons, inlets and bays, shingle and stony beaches with vegetated drift lines, vegetated sea cliffs, salt marshes and salt meadows, grasslands, Thermo-Mediterranean and pre-steppe brush, salt and gypsum inland steppes and coastal woodlands. Section 4.3.2 provides a further discussion on coastal habitats is provided in relation to regional areas along the Sicilian and Tunisian coasts.

Coastal lagoons are the only coastal habitat listed as a priority in Annex 1 of the Habitats Directive. Mediterranean coastal lagoons offer a diversity of habitats for many species. They act as nursery areas and feeding sites for many coastal fishes (UNEP-MAP RAC/SPA 2010). Soria et al. (2022) identified 30 large coastal lagoons in the Mediterranean Sea and Black Sea (Figure 11). Of these, the Tunisian coast host six sites: three on the northern coast and three in the Gulf of Gabés. To provide a finer scale understanding of the presence smaller coastal lagoons on both sides of the Sicilian Channel in the regions where the cable landing points are located, further study was conducted using satellite imagery and Ramsar sites that comprise such habitat (see Section 4.3.2). This has confirmed the presence of coastal lagoons along the coastlines of southern Sicily and the areas where the cable lands in Tunisia.

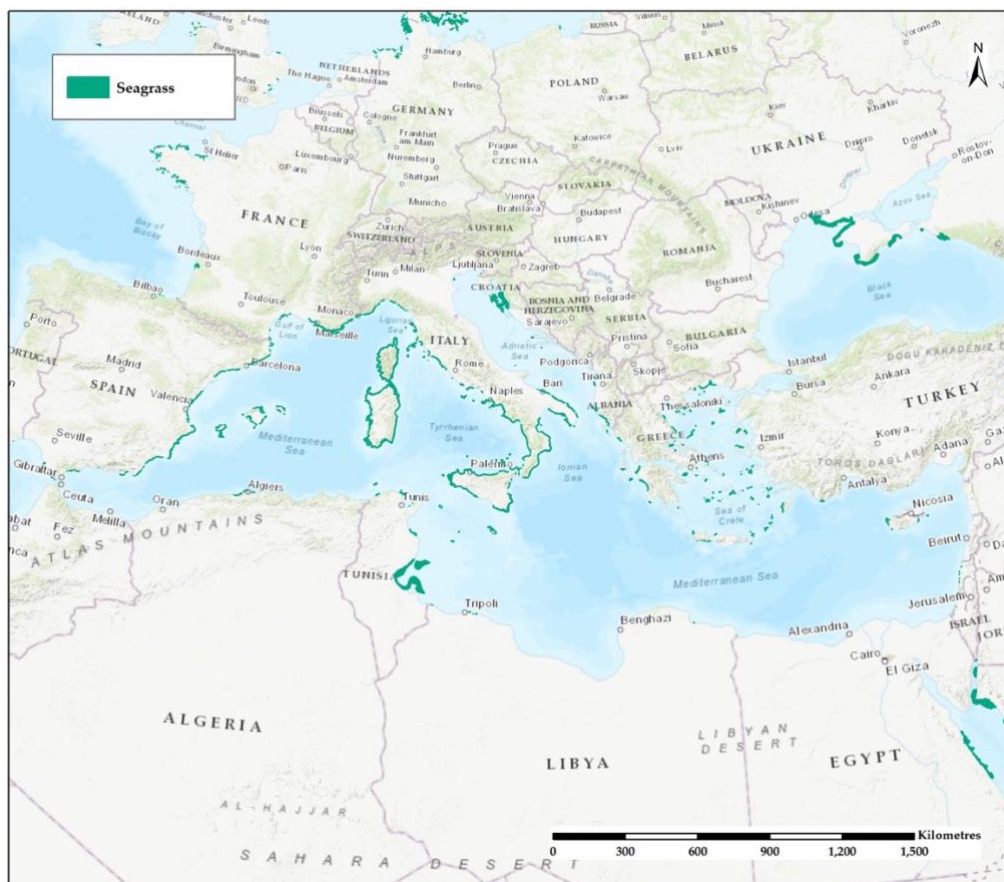


**Figure 11: Broad-scale mapping of large coastal lagoons in the Mediterranean Sea (Source: Soria et al. (2022))**

## Marine habitats

### Seagrass meadows

Seagrass meadows provide attributes for many marine species that depend on them for a range of important functions, including foraging, refuge from predation, breeding, and nursery. Seagrass meadows provide foraging habitat for the Endangered green turtle (*Chelonia mydas*) and offer a significant nursery, refuge and breeding area for fishes. They are also the main habitat that supports the fan mussel (*Pinna nobilis*), which is Critically Endangered. Seagrass meadows also have a relationship with other marine habitats through the movement of species across their life-cycles and through providing nutrients etc. In addition, they can provide sediment stabilisation and dissipate wave energy protecting other coastal habitats. In the Mediterranean Sea, seagrass meadows are either monospecific or consist of a mix of *Posidonia oceanica*, *Zostera* sp., *Cymodosea nodosa* and/or *Ruppia* sp. *P. oceanica* is the most important seagrass species in the Mediterranean Sea and is endemic to only this region. *Posidonia* meadows cover approximately 25% of the seabed within depths of 0-40 m. These meadows are largely located on the northern coastlines, including around the Mediterranean islands. Their distribution on the southern coastlines is patchier, but an area of note based on broad-scale mapping includes the Gulf of Gabés (see Figure 12). The presence of seagrass meadows in the Sicilian Channel is one of the reasons for the identification of the area as an EBSA.



**Figure 12: Broad-scale mapping of seagrass meadows in the Mediterranean Sea (Source: oecanplus.org)**

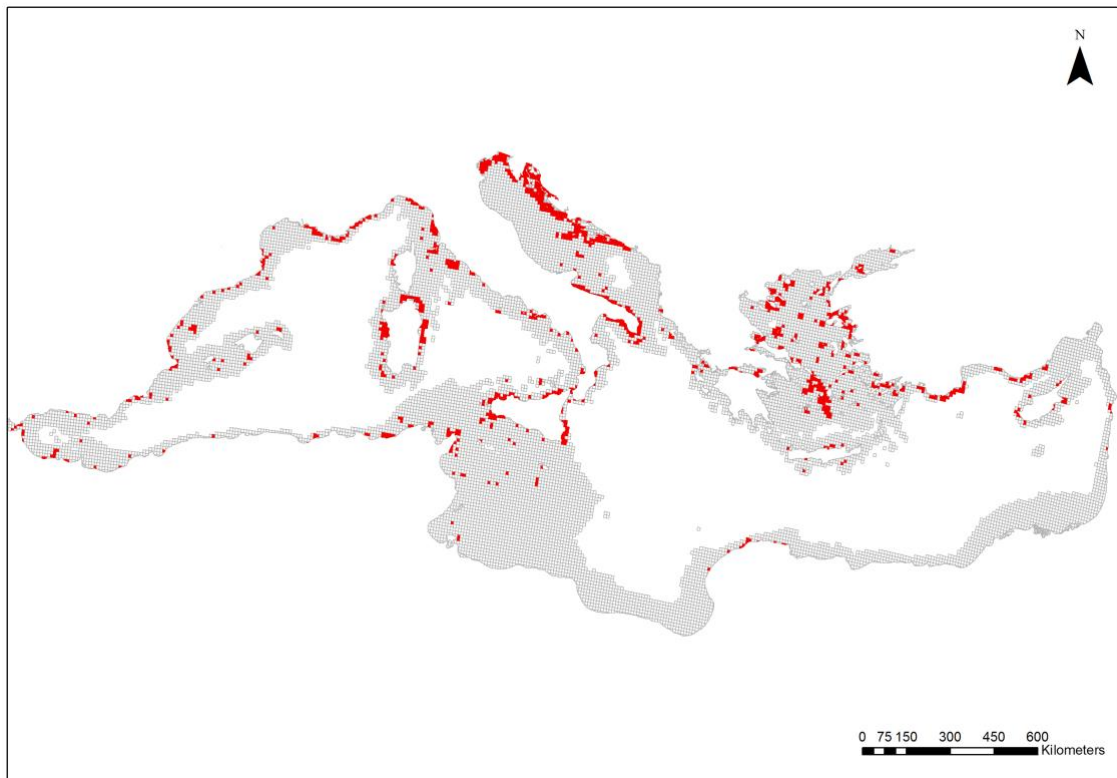
### Shallow-water coral communities

A total of 88 coral (both warm and deep-water) species are known to have distributions into the Mediterranean, of which 5 are endemic (Otero et al., 2017) .

The only true coral species in the Mediterranean Sea that is similar to tropical reef-building corals is the endemic Mediterranean pillow coral (*Cladocora caespitosa*) (Chefaoui et al., 2017). This species is globally Endangered under IUCN classification but is stated as Least Concern on Italy's national red list. It is found in a wide variety of environments up to a depth of about 35 m. It can form extensive banks, but can also exist as scattered, non-reef forming colonies (Casado de Amezua et al., 2015). The currently known distribution range of this species covers the entire Mediterranean Basin and adjacent areas of the Atlantic including Olhao in Portugal and Agadir in Morocco (Casado de Amezua et al., 2015). There are differences in assemblages across different regions. Despite the wide distribution, beds or banks are only formed in a few locations, including in Tunisia, the Gulf of Atalanti and some places of the Aegean Sea (Laborel, 1987); the Gulf of La Spezia, Ligurian coasts, the Adriatic Sea and the northwestern Mediterranean and the Balearic Islands (Casado de Amezua et al., 2015). Otero et al. (2017) reported that the largest and best developed populations and reefs known to date are in the Mljet National Park (Croatia), Columbretes Islands Marine Reserve (Spain) and in Kotor Bay (Montenegro). Based on the literature reviewed this species is present in the shallow waters on both side of the Sicilian Channel, but dense beds or banks have not been confirmed.

### Coralligenous formations

Coralline algal formations comprise another important biogenic reef habitat in the Mediterranean Sea. They have been reported to be the second most diverse benthic habitat of the Mediterranean Sea (Giakoumi et al., 2013). Coralligenous formations are found in depths of 70-250 m. Their spatial distribution is presented in Figure 13. Giakoumi et al. (2013) reported that presence was highest in the Adriatic Sea, followed by the Tyrrhenian, Ionian, and Aegean Seas, while it was much lower in the north-eastern parts of the Levantine Sea and the Tunisian Plateau/ Gulf of Sidra. However, it should be noted that there is more data available in the northern sector of the Mediterranean Sea. These communities comprise the combined bioconcretion resulting from different calcareous algal Corallinacea species, including those that are endemic to the Mediterranean Sea. Most dominant are *Lithophyllum sp.* and *Mesophyllum sp.* and *Neogoniolithon sp.* These formations have extremely slow growth rates, with reefs not uncommonly surpassing 7,000 years old. They present a hotspot for biodiversity, hosting 1700 species including spawning ground for commercial fish species and providing structural heterogeneity for benthic fauna.



**Figure 13: Broad-scale mapping of coralligenous formations in the Mediterranean Sea (Source: Giakoumi et al., 2013)**

#### Marine caves

Giakoumi et al. (2013) reported that approximately 3,000 marine caves have been recorded in 14 Mediterranean countries: Albania, Croatia, Cyprus, France, Greece, Israel, Italy, Lebanon, Malta, Montenegro, Morocco, Spain, Tunisia, and Turkey. The vast majority (about 97%) of marine caves recorded are in the northern Mediterranean Sea. The lowest number of marine caves were recorded in the Tunisian Plateau/Gulf of Sidra and the Alboran Sea (Giakoumi et al., 2013). Whilst marine caves are present in the Sicilian Channel, there are relatively few and they mostly lie around the coasts of the Egadi Islands, south-eastern tip of Sicily, Zembra Island, Malta and Lampedusa Island (Giakoumi et al., 2013).

#### Deep-sea coral and sponge communities

Deep-sea communities are associated with numerous structures, including continental slopes, submarine canyons, seamounts, pockmarks, carbonate mounds, hydrothermal vents and cold seeps (IUCN, 2019). Such habitats are important for deep-sea biodiversity in the Mediterranean Sea, providing microhabitats within, on and surrounding the colonies. They support sessile invertebrates, sponges, bivalves, molluscs, cephalopods and fishes, including providing important foraging and spawning habitat for some species. Deep-sea coral rubble accumulations also contribute to the enhancement of deep-sea biodiversity, albeit hosting different species communities (IUCN, 2019).



Reefs as defined by the Habitats Directive could be considered to contain several deep communities: facies and forests of gorgonians and black corals; *Isidella elongata* and *Callogorgia verticillata* gardens; red corals (*Corallium rubrum*); banks of *Dendrophyllia ramea* communities, *Dendrophyllia cornigera*, and white corals banks of *Madrepora oculata* and *Lophelia pertusa*. Based on existing information, there are six main deep-water coral provinces in the Mediterranean Sea comprising patches and frameworks in the Sicilian Channel, Alboran Sea, Gulf of Lion, south of Sardinia and Adriatic Sea (IUCN, 2019).

The colonial stony white coral species *Lophelia pertusa* and *Madrepora oculata* are Endangered on the Mediterranean Red List and Critically Endangered on the Italy Red List. These species are key to the building of reef structures across the coral provinces. Gorgonian and black coral gardens in the Mediterranean Sea share a similar distribution and have only been found in the western Mediterranean, Sicilian Channel and Adriatic Sea (IUCN, 2019). The black coral species present in such areas include *Antipathes dichotoma*, *Leiopathes glaberrima*, *Antipathes subpinnata* and *Parantipathes larix*. *L. glaberrima* is Endangered and is only found in patches in the Mediterranean Sea, Atlantic, Gulf of Mexico and Hawaii. The Critically Endangered gorgonian bamboo coral *Isidella elongata* is restricted to the Mediterranean Sea (IUCN, 2019) and this is another structural species present in the area. This species is present in patchy and clustered distributions with a significant cluster present in the Sicilian Channel. Other threatened species that are known to be present in coral provinces include the tooth coral (*Balanophyllia europaea*), red coral (*Corallium rubrum*), Cockscomb cup coral (*Desmophyllum dianthus*), Coral jaune (*Dendrophyllia cornigera*), *Ellisella paraplexauroides*, Red Gorgonian (*Paramuricea clavata*), tall sea pen (*Funiculina quadrangularis*), *Pennatula rubra*, *Pennatula phosphorea*, *Pteroeides spinosum* and Coral candalabro (*Dendrophyllia ramea*) (IUCN, 2019). The presence of deep-water coral communities in the Sicilian Channel is one of the reasons for the identification of the area as an EBSA.

Sponge communities are also important for biodiversity in the deep sea, hosting aggregations of species with high abundance (IUCN, 2019). Some species can build reef structures. 172 species of sponge have been found to occur in the Mediterranean Sea associated with deep-sea corals (Santín et al., 2021). Most sponge species found the Mediterranean are also known to occur in other basins, namely the North Atlantic, therefore rates of endemism for sponges are suggested to be relatively low. Calcinai et al. (2013) conducted sampling in the Sicilian Channel in 2007, confirming the presence of 20 sponge species (19 belonging to the class Demospongiae and one to the class Hexactinellid). Of which, *Polymastia tissieri* and *Agelas oroides* are endemic to the Mediterranean. Other species found in the Sicilian Channel endemic to the Mediterranean include *Spongia zimocca* (Endangered on the Italy Red List), *Axinella cannabina* (Endangered on the Italy Red List) and *Calix nicaeensis* (Critically Endangered on the Italy Red List).

#### 4.1.5.2 Species

Species that comprise benthic communities have already been considered in the discussion of habitats above. As previously noted, ecoregional assessments have been carried for marine pelagic habitats and the outcomes of this work have previously been



discussed (see Section 4.1.2). It is important to consider the distribution of priority coastal and marine species to allow for more effective definitions of seascapes, including consideration of wide-ranging species. This includes an understanding of endemism, restricted ranges, key functions and interconnectivity.

### Fishes

In the Mediterranean Sea, fish species richness estimates lie in the region of 562 – 650 species (Coll et al, 2010). This is about 7% of the global marine fish species, categorising the overall Mediterranean Sea as a biodiversity ‘hotspot’ due to the unusually high species richness for a temperate sea (Malak et al., 2008). A total of 74 species are assessed as being endemic to the Mediterranean Seas. Endemic species are more frequently found in the western half of the Mediterranean Sea, especially around the Gulf of Lion, Ligurian, Tyrrhenian and Tunisian coastlines (Malak et al. 2008).

Specifically, within the Sicilian Channel, three key endemic bony fish species are present: the North African Shad (*Alosa algeriensis*) is located only on the North African and Sardinian coastlines; the Mediterranean Killifish (*Aphanius fasciatus*) is found in the coastal zones of the eastern Mediterranean and Sicilian Channel; and the Tortonese's goby (*Pomatoschistus tortonesei*), which is only found in a small corridor in the shallow waters of the Sicilian and Tunisian coastlines.

Wide-ranging bony fish species of commercial importance seem to transit within the Mediterranean Sea and have ranges that extend outside of this area. Of note, the bluefin tuna (*Thunnus thynnus*), swordfish (*Xiphias gladius*), and dusky grouper (*Mycteroperca marginatus*) have spawning grounds within the Mediterranean Sea. There are only two known spawning grounds of bluefin tuna globally, the Mediterranean and the Gulf of Mexico. In the Mediterranean Sea, the Sicilian Channel is one of three known spawning sites alongside the Balearic Islands and the South Tyrrhenian Sea. A similar spatial pattern is observed in the swordfish, although its range also includes the Strait of Messina, the Ionian Sea and the Levantine basin (Millot et al., 2023). The importance of the Sicilian Channel for the spawning of bluefin tuna and swordfish is one of the reasons for the identification of the area as an EBSA. For the dusky grouper, there are uncertainties with respect to the range of this species and the areas that support important function such as the exact spawning areas. However, said Lampedusa Island is one of the few known sites for this species. All of this means that the Sicilian Channel supports key functions for these species that are not present elsewhere. In addition, the wide-ranging Mediterranean shortbill spearfish (*Tetrapturus belone*) is known to be abundant in the epipelagic waters around Tunisia and Italy.

85 elasmobranch species are present in the Mediterranean Sea (Follesa et al., 2013). Combined with the intensity of fishing in the Mediterranean Sea, a significant portion (over 40%) of elasmobranch species found here are classified as threatened by the IUCN. There is a much larger proportion of Mediterranean shark and ray species threatened with extinction than the global average.

In general, the Gulf of Gabés and the Sicilian Channel appears to sustain a high diversity of sharks and rays, some of which are endemic to this region. As discussed in Section 4.3.4,

ISRAs have been defined in the seascape unit. To aid the protection of areas important for elasmobranchs, especially at key life history stages, ISRAs have been defined for the Mediterranean basin (see Section 4.3.4). The largest ISRA in the Mediterranean Sea is the Strait of Sicily and the Tunisian Plateau; and this area sustains a high diversity of sharks (32 species). This ISRA is categorised due to the importance for elasmobranchs resulting from the presence of threatened species, including common guitarfish *Rhinobatos rhinobatos* and rough skate *Raja radula*. The area is also recognised as a reproductive area for the white shark and for undefined aggregations of the sandbar shark *Carcharhinus plumbeus*. Within this large ISRA there are also four smaller ISRAs, including, on the Italian side the Egadi Archipelago ISRA, and the Pelagie Archipelago and Levante Shoal ISRA. On the Tunisian side, Kerkennah ISRA and Jerba-Zarzis ISRA, both of which are found within the Gulf of Gabés. These ISRAs are categorised for similar species and there is likely interconnectivity of species within them. Other species of note in these other ISRAs include the smoothhound sharks (*Mustelus mustelus* and *Mustelus punctulatus*) and shortfin mako (*Isurus oxyrinchus*).

Species in the families of angelsharks and guitarfish are of particular concern as some of the most threatened families of animals globally (67-100% of species in these families are threatened). There are five species from these two families which are native to the Mediterranean Sea (*Squatina squatina*, *Squatina aculeata*, *Squatina oculata*, *Rhinobatos rhinobatos*, *Glaucostegus cemiculus*). These species are therefore a conservation priority for the Mediterranean Sea. In addition, another threatened species of note, endemic to the Mediterranean Sea, is the Maltese skate (*Leucoraja melitensis*). The Maltese skate has extremely limited range, now thought to only be found in the Sicilian Channel; and it is considered rare off Malta and Tunisia. Lastly, a genetically distinct population of white sharks (*Carcharodon carcharias*) is present in the Mediterranean Sea. There is a lack of data to inform the understanding of the distribution and range of this subpopulation, but it appears to be most frequently observed in the Sicilian Channel. The Sicilian Channel is recognised as a nursery area for this species - being one of the reasons for the identification of the area as an EBSA.

#### Marine mammals

12 marine mammal species, comprising 11 cetacean and one pinniped species, are regularly observed and thought to be resident in the Mediterranean Sea (Coll et al, 2010; Notarbartolo Di Sciara, 2016). Alongside the 12 resident cetacean species in the Mediterranean Sea, there are sporadic observations of 16 other species (Notarbartolo Di Sciara, 2016). An important feature of the marine mammals in the Mediterranean Sea is that six species have subpopulations that are genetically distinct to other global populations namely, common bottlenose dolphin (*Tursiops truncatus*), common dolphin (*Delphinus delphi*), fin whale (*Balaenoptera physalus*), sperm whale (*Physeter macrocephalus*), Cuvier's beaked whale (*Ziphius cavirostris*) and Risso's dolphin (*Grampus griseus*).

During assessment undertaken by the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area (ACCOBAMS) areas in the Mediterranean Sea were identified as critical habitat for cetaceans. This included the waters around the islands of Malta extending to south-eastern Sicily and the Strait of Sicily

(Oceana, 2011; UNEP, 2015a). Following on from this, 24 IMMAs have been identified in the Mediterranean Sea (see Section 4.3.4). The importance of the Sicilian Channel for cetaceans is one of the reasons for the identification of the area as an EBSA.

Within the Sicilian Channel, two IMMAs have been confirmed, being Kélibia IMMA and Lampedusa IMMA. Two candidate IMMAs (the east of Sicily and Strait of Messina and the waters surrounding the Maltese Islands) and three areas of interest have also been identified for this area. Kélibia IMMA is located around the Cap Bon Peninsula in northeast Tunisia and the cable route transects this area. This IMMA hosts a locally resident subpopulation of Vulnerable Mediterranean common bottlenose dolphins. Individuals are consistently observed in the region and appear to have long-term site fidelity to the IMMA. Common bottlenose dolphins are reported in nearshore areas along the coast of Tunisia suggesting its range extends beyond IMMA areas (UNEP, 2015a). Lampedusa IMMA is also considered an area of conservation note for common bottlenose dolphins and fin whales. Fin whales are known to congregate in the Lampedusa IMMA in early spring. The range and distribution of fin whales in the Mediterranean Sea is largely uncertain, but other important areas include the Ligurian Sea in the northwest of the Basin. UNEP (2015a) reported on sightings of fin whales across the Sicilian Channel, with a hotspot around Lampedusa. They also reported on strandings on the coast of Tunisia. The candidate IMMA (cIMMA) that covers waters around the Maltese Islands is of importance for common dolphins and this area forms part of the wider cetacean habitat identified by ACCOBAMS. It is possible that common dolphin ranges will extend beyond IMMA areas. Bearzi et al. (2021) reported that common dolphins occur largely as scattered small groups in parts of the southern Tyrrhenian Sea, Sicily Channel and Ionian Sea.

IMMAs in the Sicilian Channel have not been defined for the presence of sperm whale and Cuvier's beaked whale. However, other IMMAs have been identified for both these species in the Mediterranean Sea. One candidate IMMA in the Strait of Messina seems to have high acoustic presence of sperm whales and it is suggested they are using this Strait to migrate between the western and eastern Mediterranean Sea. Juvenile and sub-adult sperm whales are thought to roam widely across the Mediterranean Sea, but social units seem to be spatially confined to some identified areas, including the Alboran Sea, Tyrrhenian Sea and Aegean Sea (UNEP, 2015a). Sperm whale observation in the Sicilian Channel are few (UNEP, 2015a). Cuvier's beaked whale is rarely sighted. Only some stranding records exists for the Sicilian Channel on the southern coast of Sicily (UNEP, 2015). The overall range of these species is unknown, but it is possible for some individuals to be present in the Sicilian Channel, especially in deep water areas with submarine canyons, seamounts and escarpments (UNEP, 2015a). Risso's dolphins occur mainly in continental slope waters throughout the Mediterranean Sea as well as around many of the region's offshore islands and archipelagos. Sightings have been consistently reported in the western Mediterranean and Greece (UNEP 2015a). In the Sicilian Channel strandings have been recorded on the coast of Tunisia and there are a small number of live sightings around Malta (UNEP, 2015).

The Mediterranean monk seal (*Monachus monachus*) is endemic to Mediterranean Sea. The distribution of this species has reduced as the population has declined. The stronghold of the species is now within islands of the Ionian and Aegean Seas, and along the coasts of

mainland Greece, Cyprus, and western and southern Turkey. However, monk seals have been recorded in the Egadi islands archipelago and Pantellaria Island, and this species forms part of the reason for the designation of SACs in these areas.

### Reptiles

Six sea turtle species have been recorded in the Mediterranean Sea. Leatherback turtles (*Dermochelys coriacea*) are regularly sited in the Mediterranean Sea, but no known nesting sites exist for this species (Casale et al., 2018). Hawksbill (*Eretmochelys imbricata*) and Kemp's ridley (*Lepidochelys kemp*) turtles have been very infrequently observed and thought to be sporadic 'visitors' (Tomas and Raga, 2008). There are only a small number of sightings of these species, in the Mediterranean Sea, and this includes a very small number of records of both species in the Sicilian Channel (Tomas and Raga, 2008; Laurent and Lescure, 1991). The olive ridley turtle (*Lepidochelys olivacea*) has also been recorded off the eastern coast of Spain (Revuelta et al., 2015), but is an extremely rare vagrant.

The loggerhead turtle (*Caretta caretta*) and green turtle (*Chelonia mydas*) reside and nest within the Mediterranean. A specific Mediterranean Sea subpopulation has been defined for loggerhead turtles. There is an influx of individuals from both these species from the Atlantic. There is a large influx is from juvenile loggerhead turtles from the Atlantic into the western Mediterranean basin that mix turtles from the Mediterranean subpopulation (Casale, et al., 2018; DiMatteo, 2021). However, these are genetically separated from the Mediterranean subpopulation. Such genetic differentiation has not been confirmed for green turtles (Casale, et al., 2018).

Nesting sites for both nesting species are predominately found in the central and eastern portions of the Mediterranean Sea. For loggerhead turtles, more than 96% of clutches are laid in Greece, Turkey, Libya and Cyprus (Casale et al., 2018). Of these areas, Greece supports approximately 50% of nesting activities. Relatively minor nesting sites have been confirmed on both sides of the Sicilian Channel for loggerhead turtles. Further research and monitoring are needed as accurate annual nesting populations are unknown here. However, between 1944 and 2015 a total of 323 loggerhead turtle nests were recorded in Sicily (Olga Prato et al., 2022). Some coastal SACs in southern Sicily include loggerhead turtles in their description of qualifying features, including the Sistema dunale Capo Granitola Porto Palo e Foce del Belice SAC that the cable transects. Along the Tunisian coastline, small levels of nesting have been recorded on beaches at Chebba, Zarzis, Hergla, the Kuriat Islands and Nefza (Jribi, 2014; Jribi et al., date unknown). In most areas, nests are not regularly observed. Of these sites, the Kuriat Islands is thought to have regular nesting and the highest number of nests (Jribi et al., date unknown). There is evidence that there is an upward trend in nesting activity in this region (Hochscheid et al., 2022). Jribi et al. (date unknown) have reported upon a nesting suitability study undertaken along the whole Tunisian coastline. Areas with potential for irregular nesting were identified in some areas on the coast of the Sicilian Channel, including at El Mansourah, El Fatha and Tzarka, which lie on the same coastline as the cable landing site. The loggerhead turtles that nest on the coasts within the Sicilian Channel form part of the broader Mediterranean Sea subpopulation and will be interconnected with broader foraging grounds, although dispersal from these sites has not been studied. For green turtles, the 13 main nesting sites

are in Turkey Cyprus and Syria. The most western nesting record of green turtles has been in Crete, which was considered as an exceptional case (Casale et al., 2018). No nesting of this species is known to occur in the Sicilian Channel.

Loggerhead turtles can be found throughout all oceanic areas of the Mediterranean Sea. 80% of juveniles of the Mediterranean Sea subpopulation are recorded in the eastern, central and north-western Mediterranean parts of the basin. Casale et al. (2018) identified the Sicilian Channel as a significant foraging area within the overall Mediterranean Sea for loggerhead turtles. They reported that the Sicilian Channel forms a significant migratory corridor from nesting sites in Greece. They also reported connectivity to this area from all nesting sites of the subpopulation through coastal migratory corridors. Schofield et al. (2013) also determined the Sicilian Channel as being a major foraging site for nesting loggerhead turtles in Greece from the evaluation of satellite telemetry data. DiMatteo et al. (2021) determined the spatial distribution of in-water abundance in the Mediterranean Sea, and they also reported that the Sicilian Channel hold a very significant number of individuals. The connectivity of the Sicilian Channel with major nesting sites for the subpopulation and the assessments of in-water abundances here would suggest that the Sicilian Channel is significant for the overall subpopulation. Considerable inter-basin exchange is also funnelled through narrow physical passages, such as the Strait of Messina, Strait of Otranto and Sicilian Strait (Casale et al. 2018; Schofield et al., 2013; DiMatteo, 2021). The presence of sea turtles in the Sicilian Channel is one of the reasons for the identification of the area as an EBSA, primarily relating to its importance for loggerhead turtles.

A very significant proportion of green turtles that nest in the eastern basin forage in the Lake Bardawil area on the Sinai Peninsula (Casale et al. 2018). By-catch studies have confirmed foraging grounds in Turkey, Cyprus, Syria, Israel, Egypt, Libya, Greece and Albania (Casale et al. 2018). However, from the evaluation of satellite telemetry data, Casale et al. (2018) confirmed a nearshore migratory corridor extending from Turkey to Tunisia, with Djerba Island forming the western limit for tracked individuals. From such studies, Casale et al. (2018) confirmed the presence of foraging grounds in the southern part of the Sicilian Channel. As green turtles forage in seagrass meadows, the presence of such habitats further west could suggest that the range of individuals nesting in the eastern area of the Mediterranean may extend beyond this area, although this cannot be confirmed. It is also possible for inter-basin exchange to occur through the Strait of Sicily, although there are no specific studies that confirm this. Whilst the Sicilian Channel provides support for green turtles nesting in the eastern Mediterranean, it is unlikely to host a significant number of individuals at any one time; and based on existing information this area is less important than major foraging aggregation areas that have been identified to the east.

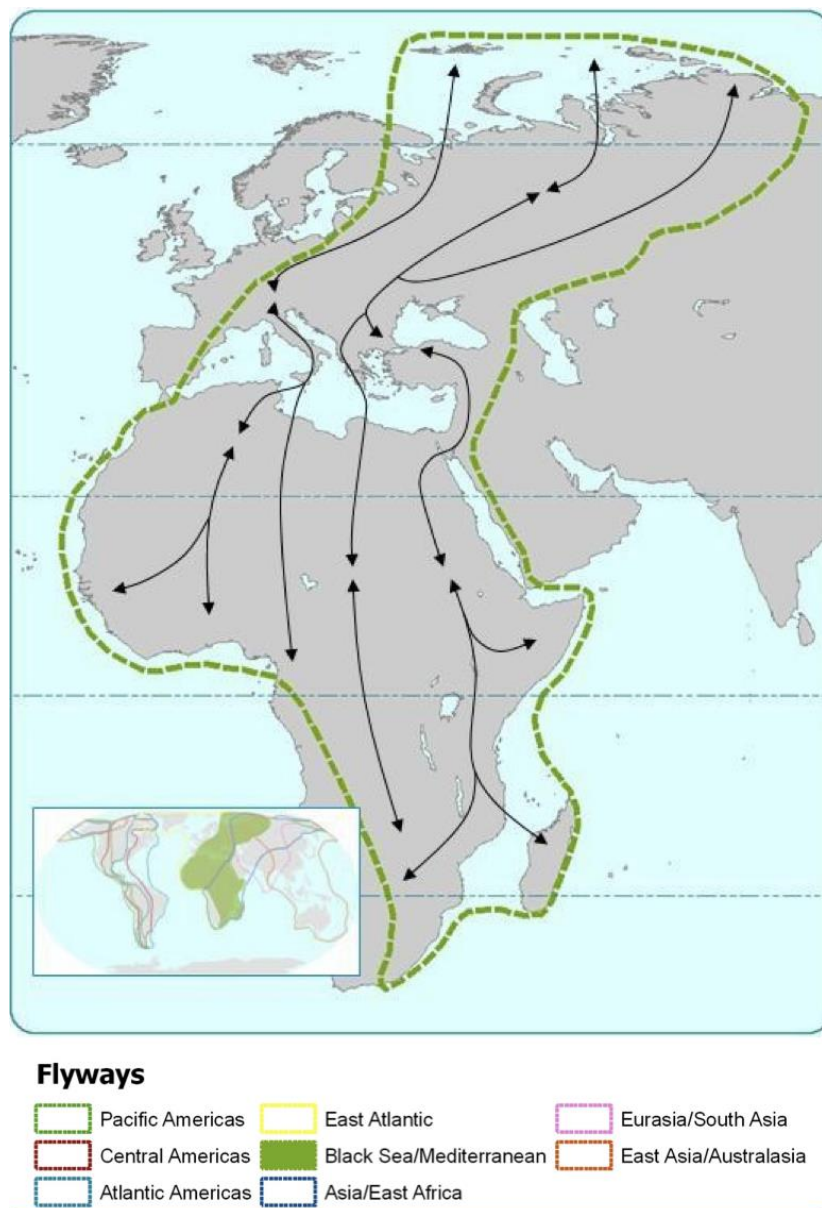
In addition to sea turtles, the Sicilian pond turtle (*Emys trinacris*) has a wide, but fragmented distribution on the island of Sicily, which relates to its limited dispersal capability (Vechhioni, 2022). This endemic species is listed as Endangered under the Italian Red List. Whilst it is a freshwater species, it is found in coastal areas within wetland areas and small ponds. Ottonello et al. (2021) reported that it appears to be more widespread in the northern and central-western parts of Sicily, but there is limited data to establish overall



populations. However, it is recorded on the southern coast of Sicily. Indeed, it is recorded in some SACs in southern Sicily in their description of qualifying features, including the Sistema dunale Capo Granitola, Porto Palo e Foce del Belice SAC at the cable landfall.

### Birds

The Mediterranean is a significant flyway between Europe and Africa (Figure 14). Therefore, coastal areas provide important habitat for migratory birds. Several threatened coastal birds in the Sicilian Channel area are included in the Italian Red List. The Marbled Teal (*Marmaronetta angustirostris*) is a migratory coastal species, listed as Near Threatened globally but as Endangered on the Italy Red List. This species is known to present in large numbers within the Korba IBA on the coast of Tunisia where around 1% of the global population may be found.



**Figure 14: The major flyways between Europe and Africa over the Mediterranean.**  
**Source: datazone.birdlife.org**

Many of the Natura sites (including SACs and SPAs) on the coast Sicily list numerous bird species. A review of these has shown that many species are common across the coastal areas. RAMSAR sites and IBAs are designated for their importance to birds. The coastline of Tunisia, especially the Gulf of Gabés, has a high number of RAMSAR sites in comparison to other areas on the coasts in the Mediterranean. The distribution of IBAs is widespread across the Mediterranean basin but with reasonably distinct patches in the Balearic Sea, Aegean Sea, Ligurian Sea and the Sicilian Channel.

Seabirds specifically have a low diversity in the Mediterranean (comprising 15 species) and small population densities, likely due to the relatively low productivity here compared to open ocean and upwelling regions. However, eight of the nine breeding seabirds present in the Mediterranean are either endemic species or a subspecies (UNEP, 2010). UNEP (2010) mapped the spatial distribution of priority conservation areas for seabirds in the Mediterranean. The mapping identified key hotspot areas along the nearshore areas of the western basin, Adriatic Sea and the Aegean Sea and the Sicilian Channel. The Sicilian Channel is a key feeding area for several species. Of note, it supports 90% of the global population of Scopoli's Shearwater (*Calonectris diomedea*) (UNEP, 2015), 10% of the global population of the Yelkouan Shearwater (*Puffinus yelkouan*) and provides important habitat for the endemic Mediterranean Storm-petrel (*Hydrobates pelagicus melitensis*). These are key reasons for the identification of the entire Sicilian Channel as an EBSA. Scopoli's Shearwater makes the longest foraging trips of all Mediterranean seabirds, and birds from distant breeding colonies often converge spatially (UNEP, 2015b). Birds from key colonies in the area cover broad foraging areas across the Sicilian Channel, especially on the Tunisian Plateau. Yelkouan shearwaters range from the Sicilian Channel to the Black Sea. This species occupies the coastal area and feeds mainly in the nearshore but is also known to forage in frontal areas. They range across the channel but are mostly concentrated on the Tunisian Plateau. The central Mediterranean Storm-petrel population concentrates in two breeding colonies in Malta and the Egadi islands archipelago. This species is found in the outer part of the continental shelf and high seas (UNEP, 2015b). The pelagic distribution of this species is thought to extend across the Sicily Channel, with perhaps the most important foraging grounds to the South, on the Tunisian Plateau (UNEP, 2015). Other endemic species of note in the Sicilian Channel include the Mediterranean shag (*Phalacrocorax aristotelis desmarestii*), Audouin's Gull (*Larus audouinii*), Mediterranean Gull (*Larus melanocephalus*) and Balearic Shearwater (*Puffinus mauretanicus*) (UNEP, 2015b).

#### 4.1.6 Summary

The CEPF Mediterranean biodiversity hotspot presents a broad seascape area that encloses a variety of ecoregions relating the bio-physical patterns and processes within the Mediterranean Sea. The sea includes patches of homogeneity but there is a high degree heterogeneity across ecological components within the overall basin. The assessment of ecological and physical patterns and processes and priority areas for conservation provide information to determine the presence of ecoregional units in the broad seascape and provide context for the area in which the project site is located. The determination of such seascape units is fundamental in helping to define EAAAs of relevance to the project site. In general, the studies that have been reviewed would suggest that the project site generally

sits within a seascape unit that comprises the Sicilian Channel bound by deeper water zones to the west and the remaining Tunisian Plateau/ Gulf of Sidra area bound by the deeper waters of the southern Ionian Sea.

## 4.2 Screening of biodiversity values

The review of seascape conditions has concluded that the Project site is in an area that has some specific attributes that are different to other areas in the Mediterranean Sea. Therefore, a screening exercise was undertaken in this seascape unit to determine the potential presence of habitats and species that may be characterised as PBF or critical habitat.

A screening exercise was undertaken to create a list of species requiring assessment. This list is provided in Appendix A. A total of 267 species were included in the screening exercise. Features that were considered to have potential to be PBF or critical habitat were taken forward for further assessment and the remainder were screened out. EAAAs were established to support the assessment of features as described in Section 4.3.

## 4.3 EAAA determination

### 4.3.1 Introduction

As previously discussed, the seascape review has helped to define a seascape unit of importance for multiple values; and these have been considered for the determination of EAAAs.

In general, the determination of EAAAs is driven by habitat and species-specific attributes and ecological processes; and EAAAs need to be initially defined for each habitat and feature. For the definition of EAAAs it was important to determine if individual assessment areas are required for each feature or whether it is appropriate to define an aggregation approach based on the characteristics of the seascape unit. Aggregation approaches to EAAA determination may be possible where there are multiple values that have largely overlapping requirements and distributions (Cousins and Pittman, 2021). This is possible where there is, for example: clustering of habitats, clear and distinct habitat mosaics, clear habitat and species associations and there is sharing of such associations across different groups, interconnectivity, clear physical boundaries that place limits on habitat or species, spatially limited important functions for wide-ranging species, conservation priorities have previously been defined for specific features or multiple values. Also, where there is data uncertainty applying broad areas of assessment will provide a precautionary approach for the assessment (Cousins and Pittman, 2021). Consideration was given to areas that support key functions for wide-ranging species (e.g., areas of breeding, nesting, nursery, movement corridors etc.). This included a review as to whether boundaries can be determined based on existing mapping of priority conservation areas for specific species; and if there are any additional areas that are of importance to support and maintain populations.

The following presents the process that was undertaken to define EAAAs for habitats and species. EAAA determination was applied to features that may be PBF or critical habitat within the seascape unit.

### 4.3.2 Habitats

#### 4.3.2.1 Coastal

The determination of appropriate EAAAs for coastal habitats followed the key steps set out below:

- Review of the presence of coastal habitats in Annex 1 of the EU Habitat Directive and Resolution 4 of the Bern Convention based at the cable landfall sites; and
- Assessment of heterogeneity of habitats across adjacent coastline areas.

As stated in Section 4.1.5.1, there is limited broad-scale information for coastal habitats across the seascape study area. However, on the Sicilian coastline several Natura 2000 sites are present. The habitats within these areas were reviewed to see if they may trigger PBF or critical habitat. Such detailed information is not available for the Tunisian coastal areas. However, some information is available for studies previously undertaken for the project; and habitats have also been broadly inferred from the features of protected areas and the review of Google Earth Imagery.

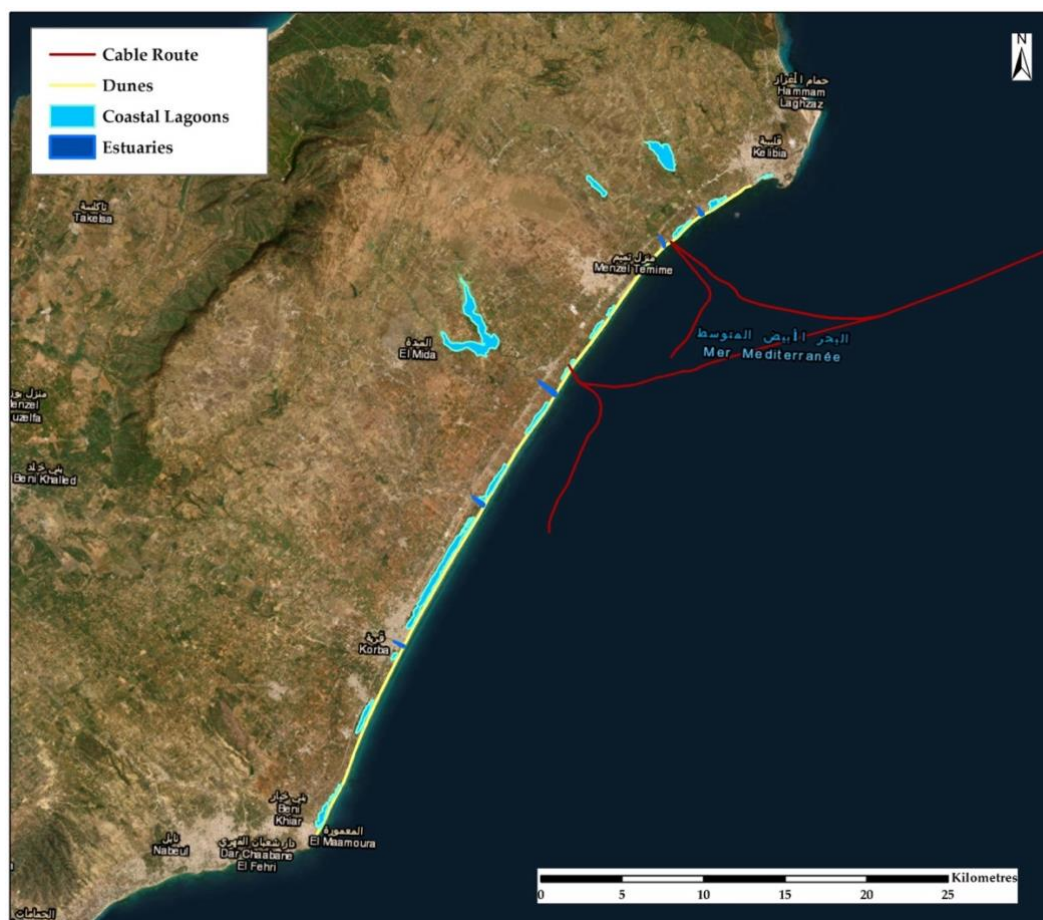
The cable landing site at Marinella on the coast of Sicily is located within the Sistema dunale Capo Granitola Porto Palo e Foce del Belice SAC. It also lies within 300m of the boundary of the nationally designated Riserva naturale Foce del Fiume Belice e dune limitrofe. To inform the determination of EAAAs of coastal habitats on the Sicily coastline, the habitat of the Natura 2000 site was reviewed to understand if they are unique or extend more broadly as individual patches or as part of mosaics. As Natura 2000 sites relate to the Habitats Directive, only habitats listed within Annex 1 were considered. However, these habitats have close associations with Resolution 4 of the Bern Convention.

The analysis identified some shared characteristics from the west of Marsala town along the entire southern coastline to the southeast of Sicily. Therefore, the characteristics of 16 Natural 2000 sites across this whole coastline area, extending approximately 300 km, were analysed to determine the extent of shared habitat characteristics. The analysis presented in Appendix B and shows that some habitats found in cable landing area on the Sicilian coast are commonly found across all the Natura 2000 sites that were evaluated. The spatial spread of these habitats is large across the whole southern coastline of Sicily. The overall results of the analysis show a complex mosaic of habitats with some site-specific variations. In some instances, this may relate to the presence of rivers, extend further inland or other morphological variations (e.g., presence of cliffs). Such habitats were excluded on the basis that they were distinct features that do not share common characteristics across the area or are not relevant in context to the cable landing area. Based on this analysis, the minimum area of the EAAA for all habitat types may be the SAC that is present at the cable landfall; and the maximum area would include the whole southern coastline of Sicily. It should be noted that the analysis has excluded areas that lie outside of the Natura 2000 sites, which may mean that some habitats are more widespread.



Given these uncertainties, a precautionary approach is appropriate for defining the spatial distribution of habitats. Therefore, a broad EAAA that includes the whole southern Sicilian coastline was defined (see Section 4.3.5).

Less information is available relating to the habitats on the coast of Tunisia at the cable landfall and this requires more detailed site-specific assessment. However, some information is available from the review of Google Imagery and the mapping of internationally recognised areas of biodiversity value. This review has identified the presence of intertidal beaches backed by dunes that extend from the towns of Kélibia in the north and Nabeul to the south. In this area, several estuaries dissect the coast. There is almost continuous strip of sandy beaches and dunes. Behind these areas are numerous coastal lagoons, most of which collectively form part of the Lagunes du Cap Bon oriental Ramsar Site (see Figure 15). Of these lagoons, the primary areas of importance appear to be to south of the site at Korba where this area is artificially flooded throughout the year using surface and wastewater discharges. The remaining areas comprise sabkha that are periodically flooded during the winter during times of rainfall. The cable dissects such an area of sabkha. Both cable landfalls are in some or all these habitats. Based on the review of information, the shared characteristics of this area mean that as a minimum, the EAAA should comprise the whole coastal area shown in Figure 15.



**Figure 15: Mapping of priority coastal habitats in the context of the cable landing sites in Tunisia**



#### 4.3.2.2 Marine

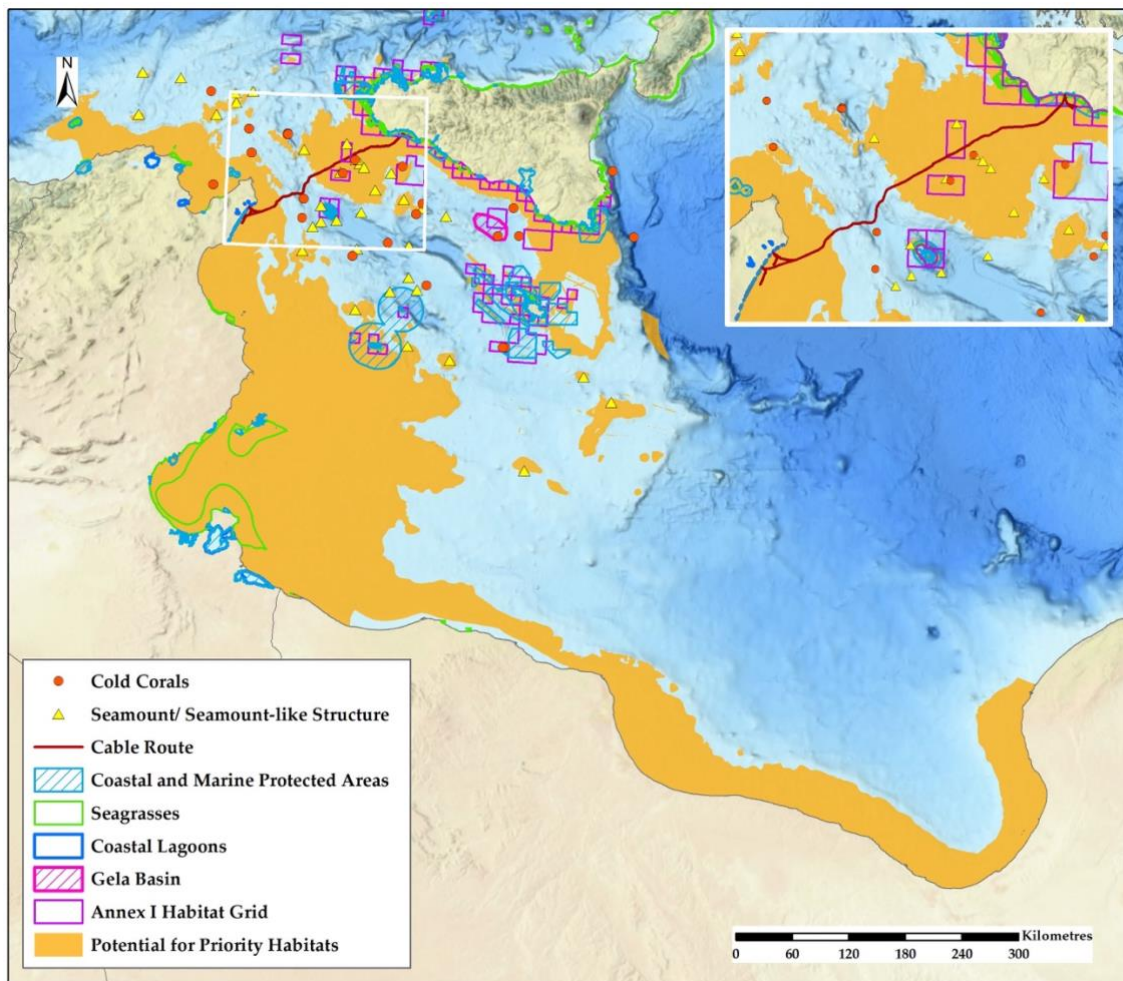
Several steps were undertaken to gain an understanding of the distribution of marine habitats potentially qualifying as PBF or critical habitat.

As a first step, data on benthic habitats available from EMODnet was reviewed to identify where there is potential for overlap with habitats listed in Annex 1 Habitats Directive or Resolution 4 of the Bern Convention. Areas were mapped as being overlapping with (to some degree) or equal to these habitats. The EMODnet mapping takes modelling approach and is therefore does not present the precise conditions that may be found. Also, the potential of overlap does not necessarily mean that PBF or critical habitat is present as this required a more detailed analysis using site-specific information. However, mapping of this habitat presents an indicative idea of distribution of possible areas of potential priority habitats. Habitats that are expected to be critical habitat based on their prioritisation within Annex 1 of the Habitats Directive were mapped separately through using EMODnet data or a review of site-specific information.

For European waters within the seascape unit, EMODnet provides areas that have been pre-defined as Annex 1 habitat. Therefore, as a second step these areas were mapped to determine the relationship of such areas with the areas that were mapped as being potential priority habitats. The mapping of Annex 1 habitats shows some overlap with areas that are indicatively mapped as having some overlap, but these areas are much more spatially limited. This suggests that the indicative mapping of priority habitats extends beyond where it may be located through the assessment of more detailed site-specific information. This is especially of note for Tunisian waters where the Annex 1 habitats have not been assessed.

As a third step, further mapping was undertaken of additional deep-sea features that are not specifically mapped by EMODnet, including coastal lagoons, seamounts, deep water corals and cold seeps. Finally, protected areas were mapped as these may comprise priority habitats.

The mapping of such features in the seascape is presented in Figure 16. The proposed cable route is seen to pass through Annex 1 habitats identified as reefs in the central Sicilian Channel and the nearshore waters of Sicily; and seagrass beds in the nearshore area of Sicily.



**Figure 16: Mapping of marine habitats that could include priority habitats**

In addition to the broad-scale mapping approach site-specific survey information was reviewed to inform the broad assessment and mapping of marine habitats. This review had a specific focus on the confirming the presence of priority habitat. For the Sicily portion of the cable route, information is available along corridors to Kartibubbo and Marinella. Along the nearshore route to Kartibubbo, *Posidonia* meadows extend in a large patch to roughly 2.827 km from the shore. In the nearshore route to the Marinella landfall site, two seagrass species were recorded, *Cymodocea nodosa* and *Posidonia oceanica*. *C. nodosa* was noted to be sparsely distributed. *Posidonia* meadows were found to be extremely dense in an area located 625 m west of cable, but these appear to be spatially limited to this area. The areas where seagrass meadows were recorded correspond with the coarse mapping available in EMODnet data. In the nearshore waters of Tunisia, RINA (2021) assessed the potential presence of seagrass habitats at the cable landing point to the south of Kélibia. During site visits that were undertaken for feasibility studies, thick banquettes of *Posidonia oceanica* were observed. It was concluded that there are likely to be a broad expanse of this habitat in nearshore areas (RINA, 2021). Of note, seagrass beds are not mapped within the EMODnet data in the nearshore waters of Tunisia, which suggests that there is a gap with respect to the mapping of such habitats in this area and potentially other nearshore zones

of Tunisia, even though seagrass beds are mapped to the south around Sousse and in the Gulf of Gabés.

Site-specific surveys have also been completed for offshore zone along the cable route. This information was reviewed to determine if any priority habitats were present and to confirm the findings of the broad-scale review discussed above. The survey comprised seabed characterisation using ROV and benthic sampling (RINA, 2023). The findings confirm the presence of sensitive habitats, including the priority habitats included in the review discussed above. Of note, the survey identified the presence of reef-supporting structures (e.g., hard substrate) and associated habitat types, including, for example, including coralline algal formations (comprising mærl beds). From the information reviewed on the Italian portion of the cable route, hard substrate areas have been avoided, although in some sections the cable lies in proximity to reef areas.

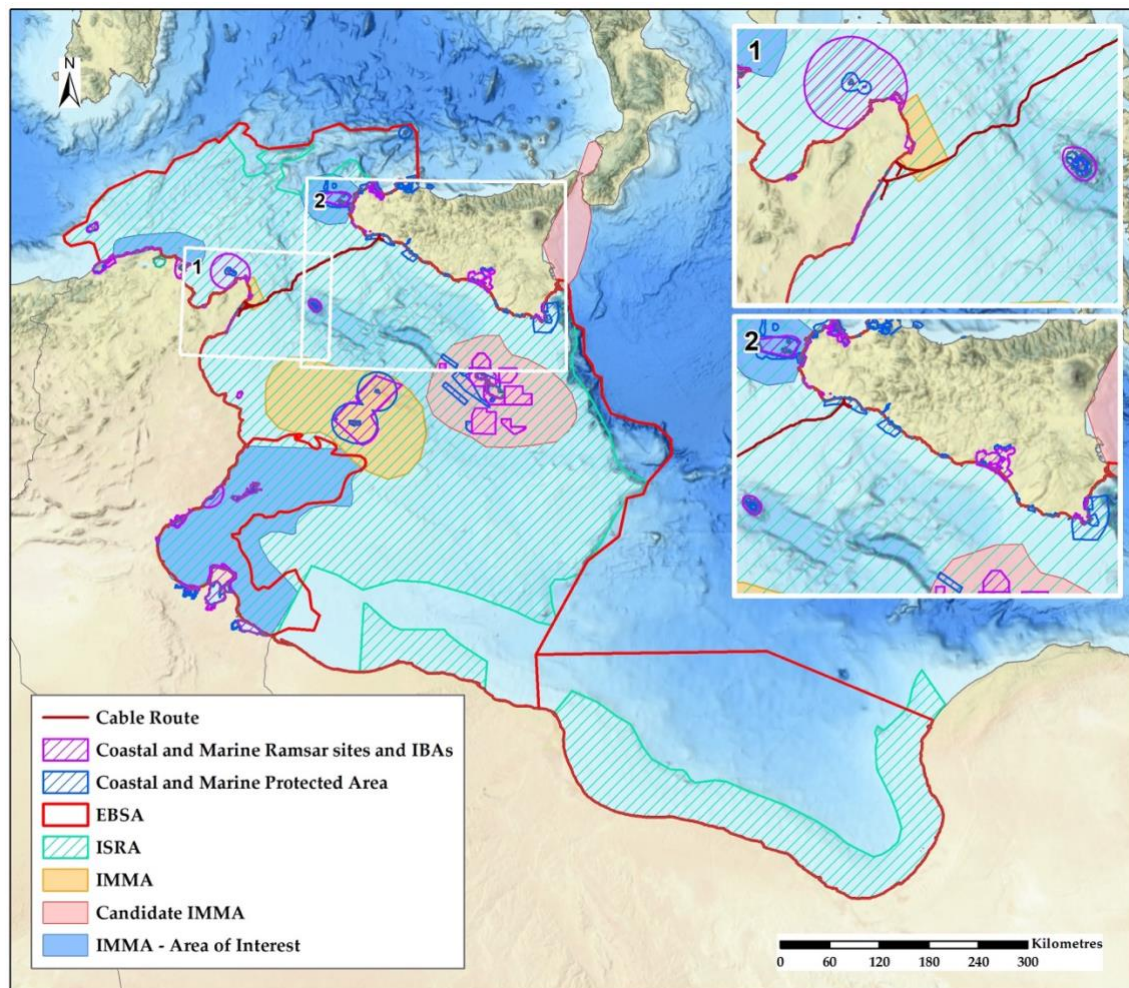
### 4.3.3 Species

The seascape review identified the seascape unit as comprising a hotspot for many species, including threatened, endemic and subpopulations. In addition, existing conservation mapping has defined the Sicilian Channel as being of importance and a hotspot for fishes, birds, reptiles and marine mammals. Whilst there is potential for the range and distribution of some species to extend beyond this area, it is possible to focus on the important functions for such species, which are clearly defined in the seascape unit. The seascape review has therefore enabled a marine EAAA to be defined that has an appropriate context for wider ranging species (see Section 4.3.5).

### 4.3.4 Conservation priorities

To further inform the definition of EAAAs, legally protected and internationally recognised areas of biodiversity value were mapped within the seascape unit. In addition, other areas with recognised high biodiversity values were mapped (see Figure 17). These areas represent priority areas for conservation and their mapping indicates the overlap and potential connectivity across these areas.





**Figure 17: Mapping of priority conservation areas in the seascape unit area**

#### 4.3.5 The defined EAAAs

The seascape review and the analysis of multiple values that comprise the seascape unit supports the broad aggregation of values into EAAAs that cover the marine environment and the coastal zones of Tunisia and Sicily. The proposed EAAA boundaries that have been defined are shown in Figure 18.

The marine EAAA is largely consistent with the boundaries of the EBSA and ISRAs and cover the whole Sicilian Channel area. This whole will be treated as a single area of analysis unit for the assessment rather than being separated into coastal shallow water habitat, nearshore habitat and offshore pelagic habitat.

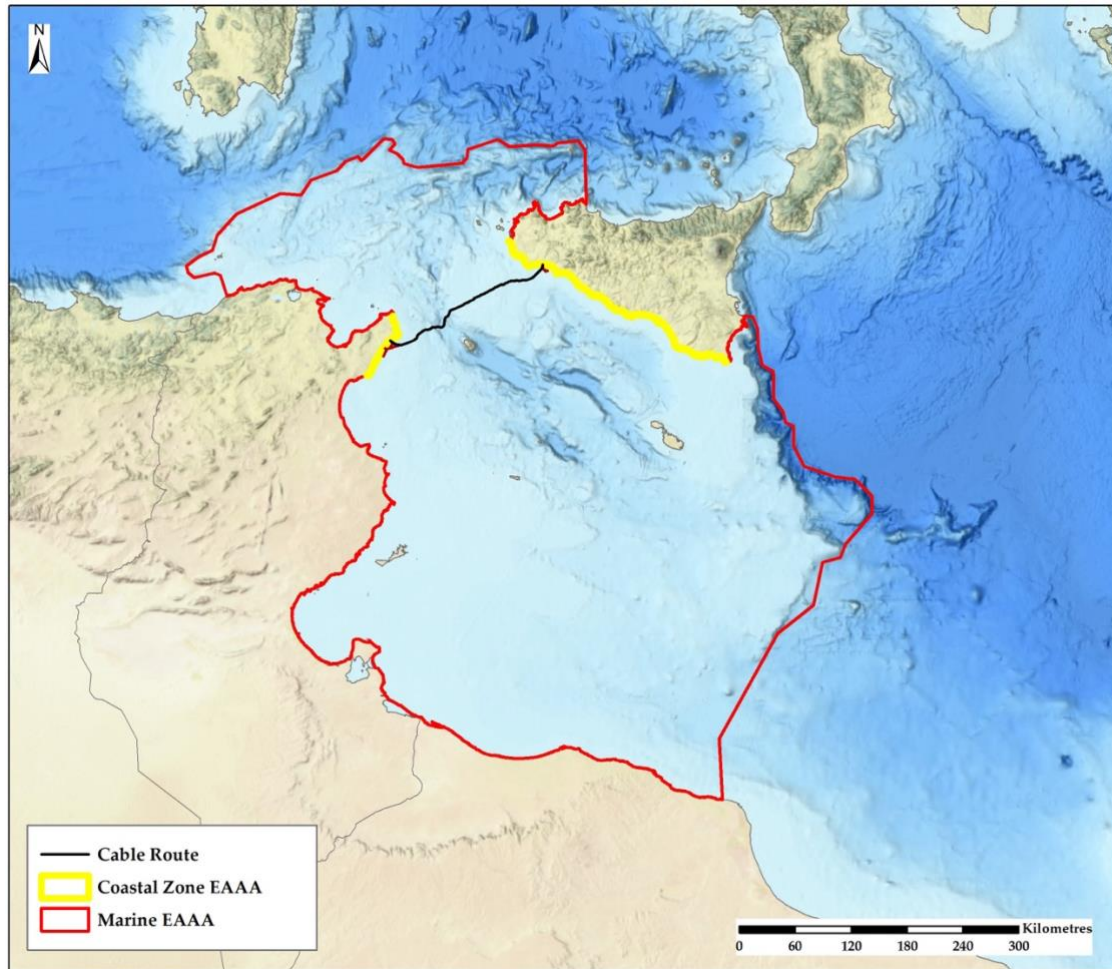
Two coastal EAAAs are defined in Tunisia and Sicily and both areas lie within the overall marine EAAA area. These areas provide a commonly shared mosaic of habitat features that have shared associations with species as described above.

The EAAAs take account of overlapping areas that provide key ecosystem functions for multiple species, as well as predicted broader interconnectivity at a species level; and enclose areas for spatially limited endemic species.



The EAAAs also incorporate the legally protected and internationally recognised areas and other areas of conservation value, as well as possible interconnectivity between areas that lie within the EAAAs.

Finally, the broad definition of the EAAAs also takes account of the uncertainties in data that exist for multiple values found in the seascape unit.



**Figure 18: Aggregated EAAAs defined for marine and coastal zones**

## 5 Results

The following results related to the baseline understanding that has been reported upon for the seascape analysis and EAAA determination.

### 5.1 Priority Ecosystems

#### 5.1.1 Critical habitat

Table 2 presented the coastal and marine habitats that are defined as critical habitat within the EAAAs.

**Table 2: Coastal and marine critical habitat**

Criteria	Qualifying coastal habitat	Qualifying marine habitat
(a) EAAA is habitat type listed in Annex 1 of EU Habitats Directive marked as “priority habitat type”	Coastal lagoons.	<i>Posidonia</i> beds.
(b) EAAA ≥5% of global extent of an ecosystem type with IUCN status of CR or EN	Not assessed by IUCN.	Not assessed by IUCN.
(c) EAAA is ecosystem determined to be of high priority for conservation by national systematic conservation planning	Coastal lagoons.  The whole coastal EAAAs, including a network of coastal Natura 2000 sites or Ramsar sites subject to conservation planning and management. Additionally, IBAs are present.	<i>Posidonia</i> beds.  Reefs and their associated structures, including deep-sea coral and sponge communities and nearshore biogenic reefs ( <i>Cladocora caespitosa</i> and coralline algal formations).  The whole EAAA comprising a network of marine Natura 2000 sites subject to conservation planning and management. Additionally, EBSAs, ISRAs and IMMAs are defined. There is expected to be with broad critical habitat species interconnectivity within and across all these areas.

### 5.1.2 PBF

PBF help to form the broad critical habitats within the EAAA related to the conservation importance of the area, including features of Natura 2000 sites. However, an assessment has been completed to define the specific PBFs relating to criteria. Where specific habitats are included as critical habitat they are not listed as PBF. IUCN Red list Ecosystem assessments have not been undertaken for the EAAAs. Therefore, assessment under this Criterion is not relevant. The assessment against the remaining Criterion is presented in Table 3.

**Table 3: Habitat type listed in Annex 1 of EU Habitats Directive or Resolution 4 of Bern Convention and thus qualifying as PBF**

Qualifying coastal habitat	Qualifying marine habitat
Coastal EAAAs broadly enclose Annex 1 and Resolution 4 habitats. On the Sicilian coast, this includes all habitats listed in Appendix B that are not classified as critical habitat. For the Tunisian EAAA further site-specific survey information is needed, but broad mapping suggest that the site may include qualifying dune habitats that may qualify as PBF and estuaries that do qualify as PBF.	Annex 1 and Resolution 4 habitats are found broadly across the marine EAAA. The specific qualifying features that apply under this Criterion include: <ul style="list-style-type: none"> <li>• Widespread sandbanks which are slightly covered by sea water all the time.</li> <li>• Widespread sublittoral sediment.</li> <li>• Patches of submerged or partially submerged sea caves.</li> </ul>

## 5.2 Priority Species and their habitats

### 5.2.1 Critical habitat

Appendix C provides information on each critical habitat species to support the conclusions that have been drawn below.

The coastal and marine critical habitat species are presented in Table 4.

**Table 4: Coastal and marine critical habitat species**

Criteria	Qualifying coastal and marine species
<b><i>Threatened species</i></b>	
(a) EAAA for species and their habitats listed in Annex IV of the Habitats Directive (See EU restrictions)	<p>The marine EAAA encloses multiple species that qualify under this criterion.</p> <p>Qualifying species where the marine EAAA is of known conservation importance include:</p> <ul style="list-style-type: none"> <li>- Fan mussel</li> <li>- Loggerhead turtle</li> <li>- Common bottlenose dolphin</li> <li>- Common dolphin</li> </ul>

Criteria	Qualifying coastal and marine species
	<ul style="list-style-type: none"> <li>- Fin whale</li> </ul> <p>Other species where the marine EAAA is unlikely to support significant populations or be of high importance in comparison to other areas:</p> <ul style="list-style-type: none"> <li>- Green turtle</li> <li>- Mediterranean slipper lobster</li> <li>- Mediterranean monk seal</li> <li>- Leatherback turtle</li> <li>- Sperm whale</li> <li>- Risso's dolphin</li> <li>- Cuvier's beaked whale</li> </ul> <p>Other qualifying species that are listed in literature as being within the marine EAAA, but are likely to be regionally extinct* or would be, at best, infrequent visitors in the marine EAAA, include:</p> <ul style="list-style-type: none"> <li>- European sturgeon*</li> <li>- Hawksbill turtle</li> <li>- Kemp ridley turtle</li> <li>- Long-finned pilot whale</li> </ul>
(b) EAAA supports ≥0.5% of the global population AND ≥5 reproductive units of a CR or EN species	<p>The EAAAs encloses multiple species that qualify under this criterion.</p> <p>Qualifying species globally on the IUCN Red List characterised with relatively high levels of certainty based on functions and distribution, include:</p> <ul style="list-style-type: none"> <li>- Maltese skate</li> <li>- Tortonese's goby</li> <li>- Fan mussel</li> </ul> <p>Likely qualifying species based on extent of occurrence and presence of important functions, include:</p> <ul style="list-style-type: none"> <li>- Fin whale – for the Mediterranean subpopulation</li> </ul> <p>Potential qualifying species with uncertainty related to populations and/ or ranges, include:</p> <ul style="list-style-type: none"> <li>- North African shad</li> <li>- Sawback angleshark</li> <li>- Smoothback angleshark</li> <li>- Blackchin guitarfish</li> <li>- Rough skate</li> <li>- Angleshark</li> </ul>



Criteria	Qualifying coastal and marine species
	<p>Other species that could qualify if applying status on regional or national Red Lists:</p> <ul style="list-style-type: none"> <li>- Loggerhead turtle – only relating to EN status on the Italy Red List and in-water habitat</li> <li>- Marbled Teal – only relating to EN status on the Italy Red List</li> <li>- Bluefin tuna – relating to the EN status on the Mediterranean Red List</li> </ul> <p>Potential qualifying species on national or regional Red Lists:</p> <ul style="list-style-type: none"> <li>- White shark – relating to the subpopulation and CR status on the Mediterranean Red List</li> <li>- Common dolphin – relating to the subpopulation and EN status on the Mediterranean Red List</li> </ul> <p>Uncertain qualifying species on national or regional Red Lists:</p> <ul style="list-style-type: none"> <li>- Sicilian pond turtle – relating to EN status on the Italy Red List</li> </ul>
(c) EAAA supports globally significant population of VU species necessary to prevent a change of IUCN Red List status to EN or CR, and satisfies threshold (b)	<p>The marine EAAA encloses multiple species that qualify under this criterion.</p> <p>Qualifying species with high certainty, include:</p> <ul style="list-style-type: none"> <li>- Yelkouan Shearwater</li> <li>- <i>Haliotis stomatiaeformis</i></li> </ul> <p>Possible qualifying species based on extent of occurrence and/ or functions, include:</p> <ul style="list-style-type: none"> <li>- Common bottlenose dolphin - relating to subpopulation VU status on the Mediterranean Red List</li> <li>- Blackspotted smoothhound</li> </ul>
(d) EAAA for important concentrations of a nationally or regionally listed EN or CR species	<p>The EAAAs enclose multiple species that qualify under this criterion.</p> <p>Likely qualifying species related to their population, functions and are listed as key features within areas with recognised high biodiversity values, include:</p> <ul style="list-style-type: none"> <li>- Loggerhead turtle – for Mediterranean Sea subpopulation and in-water habitat</li> <li>- Bluefin tuna</li> <li>- Common dolphin - for the Mediterranean subpopulation only</li> </ul>

Criteria	Qualifying coastal and marine species
	<ul style="list-style-type: none"> <li>- Fin whale - for the Mediterranean subpopulation only</li> <li>- Sawback angelshark</li> <li>- Smoothback angelshark</li> <li>- Common guitarfish</li> <li>- Blackchin guitarfish</li> <li>- Blackspotted smoothhound</li> <li>- Marbled Teal</li> <li>- Common smoothhound</li> <li>- Shortfin mako</li> <li>- Sandbar shark</li> <li>- White shark</li> <li>- Sicilian pond turtle</li> </ul>
<b><i>Restricted range species</i></b>	
(a) EAAA regularly holds $\geq 10\%$ of global population AND $\geq 10$ reproductive units of the species	<p>Sufficient information is not available to confirm that this Criterion is met. However, based on the distribution of species and definition of important areas, possible qualifying species in the marine EAAA, include:</p> <ul style="list-style-type: none"> <li>- <i>Haliotis stomatiaeformis</i></li> <li>- Maltese skate</li> <li>- Tortonese's goby</li> </ul>
<b><i>Migratory and congregatory species</i></b>	
(a) EAAA sustains, on a cyclical or otherwise regular basis, $\geq 1$ percent of the global population at any point of the species' lifecycle	<p>The EAAAs enclose multiple species that qualify under this criterion.</p> <p>Qualifying species with high certainty, include:</p> <ul style="list-style-type: none"> <li>- Loggerhead turtle – relating to Mediterranean Sea subpopulation in-water habitat</li> <li>- Yelkouan Shearwater</li> <li>- Scopoli's Shearwater</li> <li>- Mediterranean Storm-petrel</li> <li>- Marbled Teal</li> </ul> <p>Likely qualifying species based on functions , include:</p> <ul style="list-style-type: none"> <li>- Fin whale – for the Mediterranean subpopulation</li> <li>- Bluefin tuna</li> <li>- Swordfish</li> </ul> <p>Possible qualifying species with high levels of uncertainty:</p> <ul style="list-style-type: none"> <li>- Mediterranean shortbill spearfish</li> <li>- White shark</li> </ul>

Criteria	Qualifying coastal and marine species
(b) EAAA predictably supports ≥10 percent of global population during periods of environmental stress	<p>Species that may predictably qualify relating to expected large current populations in the area, provision of vital attributes and/ or very limited spatial ranges. The following species would predictably qualify:</p> <ul style="list-style-type: none"> <li>- Loggerhead turtle - relating to Mediterranean Sea subpopulation in-water habitat</li> <li>- Scopoli's Shearwater</li> <li>- Yelkouan Shearwater</li> <li>- Mediterranean Storm-petrel</li> <li>- <i>Haliotis stomatiaeformis</i></li> <li>- Maltese skate</li> <li>- Tortonese's goby</li> </ul>

### 5.2.2 PBF

Table 5 presents species identified as being PBF based on their range being confirmed in the EAAA, but in numbers that do not meet critical habitat criteria. These features may qualify for one or more criteria. Appendix A provides supporting information for the selection of these species.

**Table 5: Qualifying PBF in the coastal and marine EAAs**

Higher taxon	Species common name	Species scientific name
Mollusc	Green ormer	<i>Haliotis tuberculata</i>
Cartilaginous fish	Tope	<i>Galeorhinus galeus</i>
Cartilaginous fish	Common eagle ray	<i>Myliobatis aquila</i>
Cartilaginous fish	Basking shark	<i>Cetorhinus maximus</i>
Cartilaginous fish	Little gulper shark	<i>Centrophorus uyato</i>
Cartilaginous fish	Bramble shark	<i>Echinorhinus brucus</i>
Cartilaginous fish	White skate	<i>Rostroraja alba</i>
Cartilaginous fish	Angular roughshark	<i>Oxynotus centrina</i>
Cartilaginous fish	Spiny butterfly ray	<i>Gymnura altavela</i>
Cartilaginous fish	Sandy skate	<i>Leucoraja circularis</i>
Cartilaginous fish	Spinetail devil ray	<i>Mobula mobular</i>
Cartilaginous fish	Blacktip shark	<i>Carcharhinus limbatus</i>
Cartilaginous fish	Common thresher	<i>Alopias vulpinus</i>
Cartilaginous fish	Spinner shark	<i>Carcharhinus brevipinna</i>
Cartilaginous fish	Copper shark	<i>Carcharhinus brachyurus</i>

Higher taxon	Species common name	Species scientific name
Cartilaginous fish	Smalltooth sandtiger	<i>Odontaspis ferox</i>
Cartilaginous fish	Rabbitfish	<i>Chimaera monstrosa</i>
Cartilaginous fish	Common stingray	<i>Dasyatis pastinaca</i>
Cartilaginous fish	Shagreen skate	<i>Leucoraja fullonica</i>
Cartilaginous fish	Bigeye thresher	<i>Alopias superciliosus</i>
Cartilaginous fish	Spiny dogfish	<i>Squalus acanthias</i>
Cartilaginous fish	Brown stingray	<i>Bathytoshia lata</i>
Bony fish	European eel	<i>Anguilla anguilla</i>
Bony fish	Dusky grouper	<i>Mycteroperca marginatus</i>
Bony fish	Common dentex	<i>Dentex dentex</i>
Bony fish	Shi Drum	<i>Umbrina cirrosa</i>
Bony fish	Atlantic mackerel	<i>Scomber scombrus</i>
Bony fish	Meagre	<i>Argyrosomus regius</i>
Jawless fish	Sea lamprey	<i>Petromyzon marinus</i>
Reptile	Leatherback turtle	<i>Dermochelys coriacea</i>
Coastal and seabirds	Balearic Shearwater	<i>Puffinus mauretanicus</i>
Coastal and seabirds	Mediterranean Gull	<i>Larus melanocephalus</i>
Coastal and seabirds	Audouin's Gull	<i>Larus audouinii</i>
Coastal and seabirds	Sandwich Tern	<i>Thalasseus sandvicensis</i>
Coastal and seabirds	Whiskered Tern	<i>Chlidonias hybrida</i>
Coastal and seabirds	Black Tern	<i>Chlidonias niger</i>
Coastal and seabirds	Mediterranean Shag	<i>Phalacrocorax aristotelis desmarestii</i>
Coastal and seabirds	European Shag	<i>Gulosus aristotelis</i>
Nearshore coastal birds	Ferruginous Duck	<i>Aythya nyroca</i>
Nearshore coastal birds	Blacktailed Godwit	<i>Limosa limosa</i>
Nearshore coastal birds	Eurasian Oystercatcher	<i>Haematopus ostralegus</i>
Nearshore coastal birds	Common Pochard	<i>Aythya ferina</i>
Nearshore coastal birds	Common Shelduck	<i>Tadorna tadorna</i>
Nearshore coastal birds	Northern Shoveler	<i>Spatula clypeata</i>
Nearshore coastal birds	Garganey	<i>Spatula querquedula</i>
Nearshore coastal birds	Tufted Duck	<i>Aythya fuligula</i>
Nearshore coastal birds	Eurasian Wryneck	<i>Jynx torquilla</i>
Nearshore coastal birds	Glossy Ibis	<i>Plegadis falcinellus</i>



Higher taxon	Species common name	Species scientific name
Nearshore coastal birds	Northern Bittern	<i>Botaurus stellaris</i>
Nearshore coastal birds	Little Bittern	<i>Ixobrychus minutus</i>
Nearshore coastal birds	Woodchat Shrike	<i>Lanius senator</i>
Birds of prey	Osprey	<i>Pandion haliaetus</i>
Birds of prey	Eleonora's Falcon	<i>Falco eleonora</i>
Birds of prey	Western Marsh-harrier	<i>Circus aeruginosus</i>

### 5.3 Legally protected areas and other areas with recognised high biodiversity values

The key features within legally protected areas and other areas with recognised high biodiversity values have been considered within the critical habitat assessment. As per the definitions of the PR 6 for such areas, this includes Natura 2000 and Ramsar sites (see Section 3.1.4). For these areas there is a need to demonstrate if there will be an impact from activities on the key features that comprise such designations. This should consider impacts within these areas and outside of these areas where there is connectivity that could affect favourable conservation status. This CHA does not currently consider impacts upon key features of these sites. However, this will be addressed in a supplementary review of project impacts that considers previous assessments that have been completed.

The physical footprint of the project lies within two SACs and is immediately adjacent to a national reserve on the southern coast of Sicily at the Marinella cable landfall as shown in Table 6.

**Table 6: Legally protected areas within and adjacent to the Marinella cable landfall**

Site name	Summary of key features
Fondali di Capo San Marco – Sciacca SAC	This marine site is designated for the presence of <i>Posidonia</i> beds, reefs and sandbanks which are slightly covered by sea water all the time. The site is also designated for the presence of loggerhead turtles and common bottlenose dolphins.
Sistema dunale Capo Granitola, Porto Palo e Foce del Belice SAC	The cable dissects this coastal SAC. The site includes a range of Annex 1 coastal habitats that are shown in Appendix B. The site also supports range of coastal bird species, as well as loggerhead turtles and the Sicilian pond turtle.
Riserva naturale Foce del Fiume Belice e dune limitrofe	The cable route lies within approximately 300 m of this national reserve. This reserve is recognised for dunes and other habitats such as cliffs. Occasional wetlands are present, and the area supports several shorebirds.

The cable landing at Menzel Horr dissects a part of the Lagunes du Cap Bon oriental Ramsar Site. As previously discussed, this Ramsar site extends across a large part of this coastal area and is comprised of coastal lagoons along the coast that are isolated by dunes and beaches. Most of the key features in the site comprise sabkha that periodically fill with rainwater; and the extent of standing water likely varies across the site. The cable crosses such an area of sabkha and the level of periodic flooding that occurs here is unknown. The area is, however, expected to be dry in the summer as a minimum. The variety of habitats across the Ramsar site support several species of fauna, especially reptiles and waterfowl, several of which are threatened. Of note, two lagoon areas to the south of the Ramsar site have been identified as IBAs (Korba and Maâmoura et Tazarka) for their migratory bird interest. These areas most regularly hold water and will therefore comprise key bird areas within the Ramsar site.

Outside of these areas of the cable route does not lie within the boundaries of any legally protected areas and other areas with recognised high biodiversity values. However, there is potential for species to be present outside of these areas that form part of the reasons for designation of such sites and are connected to them. A review of the marine protected areas in the Sicilian Channel indicates that this relates to loggerhead turtles, seabirds (including critical habitat, PBF and other listed species) and common bottlenose dolphin.

## 6 Conclusions

The CHA has determined that the Project is in an important biodiversity hotspot providing a range of priority habitats that support multiple species of conservation note. The importance of the area and overlapping values has resulted in the determination of broad coastal and marine EAAAs that aggregate features into units for the assessment of the presence of PBF and critical habitat. The assessment has confirmed that the EAAAs comprise critical habitat across multiple criteria. This includes classification of two specific habitats as being critical habitat (*Posidonia* meadows and coastal lagoons) but also the overall EAAAs based on these area enclosing areas that are of high priority for conservation by national systematic conservation planning. In addition to these multiple individual Annex 1 and Resolution 4 habitats have been defined as PBF. Taking a precautionary approach 34 species have been identified that may support the classification of critical habitat across multiple criteria. In some instances, a high level certainty for species forming critical habitat can be confirmed. However, in many instances there is some uncertainty, but conclusions have been drawn on the likelihood of triggering critical habitat based on ranges, habitat associations and support for important functions. In addition, 54 species have been identified as PBF. Finally, the project lies within or has some potential connectivity to several legally protected areas and other areas with recognised high biodiversity values. The assessment therefore confirms that the Project lies within an area of high biodiversity importance within the Mediterranean Sea and the Project must clearly demonstrate that the requirements of PR 6 have been met.

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## Appendix A

### Critical Habitat Species Screening List

Higher taxon	Species common name ( <i>scientific name</i> )	EU Habitats Directive/ Birds Directive listing	IUCN Global Red List Status	Mediterranean Red List Status	Italy Red List Status	Endemic?	Range- restricted?	Migratory species?	Congregatory species?
Mollusc	Fan mussel ( <i>Pinna nobilis</i> )	Yes - Annex IV	CR	CR	Not assessed	Yes	No	No	No
Mollusc	<i>Haliotis stomatiaeformis</i>	No	VU	Not assessed	Not assessed	Yes	Yes	No	No
Mollusc	Green ormer ( <i>Haliotis tuberculata</i> )	No	VU	Not assessed	Not assessed	No	No	No	No
Crustacea	Common spiny lobster ( <i>Palinurus elephas</i> )	No	VU	Not assessed	Not assessed	No	No	No	Yes
Crustacea	Mediterranean slipper lobster ( <i>Scyllarides latus</i> )	Yes - Annex IV	DD	Not assessed	Not assessed	No	No	No	No
Cartilaginous fish	Maltese skate ( <i>Leucoraja melitensis</i> )	No	CR	CR	NT	Yes	Yes	No	n/a
Cartilaginous fish	White shark ( <i>Carcharodon carcharias</i> )	No	VU	CR	DD	Yes	No	Yes	Yes
Cartilaginous fish	Sand tiger shark ( <i>Carcharias taurus</i> )	No	CR	CR	DD	No	No	Yes	n/a
Cartilaginous fish	Angleshark ( <i>Squatina squatina</i> )	No	CR	CR	CR	No	No	No	n/a
Cartilaginous fish	Tope ( <i>Galeorhinus galeus</i> )	No	CR	VU	CR	No	No	No	Yes
Cartilaginous fish	Great hammerhead ( <i>Sphyrna mokarran</i> )	No	CR	Not assessed	NA	No	No	n/a	n/a
Cartilaginous fish	Duckbill eagle ray ( <i>Aetomylaeus bovinus</i> )	No	CR	CR	DD	No	No	No	n/a
Cartilaginous fish	Sawback angleshark ( <i>Squatina aculeata</i> )	No	CR	CR	CR	No	No	No	n/a
Cartilaginous fish	Smoothback angleshark ( <i>Squatina oculata</i> )	No	CR	CR	CR	No	No	No	n/a
Cartilaginous fish	Common guitarfish ( <i>Rhinobatos rhinobatos</i> )	No	CR	EN	CR	No	No	No	n/a
Cartilaginous fish	Lusitanian cownose ray ( <i>Rhinoptera marginata</i> )	No	CR	DD	NA	No	No	No	n/a
Cartilaginous fish	Common eagle ray ( <i>Myliobatis aquila</i> )	No	CR	VU	DD	No	No	Yes	n/a
Cartilaginous fish	Blackchin guitarfish ( <i>Glaucostegus cemiculus</i> )	No	CR	Not assessed	CR	No	No	No	n/a
Cartilaginous fish	Sandbar shark ( <i>Carcharhinus plumbeus</i> )	No	EN	EN	DD	No	No	Unknown	n/a
Cartilaginous fish	Basking shark ( <i>Cetorhinus maximus</i> )	No	EN	EN	DD	No	No	Yes	n/a
Cartilaginous fish	Common smoothhound ( <i>Mustelus mustelus</i> )	No	EN	VU	EN	No	No	Unknown	No
Cartilaginous fish	Little gulper shark ( <i>Centrophorus uyato</i> )	No	VU	VU	NT	No	No	n/a	n/a
Cartilaginous fish	Bramble shark ( <i>Echinorhinus brucus</i> )	No	EN	EN	DD	No	No	Unknown	n/a
Cartilaginous fish	White skate ( <i>Rostroraja alba</i> )	No	EN	EN	CR	No	No	Unknown	n/a
Cartilaginous fish	Angular roughshark ( <i>Oxynotus centrina</i> )	No	EN	CR	DD	No	No	Unknown	n/a
Cartilaginous fish	Spiny butterfly ray ( <i>Gymnura altavela</i> )	No	EN	CR	DD	no	No	No	n/a
Cartilaginous fish	Rough skate ( <i>Raja radula</i> )	No	EN	EN	DD	Yes	No	No	n/a
Cartilaginous fish	Undulate skate ( <i>Raja undulata</i> )	No	EN	NT	DD	No	No	n/a	n/a
Cartilaginous fish	Sandy skate ( <i>Leucoraja circularis</i> )	No	EN	CR	DD	No	No	No	n/a
Cartilaginous fish	Spinetail devil ray ( <i>Mobula mobular</i> )	No	EN	EN	EN	No	No	Unknown	Yes
Cartilaginous fish	Oceanic whitetip shark ( <i>Carcharhinus longimanus</i> )	No	CR	Not assessed	Not assessed	No	No	Yes	No
Cartilaginous fish	Shortfin mako ( <i>Isurus oxyrinchus</i> )	No	EN	CR	EN	No	No	No	No
Cartilaginous fish	Longfin mako ( <i>Isurus paucus</i> )	No	EN	DD	Not assessed	No	No	No	No

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Cartilaginous fish	Blacktip shark ( <i>Carcharhinus limbatus</i> )	No	VU	DD	DD	No	No	No	No
Cartilaginous fish	Kitefin shark ( <i>Dalatias licha</i> )	No	VU	VU	VU	No	No	No	No
Cartilaginous fish	Porbeagle ( <i>Lamna nasus</i> )	No	VU	CR	DD	No	No	Yes	No
Cartilaginous fish	Common thresher ( <i>Alopias vulpinus</i> )	No	VU	EN	CR	No	No	Yes	n/a
Cartilaginous fish	Spinner shark ( <i>Carcharhinus brevipinna</i> )	No	VU	VU	DD	No	No	No	n/a
Cartilaginous fish	Silky shark ( <i>Carcharhinus falciformis</i> )	No	DD	Not assessed	NA	No	No	Yes	n/a
Cartilaginous fish	Smooth hammerhead ( <i>Sphyrna zygaena</i> )	No	VU	CR	DD	No	No	Yes	n/a
Cartilaginous fish	Copper shark ( <i>Carcharhinus brachyurus</i> )	No	VU	DD	DD	No	No	n/a	n/a
Cartilaginous fish	Smalltooth sandtiger ( <i>Odontaspis ferox</i> )	No	VU	CR	DD	No	No	No	n/a
Cartilaginous fish	Rabbitfish ( <i>Chimaera monstrosa</i> )	No	VU	NT	LC	No	No	Yes	n/a
Cartilaginous fish	Marbled torpedo ray ( <i>Torpedo marmorata</i> )	No	VU	LC	LC	No	No	Unknown	n/a
Cartilaginous fish	Velvet belly lanternshark ( <i>Etmopterus spinax</i> )	No	VU	LC	LC	No	No	n/a	n/a
Cartilaginous fish	Ocellate torpedo ( <i>Torpedo torpedo</i> )	No	VU	LC	LC	No	No	No	n/a
Cartilaginous fish	Common stingray ( <i>Dasyatis pastinaca</i> )	No	VU	VU	LC	No	No	No	
Cartilaginous fish	Shagreen skate ( <i>Leucoraja fullonica</i> )	No	VU	CR	DD	No	No	Unknown	n/a
Cartilaginous fish	Nursehound ( <i>Scyliorhinus stellaris</i> )	No	VU	NT	NT	No	No	No	n/a
Cartilaginous fish	Blackspotted smoothhound ( <i>Mustelus punctulatus</i> )	No	VU	VU	EN	No	No	Unknown	n/a
Cartilaginous fish	Bigeye thresher ( <i>Alopias superciliosus</i> )	No	VU	EN	CR	No	No	Yes	n/a
Cartilaginous fish	Spiny dogfish (c)	No	VU	Not assessed	CR	No	No	No	
Cartilaginous fish	Brown stingray ( <i>Bathytoshia lata</i> )	No	VU	Not assessed	DD	No	No	n/a	n/a
Cartilaginous fish	Milk shark ( <i>Rhizoprionodon acutus</i> )	No	VU	Not assessed	Not assessed	No	No	n/a	n/a
Bony fish	Bluefin tuna ( <i>Thunnus thynnus</i> )	No	LC	EN	NT	No	No	Yes	n/a
Bony fish	Albacore tuna ( <i>Thunnus alalunga</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	European Sturgeon ( <i>Acipenser sturio</i> )	Yes - priority species Annex II and IV	CR	Not assessed	RE				
Bony fish	North African Shad ( <i>Alosa algeriensis</i> )	Yes - Annex II	EN	Not assessed	Not assessed	Yes	No	Yes	n/a
Bony fish	European eel ( <i>Anguilla anguilla</i> )	No	CR	Not assessed	CR	No	No	Yes	Yes
Bony fish	Tortonese's goby ( <i>Pomatoschistus tortonesei</i> )	No	EN	EN	Not assessed	Yes	Yes	No	n/a
Bony fish	Punican Bleak ( <i>Anaocypris punica</i> )	No	CR	Not assessed	Not assessed	Yes (inland not EAAA)	No	No	No
Bony fish	European anchovy ( <i>Engraulis encrasicolus</i> )	No	LC	LC	LC	No	No	Yes	Yes
Bony fish	Red mullet ( <i>Mullus barbatus</i> )	No	LC	LC	LC	No	No	n/a	n/a
Bony fish	Greater forkbeard ( <i>Phycis blennoides</i> )	No	LC	LC	LC	No	No	Yes	Yes
Bony fish	Dusky grouper ( <i>Mycteroperca marginatus</i> )	No	VU	EN	Not assessed	No	No	n/a	Yes
Bony fish	Common dentex ( <i>Dentex dentex</i> )	No	VU	VU	Not assessed	No	No	n/a	n/a

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Bony fish	Blue Marlin ( <i>Makaira nigricans</i> )	No	VU	Not assessed	Not assessed	No	No	Yes	n/a
Bony fish	Mediterranean shortbill spearfish ( <i>Tetrapturus belone</i> )	No	LC	LC	LC	No	No	Yes	n/a
Bony fish	Green wrasse ( <i>Labrus viridis</i> )	No	VU	VU	Not assessed	No	No	No	n/a
Bony fish	Bluefish ( <i>Pomatomus saltatrix</i> )	No	VU	LC	LC	No	No	Yes	n/a
Bony fish	Ocean sunfish ( <i>Mola mola</i> )	No	VU	DD	LC	No	No	No	n/a
Bony fish	Gray triggerfish ( <i>Balistes capriscus</i> )	No	VU	Not assessed	LC	No	No	No	n/a
Bony fish	Madeiran sardinella ( <i>Sardinella maderensis</i> )	No	VU	LC	LC	No	No	Yes	n/a
Bony fish	Atlantic horse mackerel ( <i>Trachurus trachurus</i> )	No	VU	LC	LC	No	No	Yes	n/a
Bony fish	Shi Drum ( <i>Umbrina cirrosa</i> )	No	VU	VU	DD	No	No	No	n/a
Bony fish	West african goatfish ( <i>Pseudupeneus prayensis</i> )	No	VU	Not assessed	Not assessed	No	No	No	n/a
Bony fish	Swordfish ( <i>Xiphias gladius</i> )	No	NT or LC	NT	NT	No	No	Yes	n/a
Bony fish	Narrow-barred spanish mackerel ( <i>Scomberomorus commerson</i> )	No	NT or LC	Not assessed	Not assessed	No	No	Yes	n/a
Bony fish	Black sea silverside ( <i>Atherina boyeri</i> )	No	NT or LC	LC	LC	No	No	Yes	n/a
Bony fish	European sea bass ( <i>Dicentrarchus labrax</i> )	No	LC or LR	NT	Not assessed	No	No	Yes	n/a
Bony fish	Thinlip grey mullet ( <i>Chelon ramada</i> )	No	LC or LR	LC	Not assessed	No	No	Yes	n/a
Bony fish	Common dolphinfish ( <i>Coryphaena hippurus</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Long snouted lancetfish ( <i>Alepisaurus ferox</i> )	No	LC or LR	DD	NE	No	No	Yes	n/a
Bony fish	Small lantern fish ( <i>Diaphus holti</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Antenna codlet ( <i>Bregmaceros atlanticus</i> )	No	LC or LR	Not assessed	NA	No	No	Yes	n/a
Bony fish	Half-naked hatchetfish ( <i>Argyropelecus hemigymnus</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Atlantic bonito ( <i>Sarda sarda</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Saddled seabream ( <i>Oblada melanura</i> )	No	LC or LR	LC	LC	No	No	Yes	Yes
Bony fish	Black seabream ( <i>Spondyliosoma cantharus</i> )	No	LC or LR	LC	LC	No	No	Yes	Yes
Bony fish	Common two-banded seabream ( <i>Diplodus vulgaris</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Skipjack tuna ( <i>Katsuwonus pelamis</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Plain bonito ( <i>Orcynopsis unicolor</i> )	No	LC or LR	LC	LC	No	No	Yes	No
Bony fish	White marlin ( <i>Kajikia albida</i> )	No	LC	DD	DD	No	No	Yes	n/a
Bony fish	Wahoo ( <i>Acanthocybium solandri</i> )	No	LC or LR	LC	NA	No	No	Yes	n/a
Bony fish	Little Tunny ( <i>Euthynnus alletteratus</i> )	No	LC or LR	LC	LC	No	No	Yes	Yes
Bony fish	Pompano Dolphinfin ( <i>Coryphaena equiselis</i> )	No	LC	DD	DD	No	No	Yes	n/a
Bony fish	Atlantic Mackerel ( <i>Scomber scombrus</i> )	No	LC or LR	LC	VU	No	No	Yes	Yes
Bony fish	Bullet Tuna ( <i>Auxis rochei</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Agujon Needlefish ( <i>Tylosurus acus</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a

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Bony fish	Benoit's Lanternfish ( <i>Hygophum benoiti</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Atlantic saury ( <i>Scomberesox saurus</i> )	No	LC or LR	LC	LC	No	No	Yes	Yes
Bony fish	Slender snipe eel ( <i>Nemichthys scolopaceus</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Cocco's lantern fish ( <i>Lobianchia gemellarii</i> )	No	LC	DD	LC	No	No	Yes	n/a
Bony fish	Spotted lanternfish ( <i>Myctophum punctatum</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Large-scale lantern fish ( <i>Symbolophorus veranyi</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Striped bass ( <i>Morone saxatilis</i> )	No	LC or LR	Not assessed	Not assessed	No	No	Yes	n/a
Bony fish	Pez Linterna Mediterráneo ( <i>Notoscopelus elongatus</i> )	No	LC or LR	LC	LC	Yes	No	Yes	n/a
Bony fish	Bandtooth conger ( <i>Ariosoma balearicum</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Conger eel ( <i>Conger conger</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Balbo sabretooth ( <i>Evermannella balbo</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Sharpchin barracudina ( <i>Paralepis coregonoides</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	European barracuda ( <i>Sphyræna sphyraena</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Tropical two-wing flyingfish ( <i>Exocoetus volitans</i> )	No	LC	DD	LC	No	No	Yes	n/a
Bony fish	Garpiki ( <i>Belone belone</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Blotchwing flyingfish ( <i>Cheilopogon heterurus</i> )	No	LC	DD	LC	No	No	Yes	n/a
Bony fish	Round sardinella ( <i>Sardinella aurita</i> )	No	LC or LR	LC	LC	No	No	Yes	Yes
Bony fish	European sprat ( <i>Sprattus sprattus</i> )	No	LC	DD	LC	No	No	Yes	n/a
Bony fish	Madeira lantern fish ( <i>Ceratoscopelus maderensis</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Electric lantern fish ( <i>Electrona risso</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Bermuda lantern fish ( <i>Hygophum hygomii</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Jewel lanternfish ( <i>Lampanyctus crocodilus</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Pygmy lanternfish ( <i>Lampanyctus pusillus</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Dofleini's lantern fish ( <i>Lobianchia dofleini</i> )	No	LC or LR	LC	LC	No	No	Yes	n/a
Bony fish	Leerfish ( <i>Lichia amia</i> )	No	LC	DD	LC	No	No	Yes	Yes
Bony fish	Mediterranean horse mackerel ( <i>Trachurus mediterraneus</i> )	No	LC or LR	LC	LC	No	No	Yes	Yes
Bony fish	Blue jack mackerel ( <i>Trachurus picturatus</i> )	No	LC or LR	LC	LC	No	No	Yes	Yes
Bony fish	Meagre ( <i>Argyrosomus regius</i> )	No	LC or LR	LC	CR	No	No	Yes	Yes
Bony fish	Yellowmouth barracuda ( <i>Sphyræna viridensis</i> )	No	LC or LR	LC	LC	No	No	Yes	Yes
Bony fish	Hardyhead silverside ( <i>Atherinomorus lacunosus</i> )	No	LC or LR	Not assessed	Not assessed	No	No	Yes	n/a
Bony fish	Dover sole ( <i>Solea solea</i> )	No	DD	LC	LC	No	No	Yes	n/a
Bony fish	<i>Kuhlia mugil</i>	No	LC or LR	Not assessed		No	No	Yes	n/a
Bony fish	Mediterranean Killifish ( <i>Aphanius fasciatus</i> )		LC	LC	LC	Yes	No	n/a	n/a
Jawless fish	Sea lamprey ( <i>Petromyzon marinus</i> )	Yes- Annex II	LC or LR	Not assessed	CR	No	No	Yes	n/a



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Reptile	Loggerhead turtle ( <i>Caretta caretta</i> )	Yes - priority species Annex II and IV	VU	LC	EN	No	No	Yes	n/a
Reptile	Hawksbill turtle ( <i>Eretmochelys imbricata</i> )	Yes - Annex IV	CR	Not assessed	Not assessed	No	No	Yes	n/a
Reptile	Leatherback turtle ( <i>Dermochelys coriacea</i> )	Yes - Annex IV	VU	EN	Not assessed	No	No	Yes	Yes
Reptile	Kemp's ridley turtle ( <i>Lepidochelys kempii</i> )	Yes - Annex IV	CR	Not assessed	NA	No	No	Yes	Yes
Reptile	Green turtle ( <i>Chelonia mydas</i> )	Yes - priority species Annex II and IV	EN	Not assessed	Not assessed	No	No	Yes	n/a
Reptile	Sicilian pond turtle ( <i>Emys trinacris</i> )	No	DD	Not assessed	EN	Yes	Yes	No	No
Mammal	Common bottlenose dolphin ( <i>Tursiops truncatus</i> )	Yes - Annex II Annex IV (All Cetacea)	LC	VU	LC	No	No	Nomadic	n/a
Mammal	Common dolphin ( <i>Delphinus delphi</i> )	Annex IV (All Cetacea)	LC	EN	EN	No	No	No	Yes
Mammal	Fin whale ( <i>Balaenoptera physalus</i> )	Annex IV (All Cetacea)	VU	EN	EN	No	No	n/a	n/a
Mammal	Sperm whale ( <i>Physeter macrocephalus</i> )	Annex IV (All Cetacea)	VU	EN	EN	No	No	n/a	n/a
Mammal	Risso's Dolphin ( <i>Grampus griseus</i> )	Annex IV (All Cetacea)	LC	DD	DD	No	No	n/a	n/a
Mammal	Long-finned pilot whale ( <i>Globicephala melas</i> )	Annex IV (All Cetacea)	LC	DD	DD	No	No	n/a	n/a
Mammal	Mediterranean monk seal ( <i>Monachus monachus</i> )	Yes - priority species Annex II and IV	EN	CR	DD	Yes	No	No	n/a
Mammal	Cuvier's beaked whale ( <i>Ziphius cavirostris</i> )		LC	DD	NT	No	No	No	n/a
Coastal and seabirds	Scopoli's Shearwater ( <i>Calonectris d. diomedea</i> )	Yes	LC	n/a	LC	No	No	Yes	Yes
Coastal and seabirds	Yelkouan Shearwater ( <i>Puffinus yelkouan</i> )	Yes	VU	n/a	DD	Yes	No	Yes	Yes
Coastal and seabirds	Balearic Shearwater ( <i>Puffinus mauretanicus</i> )	Yes	CR	n/a	Not assessed	No	No	Yes	Yes
Coastal and seabirds	Mediterranean storm Petrel ( <i>Hydrobates pelagicus melitensis</i> )	Yes	LC	n/a	NT	No	No	Yes	Yes
Coastal and seabirds	Black-legged Kittiwake ( <i>Rissa tridactyla</i> )	No	VU	n/a	Not assessed	No	No	Yes	Yes
Coastal and seabirds	Atlantic Puffin ( <i>Fratercula arctica</i> )	No	VU	n/a	Not assessed	No	No	Yes	Yes
Coastal and seabirds	Sooty Shearwater ( <i>Ardenna grisea</i> )	No	NT or LC	n/a	Not assessed	No	No	Yes	Yes
Coastal and seabirds	Mew Gull ( <i>Larus canus</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Coastal and seabirds	Lesser Black-backed Gull ( <i>Larus fuscus</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes

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Coastal and seabirds	Black-headed Gull ( <i>Larus ridibundus</i> )	No	LC or LR	n/a	LC	No	No	Yes	Yes
Coastal and seabirds	Slender-billed Gull ( <i>Larus genei</i> )	Yes	LC or LR	n/a	NT	No	No	Yes	Yes
Coastal and seabirds	Mediterranean Gull ( <i>Larus melanocephalus</i> )	Yes	LC or LR	n/a	NT	No	No	Yes	Yes
Coastal and seabirds	Little Gull ( <i>Hydrocoloeus minutus</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Coastal and seabirds	Audouin's Gull ( <i>Larus audouinii</i> )	Yes	VU	n/a	LC	No	No		Yes
Coastal and seabirds	Caspian Tern ( <i>Hydroprogne caspia</i> )	No	LC or LR	n/a	NA	No	No	Yes	Yes
Coastal and seabirds	Lesser Crested Tern ( <i>Thalasseus bengalensis</i> )	No	LC or LR	n/a	NA	No	No	Yes	Yes
Coastal and seabirds	Sandwich Tern ( <i>Thalasseus sandvicensis</i> )	No	LC or LR	n/a	VU	No	No	Yes	Yes
Coastal and seabirds	Common Tern ( <i>Sterna hirundo</i> )	Yes	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Coastal and seabirds	Little Tern ( <i>Sternula albifrons</i> )	Yes	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Coastal and seabirds	Whiskered Tern ( <i>Chlidonias hybrida</i> )	Yes	LC or LR	n/a	VU	No	No	Yes	Yes
Coastal and seabirds	White-winged Tern ( <i>Chlidonias leucopterus</i> )	No	LC or LR	n/a	NA	No	No	Yes	Yes
Coastal and seabirds	Black Tern ( <i>Chlidonias niger</i> )	Yes	LC or LR	n/a	CR	No	No	Yes	Yes
Coastal and seabirds	Northern Gannet ( <i>Morus bassanus</i> )	No	LC or LR	n/a	NA	No	No	Yes	Yes
Coastal and seabirds	Great Cormorant ( <i>Phalacrocorax carbo</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Coastal and seabirds	Mediterranean Shag ( <i>Phalacrocorax aristotelis desmarestii</i> )	No	LC or LR	n/a	LC	No	No	Yes	Yes
Coastal and seabirds	European Shag ( <i>Gulosus aristotelis</i> )	No	LC or LR	n/a	LC	No	No	Yes	Yes
Coastal and seabirds	Common Gull-billed Tern ( <i>Gelochelidon nilotica</i> )	Yes	LC or LR	n/a	NT	No	No	Yes	Yes
Coastal and seabirds	Yellow-legged Gull ( <i>Larus michahellis</i> )	No	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Marbled Teal ( <i>Marmaronetta angustirostris</i> )	Yes	NT	n/a	EN	No	No	Yes	Yes
Nearshore coastal birds	Slender-billed Curlew ( <i>Numenius tenuirostris</i> )	Yes	CR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Ferruginous Duck ( <i>Aythya nyroca</i> )	No	NT or LC	n/a	EN	No	No	Yes	Yes
Nearshore coastal birds	Blacktailed Godwit ( <i>Limosa limosa</i> )	Yes	LC or LR	n/a	EN	No	No	Yes	Yes
Nearshore coastal birds	Bartailed Godwit ( <i>Limosa lapponica</i> )	Yes	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Eurasian Curlew ( <i>Numenius arquata</i> )	No	LC or LR	n/a	NA	No	No	Yes	Yes
Nearshore coastal birds	Red Knot ( <i>Calidris canutus</i> )	Yes	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Curlew Sandpiper ( <i>Calidris ferruginea</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Eurasian Oystercatcher ( <i>Haematopus ostralegus</i> )	Yes	LC or LR	n/a	VU	No	No	Yes	Yes
Nearshore coastal birds	Northern Lapwing ( <i>Vanellus vanellus</i> )	Yes	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Common Pochard ( <i>Aythya ferina</i> )	Yes	LC or LR	n/a	VU	No	No	Yes	n/a
Nearshore coastal birds	Common Shelduck ( <i>Tadorna tadorna</i> )	No	LC or LR	n/a	VU	No	No	Yes	Yes
Nearshore coastal birds	Eurasian Wigeon ( <i>Mareca penelope</i> )	No	LC or LR	n/a	NA	No	No	Yes	Yes
Nearshore coastal birds	Northern Shoveler ( <i>Spatula clypeata</i> )	No	LC or LR	n/a	VU	No	No	Yes	Yes
Nearshore coastal birds	Northern Pintail ( <i>Anas acuta</i> )	Yes	LC or LR	n/a	NA	No	No	Yes	Yes
Nearshore coastal birds	Garganey ( <i>Spatula querquedula</i> )	No	LC or LR	n/a	VU	No	No	Yes	Yes

Higher taxon	Species common name (scientific name)	EU Habitats Directive/ Birds Directive listing	IUCN Global Red List Status	Mediterranean Red List Status	Italy Red List Status	Endemic?	Range- restricted?	Migratory species?	Congregatory species?
Nearshore coastal birds	Tufted Duck ( <i>Aythya fuligula</i> )	No	LC or LR	n/a	VU	No	No	Yes	Yes
Nearshore coastal birds	Red-breasted Merganser ( <i>Mergus serrator</i> )	Yes	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Eurasian Wryneck ( <i>Jynx torquilla</i> )	No	LC or LR	n/a	EN	No	No	Yes	Yes
Nearshore coastal birds	Common Kingfisher ( <i>Alcedo atthis</i> )	Yes	LC or LR	n/a	NT	No	No	Yes	Yes
Nearshore coastal birds	Pallid Swift ( <i>Apus pallidus</i> )	No	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Common Crane ( <i>Grus grus</i> )	Yes	LC or LR	n/a	RE	No	No	Yes	Yes
Nearshore coastal birds	Baillon's Crake ( <i>Zapornia pusilla</i> )	No	LC or LR	n/a	NA	No	No	Yes	Yes
Nearshore coastal birds	Common Coot ( <i>Fulica atra</i> )	Yes	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Jack Snipe ( <i>Lymanocryptes minimus</i> )	Yes	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Whimbrel ( <i>Numenius phaeopus</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Spotted Redshank ( <i>Tringa erythropus</i> )	Yes	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Common Redshank ( <i>Tringa totanus</i> )	Yes	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Marsh Sandpiper ( <i>Tringa stagnatilis</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Common Greenshank ( <i>Tringa nebularia</i> )	Yes	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Common Sandpiper ( <i>Actitis hypoleucos</i> )	No	LC or LR	n/a	NT	No	No	Yes	Yes
Nearshore coastal birds	Ruddy Turnstone ( <i>Arenaria interpres</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Sanderling ( <i>Calidris alba</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Little Stint ( <i>Calidris minuta</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Temminck's Stint ( <i>Calidris temminckii</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Dunlin ( <i>Calidris alpina</i> )	Yes	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Broad-billed Sandpiper ( <i>Calidris falcinellus</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Ruff ( <i>Calidris pugnax</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Pied Avocet ( <i>Recurvirostra avosetta</i> )	Yes	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Eurasian Golden Plover ( <i>Pluvialis apricaria</i> )	Yes	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Grey Plover ( <i>Pluvialis squatarola</i> )	Yes	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Common Ringed Plover ( <i>Charadrius hiaticula</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Little Ringed Plover ( <i>Charadrius dubius</i> )	No	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Collared Pratincole ( <i>Glareola pratincola</i> )	No	LC or LR	n/a	EN	No	No	Yes	Yes
Nearshore coastal birds	Little Grebe ( <i>Tachybaptus ruficollis</i> )	No	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Great Crested Grebe ( <i>Podiceps cristatus</i> )	No	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Black-necked Grebe ( <i>Podiceps nigricollis</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Grey Heron ( <i>Ardea cinerea</i> )	No	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Purple Heron ( <i>Ardea purpurea</i> )	Yes	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Great White Egret ( <i>Ardea alba</i> )	Yes	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Squacco Heron ( <i>Ardeola ralloides</i> )	Yes	LC or LR	n/a	NT	No	No	Yes	Yes

Higher taxon	Species common name ( <i>scientific name</i> )	EU Habitats Directive/ Birds Directive listing	IUCN Global Red List Status	Mediterranean Red List Status	Italy Red List Status	Endemic?	Range- restricted?	Migratory species?	Congregatory species?
Nearshore coastal birds	Black-crowned Night-heron ( <i>Nycticorax nycticorax</i> )	No	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Greater Flamingo ( <i>Phoenicopterus roseus</i> )	No	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Glossy Ibis ( <i>Plegadis falcinellus</i> )	Yes	LC or LR	n/a	VU	No	No	Yes	Yes
Nearshore coastal birds	Eurasian Spoonbill ( <i>Platalea leucorodia</i> )	Yes	LC or LR	n/a	NT	No	No	Yes	Yes
Nearshore coastal birds	Eurasian Jackdaw ( <i>Corvus monedula</i> )	Yes	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Carrion Crow ( <i>Corvus corone</i> )	Yes	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Bluethroat ( <i>Luscinia svecica</i> )	Yes	LC or LR	n/a	NA	No	No	Yes	Yes
Nearshore coastal birds	Black Redstart ( <i>Phoenicurus ochruros</i> )	No	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Common Starling ( <i>Sturnus vulgaris</i> )	Yes	LC or LR	n/a	NT	No	No	Yes	Yes
Nearshore coastal birds	Spectacled Warbler ( <i>Curruca conspicillata</i> )	No	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Crested Lark ( <i>Galerida cristata</i> )	No	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Tawny Pipit ( <i>Anthus campestris</i> )	Yes	LC or LR	n/a	VU	No	No	Yes	Yes
Nearshore coastal birds	Meadow Pipit ( <i>Anthus pratensis</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Red-throated Pipit ( <i>Anthus cervinus</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Rock Pipit ( <i>Anthus petrosus</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Water Pipit ( <i>Anthus spinoletta</i> )	No	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Kentish Plover ( <i>Charadrius alexandrinus</i> )	Yes	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Nearshore coastal birds	Black-winged Stilt ( <i>Himantopus himantopus</i> )	Yes	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Common Moorhen ( <i>Gallinula chloropus</i> )	Yes	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Eurasian Skylark ( <i>Alauda arvensis</i> )	Yes	LC or LR	n/a	VU	No	No	Yes	Yes
Nearshore coastal birds	Northern Wheatear ( <i>Oenanthe oenanthe</i> )	No	LC or LR	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Eurasian Penduline-tit ( <i>Remiz pendulinus</i> )	No	LC or LR	n/a	VU	No	No	Yes	Yes
Nearshore coastal birds	Sedge Warbler ( <i>Acrocephalus schoenobaenus</i> )	No	LC	n/a	CR	No	No	Yes	Yes
Nearshore coastal birds	Northern Bittern ( <i>Botaurus stellaris</i> )	Yes	LC	n/a	EN	No	No	Yes	Yes
Nearshore coastal birds	Eurasian Dotterel ( <i>Eudromias morinellus</i> )	Yes	LC	n/a	NA	No	No	Yes	Yes
Nearshore coastal birds	European Roller ( <i>Coracias garrulus</i> )	Yes	LC	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Collared Flycatcher ( <i>Ficedula albicollis</i> )	Yes	LC	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Little Bittern ( <i>Ixobrychus minutus</i> )	Yes	LC	n/a	VU	No	No	Yes	Yes
Nearshore coastal birds	Woodchat Shrike ( <i>Lanius senator</i> )	No	LC	n/a	EN	No	No	Yes	Yes
Nearshore coastal birds	Hoopoe ( <i>Upupa epops</i> )	No	LC	n/a	LC	No	No	Yes	Yes
Nearshore coastal birds	Alpine Swift ( <i>Tachymarptis melba</i> )	No	LC	n/a	LC	No	No	Yes	Yes
Birds of prey	Black Kite ( <i>Milvus migrans</i> )	Yes	LC or LR	n/a	LC	No	No	Yes	Yes
Birds of prey	Saker Falcon ( <i>Falco cherrug</i> )	Yes	EN	n/a	Not assessed	No	No	Yes	Yes
Birds of prey	Peregrine Falcon ( <i>Falco peregrinus</i> )	Yes	LC or LR	n/a	Lc	No	No	Yes	Yes
Birds of prey	Osprey ( <i>Pandion haliaetus</i> )	Yes	LC or LR	n/a	CR	No	No	Yes	Yes

Higher taxon	Species common name ( <i>scientific name</i> )	EU Habitats Directive/ Birds Directive listing	IUCN Global Red List Status	Mediterranean Red List Status	Italy Red List Status	Endemic?	Range- restricted?	Migratory species?	Congregatory species?
Birds of prey	Merlin ( <i>Falco columbarius</i> )	No	LC or LR	n/a	Not assessed	No	No	Yes	Yes
Birds of prey	Lesser Kestrel ( <i>Falco naumanni</i> )	Yes	LC	n/a	LC	No	No	Yes	Yes
Birds of prey	Palid Harrier ( <i>Circus macrourus</i> )	Yes	NT	n/a	Not assessed	No	No	Yes	Yes
Birds of prey	Hen Harrier ( <i>Circus cyaneus</i> )	Yes	LC	n/a	NA	No	No	Yes	Yes
Birds of prey	Eleonora's Falcon ( <i>Falco eleonora</i> )	Yes	LC	n/a	VU	No	No	Yes	Yes
Birds of prey	Western Marsh-harrier ( <i>Circus aeruginosus</i> )	Yes	LC	n/a	VU	No	No	Yes	Yes



## Appendix B

### Review of Coastal Habitats on the Coast of Sicily

**Analysis of the presence of coastal Annex 1 habitats across 16 Natura 2000 sites on the southern coastline of Sicily of relevance to the coastal landing site. Habitats present within the Natura 2000 site at the cable landing point are highlighted in green.**

<b>Annex 1 habitats within the SACs on the southern coast of Sicily</b>	<b>Frequency of occurrence across all sites</b>
Annual vegetation of drift lines	16
Thermo-Mediterranean and pre-desert scrub	15
Pseudo-steppe with grasses and annuals of the <i>Thero-Brachypodieatea</i>	15
<i>Crucianellion maritimae</i> fixed dunes	12
Mediterranean salt meadows ( <i>Juncetalia maritimi</i> )	11
<i>Malcolmietalia</i> dune grasslands	11
Vegetated sea cliffs of the Mediterranean coasts with endemic <i>Limonium</i> spp.	9
<i>Salix alba</i> and <i>Populus alba</i> galleries	5
Estuaries	3
Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation	3
<i>Brachypodietalia</i> dune grasslands with annuals	2
Mediterranean tall humid grasslands of the <i>Molinio-Holoschoenion</i>	2
Caves not open to the public	2
Mediterranean and thermo-Atlantic halophilous scrubs ( <i>Sarcocornetea fruticosi</i> )	10
Coastal lagoons	8
Salicornia and other annuals colonizing mud and sand	7
Halo-nitrophilous scrubs ( <i>Pegano-Salsoletea</i> )	7
Southern riparian galleries and thickets ( <i>Nerio-Tamaricetea</i> and <i>Securinegion tinctoriae</i> )	7
Mediterranean salt steppes ( <i>Limonietalia</i> )	5
Mediterranean temporary ponds	4
Coastal dunes with <i>Juniperus</i> spp.	4

Annex 1 habitats within the Sistema dunale Capo Granitola, Porto Palo e Foce del Belice SAC	Habitat presence in Natura 2000 sites on the southern Sicilian coastline														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Estuaries															
Reefs															
Annual vegetation of drift lines															
Vegetated sea cliffs of the Mediterranean coasts with endemic <i>Limonium</i> spp.															
Mediterranean salt meadows ( <i>Juncetalia maritimi</i> )															
<i>Crucianellion maritimae</i> fixed dunes															
<i>Malcolmietalia</i> dune grasslands															
<i>Brachypodietalia</i> dune grasslands with annuals															
Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation															
Thermo-Mediterranean and pre-desert scrub															
Pseudo-steppe with grasses and annuals of the <i>Thero-Brachypodieatea</i>															
Mediterranean tall humid grasslands of the <i>Molinio-Holoschoenion</i>															
Caves not open to the public															
<i>Salix alba</i> and <i>Populus alba</i> galleries															

**SACs in Southern Sicily by number**

1. Stognone di Marsala. 2. Paludi di Capo Feto e Margi Spanò 3. Foce del Fiume Verdura 4. Foce del Magazzolo, Torre Salsa 5. Scala dei Turchi 6. Litorale di Palma di Montechiaro 7. Torre Manfredia, Biviere e Piana di Gela 8. Punta Braccetto 9. Foce del Fiume Irmínio 10. Contrada Religione 11. Spiaggia Maganuco 12. Pantani della Sicilia sud orientale 13. Pantano Morghella 14. Pantano di Marzamemi. 15. Vendicari

## Appendix C

### Summary Review of Critical Habitat Species

Critical habitat species	Description to support critical habitat conclusion
Fan mussel ( <i>Pinna nobilis</i> )	Critically Endangered on the IUCN and Mediterranean Red Lists and included on Annex IV of the Habitats Directive. The population of this species is unknown and has been subject to a recent mass mortality event in the Mediterranean with potential impacts on historic distribution and importance. Endemic to the Mediterranean with a patchy distribution. Historically, the Gulf of Gabés has presented a key patch in the Mediterranean. Also, distributed on both sides of the Sicilian channel. This species is strongly associated with seagrass meadows that are present in the marine EAAA in nearshore areas. The overall marine EAAA presents a significant historic patch of distribution meaning that this area could be significant in terms of the overall population.
<i>Haliotis stomatiaeformis</i>	Listed by IUCN as globally Vulnerable and an endemic species with an overall estimated area of occupancy is 680 km <sup>2</sup> that extends across the Sicilian channel. The population of this species is unknown, but approximately half of its entire range is enclosed within the marine EAAA, including off southern Sicily, Malta, and smaller islands in the central channel. It associated with nearshore habitats (to a depth of 10 m), and it lives under rocks and stones.
Mediterranean slipper lobster ( <i>Scyllarides latus</i> )	Annex IV species that is Data Deficient on the IUCN Red List. It is that is widely distributed across the Mediterranean, extending to the west coast of Africa and island complexes in the Atlantic. Tends to inhabit nearshore rocky substrates in depths of 2-50 m. No population estimates are available for this species.
Maltese skate ( <i>Leucoraja melitensis</i> )	Endemic to the Mediterranean Sea. Listed as Critically Endangered by IUCN and the Mediterranean Red Lists, but Near Threatened on the Italy Red List. Status not assessed for the Mediterranean, but it is Near Threatened on the Italy Red List. The population of this species is unknown. The range of this species is limited to the eastern portion of Algeria, Tunisia, Malta and Libya. A significant proportion of its range is enclosed within the marine EAAA. Inhabits over sandy and sandy-muddy bottoms at depths of 60–800 m, but most commonly 400–800 m.
White shark ( <i>Carcharodon carcharias</i> )	Although its global status is Vulnerable, a subpopulation has been defined for the Mediterranean and has a status of Critically Endangered on the Mediterranean Red List. The range of this subpopulation is restricted to the Mediterranean. There is a lack of data to inform the understanding of the distribution and range of this



Critical habitat species	Description to support critical habitat conclusion
	subpopulation, but it appears to be most frequently observed in the strait of Sicily and the Sicilian Channel. This area is recognised as an important nursery area for this species - being one of the reasons for the identification of the area as an EBSA. There is evidence of declines and likely fishery pressures placed upon the apparent reproductive and nursery grounds in the Sicilian Channel, as well as significant declines across the Mediterranean Sea. Although no information is available to confirm the abundance of this species in the Sicilian Channel, as this area is thought to be a key spawning area, it is possible that the marine EAAA is an important aggregation area for this species.
Sawback angleshark ( <i>Squatina aculeata</i> )	A Critically Endangered species on the IUCN, Mediterranean and Italy Red Lists. This species is subject to fishing pressure and has declined swiftly since the 1970s. The population size of this species is unknown. The Sawback angleshark has a habitat preference for muddy substrate at a depth of 30-500 m. It is confirmed to be extant in a limited number of countries, including the central Mediterranean (Tunisia, Sicily, Israel), the Aegean Sea (including Turkey and Northern Cyprus) and a few locations in the eastern Atlantic (Senegal, The Gambia, and Sierra Leone). It appears to be more regularly observed in the Gulf of Gabés and Sicily than the rest of the Mediterranean where there are only sporadic records. In addition, the species is included in the Sirt Gulf ISRA. The marine EAAA overlaps one of the few areas this species still has confirmed presence, therefore the marine EAAA could be significant for the overall population.
Smoothback angleshark ( <i>Squatina oculata</i> )	A Critically Endangered species on global, Mediterranean and Italy Red Lists. The population size of this species is unknown. Following heavy fishing pressure, the species has not been reported in many areas of its previous range in several decades. Throughout much of its historical range the species is now thought to be locally extinct. Regions which have maintained occurrence of this species include Sicily, the Aegean Sea, the Sea of Marmara, Tunisia, Ghana, Senegal, and Sierra Leone. The species is also included in the Sirt Gulf ISRA. Due to the significant range contraction of the species the marine EAAA could be an area of importance for the remaining distribution of the species.
Common guitarfish ( <i>Rhinobatos rhinobatos</i> )	This species is listed as globally Critically Endangered by IUCN and Italy Red Lists. Its status on the Mediterranean is Endangered. The common guitarfish is associated with muddy or sandy substrate from 0-180 m depth. This species is present in the eastern Atlantic Ocean and Mediterranean Sea from the southern Bay of Biscay to Angola. There is a very low rate of encounter of this species in the Mediterranean Sea, which

Critical habitat species	Description to support critical habitat conclusion
	makes it difficult to assess temporal and spatial trends. However, by 1990 the species had been reported as extinct from the western, and eastern regions of the Mediterranean Sea. From fishing catches in the Gulf of Gabés and other central Mediterranean- African coastline areas, the species is still present. It is included as a trigger species in the Kerkennah ISRA in the Gulf of Gabés. Within the Mediterranean Sea, the marine EAAA could be an area of importance for this species. The species is rare but present across a large range of the eastern Atlantic but with uncertainties as to the size of this population, it is unlikely the EAAA hosts a globally significant population.
Blackchin guitarfish ( <i>Glaucostegus cemiculus</i> )	This species is globally Critically Endangered by IUCN. It has not been assessed for the Mediterranean but has a Critically Endangered listing on the Italy Red List. The species is thought to be widely distributed from Portugal to Angola, including the Mediterranean Sea. However, fishing intensity as a highly valued catch, due to the size of its fins, appears to have reduced the distribution to such an extent it appears to have disappeared from several areas in its range. The southern Mediterranean (including the Gulf of Gabés) and a few areas of the eastern Mediterranean) seem to be core parts of the species' distribution. The presence of the species in the Jerba-Zarzis ISRA that lies in the marine EAAA was one of the triggers for listing of this area. As such, it is possible the marine EAAA could be an area of importance as an area the species still commonly occurs compared to other areas.
Rough skate ( <i>Raja radula</i> )	Endemic to the Mediterranean and assessed as Endangered on the IUCN and Mediterranean Red Lists. The population size of this species is unknown. It is thought to occur throughout the Mediterranean Sea in coastal waters, however, it is predominately found off the coast of Sardinia, Sicily, around the Balearic Islands. In addition, the presence of this species is included in the listing of three of the ISRAs found in the marine EAAA. As such, it is possible that the marine EAAA could be significant for the overall population.
Angleshark ( <i>Squatina squatina</i> )	A Critically Endangered species on the IUCN, Mediterranean and Italy Red Lists. Historically distributed across the northeast Atlantic, Mediterranean, and Black Seas in coastal shelf sandy habitat, much of the population has been subject to heavy demersal fishing have led to dramatic declines and local extinctions. As such, the angleshark is now extremely uncommon through much of its range. Occasional sightings are reported in Wales, Ireland, Tyrrhenian Sea, north Adriatic and Aegean. In addition, the Sirt Gulf ISRA is noted

Critical habitat species	Description to support critical habitat conclusion
	to be a reproductive area for the angleshark. As such, it is possible the marine EAAA is important for the species.
Blackspotted smoothhound ( <i>Mustelus punctulatus</i> )	The status of this species is Vulnerable on the IUCN and Mediterranean Red Lists and is Endangered on the Italy Red List. There are significant uncertainties related to the population size and distribution of this species due to it being frequently misidentified as more abundant smoothhound species. Associated with sandy, gravelly substrates and seagrass beds on the continental shelf and slope. This species occurs primarily in the Mediterranean Sea with some recordings in the Eastern Central Atlantic. It appears to be very rare in the northern Mediterranean Sea but is more common in the north African coasts, especially Tunisia and Libya. In addition, three of the ISRAs in the marine EAAA are noted as feeding areas for this species. Therefore, the marine EAAA appears to be important for functions for this species, as well as the area potentially hosting a significant overall population.
Common smoothhound ( <i>Mustelus mustelus</i> )	Endangered on the IUCN and the Italy Red Lists, but Vulnerable on the Mediterranean Red List. The species has a relatively wide distribution in the Mediterranean Sea, east Atlantic Ocean and Western Indian Ocean. Of note, the Kerkennah ISRA in the Gulf of Gabés is noted a reproductive area for this species. In addition, from one fishery-independent study in 2008, this species seems to be more abundant off Tunisia than other Mediterranean coasts. As such, the marine EAAA could be an area of importance based on functions.
Shortfin mako ( <i>Isurus oxyrinchus</i> )	Endangered globally and Critically Endangered in the Mediterranean. The size of the population is unknown. The species is widespread in tropical and temperate waters. However, the Pelagie Archipelago and Levante Shoal ISRA is noted to be a reproductive area for the species. Therefore, the marine EAAA could hold value for this species related to crucial functions.
Sandbar shark ( <i>Carcharhinus plumbeus</i> )	The status of this species is Endangered on the IUCN and Mediterranean Sea Red Lists. The population size of this species is unknown. The species occurs worldwide in warm and temperate waters. However, the Gulf of Gabés is noted to be an area of greater abundance compared to the rest of the Mediterranean Sea. In addition, the Jerba-Zarzis ISRA in the Gulf of Gabés is noted to be a reproductive area for this species. As such, the marine EAAA could be an important area based on functions.
Swordfish ( <i>Xiphias gladius</i> )	The swordfish is Near Threatened on the IUCN Global and Italy Red Lists and is a highly migratory species. The species is distributed worldwide in warm, tropical, and occasionally cold water. Despite the highly

Critical habitat species	Description to support critical habitat conclusion
	migratory behaviour there is thought to be four genetically distinct populations, one of which is the Mediterranean Sea. The Sicilian Channel is thought to be the most important spawning ground for this species. This swordfish spawning ground is a reason for the classification of the Sicilian channel as an EBSA. Although the population size with the marine EAAA is unknown, it is likely that is area is of importance for the species, especially on a cyclical basis for important functions.
Mediterranean shortbill spearfish ( <i>Tetrapturus belone</i> )	The species is endemic to the Mediterranean, however, there is one record from Madeira. The species is Least Concern on the IUCN and Italy Red Lists. It is also deemed to be migratory. The spearfish is most abundant around Italy and Tunisia. As an epipelagic species, little is known about the species population size or biology. However, given the known abundance around Italy and Tunisia, the marine EAAA could be significant in terms of overall population.
Bluefin tuna ( <i>Thunnus thynnus</i> )	The bluefin tuna is classified as globally of Least Concern by IUCN but is Endangered on the Mediterranean Red List. The Atlantic stock comprises two distinct genetically populations, the west and east. The size of the east Atlantic stock is unknown. The eastern Atlantic stock spawn in the Mediterranean Sea, of which there are only three known spawning areas including the marine EAAA (specifically the east of Sicily), as well as the Balearic waters and the south Tyrrhenian Sea. The marine EAAA is therefore likely to host an important concentration of the eastern Atlantic bluefin tuna on a cyclical basis as one of only three spawning grounds.
Tortonese's goby ( <i>Pomatoschistus tortonesei</i> )	Endangered on the IUCN and Mediterranean Red Lists. Endemic to a small range off the coast of Tunisia and Sicily in water depths of 1-5 m. There is an estimated area of occupancy of less than 550 km <sup>2</sup> . Almost the whole of the species' range falls within the marine EAAA. The species is particularly associated with <i>Zostera</i> seagrass beds. The size of the population is unknown.
North African Shad ( <i>Alosa algeriensis</i> )	Listed as Endangered on the IUCN Red List, and is only found in three regions including Morocco, Algeria and Tunisia. Very little is known about the population or abundance of this species. It is anadromous and regularly enters coastal lagoons and rivers. Due to the narrow area of occupancy, estimated to be 300 km <sup>2</sup> , the marine EAAA could host a significant concentration of the global population, although there are uncertainties related to presence due to scarcity of recordings.
Loggerhead turtle ( <i>Caretta caretta</i> )	Annex IV species. Subpopulation is Listed by IUCN as Vulnerable globally, Least Concern on the Mediterranean Red List and Endangered on the Italian Red List. The coastal EAAAs host relatively low level

Critical habitat species	Description to support critical habitat conclusion
	nesting in comparison to other nesting areas. However, the Sicilian Channel provide support to a significant portion of the subpopulation, including direct connectivity with the major nesting sites. Of note, this area is significant with respect to connectivity with nesting sites in Greece that host around 50% of the overall nesting population. The importance of the Sicilian Channel also relates to juvenile development grounds, and the Strait of Sicily supports considerable inter-basin exchange. Whilst accurate populations of all individuals in the Sicilian Channel is not available, studies have confirmed the high abundance of this area and confirm it as a significant hotspot for the overall population. As such, the marine EAAA is one of the most important areas of in-water habitat in the Mediterranean Sea for loggerhead turtles.
Green turtle ( <i>Chelonia mydas</i> )	Annex IV species and listed as Endangered by IUCN. Unlike loggerhead turtles, a subpopulation in the Mediterranean Sea has not been confirmed. This species does not nest in the coastal EAAAs, but the southern nearshore portion of the EAAA in eastern Tunisia has been confirmed as an area connected to nesting population in the eastern Mediterranean. It is possible that the remaining coastal areas provide foraging grounds, and that the Strait of Sicily supports inter-basin exchange. However, whilst presence is confirmed in the EAAA it is not considered as being significant for this species, especially related to other areas for in-water habitat in the eastern Mediterranean Sea.
Hawksbill turtle ( <i>Eretmochelys imbricata</i> )	Annex IV species and listed as Critically Endangered by IUCN. Only a very small number of sightings have occurred in the whole Mediterranean Sea. Whilst there are a small number of records in the central Mediterranean, they are sporadic and infrequent visitors. The in-water habitat of the marine EAAA is not expected to be of any significance for hawksbill turtles.
Kemp ridley turtle ( <i>Lepidochelys kempī</i> )	Annex IV species and listed as Critically Endangered by IUCN. Only a very small number of sightings have occurred in the whole Mediterranean Sea. Whilst there are a small number of records in the central Mediterranean, they are sporadic and infrequent visitors. The in-water habitat of the marine EAAA is not expected to be of any significance for Kemp's ridley turtles.
Sicilian pond turtle ( <i>Emys trinacris</i> )	Endemic to Sicily and listed as Endangered on the Italy Red List. The overall population of this species is unknown. It is reported that it appears to be more widespread in the northern and central-western parts of Sicily. However, it is recorded on the southern coast of Sicily, including within the western and eastern



Critical habitat species	Description to support critical habitat conclusion
	portion of the coastal EAAA. Within the coastal EAAA it will be restricted to inland freshwater wetland and pond areas.
Common bottlenose dolphin ( <i>Tursiops truncatus</i> )	Annex IV species and listed as Vulnerable on the Mediterranean Red List. The Kélibia and Lampedusa IMMAs lie within the marine EAAA, and this species forms a key reason for the determination of the importance of these areas. The IMMAs host a locally resident group within the Mediterranean Sea subpopulation. Six other IMMAs areas have been identified with this species as a key feature. Photo-identification studies recognize a catalogue of 44 individuals in the Kélibia IMMA. No recent population estimates for the Lampedusa IMMA, but data from 1998 presented in the IMMA description states 115 (93-116) individuals. It is estimated that there 2,350 individuals in the overall Mediterranean subpopulation (Labach et al., 2021). The IMMAs may therefore represents around 8% of the overall subpopulation. This species is also reported in nearshore areas along the coast of Tunisia suggesting its range extends beyond IMMA areas.
Common dolphin ( <i>Delphinus delphi</i> )	Annex IV species and listed as Endangered on the Mediterranean and Italy Red Lists. A distinct subpopulation has been identified in the Mediterranean Sea. The waters around the Island of Malta are thought to contain habitat of importance to this species as this area forms part of the wider cetacean habitat identified by ACCOBAMS. This area has been defined as a cIMMA. It is estimated that the subpopulation comprises 2,496 mature individuals. They occur as scattered small groups in parts of the southern Tyrrhenian Sea, Sicilian Channel and Ionian Sea. The cIMMA is one of only six IMMAs where this species is a key feature in the Mediterranean Sea based on populations and vulnerability. Although populations in the marine EAAA are unknown, this area is of importance for the overall subpopulation based on known ranges, which is supported by the ACCOBAMS assessment of this area being critically important for cetaceans.
Fin whale ( <i>Balaenoptera physalus</i> )	Annex IV species and listed as Endangered on the Mediterranean Red and Italy Red Lists. A distinct subpopulation has been identified in the Mediterranean Sea. This species is a key reason within the Lampedusa IMMA which lies in the central part of the marine EAAA. This species is a key feature of four other IMMAs that are all located in the western Mediterranean basin. The Sicilian Channel is likely to support inter-basin exchange for this species and sightings have been recorded outside of the IMMA area, including around Malta and in the Strait of Sicily. The overall subpopulation is estimated in to contain fewer than 10,000

Critical habitat species	Description to support critical habitat conclusion
	individuals. No information is available for the population in the Lampedusa IMMA. The area comprises the only known winter feeding ground in the southern part of the Mediterranean Sea.
Sperm whale ( <i>Physeter macrocephalus</i> )	Annex IV species and listed as Endangered on the Mediterranean and Italy Red Lists. A distinct subpopulation has been identified in the Mediterranean Sea. The marine EAAA is not located in an area where there is a social aggregation of this species, but juvenile and sub-adult sperm whales are thought to roam widely across the Mediterranean Sea. Sperm whale observation in the Sicilian Channel are few. As such, this species is not listed for IMMAs in the Sicilian Channel. However, the Messina Channel that lies outside of the marine EAAA is a known transit location for individuals and is identified as an IMMA for this species.
Risso's Dolphin ( <i>Grampus griseus</i> )	Annex IV species and listed as Least Concern on the IUCN Red List and Data Deficient on the Mediterranean Red List. A distinct subpopulation has been identified in the Mediterranean Sea. Only strandings and a few sightings have been recorded in the Sicilian Channel and IMMAs present here do not include this species. The Sicilian Channel does, however, provide suitable habitat for this species in offshore areas around steep slopes and submarine canyons.
Long-finned pilot whale ( <i>Globicephala melas</i> )	Annex IV species and listed as Least Concern on the IUCN Red List and Data Deficient on the Mediterranean Red List. Only two have been recorded in the Sicilian Channel and IMMAs present here do not include this species. The Sicilian Channel does, however, provide suitable habitat for this species in offshore areas.
Cuvier's beaked whale ( <i>Ziphius cavirostris</i> )	Annex IV species and listed as Least Concern on the IUCN Red List and Data Deficient on the Mediterranean Red List. A distinct subpopulation has been identified in the Mediterranean Sea. Only strandings have been recorded in the Sicilian Channel and IMMAs present here do not include this species. The Sicilian Channel does, however, provide suitable habitat for this species in deep offshore areas.
Mediterranean monk seal ( <i>Monachus monachus</i> )	Annex IV species and listed as Endangered on the IUCN Red List and Critically Endangered on the Mediterranean Red List. the stronghold of the species is now islands in the Ionian and Aegean Seas, and along the coasts of mainland Greece, Cyprus, and western and southern Turkey. However, monk seals have been recorded in the Egadi islands archipelago and Pantellaria Island. The marine and coastal EAAAs do not, however, represent significant habitat in comparison to other areas.

Critical habitat species	Description to support critical habitat conclusion
Scopoli's Shearwater ( <i>Calonectris diomedea</i> )	Migratory species that is listed as Least Concern by IUCN. The Sicilian channel is a key feeding area for this species and hold at least 90% of the global population. Birds from key colonies in the area cover broad foraging areas across the channel, especially on the Tunisian Plateau.
Yelkouan shearwater ( <i>Puffinus yelkouan</i> )	Migratory species that is listed as Vulnerable by IUCN. The Sicilian channel is a key feeding area for this species and hold at least 10% of the global population. They range across the channel but are mostly concentrated on the Tunisian Plateau.
Mediterranean storm petrel ( <i>Hydrobates pelagicus melitensis</i> )	Migratory species that is listed as Least Concern by IUCN. In the Mediterranean, the endemic subspecies <i>melitensis</i> has a small population (<16,000 breeding pairs) and this is present in two breeding colonies in the Egadi islands and Malta. The central Mediterranean storm petrel population concentrates in two breeding colonies in Malta and the Egadi islands. This foraging habitat from these colonies extends across the Sicilian channel.
Marbled Teal ( <i>Marmaronetta angustirostris</i> )	This is a migratory coastal species, listed as Near Threatened globally but as Endangered on the Italy Red List. The population size of the Marbled Teal is estimated to be approximately 10,000 – 42,000 individuals. Within the Korba IBA that is in the coastal EAAA in Tunisia, there is noted to be 40 to 100 individuals present. Therefore, using a cautious approach this is potentially 1% of the global population present in this coastal EAAA.