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POST-2020 SAP BIO

ALBANIA
CONSERVATION OF MEDITERRANEAN MARINE AND COASTAL BIODIVERSITY BY 2030 AND BEYOND

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Ecological Status, Pressures, Impacts, their Drivers and Priority Response Fields

POST-2020 SAP BIO

Strategic Action Programme
for the **Conservation** of **Biodiversity**
and **Sustainable Management**
of **Natural Resources**
in the **Mediterranean Region**

United Nations Environment Programme
Mediterranean Action Plan
Specially Protected Areas Regional Activity Centre (SPA/RAC)
Boulevard du Leader Yasser Arafat
B.P.337 - 1080 Tunis Cedex - TUNISIA
car-asp@spa-rac.org

The present publication has been prepared as Albania national contribution to support the Post-2020 SAPBIO elaboration. It has been prepared by Mr. Rezart Kapedani as National consultant, guided by Mr. Zamir Dedej National SAPBIO Correspondent.

For bibliographic purposes, this document may be cited as
UNEP/MAP-SPA/RAC, 2021. Albania Conservation of Mediterranean marine and coastal biodiversity by 2030 and beyond. By R. Kedani. Ed. SPA/RAC, Tunis: 74 pp. + Annexes

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This publication has been prepared with the financial support of the MAVA foundation

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List of Acronyms

AZA	Allocated Zone for Aquaculture
CBD	Convention of Biological Diversity
CCH	Cetacean Critical Habitat
DCM	Decision of the Council of Ministers
EBSA	Ecologically or Biologically Significant Marine Areas
EFH	Essential Fish Habitats
FAO	Food and Agriculture Organization
FRA	Fishery Restricted Areas
GES	Good Environmental Status
GFCM	General Fishery Commission for the Mediterranean
GSA	Geographical Sub-Area
IMAP	Integrated Monitoring and Assessment Programme
IMMA	Important Marine Mammal Area
IPA-CBC	Instrument for Pre-Accession Cross Border Cooperation Programme
IUCN	International Union for Conservation of Nature
IUU fishery	Illegal, Unreported and Unregulated Fishery
LOA	Length Over All
MCS	Monitoring, Control and Surveillance
MEA	Multilateral Environmental Agreement
MPA	Marine Protected Areas
MSFD	Marine Strategy Framework Directive
MSP	Marine Spatial Planning Directive
MTE	Ministry of Tourism and Environment
NAPA	National Agency of Protected Areas
NBSAP	National Biodiversity Strategic Action Plan
NEA	National Environmental Agency
NIS	Non-Indigenous Species
PA	Protected Area
PAP/RAC	Priority Actions Programme Regional Activity Centre
RFMO	Regional Fishery Management Organizations
SPA/RAC	Specially Protected Areas Regional Activity Center
UNCLOS	United Nations Convention on the Law of the Sea
VME	Vulnerable Marine Ecosystems
WFD	Water Framework Directive

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Executive Summary

Although a small country, Albania is distinguished for its rich biological and landscape diversity. The presence and combination of a high diversity of ecosystems and habitats, creates ideal conditions for hosting and maintaining a large number of flora and fauna species, including several endemic and sub-endemic elements. Coastal and marine areas are the richest in terms of biological diversity.

From the analysis of available documents, there are than 930 taxa of microscopic algae for coastal wetlands and 119 phytoplankton species of phytoplankton, 14 species of microzooplankton and 97 taxa of mesozooplankton in Albanian marine waters.

There are approximately 186 registered species and infraspecific groups and macro alga, as well seaweeds that belong to 63 clusters/families and 112 types (varieties), including important species such as *Posidonia oceanica*, *Lithophyllum byssoides* and *Cystoseira amentacea*.

About 50 species of echinoderms, 115 decapods and 230 marine molluscs have been reported in total for Albania. Also, the most important marine mammals are: bottlenose dolphin (*Tursiops truncatus*), stripped dolphin (*Stenella coeruleoalba*) with sporadic sightings of the Mediterranean monk seal (*Monachus monachus*). The loggerhead turtle (*Caretta caretta*) is the main marine turtle inhabiting the Albanian waters while true seabirds do not breed in Albania but on the coastal wetlands, Albania has a high presence of waterbirds. Presence of NIS is increasing like in all neighbouring countries due to several factors including the climate change impact.

However, there is a lack of knowledge for the marine and coastal habitats. There is very limited monitoring, not covering the entire Albanian waters. Most of assessments are done not on regular basis not allowing to have a clear picture of trends of species, habitats and pollution. There is not a comprehensive database for the list and distribution of species and habitats especially for the marine waters. There are few scientific papers produced that are related to these ecosystems related to the peculiarities of Albanian waters.

There are already 8 PAs in the coastal area covering important wetland habitats. All of them are under human pressure coming from illegal constructions, tourism and fishery activities and climate change. All these PAs need an update of the management plans and more effort to implement the established measures for the protection of the functionality of the wetlands.

There is only on MPA in the marine waters. It covers only 2% of the territorial sea. The Aichi targets has not been met, so new MPAs should be established not only to reach the Aichi target but also to cover also other important marine areas, starting with Porto Palermo where data and studies are already available. No measures has been taken yet to protect VMEs in open waters.

Fishery is an important activity both in marine waters and in lagoons. The sector is quite developed and impacts the marine and coastal habitats and fish stock. Also, vulnerable species such as sharks and marine turtles are negatively impacted as part of the by-catch. Intensive aquaculture activities are present especially in the Ionian Sea and no AZA analysis have been prepared yet for the Albanian waters.

The focus on the protection of coastal and marine ecosystems is still very low from the Albanian government. Although Albania is part of all relevant MEAs, still it is lagging in preparation, implementation and enforcement of measures to protect the coastal and marine ecosystems. The legislative framework on the protection of marine waters is obsolete and does not reflect all requirements coming from the Barcelona conventions, and the EU acquis. There is no clear institutional set-up for the management, monitoring and research activities in the marine waters.

The most critical impact identified for the marine and coastal biodiversity are: (i) coastal development; plastic pollution and marine litter; IUU fishery; and climate change effects.

The main needs that should be addressed in the short and mid-term for Albania are:

i. legislative improvements;
ii. setting of proper institutional structure;
iii. establishment of a maritime spatial plan;
iv. monitoring of coastal and especially marine habitats;
v. improvement of scientific research and capacities;
vi. increasing the PA network;
vii. updating of management plans;
viii. enforcement of nature protection and fishery legislation; and
ix. improvement of transboundary cooperation.

There is a lack of funding for the study and management of coastal and marine ecosystems. Regular state funding is crucial to set-up a regular monitoring system for all parameters included in the IMAP. A financial mechanism that should enable MTE and NAPA to retain a part of the income generated from PAs can help in the monitoring of the coastal and marine PAs.

Since Albania is entering the negotiation phase for the accession to the EU, a project dedicated to the full approximation of the MSFD can be proposed for financing under EU funds. Also, EU funds such as the one related to nature protection (Life+) and scientific research (Horizon 2020) should be taken into consideration.

There is a need to improve the overall spatial planning on the marine waters. While protecting the full range of marine biodiversity from unicellular algae to huge cetaceans, analysing all environmental aspects from ecosystem functions to chemical properties, and assessing the effects of all human activities, from tourism to commercial and recreational fisheries is quite ambitious, gradual steps are required immediately. Transposition of MSFD and MSP directives are required to start the national process of protecting the marine waters.

There is already an Integrated Cross-sectoral Plan for the Coast, but more effort is needed to protect the coastal wetlands from the construction activities and unsustainable tourism. Management of pollution coming from inland activities should be addressed for lagoons, rivers and the coastline.

Transboundary cooperation should be enforced. The main areas where collaboration is sought is: (i) the study of adjacent areas among countries; (ii) study of species that require regional/subregional efforts (cetaceans, marine turtles, NIS etc.); (iii) share of knowledge, capacities and databases; and (iv) preparation and implementation of regional project related to marine and coastal ecosystems.

1.

Reference documents and information consulted

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1.1. Documents provided by SPA/RAC and its international consultants

- Impact of Tourism on Mediterranean Marine and Coastal Biodiversity (2003)
- Mediterranean Coastal Lagoons: Sustainable Management and Interactions among Aquaculture, Capture Fisheries and the Environment (2015)
- Report from the Commission to the European Parliament and the Council on the implementation of the Marine Strategy Framework Directive (2020)
- Strategic Action Programme for the Conservation of Biological Diversity (SAPBIO) in the Mediterranean Region (2004)
- The State of Mediterranean and Black Sea Fisheries (2018)
- The Status of Marine Protected Areas in the Mediterranean Sea (2016)
- Transforming our world: the 2030 Agenda for Sustainable Development (2015)

1.2. National documents and publications identified and available

- Albanian National Fishery Strategy 2016-2021 (in Albanian)
- Assessment of the status of the Albanian marine environment 2015 (in Albanian)
- Document of Strategic Policies for the Protection of Biodiversity in Albania 2015-2020
- Karaburun – Sazan National Park Management Plan 2015 (in Albanian)
- Legal and Institutional framework assessment for conservation of coastal and marine biodiversity and the establishment of MPAs (2014)
- National Integrated Monitoring Programme for Albania (draft version from GEF Adriatic Project)
- Assessment of the Ecological Status and MSP preliminary initial assessment in Vlora Marine Area (Albania) in the framework of the MSP Pilot Project (2020)
- National Program for Environmental Monitoring for 2020 (in Albanian)
- State of Environmental Report 2018 (in Albanian)
- Strategic Plan for Marine and Coastal Protected Areas (SPMCPAs) (draft version)
- Towards GES assessment for Albania (draft version from GEF Adriatic Project)
- UNECE – Albania Environmental Performance Reviews (Third review)

1.3. Other documents identified

- Albanian Bathing Water Quality in 2019 (EEA Country Report)
- Albanian National Tourism Strategy 2019-2023
- Census and analysis of small scale fishery in Albania (2019)
- Climate Change 2013: The Physical Science Basis
- National Strategy for Development and integration

1.4. Quality and comprehensiveness of available information documents

In general, there are not a lot of documents available to have all required resource documents required for the preparation of this document. Some of the issues related to the available information documents are the following:

Limited number of information and documents:

There are only few documents available for some of the aspects related to this report, especially related to national specifics. Some habitats and groups are not studied as required and there are gaps in their knowledge.

Data trend and updates:

In most of the issues considered in the report, there is a lack of continuous monitoring and collection of data. As such, there is no clear indication of what the trend in the last 20 years for most of the issues present in the report are (species, habitats, pressures etc.).

Coverage:

Also, for the available data they do not cover the entire coast. While for some of the areas (e.g. Vlora bay) there is a good presence of scientific papers/ studies, some other areas (e.g. Drini bay, Fier-Vlora coastline) are lacking proper monitoring and studies.

Databases:

In Albania, there is a new process for the establishment and update of databases on species, habitats, pollution sources etc. So, data are scarce and not always validated.

Open sea gap:

As probably in other countries, there are more info on the coastal and near coast areas compared to open sea areas.

2.

Marine and coastal ecosystem status

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2.1. Biological characteristics

There are not a lot of reports and scientific papers related to the biological characteristics of the Albanian marine and coastal ecosystems. However, Below there is a summary of the most update information of such ecosystems.

2.1.1. Description of water column biological communities

In Albania there are very few studies focused on the microscopic organisms such as: phytoplankton or periphyton community. There have been some studies in the last three decades, mainly in the wetland of Butrint, Narta, Karavasta and Patok. Already over 930 taxons of microscopic organisms are recognised for the wetlands and coastal area. Research studies focused on microscopic algae (phytoplankton or periphyton) in the Albanian coastal wetlands and marine habitats started only in last three decades, mostly in the lagoons of Butrinti, Narta, Karavasta and Patok. More than 930 taxa of microscopic algae are already known; most of them belong to pennate diatoms (ca. 720 taxa) and less to centric diatoms (ca. 120 taxa), followed then by dinoflagellates (ca. 77 taxa). Only about 245 taxa of diatoms were found in marine waters, ca. 130 in various habitats of Vlora bay (in Adriatic from Zvërneci to Orikumi), and ca. 180 taxa in Ksamili (Ionian littoral) (Miho *et al.*, 2012).

Meanwhile the studies for the phytoplankton in marine waters are very limited. From a study carried out in 2006 (Saracino and Rubino, 2006), A total of 119 phytoplankton counting categories were recognized (98 of them were identified to the species level, 13 to the genus level, while 8 remained undetermined). The list of identified species is shown in Annex 1. In the whole South Adriatic Sea, the phytoplankton is dominated by the nanoplanktonic component, mostly represented by phytoflagellates <10 µm. This is typical of oligotrophic systems and the previous studies carried out in this area (Viličić *et al.*, 2002) already showed the oligotrophic character of this sub-basin, strongly reflected in the phytoplankton assemblages, both in terms of low densities and nanoplankton dominance.

Low nutrient concentrations influence relatively low productivity not only above the Albanian shelf but also further to the north along the Montenegrin and Croatian coastal Adriatic Sea (Viličić *et al.*, 2010).

Very few studies have been carried out related to zooplankton as well. According to a study of 2012 (Miloslavić *et al.*, 2012), the highest total microzooplankton abundance was of 63 ind. L-1 was noted at the surface and then abundances decreased with depth, and towards the open sea and 14 tintinnid species were recorded. In the same study total of 97 mesozooplankton taxa were identified with the highest species richness was found in the deep layer. The list of identified mesozooplankton taxa of is shown in Annex 2.

2.1.2. Information on invertebrate bottom fauna, macro-algae and angiosperms including species composition, biomass and annual/seasonal variability

According to available data there are approximately 186 registered species and infraspecific groups and macro alga, as well seaweeds that belong to 63 clusters/families and 112 types (varieties), (Table 1). Further studies, in particular for unexplored marine areas so far, or for specific geographic areas will come up with a bigger list of species. Some of the important species include: *Fucus virsoides* is a brown algae endemic to the Adriatic Sea found in biocenosis (biological community) and low mediolittoral rocks. Its origin is from the boreal zone and is considered as relict before the Miocene period, while the only *Fucus* population is found in the Mediterranean (RAC/SPA 2011).

Table 1

Number of species of marine macro flora that are found in Albania

Algae (macrophyte) Taxonomy classification	Number of species/ infraspecific taxon (rank of species)
Phaeophyta	40
Rhodophyta	101
Chlorophyta	39
Magnoliophyta	6
Total	**186**

Two Magnoliophyta (*Posidonia oceanica*, *Zostera noltii*), two Phaeophyta (*Cystoseira amentacea* and *Cystoseira spinosa*), and two Rhodophyta (*Lithophyllum byssoides* and *Lithophyllum trochanter*).

Studies about the fauna of the marine habitats cover only a limited number of groups. About 50 species of echinoderms, 115 decapods and 230 marine molluscs have been reported in total.

As regards to the benthic macroinvertebrates, 210 mollusk species have been reported from Vlora bay, more than 120 macroinvertebrate species in the shallow rocky coast of Vlora between Cold Water and Orikumi, about 110 species in Saranda bay, about 90 species from the shallow rocky coast of Kallmi (Durrës) and more than 40 species at the rocky coast of Shëngjin (Miho *et al.*, 2013).

2.1.3. Information on vertebrates other than fish

Ten species of **Cetaceans** were recorded in Adriatic Sea, with 4 regulars in the southern Adriatic: bottlenose dolphin (*Tursiops truncatus*), stripped dolphin (*Stenella coeruleoalba*), Cuvier's beaked whale (*Ziphius cavirostris*) and Risso's dolphin (*Grampus griseus*) (Fortuna et al, 2015) as shown in Table 2.

Table 2

Cetacean species recorded and confirmed in the Adriatic Sea (Based on Fortuna *et al*., 2015)

Common name	Scientific name	Current occurrence in the southern Adriatic
Common bottlenose dolphin (hereafter bottlenose dolphin)	*Tursiops truncatus*	**Regular**
Striped dolphin	*Stenella coeruleoalba*	**Regular**
Common dolphin	*Delphinus delphis*	**Rare visitor**
Cuvier's beaked whale	*Ziphius cavirostris*	**Regular**
Risso's dolphin	Grampus griseus	**Regular**
Fin whale	Balaenoptera physalus	**Seasonally regular**
Sperm whale	Physeter macrocephalus	**Potentially regular**
False killer whale	Pseudorca crassidens	**Not occurring**
Long-finned pilot whale	Globicephala melas	**Not occurring**
Humpback whale	Megaptera novaeangliae	**Rare visitor or not occurring**

Also, it is important to mention that the Mediterranean monk seal (*Monachus monachus*) is occasionally observed in the Albanian waters, the latter one spotted in March 2019 in the Vlora bay. For the most common species bottlenose dolphin based on combined results of the first two aerial surveys, carried out in the summer of 2010 and 2013, 5,700 specimens of bottlenose dolphin are estimated in the entire Adriatic, with 0.042 specimen per km^2, out of it 1,800 specimens in the Southern Adriatic or 0.032 specimen per km^2. The relative density estimated both in Albanian territorial waters and Albanian continental shelf margin (CMS) are slightly below the relative density in the Sothern Adriatic (Fortuna, *et al*., 2018).

Three species of **marine turtles** are recorded in the Albanian waters ranked in order of abundance: (i) the loggerhead turtle (*Caretta caretta*); (ii) the green turtle (*Chelonia mydas*); and (iii) the leatherback turtle (*Dermochelys coriacea*). Presence of the Hawksbill Turtle (*Eretmochelys imbricata*) was recorded only once, in 1997. Drini Bay (northern Albania) is a regionally and nationally important habitat that is used by sea turtles for foraging, as a refuge and as part of a key migratory corridor between the Ionian and Adriatic Seas, while the presence of marine turtles in Vlora Bay shows that they use this area as a migratory corridor (Sacdanaku E., Haxhiu I. 2015).

The **seabird** community in the Adriatic Sea only represents a small fraction of all the seabirds found in the Mediterranean. The small size and the absence of significant oceanographic features in the Adriatic explain the small size of its seabird populations (UNEP-MAP-RAC/SPA, 2015). Seabird species (*Calonectris diomedea*, *Puffinus yelkouan*, *Phalacrocorax aristotelis desmarestii* and *Larus audouinii*), highly depend on good status of marine environment, because they feed on the sea, mainly on large areas. Main habitats of true seabirds are located in the central and northern part of the Adriatic (Map 1). These species are not reported to breed in Albania, where they are known only during migration and winter periods.

Map 1

View of the study area (Adriatic Sea), showing the Important Areas for the conservation of seabirds proposed – A: Central Adriatic Sea, B: Northern Adriatic Sea. Based on: S.Requena (2015) for SPA/RAC.

Some species included in the SPA/BD protocol partly depend upon the marine environment during their life cycle breed in Albania, notably *Larus genei* and *Sterna albifrons*.

The complex ecosystems of coastal lagoons shelter more than 70 % of vertebrate fauna in the country particularly migratory and wintering birds. Annually there are around 70 waterfowl and water bird species found in the coastal lagoons and large lakes inside the country, with a total population of 180,000 individuals during the winter-(UNDP, 2015).

2.1.4. Inventory of the temporal occurrence, abundance and spatial distribution of non-indigenous, including invasive-species

In the Adriatic Sea, the presence of non-indigenous species (NIS) is increasing. Their impact on biological and ecological diversity as well as on economy and human health becomes more and more significant. The main pathways of NIS introductions into the Adriatic Sea are associated with the shipping and corridor pathway (mainly the Suez Canal). To a lesser extent other pathway are unintentional movement of live organisms as contaminants; and escapees from aquaria, aquaculture and marine aquaculture.

A preliminary list of NIS in the Albanian waters includes 35 species, and the predominant groups are the molluscs (12), macroalgae (9) and fish (7) as shown in Table 3. These data were collected from different marine expeditions, research surveys, diploma and doctoral thesis, scientific papers and projects' reports (prepared by S. Beqiraj for IMAP Report Albania, 2020).

Table 3

List of NIS present in Albania (prepared by S. Beqiraj for IMAP report)

No.	Name of Species	Detection Year
	Crustacea	
1	*Callinectes sapidus* (Rathbun, 1896)	2006
2	Penaeus aztecus (Ives, 1891)	2018
3	Penaeus japonicus (Spence Bate, 1888)	1994
4	Percnon gibbesi (H. Milne Edwards, 1853)	2010
	Fish	
5	Hemiramphus far (Forsskål in Niebuhr, 1775)	1985
6	Lagocephalus sceleratus (Gmelin, 1789)	2015
7	Parexocoetus mento (Valenciennes, 1847)	1985
8	Saurida lessepsianus (Russell, Golani & Tikochinski, 2015)	1995
9	Siganus luridus (Rüppell, 1829)	2014
10	Siganus rivulatus (Forsskål & Niebuhr, 1775)	2014
	Mollusca	
11	Anadara kagoshimensis (Tokunaga, 1906)	2001
12	Arcuatula senhousia (Benson in Cantor, 1842)	2011
13	Brachidontes pharaonic (P. Fischer, 1870)	2005
14	Bursatella leachii (Blainville, 1817)	2013
15	Cellana rota (Gmelin, 1791)	2007
16	Conomurex persicus (Swainson, 1821)	2015
17	Dendostrea cf folium (Linnaeus, 1758)	2000
18	Fulvia fragilis (Forsskål in Niebuhr, 1775)	2016
19	Magallana / Crassostrea gigas (Thunberg, 1793)	2013
20	Pinctada imbricata radiata (Leach, 1814)	2010
21	Rapana venosa (Valenciennes, 1846)	2011
22	Ruditapes philippinarum (Adams & Reeve, 1850)	1995
	Plants	
23	Aglaothamnion feldmanniae (Halos, 1965)	2014
24	Antithamnion nipponicum (Yamada & Inagaki, 1935)	2014
25	Antithamnionella elegans (Berthold J. H. Price & D. M. John, 1986)	2014
26	Asparagopsis armata (Harvey, 1855)	2014
27	Asparagopsis taxiformis (Delile Trevisan de Saint-Léon, 1845)	2005
28	Caulerpa cylindracea (Sonder, 1845)	1993
29	Chondria pygmaea (Garbary & Vandermeulen, 1990)	1974
30	Colpomenia peregrina (Sauvageau, 1927)	1986
31	Halophila stipulacea (Forsskål Ascherson, 1867)	1974
32	Lophocladia lallemandi (Montagne F.Schmitz, 1893)	2010
33	Womersleyella setacea (Hollenberg R.E.Norris 1992)	2015
	Polychaeta	
34	Ficopomatus enigmaticus (Fauvel, 1923)	1986
	Ascidiacea	
35	Styela plicata (Lesueur, 1823)	2014

2.1.5. Information on species of commercial interest for fishing (fish, mollusc and shellfish)

Fishery activity in Albania is a long tradition especially for the small-scale fishery and the coastal lagoons and the inland lakes fisheries. Overall the fishery sector is small but has been developed in the recent decade. Based on the data collected from the GFCM fleet register (2018 data) there are 631 vessels of which 226 are with LOA>12 m, while 405 are smaller than 12 m. Albania has 5 licenses for the use of hydraulic dredges and at the moment, one license for the bluefin tuna fishery. Most of SSF boats use gill nets, trammel nets and hook lines. There are also 6 fixed structures (stationary uncovered pound nets) along the Albanian coast. The recreational/leisure fisheries are developed but statistics and regulations are loosely implemented. The fleet of the larger vessels is largely skewed toward the bottom trawlers (see Table 4) and as such demersal species are the main species under fishing pressure. According to The State of Mediterranean and Black Sea Fisheries SoMFi (FAO, 2018), Albania has the oldest fleet in the Mediterranean (43 years old).

Table 4

Distribution of fishing gears for Albanian vessels with LOA > 12m (source GFCM Fleet Register)

Fishing Gear used					
Bottom trawl	**Purse Seine**	**Gillnet & entangling nets**	**Hooks & Lines**	**Dredges**	**Miscellaneous Gears**
168	11	25	6	5	11

Regarding the SSF, from a study conducted in 2019 in the frame of MarE project, the number of small-scale fishing vessels is not 405 as declared in the fleet register but should be around 1000 unities.

Fishing vessels of the Albanian fleet fish almost entirely in the south Adriatic area (GSA 18). The main target species for the pelagic fishery are European pilchard (sardine) (*Sardina pilchardus*) and European anchovy (*Engraulis engrasicolus*), while for the demersal species the main species are European hake (*Merluccius merluccius*), red mullet (*Mullus barbatus*), deep-water rose shrimp (*Parapenaeus longirostris*), Norway lobster (*Nephrops norvegicus*)[1]. These are also Stocks for these species are assessed at Adriatic level at the annual GFCM Working Groups for Stock Assessment of Demersal and Small Pelagic Species. All data and results are submitted through relevant Stock Assessment Forms (SAF).

According to the interviews taken during the 2019 analysis of the SSF, there is a large number of species targeted and caught by the fishers in the small-scale fishery. However, based on the data calculation, the main 5 species targeted by the fishers in the SSF for the entire Albanian coastline are: (i) seabreams (Sparidae); (ii) seabass (*Dicentrarchus* spp.); mullets (Mugilidae); (iv) red mullets (*Mullus* spp.); and (v) caramote prawn (*Melicertus kerathurus*).

1. It should be noted there are also other species of importance for the bottom trawling fishery but these are the most important.

Fishery is also important in the lagoons. All lagoons are used for fishery activity as well, when some of the most important species include mullets (Mugilidae), European eel (*Anguilla Anguilla*), gilt-head seabream (*Sparus aurata*), and other species like sandsmelts (*Atherina* spp.), gobies (Gobioidei)

It should be noted that the Albanian coastal part in the Ionian Sea is also part of habitat of Corfu toothcarp (*Valencia letourneuxi*) that is part of the Annex II of SPA/BD and also considered as Critically Endangered.

Sharks and rays are not target species for the Albanian fishery sector, however they are present in the by-catch. Based on the available data, 47 species have been identified in the Albanian water as shown in Annex 3.

Aquaculture is developed especially in the Ionian Sea (from Vlora bay southward to Cape of Stillo) through cage culture. The main species cultivated are gilt-head seabream (*Sparus aurata*) and European seabass (*Dicentrarchus labrax*). Only one species of mussels is cultivated: the Mediterranean mussel (*Mytilus galloprovincialis*), in the Butrinti lagoon, Drini bay and Cape of Rodoni

As related to the species included in the Annex III of the SPA/BD protocol. The fishery of red coral (*Corallium rubrum*) is prohibited. Some of the crustacean and fish species present in the Annex III of SPA/BD are caught only as by-catch and conservation measures in line with the GFCM recommendation and the EU Mediterranean Fisheries Regulation ((EC) No 1967/2006) has been taken. Bluefin tuna is caught following the quotas and restrictions of ICCAT, where Albania is a contracting party and actually only one licence/year is given for the fishery of this species.

2.1.6. Others

About 30% of the surface of the Albanian protected areas belong to the coastal zone. Despite reclamation for agricultural purposes during the past few decades, Albania still has about 950 km^2 transitional or related areas, where about 400 km^2 are wetlands and lagoons. All these habitats are distinguished by their wealth of breeding and refuge habitats for flora and fauna, especially for fish and wintering or migratory aquatic birds, some of them globally endangered. Three large RAMSAR areas: (i) Butrinti-Çuka-Stillo; (ii) Karavasta-Divjaka and (iii) Lake Shkodra-River Buna-Velipoja, represent distinct transitional values (Miho *et al.*, 2013).

2.2. Main Habitat types

There is not a complete inventory of the marine habitats in Albania, however, here are mentioned some of the most important that have been identified. The most typical Mediterranean habitats of the coastal belt are: (i) red algae *Lithophyllum byssoides* on the mediolitoral floor; (ii) *Posidonia oceanica* meadows and the "fucal forests" (biocenoses with *Cystoseira* spp.) in the infra-littoral floor; as well as (iii) the coralligenous in the circalittoral floor.

Regarding **photophilic algae**, the most relevant species for conservation interest and their use as indicator species of good ecological status (Ballesteros *et al.*, 2007) are the long-lived species *Lithophyllum byssoides* (Lamarck) Foslie (Rhodobionta, Archaeplastida, 1900) and *Cystoseira* spp. (Phaeophyceae, Stramenopiles), which are usually regarded as sensitive to pollution and coastal development. Other species belonging to the habitat known as "Fucal forest" in Albania are: *Cystoseira barbata*, *C. crinita*, *C. compressa*, *C. corniculata* and *Sargassum vulgare*. Still, no time series do exist to measure distribution and other trends and available data are limited to few descriptive studies of existing and proposed marine protected areas (MPA).

As part of the studies carried out in Albania, a total of 11 Posidonia meadows have been identified located in the area between Cape Rodon (northern boundary) and Cape Stillo (southern limit). The results of the mapping of *Posidonia oceanica* meadows in Albania show that this habitat covers ca. 4,803 ha of the shallow coastal area (Telesca. et al., 2015). Large *Posidonia* meadows are found along the Adriatic coast, forming isolated beds around Rodoni Cape, Porto Romano and Vlora Bay. Continuous and healthy meadows are found almost throughout the Ionian coastline, from Palasa in the Himara area to the southern Albanian border (Stillo Cape).

In Albania, baseline data on **coralligenous assemblages** are scarce, and complete distribution of this habitat is still unknown. The only scientific survey aimed at studying and mapping of coralligenous assemblages was carried out in April 2016 at the National Marine Park of Karaburun-Sazan (Andromede Oceanology, 2016). Other data are sporadic as they come from studies not specifically focusing on coralligenous and do not follow any standardized approach. A list of typical/indicator species occurring within the coralligenous habitat along the Albanian part of the Adriatic Sea has been compiled mainly according to the 2016 study (Andromede Oceanology, 2016) and classified according to (UNEP/MAP-RAC/SPA, 2011) and (Garrabou *et al*., 2014) as shown in the Table 5.

Table 5

A list of typical/indicator species of coralligen habitats in Albania.
Based on Andromede Oceanology, 2016

Algal builders

Rhodophyta
- Coralline algae: *Mesophyllum sp., Lithophyllum sp.*
- Encrusting *Peyssonnelia* spp.

Animal builders

Bryozoans
- *Myriapora truncata* (Pallas, 1766)
- *Pentapora fascialis* (Pallas, 1766)
- *Smittina cervicornis* (Pallas, 1766)
- *Schizomavella mamillata* (Hincks, 1880)

Serpulids
- *Filograna sp.*

Scleractinians
- *Caryophyllia inornata* (Duncan, 1878)
- *Leptopsammia pruvoti* (Lacaze-Duthiers, 1897)
- *Madracis pharensis* (Heller 1868)

'Agglomerative' animals

Sponges
- *Geodia* sp.

Bryozoans

Bioeroders

Sponges
- *Cliona viridis* (Schmidt, 1862)

Molluscs
- *Lithophaga lithophaga* (Linnaeus, 1758)

Echinoids
- *Sphaerechinus granularis* (Lamarck, 1816)

Species of particular importance (particularly abundant, sensitive, architecturally important or economically valuable)

Rhodophyta
- Uncalcified *Peyssonnelia spp.*

Chlorophyta
- *Halimeda tuna* (J.Ellis & Solander) J.V. Lamouroux 1816

Sponges
- *Crambe crambe* (Schmidt, 1862)
- *Hemimycale columella* (Bowerbank, 1874)
- *Chondrosia reniformis* (Nardo, 1847)
- *Petrosia ficiformis* (Poiret, 1789)
- *Axinella cannabina* (Esper, 1794)
- *Axinella polypoides* (Schmidt,1862)

Gorgonians
- *Paramuricea clavata* (Risso, 1826)
- *Eunicella cavolini* (Koch, 1887)
- *Corallium rubrum* (Linnaeus, 1758)

Tunicates
- *Halocynthia papillosa* (Linnaeus, 1767)

Invasive species

Chlorophyta
- *Caulerpa cylindracea* (Sonder 1845)

Rhodophyta
- *Womersleyella setacea* (Hollenberg) R.E.Norris 1992

2.3. Singular habitats in the country

Although there are several areas of high interest and value, from the literature consulted, no coastal and/or marine area has been considered as a singular habitat on a regional scale.

2.4. Transboundary issues

Albanian marine ecosystems represent a part of the natural ecosystems of the Mediterranean. Species migrate through rivers and upper parts of the Albanian mountains from their natural habitats outside Albania towards Greece, Northern Macedonia, Montenegro and Kosovo. The large number of sub-endemic species and marine endemic species in the Adriatic Sea have pointed to the importance of Albania regarding protection of biological diversity in the regions of the Balkans and the Mediterranean.

Some of the habitats will require joint effort with Greece, Montenegro and Italy to avoid their deterioration and promote their conservation.

2.5. Identification of the country's marine and coastal biodiversity gaps needed for scientifically sound based conservation

It is not yet possible to have a scientifically sound based conservation in Albania because the data are missing or scarce, which clearly emphasize a need for improvement of knowledge on selected components of biodiversity and NIS. Increase of knowledge refers both to knowledge about abundance, distribution, demographic per se, as well as knowledge about impacts of potentially most significant pressures, such as by-catch of cetaceans and marine turtles. All data should be collected in systematic and standardized way, as already stated in the IMAP report prepared for Albania. Furthermore, acquired information should be adequately managed, shared and made available, using adequate information technology and web tools. Finally, in order to be able to implement all measures, it is important to ensure long-term human and financial capacities.
Some of the main gaps that should be addressed are:

1 _ There is no proper legislative framework transposing MSFD and MSP Directives to pave the way for a proper monitoring and conservation of coastal and marine habitats;
2 _ Lack of monitoring of coastal and especially marine environment resulting in a lack of related data;
3 _ Low number of experts and with limited capacities to implement proper monitoring and conservation measures for these areas;
4 _ Very limited funding and often coming from external non long-term sources dedicated to the study and conservation of coastal and marine environment;
5 _ Low level of commitment to increase the MPAs and reduce the pressures to coastal and marine environment.

3.

Pressures and impacts

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3.1. Biological disturbance

In the Adriatic Sea the presence of non-indigenous species (NIS) is increasing. Their impact on biological and ecological diversity as well as on economy and human health becomes more and more significant. According to the EEA, the main pathways of introduction of NIS across the Adriatic Sea is shipping, aquaculture and corridors[1].
The main threat is presented by the invasive species where the most important to be mentioned are:

Algae

Caulerpa cylindracea is the most widespread invasive species along the Albanian coast. In many areas it seems to have successfully competed with the seagrasses and largely covered benthic habitats, on both hard and soft bottoms; and *Womersleyella setacea* that was observed for the first time in Albania in 2015 (S. Beqiraj, unpublished) with a high presence along the Ionian coast and in the most southern edge of the East Adriatic (Sazani Island and Karaburun Peninsula);

Crustacean

Callinectes sapidus has started its massive and quick distribution along the Albanian coast in 2006 (Beqiraj and Kashta, 2010). Within few years it has been established in most of coastal lagoons and estuaries of Albania and became a common species in the fish market. In the Lagoon of Patok, the Lagoon of Viluni and the Shkumbini estuary the blue crab population is characterized by huge density.

Fish

Lagocephalus sceleratus as it is extremely poisonous to human if eaten, and to *Siganus luridus* that negatively impacts the structure of the local algal community, often resulting in the eradication of algae locally.

Fishery also has a large impact on the habitat and some of the species. Since the majority of large-scale vessels are trawlers, they have constantly put a large pressure on demersal species. Also, IUU fishery has damaged for years the Posidonia meadows. The improvement of the enforcement of the law on Fishery has reduced the number of vessels trawling in depth of less than 40 meters. Also, during the '90, the red coral habitats have been damaged by the illegal harvesting of this species.

Another problem not solved yet is the illegal harvesting of date shell (*Lithophaga lithophaga*) that is sold illegally to the restaurants and causes large damages and leading to desertification of parts of the coast.

1. https://www.eea.europa.eu/data-and-maps/figures/mode-of-introduction-of-nis

There are several fish species in the south Adriatic that are target species and are considered as shared stocks. Scientific Advisory Committee on Fisheries (SAC) of GFCM has recurrently considered that the stocks of European hake (*Merluccius merluccius*), Norway lobster (*Nephrops norvegicus*), red mullet (*Mullus barbatus*), common sole (*Solea vulgaris*), mantis shrimp (*Squilla mantis*) and deep-water rose shrimp (*Parapenaeus longirostris*) are in overexploitation in geographical subareas (GSAs) 17 and 18. The situation is also problematic for the two main species targeted by the small pelagic fishery anchovy and sardine. SAC concludes that anchovy and sardine are overexploited, acoustic survey data for both small pelagic species, sardine and anchovy, indicate a declining trend in total biomass and as such in 2018 GFCM has set emergency measures in 2019-2021 for small pelagic stocks in the Adriatic Sea. Recreational fishery is also largely unregulated. Several species that are targeted by this fishery are in decline where some of the most sensitive species related also to Annex III of SPA/BD are groupers (*Epinephelus* spp.), brown meagre (*Sciaena umbra*) and shi drum (*Umbrina cirrosa*).

Marine aquaculture in Albania is localised in the southern coast and puts pressure in these areas. There are several farms in the Vlora bay, some installations in Porto Palermo and in Saranda bay and Stillo cape. Aquaculture development can result in loss of or alterations to important coastal habitats. The use of feed, antibiotics and the accumulation of faecal matter may all contribute to poor water quality. There is a process of designing the AZA for the marine waters and as such further developments should take into consideration the impact of aquaculture in certain areas and/or prohibit development in sensitive areas.

3.2. Vulnerable marine ecosystems

There are numerous features or elements in the region that could host VMEs. These include 518 large submarine canyons (Würtz, 2012) and around 300 seamounts (CBD, 2014). GFCM has not defined VMEs within its management regulations, and there are no formally declared and adopted VMEs within the Mediterranean Sea. Instead, and through its ecosystem approach, the GFCM has adopted FRAs as a multi-purpose spatial-management tool used to restrict fishing activities in order to protect deep-sea sensitive habitats, such as VMEs, and essential fish habitats (FAO. 2016).

Albania is situated in the southern Adriatic area that has two main areas that has VMEs: (i) the open area bordering Montenegro and Italy (the deepest area of the Adriatic) and: (ii) the Otranto channel. There is no FRA yet declared in the Albanian territorial sea or contiguous sea but there is a proposal to declare part of the Otranto channel as FRA. The ground to propose part of the Otranto channel (South Adriatic Pit area) it as a FRA is that the area has been clearly identified as: (i) a site of unique physical features influencing the dynamics of waters circulation and water exchange with the whole Mediterranean basin; (ii) an important EFHs for valuable species such as deep water shrimps (e.g. *Aristeomorpha foliacea*), deep-water rose shrimp (*Parapeneus longirostris*), European hake (*Merluccius merluccius*) and blackmouth catshark (*Galeus melastomus*); (iii) a key area for sea turtles, tuna, swordfish, sharks and an important migratory corridor for megafauna like cetaceans; and (iv) an area containing VMEs that could be significantly impacted by bottom trawling.

3.3. Emerging issues such as climatic change effects and open sea including deep-sea ecosystem concerns

An increase in sea level, temperature, ocean acidification, the duration and severity of precipitation, droughts and storms are projected to result from global climate change. All these increases are expected to adversely impact coastal and marine areas both directly and indirectly. These effects both separately and in combination will further reduce the capacity of, already stressed, natural systems to deliver social and economic goods and services. The expected Climate Change Scenario for Albania (CCSA), including seasonal and annual changes projects an annual increase in air temperature up to 1°C, 1.8°C, 3.6°C respectively by 2025, 2050 and 2100 and a decrease in precipitation up to - 3.8%, -6.1%, -12.5% by the same time horizons. The projected sea level rise of 48-61 cm for 2100 would result in direct flooding of coastal areas. Some coastal lagoons are expected to become more sea-like as sea-level rise results in a breach of the sand and gravel bars that separate them from the sea. Other consequences of expected warming include not only changes in total water amount and levels, but also erosion of riverbeds, and modification of turbidity and sediment load. The ground water supply will be affected by decreased percolation of water, due to decrease in the amount of precipitation and stream flow and as well as losses of soil moisture from increased evapo-transpiration when the demand for drinking water and water use for social and economic purposes may be expected to increase because of population growth. As regards the forest sector, extensions of vegetation flats are expected by 2025, 2050, and 2100.

An increase in sea surface temperature is unlikely to have a direct, negative impact, since most sea grasses, including *Posidonia* and *Cymodocea*, are somewhat thermophilic. However, thermophilic algae and perhaps other sea plants may actively compete with native species. The plankton productivity could become significantly more variable in marine littoral and estuarine systems, and that change could have flow-on effects to system ecology and productivity. Ocean acidification will adversely impact the calcifying capacity of calcifying plankton, plants and animals with potentially severe consequences for marine food changes.

The natural communities associated with low lying coastal areas are expected to move inland due to expected gradual inundation, as long as there is the available undisturbed space for this migration. Certain communities including existing coastal dunes, saline marshlands and wetlands are likely to reduce in their area. The expected more open channels between the coastal wetlands with the sea in the future will change the present ecosystems, gradually to a complete saline ecosystem. Changes in these wetland areas will affect many bird species that are dependent on brackish systems through loss of nesting, breeding, staging and wintering habitat.

Fishery activities along the coastal areas of Albania may already be affected by climate change. The combination of factors, some of which may be climate-change linked include an increase in sea level, water temperature, salinity and eutrophication in coastal lagoons cause unusual phenomena such as the bloom of toxic phytoplankton. Abnormally high levels of toxic phytoplankton have been detected in some bivalve mollusc harvesting areas.

In some cases, the effects on fisheries can result in changes in the life cycle. This phenomenon particularly concerns species that used to migrate in the autumn to their winter habitats but today stay longer in the northern and central Mediterranean.

Today, it happens increasingly frequently that this big pelagic remains until the winter in the northern basin. Similarly, the tuna *Thunnus thynnus*, a migrant from the Atlantic, today remains an increasingly long time in the north and the centre of the Adriatic Sea, thus offering itself to local fisheries over longer periods (INCA, 2013).

The rise of mucilaginous aggregates is also a concern. This mystery slime has regularly been reported in the Tyrrhenian Sea and the Adriatic over the last thirty years. The origin of these phenomena differs according to the basin considered. In the eutrophic water of the Adriatic, this mucilage is produced by phytoplankton blooms, caused by sudden variations in the availability of nutrients. In most cases, the trigger usually is still remaining a mystery. Whatever the origin, by accumulating on the seabed this mucilage has harmful effects on the benthic populations. (INCA, 2013).

4.

Current response measures

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4.1. Marine protected areas and other area based conservation measures

4.1.1. Marine and Coastal Protected Areas

National Biodiversity Strategy and Action Plan (NBSAP) is the main nature conservation specific policy document in Albania. The latest NBSAP (2014–2020) was prepared based on the guidance of the CBD Strategic Plan for Biodiversity 2011–2020 and the EU Biodiversity Strategy to 2020, ensuring also full alignment with other sectoral strategies. The Action Plan includes, among all, national objectives such as designating 17% of terrestrial and 6% of marine and coastal protected areas by 2020, as well as fully transposing the EU acquis on nature conservation by 2020. However, not all these objectives have been achieved. Protected areas in Albania, designated in one of the national protected areas categories that are aligned with the IUCN PA categories, cover 5.263 km² or 18 % of the country's territory (Map 2). The majority of the coastal wetlands are included in the PA network as shown in Table 6, meanwhile Albania has only on MPA (Karaburun-Sazan) covering about 2% of the marine area. It should be noted that Karaburun-Sazan is also a SPAMI.

Map 2

Map of Protected Areas in Albania (source: NAPA - last update November 2018)

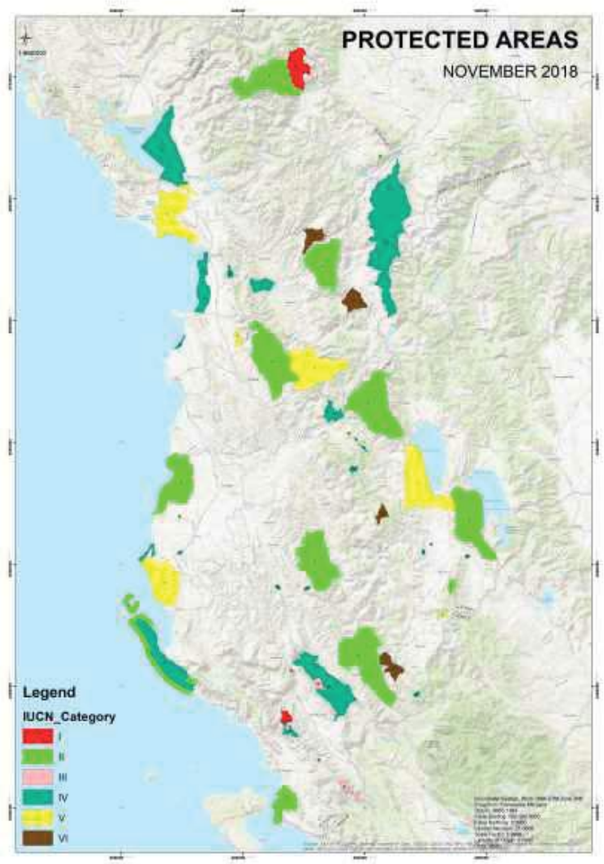


Table 6

List of Coastal and Marine PAs (updated as January 2020)

No.	PA Category	Name of PA	IUCN Cat.	AREA (in Ha)
1	National Park (Marine)	Karaburun-Sazan	II	12417.89
2	National Park	Butrint	II	9416.82
3	National Park	Divjakë-Karavasta	II	21972.10
4	Natural Managed Reserve	Rrushkull	IV	649.76
5	Natural Managed Reserve	Pishë Poro	IV	1499.11
6	Natural Managed Reserve	Kune-Vain-Tale	IV	4389.65
7	Natural Managed Reserve	Patok-Fushëkuqe-Ishëm	IV	4996.70
8	Protected Landscape	Lumi i Bunës-Velipojë	V	23008.53
9	Protected Landscape	Vjosë-Nartë	V	19722.42
Total Area				**98072.97**

In relation to the establishment of MPAs, a detailed study for the establishment of the Porto Palermo – Llamani bay has been carried out, however this area has not been declared as an MPA.

4.1.2. Other area based conservation measures

The area near Vlora and some of Albania open waters (Map 3) have been declared as EBSA (South Adriatic Ionian Straight).

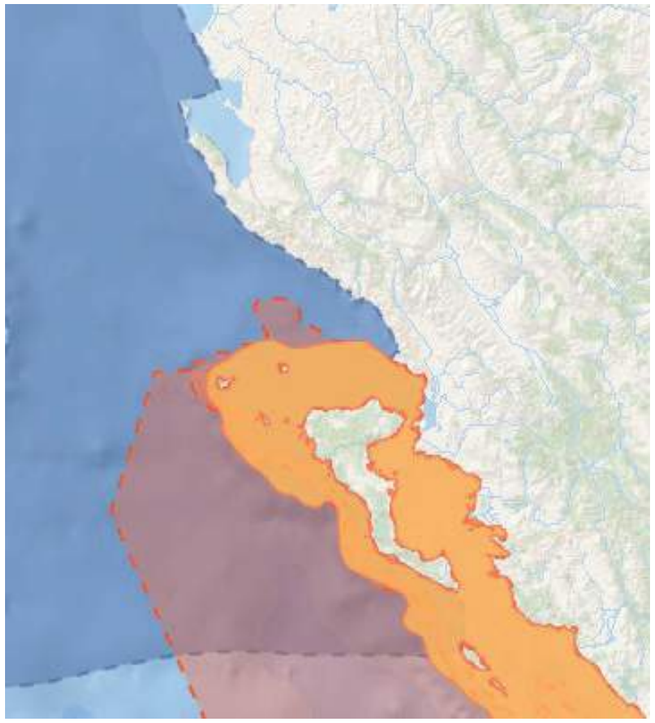
Map 3

Location of the South Adriatic Ionian Straight EBSA (source: https://www.cbd.int/ebsa/)

The Sazani Island – Karaburuni Peninsula has already been identified as CCH since it is an area of special importance for the common dolphin and other cetaceans. Furthermore, the southernmost part of the Albanian coast also is part of the Ionian Archipelago IMMA (Map 4) being an area where the common dolphin (*Delphinus delphis*) and the monk seal (*Monachus monachus*) are present.

Map 4

Northern Part of Ionian Archipelago IMMA
(source: https://www.marinemammalhabitat.org/immas/imma-eatlas/)



Albania has 3 Ramsar sites in the coastal area namely: (i) Lake Shkodra and river Buna; (ii) Karavasta lagoon system; and (iii) Butrinti.

The Karaburun – Sazan National Marine Park has been declared as a SPAMI in 2016.

It should be noted, a process for identifying the AZA in marine waters, as foreseen in the provisions of the Law of Aquaculture, is undergoing and expected to be closed within 2020.

In April 2013, the Ministry of Environment, Forests and Water Administration approved (Minister order No. 283) the list of coastal wetlands that serve as habitats for migratory birds to be included in the list of Important Bird Areas (see Table 7).

Table 7

List of coastal wetlands serving as IBA

Site ID	Name of the area	Code	Area ha	Lat.	Long.	Criteria
2899	Liqeni i Shkodrës	AL001	14.000	42,167	19,333	A1, A4i, A4iii, B1i
2903	Laguna e Nartës	AL005	4.180	40,583	19,383	A1, A4i, A4iii, B1i
2904	Laguna e Karavastasë	AL006	5.450	40,883	19,417	A1, A4i, A4iii, B1i, B2
2905	Delta e Drinit	AL007	2.188	41,783	19,617	A1, A4i, B1i
2908	Gjiri i Vlorës-Karabu-run-Mali Çikës	AL010	35.000	40,167	19,667	B2
2910	Liqeni i Butrintit	AL012	1.900	39,833	20,000	B2
2911	Laguna e Patokut	AL014	1.211	41,633	19,600	A1, A4i, B1i
2912	Gjiri i Lalzit	AL015	800	41,300	19,500	B1i
2913	Velipoja	AL013	1.500	41,867	19,433	A1

The law on fishery, Law 64/2012 of 31.05.2012 "On fisheries", includes some restriction concerning the fishing activities, related to the conservation and protection. Based on Article 16, point 5 fishing with trawl nets, dredges, purse seines, boat seines, shore seines or similar nets above sea grass beds of, in particular, *Posidonia oceanica* or other marine phanerogams is prohibited.

Based on DCM No. 402 of 8.5.2013 "Concerning management measures for the sustainable exploitation of fishery resources in the Sea", Chapter 13 para. 16, the use of towed gears is prohibited within 3 nautical miles of the coast or within the 50 m isobaths where that depth is reached at a shorter distance from the coast.

Based on Regulation No 1 of 7.03.2014 "On the implementation of Law No. 64/2012 "on Fishery":

Article 4.11: Is prohibited fishing in the area by 2 km radius from a mouth of River Buna and 1 km from the mouth of other Albanian Rivers.

Article 4.15: Is prohibited every fishing & aquaculture activity in outside part of Karaburuni shore from Kepi i Gjuhëzës until Rrugët e Bardha (Palase) in the distance of 1 marine mile shoreline or 50 m isobath in the case when this depth could be in smaller distance.

Article 4.17: It is prohibited to fish with trail net (trawl or pelagic) in the Vlora Bay (limited on the north from the basic line of the Bay of Karaburun up to Treport).

Article 45/1: Is prohibited fishing in the sea- lagoon communication channels as well as in the seaside area included within the arch with a radius of 2 km by a centre the outfall channel to the sea

4.2. Legal and institutional frameworks governing the conservation and sustainable use of marine and coastal biodiversity

4.2.1. Legal framework

The protection of the marine and coastal environment and marine and coastal biodiversity is subject to all the environmental laws and by-laws of the Republic of Albania and the international conventions, protocols, agreements to which the Republic of Albania is a party.

The **Albanian Constitution** was adopted by the Albanian Parliament in 1998. It requires institutions to "maintain a healthy environment, ecologically suitable for present and future generations".

Albania has progressed with nationalization of the SDGs. The National Committee on SDGs established in May 2017 (Order of the Prime Minister No. 63 of 12 May 2017) is a political-level body mandated to guide implementation of the SDGs in the country. The Committee includes governmental representatives, as well as representatives of civil society and academia (UNECE, 2018).

Document of Strategic Policies for the Protection of Biodiversity (DSPPB), which includes the Action Plan, as the key policy document on nature and biodiversity protection domain has taken into account several issues including the one contained in the Document of Strategic Policies for Environmental Protection: increasing the surface of PAs, formulation of Management Plans and their implementation; completing the legal framework, in line with the EU acquits on nature and environment; elimination of illegal logging and hunting, while enforcing the legislation, and activities for building capacities, and implementation of action plans for endangered species and habitats.

The integrated cross-sectorial plan will be the constitution of the coastal region development, which will promote a sustainable economic development, social integrity and protection of the nature assets for the next 15 years. The Integrated Cross-Sectorial Plan for the Coast gives the required development vision for the coastline. This plan directs sectorial developments that have national importance in the areas of tourism, environment, transport, energy, agriculture, culture, and the urban development in the territories administered by municipalities.

In the past 20 years, a number of laws and other legal acts on the environment have been drafted and approved. The Albanian national legal framework is largely harmonized with EU legislation. The Albanian legal framework regarding environmental issues is based on the Constitution of the Republic of Albania and consists of laws and bylaws, such as DCMs, ministerial acts, regulations, guidelines and standards. However, it should be noted that although the WFD has been partially transposed and a related monitoring program is in place, the MSFD has been transposed yet and the monitoring of marine waters for the moment is done regularly only for the parameters related to the Bathing Water Directive.

Albania is party to a considerable number of MEA related to biodiversity, where the most important are shown in the Table 8.

Table 8

List of MEAs and international RFMOs where Albania is party

Nr.	Name of MEA	Date (rtf = Ratification, acs = Accession, acp = Acceptance, apv = Approval, scs = Succession)	Date of entry into force (if available)
1	**Barcelona** Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean	30/05/1990 (acs)	29/06/1990
	Barcelona Convention Amendments	26/07/2001 (acp)	09/07/2004
	Dumping Protocol	30/05/1990 (acs)	29/06/1990
	Dumping Protocol Amendments	26/07/2001 (acp)	
	Emergency Protocol	30/05/1990 (acs)	29/06/1990
	LBS Protocol	30/05/1990 (acs)	29/06/1990
	LBS Protocol Amendments	26/07/2001 (acp)	11/05/2008
	SPA Protocol	30/05/1990 (acs)	29/06/1990
	SPA and Biodiversity Protocol and Annexes	26/07/2001 (rtf)	25/08/2001
	Offshore Protocol	26/07/2001 (acs)	24/03/2011
	Hazardous Wastes Protocol	26/07/2001 (acs)	19/12/2007
	Integrated Coastal Zone Management (ICZM)	04/05/2010 (acs)	24/03/2011
2	**Berne** Convention «On the conservation of wildlife and European natural habitats»	04/04/1998 (rtf)	
3	(**Bonn** Convention) Convention on the Conservation of Migratory Species of Wild Animals	16/11/2000 (acs)	01/09/2001
	Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA).	---	01/09/2001
	Agreement on the Conservation of European Populations of Night Bats (EUROBATS)		03/07/2001
	The Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area (ACCOBAMS);	22/06/2001 (acs)	05/05/1995 (MoU Signatory)
	Slender-billed Curlew	---	18/04/2002 (MoU Signatory)
	Middle-European Great Bustard	---	
4	**CITES** Convention on International Trade in Endangered Species of Wild Flora and Fauna	27/06/2003 (acs)	25/09/2003
5	**CBD** Convention on Biological Biodiversity	5/1/1994 (acs)	5/4/1994
	Cartagena Protocol on Biosafety	8/2/2005 (acs)	9/5/2005
	Nagoya Protocol on Access and Benefit-sharing	29/1/2013 (acs)	12/10/2014
	Nagoya – Kuala Lumpur Supplementary Protocol on Liability and Redress	29/1/2013 (acs)	5/3/2018
6	**GFCM**, General Fisheries Commission for the Mediterranean		10/4/1991
7	**ICCAT** International Commission for the Conservation of Atlantic Tunas		31/3/2008
8	**Ramsar** Convention on Wetlands of International Importance		29/02/1996
9	**UNCLOS** United Nations Convention on the Law of the Sea	23/6/2003 (acs)	
10	**UNFCCC** United Nations Framework Convention on Climate Change	3/10/1994 (acs)	
	Kyoto Protocol	1/4/2005 (rtf)	
	Paris Agreement	21/9/2016 (rtf)	
11	Commitment to Agenda 2030 and the Sustainable Development Goals.	4/12/2017 (Parliament Resolution)	

The main laws and bylaws related to protection of coastal and marine areas are listed in the Table 9 below:

Table 9

List of main legal acts regulating the protection of coastal and marine areas

1	Law No. 10431/11 “On the protection of environment”, amended;
2	Law No. 10119/09 “On Territory Planning,” amended;
3	Law No. 81/2017, “On protected areas”;
4	Law No. 8905/02, “On the protection of marine environment from pollution and deterioration”, amended;
5	Law No. 9587, “On Protection of Biodiversity” amended;
6	Law No. 10006/08, “On Protection of Wild Fauna”, amended;
7	Law No. 64/12, “On Fishery”, amended;
8	Law No. 103/16, “On Aquaculture” amended;
9	Law No. 10253/10, “On hunting”, amended;
10	Law No. 61/16, “On Moratorium of hunting activity in the Republic of Albania”;
11	Law No. 10463/11 “On Integrated Waste Management”, amended;
12	Law No. 111/2012, “On Integrated Water Resource Management”, amended;
13	Law No. 9115/03 “For the environmental treatment of polluted waters”, amended;
14	Law No. 10440/11, “On environmental impact assessment”, amended;
15	Law No. 10448/11 “On environmental permits”, amended;
16	DCM No. 1189/09 “On Rules and Procedures for the preparation and implementation of the national environmental monitoring program”;
17	DCM No. 57/19 “On Criteria and methodology of Zoning of Environmental Protected Areas;
18	DCM No. 177/05 “For the allowed norms of the liquid discharges and the criteria of zoning of the receiving water environment”;
19	DCM No. 256/19, “On laying down Detailed Rules for the Collection, Management and Use of Fishery Sector Data and the Support for the Scientific Advice for the Fishery National Strategy”.

4.2.2. Institutional framework

The **Ministry of Tourism and Environment** (MTE) is responsible for the development of policies and legislation on tourism and on a large number of environmental issues, including air quality, climate change, waste management, biodiversity, nature protection, sustainable management of forests and pastures, industrial pollution prevention and chemicals. The Ministry is also responsible for water monitoring. It coordinates the integration of environmental and climate change issues into agriculture, tourism, health, energy, transport, forestry and water policies.

The **National Agency of Protected Areas** (NAPA) was established in February 2015 to strengthen efforts on biodiversity conservation and management of the protected areas network. NAPA's functions include the management of protected areas, including the development and implementation of management plans, monitoring and environmental education.

The **National Environmental Agency** (NEA) is a regulatory authority in the environmental sector and the main institution responsible for monitoring and reporting on the environment. Some of its related functions include: (i) Prepare the National Programme on Environmental Monitoring and monitor the state of the environment; (ii) Develop and publish the annual state of environment report (SoER); (iii) Establish and maintain the Environmental Information System. In 2019, NEA has taken on board also some inspection role and responsibilities that were previously held by the State Inspectorate of Environment, Forestry and Water.

The **National Coastal Agency** (NCA) has been established with the mission to better manage and protect natural coastal assets as well as the promotion of the country as a tourist destination. NCA mission is to protect and develop a sustainable environment of the coastal area, through monitoring and control of all existing potential of the coastal and maritime area and environmental assets included in it, as well as control of tourist activities throughout the territory. of the Republic of Albania for the purpose of sustainable tourism development.

The **National Territorial Planning Agency** (NTPA) is an authority responsible for planning, subordinate to the Ministry responsible for territorial planning and development issues. NTPA mission is to contribute to the sustainable territorial development guided by well-planned strategies and medium and long term development programs; ensure the implementation of applicable laws and by-laws that guarantee the territorial well-planning; and facilitate professional dialogue in the field of territorial planning by disseminating the knowledge acquired during our experience in this field.

The **National Water Council** is an interministerial body chaired by the Prime Minister. It offers a high-level forum where water resources planning, and administration issues can be discussed in an integrated way. Since 2014, the technical secretariat of the Council is part of the Prime Minister's Office.

Other institutions that are related to the marine and coastal areas are the National Agency of Water Resources and the State Agency for Geospatial Information.

4.3. Transboundary issues and existing, planned or needed coordination / harmonisation at subregional or regional level

The Adriatic Sea is bordered by Albania, Bosnia and Herzegovina, Croatia, Italy, Montenegro and Slovenia. The general maritime jurisdictional situation in the Adriatic Sea is rather complex. Although not all boundaries are agreed upon, they are based on the generally applied principles of the UNCLOS. Politically, the Adriatic Sea area affiliates predominantly to the European Union, since Croatia, Italy and Slovenia are members of the EU. As such, these countries have harmonized their legislation with the EU acquis, including the MSFD and MSP. All Adriatic countries are also parties to the Barcelona Convention and should follow requirements of this international treaty.

Albania waters include the south-eastern part of the Adriatic Sea and the north-eastern part of the Ionian Sea. It borders with Greece and Montenegro on marine and coastal waters and borders with Italy only on marine waters. For the moment being there is no delimitation agreement with countries both for the Adriatic and Ionian Sea.

All indicated features of the Adriatic Sea, emphasize a need for strong cooperation and communication between the Adriatic countries in order to ensure the healthy state of the Adriatic Sea. Also the transboundary biodiversity governance should be implemented among neighbouring countries especially for the ecosystems fragmented by borders.

There have been some initiatives that are promoting the coordination and harmonisation at subregional and regional level. The most important are included below:

- Barcelona Convention Regional Activity Centres (especially SPA/RAC and PAP/RAC) through its programs and initiatives has undertaken several regional and sub-regional activities in relation to the harmonisation of the scientific research, collection of data and conservation efforts with the ultimate objective of achieving the GES of the Mediterranean Sea;

- EU thought its programs and projects has supported Albania for improving the collaboration with the neighbouring countries in the collaboration for the coastal and marine areas (mainly through the INTERREG IPA-CBC programs);

- EUSAIR - the EU Strategy for the Adriatic and Ionian Region is a macro-regional strategy adopted by the European Commission and endorsed by the European Council in 2014. The Strategy was jointly developed by the Commission and the Adriatic-Ionian Region countries and stakeholders, which agreed to work together on the areas of common interest for the benefit of each country and the whole region.

- MedPAN is the network of MPA managers in the Mediterranean. It gathers today 124 institutions and NGOs from 21 Mediterranean countries that either have direct responsibility for managing Marine Protected Areas (MPA) or are involved in the development of MPAs in the Mediterranean.

5.

Assessment of marine and coastal status and pressures and impacts on the marine and coastal biodiversity

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Albanian marine ecosystems are under significant pressure. The risks are linked to the intrinsic value of ecosystems, but also the loss of biodiversity and natural habitats which play a major role in human health, lifestyle, food production and availability of natural resources for the economic development and well-being of coastal populations.

5.1. Marine and coastal status and pressures relevant for national marine and coastal areas

The main pressures relevant for the Albanian marine and coastal areas are stated below:

5.1.1. Pollution

Pollution is problematic since several rivers discharge into the Albanian waters affecting directly their quality. In the last years, the quality of bathing waters (see Map 5) has improved, however the issues related to pollution persist. The main sources of pollution are:

Pollution from discharge of untreated urban water and solid waste – the impact of urban discharges without any prior treatment is the main source of water pollution in coastal areas. Problematic are the coastal areas where untreated urban water is discharged from hydropower stations.

Pollution from the discharge of industrial solid and liquid materials - these can come from light and food industry factories, cement factories, leather processing, ceramics, textiles, mining, metallurgy, oil and gas extraction and processing, and wood processing.

Map 5

Bathing Water Quality in Albania

Pollution from agriculture activities – following the land privatization process of '90s, agriculture production has decreased rapidly. This reduction is due to the migration of people from the rural areas toward the more urban areas as well as abroad, and the increasing expenses associated with agricultural production so reducing profitability. One positive outcome of this trend is that the use of chemicals in agriculture has become limited.

Pollution from the discharge of solid materials, mainly from mines and processing enterprises - these are related to of copper, chromium and iron-nickel ores. Their landfills are often found on riverbanks. Their amount can be up to 12.5 x 10^6 tons, of which about 9 x 10^6 of which are sterile copper ore with copper content 0.15 to 0.20%.

Although mining, metallurgical and chemical activities have declined since the 1990s, mass discharges of these discharges still pose an environmental and human health risk.

Pollution from the oil extraction and processing industry - The oil industry (extraction and processing) remains one of the main sources of pollution in inland and coastal waters, most notably for the Seman rivers (from its Gjanica branch) and the Vjosa (passing through oil and bitumen areas).

5.1.2. Hydro-technical interventions

Along the Adriatic coast, there are several port structures, which are protective of the coastline in the area of Shëngjin, Durrës and Vlora, as well as the presence of some breakwater. In the period 1991-2019, significant changes of the coastline are observed in the areas of river deltas and lagoons where there has been a lack of management by the irrigation and cleaning structures of the main canals, bringing significant changes in the geomorphology of the coastline. These changes have led to an increase of the sensitivity of agricultural and urban areas in the vicinity of floods from the sea and rivers.

The situation of coastal lagoons in Albania has been strongly influenced by different human interventions in different historical periods (mainly during the 60-80s of last century). Drainage of lagoons for opening new agriculture land, establishment of extensive agriculture drainage systems, and/or building of dams along river (mainly for hydro power generation), have strongly influenced the extension and functioning of these lagoons causing destruction or loss of some of them and/or changes in the Albanian coastline (increased coastal erosion) as result of reduced sediments transported by the rivers.

5.1.3. Waste management and marine litter

Approximately 60% of the Albanian population is living in the coastal areas. Point source pollution of coastal waters has significantly diminished, due to the fact that most of the industries are closed down, but there has been an increase of urban pollution in the coastal area caused by the tourism development mainly in the Adriatic coast and by the increasing number of inhabitants in the main Albanian cities like Tirana and Durrës (waste water and solid waste discharge on rivers and then into the sea).

During the last 15 years tourist construction along the coastal zone has not been preceded or accompanied by necessary waste management infrastructure such as water supply and sewerage, collection, transport and sanitary disposal of solid wastes. The situation is improving, in the last 7 years, 3-4 wastewater treatment plants have been built.

A large problem is the lack of proper waste integrated management system in the inland areas as well. Rivers discharge a lot of waste into the coast resulting in polluted deltas and a lot of marine litter. From an analysis carried out in Durrësi and Lalzit bay in 2015 (Gjyli *et.al*., 2020), mean litter density was found to be 333 items/100m (range: 99–510 items/100m) and 0.14 items/m^2 (0.09–0.21 items/m^2).

5.1.4. Coastal Development and Tourism

The impacts of coastal development, particularly from tourism and urbanisation have intensified over the last few years. This coastal demographic growth contributes to degraded landscapes, soil erosion, increased waste discharges into the sea, loss and fragmentation of natural habitats as well as deteriorating the state of vulnerable or endangered species. The development of tourism, and urbanisation has created economic opportunities for some, but has had also costs in the marine areas and especially in the coastal and wetland areas.

Albania is under threat due to fast development of the tourism sector. With the current model of development based on quantities, the foreseen growth of tourism in the region will continue to be detrimental for the landscape, and have an impact on soil erosion, while exercising pressure on endangered species. Concomitantly, the strain or overuse of available water resources, increasing amount of waste and discharge of pollution in the sea among others represent a cultural threat. Construction for tourism purposes has also had a very adverse impact on the fragile coastal and marine resources in the country. Based on the Albanian Tourism Strategy there have been more than 26 million overnight visitors in Albania for 2017.

However, there is no full assessment and analysis evaluating and identifying problems caused by numerous interventions in the past and the impact they have had on coastal ecosystems of Albania, measures have to be taken to address them properly.

5.1.5. Underwater noise

Research activities demonstrate that exposure to underwater noise can cause several types of adverse effects on marine animals, ranging from changes of behaviour to their death. While there are countries that have underwater noise maps available, status assessments are very scarce.

This issue should be addressed in the future for the Albanian marine waters since sources of noise such as Maritime traffic, marine research, offshore energy platforms or construction operations are or will be part of the Albanian maritime activities as well.

5.2. Critical impacts and effects on marine and coastal biodiversity

The most critical impact identified for the marine and coastal biodiversity are:

Coastal development

The number of tourists is increasing annually with 12% (if we exclude the 2020 due to the Covid-2019 pandemic conditions) and along with that the number of coastal constructions. In 2017 the area given for construction of hotels and accommodating structures was equal with the area given for the same purpose for the 2013-2016 period (INSTAT, 2018). This construction in the seaside and/or in the wetlands has put intense pressure in some of the high-biodiversity areas in Albania;

Plastic pollution

In the WWF report (Alessi et.al., 2018), it is pointed out that Albania, is one of the most problematic countries, with the highest percentage of untreated plastic waste, 73%. This ranks Albania in one of the top 4 countries with the highest norm of the untreated plastic waste in the Mediterranean, along with Montenegro, Egypt, and Libya. All the plastic coming from the river and discharged in the sea enters the trophic chain and impacts not only Albanian ecosystems but also the one of neighbouring countries;

IUU fishery

Some of the illegal fishing activities that are putting a lot of pressure in the commercial and vulnerable species stock are the following: Fishing in protected areas (under 30 meters depth, in the PAs), using illegal fishing gears (explosives, mesh sizes not in line with the regulations); targeting vulnerable species (date shell, groupers, sharks etc.); non-regulated activities (recreational fishery, lagoon fishery etc.).

Climate change

The report from the International Panel on Climate Change (IPPC, 2013) highlights the Mediterranean as one of the most vulnerable regions in the world to the impacts of global warming. The evidence that the climate is getting warmer is overwhelming. A warmer climate can be expected to disrupt the hydrological cycle, resulting in changes in the frequency and intensity of extreme events, as well as to their timing, duration and geographic distribution. In the face of the current and future impacts and threats from climate change, the viability and sustainability of socio-economic and ecological systems that make up the fisheries and aquaculture sectors will be determined by their ability to adapt to them. (Barange *et.al.*, 2018).

6.

Assessment of national priority needs and response actions

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The marine and coastal biodiversity in Albania is not properly studied, known and conserved.

6.1. Needs

There are several needs that are identified marine and coastal areas biodiversity in Albania.

There is a need for **legislative improvements**. Albania is entering in the negotiation process for the accession in EU. As such, the Albanian legislation should be approximated with the EU acquis. The MSFD has not started yet to be transposed into the Albanian legislation. The law on protection of marine environment is almost 20 years old and needs to be repealed to have a new law including all provisions of MSFD. Following the new law, several bylaws needs to be prepared to implement and enforce the new law. Biodiversity issues are not properly addressed in the other sector's legislation.

The **institutional structure** for the management of the coastal and marine habitats and biodiversity needs to be improved and clarified. There are several authorities dealing with marine and coastal waters and the new law and bylaws should clarify roles and responsibilities for the institutions. It is important that in parallel with the transposition of the MSFD directive the MSP Directive should be implemented as well.

There is a need for a national **maritime spatial planning**. There are several activities that are ongoing simultaneously in the same area that need better spatial planification. For example, Vlora bay is an area where co-exist plans to develop further aquaculture, maritime transport, coastal infrastructure, coastal and marine tourism, recreational and leisure craft and fishery but there is no common understating on the interaction among these activities.

Monitoring of coastal and especially marine habitats is insufficient. For the moment only bathing water quality is monitored in the marine waters and limited monitoring is done for the marine and coastal habitats and biodiversity (International Waterbird Census and Fishery dependent and independent data collection). There is a need to establish a monitoring program for the coastal and marine ecosystems or enlarge the existing monitoring program managed by NEA to also include the monitoring of marine and coastal ecosystems. A draft monitoring program has already been prepared by GEF-Adriatic program with the help of international and national experts.

There is a need for a **scientific institution** that is dedicated to the sea. There are several institutions such as Faculty of Natural Sciences and the Centre for Flora and Fauna (within the Tirana University); Laboratory of Fishery and Aquaculture (within the Agricultural University of Tirana); Institute of GeoSciences, Energy, Water and Environment etc. but none of them is dedicated and specialized to the studies related to coastal and marine ecosystems. An Institute related to Marine Biology and Oceanography is missing. There is a need for **scientific research** especially in some areas where there is a lack of data such as marine phyto & zooplankton, cetaceans, NIS presence and distribution etc.

Also, there is a need for continuous scientific research on effects and impacts that other activities have on the coastal and marine ecosystems and to prepare databases of presence and distribution of habitats and species in Albanian waters to be compliant with Natura 2000 requirements as well.

There is a need for **extended areas of protection** of the marine environment. There are several marine areas that require extra protection and as such to have some area-based conservation measures. The number of MPAs other areas and their related span is still limited and requires further effort to increase them.

For the existing PAs, most of the **management plans** are outdated and/or have not been regularly revised. There is a need to prepare/update new management plans that are in line with the new developments in the country and also take into account the developments in the last decade and other factors e.g., climate change, internal migration flows etc.

There is a need to increase the **MCS activities** in the fishery sector. These activities will enable not only the protection of sensitive habitats, protection of vulnerable species but also discipline some of the activities such as SSF, recreational fishery etc.

There is a need to improve the **wetlands** management approach. For the moment there is not a proper management of the coastal wetlands resulting in several stakeholders working separately and not managing these delicate systems as a whole.

There is a need to **improve the capacities** of experts related to the marine and coastal ecosystems and biodiversity. There are very few national experts dealing with these issues, they are engaged sporadically and the replacement of older experts with new ones is proceeding with slowed pace. Several fields of expertise have only one expert and in some areas, there are no properly trained experts.

There is already a good **transboundary cooperation**, but it needs to be further improved. Examples like the one of joint regular scientific campaigns for the monitoring of pelagic and demersal resources should be implemented also in other contexts. For some of the neighbouring areas or for some migratory, straddling species common measures are missing.

6.2. Urgent actions proposed

Based on the identified needs, some urgent actions proposed for the 2020-2023 period are shown below:

- New Law on protection of Marine Environment transposing the MSFD Directive;
- Preparation of the set-up for the drafting of a Maritime Spatial Plan for the Albanian waters;
- A new bylaw for the environmental monitoring that should include also the marine ecosystems based on the IMAP requirements;
- New bylaws that will regulate the recreational and sport fishery;
- An analysis of the institutional set-up related to the management of coastal and marine areas with emphasis on clarifying the roles and responsibilities of each institution;
- Preparation and update of existing database for the list of habitats and species related to coastal and marine habitats;
- Preparation/update of all management plans of coastal and marine PAs.

7.

Funding problems and opportunities

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7.1. Regular national sources, potential co-financing for international funding

Data on environmental expenditure are not yet being produced due to the lack of information and proper collection and analytical methods. The environmental protection expenditures have doubled since 2014 and, according to the Albania's Economic Reform Programme 2016–2018 (DCM No. 52 of 27.01.2016), they are planned to increase further, up to a 0.3 per cent share of GDP. In addition, investments in the environment have been growing significantly and are expected to stabilize in 2017. There are no financial sources earmarked to protected areas or to nature and biodiversity conservation. Limited financial resources are available in the state budget to cover the costs of management and maintenance of equipment and infrastructure of the protected areas.

The income-generation mechanisms are therefore sought-after for protected areas that may support local economic development, particularly tourism. (UNECE, 2018). However, there is a process ongoing to establish a financial mechanism that should enable MTE and NAPA to retain a part of the income generated from PAs (visitors, use of resources) to reuse in the PAs.

MTE co-finances several projects coming from international funding, mainly for the VAT part but also for other budget lines when it is required by the donor. However, it should be noted that this co-financing also has constraints due to the limitation of MTE budget for the co-financing of projects.

7.2. Other sources (private, public, partnership)

There are limited sources of financing related to the protection and conservation of marine and coastal ecosystems. Support for environmentally friendly development of the private sector may partially derive from the increasing actions for corporate social responsibility (CSR) related to support for private expenditure and investment in new businesses, and particularly SMEs, in a few sectors, particularly fishery, agriculture and tourism.

Philanthropic activities are very limited for the nature protection sector in Albania. Based on the daily monitoring of the philanthropic activity in the country, support to marginalized groups, followed by seasonal giving and poverty relief are the main fields of donation during last 5 years, 2014 - 2019. The biggest contributors belong to the banking and insurance sector (Partners Albania, 2017).

The Albanian government has also used often the Private Public Partnership approach (PPP), but often such approach has been criticised by civil society sector and local communities as damaging to natural resources for some of the projects.

7.3. International funds, projects, programmes, national eligibility for international programmes/funds (e.g., green funds) identified

Net official development assistance (ODA) includes disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the OECD Development Assistance Committee (DAC), by multilateral institutions and by non-DAC countries to promote economic development and welfare.

The main donor of Albania is EU. Since Albania has entered the accession negotiations process to the EU, the Instrument for Pre-accession Assistance (IPA) is quite important. IPA III (2021-2027) includes in its specific objectives: …(d) To strengthen economic and social development including through increased connectivity and regional development, agriculture and rural development and social and employment policies, to reinforce environmental protection, increase resilience to climate change, accelerate the shift towards a low-carbon economy and develop the digital economy and society; and (e) To support territorial and cross-border cooperation.

Interreg is one of the key instruments of the EU supporting cooperation across borders through project funding. Its aim is to jointly tackle common challenges and find shared solutions in fields such as health, environment, research, education, transport, sustainable energy and more.

Also there are other sources that come from EU (Albania is not fully eligible for all of them) such as Life+, Horizon 2020, funding under the European Structural and Investment Funds including the European Maritime and Fisheries Fund and regional funding, neighbourhood policy funding, Partnership Instrument funding, and development funding (EC, 2020).

From the UN organizations the most relevant for Albania are: Food and Agriculture Organization of the United Nations (FAO); United Nations Development Programme (UNDP); United Nations Environment Programme (UNEP).

The Global Environmental Facility (GEF) is also one of the main actors in supporting with projects and programs on these issues including some of GEF collaboration agencies such as: European Bank for Reconstruction and Development (EBRD); The World Bank Group (WBG); Conservation International (CI); International Union for Conservation of Nature (IUCN); World Wildlife Fund (WWF).

There are also several bilateral donors working in Albania and dealing with the nature protection and biodiversity sector, such as: Italian Agency for Development Cooperation (AICS), Swedish Agency for Development Cooperation (Sida), *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ) etc.

Other organization that have supported initiatives in the coastal and marine ecosystems include: Conservatoire du Littoral; General Fisheries Commission for the Mediterranean; FAO AdriaMed; MedPAN; Prince Albert II of Monaco Foundation;

No national environmental fund or state budget line for an environment-related purpose has been established in Albania. According to the Law on Environmental Protection, the income from permit fees and fines for not complying with the environmental legislation should be used to finance environmental protection activities, such as mitigation of pollution sources or promoting projects for rehabilitation of damaged zones. Revenues from environmental taxes and fines are redistributed to other institutions and not allocated properly to the environmental protection or management purposes. The Government has not worked on arranging an environmental fund or a budget line until now, which is also due to the need to keep more flexibility for the Ministry of Finance and Economy in managing public expenditure and finance for macroeconomic stability purposes.

8.

Conclusions and recommendations

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CONCLUSIONS

Although a small country, Albania is distinguished for its rich biological and landscape diversity. The presence and combination of a high diversity of ecosystems and habitats, creates ideal conditions for hosting and maintaining a large number of flora and fauna species, including several endemic and sub-endemic elements. Coastal and marine areas are the richest in terms of biological diversity.

Albanian marine ecosystems are complex with different habitats and species in the Adriatic and Ionian Sea. Apart from the Karaburun – Sazani MPA, there are other areas of interest such as Porto Palermo, Drini bay, Patok bay, Otranto strait that are quite important in terms of species and habitats.

Albanian coastal and marine ecosystems include several areas that have values and are recognized some protected status:

- one Marine Protected Areas (Karaburun - Sazan National Park - IUCN Cat. II);
- one EBSA (South Adriatic Ionian Straight);
- one CCH (Sazani Island – Karaburuni Peninsula);
- one IMMA (Ionian Archipelago);
- three Ramsar sites (Lake Shkodra and river Buna; Karavasta lagoon system; and Butrinti);
- one SPAMI (Karaburun – Sazan National Marine Park);
- 9 declared IBAs (Liqeni i Shkodrës; Laguna e Nartës; Laguna e Karavastasë; Delta e Drinit; Gjiri i Vlorës-Karaburun-Mali Çikës; Liqeni i Butrintit; Laguna e Patokut; Gjiri i Lalzit; Velipoja).

There are several species that inhabit the Albanian coastal and marine waters that are part of Annex II & III of SPA/BD protocol, such as *Corallium rubrum*, *Homarus gammarus*, *Lithophaga lithophaga*, *Lithophyllum byssoides*, *Posidonia oceanica*, *Thunnus thynnus*, *Valencia letourneuxi*, etc.

Albania is part of all the MEA that are relevant to the conservation of coastal and marine ecosystems. From the analysis carried out, the only international agreement related to this report that Albania has not signed is The Memorandum of Understanding on the Conservation of Migratory Sharks.

Albanian's marine habitats are precious national assets. Their ecological and economic importance are greatly threatened by both human activity and natural forces. Habitat conversion and degradation resulting from industrial, residential, and recreational activities and pollution are adversely affecting the ecological diversity and balance required to maintain the health of each ecosystem, including important fisheries resources. Albanian marine ecosystems are under significant pressure.

The risks are linked to the intrinsic value of ecosystems, but also the loss of biodiversity and natural habitats which play a major role in human health, lifestyle, food production and availability of natural resources for the economic development and well-being of coastal populations. The coastal wetlands are at significant pressure coming from both human activities and climate change effects.

Protection and preservation of natural habitats are inherently better than waiting for damage or loss to occur, but economic incentives to encourage preservation of marine habitat in a natural state are few for the moment.

Current scientific knowledge is far from the one required so that can be used effectively to protect, enhance, restore, and create coastal and marine habitats. There is no regular monitoring of the marine ecosystems and some habitat types and species are poorly studied or not studied at all on Albanian waters.

Data, experts, funding and responsibilities are distributed in different institutions and there is no common umbrella for the proper management of coastal and marine ecosystems. Most of lagoons are PAs but they are at heavy pressures from other users (tourism, fishery, infrastructure projects etc.).

There is a good collaboration with neighbouring countries, but the number of joint activities and assessments is still low. There is a need to involve young researchers from Albanian universities in the studying of coastal and marine habitats especially for the habitats and groups that are not already covered (e.g. coralligenous habitats, crustaceans, echinoderms, etc.).

RECOMMENDATIONS

Based on this analysis of all issues related to the coastal and marine ecosystems in the Albanian waters and in the light of the conclusions formulated above, it is recommended that:

- A national legislative framework to prevent or, when development is determined to be in the national interest, offset the further degradation, conversion, and loss of coastal and marine habitats should be established. The policy, that should transpose the MSFD directive, should specify goals and establish a period for its implementation. When possible, incorporate the protection of biodiversity in the legislation of related sectors.

- There is a need to increase the number of MPA in Albanian waters. There are already two other areas identified (Porto Palermo and Rodoni bay) that are potential areas for establishment of MPAs due to their values.

- There is an urgent need to improve the management of the coastal lagoons in order to adjust the fishery, touristic and urbanization pressure toward sustainable levels. Management plans for all lagoon PAs should be revised to protect their values from deterioration and unsustainable exploitation. Orikumi lagoon should have a PA status as well. Climate change impacts should be considered as well when managing the Albanian lagoons.

- Monitoring regimes should be designed to contribute to the advancement of scientific knowledge needed for both coastal and marine habitats and should serve to the purpose of the GES assessment both for marine and transitional waters. There is a need for an established database for the NIS, and also to populate the existing databases (National Network of Biodiversity of Albania - BioNNA) with the datasets for coastal and marine species. Monitoring should be carried out on regular basis and by including the parameters and methodologies already present in the IMAP resource documents.

- Posidonia meadows need to be reassessed to see how they have evolved in the last decade, while coralligenous habitats should be studied in the entire Albanian territorial sea.

- For all PAs or areas with high biodiversity values, research on completing the list of species and habitats to be added to the Annexes of BHD should be carried out. This list should be prepared taking into account the future establishment of Natura 2000 network in Albania.

- The capacity building is needed for young experts working into coastal and marine ecosystems since some of the taxas are poorly studied, assessments are missing or done sporadically, and not coastal and marine areas are covered by monitoring. In the future academic institutions should increase their involvement in the monitoring of the sea and a research institution dedicated to the sea is deemed important from all stakeholders.

- There is a need to regulate the fishing effort especially for the recreational fishery (especially in the Ionian Sea) and SSF (for the entire coastline). A joint effort from different stakeholders to combat the IUU fishery is also needed.

- State funding should increase for the monitoring of coastal and marine ecosystems. Most of national monitoring should be carried out on regular basis coming from national budgets and not relying on projects or external funding.

- All stakeholders that can impact the coastal and marine biodiversity should be involved in the efforts to protect these values.

- Transboundary cooperation should be enforced. The main areas where collaboration is sought is: (i) the study of adjacent areas among countries; (ii) study of species that require regional/subregional efforts (cetaceans, marine turtles, NIS etc.); (iii) share of knowledge, capacities and databases; and (iv) preparation and implementation of regional project related to marine and coastal ecosystems.

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Annexes

Annex I

List of the identified phytoplanktonic counting categories collected along the Albanian coast

Diatoms

Achnanthes sp.
Amphiprora alata Kützing
Asteromphalus heptactis (Brébisson) Ralfs in Pritchard
Cerataulina pelagica (Cleve) Hendey
Chaetoceros affinis Lauder
Chaetoceros decipiens Cleve
Chaetoceros peruvianus Brightwell
Chaetoceros cf. *subtilis* Cleve
Chaetoceros sp.
Cocconeis sp.
Coscinodiscus sp.
Cylindrotheca closterium (Ehrenberg) Lewin et Reimann
Dactyliosolen fragilissimus (Bergon) Hasle
Diploneis sp.
Guinardia flaccida (Castracane) H.Peragallo
Guinardia striata (Stolterfoth) Hasle
Hemiaulus hauckii Grunow ex Van Heurck
Lauderia annulata Cleve
Leptocylindrus danicus Cleve
Lioloma pacificum (Cupp) Hasle
Lithodesmium undulatum Ehrenberg
Navicula spp.
Nitzschia longissima (Brébisson) Ralfs
Pleurosigma elongatum W. Smith
Proboscia alata (Brightwell) Sundström
Pseudo-nitzschia cf. *delicatissima* (Cleve) Heiden
Pseudo-nitzschia galaxiae (Hasle) Hasle
Pseudo-nitzschia cf. *pseudodelicatissima* (Hasle) Hasle
Pseudosolenia calcar-avis (Schultze) Sundström
Rhizosolenia styliformis Brightwell
Striatella unipunctata (Lyngbye) C.Agardh
Synedra undulata (J.W.Bailey) Gregory
Tabellaria fenestrata (Lyngbye) Kützing
Thalassionema frauenfeldii (Grunow) Hallegraeff
Thalassionema nitzschioides (Grunow) Hustedt
Thalassiosira rotula Meunier

Dinoflagellates

Alexandrium cf. *fundyense* Balech
Alexandrium sp.
Amphisolenia bidentata Schröder
Centrodinium elongatum Kofoid
Ceratium candelabrum (Ehrenberg) Stein
Ceratium furca (Ehrenberg) Claparède et Lachmann
Ceratium fusus var. *seta* (Ehrenberg) Sournia
Ceratium horridum (Cleve) Gran
Ceratium massiliense (Gourret) Jörgensen
Ceratium minutum Jörgensen
Ceratium pentagonum Gourret
Ceratium tripos (O.F.Müller) Nitzsch
Ceratocorys horrida Stein
Cochlodinium polykrikoides Margalef
Corythodinium tesselatum (Stein) Loeblich et Loeblich
Dinophysis recurva Kofoid et Skogsberg

Dinophysis uracantha Stein
Goniodoma polyedricum (Pouchet) Dodge
Gonyaulax spinifera (Claparède et Lachmann) Diesing
Gymnodinium heterostriatum Kofoid et Swezy
Gymnodinium marinum Kent
Gymnodinium simplex (Lohmann) Kofoid et Swezy
Gymnodinium sp.
Gyrodinium fusiforme Kofoid et Swezy
Gyrodinium lachryma (Meunier) Kofoid et Swezy
Gyrodinium sp.
Heterocapsa niei (Loeblich III) Morrill et Loeblich III
Heterocapsa triquetra (Ehrenberg) Stein
Histioneis voucki Schiller
Karlodinium veneficum (Ballantine) J.Larsen
Karlodinium cf. *vitiligo* (Ballantine) J.Larsen
Lingulodinium polyedrum (Stein) Dodge
Mesoporos globosus (Schiller) Lillick s
Noctiluca scintillans (Macartney) Kofoid et Swezy
Oblea sp.
Ostreopsis sp.
Oxytoxum crassum Schiller
Oxytoxum longiceps Schiller
Oxytoxum minutum Rampi
Oxytoxum cf. *punctulatum* Rampi
Oxytoxum variabile Schiller
Oxytoxum sp.
Pentapharsodinium tyrrhenicum (Balech) Montresor et al.
Phalacroma rotundatum (Claparède et Lachmann) Kofoid et Michener
Podolampas palmipes Stein
Polykrikos schwartzii Bütschli
Prorocentrum compressum (Bailey) Abé ex Dodge
Prorocentrum micans Ehrenberg
Prorocentrum triestinum Schiller
Protoperidinium bipes (Paulsen) Balech
Protoperidinium cerasus (Paulsen) Balech
Protoperidinium conicum (Gran) Balech
Protoperidinium depressum (Bailey) Balech
Protoperidinium diabolum (Cleve) Balech
Protoperidinium globulum (Stein) Balech
Protoperidinium mite (Pavillard) Balech
Protoperidinium oblongum (Aurivillius) Parke et Dodge
Protoperidinium parthenopes Zingone et Montresor
Protoperidinium pentagonum (Gran) Balech
Protoperidinium steinii (Jörgensen) Balech
Pyrocystis robusta Kofoid
Scrippsiella precaria Montresor et Zingone
Scrippsiella trochoidea (Stein) Loeblich III
Scrippsiella spp.
Torodinium robustum Kofoid et Swezy
Torodinium teredo (Pouchet) Kofoid et Swezy

Coccolithophorids

Anoplosolenia brasiliensis (Lohmann) Deflandre
Calyptrosphaera oblonga Lohmann
Emiliania huxleyi (Lohmann) Hay et Mohler
Rhabdosphaera clavigera Murray et Blackman
Syracosphaera pulchra Lohmann

Others

Chrysochromulina cf. *camella* Leadbeater et Manton
Dictyocha fibula Ehrenberg
Dictyocha octonaria (Ehrenberg) Hovasse
Eutreptiella marina Cunha

Annex II

Mesozooplankton taxa found across the Albanian boundary zone

Hydromedusae

Rhabdoon singulare
Obelia sp.
Eirene viridula
Liriope tetraphylla
Aglaura hemistoma
Persa incolorata
Rhopalonema velatum
Solmundella bitentaculata
Solmissus albescens

Calycophorae

Lensia conoidea
Lensia multicristata
Lensia subtilis
Lensia meteori
Muggiaea atlantica
Eudoxoides spiralis
Sphaeronectes koellikeri
Sphaeronectes irregularis
Sphaeronectes fragilis

Pteropoda

Limacina inflata
Limacina trochiformis
Creseis acicula
Creseis virgula
Hyalocylix spp.

Cladocera

Evadne spinifera

Copepoda

Calanus helgolandicus
Mesocalanus tenuicornis
Nannocalanus minor
Pareucalanus attenuates
Paracalanus denudatus
Paracalanus parvus
Calocalanus spp.
Mecynocera clausi
Clausocalanus lividus
Clausocalanus arcuicornis
Clausocalanus jobei
Clausocalanus paululus
Clausocalanus pergens
Clausocalanus furcatus
Ctenocalanus vanus
Aetideus armatus
Euchirella messinensis
Euchaeta acuta
Pareuchaeta hebes
Euchaeta marina
Scolecithrix bradyi
Scolecithricella spp.
Centropages typicus
Centropages kröyeri
Isias clavipes
Temora stylifera
Pleuromamma abdominalis
Lucicutia flavicornis
Lucicutia ovalis
Heterorhabdus papilliger
Haloptilus acutifrons
Haloptilus longicornis
Candacia giesbrechti
Candacia tenuimana
Acartia clausi
Oithona atlantica
Oithona nana
Oithona similis
Oithona plumifera
Oithona setigera
Sapphirina spp.
Cyclopoida-oncaeids
Corycaeus spp.
Euterpina accutifrons
Macrosetella gracilis
Clytemnestra rostrata
Mormonilla minor

Hyperiidea

Hyperia glabra
Phoronima sp.
Vibilia sp.
Eupronoe sp.

Euphausiacea larvae

Stylocheiron abbreviatum
Euphausia krohnii
Thysanoessa gregania
Thysanopoda aequalis
Stylocheiron longicorne

Chaetognatha

Sagitta enflata
Sagitta minima
Sagitta setosa
Sagitta serratodentata
Sagitta decipiens
Sagitta lyra

Appendicularia

Oikopleura dioica
Oikopleura longicauda
Oikopleura fusiformis
Oikopleura villafrancae
Oikopleura parva
Oikopleura albicans
Appendicularia sicula
Fritillaria aequatorialis
Fritillaria borealis
Fritillaria pellucida

Doliolids

Annex III.

Annex 3 - Checklist of Chondrichthyes species in Albanian waters (source: Albanian ichthyology & SafeShark project)

No.	Latin Name	Albanian name
1	*Heptranchias perlo*	Peshkaqen me dhëmbë
2	*Hexanchus griseus*	Peshkaqen kokështypur
3	*Carcharias taurus*	Peshkaqen i egër
4	*Odontaspis ferox*	Peshkaqen i egër dhëmbëvogël
5	*Carcharodon carcharias*	Peshkaqen njeringrënës
6	*Isurus oxyrinchus*	Peshkaqen tonil / Peshkaqen turishkurtër
7	*Lamna nasus*	Tonil
8	*Cetorhinus maximus*	Peshkaqen shtegtar / Peshkaqen gjigant
9	*Alopias vulpinus*	Peshkaqen dhelpër / Peshkaqen bishtshpatë
10	*Galeus melastomus*	Gojëziu
11	*Scyliorhinus canicula*	Mace deti / Mica e detit
12	*Scyliorhinus stellaris*	Daci i detit
13	*Galeorhinus galeus*	Peshk qen
14	*Mustelus asterias*	Pëllumb me yllëza
15	*Mustelus mustelus*	Peshk pëllumb / palombi
16	*Carcharhinus melanopterus*	Peshkaqen pendëzi
17	*Carcharhinus plumbeus*	Peshkaqen i hirtë
18	*Prionace glauca*	Peshkaqen jeshil / Peshkaqeni blu
19	*Sphyrna zygaena*	Peshk çekiç / peshk çekan
20	*Dalatias licha*	Djalli i natës
21	*Etmopterus spinax*	Peshkaqen barkzi
22	*Oxynotus centrina*	Peshk derr
23	*Centrophorus cf granulosus*	Peshkaqeni gllabërues / Peshkaqeni kokërrzor
24	*Squalus acanthias*	Peshkaqen gjëmbor
25	*Squalus blainville*	Peshkaqen dygjilpërësh
26	*Echinorhinus brucus*	Peshkaqen therës / Peshkaqen me ferra
27	*Squatina oculata*	Skadhinë / Peshkengjëll me njolla
28	*Squatina squatina*	Skadhinë e butë / Peshku engjëll
29	*Tetronarce nobiliana*	Piskë / Peshk elektrik i zeshkët
30	*Torpedo marmorata*	Peshk elektrik i mermertë
31	*Torpedo torpedo*	Peshk elektrik
32	*Rhinobatos rhinobatos*	Peshk kitarrë
33	*Dipturus cf batis*	Raxha me turi / raxha skijatore
34	*Dipturus oxyrinchus*	Raja turigjatë
35	*Leucoraja fullonica*	Raxha gjëmbore
36	*Raja asterias*	Ferrzë / Raxha me yjëza
37	*Raja clavata*	Raja / shori / dhelpra e detit
38	*Raja miraletus*	Raxha me dy pika / Raxha e zeshkët
39	*Raja radula*	Raja therëse / Raja turishtypur
40	*Raja undulata*	Raja mozaik
41	*Rostroraja alba*	Raxhë e bardhë
42	*Bathytoshia centroura*	Neshtelije / trigoni bishtgjatë
43	*Dasyatis pastinaca*	Shkotërr / trigoni / bishtmiu
44	*Gymnura altavela*	Aeroplankë / raja flutur therëse
45	*Myliobatis aquila*	Shqiponjë deti
46	*Mobula mobular*	Lopë deti / Djalli detit
47	*Chimaera monstrosa**	Kokënjësorja / Kimera / Peshk lepur

SPA/RAC WORKING AREAS

*SPA/ RAC, the UNEP/ MAP **Specially Protected Areas Regional Activity Centre**, was created in 1985 to assist the Contracting Parties to the Barcelona Convention (21 Mediterranean contries and the European Union) in implementing the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD Protocol).*

POST-2020 SAPBIO

Strategic Action Programme for the **Conservation** of **Biodiversity** and **Sustainable Management** of **Natural Resources** in the **Mediterranean Region**

SPAMI

Specially Protected Areas of **Mediterranean Importance**

Marine turtles

Cetaceans

Specially Protected Areas

Monitoring

Mediterranean Monk Seal

Cartilaginous fishes
(Chondrichtyans)

Coralligenous and other calcareous bio-concretions

Marine vegetation

Marine and coastal bird species

Listed in Annex II of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean

Dark Habitats

Habitats and species associated with seamounts, underwater caves and canyons, aphotic hard beds and chemo-synthetic phenomena

Species introduction and invasive species

POST-2020

SAP BIO

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Specially Protected Areas Regional Activity Centre (SPA/RAC)
Boulevard du Leader Yasser Arafet
B.P. 337 - 1080 - Tunis Cedex - Tunisia
+216 71 206 649 / +216 71 206 485
car-asp@spa-rac.org
www.spa-rac.org

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This publication has been prepared
with the financial support of the MAVA foundation