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MEDITERRANEAN ECOLOGICALLY OR BIOLOGICALLY SIGNIFICANT AREAS (EBSAs)

Final Report

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Abbreviations

ABMT	Area-based Management Tools
ABNJ	Areas Beyond National Jurisdiction
ACCOBAMS	Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area
BBNJ	Biodiversity Beyond National Jurisdiction
BC	Convention for the Protection of the Marine Environment, and the Coastal Region of the Mediterranean (Barcelona Convention, 1976, amended 1995)
CBD	Convention on Biological Diversity
EBM	Ecosystem-based management
EBSA	Ecologically or Biologically Significant Area
EEZ	Exclusive Economic Zone
FRA	Fishery Restricted Area
GBF	Global Biodiversity Framework
GFCM	General Fisheries Commission for the Mediterranean
IBA	Important Bird and Biodiversity Area
IMO	International Maritime Organisation
MPA	Marine Protected Area
MSP	Marine/Maritime Spatial Planning
MSFD	Marine Strategy Framework Directive
N2K	Natura 2000 network of protected areas of the European Union
OECM	Other Effective Area-based Conservation Measure
PAP/RAC	Priority Action Plan Regional Activity Centre of the Barcelona Convention
SPA/BD	Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean in the framework of the Barcelona Convention
SPA/RAC	Specially Protected Areas Regional Activity Centre of the Barcelona Convention
SPAMI	Specially Protected Area of Mediterranean Importance
UfM	Union for the Mediterranean
UNEP/MAP	Mediterranean Action Plan of the United Nations Environment Programme

Executive summary

The Ecologically or Biologically Significant Areas (EBSAs) identify marine areas of high ecological importance, it is globally recognised as a sign of robust, science-based evidence. One key limitation is the absence of global guidance on developing governance frameworks and management in EBSAs. This leaves the responsibility with individual states and regional bodies, which can constrain coordinated action particularly in transboundary contexts. Moving the EBSA process forward requires improved integration within marine spatial planning, enhanced consideration of connectivity and representativity, and stronger links to existing management and governance frameworks. Despite this the EBSAs remain an opportunity for states to fulfil their obligations to reach global and regional conservation targets.

In the Mediterranean there are 15 EBSAs recognised by both the Convention on Biological Diversity (CBD) and the UNEP Regional Seas Programme (Mediterranean Action Plan (UNEP/MAP)). These originate from the inaugural, and only, regional EBSA workshop held in Malaga in 2014, hosted by the CBD and the UNEP/MAP. There remain significant gaps in the ecological and biological justifications of these areas and the governance mandates of the states and regional bodies of the Mediterranean Sea. Updating these justifications and reviewing legal mandates are a vital necessity for a 'Malaga +20' process.

As part of the UNEP/MAP, the Specially Protected Areas and Biological Diversity Protocol provide the framework to establish Specially Protected Areas of Mediterranean Importance (SPAMIs) in the region. There is growing consensus that the EBSAs provide the science of "where" to protect, and the SPAMIs can be the framework for "how" to protect, with the UNEP/MAP playing an important coordinating role. However, there needs to be clarity on which protocol of the UNEP/MAP should lead on the definition of a consistent governance framework for the EBSAs. The vulnerability of the Mediterranean requires concerted action from all stakeholders to encourage policy makers and authorities to make bold decisions. The EBSAs provide a means to confront the governance challenges found within the fragmented regimes of the Mediterranean.

Introduction

EBSA concept

The Ecologically or Biologically Significant Area (EBSA) process was initiated in 2008 under the Convention on Biological Diversity (CBD) with criteria outlined by the ninth Conference of the Parties (COP10) in decision X/29 in 2010. Originally, developed to identify marine areas of high ecological importance in areas beyond national jurisdiction (ABNJ), it provides a framework to support enhanced conservation measures such as Marine Protected Areas (MPAs), Other Effective Area Based Conservation Measures (OECMS), and the application of environmental impact assessments (Dunn et al., 2014; Johnson et al., 2024). Over time, the scope has expanded to include areas within national jurisdictions. In 2024, at the COP 16, new modalities allowing for the modification of existing EBSAs and the identification of new EBSAs were adopted (CBD, 2024). As of early 2026, there are more than 330 EBSAs registered in the CBD global repository.

The concept of EBSAs is to identify *"areas of the ocean that have special importance in ecological and/or biological terms"* (CBD, 2008). The EBSA framework is inherently flexible, reflecting the dynamic and complex nature of marine ecosystems (Dunn et al., 2025). An EBSA may be defined by a single fixed feature or by a group of similar features, where ecological connectivity is essential for maintaining ecosystem health and resilience. In other cases, EBSAs may encompass a range of seabed features across different depths that together provide critical habitat for marine communities, or variable pelagic features, such as an ocean front. Where appropriate, EBSAs may also shift spatially over time, with boundaries that change in response to seasonal, interannual, or longer-term variations in oceanographic or climatic conditions. This dynamic approach enables EBSA descriptions to more accurately capture the natural variability of their ecological and biological characteristics (Dunn et al., 2025).

The EBSA identification process uses a set of seven scientific criteria, meeting at least one of these criteria makes an area eligible.:

1. Uniqueness or Rarity [C1].
2. Special importance for life history stages of species [C2].
3. Importance for threatened, endangered or declining species and/or habitats [C3].
4. Vulnerability, Fragility, Sensitivity, or Slow recovery [C4].
5. Biological Productivity [C5].
6. Biological Diversity [C6].
7. Naturalness [C7].

EBSAs are typically large, heterogeneous, transboundary regions that encompass both high biodiversity values and significant economic uses (Dunn et al., 2019). Although not originally designed for MSP, they are increasingly recognized as valuable tools for ecosystem-based management (EBM) and for balancing conservation goals with growing blue economy development. The EBSA designation is scientific recognition intended to inform MSP, conservation and sustainable-use policy (Dunn et al., 2025).

Overlaying EBSAs over political and maritime boundaries helps visualize which countries share responsibility for a given region, and which jurisdictional rights and responsibilities these states have, a crucial first step for transboundary cooperation. This may highlight "hotspots" of ecological importance that may lie across multiple jurisdictions which requires that conservation must go beyond national-level planning, toward macro-regional or joint governance to define area-based management tools (ABMT). It also identifies where human uses may conflict with sensitive ecosystems, especially in deep or remote EBSAs, underscoring need for careful impact assessment, monitoring, and possible regulation (Dunn et al., 2025).

A major limitation of the process is the lack of consistent global guidance on management, leaving implementation to individual states and regional bodies and potentially limiting coordinated action in transboundary areas (Dunn et al., 2025). This is particularly relevant in multi-jurisdictional regions such as the Mediterranean Sea, where collaboration is essential for effective and cost-efficient biodiversity management (Mackelworth et al., 2024).

Mediterranean context

In the Mediterranean, 17 areas were originally identified in the inaugural, and only, regional workshop to facilitate the description of EBSAs, held in Malaga in 2014, hosted by the CBD and the UNEP/MAP. Subsequently 15 Mediterranean EBSAs were later accepted into the CBD repository (Table 1). These areas are recognised for a wide range of species and habitats encompassing pelagic, benthic, deep-sea, and transitional environments (CBD, 2014).

	C1	C2	C3	C4	C5	C6	C7
1. Northern Adriatic	++	+++	+++	++	+++	++	+
2. Jabuka/Pomo Pit	+++	+++	++	++	+++	++	+
3. South Adriatic Ionian Strait	+++	+++	+++	+++	++	+++	++
4. North-Western Mediterranean Pelagic Ecosystems	+++	+++	+++	+++	+++	+++	++
5. North-Western Mediterranean Benthic Ecosystems	+++	++	+++	+++	++	+++	++
6. Sicilian Channel	++	+++	+++	+++	++	+++	+
7. Gulf of Gabès	+++	++	+++	+++	++	++	++
8. Gulf of Sirte	++	+++	+++	+++	+++	+++	+++
9. Nile Delta Fan	+++	+++	+++	+++	+++	+++	++
10. East Levantine Canyons Area	+++	+++	+++	+++	-	+++	++
11. North-East Levantine Sea	++	+++	+++	++	-	-	-
12. Akamas and Chrysochou Bay	+++	+++	+++	+++	-	++	++
13. Hellenic Trench	+++	+++	+++	+++	+++	-	-
14. Central Aegean Sea	++	+++	+++	++	+	+++	++
15. North Aegean	+++	+++	++	+	+++	+++	+

Table 1. List of EBSAs in the Mediterranean Sea eligible to qualify as an EBSA and criteria they meet: +++ high, ++ medium, + low, - no information (CBD, 2014).

Many of the Mediterranean EBSAs incorporate multiple national jurisdictions, including internal waters, territorial seas, exclusive economic zones (EEZs) and continental shelves. Others straddle high seas or sit within complex geopolitically shared basins, thus underlining their transboundary character (CBD, 2014).

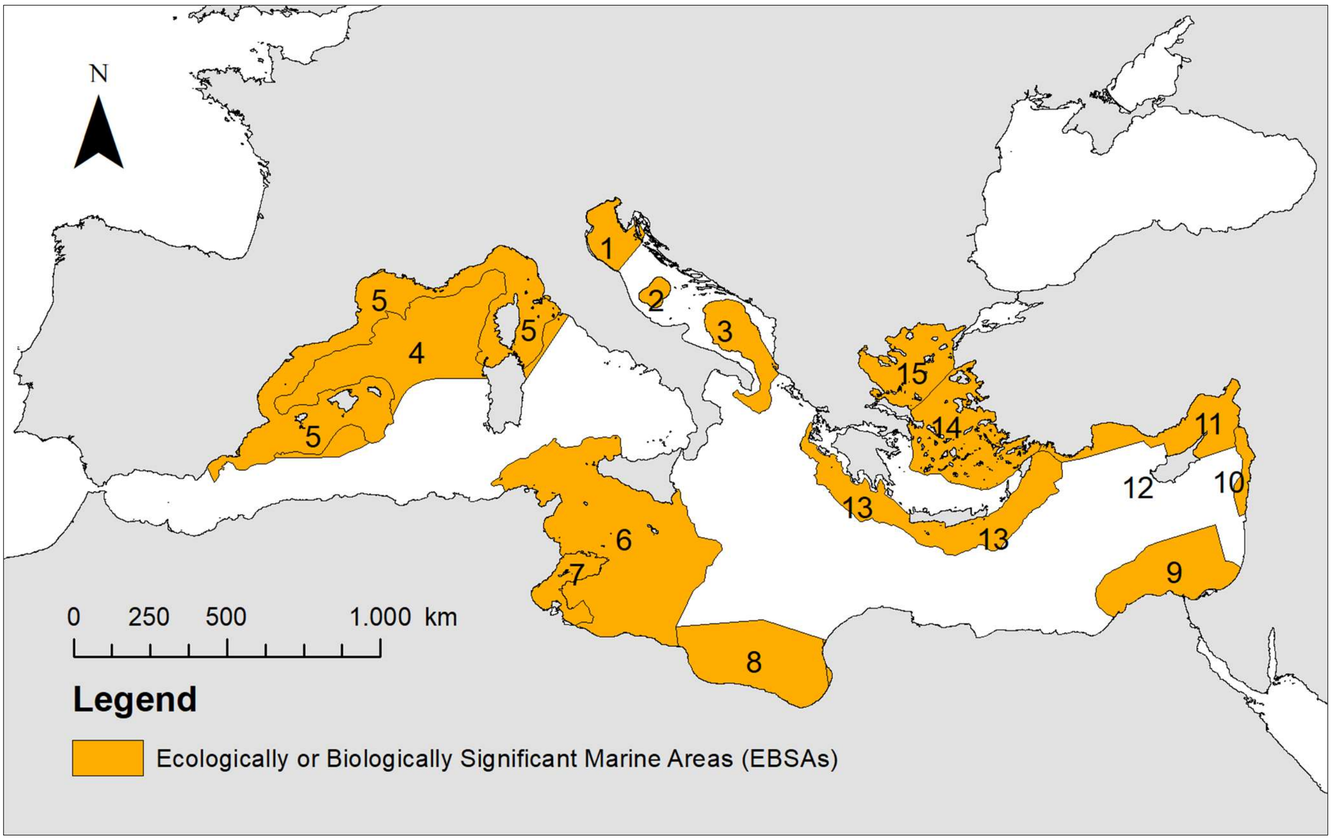

Figure 1. EBSAs recognized under the CBD process across the Mediterranean.

The formal link between the CBD and UNEP/MAP, as part of the UN framework, is important for the alignment of regional marine goals with global targets. As part of the Convention for the Protection of the Marine Environment, and the Coastal Region of the Mediterranean (Barcelona Convention, 1976, amended 1995), the Protocol Concerning Specially Protected Areas and Biological Diversity (SPA/BD) is the primary instrument for implementing CBD goals within the Mediterranean. The SPA/BD Protocol is coordinated by the Specially Protected Areas Regional Activity Centre (SPA/RAC) which also defines the method for nations to propose Specially Protected

Areas of Mediterranean Importance (SPAMIs). In 1996, five criteria were developed to assess the Mediterranean regional value of a candidate site (UNEP/MAP-SPA/RAC, 1996):

1. Uniqueness
2. Natural representativeness
3. Diversity
4. Naturalness
5. Presence of habitats that are critical to endangered, threatened or endemic species

To be officially registered as a SPAMI, the proposing nations must draft and submit a comprehensive presentation report, which includes, a legally binding, active management plan, concrete protection measures, and financial and operational institutional capacity to enforce those rules (UNEP/MAP-SPA/RAC, 1996). The SPA/RAC acts as the technical liaison between the States, the Barcelona Convention and the CBD on all matters relating to marine areas of high ecological value, including the identification, recognition and management of the EBSAs.

Policy challenges within the Mediterranean context

The Mediterranean Sea presents a complex geopolitical governance challenge for marine conservation generally. However, the first UNEP Regional Seas Programme, the Mediterranean Action Plan (UNEP/MAP), that was established in 1975 legally underpins the Barcelona Convention (1976, amended 1995). The Convention provides a multilateral legal framework for the protection of the Mediterranean Sea with the UNEP/MAP system providing a coordinating role. However, with seven protocols, each bringing its own mandate and having evolved over five decades, there is growing recognition for the need to clarify roles and strengthen the synergies between them, particularly where their areas of action overlap. This is no different for coordinating the EBSA process, which should involve the relevant institutions working on MSP, sectoral stakeholders, Mediterranean communities and nation states as well as macro-regional bodies.

The Post 2020 Strategic Action Programme for the CBD in the Mediterranean Region (SAPBIO), coordinated by the UNEP/MAP-SPA/RAC, aims to align Mediterranean conservation with the UN

Sustainable Development Goals and the Kunming-Montreal Global Biodiversity Framework. The Mediterranean Strategy for Sustainable Development (MSSD) is an important policy framework that aims to align with the global Sustainable Development Goals with the ecological, social, and economic realities of the Mediterranean basin. This strategy is driven by Plan Bleu Regional Activity Centre (UNEP/MAP-PB/RAC) that provides socioeconomic insights, foresight studies and data monitoring to ensure countries can track their sustainability targets. Finally, the role of the Priority Action Plan Regional Activity Centre (UNEP/MAP-PAP/RAC) must also be considered. UNEP/MAP-PAP/RAC is mandated to implement the integrated coastal zone management protocol, utilising marine spatial planning as a tool for its implementation (UNEP/MAP 2023). Embedding systematic conservation planning within a rational MSP for the EBSAs will be crucial part of ensuring that sustainable development strategies are met within the Mediterranean.

Within the EU Mediterranean States, the EU Biodiversity Strategy for 2030 contributes to the post-2020 global biodiversity negotiations as a core part of the European Green Deal. Within this, the expansion of the marine Natura 2000 (N2K) network is the primary tool for spatial conservation, yet effective governance also remains elusive (European Environment Agency (EEA), 2020). All N2K sites are implemented through the harmonisation of EU directives into national policy, as such governance frameworks and management plans vary widely according to the application of the directives by the national authorities.

Beyond the EU, the Council of Europe's Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention, 1979) has been adopted by many non-EU Mediterranean States including some north African States. The Bern Convention provided the foundation and guiding framework for the Habitats Directive and the Birds Directive of the EU. As part of the Convention, non-EU states may include protected areas under the Emerald Network of the Bern Convention. As states accede into the EU these protected areas become part of the N2K network.

Some species of conservation concern may also fall under different protection regimes. The UNEP-MAP, in cooperation with other institutions, has provided guidance on the conservation of particularly important species for the Mediterranean, including the Mediterranean Monk Seal, sea turtles and cetaceans. Within the whole the Mediterranean, the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS), concluded under the Convention Migratory Species, also identifies areas of importance for cetacean species.

Increasingly sectoral management measures, which may only affect one sector, are being promoted as potential OECMs which may also contribute to 2030 targets. Of particular importance are the General Fisheries Commission for the Mediterranean (GFCM) and the International Maritime Organisation (IMO). The GFCM as the regional fisheries organisation for the Mediterranean plays a significant role in identifying sensitive indicators for the good environmental status of the region and has the capacity to establish fisheries restricted areas (FRAs) with the support of the Member States of the Commission. The IMO has the mandate to route shipping and designate Particularly Sensitive Sea Areas. As shipping and fisheries are two of the major industries that can have profound effects offshore, these sectors are particularly powerful actors, along with the marine energy industry. Of course, OECMs must have clarity on who is the competent authority and what are the conservation goals, rather than being a convenient means to fulfil national percentage targets.

Finally, increasing concern over the state of the oceans and the push for the Blue Economy has seen other regional organisations including the Union for the Mediterranean (UfM) and the EU increase their interest in management of this region. The UfM sets out a vision for connecting and engaging with the people of the region, building a resilient, sustainable and stable Mediterranean and connecting economies (UfM vision statement, 2025) aligned with the regional objectives of the Pact for the Mediterranean. The proposed expansion of the EU macro-regional strategies to include the western Mediterranean and the EU Ocean Act outlines similar goals putting macro-regions in the policy framework.

This paints a picture of multiple macro-regional institutions and sectoral agencies with differing mandates, overlapping strategies resulting in fragmented governance with limited implementation pathways.

Mediterranean EBSAs

Adriatic-Ionian Region

Northern Adriatic

The area is in the northern part of the North Adriatic Sea Basin (Figure 2), with an average depth of 35 m and is strongly influenced by the Po River plume. It includes mobile sandy bottoms, seagrass meadows (*Posidonia oceanica*), hard bottom associations and unique rocky outcrops. The area is one of the most productive areas in the Mediterranean and is home to several rare and endangered habitat types and species. It hosts a population of the highest density of bottlenose dolphin (*Tursiops truncatus*) in the Mediterranean, it is one of the most important feeding grounds in the Mediterranean of the loggerhead turtle (*Caretta caretta*) (UNEP-MAP-RAC/SPA, 2014a; Fortuna et al., 2014) and it is a nursery area for a number of vulnerable species (blue shark (*Prionace glauca*), sandbar shark (*Carcharinus plumbeus*), anchovies (*Engraulis encrasicolus*), etc.). The area hosts a strong diversity of benthic and pelagic habitats due to an important gradient of environmental factors from its western portion to its eastern coasts (CBD, 2016). The area is also very important for the Mediterranean shags (*Phalacrocorax aristotelis desmarestii*) subspecies. Large aggregations of shags forage in the area in late summer and autumn with average counts of 2,000−4,000 individuals (with a high of 10,000) which is more than half the entire breeding population in the Adriatic (Cosolo et al., 2012). Northern Adriatic EBSA is also important for species like common tern (*Sterna hirundo*) that nests on little islands in the North Adriatic area (Rendić and Sušić, 2003), and the most northern natural population of Griffon Vultures (*Gyps fulvus*) in the Mediterranean (Le Gouar et al., 2008).

Anthropogenic pressures are very high in the region, although biodiversity remains high. Vulnerabilities are linked to high human population density and intensive level of fisheries, seismic activities and oil and gas exploration and exploitation. There is an increase of marine traffic in this area due to tourism and expansion in the ports of Venice, Trieste, Koper and Rijeka (CBD, 2016).

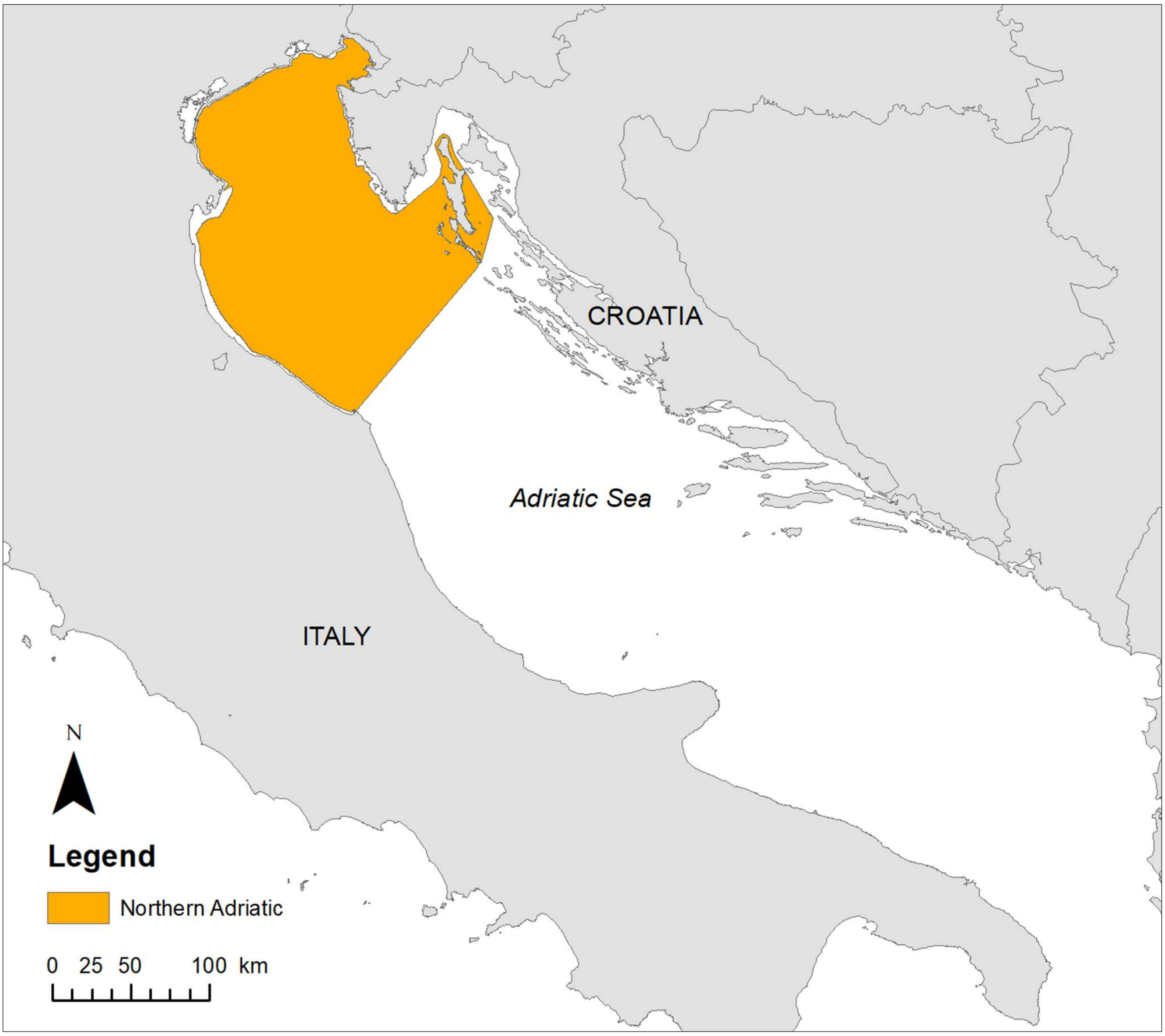

Figure 2. Northern Adriatic EBSA

Jabuka/Pomo Pit

The area encompassing the adjacent depressions, the Jabuka (or Pomo) Pit is situated in the Middle Adriatic Sea (Figure 3) and has a maximum depth of 200 - 260 m. This area has complicated geographical features, including rocky bottoms, and has unique characteristics in terms of sediments, oceanography and biota. It is a region were cold nutrient-rich waters from the Northern Adriatic flow to the bottom of the Adriatic and become trapped by the Pit. It plays an important role in the overall oceanographic dynamic of the Adriatic Sea. The Pit is an upwelling region, with the bottom water being cooler and more nutrient-rich than near surface waters. These conditions encourage a high abundance of fish and shellfish, and the area has long been known as a productive fishing ground (FAO AdriaMed, 2011). The Jabuka/Pomo Pit could function as a favourable environment for some key life history stages of the porbeagle shark (*Lamna nasus*) (Scacco et al., 2012), which is critically endangered (CR) according to the IUCN Red List and listed on Annex II SPA/BD Protocol. The area has a high density of giant devil ray (*Mobula mobular*) in the Adriatic (Fortuna et al., 2014). that is listed on Annex II of SPA/BD Protocol. The Jabuka/Pomo Pit is a sensitive and critical zone for spawning and nursery for important Adriatic demersal resources especially for European hake (*Merluccius merluccius*) (FAO Adriamed, 2011). The area hosts the largest population of Norway lobster (*Nephrops norvegicus*) and is important especially for juveniles in the depths over 200 m (UNEP-MAP-RAC/SPA, 2014b). Regarding benthic species, several types of corals can be found (Scleractinia and Actiniaria) (CBD, 2016).

Although it covers less than 10% of the total surface of the Adriatic Sea, it is one of the most important fishing grounds in the Adriatic. Fish populations are vulnerable due to overfishing and high fishing pressure on juveniles (CBD, 2016).

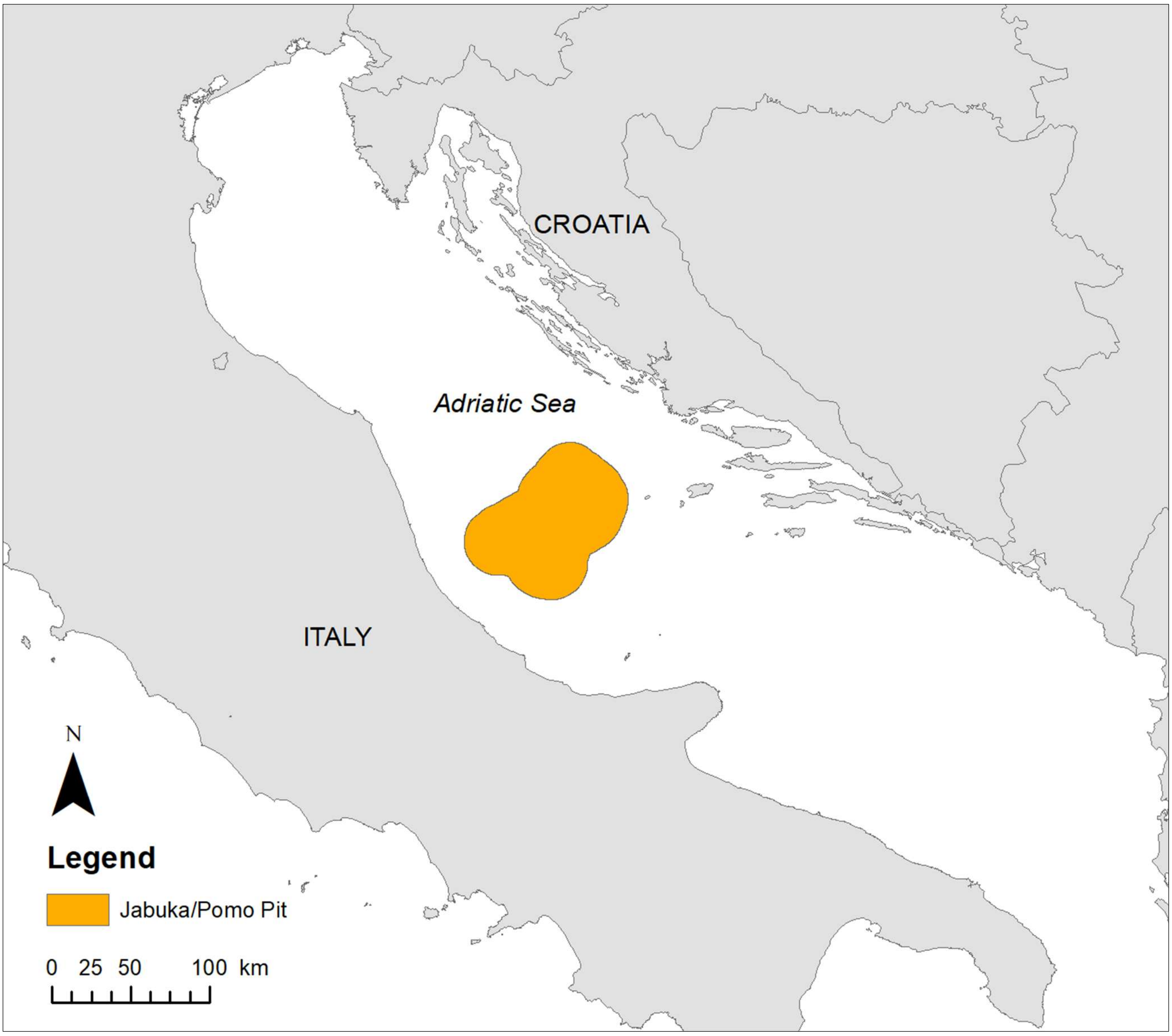

Figure 3. Jabuka/Pomo Pit EBSA

South Adriatic Ionian Strait

The area is in the centre of the southern part of the Southern Adriatic basin and the northern Ionian Sea (Figure 4). It is characterized by steep slopes, high salinity and a maximum depth ranging between 200 m to 1500 m. Water exchange with the Mediterranean Sea takes place through the Otranto Channel, which has a sill that is 800 m deep. It is an area where southern Adriatic deep water is locally formed. The South Adriatic basin is intruded upon by Levantine Intermediate Water, a high salinity water mass formed through evaporation in the eastern Mediterranean (Zore-Armanda, 1963). Furthermore, this area encompasses the Bari Canyon, which plays an important role in the dynamics of the Adriatic Sea as it is the main channel facilitating the transport of sediments between the western Adriatic shelf and the southern basin (Oceana, 2014). The South Adriatic Pit is also characterized by open sea zooplankton, particularly euphausiids, also known as krill. There are also mesopelagic and deep zooplankton in the area (Viličić, 2008). This area contains important habitats for goose-beaked whales (*Ziphius cavirostris*), an Annex II species of the SPA/BD Protocol of the Barcelona Convention, and significant densities of other megafauna such as the giant devil ray (*Mobula mobular*), striped dolphin (*Stenella coeruleoalba*), and loggerhead turtle (*Caretta caretta*), all of which are listed in Annex II of SPA/BD Protocol (Fortuna et al., 2014; UNEP-MAP-RAC/SPA, 2014a). Tuna (*Thunnus thynnus*), swordfish (*Xiphias gladius*), and sharks can also be found in the area (UNEP-MAP-RAC/ SPA, 2014b)

This area is a site of active coral growth since the latest Pleistocene (Taviani et al., 2011). Benthos includes deep-sea cold-water coral communities and deep-sea sponge aggregations representing important biodiversity reservoirs and contributing to the trophic recycling of organic matter (Oceana, 2014). The area hosts cnidarian-rich habitats in the depth range of ca. 400-700 m. In 2006, Santa Maria di Leuca area was designated under the General Fisheries Commission for the Mediterranean (GFCM) as a Fishery Restricted Area (FRA) banning the use of towed gears due to the relationship between the Lophelia reef and the occurrence of priority commercial species (e.g., *Aristaeomorpha foliacea, Aristeus antennatus, Merluccius merluccius, Nephrops norvegicus, Pagellus bogaraveo*).

Figure 4. South Adriatic Ionian Strait EBSA

North-West Mediterranean Sea

Northwest Mediterranean Pelagic Ecosystem

The area encompasses the Pelagos Sanctuary as well as two previously proposed SPAMIs, the Gulf of Lion and the southern Balearic Islands (Figure 5). It also contains several other SPAMIs and Important Bird and Biodiversity Areas (IBAs). A central feature of the area is the Provencal-Corsican-Ligurian Basin (Wurtz, 2012). The Balearic promontory is a major feature of the western Mediterranean Basin (Acosta et al., 2004). The oceanography of the water masses in the area is at the base of its productivity. The area is marked by a relatively high mesotrophic caused by a variety of mechanisms of fertilization, the presence of the Ligurian-Provencal current and existence of complex flowing structures involving divergences and convergences. Current dynamics in the Balearic sub-basin are affected by atmospheric forcings making the Balearic region a transition zone (García et al., 2006).

The Pelagos Sanctuary was established by an international treaty among France, Italy and Monaco in 2001. In addition, other features in the area, both geomorphological and other oceanographic features concur with the Ligurian Front to the present areas especially suitable for hosting marine mammal species. The Pelagos Sanctuary area, complemented by an extension to the south-east into the Tyrrhenian Sea, and another extension to the west encompassing the Gulf of Lion all the way to the Balearic sub-basin, are essential to the diet of many cetacean species in the western Mediterranean. During the winter, hydrological events produce a significant mixing of waters allowing the migration of nitrates, phosphates and silicates of lower strata to the euphotic layer. In the spring, there is an increase of water temperatures and a stabilization of the surface of the water masses. These phenomena facilitate a higher level of spring and summer primary productivity than the coastal area, particularly within the frontal zone where the observed productivity is relatively high throughout the year. The high level of primary productivity is critical to the structure of the upper levels of the food chain.

The Balearic sub-basin represents an essential area for the migratory, reproduction and/or nursery pathways of different species of large vertebrates as tunas, cetaceans, and sea turtles entering from the Atlantic. Marine turtles (*Caretta caretta* and *Dermochelys coriacea*) from the Atlantic as well as *C. caretta* from the eastern and central Mediterranean are distributed in the northern part of the island and the Catalan Sea. The Balearic Archipelago is an important developmental habitat for loggerhead turtles from Atlantic and Mediterranean origin (Carreras et al., 2006) but while there, they experience high levels of attrition due to long-line bycatch (Camiñas, 2004).

For some groups of large pelagic, including tuna and tuna-like species, the western Mediterranean represents an important reproduction and feeding area (Aranda et al., 2013). The Bluefin tuna (*Thunnus thynnus*), the southern Balearic area is considered one of the most important spawning sites for the stock along (García et al., 2003; Karakulak et al., 2004). Other pelagic species that are also known to reproduce in summer around the Balearic Islands include albacore (*Thunnus alalunga*), common dolphinfish (*Coryphaena hippurus*), small tuna such as frigate tuna (Auxis spp.), little tunny and skipjack tuna.

A total of 71 species of cartilaginous fishes live and breed in the Mediterranean and many of these are present in the Balearic region (Cavanagh and Gibson, 2007). Aggregations of basking shark (*Cetorhinus maximus*) have been observed in the northern Balearic region. A strong correlation between the presence of *C. maximus*, chlorophyll concentration and prey abundance in these areas indicates that they are important feeding sites (Sims, 2003).

The area contains a major feeding ground for the Fin whale (*Balaenoptera physalus*), but newborn animals are also frequently seen here. The Sperm whale (*Physeter macrocephalus*) frequent slope areas, however they can also be found in deeper waters. Recent studies have proven that waters around the Balearic Islands, especially in the deepest waters, around canyons and in the Emile Baudot Escarpment, are key areas for the Mediterranean sperm whale population. The area is used by this endangered population of some 300 individuals (Brotons et al., 2013; Pirotta et al., 2011). The Genoa canyon, the Caprera canyon, west Sardinia and areas north of the Balearic Islands, normally in depths over 600 m host hotspots of the Goose-beaked whale (*Ziphius* *cavirostris*). The Long-finned pilot whale (*Globicephala melas*) is found in deep waters. Risso's dolphin (*Grampus griseus*) is permanently found in the area, with distribution largely limited to steep slopes. The Common bottlenose dolphin (*Tursiops truncatus*) is found mostly over the continental shelf throughout the area. Striped dolphin (*Stenella coeruleoalba*) is common throughout the area in waters deeper than 1000 m. The Short-beaked common dolphin (*Delphinus delphis*) is rare throughout the area, except to the NW of Sardinia. Animals are under diverse pressures from humans, including: ship strikes (fin whale, sperm whale); noise (mostly goose-beaked whale, but other species as well); fisheries interactions (common bottlenose dolphin, seaturtles, birds); disturbance by intrusive whale watching (several species including fin and sperm whales off France); and chemical pollution (coastal dolphins).

The area includes 63 IBAs, with global criteria and thresholds met on 87 occasions, and regional criteria and thresholds an additional 89 times. These sites have been designated for 18 species and together contain roughly half a million individuals. Exact areas of highest usage vary between species, colonies and life-history stages, but taken together encompass much of the area defined. This area is the most important area globally for the Critically Endangered Balearic shearwater, with the entire global population, 3000 pairs in 2009 (Arcos et al., 2011), breeding on cliffs and small islets in the Balearic Islands. The area is also key to the Near Threatened Audouin's gull, with the Ebro Delta colony alone holding 67% (14,177 pairs) of the global population in 2007 (Gutiérrez and Guinart, 2008). Other species breeding and feeding in globally significant numbers include black-headed gull, gull-billed tern, little tern, Mediterranean gull, Scopoli's shearwater, sandwich tern, slender-billed gull, Yelkouan shearwater, and yellow-legged gull. Species breeding in regionally significant numbers include the Mediterranean subspecies of European shag and European storm petrel and common tern (BirdLife, 2013). Balearic shearwater (*Puffinus mauritanicus*) is listed as Critically Endangered by IUCN Red List and is also listed on Annex I of the EU Birds Directive and Annex of BC. It is a long-lived species and therefore immediate threats affect adult mortality rates. Adult survival is the main conservation concern. Birds are susceptible to by-catch in fisheries (Louzao et al., 2011) and have been shown to shift their non-breeding distribution due to sea surface temperature variations linked to climate change (Wynn et al., 2007).

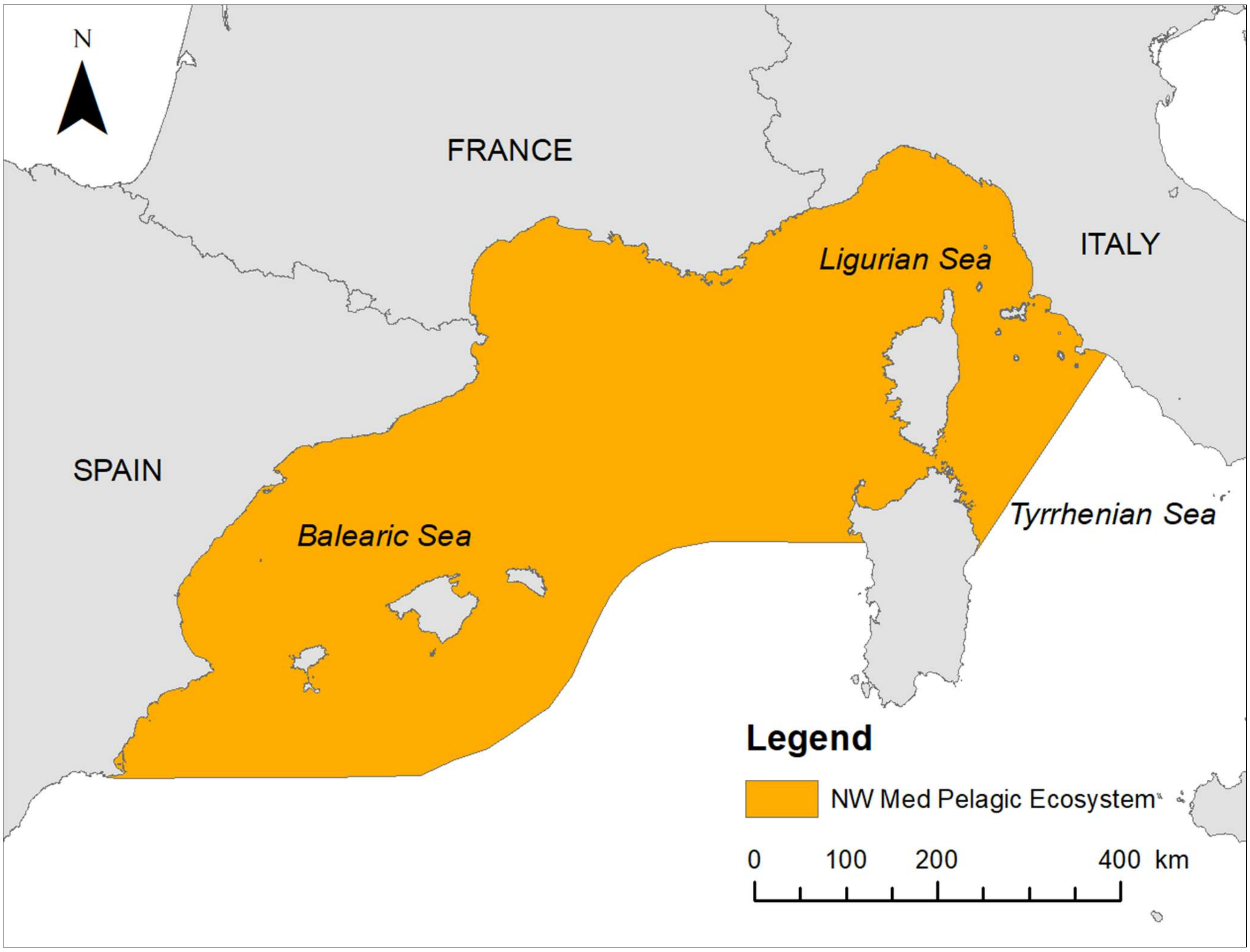

Figure 5. North West Mediterranean Pelagic Ecosystem EBSA

Northwest Mediterranean Benthic Ecosystem

The area (Figure 6) is relatively wide and is in the same area as 11 SPAMIs and two candidate SPAMIs (southern Balearic and Gulf of Lion; UNEP-MAP-RAC/SPA, 2010a). The depth range of the area spans between 0 and around 2500 m (UNEP-MAP-RAC/SPA, 2010b).

The wide variety of seafloor features in both the shelf and the slope supports a high diversity of substrate types and habitats resulting in shelf and slope ecosystems that are specific and rich in species and in ecological interactions. On the shelf, common components of photic-benthic ecosystems are macroalgal assemblages of a wide variety of species as well as important seagrass beds of four species including the key-stone species *Posidonia oceanica*. This endemic species represents a highly productive ecosystem with a high vegetal biomass that form the base of many food webs (Boudouresque et al., 2012).

Underwater marine caves are natural habitats that come under Habitat Directive on the conservation of natural habitats and of wild fauna and flora and appear as such as priority habitats requiring protection (Directive 92/43). A relevant list of endemic benthic species (e.g., several Cystoseira species, *Posidonia oceanica, Asterina pancerii, Cladocora caespitosa, Lithophaga lithophaga, Pinna nobilis*) with some of them restricted to the Western Mediterranean, such as *Laminaria rodriguezii* in some areas. Other threatened, sensitive, productive and biodiverse habitats are important parts of the seafloor diversity, such as coralligenous bottoms, and the emblematic species *Corallium rubrum*, a species that has been mainly documented in the western and central Mediterranean. Coralligenous is considered as the second key ecosystems and constitutes a typical Mediterranean underwater seascape (Ballesteros, 2006). Mäerl beds (or more globally rhodolith beds) are the result of the building activities of coralline algal and animal builders, as well as biological eroding processes. Coralligenous bottoms are of great significance both for fisheries and CO_2 regulation. Mäerl beds are biodiversity “hot-spots” as they enhance biological and functional diversity of coastal sediments. They are considered as vulnerable habitat according to the Regulation EC 1967/2006 (European Commission, 2006). Different scleractinian corals, sponges and bryozoans aggregations, mäerl beds, as well as a wide variety of sedimentary habitats such as sea-pen dominated communities, deep biological detritic communities, facies of crinoids (e.g., *Leptometra phalangium*) make up the wide variety of sensitive biogenic habitats occurring in the area (Ballesteros, 2006; Barberá et al., 2012; Martin et al., 2014).

The deep submarine geomorphology of the area is very complex and diverse with the presence of three main basins (Algerian, Balearic and Liguro-Provencial) a shelf that is narrow in some parts (as less as 1,5 km in Corsica) and as wide as 50 km in the Ebro Delta area or the Gulf of Lion. The shelf is heterogeneous and includes prodeltaic structures, rocky outcrops, sometimes of volcanic origin, deep biodetritic assemblages and different types of carbonate shelves. The Feature conditions and future outlook of the area slope displays a wide variety of ecologically important submarine structures such as many submarine canyons (Würtz, 2012) and seamounts of different heights and geologic origin (UNEP-MAP-RAC/SPA, 2010b), submarine structures caused by fluid emissions such as pockmarks (Zeppili et al., 2012) as well as contouritic systems resulted from the strong deep water currents (Vandorpe et al., 2011). In the slopes of the area, a wide variety of threatened and/or sensitive engineering benthic invertebrate assemblages habitats also occur such as cold-water coral reefs, deep-sea sponge aggregations, gorgonian and black coral gardens, and compact muds with sea pens or bamboo corals (Ordines and Massutí, 2008; Orejas et al., 2009; Maynou and Cartes, 2012; Gori et al., 2013).

Some of these deep-sea habitats are components of the seamounts and submarine canyons and are very sensitive to anthropogenic activities (e.g., fisheries) due to their three-dimensional structure and their low growth rates. Different areas such as the canyon system of the Gulf of Lion and the Ebro Delta display high levels of primary production due to the presence of upwellings and river outputs (UNEP-MAPRAC/SPA 2010b; Würtz, 2010) and upwellings in the Cassidaigne region. These areas also support a high productivity of zooplankton and ichtyoplancton, including spawning and nursery areas of important commercial species (e.g., small pelagics, hake). Some species are restricted to specific geomorphological structures such as stony sponges on seamounts, cold water corals in canyons and seamounts, specific hydromedusa in canyons (Gili et al., 2000), or the carnivorous sponge *Asbestopluma hypogea*, found in dark submarine caves and deep-sea canyons (Aguilar et al., 2011). Corse-Ligurian-Provencal basin experiences the combined pressure of natural environmental fluctuations and the impacts of human activities, in addition to the same constraints facing the Mediterranean Sea, which is particularly sensitive to any change since it is small and semi-closed. The profound changes of the Mediterranean ecosystem caused by the combination of increasing human impacts and natural factors are increasingly worrying especially due to its important endemism. This area is very densely populated and hosts a significant amount of tourism. Several human activities can damage the ecosystems of the area, in particular, water contamination due to sewage outfalls, runoffs and industrial discharges, different types of fishing (e.g., bottom trawling, fishing lines), and mooring and intensive anchoring (CBD, 2016).

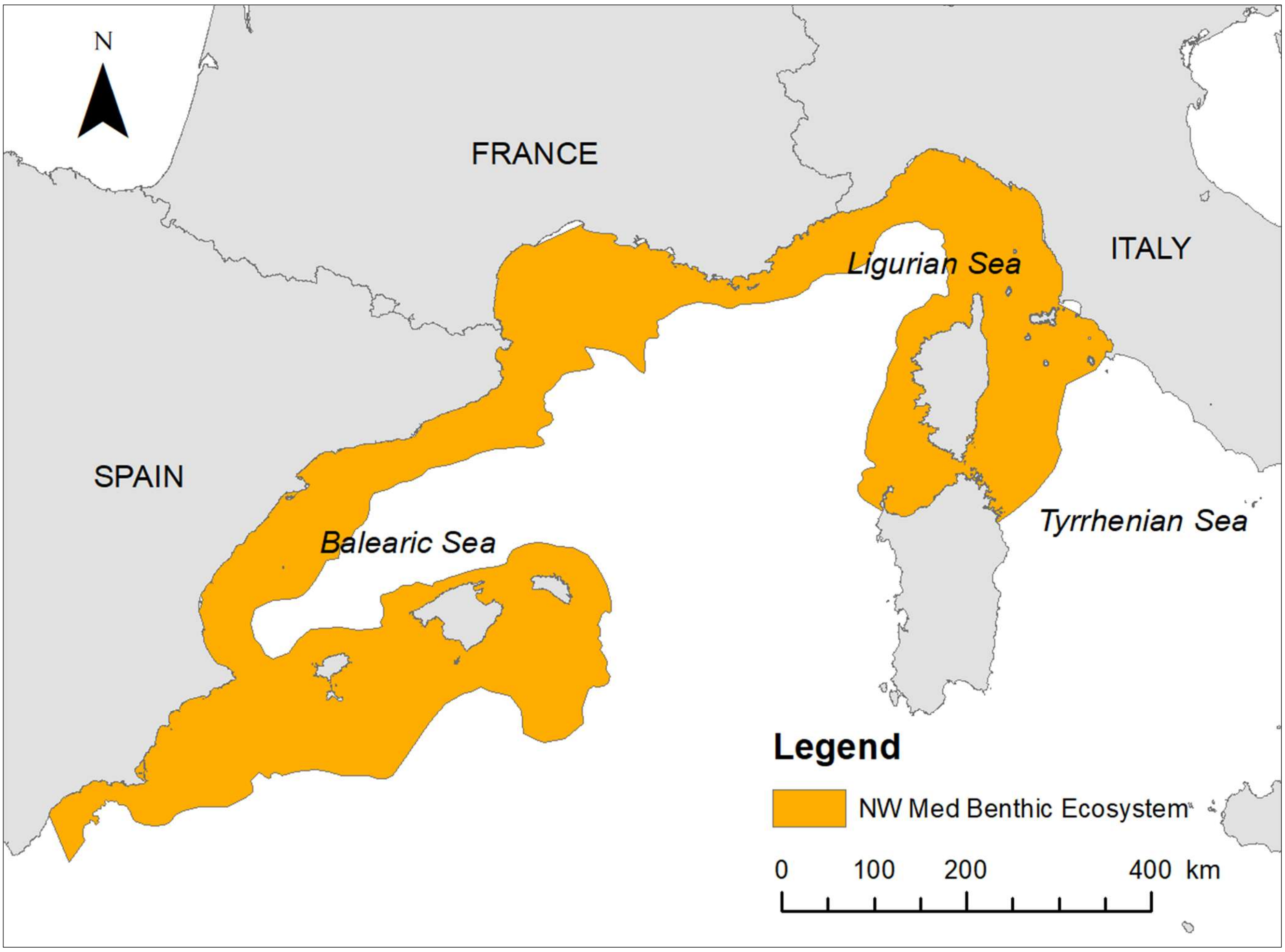

Figure 6. North West Mediterranean Benthic Ecosystem EBSA

Central Mediterranean Sea

Sicilian Channel

The Sicilian Channel plays an important role by dividing the Mediterranean Sea into two principal sub-basins. The complex topography and circulation scheme makes the Sicilian Channel (Figure 7) a highly productive area and a biodiversity hotspot within the Mediterranean. The Sicilian Channel has complex bottom morphology comprising two sill systems separated by an internal deep basin. These large sill systems are separated by the narrow shelf in the central part. The shape of slope is extremely irregular, incised by many canyons, trenches and steep slopes (Fiorentino et al., 2006).

In the Sicilian Channel sessile benthos is dominated by the octocorals *Isidella elongata* and tall sea pen (*Funiculina quadrangularis*) as well as red coral (*Corallium rubrum*) (Freiwald et al., 2009). Hard bottoms are characterized by huge white coral assemblages formed by madrepores (*Madrepora oculata, Lophelia prolifera*) and barnacles (*Balanus* sp.) (Ragonese et al., 2003). Another yellow coral, *Dendrophyllia cornigera* lives at higher depths (i.e. >500 m), colonizing rocky substrates exposed to hydrodynamism. The most intense growth of *C. rubrum* was documented in the Linosa sample site, among the white coral habitats surveyed in the Sicilian Channel. Ninety-six different species, including fours species of black corals (*Antipathes dicotoma, Antipathes subpinnata, Parantipathes larix, Leiopathes glaberrima*) have been recorded in 2012.

Cold seep communities are the host unique chemosynthesis-based communities (not relying on photosynthetic production) dominated by bacterial mats and particular species of bivalves and tubeworms, that are associated with endosymbiotic (chemo-autotrophic) bacteria. The existence of pockmarks in the area points to the existence of these cold-seep type communities (Minisini et al., 2007).

This area is a recognized spawning and nursery area for species of high commercial relevance such as bluefin tuna, swordfish, hake and greater fork beard. (e.g., Garcia Lafuente et al., 2002; Garofalo et al., 2004). The area also includes spawning grounds of red mullet (*Mullus barbatus*) (Garofalo et al., 2004) and a relatively high abundance of rays (Garofalo et al., 2003).

The Maltese skate (*Leucoraja melitensis*) is an endemic species. Its main range now appears to be restricted to the Sicilian Channel, where it is found at depths subject to heavy trawling activity (Cavanagh and Gibson, 2007). The Sicilian waters are one of the most important spawning sites for threatened bluefin tuna in the Mediterranean, where larvae are mainly concentrated around Sicily. The Sicilian Channel seems to be one of the most important spawning grounds for the Swordfish (*Xiphias gladius*) (Di Natale, 2006) and a nursery ground for the white shark.

Fin whales are known to congregate in late February and early March in the coastal waters of the island of Lampedusa (Italy). Bottlenose dolphins have been recorded in waters around the Pelagic Islands. Lampedusa and Linosa (two Natura 2000 sites) are among the last known nesting sites of loggerhead turtle (*Caretta caretta*) in this part of the Mediterranean (Casale and Mariani, 2014).

Malta is home to around 10% of the world's population of Yelkouan shearwaters (*Puffinus yelkouan*). Nine of the eleven IBAs in the Maltese Islands have been designated for this species. Scopoli's shearwater (*Puffinus diomedea*) is strictly endemic to the Mediterranean Basin and is included on Annexes of the EU Birds Directive and the BC. The endemic Mediterranean subspecies of storm-petrel *Hydrobates pelagicus melitensis* is listed on annexes of both the Birds Directive and BC. It is a localized, breeding visitor to Malta, thought to be the largest colony in the Mediterranean.

The Sicilian Channel is one of the most important fishing areas of the Mediterranean Sea, where significant fleets operate with high fish production. Demersal fishing ground overlaps with important spawning and nursery grounds and areas occupied by larvae and juveniles of some of the most commercial fish species (e.g., hake, red mullet, anchovy and great fork beard) (Fiorentino et al., 2003; Garofalo et al., 2004). Longline fisheries in the area pose a great threat to many species including large turtles (Baez et al., 2007). In addition, chondrichthyans are also being taken as by-catch in the longline fishery (Cavanagh and Gibson 2007). Shearwaters are threatened by low adult survival (Oppel et al., 2011), with birds particularly susceptible to by-catch in fisheries.

There is evidence that the area between Sicily and Malta is a pollution hotspot regarding oil spills in the Mediterranean Sea (EC Joint Research Centre/IPSC, 2006).

The growing number of tourists presents a significant threat to many coastal habitats. One of the main threats to the Pelagian Island turtle population is tourist activities in the nesting sites (Giacoma and Solinas, 2001). Collisions of marine turtles with boats crossing the waters of the Sicilian Channel (between Sicily mainland and Pelagie Islands) have been recorded (Life NAT/IT/ 000163). In addition, the Mediterranean sperm whale subpopulation may be affected by disturbance from intense maritime traffic and collisions with vessels, including high-speed ferries.

Research on the ecological and biological value of the Sicily strait was also widened on underwater banks that were previously under-recognized hotspots of marine biodiversity (Altobelli et al. 2017). The banks support rich biological communities, with particularly strong ecological and biological value at Graham Bank. The benthic (seafloor) and benthopelagic (near-bottom) groups are especially diverse but also highly threatened by human impacts, most notably fishing pressure and other disturbances. Despite these threats, the banks still have large relatively pristine areas, making them strong candidates for area-based conservation measures, such as MPAs, SPAMIs or fisheries restricted areas (Altobelli et al., 2017).

The area is subject to multiple cumulative pressures, including intensive fishing (especially bottom-contact gears), maritime traffic, marine litter and pollution, and emerging offshore activities. These pressures threaten both benthic habitats and mobile species, underscoring the need for coordinated management (Consoli et al., 2021).

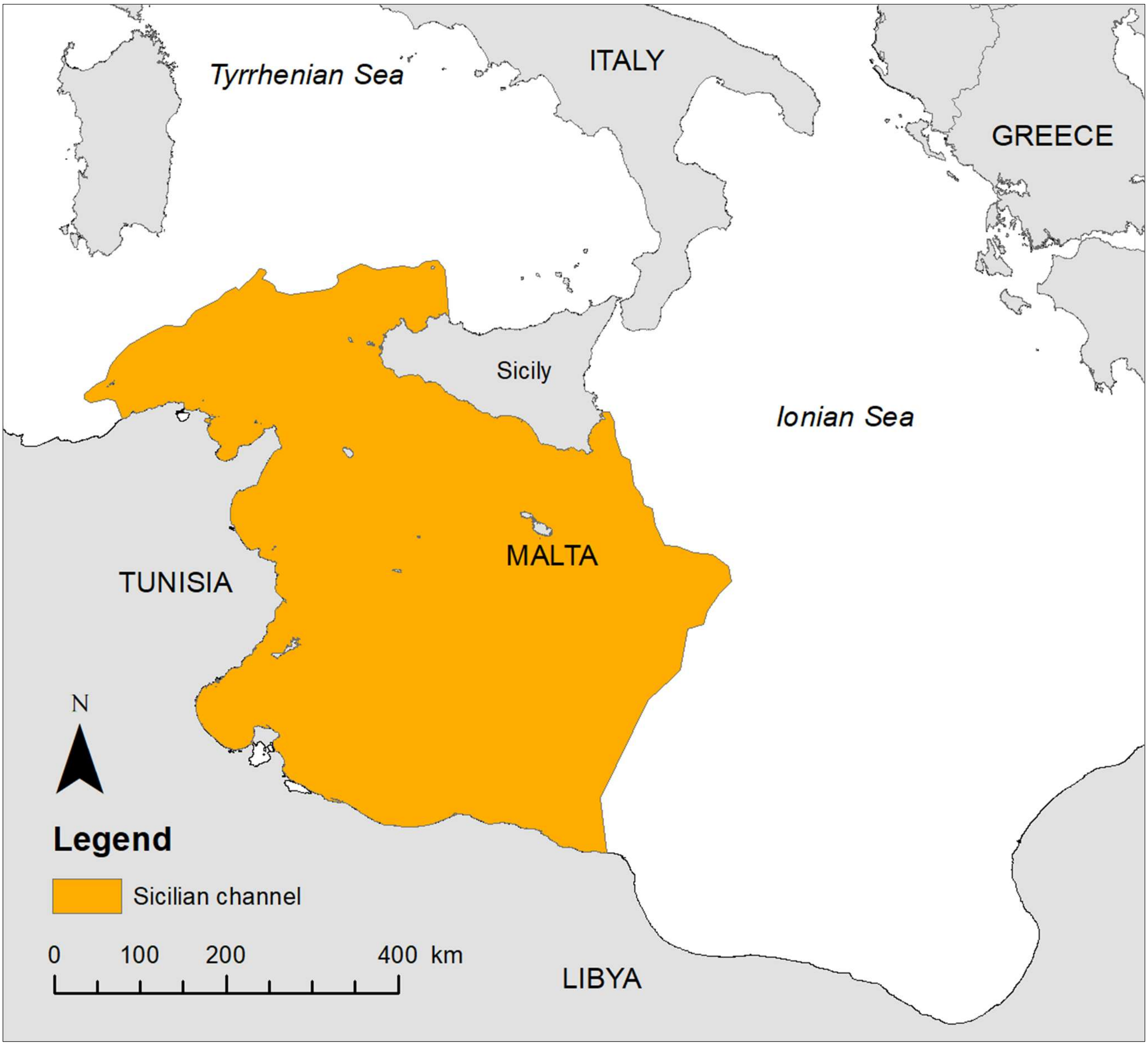

Figure 7. Sicilian channel EBSA

Gulf of Gabès

The continental shelf in this area (Figure 8) is characterized by a very gentle slope and the absence of significant underwater relief, except for a few submerged banks. Marine hydrology is highly active and complex, influenced by wave action generated by easterly winds. The natural conditions prevailing on the Kerkennah Islands shelf are characterized by shallow depths, large tidal amplitudes, and clear waters, which contribute to the exceptional richness of marine fauna and flora. Surrounding the archipelago is an extensive platform covered with diverse sediment types, including pure sand, slightly muddy sand, muddy sand, and sandy mud.

Marine hydrodynamics in the Gulf of Gabès are largely governed by tidal processes, which are rare within the Mediterranean basin. The tidal regime is semi-diurnal. The hydrodynamic behavior of the gulf is closely linked both to the general circulation of Mediterranean waters and to the propagation of tidal waves within the gulf itself. The Gulf of Gabès is particularly notable for its gentle bathymetric gradients and its exceptionally wide continental shelf, which distinguishes it from other Mediterranean regions. Shallow areas surrounding the Kerkennah Islands extend toward the Libyan coast. These features make this a remarkable region due to its high biological diversity, favorable navigation conditions, including calm areas under most weather conditions, and its unique tidal amplitude within the Mediterranean Sea (CBD, 2016).

Despite the relative homogeneity of underwater relief and the predominance of sandy-muddy substrates, benthic communities in the Gulf of Gabès are highly diverse. *Cymodocea nodosa* seagrass beds are widespread and dense, occurring at very shallow depths, sometimes to 20 cm. *Posidonia oceanica* seagrass meadows exhibit varying conservation status across the region. Other ecologically important benthic communities include lagoonal assemblages of free-living red and brown algae in Boughrara Lagoon, including *Rytiphlaea tinctoria, Hypnea musciformis, Halopitys incurvus,* and *Cystoseira cf. barbata*, as well as green algae such as *Chaetomorpha linum* and *Ulotrix flacca*. The protected fish species *Aphanius fasciatus* is abundant in this habitat (CBD, 2016).

Calcareous bio-constructions formed by *Serpulidae polychaetes* form structurally complex habitats supporting high biodiversity. Maërl beds of calcareous red algae occur between 21 and 45 m, although they are relatively rare. More developed maërl beds and *Arthrocladia villosa* habitats occur south of Kerkennah and east of Djerba and serve as important nursery grounds for juvenile fish, including *Spicara smaris, Mullus surmuletus,* and *Pagellus erythrinus*. Soft-bottom ascidian-dominated habitats are particularly characteristic of the Gulf of Gabès and have no equivalent elsewhere in the Mediterranean. These bio-constructing organisms form complex habitats that support high biodiversity. Echinoderm-dominated habitats also occur on muddy detritic substrates typically between depths of 40 and 50 m (CBD, 2016).

The Gulf of Gabès is also an important migratory corridor for birds crossing the Mediterranean. The Kerkennah Islands are IBAs, supporting wintering populations of *Phalacrocorax carbo* and various gull and tern species, including *Larus genei, Larus fuscus, Larus cachinnans, Sterna caspia,* and *Sterna sandvicensis*, as well as flamingos. The Kneiss Islands is the most important site in terms of bird diversity and carrying capacity, particularly for wintering waterbirds. Other important sites include Thyna saltworks, Boughrara Lagoon, Ras Rmel, and El Bibane Lagoon (CBD, 2016).

The Kerkennah archipelago is subject to various forms of erosion caused by surface water runoff (rain), wind (aeolian erosion), and marine erosion, which is clearly the most significant. Marine erosion affects all coastal morphological features, and its effects are observable along different parts of the coastline. Sand has historically been exploited for construction purposes, despite such practices being prohibited. As a result, intensive coastal construction over the past thirty years has contributed to beach erosion and shoreline retreat. This is particularly evident in the Bounouma region, which is transformed into a peninsula during strong north or northwest winds. Unregulated and uncontrolled construction has significantly altered coastal landscapes in several areas. The supply of essential construction materials such as stones, gravel, and sand has become a major issue for the archipelago (CBD, 2016).

The shallow waters surrounding the archipelago have long been exploited using trapping and capture techniques adapted to various fisheries resources, including fish, mollusks, and sponges.

The widespread use of non-compliant fishing techniques, declining fishery production indicating disruption of marine ecosystems and associated production chains, particularly seagrass meadows, and the presence of a large fleet of trawlers operating along the coast, representing more than 80% of the national fleet.

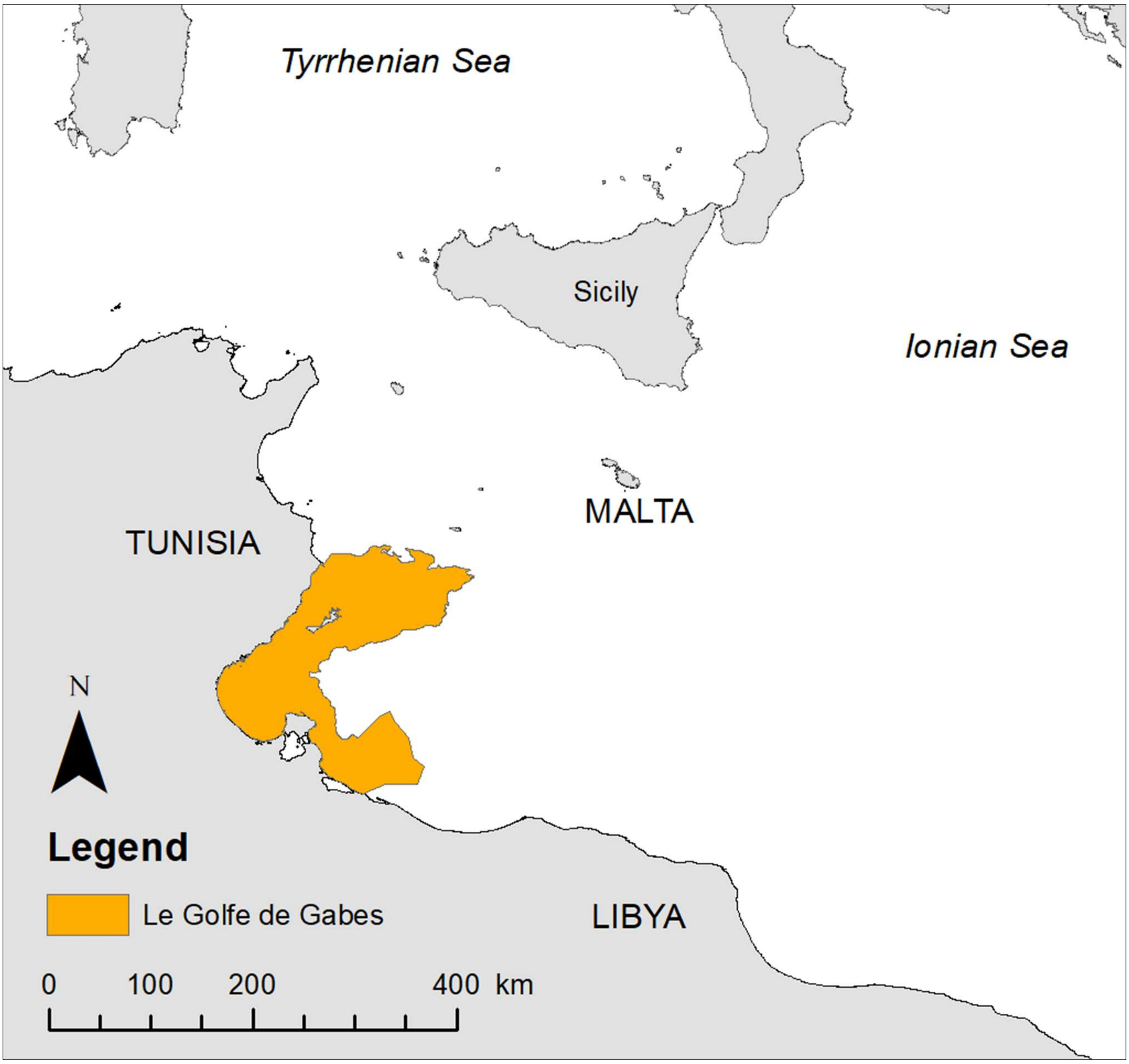

Figure 8. Le Golfe de Gabes EBSA

Gulf of Sirte

The Gulf of Sirte is a very large natural area in the southern Mediterranean coast, entirely located in Libya's national jurisdiction (Figure 9). Its naturalness provides excellent coastal habitats for the reproduction of several endangered or threatened species such loggerhead turtles (*Caretta caretta*) and lesser crested terns (*Sterna bengalensis emigrata*). Saied et al. (2012) stressed the unique nature of the Libyan nesting population of loggerhead turtle (*Caretta caretta*) in the Gulf of Sirte. The protection of this nesting stock is fundamental to managing the Mediterranean loggerhead turtle population. The area is of great importance for life-history stages, conservation and productivity of large numbers of pelagic species such as cetacean species, bluefin tuna (*Thunnus thynnus*) and many Chondrichthyan fish species, including many of the ones listed in the endangered and threatened species within the BC Annex II. One of the six spawning areas of bluefin tuna is included in this area. Cartilaginous fish, mainly sharks, guitarfish and some species of stingrays, have traditionally been consumed in Libya. Although no fishery data are available, cartilaginous fish are a component of by-catch of fisheries targeting swordfish, tuna, and demersal fish. However, in the Gulf of Sirte, a seasonal artisanal fishery targets sharks. Also, it has been recently observed that some longline fishing tends to target sharks because of the economic value of their meat on the national market and of their fins on the international market. The importance of this area for Elasmobranchs has given place to elaboration of a tailored research programme on this taxonomic group in Libya by the UNEP/MAP Regional Activity Centre for Specially Protected Areas (Seret, 2005). The sea bottoms of the littoral zone of the Gulf of Sirte include important habitats such Posidonia meadows.

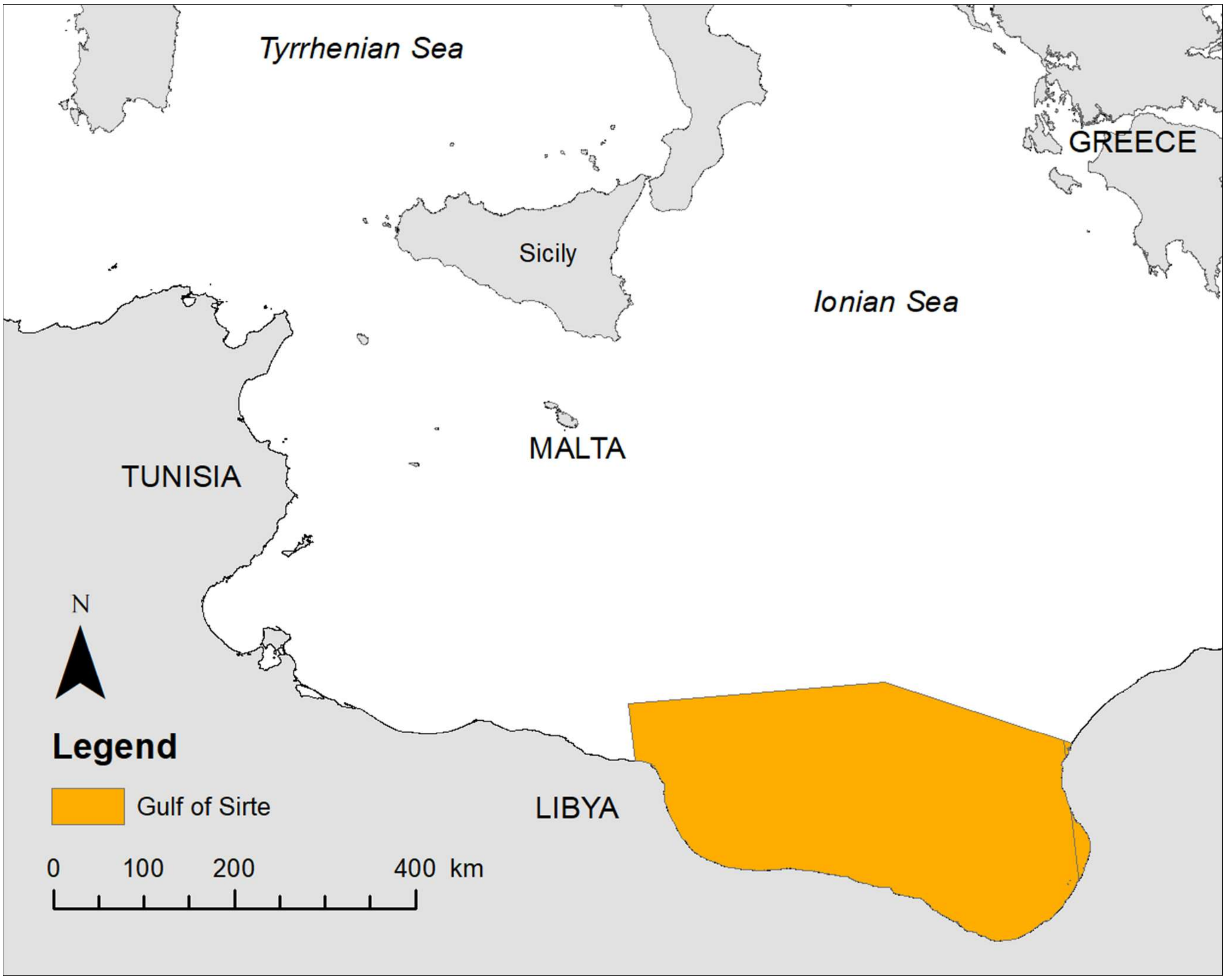

Figure 9. Gulf of Sirte EBSA

Ionian - Aegean Sea

Hellenic Trench

The Hellenic Trench features (Figure 10) a deep trench in the seafloor with a particularly steep slope, extending as an arch around Greece from west to east, starting from the Greek Ionian islands, around the Peloponnese, to the south of Crete and further north-east, past the southern coast of the island of Rhodes towards the south-west coast of Anatolia. The depths included in the area range from 200 to 2000 m. Long-term observations have shown that the Hellenic Trench contains critical habitat of deep-diving cetaceans, such as sperm whales and goose-beaked whales (Cañadas et al., 2011).

A cyclonic feature of the eastern Mediterranean circulation (Rhodes Gyre) characterized by constant upwelling whereby nutrient-rich deep water is brought up to the surface, enabling higher primary production than in surrounding areas. Higher levels of primary productivity than those of the surrounding waters, indicate that the area may be particularly important for secondary consumers in this area.

Coastal hot spots of biodiversity including seagrass (Posidonia) meadows, brown algae (Cystoseira) forests, coralligenus concretions are present in the area. A number of Natura 2000 sites have been designated in the coastal areas of Crete, Rhodes and smaller islands of the Dodecanese.

Coastal biodiversity hot spots within the Inner Ionian Sea, in the waters between the islands of Lefkada, Kefallonia and Zakynthos and mainland Greece. The area hosts a breeding nucleus of the critically endangered Mediterranean monk seal and is a feeding and breeding area for the endangered short-beaked common dolphin and the vulnerable common bottlenose dolphin (CBD, 2016). The deep area is frequently subjected to naval activity. This includes the use of high energy sonar, which is known to have lethal effects on deep-diving cetaceans. Several atypical mass stranding events of goose beaked whales, which have been connected to simultaneous navy exercises with both direct and circumstantial evidence, have taken place in the area (CBD, 2016).

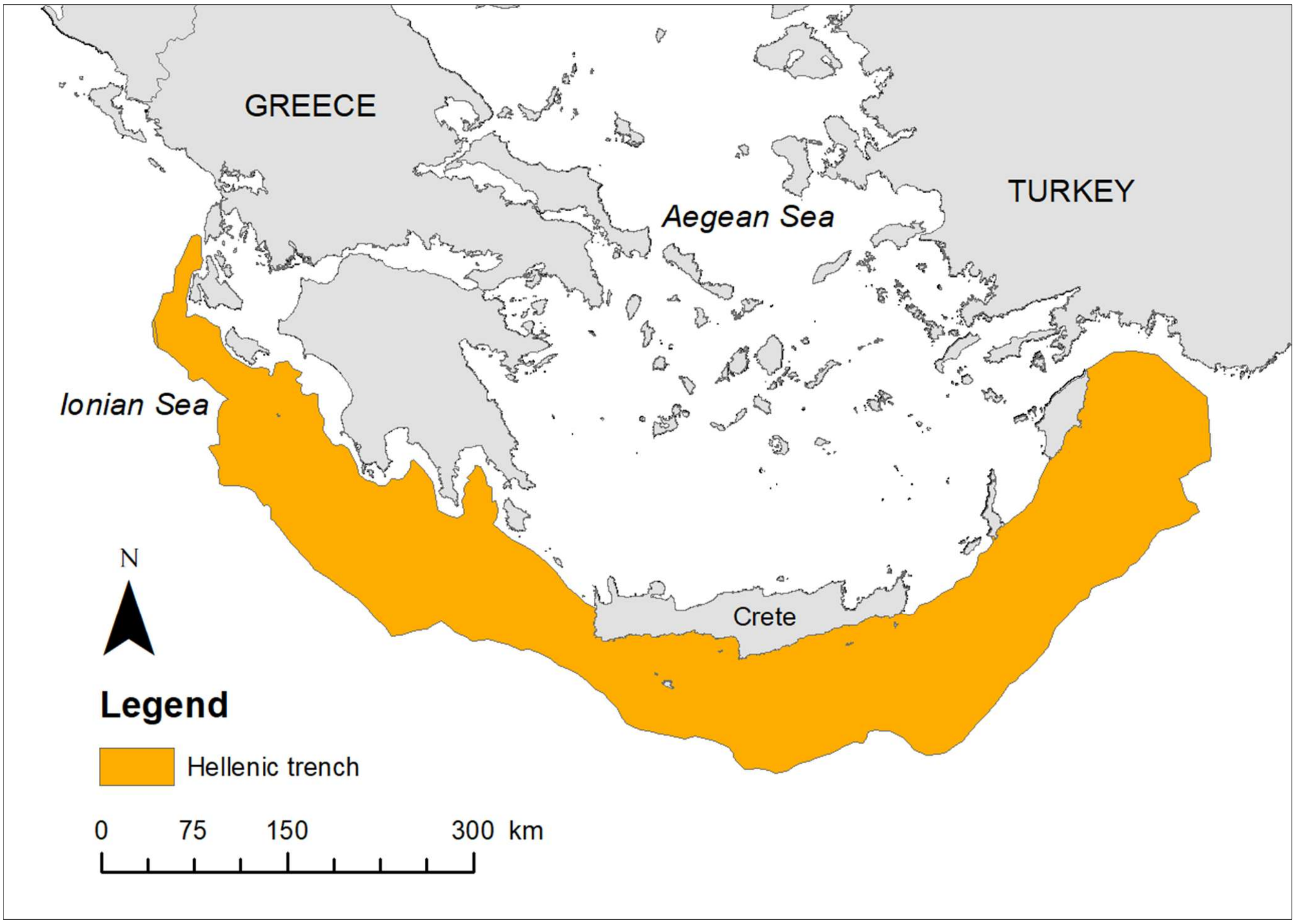

Figure 10. Hellenic trench EBSA

Central Aegean Sea

The area is bordered by Türkiye and Greece and is characterized by an extensive archipelago of hundreds of small islands and islets, and peninsulas and bays, and thus hosts many different habitats (Figure 11). The area lies on a plateau and is comparatively shallow (ca. 150 m on average). Seismic activity in the area is high. The southern border of the area is limited by the South Aegean Volcanic Arc, which contains active volcanoes, including the submarine volcano of Kolumbo and the volcanic vents surrounding Santorini. Water circulation patterns in the area are complex, influenced by the seabed topology, seasonal variability, and different interacting water masses, but overall the circulation pattern in the area is cyclonic (Fric et al., 2012). Cold water masses from the northern Aegean and the Black Sea influence the northern part of the area, whereas the southern part is influenced by warm water masses from the Levantine basin. The area is generally classified as oligotrophic, though abundant seagrass meadows create local hotspots of productivity and biodiversity. Due to its fragmented nature, the area is generally characterized by a large variety of habitats (UNEP-MAP RAC/SPA, 2010c).

Data on the distribution and life history of a number of bird species have led to the designation of 34 IBAs in the area (Fric et al., 2012; BirdLife International, 2014). These sites have been between species, colonies and life-history stages, but taken together encompass much of the area defined. The area hosts three MPAs along the Turkish coastline (Bann & Başa, 2011): (1) Foça Special Environmental Protection Area (SEPA), which contains essential habitats for monk seals. Moreover, the delta Gediz located inside this protected site is also an important habitant for many bird species, as well as an important site for many fish species; (2) Datca-Bozburun SEPA, which is an important area for birds, monk seals, *Pinna nobilis*, marine turtles, sponges and healthy Posidonia meadows; and (3) Gokova SEPA, including the Boncuk Bay, which is an important site for birds (especially *Larus audoinii, Phalacacorax aristotelis*) and sandbar sharks. Additionally, Boncuk Bay is one of the few nursery grounds for sandbar sharks *(Carcharinus plumbeus*) in the Mediterranean. Notable areas including marine areas and falling under the Habitats Directive include: Area around the island of Yaros, which is an important site for monks seals, birds and marine biodiversity; Area of Fourni/ Ikaria, which is important for birds, seagrass beds and marine biodiversity; Large seagrass beds between the island of Chios and the Turkish mainland; and Waters surrounding the Milos-Kimolos and the Koufonissia islands, which are important breeding grounds for monk seals.

The area includes several endemic seabirds, as well as some of the key breeding sites and feeding areas for 45% of the global population of Yelkouan shearwater. The area is also used extensively by Audouin's gull (4% global population, about 350-500 breeding pairs in the area and Scopoli's shearwater (2% global population) and the Mediterranean endemic subspecies of European shag and European storm petrel (Fric et al., 2012).

The deep area between the Cyclades and the Dodecanese archipelagos is an important corridor for migrating sperm whales. The area also hosts also populations of bottlenose, striped and common dolphins. (ACCOBAMS, 2010a; ACCOBAMS, 2010b). The Mediterranean monk seal (*Monachus monachus*) is estimated to number 220 to 270 individuals. These individuals are usually scattered in low numbers throughout the region, although many breeding sites have been identified in the Kyklades archipelago, the Dodecanese Islands and Central Aegean Islands. The biggest threat to the population is interactions with small-scale fisheries. However, the area hosts a large number of critical whelping, resting and feeding sites for the species which provide a high potential for the recovery of the species, provided appropriate management measurements are taken (Cebrian, 2005). The proposed area comprises the area of Boncuk Bay, which is a known nursery ground of the Sandbar shark (*Carcharinus plumbeus*) (Bilecenoğlu, 2008), which is classified as vulnerable by the IUCN Red List.

The area is highly seismically active. Its southern boundary is formed by a volcanic arc which is associated with the subduction of the Africa plate beneath the Aegean Sea plate, in the Dodecanese and Cyclades Islands This results in a number of sites with hydrothermal activities in the area. The most active areas with hydrothermal activity are the brine seeps and vents around Milos, the vents around Santorini, the Nisyros/ Kos area and the vents around Lesbos. Several sites host a very high diversity of prokaryotes (e.g., archea and bacteria) including sulphur and sulphate reducers, methanogens and iron oxidisers, among others, including many new taxa, some of which are expected to be of biotechnological potential (Kilias et al., 2013).

Coralligenous formations and maërl beds, formed by coralline algae, are important biodiversity 'hotspots' (Ballesteros, 2006). They are important habitats for mollusks and crustaceans of economic importance and form nursery grounds for a variety of species (Hall-Spencer et al., 2010). Under the European Council regulation EC 1967/2006, these habitats are defined as vulnerable and destructive fishing techniques are banned in these sites. In the eastern Mediterranean, these formations usually occur below 70 m deep and therefore their exact distribution is not known. The deep areas between the Cyclades islands are known to host coralligenous and maërl grounds (Fraschetti et al., 2013). However, predictive models show a high probability for the occurrence of these habitats in certain parts of the area (Fraschetti et al., 2013).

Posidonia oceanica meadows have often become fragmented and endangered by illegal and destructive fishing practices, damage from fish farm waste and anchoring boats, as well as by impacts from invasive algal species, such as Caulerpa sp. (Okudan et al., 2011). Regulation EC 1967/2006 defines seagrass beds as vulnerable habitats and bans all destructive fishing practices in these areas.

The coastal portions of this area are generally subjected to increased anthropogenic impacts such as habitat destruction through urbanization and tourism, commercial and recreational ship traffic, underwater noise and ship anchorage, marine litter, pollution and impacts from destructive fishing practices (Azzellino et al., 2011). Additionally, the area hosts vulnerable species and habitats, as well as a consistently increasing number of Lessepsian migrant species, which, in combination with rising sea temperatures, could potentially have unexpected impacts on species composition and ecosystem function (Zenetos et al., 2010; Raitsos et al., 2010).

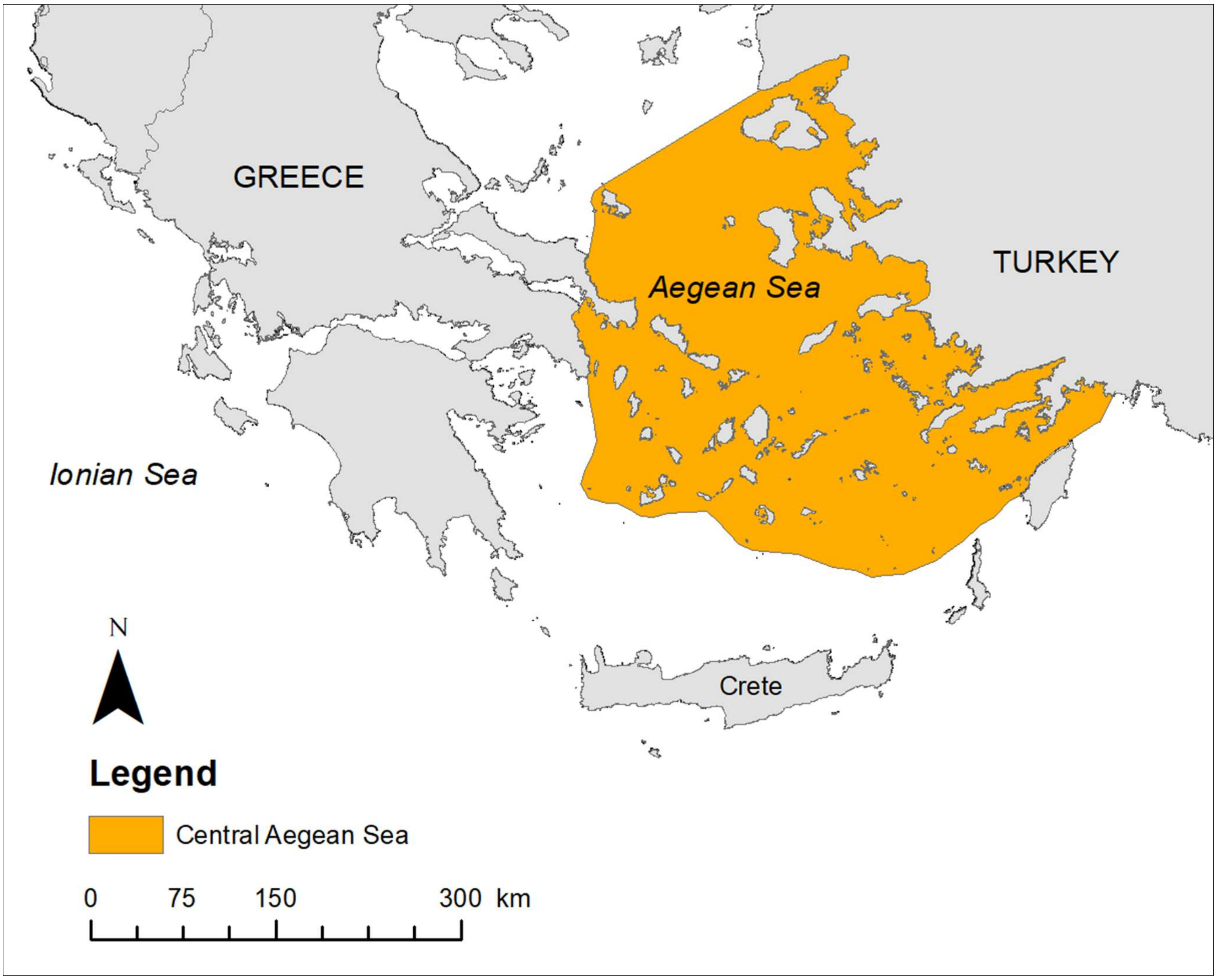

Figure 11. Central Aegean Sea EBSA

North Aegean

The area (Figure 12) comprises the large North Aegean continental shelf, ending at the North Aegean trench (more 1000 m depth). It is known as the most productive part of the Eastern Mediterranean (in terms of primary production and small pelagic fisheries, such as sardines and anchovy, due to the incoming waters from the Black Sea, as well as from the runoff on several trans-frontal rivers. Almost 40% of all the fish species known to occur in the waters surrounding Greece can be found in the Northern Aegean Sea/Thracian Sea between 100-400 meters depth, including 28 elasmobranches, some of which are protected species such as *Oxynotus centrina, Squatina aquatina, Squatina oculata, Squalus acanthias* or *Rostroraja alba*. More than 30 Natura 2000 sites have been identified as biodiversity hotspots in the area, mainly due to the presence of *Posidonia oceanica* meadows, brown algae (*Cystoseira* spp.) forests and marine caves important for the life cycle of the Mediterranean monk seal. For the latter species, a large marine area has been designated by Greece as National Marine Park (about 200,000 ha) in the North Sporades Archipelagos. Additional ecological features of the North Aegean as unique for the Mediterranean is the presence of the cetacean species *Phocoena phocoena* in the northern part of the area and cold water corals in the trench. Regarding additional biodiversity elements, the following can be listed: presence of 314 different zoobenthos species, including maërl and coralligenous beds in the Chalkidiki peninsula; stony corals, as *Dendrophyllia cornigera*, *Caryophyllia inornata, Madracis pharensis, Cladocora caespitosa, Leptosammia pruvotti*, etc.; protected sponges species, like *Spongia officinalis, Spongia agaricina, Spongia virgultosa, Hippospongia communis, Aplysina aerophoba*; gorgonian communities on coralligenous beds between Lesvos and Mainland Greece: including *Eunicella cavolinii, Paramuricea clavata, Leptogorgia sarmentosa, Eunicella singularis* and *Corallium rubrum*; high diversity of molluscs, including protected species, like *Luria lurida* in the Chalkidiki peninsula; more than 100 species of small invertebrates living within mussel beds (*Mytilus* *galloprovincialis*) in the Thermaikos Gulf (CBD, 2016).

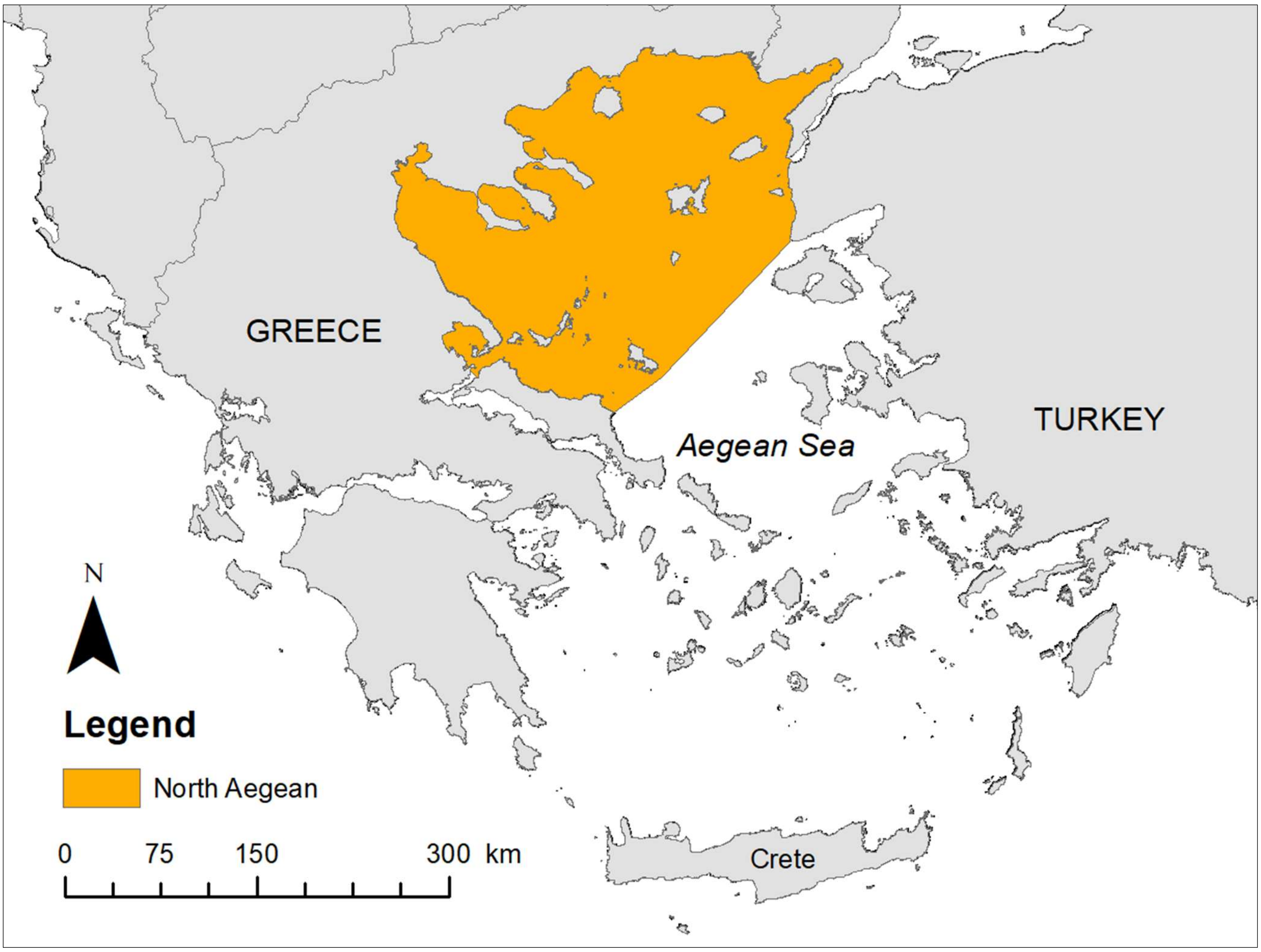

Figure 12. North Aegean EBSA

Levantine Sea

Nile Delta Fan

The area (Figure 13) is influenced by the Libyan-Egyptian current and the surface current flowing eastward along the continental slope off Egypt and northward along Israel and Lebanon. The geostrophic circulation of the eastern Mediterranean waters demonstrates a considerable stability in winter and autumn and is mainly characterized by a vast cyclonic gyre in the Levantine Sea, also enclosing an anti-cyclonic gyre near the Egyptian coast (El-Geziry and Bryden, 2010). The depth range in the area varies from the coastline to over 1700 meters depth.

The Egyptian continental shelf and deep-sea surrounding areas are unique due to the occurrence of many cold seeps — mud volcanoes, authigenic carbonates and pockmarks. Cold seeps are structures that harbour rare biological communities and have a high biological significance at global level. Offshore northern Egypt, the mud volcanoes are clearly dominated at present by gas expulsion and sub vertical mud breccia extrusion. The occurrence of gas hydrocarbon seeps harbor chemosymbiotic communities. The area's cold seeps host species of mollusc and polychaetes like *Lamellibranchia anaximandri*, Amphinomid *Cryptonome conclava*, and *Lamellibranchia anaximandri* (Southward et al., 2011; Borda et al., 2012). Two highly active mud volcanoes (Amon and Isis) located at depths of 990–1,265 m correspond to a hot spot in terms of mud eruption, gas concentrations, temperatures and microbial activity. The seafloor is particularly chaotic and its sediments are highly disturbed and gas-saturated. Long-term release of gas along some of these faults contribute to the precipitation of methane-derived carbonates and the construction of metre-scale hard ground edifices that attract chemosynthetic fauna. This type of seep activity occurs at the surface and off the flanks of the mud. Because of the occurrence of cold seeps in the area, GFCM designated a FRA due to the existence of such Vulnerable Marine Ecosystems (VMEs). According to that, bottom trawling activities were forbidden, however the last assessment of the FRAs shows a lack of enforcement in the area (GFCM, 2014).

The richest marine biodiversity in the area are phytoplankton (661 species), consisting mostly of diatom, dinoflagellates and to a much lesser extent chlorophytes and cyanophytes. Most common marine algae and seagrasses are *Posidonia oceanica*, *Zostera* sp, *Sargassum* sp, *Caulerpa prolifera*, *Halimeda* sp and other. Zooplankton is represented by 184 species, mostly copepods, whereas macro benthic fauna (annelids, molluscs, echinoderms, arthropods, ascidians) are not abundant in biomass but high in species diversity. For example, a total of 51 sponge species, 126 polychaete species, 57 crustacean species, 7 bryozoan species, more than 100 mollusc species and 350 fish species have been recorded from the coastal waters of the Mediterranean.

There are about 50 species of sharks and rays in the area. Blue sharks constitute a major portion of bycatch of long line fisheries targeting swordfish or tuna, much of which is rarely incorporated into national and international catch statistics. In the western area of the Nile Delta Fan, blue sharks (*Prionace glauca*) have been documented. The blue shark is listed among the "protected fauna species" of the Bern Convention and is categorized as "Near threatened" under the IUCN Red List. The UNEP RAC/SPA Action Plan for the Conservation of Cartilaginous Fishes lists the blue shark among the main commercial species for which it primarily recommends the development of sustainable management programmes for fisheries catching this species both as target or by-catch (Megalofonou et al., 2009). Giant devil ray (*Mobula mobular*) has been also observed aggregating at the surface in the area. On the other hand, the presence of *Squalus acanthias, Oxynotus centrina, Squatina squatina, Scyliorhinus canicula, Scyliorhinus stellaris, Mustelus mustelus, Mustelus punctulatus* and *Carcharhinus altimus* have been demonstrated in the Egyptian waters off Alexandria (Moftah et al., 2011).

Coastal waters of the Nile Delta match the distribution grounds of sardine, as landings information from local fisheries confirms. Pelagic fish nurseries are located in areas of favourable food concentrations where oceanographic factors combine within an optimal environmental window. Moreover, similarly to large upwelling ecosystems, the juvenile grounds of sardine are mainly situated in inshore, coastal waters. The Nile Delta has been identified as spawning area for the bluefin tuna (ICCAT, 2010). A pelagic long line fishery targeting albacore in the Eastern Mediterranean Sea off Egypt has been documented. This fishing method was found to be highly selective for albacore, where its catch represented about 93.5% of the total landed catch (Gabr and El-Haweet, 2012).

All three marine turtle species occurring in the Mediterranean also regularly occur in the Egyptian Mediterranean waters. Loggerhead and green turtles nest in the Egyptian Mediterranean coast, although important nesting sites have not been documented in Egypt. In the area between Alexandria and Port Said, the highest density of dead loggerhead turtle strandings has been observed, suggesting that turtles congregate here to feed on the inshore continental shelf. Egypt probably hosts important foraging areas or migratory corridors for Chelonia mydas, as suggested by satellite tracked nesting turtles from Northern Cyprus and Syria. This is supported by the high by-catch level. The coasts of the Sinai Peninsula are commonly used as nesting areas by loggerhead and green turtles. All turtle species are under the Annex II to the SPA/BD Protocol, and they also appear in the IUCN Red List under the “Endangered” (*C. caretta* and *C. mydas*) and “Critically Endangered” (*D. coriacea*) categories. Despite this, a high pressure from human activities (by-catch, black market) is jeopardizing these populations. The declared catch rates and official fishing fleet statistics suggest that captures of loggerhead and green turtles are in the order of several thousand per year, mainly from trawling, longlining and set nets (Nada and Casale, 2011).

Seabirds breed and winter at five IBAs within the site, and travel from colonies to feed within the marine area, primarily within 15 km of the coast (BirdLife, 2014). Three species breed in globally significant numbers that exceed IBA criteria and thresholds: little gull (800 individuals), slender-billed gull (5,700 individuals) and little tern (1200 individuals). Four species winter in globally significant numbers that exceed IBA criteria and thresholds: little gull (up to 51000 individuals), slender-billed gull (up to 4200 individuals), black-headed gull (45000 individuals), great cormorant (62800 individuals). Seabird species listed on Annex II of the BC include little tern (*Sterna albifrons*) and gull-billed tern (*Sterna nilotica*).

In the area described, marine resources have been used extensively, and human impacts (habitat fragmentation, overfishing, destructive fishing practices, by-catch, pollution, deep sea mining, invasive species, and additionally climate change) with large projects such as the Suez Canal, have affected the natural patterns, resulted in several of habitats and species lost. Changes in conditions are apparent since the turn of the millennium, including visible improvements in water quality in many places and declining quantities of hazardous substances in most areas. Nevertheless, new issues are emerging which warrant attention, such as desalination and its negative effects, aquaculture and, cumulative risks due to reduced access and availability of space for multiple conflictive uses. Furthermore, the expected impact of climate change on the Nile Delta and its coastal lakes are alarming. As well, the recent increase of sea water temperature, increased frequency of extreme events, and the coastal erosion of the Nile Delta, will likely make many millions of people vulnerable (UNEP-MAPRAC/SPA, 2009).

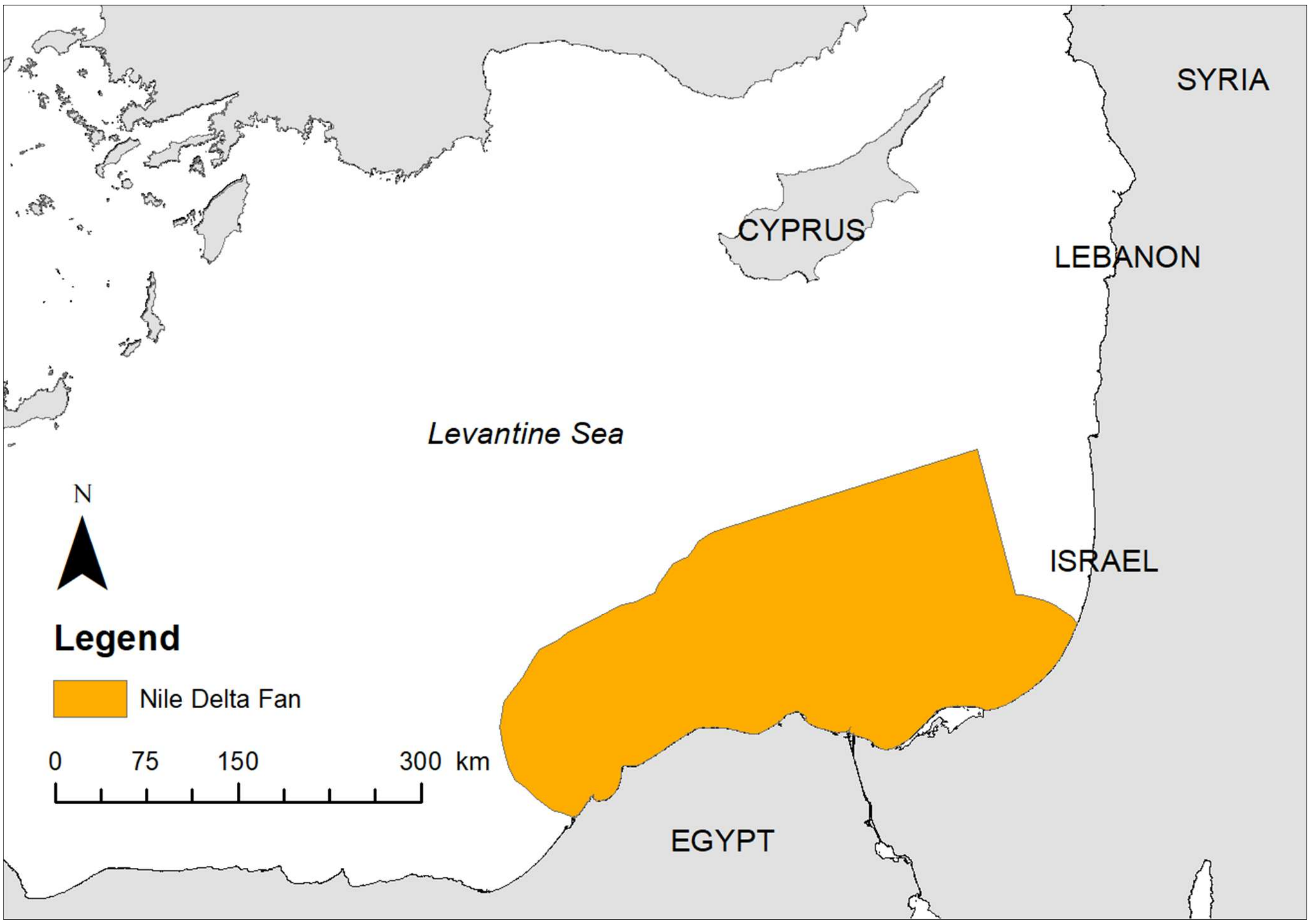

Figure 13. Nile Delta Fan EBSA

East Levantine Canyons (ELCA)

The area (Figure 14) contains several submarine canyons, which are nutrient “super highways”, where mixing rates could reach 1000 times the rates measured in the open ocean. Submarine canyons are steep-walled, sinuous valleys, with V-shaped cross sections, and relief comparable even to the largest of land canyons. Tributaries are found in most of the canyons and rock outcrops abound on their walls. Submarine canyons allow the energy turnover to speed up by reducing the time and the distances covered by water masses, organic and inorganic sediments, benthonic and nektonic organisms during their active or passive movements from shallow to deeper waters and vice-versa. Upwelling associated with canyons enhances local primary productivity with the effects extending up the food chain to include birds and marine mammals. Consequently, commercially important pelagic and demersal fisheries as well as cetacean feeding grounds are commonly located at the heads of submarine canyons. In addition, unique benthic habitats are associated with submarine canyons, particularly the heads of shelf incising canyons that are characterized by steep bedrock exposures upon which biologically diverse communities may occur. Submarine canyons that extend across the continental shelf and approach the coast are known to intercept organic-matter-rich sediments being transported along the inner shelf zone. This process causes organic-rich material to be supplied and transported down-slope, where it provides nourishment to feed a diverse and abundant macro fauna. GFCM prohibited the use of towed dredges and trawl net fisheries at depths beyond 1000 m and in areas called “Deep Sea FRA”. Conservation of deep-sea features, such as canyons, requires an improved understanding of the biological and ecological role of these ecosystems, threats and conservation issues, limits and chances of national and international jurisdictions (CBD, 2016).

Besides deep canyons all along the Lebanese and Syrian coasts, the ELCA is characterised by hydrothermal vents (Shaban, 2013) and submarine freshwater springs (Bakalowicz M., 2014). The area is of biological importance (IUCN, 2012; Nader, 2012). This area is part of the migration routes of bluefin tuna and tuna-like species. The eastern Mediterranean coasts host one the largest areas in the Mediterranean of Opisthobranch formations (Crocetta, 2013) dominated by the threatened

Dendropoma platforms (IUCN Red List of endangered species, Annex II, SPA/BD Protocol). Furthermore, the region experiences the highest winter temperatures in the Mediterranean allowing it to act as a refuge and spawning ground for an array of biologically important species such as the giant devil ray (*Mobula mobular*) (Couturier et al., 2013). These warm temperatures also allow Lessepsian species to survive the cold winter temperatures experienced in other areas of the basin. Many other marine species including the following: monk seal (*Monachus monachus*), several species of sharks like the smalltooth sandtiger shark (*Odontaspis ferox*), the cape shark (*Squalus acanthias*), the common guitarfish (*Rhinobatos rhinobatos*), and marine mammals (*Physeter macrocephalus, Stenella coeruleoalba, Grampus griseus, Delphinus delphis, Tursiops truncates*) amongst others. The region is also recognized as one of the most important nesting grounds in the Mediterranean for two marine turtles*, Chelonia mydas* and *Caretta caretta* as well as visiting grounds for *Dermochelys coriacea*. Within the area, two MPAs have been declared, the Palm Island Nature Reserve (also classified as IBA) and the Tyre Coast Nature Reserve (IUCN, 2012).

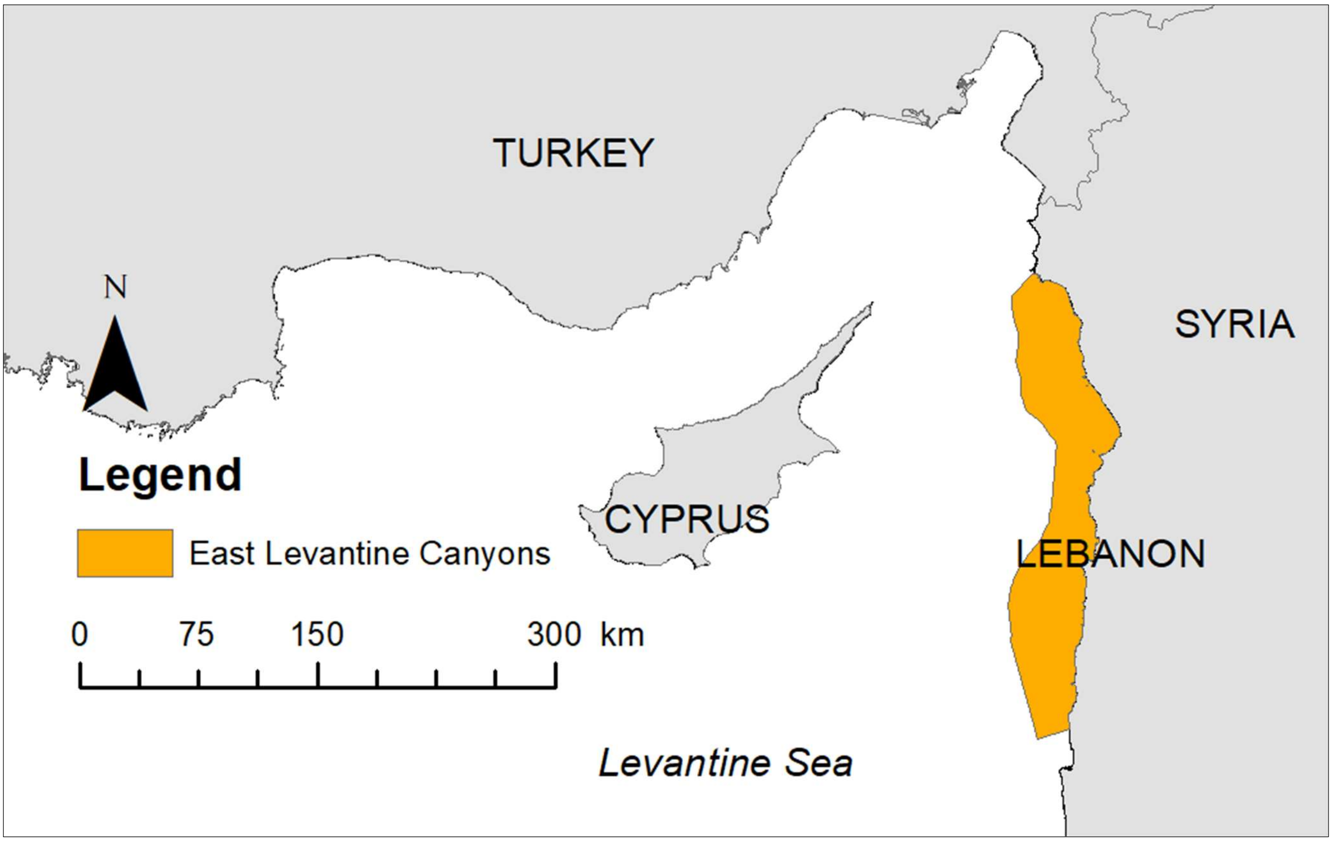

Figure 14. East Levantine Canyons EBSA

North East Levantine Sea

The area comprises the Finike Ridge, Antalya Basin, Adana Trough, Cicilian and Latakia Basins (Figure 15). The area ranges from shallow waters to 2700 m depth in some parts south of Latakia Basin. The area is within a warm part of Levantine Basin and includes some of the warmest temperatures in the eastern part of the Latakia Basin. This may allow for winter survival of thermophilous alien species from the Red Sea and species of more tropical affinities.

The bluefin tuna (*Thunnus thynnus*) has the major spawning grounds within the area (ICCAT, 2010). The largest concentration of bluefin tuna larvae was found in the Taseli strait. There is a trend of increasing larvae size from east to west. Within the Taseli Strait alone, a total of 125 larval fish taxa belonging to 39 families have been recorded, out of which anchovy was the most observed species. It seems that productivity in the lower trophic levels provides suitable spawning and nursery areas for small pelagics in the Taseli Strait. Their dispersed aggregations are not suitable for exploitation but nevertheless provide an important food source for the larger fish such as juvenile bluefin tuna and hake (CIESM, 2011). Among the demersal species, hake is important in this area. This species undergoes ontogenetic migration between the continental slope and upper shelf area, and juvenile hake migrate to the upper shelf to fulfill their changing dietary requirements (Carpenteri et al., 2005).

The Mediterranean monk seal is perhaps the most critical element of the ecosystem. The occurrence of the species within the North-East Levantine Sea has been studied and important breeding habitats have been identified in the Taseli strait, west coast of Mersin and the northern part of Cyprus (Gucu et al., 2009a). It was estimated that the seals inhabiting the area are around 40 individuals (Gucu et al., 2009b) with an average fecundity of 0.22 (Gucu and Ok, 2006). The area has been set aside for conservation in 1997. The surroundings of the identified breeding caves, and the foraging area has been designated as “No-take-zone” in the sea and on the land as “1st Degree Natural Asset”.

Marine turtles are important elements of the conservation value of the Taseli strait. The area provides important nesting sites to *Chelonia mydas* and *Caretta caretta*. The pelagic area is also important for foraging of both species, while the area between Cyprus and Türkiye is part of a migratory corridor of green turtle (Casale and Margaritoulis, 2010). In addition to the nesting beaches, turtles, especially sub-adult green turtle are also observed in the shallow waters rich with seagrass meadows. The *Cymodocea nodosa* beds are the major feeding grounds of the species. The dense meadow off Babadıl cree is therefore a favourable fishing ground for the species. The juveniles are observed frequently on the meadow (CIESM, 2011).

IBA has been identified in the north-eastern part of Cyprus, Karpasia Peninsula. In this area, there is a regular presence of globally near threatened Audouin's gull (*Larus audouinii*), the most easterly breeding locality for the species, with up to 30 breeding pairs. Birds are thought to forage within 15 km of the coast. The site is also of regional importance for the endemic Mediterranean subspecies of European shag (*Phalacrocorax aristotelis desmarestii*) with up to 25 breeding pairs occurring. Audouin's gull also nests on the Gilindire islands in Aydıncı, which are located at the southern part of Türkiye. The nesting occurs in spring, and the hatchings turn to juveniles in summer and feed in the region before they migrate off in late summer. The main accumulations of feeding juveniles are observed in flocks around Sanca cape and Beşparma island (BirdLife International, 2014).

The meadows of *Posidonia oceanica* meadows are well-developed in the western part of the area and particularly, in the Natura site of Kastellorizo island complex. On the other side, the distribution of the meadows reaches to an end on the north coast of Taseli strait. The historical records (Cirik, 1990) shows that the meadow has regressed almost 10 km towards the west. Temperature, salinity and mechanical stress by bottom trawlers seems responsible of the absence of *Posidonia oceanica* in the Levant Sea (Celebi et al., 2006). This north-eastern limit of the species coincides with remarkable gradient in the distribution of Lessepsian fish.

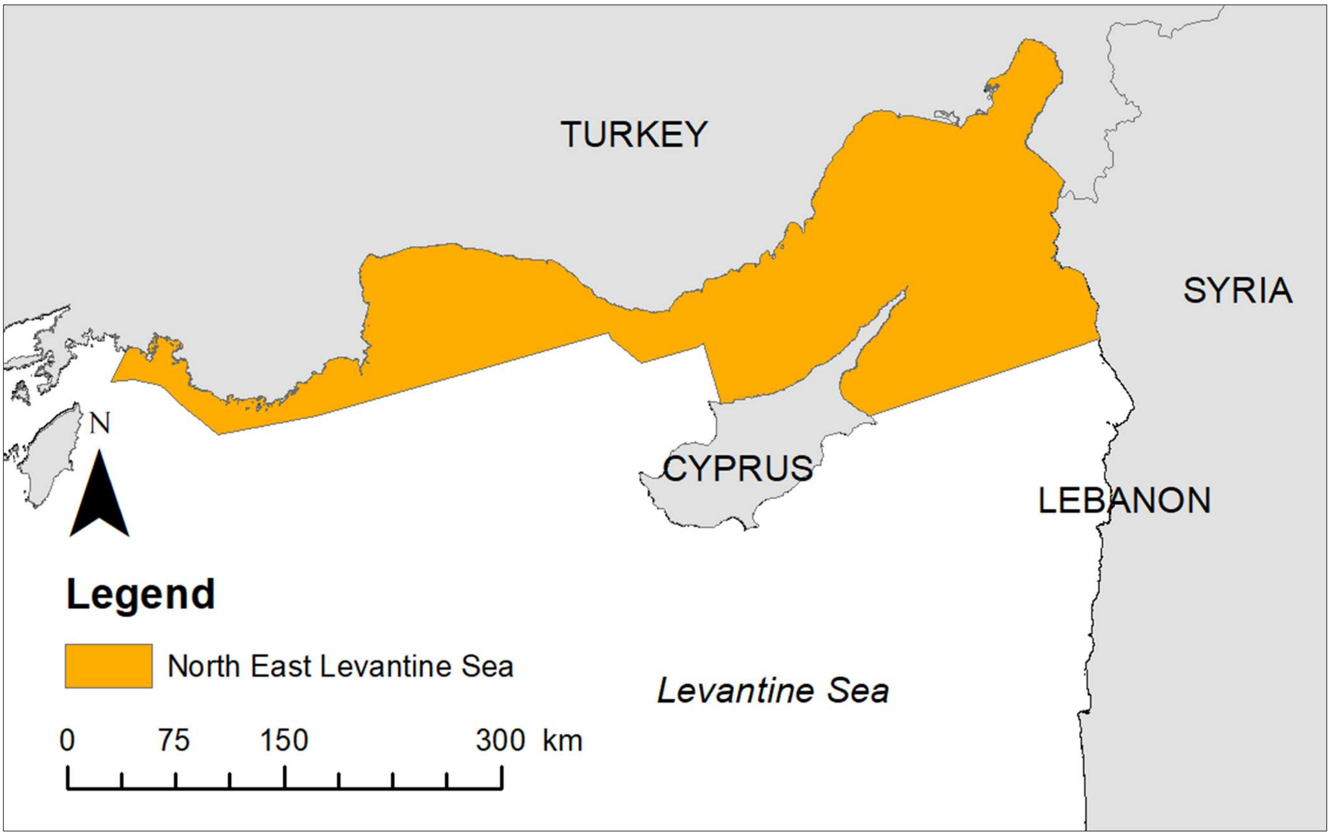

Figure 15. North East Levantine Sea EBSA

Akamas and Chrysochou Bay

This is the smallest EBSA in the Mediterranean, including two bays with water down to the 50 m isobath (Figure 16). Both bays include many important turtle nesting beaches, with stretches of rocky shores with sea caves in the Akamas site, which also has extensive rocky bottoms. In some areas, these rocky shores are high and some have partly submerged sea caves (EU habitat type 8330) that offer resting and breeding habitats for the monk seal. The seabed is generally rocky with patches of Posidonia (habitat type 1120) growing between them.

Further offshore, the seabed, where it is not rocky, is of coarse sand, which often gives way to finer sediments. More extensive Posidonia beds are found south of Lara and further north as well as on the northern coast in much of the area. They are found generally at depths between 10 and 30 m, but may extend to a depth of over 40 m. Apart from the Posidonia beds, the most prominent, widely distributed and well-developed habitat is that of the reefs (EU habitat type 1170). It is characterized, in shallow waters, by dense Cystoseira forests harbouring a rich invertebrate fauna. A noticeable feature, mainly in the limestone areas at the north of the peninsula and including Halavron as well as in the Lara peninsula, are the vermetid reefs, formed by the calcareous tubes of the gastropods *Vermetus* spp., and by *Dendropoma petraeum* etc. (EU habitat type CY04).

The monk seal caves in Akamas have been mapped and have intermittently been monitored over the last 20 years. The site also includes Posidonia meadows, coastal and deeper water reefs and small islands. The Chrysochou Bay, which includes the Polis-Yialia Natura 2000 site, stretches from a practically uniform sandy or sandy/pebbly beach to the 50 m isobaths. The sea bed in shallow waters is composed of fine sand with pebbles in parts with larger stones off the estuaries of several (seasonal) rivers. The prevailing winds are westerly, so exposure to wave action increases towards the east in the Bay. Currents are variable often depending on wind direction.

The Akamas beaches are very important nesting areas for green and loggerhead turtles. There are data on nesting since the 1980s when the Cyprus Turtle Conservation Project started. Mating of both loggerhead and green turtles takes place in the surface waters of the site and in the waters of the Bay adjacent to the Polis-Yialia Natura 2000 site. Foraging of green turtles of various sizes above about 30 cm is very common. Nesting of loggerhead turtles has significantly increased from about 50-60 nests per year on the west coast of Akamas between 1980 to 2006 to well over 250 in the 2012 to 2014. Increases in the number of green turtle nests have also been observed and an obvious increase in the number of juvenile and sub-adult green turtles in the Bay, as is clear from the number of strandings of such turtles on the shores of the Bay. The number of nests per year in the Chrysochou Bay has increased from about 200 nests per year until 2006 and reaching about 750 in 2013. It should be noted that, genetically, the population of turtles in the Mediterranean is not uniform with several recent studies focusing on the genetic differences that characterize the different rookeries and their relationships.

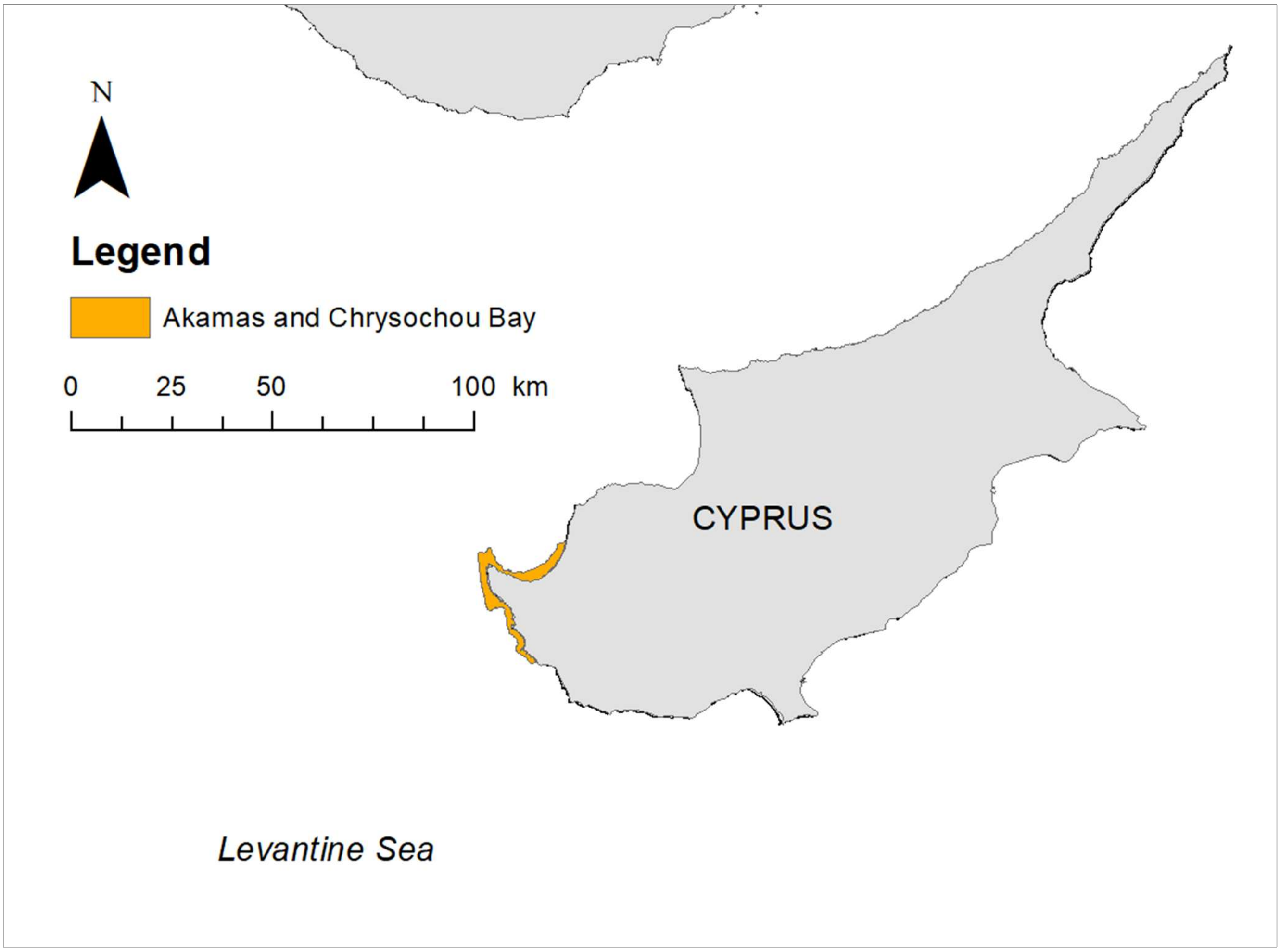

Figure 16. Akamas and Chrysochou Bay EBSA

Large scale case studies

The Pelagos Sanctuary, established in 2001, was one of the first case studies that applied the CBD EBSA criteria. Initially the proposal was to combine the Pelagos Sanctuary and the Strait of Sicily into a network for the protection of the Mediterranean fin whale population (Aïssi & Würtz, 2010). The goal was to apply the EBSA criteria to better capture the dynamic habitat needs of fin whales rather than relying on a single static MPA. The authors support adopting tailored, site-specific protection measures rather than uniform regulations across large EBSAs, integrating conservation plans into MSP processes (Aïssi & Würtz, 2010).

In 2013, Micheli et al., reviewed 18 initiatives for conservation across the Mediterranean. While there was a wide variation in their extent, methodologies and approaches, certain areas within the basin were consistently identified as priorities (Figure 17).

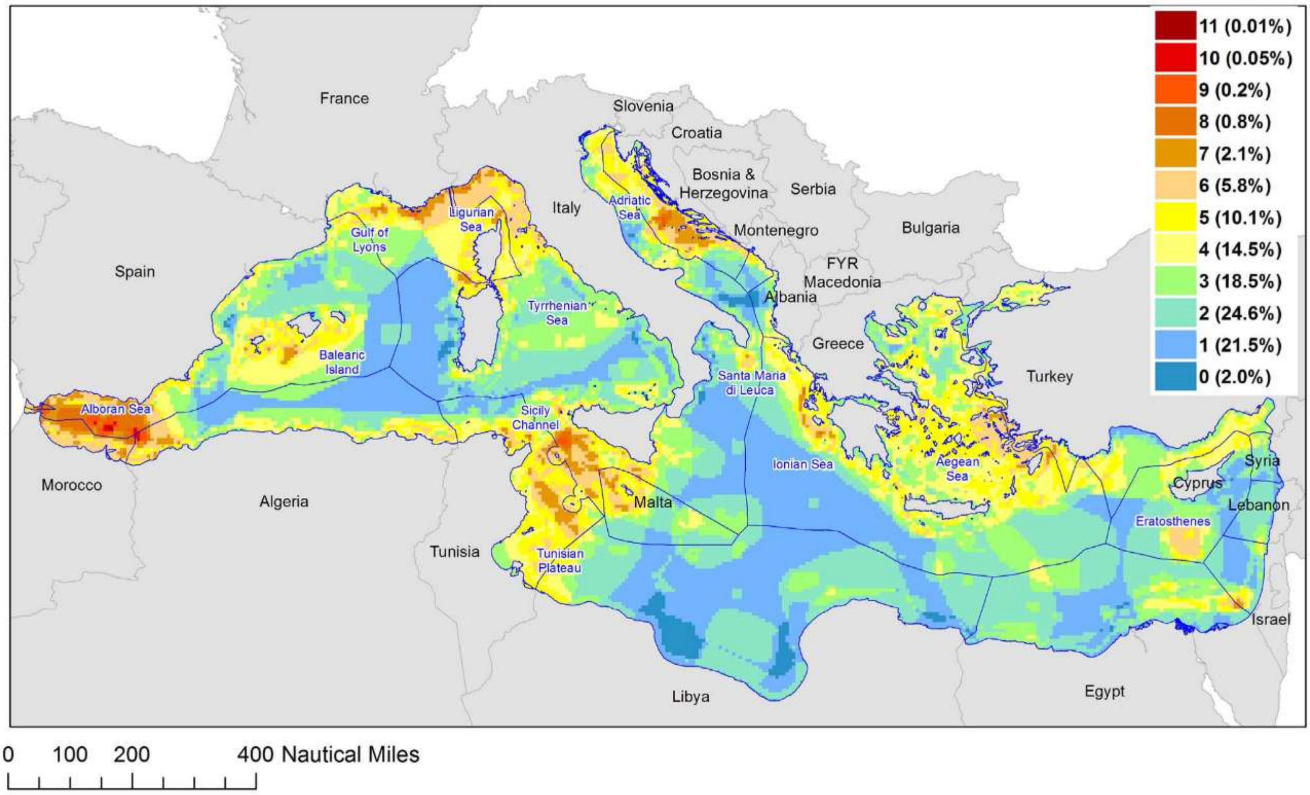

Figure 17. Frequency of inclusion by proposed conservation plans. The number of schemes including a particular area and the total % included are reported in the legend (After Micheli et al., 2013).

Considering the application of the Aichi targets by 2020, this analysis identified ten areas, encompassing 10% of the Mediterranean Sea, that are consistently identified among the existing proposals. In addition, another 10% was selected by at least five proposals (Micheli et al., 2013). At the time this analysis included both the then current SPAMI and EBSA lists. In many ways the results reflect the current EBSA list, just without the Alboran Sea.

Concurrently, Portman et al. (2013) reflect upon on the need to actualise conservation in the Mediterranean based on the available ecological knowledge and the existing governance frameworks in place. They proposed combining the principles of professional terrestrial planning processes with systematic conservation planning utilising the available data to move forward with prioritised conservation marine spatial planning for the Mediterranean. The authors call upon decision makers to draw on existing planning modes to spatially plan the marine systems, particularly identifying the EBSAs as a politically endorsed framework with clear recognition that *'effort needs to be invested by all conservation actors and national governments in moving the EBSA process from assessment and identification to planning and implementation of protected areas (SPAMIs) or conservation zones'* (Portman et al, 2013 p. 273).

Subsequent authors have examined other the conservation challenges at the Mediterranean scale. Mazor et al. (2018) focuses on the interaction between the oil and gas industry and biodiversity conservation, governance, and MSP. The authors argue that the high ecological value, intense human use, and complex geopolitics of the Mediterranean, make it particularly vulnerable to poorly planned offshore energy expansion. New hydrocarbon discoveries have accelerated exploration and production interest often occurring faster than the development of adequate environmental safeguards, spatial planning frameworks, or regional coordination mechanisms (Mazor et al., 2018).

Combes et al. (2021) present an application of systematic conservation planning at an ocean-basin scale, with the objective to identify a coherent and ecologically viable network of deep-sea protected areas across the North Atlantic and the Mediterranean. Their results provide strong support for EBSA identification, MPA network design, and other area-based management tools

(ABMT) in the ABNJ. They suggest that the Mediterranean requires targeted deep-sea protection due to its unique biodiversity, high endemism, and intense cumulative pressures. Protecting a relatively small proportion of the seafloor could safeguard a large share of deep-sea biodiversity if areas are selected strategically. The authors argue that connectivity between protected sites is critical for long-term ecological viability, especially for habitat-forming species. This approach aligns closely with global conservation targets, including 30% by 2030 of the GBF. They conclude that deep-sea biodiversity can be effectively conserved through a strategically designed, basin-scale network of protected areas, even in complex, multi-jurisdictional ocean basins like the North Atlantic and Mediterranean (Combes et al., 2021)

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Research Groups

RESEARCH AREA	NAME	AFFILIATION	RELEVANT EBSAs
Global	Vicky Gunn	Seascape Consultants	
Mediterranean Scale	Carole Martinez	MedPAN	
Mediterranean Scale	Mauro Randone	WWF Mediterranean	
Mediterranean Scale	Pilar Marin	IUCN Med	
Mediterranean Scale	Emiliano Ramieri	CNR ISMAR	
Adriatic-Ionian Region	Iztok Skerlic	EUSAIR TSG 3	Northern Adriatic, Jabuka/Pomo Pit, South Adriatic Ionian Strait, Hellenic Trench
Adriatic-Ionian Region	Ilaria Tani	University of Milano-Bicocca	Northern Adriatic, Jabuka/Pomo Pit, South Adriatic Ionian Strait, Hellenic Trench
Adriatic-Ionian Region	Peter Mackelworth	Marine Institute	Northern Adriatic, Jabuka/Pomo Pit, South Adriatic Ionian Strait
North-West Mediterranean	Marta Coll	Institut de Ciències del Mar (CSIC)	North-western Mediterranean Pelagic Ecosystems, North-western Mediterranean Benthic Ecosystems
North-West Mediterranean	Sylvaine Giakoumi	Zoological Station Anton Dohrn (SZN), Napoli	North-western Mediterranean Pelagic Ecosystems, North-western Mediterranean Benthic Ecosystems
North-West Mediterranean	Maria Bas Lopez	Institut de Ciències del Mar (CSIC)	North-western Mediterranean Pelagic Ecosystems, North-western Mediterranean Benthic Ecosystems
Central Mediterranean	Pierpaolo Consoli	Zoological Station Anton Dohrn (SZN)	Sicilian channel
Central Mediterranean	Carlotta Bianchi	WWF Mediterranean	Sicilian channel
Ionian-Aegean	Stelios Katsanevakis	University of the Aegean, Greece	Hellenic Trench, North Aegean, Central Aegean Sea
Levantine	Maria Hadjimichael	Cyprus Marine and Maritime Institute	North-East Levantine Sea, Akamas and Chrysochou Bay

Gap Analysis

Data on the biological features and the governance frameworks of individual Mediterranean EBSAs are inconsistent. There are large variations in the use of indicators, different methodologies and large data gaps, including in many instances an absence of socio-economic data. Generally, this finding is consistent with all data for the Mediterranean, where there is a paucity of information in the southern and eastern parts of the basin. In these regions, where there was data, in many cases the information was not recent. Specifically for this study no active research groups were identified working on the following EBSAs:

- Gulf of Gabès
- Gulf of Sirte
- Nile Delta Fan
- East Levantine Canyons

It is clear from this analysis that there is greater capacity in the European Mediterranean States. Biological data is consistently more recent, and cooperation is facilitated both by reliable funding and consistent biodiversity conservation objectives associated with EU funding mechanisms and policy frameworks. However, even within the EU member states, much of the data has been collected *ad hoc* and according to the priorities of different, often conflicting, programmes. There is a lot of redundancy, and few opportunities to synergise across programmes. Issues of cumulative pressures are being addressed at a fragmented sectoral scale, problems remain around accounting for connectivity, synergies and cumulative effects (Stelzenmuller et al., 2018). There is a need for systematic data collection, collation and assessment at regional scale using standardised methodologies to ensure data feeds into the necessary policy discussions and rational decision making (Nikolaou, et al., 2025).

Policy recommendations

The UNEP/MAP remains the most important coordinating body for marine conservation within the Mediterranean Sea. Significant thought and bold decisions must be made so that the mandates of the UNEP/MAP protocols are fit for purpose with the current crises and the looming 2030 deadlines, including the clarification of roles and strengthening of synergies for the EBSAs. There needs to be a deep institutional and technical realignment of the goals of the different regional activity centres, shifting away from isolated singular mandates to an integrated, digitized, and highly coordinated strategy. A twenty-first century revision of the SPAMI framework focussing on governance, monitoring and funding should be prioritised.

In 1979 the Bern Convention provided the bones for the EU Habitats and Birds Directives. Good policy already exists within the many strategies, policies and guidelines that have different mandates within the Mediterranean. In a similar way of reusing the bones of the Bern Convention, utilising the existing good policy is not only pragmatic, but essential and timely. Greater policy alignment with the EU, such as using the good environmental status of the EU MSFD, engaging more directly on spatial conservation with the Bern Convention and learning from the global discussions around the definition of the International Legal Binding Instrument of the BBNJ, can strengthen an evolving framework for the Mediterranean EBSAs.

It is important that the process engages early with stakeholders and decision-makers from leading economic sectors. Developing economic strategies is essential to ensure meaningful engagement. Co-designing management and governance structures strengthen the process. However, this process must be rigorous and defendable to ensure that the EBSAs fulfil their objectives. There are lessons to be learned from engaging with the EBSA process at global level and looking at best practice, including the work of the Global Oceans Biodiversity Initiative and other research teams. A review of transboundary management examples, such as the Trilateral Wadden Sea Cooperation or the Charlie Gibbs Facture Zone, can inform decision makers on the successes and failures that drive complex governance negotiations forward.

Road Map

Short-term (1-2 years)

1. Bring together the identified researchers and institutions for the creation of *ad hoc* working groups. This could be hosted back-to-back with an existing project/meeting in 2026 or 2027, 'Malaga +20' Mediterranean EBSA workshop.
2. Systematically review and update the available knowledge for the identification of the current EBSAs.
3. Review and provide advice for updating the SPAMI framework, and contribute to any ongoing policy consultations, such as the EU Ocean Act and the Pact for the Mediterranean.

Medium term (2-5 years)

1. Identify project funding to formalise the *ad hoc* groups in (1) EBSA data review and updates (2) Governance frameworks (3) Capacity building and awareness raising.
2. Engage with stakeholder groups, including sectoral industries to co-design strategies for the future management of marine systems.
3. Engage with global policy discussion around EBSA management processes, consider examples from other seas, particularly exploring existing precedents set around Internationally Legally Binding Instruments, such as the work done for the BBNJ.

Long term (5 years +)

1. Integrate EBSAs into the broader network criteria, including discussions focusing on the triple planetary crisis and resilience within the Mediterranean.
2. Create a biodiversity-based boundary organisation to coordinate work at the science-policy-society interface providing credibility and support for the integration of data for to address the triple planetary crisis and resilience.
3. Working with stakeholders and authorities, develop funding mechanisms to assist conservation actions, including monitoring and enforcement.

Concluding Remarks

The Mediterranean stands at a crossroads, it is one of the most vulnerable seas to the current triple planetary crisis. This requires a connected view of the world from politicians and decision-makers. Without aggressive intervention, these combined pressures threaten to make the Mediterranean uninhabitable. Considering the growing calls to fulfil the 2030 targets, the EBSAs provide a framework endorsed at global scale and the parties of the UNEP/MAP. While there is sufficient scientific justification to support SPAMI designations for some of the EBSAs listed, it is important to review and update knowledge. Where data gaps remain, systematic frameworks must be applied to provide consistent knowledge and justification for others. Establishing a network of SPAMIs based upon the EBSA elaborations would strengthen protection not only BBNJ, but biodiversity in other jurisdictions, improving coordination among Mediterranean countries, and contributing to international biodiversity targets (Consoli et al., 2021). There are of course risks involved in indiscriminately adopting the Mediterranean EBSAs wholesale.

The UNEP/MAP has provided a framework for cooperation for the protection of the Mediterranean Sea for more than half a century and remains the best option for coordinating management efforts. The expansion of the PAP/RAC mandate for MSP and the establishment of the Regional Activity Centre on Climate Change shows new impetus in engaging with the critical problems facing the Mediterranean Sea. New momentum from the UfM and the Pact for the Mediterranean encourages transboundary cooperation. The proposed expansion of the EU macro-regional strategies in the Mediterranean and the EU Ocean Act provide opportunities to strengthen ocean governance. These instruments provide opportunities to improve coordination amongst nations, reinforce the sea-basin approach and reinvigorate conservation. While these macro-regional bodies and policies play an important role, national authorities remain the most important decision makers. As such, they need to understand how the EBSAs provide an opportunity to fulfil international and regional targets for conservation while maintaining a blue growth agenda. In summary, EBSAs can act as a scientific indicator of "where" to protect, while SPAMIs represent the legal framework for "how" to protect these areas in the Mediterranean.

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