



REPUBLIKA E SHQIPERISË  
MINISTRIA E MJEDISIT, PYJEVE  
DHE ADMINISTRIMIT TË UJËRAVE

# Protected area gap assessment, marine biodiversity and legislation on marine protected areas



Tirana - March 2010



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# **PROTECTED AREAS GAP ASSESSMENT, MARINE BIODIVERSITY AND LEGISLATION ON MARINE PROTECTED AREAS**

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## **Acronyms and Abbreviations**

AL	Albania
BSAP	Biodiversity Strategy and Action Plan
ASCI	Areas of Special Conservation Interest
AULEDA	Aulona Local Economic Development Agency
BIO SAP	Biodiversity-Strategic Action Plan for Marine and Coastal Biodiversity
BRI	Biological Research Institute
CAMP	Coastal Area Management Program
CBD	Convention on Biological Diversity
CITES	Convention for International Trade in Endangered Species
CHM	Clearing House Mechanisms
CNPPA	Commission on National Parks and Protected Areas
CoM	Council of Ministers
COP	Conference of the Parties
CTAAR	Council of Territorial Adjustment of the Albanian Republic
CZMP	Coastal Zone Management Plan
DCM	Decision of Council of Ministers
DFS	District Forest Service
DNPP	Directorate of Nature Protection Policies
EA	Ecosystem Approach
ECNC	European Commission National Conservation
EEA	European Environmental Agency
EECONET	European Ecological Network
EEZ	Exclusive economic zone
EIA	Environmental Impact Assessment
EU	European Union
FRI	Fishery Research Institute
FYROM	Former Yugoslav Republic of Macedonia
FAO	Food and Agriculture Organization of the United Nations
FD	Fishery Directorate
GBS	Global Biodiversity Strategy
GDFP	General Directorate of Forests and Pastures
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GEF/SGP	Global Environmental Facility/Small Grant Programme
GES	good environmental status
GIS	Geographic Information System
GNP	Gross National Product
GoA:	Government of Albania
GPA	Global Program of Action for Protection of the Marine Environment from Land Based Activities
ICZM	Integrated coastal zone management
IFPR	Institute of Forests and Pastures Research

IHM	Institute of Hydrometeorology
IMO	International Maritime Organisation of the United Nations
IUCN	International Union for Conservation of Nature
K-V-MPA	Karaburuni-Vlora Marine Protected Area
LAC	Limits of Acceptable Change
LG	Local Government
LOSC	United Nations Convention on the Law of the Sea
LPA	Landscape Protected Area
MAP	Mediterranean Action Plan
MAFPC	Ministry of Agriculture, Food and Protection of Consumers
MARPOL	Convention on Prevention of Pollution from Ships
MB	Management Boards
MDGs	Millennium Development Goals
MEFWA	Ministry of Environment, Forest and Water Administration
METAP	Mediterranean Action Plan
MKOE	MillieuKontakt Ost Europa
MNS	Museum of Natural Sciences
MN	Montenegro
MoAF	Ministry of Agriculture and Food
MoE	Ministry of Environment
MoLG	Ministry of Local Government
MoTA&T	Ministry of Territorial Adjustment and and Tourism
MP	Management Plan
MPA	Marine Protected Area
NBSAP	National Biodiversity Strategy and Action Plan
NCNB	National Council for Nature and Biodiversity
NCSA	National Capacity Self-Assessment
NCTA	National Council of Territorial Adjustment
NGO	Non Governmental Organisation
NSSD	National Strategy for Socio-Economic Development
PA	Protected Area
PAMU	Protected Area Management Unit
PEEN	Pan-European Ecological Network
PESBLD	Pan-European Strategy on Biological and Landscape Diversity
PLPA	Proposed Landscape Protected Area
PoWPA	Program of Work on Protected Areas
PSSA	Particularly sensitive sea area
REA	Regional Environmental Agency
REC	Regional Environmental Centre
RFU	Regional Facilitation Unit
RNPA	Representative Network of Protected Areas
SB	State Budget
SPA	Specially Protected Areas

SPA/RAC	Specially Protected Areas/Regional Activity Center
TOR	Terms of Reference
UNCED	United Nations Conference on Environment and Development
UNFCCC	United Nations Framework Convention on Climatic Changes
UNDP	United Nations Development Program
UNEP	United Nations Environmental Program
UNESCO	United Nations Education and Scientific Cooperation Organization
VC	Visitor Centre
WFD	Water Framework Directive
WTO	World Tourism Organisation

## Preface

The objective of the project was to implement some of key recommendations relating to country's participation in the Programme of Work on Protected Areas which included the need for a comprehensive ecological gap assessment for the protected area system, and establishment of a policy environment and knowledge on marine protected areas.

Despite the sea presence, there has not been yet a Marine Protected Area (MPA) in Albania, but only national parks considering mainly terrestrial ecosystems. Marine protected areas are a practical way of conserving marine biodiversity, maintaining the productivity of marine ecosystems and contributing to the economic and social welfare of human communities. Establishment of MPAs and no-take zones will be beneficial for fisheries management as it will seek to make fisheries sustainable in the long term. In addition, ecotourism development and local economy would benefit in the short and long run (this will include cost benefit analysis and monitoring).

The project addressed key gaps of the PA system in Albania in general (by identifying and planning to cover the key biological gaps), and more specifically marine areas (as this has been the weakest element of the PA system so far). The efforts also elaborated the key priority actions related to the working program on PA that Albanian environment authorities have identified.

The project team of national and international experts has prepared the following reports:

The gap assessment of the system of PAs in Albania (Genti Kromidha);

The assessment of marine biodiversity and potential MPAs (Prof. Lefter Kashta & Dr. Sajmir Beqiraj); Proposal for a Marine protected Area in Albania (Dr. Virginie Tilot);

The legislation framework for PA and marine conservation (Ermira Koçu and Nienke van der Burgt with contribution from Paul Goriup and Stephen Hodgson);

The accompanying maps have been compiled by Albana Zotaj.

The following document represents consolidated material which integrates in a more practical way the contributions of the project team that are mentioned above and more specifically: :

- Evidences the highlighted issues related to gap assessment of the PA system in Albania;
- Describes the situation on marine biodiversity conservation and MPAs in Albania;
- Describes the biodiversity, natural and cultural values of the proposed potential MPAs and illustrates the fulfillment of the relevant criteria for MPA proclamation;
- Evidences the highlighted issues related to the proposal for the first MPA in Albania;
- Evidences the gaps of legislation related to marine conservation and highlights the proposals for improvement and approach to the relevant European legislation.

## Acknowledgement

This publication was accomplished with assistance and support of GEF, UNDP Albania and MoEFWA of Albania.

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## Introduction

Albania is endowed with a natural heritage as rich as its cultural heritage. The country's future is dependent on the wise use of its natural resources. The government of Albania is committed to the conservation of the country's renewal and non-renewable natural heritage, for the benefit of present and future generations. The establishment of a National Protected Areas network aims at maintaining the diversity and viability of the various components of Albanian's natural heritage, and to insure the sustainable utilization of the natural resources within them.

The objective of the project is, building on the recent WB study on the protected area system in Albania, to implement some of its key recommendations relating to country's participation in the Programme of Work on Protected Areas. These included a need for a comprehensive ecological gap assessment for the protected area system, and a need for establishment of a policy environment and knowledge on marine protected areas.

In order to strengthen the implementation of the National action plan on CBD Programme of Work on Protected Areas (Annex 3), Memorandum of Understanding between WWF European Policy Programme International Ass. Rome Branch and the Ministry of Environment, Forests and Waters Administration was signed in 2007, on cooperation in developing common actions in support of the CBD PoWPA implementation in Albania, in the context of the wider Dinaric Arc Ecoregion. The general objectives of this collaboration are those identified in Protected Areas for a Living Planet - Dinaric Arc Ecoregion Project (Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, and Albania), including supporting data and inventory needs, institutional capacity building, creating an enabling policy framework, ensuring financial sustainability of protected areas and national system of protected areas, assessing management effectiveness of existing PAs, developing management plans that would preserve "favourable conservation status" of habitats and species of European importance, developing an effective system for monitoring of biodiversity, ensuring that governmental and non-governmental stakeholders contribute to the implementation of the activities under this MoU, establishing and strengthening regional networks and trans-boundary protected areas, and other forms of collaboration between neighbouring protected areas across national boundaries, within the Dinaric Arc Ecoregion.

Although there are protected areas and different projects are being run, Albania has not yet drawn up a comprehensive inventory of biodiversity data that could be used for further protected areas planning. Apart from the Global Environment Facility (GEF) grant that assisted the development of the national strategy and action plan for biological and landscape diversity conservation, as well as the preparation of the Coastal Zone Management Project, Albania received very little international assistance to protect biodiversity and marine, coastal ecosystems.

Despite the sea presence, there is no Marine Protected Area (MPA) in Albania, only national parks considering mainly terrestrial ecosystems. The Albanian coastal region, with a total length of about 429 km, in general is preserved more or less in its natural state. But on the other hand it is a fact that the uncontrolled human activity has damaged extensively the ecological values of the coastal area of Albania.

Marine waters of Albania, in spite of being very scanty and poorly studied and surveyed so far, are distinguished for their high level of biological diversity and very well developed littoral and benthic communities (Anonymous, 2002).

Large, meadow-forming species of *Posidonia oceanica* is the dominant seagrass species on Albanian coast in terms of cover/abundance. The *Posidonia oceanica* beds in the Adriatic coast of Albania are rare and isolated. This seems to be linked to the effect of freshwater flows and high values of suspended materials coming down from the rivers.

Well developed *Posidonia* meadows are found along the littoral of Cape Rodoni, near Porto Romano and Vlora bay. Extensive *Posidonia oceanica* meadows cover the shallow waters of all Ionian south of Vlora. Their state is considered as normal according to their density, leaves production and rhizome growth rate (Kashta *et al.*, 2005; 2007)

In some localities with subnormal low density values must have been object of human activity impacts, creating regressions phenomenon until “matte” morte or dead “matte”.

An international project aimed at mapping (GIS) *Posidonia* meadows along the Albanian coast, collect scientific information on the meadows and, through bottom-up-approach, promoting the protection of *Posidonia oceanica*, is coming to the end.

The marine environment along the Adriatic Coast is affected by the considerable pollution of the last 30 years, both by discharge into the sea of polluted river water and by direct discharge of untreated urban and industrial wastewater (Anonymous, 2002).

The intensive agricultural activity, developed in this area, represent another source (nutrients and pollutants) that impact seagrass beds.

Another factor of the last ten years that is having significant impacts on the marine and coastal ecosystems is the creation of new resident areas and enlargement of the existing ones along the coast, including the construction and housing along the beach and seashore. The presence of an increasing number of people in the coastal area is accompanied by an increase of water pollution (Anonymous, 2002).

The lagoons and their surrounding areas are of very present in the coastal area and of special concern, particularly for the avifauna. In 3% of the territory that covers the coastal wetlands are present more then 70% of the country biodiversity value. The most important wetlands for the wintering birds along the Albania's coast are Karavasta, Narta and Kune-Vaini lagoons. These wetlands serve as a haven for more than 6% of the wintering individuals of the European population of the Dalmatian Pelican *Pelecanus crispus*. Dolphins' *Delphinus delphis* and *Tursiops truncatus* visit the marine and coastal waters of Albania, while *Stenella coeruleoalba* is an occasional visitor. *Delphinus delphis* is a vulnerable species, whereas *Tursiops truncatus* is a rare species. The Mediterranean seal *Monachus monachus*, a species threatened with extinction is also a very rare, occasional visitor to the Albanian coastal waters.

Establishment of MPAs and no-take zones will be beneficial for fisheries management as it will seek to make fisheries sustainable in the long term. These activities will be based on the involvement and participation of fishermen in this process who would become owners and ‘caretakers’ of no-take zones and MPAs. In addition, ecotourism development and local economy would benefit in the short and long run (this will include cost benefit analysis and

monitoring). For example, with this approach fish will be provided by locals from their sustainable fisheries and sustainable mariculture farms (need for certification). In addition, local restaurants and hotels can become part of this initiative establishing special seafood festivals, educating tourists about the sea food species that are sustainably managed, and are not endangered and threatened by fishing, pollution etc. ('greening of fisheries industry').

Establishment of MPA and no-take zones will increase scientific understanding, and enhance non-extractive human activities related to tourism and recreation.

The present project (i) addresses the key gaps of the protected areas system in Albania in general (by identifying and planning to cover the key biological gaps), and (ii) marine areas more specifically (as this has been the weakest element of the protected area system so far). This addresses the key priority actions for PoWPA identified by Albania.

# 1. GAP ASSESSMENT OF THE SYSTEM OF PAS IN ALBANIA

## 1.1. *The system of Protected Areas in Albania*

### 1.1.1. Background

Environment protection and sustainable use of nature resources is one of the priorities of Albanian Government. Halting environment degradation, prevent losing important nature values, reducing air and water pollution, control of soil erosion, stopping illegal forest harvesting are some of the main concerns the government has to deal with. Strengthening and enlargement of protected areas system is also an important priority and an appropriate tool to guarantee not only the preservation of natural values and biodiversity but even the sustainable use and economical development of these areas and communities living within or around them.

The protected areas include some of the most important natural values of the country from both the ecologic and economic point of view. Restructuring and enlargement of the protected areas system, development of zoning concepts and management plans and building and strengthening management capacities are part of the policy and strategy of the Ministry of Environment, Forests and Water Administration to improve protected areas management and achieve European Union standards and Government commitments on nature protection.

**Protected areas are important because they:**

- ◆ help maintain the diversity of ecosystems, species, genetic varieties and ecological processes, which are vital for support of life on Earth;
- ◆ provide vital services and goods from nature that support peoples' livelihoods, including water, clean air, climate and biological control, and aesthetic and spiritual values;
- ◆ have important intrinsic values as representative of the world's wilderness, as repositories of outstanding areas of living richness, for conserving scenic and cultural values of significance;
- ◆ are often the home of people with traditional cultures and irreplaceable knowledge of nature;
- ◆ may be models of sustainable use of resources which can be applied elsewhere; and
- ◆ have immense scientific, educational, cultural, recreational and spiritual value.

Protected areas are one of the greatest legacies that humanity can leave for future generations to ensure that our descendants have access to nature and to the material and non-material benefits they provide.

The protected areas exist in a rapidly changing environment. There are many issues, that represent both opportunities and threats to protected areas, stemming from climate change,

invasive species, fragmentation of the natural landscape, increasing urbanization and growing demands upon natural resources.

The “in situ” nature preservation in Albania started some 50 years ago. But it took a stronger development after 1990. There are currently about 797 protected areas (including 750 Nature Monuments) in Albania, covering around 13 % of the total land surface of the country. There are no marine protected areas in Albania yet.

Ministry of Environment, Forests and Water Administration (MEFWA) is the main institution responsible for the protection of environmental values in Albania. According to the legal provisions, MEFWA identifies protected areas and approves management plans.

The administration and management of protected areas is based on Law No. 8906 dated 6 June 2002 “On Protected Areas”. The object of this law is the declaration, preservation, administration, management and use of protected areas and their natural and biological resources; the facilitation of conditions for the development of environmental tourism, for the information and education of the general public and for direct or indirect economic profits, by the local population, by the public and private sector.

This law regulates the protection of six categories of protected areas, applied in the territory of the Republic of Albania. The categorization of areas, the status, and level of protection for each area is based on the criteria of the World Centre of Nature Conservation (IUCN).

The National Biodiversity Strategy and Action Plan, understanding and appreciating the importance of Protected Areas for the preservation of biodiversity, have recommended expanding Protected Areas and strengthening their management as high priority objectives for the country. Establishment of the Ecological Network is a long process which will be accompanied by a programme to help understand the Ecological Network, its planning and establishment, and to promote public participation and local community involvement in this process.

### **1.1.2. International developments**

The Convention on Biological Diversity (CBD), that was signed by Albania on January 5<sup>th</sup>, 1994, considers the establishment and management of Protected Areas as one of the main mechanisms for biodiversity protection and ecological management. The Global Biodiversity Strategy and the Pan- European Strategy on Biological and Landscape Diversity (PESBLD), initiatives where Albania is actively participating, understanding and appreciating the importance of Protected Areas for the preservation of biodiversity, have recommended expanding Protected Areas and strengthening their management as high priority objectives for every country.

The seventh meeting of the Conference of the Parties to the CBD (COP 7), confirming that efforts to establish and maintain systems of protected areas are essential for achieving the three objectives of the Convention and to achieve sustainable development and the attainment of the Millennium Development Goals, approved a specific Program of Work on Protected Areas. The overall purpose of the programme of work on protected areas is to support the establishment and maintenance by 2010 for terrestrial and by 2012 for marine areas of comprehensive, effectively managed, and ecologically representative national and regional systems of protected areas.

A European initiative to establish and develop an ecological network known as EECONET aims to protect the structure and complex ecological relationships of Europe. EECONET at the same

time is an instrument to develop the priorities for action for each country. The establishment of the ecological network requires four main elements: (i) core area or biocenter to preserve ecosystems, habitats, species, and landscapes; (ii) ecological corridors or biocorridors to improve the coherence of the biological systems; (iii) rehabilitation areas where damaged elements of the ecosystems, habitats, and landscapes have the need for repair or full recovery; and (iv) buffer zones which support and protect the ecological network from external impacts. Core areas/biocenters must include areas and main characteristics, which represent biological diversity and landscapes. Biocorridors are necessary to secure the coherence and functioning of the ecological network because they facilitate spreading and migration of species between biocenters.

#### **Protected Areas and Sustainability**

Protected areas contribute to sustainable development by:

1. Conserving soil and water in erodible areas;
2. Regulating and purifying water flow, especially by protecting wetlands and forests;
3. Shielding people from natural disasters, such as floods or storm surges;
4. Maintaining important natural vegetation on soils of inherently low productivity;
5. Maintaining wild genetic resources important to medicine or for plant or animal breeding;
6. Protecting species that are highly sensitive to human disturbance;
7. Providing critical habitat for feeding, breeding or resting of species that are harvested;
8. Providing income and employment through tourism.

Source: *Action Plan for the Protected Areas in Europe* (IUCN, 1993)

#### **1.1.3. National developments**

The nature protection inside the PA's system is being evaluated as an important instrument to preserve the biodiversity values in the country. The strengthening and enlargement of the protected areas system, as the basis of the Ecologic Network of the country, is considered as one of the most important objectives of the Program of Work and Action plans of the Ministry of Environment, Forest and Water Administration,. In this framework it is aimed, as a short term objectives that the protected areas will cover 15 % of the territory (doubling their actual size) and a long term objectives (year 2015) about 20 % of the overall country's surface. The bases for the enlargement of the protected area system are the proposals made in the BSAP refined and improved by considering recent developments and natural processes.

The Council of Ministers approved several Decisions related to the enlargement of the protected areas system: the enlargement of "Butrinti's National park, the designation of Nature Managed Reserve "Shkodra Lake" and the designation of the Protected Landscape "Buna River - Velipojë", National park "Mali i Dajtit", Protected Landscape "Mali me Gropa-Bize-Martanesh",

National Park “Divjake-Karavasta” and National Park “Shebenik-Jabllanice”, increasing significantly the size of protected areas in Albania.

Considering their international significance, the Albanian Government, decided to propose to the Ramsar Convention to include the areas of “Shkodra Lake” and “Buna River” in the list of Ramsar sites, as internationally important areas, especially for the water birds. On the February 2nd, 2006 the Ramsar Convention’s Secretariat delivered to the Ministry of Environment, Forests and Water Administration the respective certificate. The process has started already and is going on in some other areas.

## 1.2. PA Gap Analysis

### 1.2.1. What is gap analysis?

**At its simplest, a gap analysis is an assessment of the extent to which a protected area system meets protection goals set by a nation or region to represent its biological diversity.** Gap analyses can vary from simple exercises based on a spatial comparison of biodiversity with existing protected areas to complex studies that need detailed data gathering and analysis, mapping and use of software decision packages. All gap analyses should consider a range of different “gaps” in a protected area network:

- **Representation gaps:** either no representations of a particular species or ecosystem in any protected area, or not enough examples of the species or ecosystem represented to ensure long-term protection.
- **Ecological gaps:** while the species or ecosystem occurs in the protected area system, occurrence is either of inadequate ecological condition, or the protected area(s) fail to address species' movements or specific ecological conditions needed for long-term survival or ecosystem functioning.
- **Management gaps:** protected areas exist but management regimes (management objectives, governance types, or management effectiveness) do not provide full security for particular species or ecosystems given local conditions.

### 1.2.2. Principles of Gap Analysis

Gap analyses should be driven by a series of scientific, social and political principles. Representation: choose focal biodiversity across biological scales (species and ecosystems) and realms (terrestrial, freshwater, and marine) for the gap analysis to capture the full array of biodiversity in the protected area system.

- **Redundancy:** include sufficient examples of species and ecosystems in a protected area network to capture genetic variation and protect against unexpected losses.
- **Resilience:** design protected area systems to withstand stresses and changes, including future changes such as global warming.
- **Different types of gaps:** analyze representation gaps (biodiversity not found in any protected area), ecological gaps (biodiversity's ecological needs not adequately addressed in protected areas) and management gaps (inadequate management or purpose).

- **A participatory approach:** collaborate with key stakeholders in decisions about protected areas. The CBD demands participation, in particular by directly affected communities, including indigenous and traditional peoples.
- **An iterative process:** review and improve the gap analysis as knowledge grows and environmental conditions change.

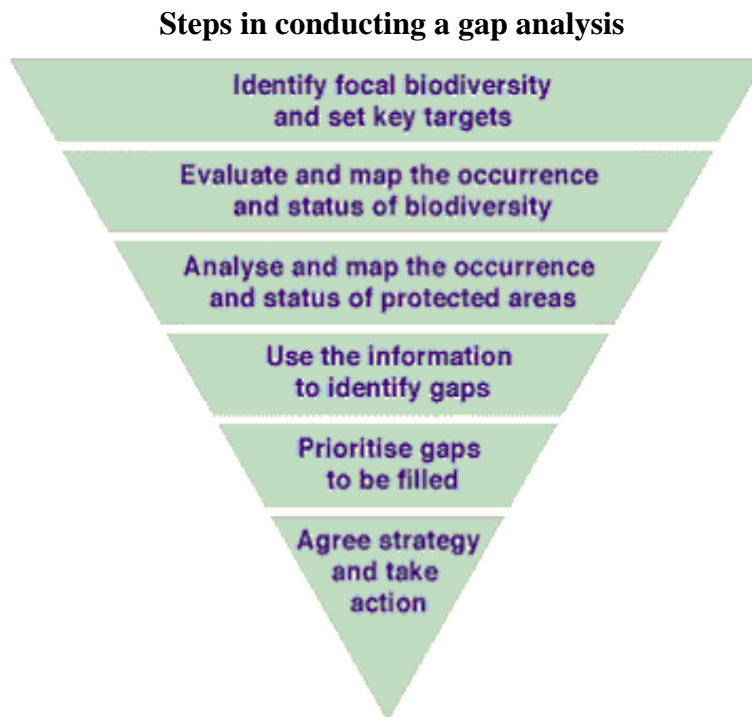
### **1.2.3. Stakeholder approaches**

Experience in protected areas demonstrates that they are most likely to succeed when key stakeholders are involved in creation, design, and management. Yet the relationship between people and protected areas is one of the most challenging in conservation, with conflicts often created by failing to address people’s needs. Such actions, quite apart from their social and humanitarian impacts, achieve little for conservation. Loss of traditional rights can reduce peoples’ interest in long-term land stewardship of resources and even increase the rate of damage to the protected area.

Conversely, people can play a key positive role. Many “natural” areas have been managed to some extent for hundreds or thousands of years and biodiversity may rely on traditional management. Local communities can maintain protected area values, if they agree with them, in situations where park managers have neither the time nor resources to ensure protection. The planning should be participatory, involving a wide range of the right stakeholders. Many tools exist to help the process of engaging with stakeholders.

### **1.2.4. Carrying out a gap analysis**

However simple or complicated, cheap or expensive, all gap analyses should follow the same basic steps outlined below





### *Identify Key Targets*

Most gap analyses focus on a representative sub-set of biodiversity as both indicators for the analysis and targets for measuring conservation success.

These **focal biodiversity elements (targets)** define species, communities and ecosystem to be evaluated (see Identify and map status and threats to biodiversity for more on indicators). They can range from simple targets relating to the area protected to more sophisticated targets of representation or endangerment, e.g.:

**Area targets:** most simply, agreeing an overall national area to be protected, such as the target of 10% of terrestrial area, developed by IUCN The World Conservation Union.

**Coarse filter targets:** protection of broad land or water types, such as ecosystems or their components (e.g. communities).

**Fine filter targets:** usually species of particularly threatened or endemic species that would not be captured by ecosystem targets. For example the European Union has used the concept of favourable conservation status of species and habitats. Targets ideally touch on both the **quantity** of land or water to be protected (to ensure sufficient populations or spatial extent of biodiversity) and its **distribution**, to ensure capturing the ecological and genetic diversity of a species or ecosystem. A simple target can be a decision to protect a stated proportion of remaining ecosystems or to maintain species. More sophisticated targets identify in detail what needs to be protected.

### *Status and Threats*

Data are gathered to compare protected areas with species needing protection Ideally should include current distribution and biodiversity status and trends. Mapping all species is impossible so analysis relies on data for well-known species (e.g., birds); species representing particular habitats; and ecosystems. Mapping can be “coarse filter” (ecosystems, habitats) or “fine filter” (species and specialized habitats). Studies involve consolidating diverse data sets; using GIS; standardizing habitat classification; and predictive models. Indicators should represent as much of the total biodiversity as possible; provide adequate data; and be sympathetic to other stakeholders.

### *Asses and Map*

A map of protected areas is needed to compare with maps of biodiversity. Basic data on protected areas are usually available at national level although spatial data and information on protected areas in other governance systems (e.g. private protected areas) may be lacking. Information about status of protected areas is generally less available, although studies and data on these are starting to emerge. Ideally, three pieces of information are helpful:

- **Distribution**
- **Protection status**
- **Management effectiveness status**

### *Identify Gaps*

Various options exist for using data to identify gaps in protected areas networks.

- **How to do the analysis:** there are three general options, depending on data quality and technical capacity:
  - **Without maps:** a lot of information can be obtained just by listing all the biodiversity elements not adequately represented in a protected area network is itself very useful.
  - **With maps:** more analysis is possible, including presence or absence from the protected area network and issues such as proximity, proportion of the population protected, and information about filling gaps.
  - **With maps plus software:** systematic, algorithm based approaches to selecting new protected areas have developed rapidly in the last few years.
- **What to look for:** two key issues are important:
  - **What type of gap exists?** – i.e. whether gaps are complete (representation gaps) partial (ecological) or are gaps in objectives, governance types or effectiveness (management gaps). In management gaps, a protected area itself appears as a “gap” if it has not been implemented or well managed.
  - **What is the extent of the gap?** – i.e. are whole new protected areas necessary, or would a corridor between existing protected areas or an extension of an existing park be sufficient to address the representation or ecological gap? These questions are central to prioritizing what is needed most.

### *Prioritize Gaps*

A gap analysis does not produce a precise plan, but rather a set of options that must be reconciled with other wants and needs. A good gap analysis will outline the priorities to be addressed and suggestions for action. Identification of *priorities* involves a number of different assessment steps:

- **Pressures and threats:** to existing protected areas and unprotected ecosystems – to identify urgent action and threats to the protected area network. Many threat assessment methodologies exist.
- **Opportunities for new protected areas:** some places may already be proposed protected areas or have a designation that could be converted into full protection status. Some community areas may be suitable as protected areas if supported by local stakeholders
- **Other opportunities for effective protection:** some gaps may be better filled by other sympathetic management than by creating protected areas in places where they are resisted or difficult to achieve.
- **Capacity to implement an expanded protected area network:** big plans are pointless without the capacity to make them happen. The CBD calls for national capacity assessment for managing protected area systems, including finance, resources, legal and policy framework, partners and skills

### *Agree Strategy*

Once priorities are set, the gap analysis is complete. But it is only worth doing if it leads to developing one or more scenarios for expansion of the protected area network taking into account:

- **Size and location of new protected areas:** possibly with linking habitats (corridors and buffer zones). Decisions will be made on the basis of priorities, opportunities and capacity.
- **Management objectives for protected areas:** varying from strict protection to cultural landscapes with human communities. All have their role, but are not equally applicable to all conservation needs. IUCN identifies six categories of management objectives that can help to plan protected area networks.
- **Governance structures for the protected areas:** who owns or manages the protected areas – can influence if communities support or oppose protection. Most governments still rely mainly on state-owned protected areas, but many other options exist, including various forms of co-management, private protected areas and community conserved areas.
- **Opportunities for conservation outside protected areas:** biodiversity may be conserved outside protected areas, if management is effective and secure.
- **Opportunities to use restoration as a tool:** sometimes this will just mean encouraging natural regeneration. In other cases active intervention is needed.

A gap analysis cannot be carried out according to a rigid formula, but needs to be developed and modified depending on need, data availability, expertise and the type of species or ecosystems being considered.

### **1.3. Assessing the protected area system in Albania**

On assessing the protected area system level design it is generally agreed that layout and configuration of the PA system optimizes the conservation of biodiversity. The PA system adequately protects against the extinction or extirpation of any species and it adequately represents the full diversity of ecosystems within the region. The PA system consists primarily of exemplary and intact ecosystems and it maintains natural processes at a landscape level. However, the system design need to be improved in order to address issues related to the protection of transition areas between ecosystems, sites of high biodiversity and high endemism and the full range of succession diversity.

Protected Areas policies clearly articulate a vision, goals, and objectives for the PA system and there is a demonstrated commitment to protecting a viable and representative PA network. PA managers agreed that there is ongoing research on critical PA-related issues and the PA system is periodically reviewed for gaps and weaknesses. However, they consider that there are no restoration targets for underrepresented and/or greatly diminished ecosystems. According to their judgment there is no comprehensive inventory of the biological diversity throughout the region and there is no assessment of the historical range of variability of ecosystem types in the region. Improvements should be made regarding issues like the adequate area of land protected to

maintain natural processes at a landscape level, development and implementation of an effective training and capacity building programs for PA staff, and evaluation of PA management, including management effectiveness.

Regarding policy environment there is a general agreement that PA-related laws complement PA objectives and promote management effectiveness and national policies promote sustainable land management. National policies foster dialogue and participation with civic and environmental NGOs as well as a widespread environmental education at all levels. At the other hand, there is insufficient commitment and funding to effectively administer the PA system. Environmental protection goals are not fully incorporated into all aspects of policy development and there is a low level of communication between natural resource departments. Improvements should be made towards effective enforcement of PA-related laws and ordinances at all levels and adequate environmental training for governmental employees at all levels.

#### **1.4. *Assessment of protected area management***

The majority of protected areas is suffering from pressures and is under continuous threats in the future. The main pressures and threat include forest harvesting, illegal building or occupying of area, grazing, hunting, NTFP collection, tourism and recreation activities, waste disposal, semi natural processes (including mainly insects and diseases but also fires), coastal erosion, waste water treatment, fires and mining.

The most problematic are Valbona NP, Lura NP, Velipoja PL, Martanesh PL. The situation looks better in some areas like Tomori NP, Oroshi MR and Thethi NP but in general this situation is because these areas, mostly forest areas, are located in very remote areas difficult to access. Also the graph shows that the main threats are hunting and grazing followed by tourism activities and fires. Coastal erosion appears to be a severe threat for protected areas along the coast.

There was a general consensus in the discussions that some of the actual pressures (illegal harvesting, hunting, grazing, fires, etc) can be reduced in the future (threats) as result of a better performance of the protected area administration in controlling activities within protected areas and improving communication with local communities. But some other pressures (tourism and recreational activities, illegal building) will continue to threaten the protected areas in the future since they could not be properly controlled.

Analyzing results of the different groups of protected areas we see some little difference in the severity and importance of pressures and threats. Group 1, consisting of relatively large areas covering different type of ecosystems, has huge problems with hunting and grazing. Group 2, consisting of relatively small forest protected areas, has problems not only with hunting and grazing but also with tourism activities and fires that are damaging their natural resources. For this group, the collection of NTFP is an important pressure and threat. Group 3, consisting mainly of wetland ecosystems, apart having severe problems with coastal erosion, are suffering also from hunting, tourism activities (which in this case are not directly related to the protected area but to the beaches) and waste disposal.

The assessment about planning of protected areas shows that in general there is a secure legal protection for protected areas and the PA objectives, layout and design of protected areas optimizes the conservation of biodiversity. Analyzing the results of answers given regarding

planning in protected areas it is evident that there are severe problems with boundary demarcation and staffing of protected areas. Other problematic issues include support from local communities, disputes regarding land tenure and user rights, conflicts with local communities, zoning of protected areas and links with other protected areas.

The situation of inputs to protected area management seems really critical especially to infrastructure and finance inputs. Although the level of personnel is not adequate, their skills and performance is good and there are attempts to improve their capacities. There is a general lack of any kind of infrastructure including transportation and personnel facilities and equipments. Also, financing to protected areas seem to be an enormous problem since there are no secure funding for the future and proper financial practices are not in place. Last but not least, protected area personnel lack communication and information infrastructure, especially the means and tools necessary for data collection and processing.

There is a huge gap in management planning. Only three PAs have a management plan and other two are working on it. The others have no management document. Also an analysis of, and strategy for addressing, PA threats and pressures is missing. There is no full inventory of natural and cultural resources in all protected areas. Protected areas administration units do not have a well detailed yearly working plan for reaching management objectives.

Research, monitoring and evaluation is not a priority for the PA managers and it is not in line with the protected area management objectives. Although PA managers dedicate a lot of time and efforts for accurately monitoring and recording the impact of legal and illegal uses of the PA, they feel that critical needs for scientific research and monitoring are not clearly identified and prioritized according to the PA management objectives. Access to scientific research and advice is mostly depending on personal connections. Generally the results of monitoring and scientific research are neither used nor included in the management planning.

The main task of PA managers is law enforcement and they spent a lot of time and resources in this regard. They also put some efforts on site restoration and provide information on the importance and values of PA natural and cultural resources. It is evident that in general PA managers do not deal with infrastructure development and research and monitoring. Also they have problems with resource inventory and planning as well as visitor management.

Although the main activity of PA managers is law enforcement, illegal activities within the PA are difficult to monitor since PA managers lack transportation infrastructure, especially in large PA. Generally PA managers are under pressure to unduly exploit PA resources which market value is high (tourism development, mining, grazing). Traditional uses of PA natural resources are not considered as a factor of vulnerability to PA.

According to PA areas managers, protected areas and their natural and cultural resources vulnerability is influenced mostly by the following factors

- The areas are easily accessible for illegal activities.
- There is a strong demand for vulnerable PA resources (illegal harvesting of valuable trees, poaching, grazing)
- Recruitment and retention of employees is difficult considering difficult working conditions and not appropriate remuneration and some time employment is related to political changes.

## 1.5. *Adresing gaps in protected areas*

### 1.5.1. Key issues

The assessment of protected areas in Albania has identified some key issues that are briefly summarized as follows.

- **Considerable progress has been made in the establishment of protected areas but significant gaps remain**

While the number of protected areas has tripled over the past 20 years there remain serious gaps in coverage of many important species and ecosystems. Marine biodiversity is of particular concern as marine protected areas cover only 0.5 % of the world's global marine surface (UNEP-WCMC and IUCN, 2003). Addressing these gaps requires the expansion of existing, and the strategic creation of new, protected areas while ensuring the connectivity of suitable habitat between them.

- **Protected Areas face many challenges and the management effectiveness of protected areas must be strengthened**

Protected areas face many challenges in the 21<sup>st</sup> century; particularly those associated with global change factors. These include: increased population growth often associated with increased demands for the use of natural resources; climate change; decentralization and democratization processes; and new forms of protected areas governance.

Managers of protected areas and other primary stakeholders often do not have sufficient knowledge, skills, capabilities and tools to effectively respond to the challenges posed by global change. Enhanced capacity building is essential to address this and is needed at a range of levels, including for protected areas agencies, park managers and key stakeholders. The skills and competencies now required are more specialized and broader than in the past requiring a range of innovative approaches.

The management of many protected areas is not effective, suffering particularly from inadequate financial resources and limited management capacity. Although a number of models have been developed for assessing management effectiveness, these need to be more widely applied and linked to field action.

- **Protected Areas play a vital role in biodiversity conservation and sustainable development**

Protected areas are vital for both biodiversity conservation and sustainable development. The importance of protected areas in contributing to Millennium Development goals, particularly those relating to environmental sustainability and poverty alleviation, is really high. There is a need for increased recognition of the crucial role of protected areas in achieving sustainable development objectives, particularly as many key stakeholders still see protected areas as a barrier to their activities and aspirations.

- **Local Communities have to be better involved in protected areas**

local communities have to be more effectively involved in protected areas and that, specifically, their rights have to be more appropriately respected. The involvement of local communities in protected area management has increased during the past decade but there is still a long way to go. This is particularly important as local communities live in most high biodiversity regions in

the country. It is acknowledged their vital role in the achievement of sustainable development and is also recognized local communities knowledge as an important element in managing natural landscapes and resources, specific sites, species, cultural and traditional values.

- **There is a need to apply new and innovative approaches for protected areas, linked to broader agendas**

There is a need to consider and apply a range of models of protected areas, including those established by Local Communities (Community Conserved Areas), as well as those established and managed by the private sector. Protected areas are also increasingly being considered in the context of the wider landscape, ecological networks and trans-boundary protected areas. Such approaches are important as many protected areas have traditionally been cut off from the economic and social activities of the surrounding land and sea. Movement of species, nutrients and other environmental flows are not limited by protected area boundaries and socio-economic activities occur at the broader ecosystem level. Accordingly, there will be an increasing need to apply these models in the future. These initiatives also provide practical and important insights on how to apply the ecosystem management approach endorsed by the Convention on Biological Diversity.

- **Protected Areas require increased financial investment**

The financial resources available for protected areas are inadequate. Under-investment by government and others in protected areas means that these areas are often failing to meet their conservation and social objectives. Inadequate human and financial resources result in many protected areas lacking effective protection and management. The challenge is to achieve a major boost in investment in protected areas and to develop more sustainable methods of protected area financing.

### **1.5.2. Future directions for addressing PA gaps**

For terrestrial protected areas the emphasis must be not only on the identification and designation of sites for enlarging and strengthening the protected area system but also on improving their management to achieve conservation and wider environmental goals. It will be essential to ensure that natural processes and functions are maintained, and restored where they have become degraded, species reinstated and some trans-located to take into account climate changes.

Management improvement will need to embrace all components of protected areas, including fund raising, economic activity, business planning and management, stakeholder engagement. It will be necessary to ensure that the skills needed are available among protected area staff and cooperative training programmes established throughout the region. Increasing the engagement of other stakeholders, especially local communities, and improving their capacity to contribute, will be a vital component. Terrestrial protected areas are too often seen in isolation from each other in space. Therefore the further implementation of connectivity measures, such as the Pan-European Ecological Network, and where appropriate the physical development of corridors connecting protected areas, will be necessary.

Also protected areas should be seen increasingly as part of whole environmental systems; it will be prudent to develop and implement strategies and plans for bio-geographical regions rather than the slavish adherence to administrative boundaries which often have no relevance in nature. Trans-boundary Protected Areas will be an even more important mechanism than in the past. National and regional effort will also be required to identify any gaps in the systems of protected

areas. A bio-geographical framework should be adopted for this work. None of these improvements can be achieved without a substantial increase in financial resources for protected areas from all sources: public, private and charitable.

The protection of the marine environment will be a major priority for the future. New approaches will be required rather than transferring the terrestrial approach. The natural system is more dynamic and unpredictable in space and time and reflects major global climatic and ocean circulation changes. The ownership of the water column, the sea bed and marine natural resources has a totally different meaning at sea. Third party access is a critical issue, especially with respect to navigation and fishing rights.

Scientific information on the key marine features and their management needs, alongside development of mechanisms for safeguarding biomass and recruitment to it through a combination of no-take zones and zoning for different levels of sustainable exploitation, controls on activity, and exploitation within naturally sustainable limits should form the basis for the new approaches. Completion of the designation of protected areas within territorial limits alongside the implementation of protection within the exclusive economic zones and on the high seas will be necessary. Effective engagement with key interests, especially the various fishing and aquaculture interests, will be essential.

There are many different structures for the governance of natural resources within protected areas in Albania. Future challenges will be to ensure a greater degree of meaningful involvement by local and other stakeholders. This will require a change from the present governance structures which are often unrepresentative and top down to those which are more representative and inclusive of all relevant interests.

### **1.5.3. Actions addressing gaps in protected area system**

The proposed actions for addressing gaps in protected areas system are based mainly on the proposals of the National Biodiversity Strategy and Action Plan and on many years of experience in the field of nature conservation in Albania and on a continuous participatory process of discussion and consultation with various experts. These actions aim to ensure adequate legal protection and appropriate management for the most valuable and representative natural and semi-natural ecosystems, habitats and landscapes in the country. These actions are important for building the Albania Ecological Network and fulfilling the commitments and obligations of the Albanian Government toward the Convention of Biological Diversity.

Actions for strengthening and enlargement of the protected areas system include the following:

- Review and reclassify a number of the existing protected areas based on the size of each protected area and its role and importance in a broader national and regional context. Changes in the management category and protection status should be applied to several existing protected areas.
- Reclassify existing Strict Nature Reserves (Category I). Actually they include some areas of important and untouched natural habitats. In order to provide for a better preservation of their natural values they should be included as core zones in areas designated to other management categories (National Parks or Protected Landscapes). So, the size of protected areas under this category (Category I) will decrease significantly till 2010. The establishment of the ecological network will require the designation of some additional



areas as Strict Nature Reserves (For example, some Nature Monuments (Category III) are proposed to become Strict Nature Reserve (Category I).

- Significantly enlarge the size of National Parks (terrestrial and marine). Under this action, adjacent existing protected areas would be combined to include new areas recently identified as appropriate for protection under this category.
- Establish, for the first time in Albania, protected areas in our seas (Marine National Parks, Marine Nature Reserves, Seascape Protected areas) as well as along rivers (Drini valley or Vjosa Valley).
- Extend the boundaries of existing Areas of Habitats and Species Management (Managed Nature Reserves) in order to improve their management and include other important habitats and ecosystems and improve species management and preservation. The size of areas designated under this category will slightly increase till 2010, from 41'128 ha to 52'935 ha.
- Expand the Landscape/Seascape Protected Areas (Category V). The number of protected areas under this category would increase from 3 to 17, with a total area under this category increasing from 49'611 ha to 119'088 ha.
- Greatly enrich the current system of protected areas in terms of ecosystems and habitats. The protected area system in Albania should include all types of habitats and ecosystems that represent our country's nature and biodiversity.
- Develop management plans for protected areas and strengthen capacities for their administration. In order to be successful and provide a better preservation and management of natural values and biodiversity, the process of strengthening and enlargement of protected areas system must be accompanied by the development of management plans for all the protected areas and strengthening the management capacities of the protected areas managers.

**Table 1-1: Plans for improving the Protected Areas system in Albania**

No	Protected Areas Management Categories	June 2005		2010		2015	
		Area Ha	Area %	Area Ha	Area %	Area Ha	Area %
1	Strict Natural Reserve	14'500	0.51%	1'800	0.06%	6'900	0.24%
2	National Park	56'440	1.96%	311'694	10.84%	311'694	10.84%
3	Natural Monument	3'490	0.12%	200	0.01%	200	0.01%
4	Areas of Habitats and Species Management	41'128	1.43%	52'935	1.84%	64'235	2.23%
5	Landscape/Seascape Protected Areas	49'611	1.73%	119'088	4.14%	187'588	6.53%
6	Protected area with managed resources	18'200	0.63%	18'200	0.63%	18'200	0.63%
	<b>TOTAL</b>	<b>183'369</b>	<b>6.38%</b>	<b>503'917</b>	<b>17.53%</b>	<b>588'817</b>	<b>20.48%</b>

#### **1.5.4. Recommendations for improving the PAs management**

In order to improve the PA management it is necessary to further improve legal framework and national policies on nature conservation. There is a need to identify and allocate resources for the preparation of management plans for protected areas as well as strengthening the PA administration and building capacities. In order to face increasing challenges and shortcomings in financial resources there is need to explore and establish economically sustainable models for protected areas management. Continuous efforts should be made to address issues like participatory management, involvement of local communities, environmental information and education and public awareness programs on the importance of PA.

Capacity building and training at all levels of the PAs administration staff will be a necessary requirement for the successful management of the PAs, either in order to manage the site at the international standards and expectations which are required of any PAs, or to be able to transmit the principles of conservation, protection and sustainability to the wider public. There is a need for training courses for professionals aimed at the exchange and increasing of knowledge in the biodiversity field. Offers of foreign courses and trainings can be used, but command of the language of the course is the main limitation.

## 2. THE SITUATION ON MARINE BIODIVERSITY CONSERVATION AND MPAS IN ALBANIA

### 2.1. *Background on marine conservation in Albania*

Albania is distinguished for its rich biological and landscape diversity. The high diversity of ecosystems and habitats offers rich habitats for a variety of plants and animals. Of the estimated 3,200 species of vascular plants, 27 are endemic and 160 sub-endemic species.

Coastal lagoons and large lakes inside the country are important areas especially for resident and wintering migratory birds. There are about 70 waterfowl and water bird species among which some are threatened such as the Dalmatian Pelican (*Pelecanus crispus*) and the Pygmy Cormorant (*Phalacrocorax pygmeus*).

There are few studies and surveys concerning the marine environment of Albania, but they show already the importance of seagrasses meadows in particular *Posidonia oceanica*, coralligenous formations and the presence of numerous benthic and pelagic species such as fish, invertebrates or marine mammals and occasionally the Mediterranean Monk Seal.

At the international level, Albania is signatory of numerous conventions and agreements, such as the Convention on Biological Diversity (CBD), the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention), the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), the Convention on the Conservation of World Cultural and Natural Heritage (UNESCO) etc.

At the regional level, Albania is party to the Convention for the protection of the marine environment and the coastal region of the Mediterranean and participates to numerous programmes developed under the convention, such as the Coastal Area Management Program (CAMP of UNEP/MAP, 1996). This programme has assisted in the coastal zone management and identification of suitable sites for conservation such as Sazani, Karaburuni, Porto Palermo, Ksamili and Ftelia, but further action steps are not yet undertaken.

At the national level, the Ministry of Environment, Forests and Water Administration (MEFWA) is responsible for the protection of environmental values and in particular of protected areas. The law No. 8906 of 2002 regulates protected areas (declaration, preservation, administration and management) and activities in protected areas such as tourism information and education.

Albania includes about 13% of its territory under conservation status, but there are no marine protected areas (MPA).

The present report corresponds partially to the step 1 recommended by the CBD to develop a representative network of marine protected areas. The identification of sites of interests, even if based on an incomplete knowledge of the marine environment represents a first phase in the process.

At the present stage, the declaration as Marine Protected Areas of the most important of the selected sites is recommended, with the proper legislation, management team and budget.

## 2.2. Existing coastal protected areas in Albania

Currently, there are no marine protected areas in Albania. The existing coastal protected areas, including mainly coastal lagoons, river mouths and deltas are supposed to imply also marine habitats close to them, although these marine habitats have never been stated and managed as MPAs. Legally, they were subjects of the IUCN categorization, (accepted and applied in Albania) and they were supposed to be managed under the same categorization as stated for the coastal area.

**Table 2-1: List of coastal Protected Areas in Albania**

National PA Category	Name of PA	District	Approval	Area (ha.)
National Park (IUCN category II)	Butrinti	Saranda	VKM <sup>7</sup> nr. 693, datë 10.11.2005	8,591
	Divjakë-Karavasta	Lushnja	VKM <sup>13</sup> nr.687,datë 19.10.2007	22,230
Managed Nature Reserve (IUCN Category IV)	Kune	Lezha	07.07.1940, 1977-Rreg.MB**	800
	Vain	Lezha	07.07.1940, 1977-Rreg.MB**	1,500
	Karaburuni Peninsula	Vlora	Urdhër MB, 22.02.1968, 1977**	20,000
	Pishë Poro	Vlora	Urdhër MB, 1958, 1977-Rreg.MB**	1,500
	Patok-Fushë Kuqe	Kurbini	Urdhër MB, 1962, 1977-Rreg.MB**	2,200
	Rrushkull	Durresi	Rreg.MB 1977**,Urdhër MB nr.2,datë 26.12.1995	650
Protected Landscape Areas (IUCN Category V)	Vjosë-Nartë	Vlora	VKM <sup>6</sup> nr.680,datë 22.10.2004	19,738
	River Buna-Velipojë	Shkodra	VKM <sup>7</sup> nr.682,datë 02.11.2005	23,027

**Notes:**

VKM - Decision of Ministerial Council

Rreg.MB - Regulation of the Ministry of Internal Affairs

Urdhër MB - Order of the Ministry of Internal Affairs

Although a considerable coastal part of Albania is covered by the protected areas, the real status of protection is still weak for most of them. Main reasons for this situation are related to the increased human impact through uncontrolled urbanization and tourism development, water pollution, deforestation, illegal and uncontrolled fishing and hunting etc. Weak legal and institutional frame, inappropriate implementation of the environmental laws and regulations, low level of public awareness and unsolved land property problems are additional reasons for the inappropriate protection of coastal areas in Albania.

However, the strengthening and enlargement of the protected areas system is considered as one of the most important objectives of the Program of Work and Action Plans of the Ministry of Environment, Forest and Water Administration. In this framework it is aimed, as a short term objectives that the protected areas will cover 15% of the territory (currently about 10%) and a long term objectives (year 2015) about 20% of the overall country's surface. The bases for the enlargement of the protected area system are the proposals made in the BSAP refined and improved by considering recent developments and natural processes.

Claim and management of Marine Protected Areas fall under the objectives mentioned above. Aiming to join the EU structures, Albania would need to improve its environmental quality, too. Regarding coastal and marine protected areas, the implementation of Marine Strategy Framework Directive (2008/56/EC) and Water Framework Directive (2000/60/EC) would be important for meeting the international standards and requirements.

### 3. ANALYSES OF BIODIVERSITY, NATURAL AND CULTURAL VALUES OF THE PROPOSED POTENTIAL MPAS

#### 3.1. *Synthesis of knowledge on biodiversity of coastal and marine areas of Albania*

The Albanian coastal area, in South-East of the Adriatic Sea and North-East of the Ionian Sea has a length about 470 km. Territorial waters extend 12 nautical miles offshore and include a wide range of water depths and substrate conditions.

River mouths and deltas, lagoons system, abandoned riverbeds, marshes, sandy beaches, dunes covered with vegetation and dense forests are present in the Albanian littoral.

According to geological studies, geomorphologic classification of the Albanian coastal area consists of two principal major zones:

a) Adriatic Coastline of Peri-Adriatic Depression in the central and northwestern part of Albania. Adriatic coastal line from Vlora in the south up to Drini Bay in the north, have a marine accumulation flattened littoral, a marine erosion coast and submerged areas with marine ingressions toward the mainland, but in few areas there is a cliff coastline, too. Accumulative areas represent main part of the coastline. Marine Quaternary littoral deposits are presented by fine, medium, and coarse gray-white, gray-yellow sand, salty clay and mud interbeds.

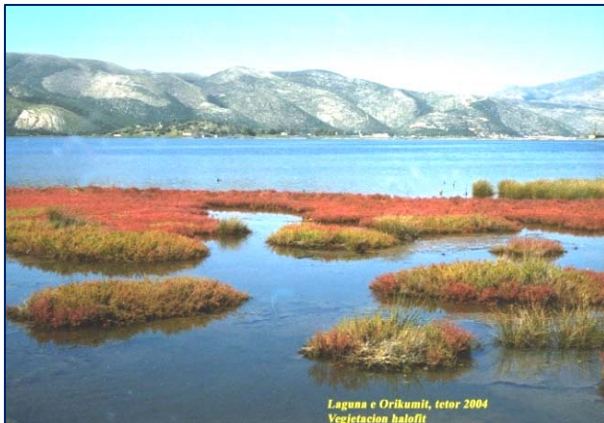
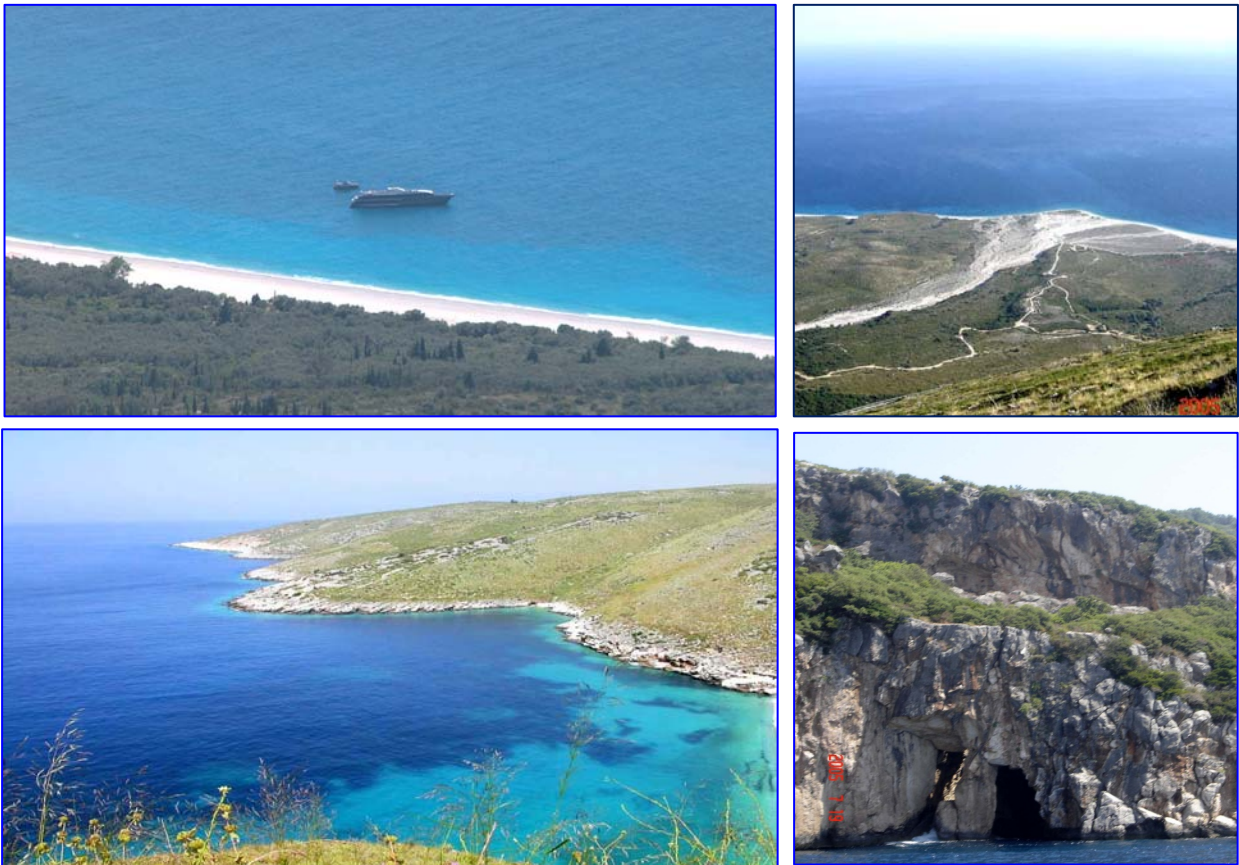


Figure 3-1: Different habitats along Adriatic coast of Albania (a- Rrushkulli; b-Blown Sand, known as *Rana e Hedhun*, c-Orikumit Lagoon; d – Lalzi, sand dunes (photos: L. Kashta, S. Beqiraj)

In these accumulative coastline areas there are some relatively small erosion sectors. The capes of Rodoni, Palla, Lagji and Treporti, composed by molasses bedrocks of the littoral anticlines of the Periadriatic Depressions represent the erosion configurations of the Albanian Adriatic sea coastline.

b) Erosion coastline of Ionian tectonic zone in the southwestern part of Albania. The Ionian coast, from Karabauruni Peninsula to Stillo Island on the Greek border, is generally high and dominated by cliffs. Along the Ionian coast erosion prevails. This coastal zone has spectacular cliffs, grottoes, caves, hillsides, harbours, bays and some of the country's most intact natural areas.



**Figure 3-2: Different habitats along Ionian coast of Albania; a: Palasa beach; b: Palasa creek; c: Himara – Llamani Bay; d: Dhermi – Pirates Cave (photos: L. Kashta)**

### **3.1.1. Knowledge on biodiversity of coastal habitats, flora and fauna.**

Marine ecosystems and coastal wetlands of Albania are rich in habitat typologies, animal and plant communities and species. They represent an important part of nature heritage not only for the country itself but also for the Mediterranean region as a whole (National Report on Marine and Coastal Biodiversity, Tirana, 2002).

Along the coast there still exist more than 390 km<sup>2</sup> of transitional wetland areas that make about 50% of the wetlands for the whole Albania. They are distinguished for the richness of breeding and refuge habitats for flora and fauna, especially for fishes and wintering of migratory and globally threatened birds. Along the Albanian coast there are situated three wetland complexes of International Importance (Ramsar sites): Butrinti, Karavasta Lagoon and Lake Shkodra - River Buna. There are also 7 sites of Managed Nature Reserve (ca. 300 km<sup>2</sup>) (Karaburuni/Vlora, Kulari, Kune-Vaini, Patoku - Fushe Kuqe, Pise Poro/Fieri, Pise-Poro/Vlora, Rrushkulli, Velipoja) on the Adriatic coast. The ancient town of Butrinti is also an Unesco site, as a World Cultural Heritage.

Albanian coast and its wetlands are important habitats for fishing and aquaculture. After FAO Yearbooks of Fishery Statistics, in yr. 2005 fishery production increased to 5275 t (primarily sea fish), of which 3802 t from capture and 1473 t from aquaculture (<ftp://ftp.fao.org/FI/STAT/summary/default.htm>).

### 3.1.2. Coastal vegetation

The vegetation is represented mainly by the evergreen shrubs and partially by deciduous shrubs; the species of last one often have thorns. Along the Adriatic coast, mainly in Divjaka (Lushnja) and Pise Poro (Vlora) grow up Mediterranean pine forests.

Evergreen Mediterranean shrubs of macquis are composed mainly from the species: *Arbutus unedo*, *Myrtus communis*, *Pistacia lentiscus*, *Erica arborea*, *Quercus coccifera*, *Spartium junceum*, *Phyllirea* spp., etc.

In the Southern region, it can be mentioned also special associations of deciduous shrubs, such as those with *Nerium oleander*, *Pistacia terebinthus*, *Spartium junceum* and *Euphorbia dendroides*. In the Ionian Riviera there grows up the Vallonea oak (*Quercus ithaburensis* subsp. *macrolepis*), a rare and endangered species with high economical values, which belongs to the Mediterranean forestry and shrubby belt.

In waste areas around the coastal lagoons, in channels, ponds or freshwater marshes grow up reed beds composed mainly of *Phragmites australis*, *Typha latifolia* and *Scirpus* sp. diverse.

The bottom of the lagoons is often inhabited by the submersed species, dominated by *Zostera noltii* and *Ruppia cirrhosa*, mixed also with macroalgae like *Chaetomorpha linum*, *Valonia aegagropila*, *Enteromorpha intestinalis* and *Ulva laetevirens*.

In the coastal wetlands and dunes there grow up halophytes, psamphytes and other brackish and freshwater associations, represented by *Ammophila arenaria*, *Arthrocnemum* spp., *Artemisia caerulea*, *Cakile maritima*, *Inula crithmoides*, *Ephedra distachia*, *Juncus maritima*, *Limonium vulgare*, *Schoenus nigricans*, *Salicornia europaea*, *Sporobolus pungens*, etc.

Woodlands in coastal lowlands, close to freshwater habitats, are represented by the alluvial forests, mixed forest, coastal pine forest and freshwater woods. The most representative species belong to *Populus alba*, *Tamarix parviflora*, *Tamarix hampeana*, *Salix fragilis*, *Salix alba*, *Alnus glutinosa*, *Fraxinus angustifolia*, *Vitex agnus-castus* etc. Coastal pine forest is composed by *Pinus halepensis* and *Pinus pinea*.



### 3.1.3. Marine flora (Seagrasses and Algae)

Marine waters of Albania, in spite of being very scanty and poorly studied and surveyed so far, are distinguished for their high biological diversity and very well developed littoral and benthic communities (Anonymous, 2002).

In Albanian marine waters grow four species of seagrasses: *Posidonia oceanica* (L) Delile, *Cymodocea nodosa* (Ucria) Ascherson, *Zostera noltii* Hornemann and the lessepsian species *Halophila stipulacea* (Forskål) Ascherson.

A recent study about the distribution of *Posidonia oceanica* along the Albanian coast (Kashta et al., 2005) confirms that habitats of this sensitive seagrass are much disturbed along the Adriatic coast; it was almost absent from Velipoja to Rodoni Promontory, and from Durrresi to Vlora, probably as a consequence of the impact of freshwater flows and high values of suspended materials coming down from the rivers; there *Posidonia* seemed to be substituted by the other seagrass, *Cymodocea nodosa*, which is considered as more tolerant to the ecological factors, but never grows up in dense meadows.

In the Adriatic coast, well developed *Posidonia* beds are found only along the littoral of Cape Rodoni, near Porto Romano and Vlora bay.



Figure 3-3: Ionian Sea. A dense *Posidonia oceanica* meadow in Dhermi, at 14m depth (photo: S. Acunto)

Extensive *Posidonia oceanica* meadows cover the shallow waters of all Ionian coastline, south of Karaburuni. Their state is considered as normal, according to their density, leaves production and rhizome growth rate. Although *Posidonia oceanica* meadows in Ionian coast show in general a normal state, there are documented areas, which have been objects of human activity impacts (sand excavation, fishing activity, water pollution etc.) creating regression phenomenon until “dead mattes”.

Together with the regression phenomenon, last years it has been identified a large distribution of the invasive algae *Caulerpa racemosa* var. *cylindracea*, which developed mainly on “dead mattes” from 2 m to 21 m depth (Kashta et al., 2005; 2007).

The first data about the macroalgae of Albania are reported by Ercegovic (1952, 1960), which mentioned some species of *Cystoseira* from rocky coast of Karaburuni Peninsula and some other species from deep waters of Albanian part of Adriatic Sea.

The most complete study about macrophyte algal flora along the Albanian coast was carried on by Kashta (1986), consisting in a taxonomic and ecological work. About 136 species have been described along the coast and its wetlands, where species from Rhodophyta were dominant. About 70% of species were found in rocky substrate, most of them in Ionian Riviera, i.e. 8 species of *Cystoseira*, also some interesting Corallinaceae such as *Lithophyllum byssoides*, *Lithophyllum trochanter*, *Lithophyllum dentatum*, *Tenarea tortuosa*, etc.

After more recent studies (Kashta, 1987; 1992-93; 1995-96; 1996; Kashta et al., 1995; 2005) the marine flora of Albania counts ca. 170 species: 85 Rhodophyceae, 36 Phucophyceae, 38 Chlorophyceae and 4 Seagrasses.

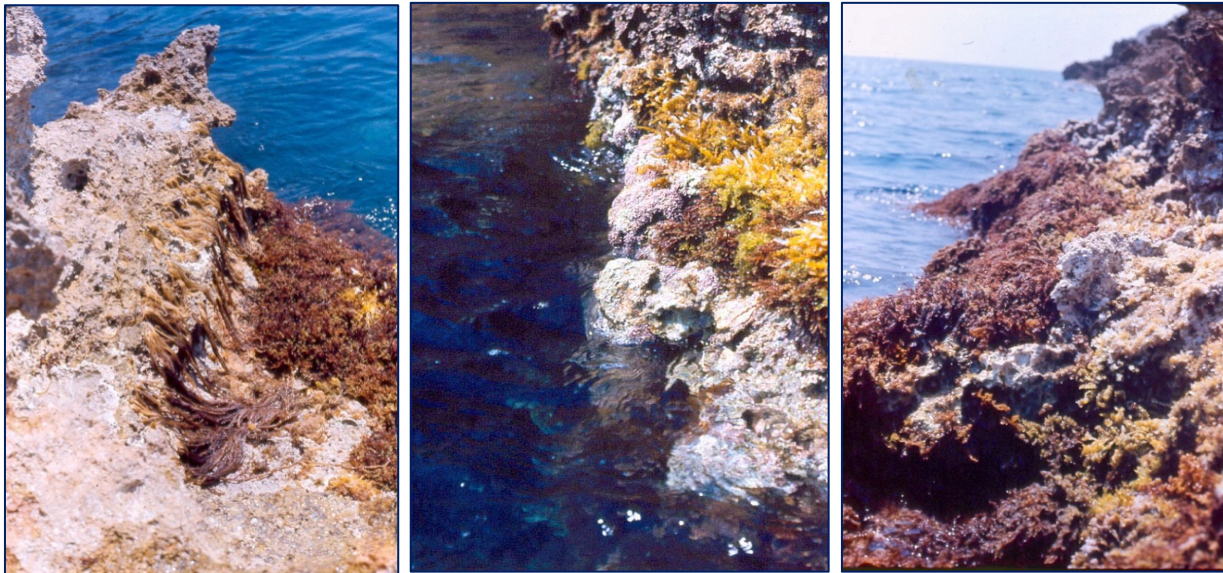


Figure 3-4: Along the Ionian rocky coast there are localities with rich littoral habitats (photos: L. Kashta)

The marine waters of Albania represent a rich biological diversity and a much-developed littoral benthos. The areas with a high diversity of species are Dhermi-Himare and Karaburuni in the

Ionian Sea and Rodoni Cape in the Adriatic Sea. These areas are also characterized by the presence of rare species, which are also very interesting from a bio-geographical point of view.

The phytobenthic community of Albania has a typical Mediterranean physiognomy, which is characterized by the domination of Atlantic and Mediterranean endemic species.

Nevertheless, the flora of the Albanian coasts has its own characteristics, due to its special biogeographical position as a transition area among the three sectors of the Mediterranean, and also due to the climatic and hydrological conditions. Thus, there can be found boreal elements along Albanian Adriatic shores such as *Fucus virsoides* (Phaeophyta) and *Catenella caespitosa* (Rhodophyta), relicts of Paratethys, which are considered as “alive fossil islands”.

In the Ionian Sea there are typical elements of the Eastern Mediterranean such as *Lithophyllum trochanter* and *Tenera tortuosa* (Rhodophyta) and at the same time typical elements of the Western Mediterranean, such as *Lithophyllum byssoides* and *Colpomenia peregrina* (Anonymous, 2002).

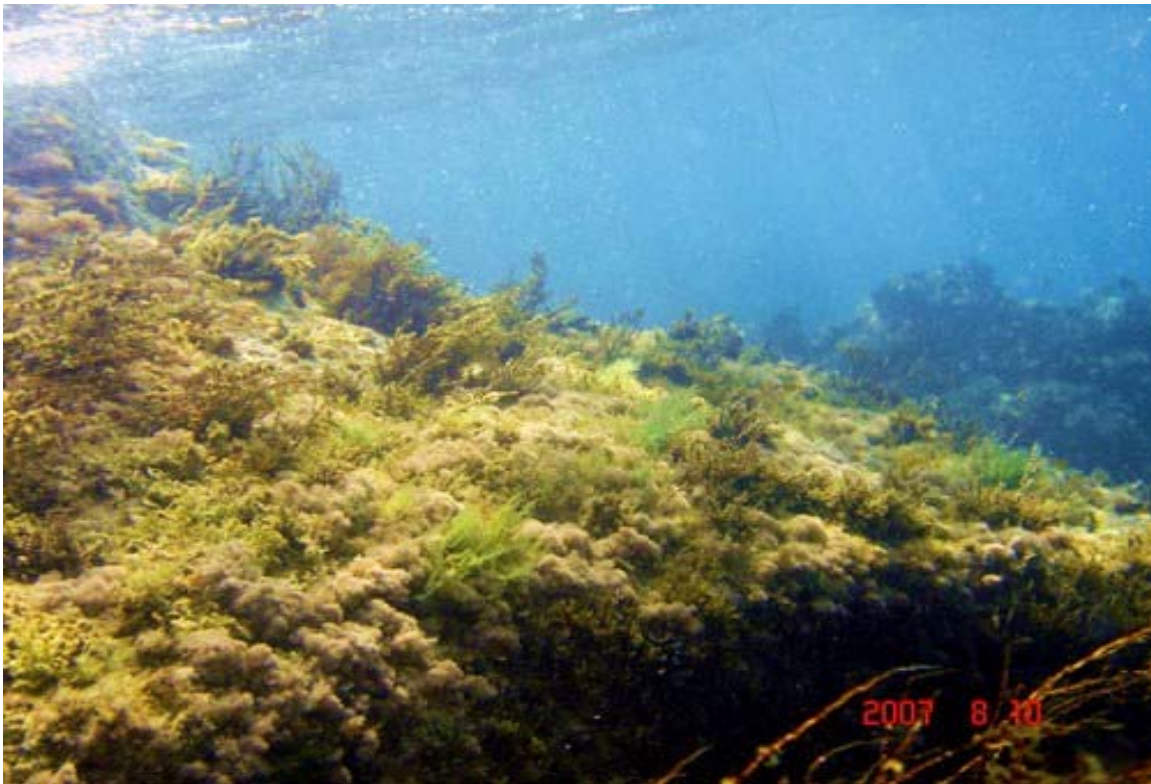


Figura 3-5: Himara. Biocenosis of infralittoral photophilic algae on rocky bottom (photo: L. Kashta)

#### 3.1.4. Coastal and marine fauna

Data on marine macrozoobenthos of Albania are relatively limited. The most studied groups of macrozoobenthos are echinoderms, decapod crustaceans and mollusks. Data on sponges, cnidarians, bryozoans, annelids and ascidians are poor and collected in the very last years only. Several benthic groups are almost or completely unstudied.

Among the first studies on marine benthos in Albania is that on the echinoderms, by Gjicknuri (1980). In his doctorate he reports the distribution of about 46 echinoderms species along the Albanian coast. Vaso, during his doctorate theses has studied the Albanian decapods, reporting more than 100 species (Vaso & Gjicknuri, 1993).

A comparative taxonomic and ecological study of mollusks (Gastropoda and Bivalvia) of the Albanian coastal lagoons has been the object of the doctoral theses of Beqiraj (2004), where about 77 species were reported. Mollusks and annelids predominate in the species composition of the macrozoobenthos of the Albanian coastal lagoons and the highest abundance has been recorded for mollusks, crustaceans and chironomids (after Beqiraj et al. 2007).

Complex studies on marine macrozoobenthos, focusing not only on a specific group, but on the biocenosis as a whole, are very recent. Few studies on benthic macrofauna associated to *Posidonia oceanica* meadows have reported about 190 species including sponges, cnidarians, bryozoans, mollusks, annelids, crustaceans, echinoderms and ascidians (after Beqiraj et al. 2008). A considerable number of species has been published from other very recent studies on macrozoobenthos of rocky coast of Vlora (Kasemi et al. 2008), rocky coast of Shengjin (Beqiraj & Selimi, 2009), Vlora Bay (Panneta et al. 2009) and Saranda Bay (Beqiraj et al. 2009).

Rakaj (1995) has reported about 250 fish species from marine waters of Albania; the most common are *Mugil cephalus*, *Mugil labrosus*, *Anguilla anguilla*, *Sparus auratus*, *Dicentrarchus labrax*, *Merluccius merluccius*, *Mullus barbatus*, *Lithognathus mormyrus*, *Solea* sp., *Aphanius fasciatus*, *Lichia amia*, *Pagrus pagrus*, *Arnaglossus laterna*, etc.

28 species of sharks have been recorded in Albanian waters (after Rakaj 1995), out of 38 species which were recorded for the whole Adriatic Sea (after Lipej et al. 2004). The most common have been considered *Scyliorhinus canicula*, *Scyliorhinus stellaris*, *Mustelus mustelus*, *Squalus blainvillei*, *Squalus acanthias*, *Squatina squatina* and *Alopias vulpinus*. However, this is a relative assessment and based on old data. Recent scientific data on sharks in the bycatch are missing. 22 species or 78% of the shark species reported for Albania are of global concern and included in the IUCN Red List 2006 (Beqiraj, 2006).

Loggerhead turtle (*Caretta caretta*), a globally endangered species, was commonly found in Patoku Lagoon. In this lagoon, the green turtle *Chelonia mydas* has been also recorded several times in the last years. Leatherback turtle *Dermochelys coriacea* is a very rare visitor in Albanian waters. These 3 sea turtle species are globally endangered species, with high threatening status (after IUCN Red List 2006).

**Table 3-1: Species number of different animal groups in coastal habitats (shallow marine waters and wetlands) of Albania and their percentage compared to the total species number reported for the country (a slightly modified version of Miho et al. 2008)**

<b>Animal groups</b>	<b>Species number in coastal habitats (% in Albania)</b>	<b>Species number reported in Albania</b>
Echinoderms	48 (100%)	48
Decapods	115 (100%)	115
Molluscs	250 (38.5%)	649
Fishes	320 (33%)	360
Amphibians	13 (87%)	15
Reptiles	27 (75%)	36

Birds	290 (89%)	326
Mammals	42 (56%)	75

Coastal lagoons and estuaries are important areas for wintering of migratory water birds; about 70 species of water-birds have been recorded. Albania is a country of special importance for Dalmatian pelican (*Pelecanus crispus*) and pygmy cormorant (*Phalacrocorax pygmaeus*).

Water birds overwinter and breed in coastal lagoons and wetlands in great numbers, but their populations are known to decrease as the result of the drainage of wetlands during the communist regime and virtually uncontrolled hunting and other impacts in the post-communist period.

Albanian marine and littoral habitats are frequently visited by the rare marine mammals. The Monk seal (*Monachus monachus*) has been a visitor of coastal waters in Karavasta region and in Ionian Riviera (Stillo and Qefali capes in Saranda, Palasa and Karaburuni). Although the Monk seal is a very rare visitor in Albanian waters, it is thought that the coastline from Stillo Cape to Karaburuni peninsula at the Ionian Sea offers several caves as potential habitats for resting shelters.



Figure 3-6: Different species of infralittoral zoobentos in Albanian seas (photos: L. Kashta, Xh. Mato)

There are no specific studies on cetaceans in the Albanian waters. Nevertheless, occasional surveys, stranding and accidental entrapments in fishing gears have confirmed the presence of five species of cetaceans in Albanian waters: the short-beaked common dolphin (*Delphinus delphis*), the common bottlenose dolphin (*Tursiops truncatus*), the striped dolphin (*Stenella coeruleoalba*), the sperm whale (*Physeter macrocephalus*) and the Cuvier's beaked whale (*Ziphius cavirostris*). Three species of cetaceans, occurring also in the Albanian waters, are identified by ACCOBAMS as the species in greatest danger of disappearing from the Mediterranean: *Delphinus delphis*, *Tursiops truncatus* and *Physeter macrocephalus*. Taking into consideration the occurrence of the cetaceans in the neighbouring areas, it is presumed that other species may occur in Albanian waters in Adriatic and Ionian seas (APAWA ed. 2007).

### **3.2. Description of proposed Marine Protected Areas**

The National Biodiversity Strategy and Action Plan (1999) has proposed 8 areas along the Albanian coast, as potential areas for being claimed Marine Protected Areas. In the following an analysis of each of these areas is carried out, aiming to identify and propose one single area as the most suitable for being claimed the first MPA in Albania.

This analysis is based on the natural and landscape values, considering the importance of habitats, communities and species, especially those of special importance as rare and/or endangered in national and international level, feeding and/or hatching grounds, as well as cultural, historical and socio-economic values and importance, according to the availability of existing data.

#### **3.2.1. Cape of Rodoni - Lalzi Bay-Ishmi Forest.**

Surface:	2,500 ha;
Current protection status:	Protected Landscape/Seascape Area;
IUCN Category:	V

Lalzi Bay is an accumulative coastline, which extends for about 18 km. The landscape is all plain, except the hill chain along Rodoni Cape that separates Erzeni watershed from Ishmi river; the highest top hill is 223 m in Likmetaj.



**Figure 3-7: View of Lalzi Bay and Rodoni Cape (photo: L. Kashta)**

The high dynamics of the coastline is a characteristic of Lalzi Bay and it is more emphasized in northern part of Erzeni delta, from Rrushkulli to Shen Pjetri beach. The sandy beaches have been continuously narrowed, due to the strong erosion in the coast. About 25 - 30 years ago the beach was 150 – 200 m wide; currently it is reduced to 10 - 30 m and even 2 – 5 m in some sectors. Former sand dunes, up to 100 m wide and 2 – 5 m high, were disappeared in some parts. This strong erosion can be evidenced even nowadays from the position of military bunkers (fig. 8).



**Figure 3-8: Strong erosion in the coast of Lalzi Bay (photos: L. Kashta, 2007)**

The most important habitats of Lalzi bay in biodiversity aspect are:

**Rrushkulli - Hamallaj** (about 12.86 km<sup>2</sup>) is the most important area, extended between Erzeni delta and Tarini torrent, in a length of about 10 km along the sea, actually a Managed Natural Reserve.

**Sandy dunes and beaches: Shen Pjetri beach** and its forest belong geographically to Lalzi bay. The zone is under the administration of Ishmi municipality (Durrresi district). A beach zone of

100 m long and 20 m wide, formed under the accumulative process of sea waves, conserved yet virgin, belongs to natural monuments (geomonuments).

From a recent investigation of the flora and vegetation, about 330 species of vascular plants were recorded, with about 15 rare or endangered species, found mainly on the dunes.

Sandy dunes and beaches from Rrushkulli to Shen Pjetri represent the most sensitive natural habitats. They are mainly inhabited by *Ammophila arenaria*, *Cakile maritima*, *Echinophora spinosa*, *Elymus farctus*, *Eryngium maritimum*, *Euphorbia paralias*, *E. peplis*, *Inula crithmoides*, *Medicago marina*, *Alkanna tinctoria*, *Pancratium maritimum*, *Salsola kali*, *Sporobolus pungens*, *Xanthium strumarium*, etc. In more stable dunes, fragments of forests or shrubs grow up, dominated by *Juniperus oxycedrus* ssp. *macrocarpa*, alternated by a narrow belt of Mediterranean pines (*Pinus pineaster*, *P. halepensis* and rarely *P. pinea*), cultivated 40-50 years ago.

According to the Albanian National Red List (2008), the plant species: *Pancratium maritimum*, *Matthiola tricuspidata*, *Juniperus oxycedrus*, *Desmazeria marina*, *Ammophila arenaria*, *Stachys maritime* and *Lotus cytisoides* have been considered as threatened species of sandy dunes of Lalzi Bay.

The data about marine fauna of Lalzi bay is limited. About 90 species of macrobenthic fauna have been reported (by Beqiraj 2006-b), mostly mollusks, but also bryozoans, crustaceans and polychaetes. Many species, especially gastropods and bivalves belong to the National Red List.

The zone of Lalzi is mentioned also for fishes. Fishing is an important activity in the zone. A checklist of 58 species was given by Haxhiu & Halimi (2006) for Patoku and Lalzi coastal areas altogether.

In the seacoast the following fishes have been reported as the most common in the fishery stock: common stingray, angelshark, spotted torpedo, annular sea bream, Atlantic horse mackerel, leerfish, red mullet and mediterranean killifish.

From about 25 recorded species of reptiles, two species belong to sea turtles (*Caretta caretta* and *Chelonia mydas*), mentioned to visit often the shallow marine waters.

Rakaj N. (in Tekke, 1996) reports that in the year 1966 the common cachalot or the dentate sperm whale (*Physeter catodon* sin. *Physeter macrocephalus*) passed through Lalzi bay, while the Monk seals (*Monachus monachus*) were regularly observed there. Moreover, it is recorded that the marine waters of Lalzi bay are often visited by dolphins (*Delphinus delphis* and *Tursiops truncatus*). According to information from local fishermen, the beak whale (*Ziphius cavirostris*) has been visitor of marine waters in Lalzi, too.





Figure 3-9: Lalzi bay. Sand dunes vegetation with *Amophyla arenaria* (photo: L. Kashta)

### Rodoni Cape

The coastline, represented by Tortonian sandstone-clay banks, is an erosive area and generally barren. Very poor vegetation dominated by *Crithmum maritimum*, *Elymus pycnanthus*, etc. grows up in some segments. Over this narrow stage, only 3-4 m above sea level, start another stage dominated by Mediterranean macquis and somewhere by *Quercus pubescens*.

#### Coastal and marine habitats

##### Mediolittoral Stage

##### Biocenosis of mediolittoral coarse detritic bottoms

Facies with banks of dead leaves of *Posidonia oceanica* and other phanerogams

At ecological aspect, these banks (wracks) constitute the basis for a specific trophic network, characterised by the presence of many isopod crustaceans. At sedimentary aspect, this facies, especially when it is well represented, constitutes a most effective natural protection for the beach against erosion. These banks are not well represented in the whole area.



**Figure 3-10: Accumulation of plant debris made up mostly of dead *Posidonia oceanica* leaves at the western side (a) and the northern side (b) of Rodoni Cape (photos: L. Kashta, 2009).**

### **Biocenosis of the lower mediolittoral rock**

The association with *Fucus virsoides*

An association that is exclusive to the eastern (from Albania to Slovenia) and northern coasts of the Adriatic, is present in the lower part of the mediolittoral.

This is the only *Fucus* population in the Mediterranean, strictly restricted to the upper Adriatic and in few points in the eastern coast of the Adriatic. Being a pre-Messinian relict, this association is extremely important from the natural heritage point of view.

### **Infralittoral stage**

#### **Biocenosis of the *Posidonia oceanica* meadows**

*Posidonia oceanica* meadows (=Association with *Posidonia oceanica*)

Three species of seagrasses are reported for this are: *Posidonia oceanica*, *Zostera noltii* and *Cymodocea nodosa*.

*Posidonia oceanica* meadows represent the most important underwater community. In this area *Posidonia oceanica* grows mainly on mattes, but it is also present in sand and rocky bottoms. The entire bottom is covered by sediments that are also present in suspension, what results in a moderate water clarity.



**Figure 3-11: The western coast of Rodoni cape: on the emerged rocks, only some centimeters underwater grows *Fucus virsoides*, an Adriatic endemic species (photo: L. Kashta)**

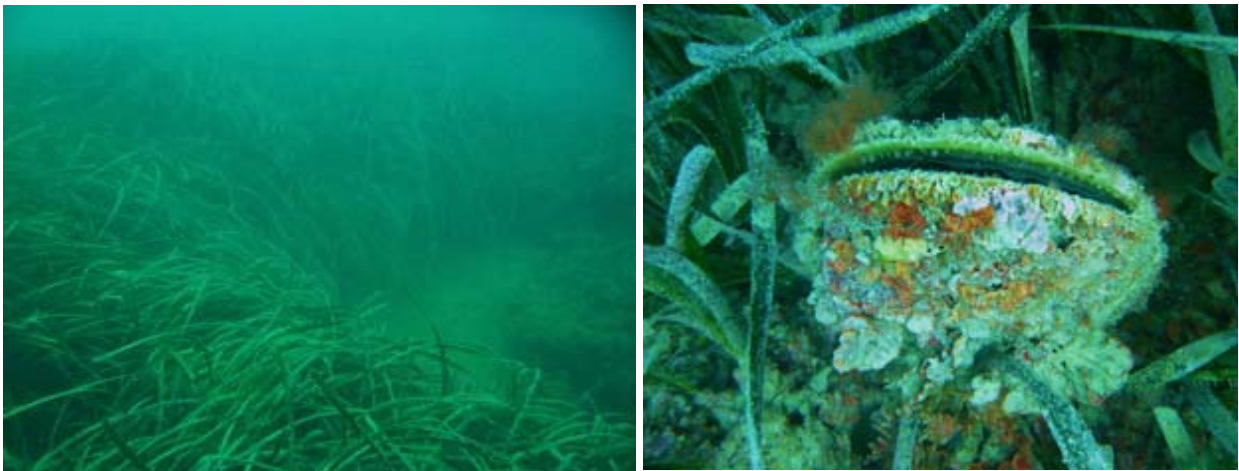
**Figure 3-12: Aerial view of Rodoni Cape coast showing dark patches of *Posidonia oceanica* meadows on the bottom.**

The upper depth limit of *Posidonia* meadows is at 3 meters. The lower limit of the meadows reaches a depth of 17-20 m and it includes different environmental conditions and bottom types,

with meadows extremely diversified in terms of physiognomy (continuous and patchy meadows).

On the rhizomes and the bottom covered by dense shoots of *Posidonia* there is a well developed sciafilic community dominated by algae like *Sphaerococcus coronopifolius*, *Peysonelia squamaria*, *Utricularia macrophysa*, *Pseudolythophyllum expansum* and *Flabellia petiolata*.

On dead mattes grow up photophilic algae like *Padina pavonica*, *Halopteris scoparia* and *Acetabularia acetabulum*.



a b  
**Figure 3-13: A meadow of *Posidonia oceanica* (a) and the endangered mollusk *Pinna nobilis* (b) at 13 m depth in Rodoni Cape (photo: S. Acunto)**

Among mollusks, as the most common species in *Posidonia* meadows of Rodoni bay were reported gastropods *Clanculus cruciatus*, *Clanculus corallinus*, *Homalopoma sangunium*, *Jujubinus exasperatus*, *Jujubinus striatus*, *Calliostoma conulum*, *Tricolia tenuis*, *Bittium reticulatum*, *Cerithium vulgatum*, *Hexaplex trunculus*, *Columbella rustica*, *Nassarius incrassatus*, *Hypseldoris tricolor* and bivalves *Pinna nobilis*, *Callista chione*, *Parvicardium exiguum*.

Different bryozoans (mainly *Electra posidoniae*), hydrozoans (mainly *Plumularia*) and some sciafilic algae live as epiphytes on *Posidonia* rhizomes in this area.

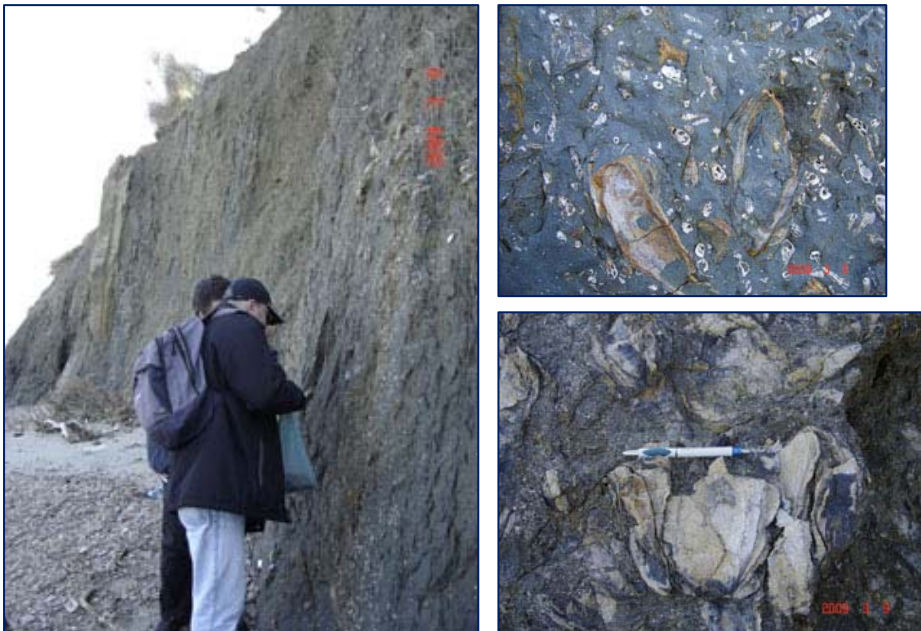


Figure 3-14: Slopes with fossil mollusks at the northern side of Rodoni Cape (photos: L. Kashta, 2009)

### Historic and cultural values in Rodoni area

#### Rodoni Castle and Saint Antonio’s Church

The Castle of Rodoni is located on the most western part of Rodoni Cape. Prince Karl Topia (XIV century) wanted to transform this place into a shipyard, while the Albanian national hero, Skanderbeg (XV century), built a castle there in order to have an easy access to the sea. The construction of the castle started after the first siege of Kruja, in 1450. It is thought to have been finished around 1452. The walls of the Rodoni Castle were 400 metres long and there were towers in each of the four corners. In 1500 the castle was taken over by the Venetians. As a result of the corrosive action of the sea waves, some of the walls are now under the waters of the Adriatic. Today the visitors can see the outer walls on the right side and the tower at the place they intersect. Close to the castle are the ruins of Saint Antonio’s Church. This church has been reconstructed recently and it is considered as a holy place and as an important pilgrimage site during some religious celebrations, especially for Saint Antonio’s day, when thousands of people from northern and central part of Albania come to visit this place.



Figure 3-15: Rodoni Castle (photo: S. Beqiraj, 2009)



Figure 3-16: Church of Saint Antonio in Rodoni Cape (photo: L. Kashta, 2009)

Table 3-2: Marine species of international concern in Rodoni – Lalzi area, listed in the most important Conventions

Species name	Barcelona protocol (1996)		Bon (2006)		CITES (2006)	Bern (1993)
	Ann. II	Ann. III	App. 1	App. 2		
<b>Magnoliophyta</b>						
<i>Zostera noltii</i>	+					
<i>Posidonia oceanica</i>	+					+

**Protected area gap assessment, marine biodiversity and legislation on marine protected areas**

<i>Cymodocea nodosa</i>						+
<b>Phaeophyta</b>						
<i>Cystoseira amentacea</i> var. <i>spicata</i>	+					+
<b>Spongia</b>						
<i>Geodia cydonium</i>	+					
<i>Hippospongia communis</i>		+				+
<i>Spongia officinalis</i>		+				+
<b>Mollusca</b>						
<i>Tonna galea</i>	+					+
<i>Pholas dactylus</i>	+					+
<i>Pinna nobilis</i>	+					
<i>Lithophaga lithophaga</i>	+				+	+
<b>Crustacea</b>						
<i>Homarus gammarus</i>		+				+
<i>Maja squinado</i>		+				+
<i>Scyllarides latus</i>		+				+
<i>Scyllarus arctus</i>		+				+
<i>Palinurus elephas</i>		+				+
<b>Echinodermata</b>						
<i>Paracentrotus lividus</i>		+				+
<b>Pisces</b>						
<i>Carcharodon carcharias</i>	+		+	+	+	+
<i>Anguilla anguilla</i>		+				
<i>Umbrina cirrhosa</i>		+				+
<i>Thunnus thynnus</i>		+				
<i>Sciaena umbra</i>		+				+
<i>Hippocampus guttulatus</i>					+	
<i>Hippocampus ramulosus</i>	+				+	+
<b>Reptilia</b>						
<i>Caretta caretta</i>	+		+	+		+
<i>Chelonia mydas</i>	+		+	+		+
<b>Cetacea</b>						
<i>Tursiops truncatus</i>	+			+	+	+
<i>Physeter macrocephalus</i>	+		+	+	+	+

**Table 3-3: Marine species of national concern in Rodoni – Lalzi area** (after Albanian Red Book 2006 and National Red List 2007)

**Seagrasses**

*Posidonia oceanica*  
*Cymodocea nodosa*

**Seaweeds (algae)**

*Cystoseira amentacea* var. *spicata*  
*Fucus virsoides*

**Sponges**

*Geodia cydonium*  
*Spongia officinalis*  
*Hippospongia communis*

**Gastropods**

*Patella caerulea*

**Bivalves**

*Arca noae*  
*Mytilus galloprovincialis*  
*Lithophaga lithophaga*  
*Pinna nobilis*  
*Ostrea edulis*  
*Crassostrea gigas*  
*Pecten jacobaeus*  
*Lima inflata*  
*Acanthocardia tuberculata*  
*Parvicardium exiguum*  
*Solen marginatus*  
*Ensis minor*  
*Loripes lacteus*  
*Lucinella divaricata*

**Polychaetes**

*Sabella spallanzani*

**Echinoderms**

*Paracentrotus lividus*

**Fishes**

*Carcharodon carcharias*  
*Hippocampus guttulatus*  
*Hippocampus ramulosus*  
*Argyrosomus regius*

**Reptiles**

*Caretta caretta*  
*Chelonia mydas*

*Patella rustica*  
*Patella ulyssiponensis*  
*Monodonta turbinata*  
*Gibbula divaricata*  
*Jujubinus exasperatus*  
*Jujubinus striatus*  
*Calliostoma conulum*  
*Tricolia pullus*  
*Tricolia tenuis*  
*Rissoa ventricosa*  
*Tonna galea*  
*Galeoda echinophora*  
*Epitonium commune*  
*Janthina janthina*  
*Hexaplex trunculus*  
*Bolinus brandaris*  
*Stramonita haemastoma*  
*Fusinus rostratus*  
*Nassarius reticulatus*  
*Nassarius incrassatus*  
*Neverita josephinia*  
*Natica stercusmuscarius*  
*Aporrhais pespelecani*

*Dosinia lupinus*  
*Macoma cumana*  
*Venerupis geographica*  
*Pholas dactylus*  
*Corbula gibba*

#### **Crustaceans**

*Hippolite longirostris*  
*Thorulus cranchii*  
*Alpheus dentipes*  
*Brachynotus sexdentatus*  
*Galathea intermedia*  
*Calappa granulata*  
*Palaemon serratus*  
*Crangon crangon*  
*Palinurus elephas*  
*Scyllarus arctus*  
*Scyllarides latus*  
*Homarus gammarus*  
*Maja squinado*  
*Eriphia verrucosa*  
*Pinotheres pisum*  
*Pisa armata*

#### **Cetaceans**

*Physeter macrocephalus*  
*Tursiops truncatus*

Cape of Lagji-Turra Castle is situated in the northern edge of the Kryevidhi Hills, which is thought to belong to Pliocene formations.

The hills are covered by Mediterranean forest and macquis composed mainly from the species *Arbutus unedo*, *Erica arborea*, *Pistacia lentiscus*, *Myrtus communis*, *Spartium junceum*, *Laurus nobilis*, *Phyllyrea media*, *Quercus ilex*, *Fraxinus ornus*, etc. The most important species is the laurel *Laurus nobilis*, a relict species, which forms here a characteristic and unique forest in Albania

### **3.2.2. Cape of Lagji -Turra Castle**

Surface: 600 ha;  
Current protection status: Scientific Reserve;  
IUCN Category: I



Figure 3-17: Gjenerali beach, in southern part of Lagji Cape



Figure 3-18: Sandy dunes (left) and shingle beach (right) along the shoreline of Spillea coast

Sandy dunes are developed in Spillea coast, in the southern part of the area. The main plant species of sandy dunes are: *Amophyla arenaria*, *Eryngium maritimum*, *Medicago marina*, *Euphorbia paralias*, etc.

The vegetation of rocky coast is dominated by *Crithmum maritimum*, accompanied from several common species like *Dittrichia viscosa*, *Hordeum marinum*, *Lagurus ovata*, *Avena barbata*, *Reichardia picroides*, etc.

## Coastal and marine habitats

### Mediolittoral Stage

#### Biocenosis of the lower mediolittoral rock

##### The association with *Fucus virsoides*

This association is developed on the mediolittoral, in some parts of the coastline represented by emerged stones, like in the coast of Rodoni Cape.

### Infralittoral stage

#### Biocenosis of the *Posidonia oceanica* meadows (=Association with *Posidonia oceanica*)

Two species of seagrasses are reported for the zone: *Posidonia oceanica* and *Cymodocea nodosa*. *Posidonia oceanica* represents the most important underwater community. In this area *Posidonia* is present in patches, as it can be distinguished in the figure 24.

*Cymodocea nodosa* forms small meadows in modest depth close to the coast.



Figure 3-19: Emerged stones represent interested biotopes for many marine livings in Lagji Cape. *Fucus virsoides*, endemic seaweed of Adriatic Sea, grow here.

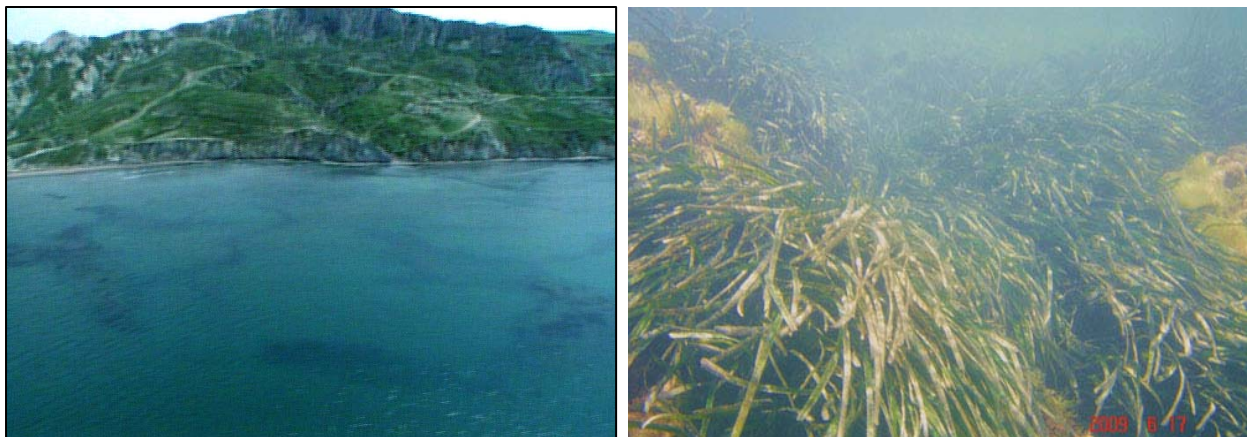




Figure 3-20: Aerial and underwater view of *Posidonia oceanica* patches in rock.

### Biocenosis of infralittoral algae

Algae reported in the area: *Nemalion helminthoides*, *Corallina officinalis*, *C. elongata*, *Hypnea musciformis*, *Phyllophora crispa*, *Sphaerococcus coronopifolius*, *Catenella caespitosa*, *Acrodiscus vidovichii*, *Ceramium ciliatum* var. *robustum*, *Spyridia filamentosa*, *Rhytiphlaea tinctoria*, *Osmundaria volubilis*, *Halopteris scoparia*, *Dictyopteris polipodioides*, *Padina pavonica*, *Cystoseira barbata*, *C. compressa*, *C. amentacea* var. *spicata*, *Ulva laetevirens*, *Cladophora prolifera*.



Figure 3-21: *Cystoseira* “forest” grows only few centimeters under water surface (photo: L. Kashta, 2009)

### Data on marine fauna

Lagji Cape has been very scarcely studied and data on marine fauna are very limited. Most of data belong to sporadic collections rather than specific studies. The most data exist about mollusks and crustaceans. However, taking into account the limited existing data, there is a considerable number of endangered species of international and national concern (see the lists below).

In the southern part of Lagji Cape is situated the so called Gjenerali (General’s) beach. It is a small sandy beach (fig. 26), almost totally in natural conditions. This beach is well known in central Albania for its cleanliness and pristine conditions, but it is not very easy to reach it, due to the bad road conditions in the last 10 - 12 km from the national road. Recently, a small tourist complex has been built, consisting in wooden villas, with a total capacity of 90 beds. The sewage is transported in underground septic wells and the impact of this complex on the coast is pretended to be very low.

Further in the south is situated Spillea beach, a long and large sandy beach, with a considerable tourist capacity, formerly known as a pristine coastal area. In the last 15 years this area has also suffered the human impact through uncontrolled tourism development, which has altered the natural habitats, with tourist settlements even inside the coastal pine forest. Agriculture is the main activity of the local community in the villages around Lagji Cape.

**Table 3-4: Marine species of international concern in Lagji Cape area, listed in the most important Conventions**

Species name	Barcelona protocol (1996)		Bon (2006)		CITES (2006)	Bern (1993)
	Ann. II	Ann. III	App. 1	App. 2		
<b>Magnoliophyta</b>						
<i>Posidonia oceanica</i>	+					+
<i>Cymodocea nodosa</i>						+
<b>Phaeophyta</b>						
<i>Cystoseira amentacea var. spicata</i>	+					+
<b>Crustacea</b>						
<i>Scyllarus arctus</i>		+				+
<b>Echinodermata</b>						
<i>Paracentrotus lividus</i>		+				+
<b>Pisces</b>						
<i>Carcharodon carcharias</i>	+		+	+	+	+
<i>Hippocampus guttulatus</i>					+	
<b>Cetacea</b>						
<i>Tursiops truncatus</i>	+			+	+	+
<i>Physeter macrocephalus</i>	+		+	+	+	+
<i>Delphinus delphis</i>	+		+	+		+
<i>Stenella coeruleoalba</i>	+			+	+	+

**Table 3-5: Marine species of national concern in Lagji Cape area (after Albanian Red Book 2006 and National Red List 2007)**

**Seagrasses**

*Posidonia oceanica*  
*Cymodocea nodosa*

**Seaweeds (algae)**

*Cystoseira amentacea var. spicata*  
*Fucus virsoides*

**Gastropods**

*Patella caerulea*  
*Patella rustica*  
*Patella ulyssiponensis*  
*Monodonta turbinata*

**Bivalves**

*Mytilus galloprovincialis*  
*Solen marginatus*  
*Chamelea gallina*

**Crustaceans**

*Alpheus dentipes*  
*Brachynotus sexdentatus*  
*Galathea intermedia*  
*Calappa granulata*  
*Scyllarus arctus*  
*Pisa armata*  
*Dardanus arrosor*

**Echinoderms**

*Paracentrotus lividus*

**Fishes**

*Carcharodon carcharias*  
*Hippocampus guttulatus*

**Cetaceans**

*Physeter macrocephalus*  
*Tursiops truncatus*  
*Delphinus delphis*  
*Stenella coeruleoalba*

*Stramonita haemastoma*

### 3.2.3. Karaburuni peninsula – Sazani island

(within the area Llogora-Orikum-Karaburun-Sazan-Radhimë-Tragjas-Dukat);

Surface (total area):	35.000 ha;
Current protection status:	National Park (Marine/Terrestrial);
IUCN Category:	II

#### General description

Karaburuni peninsula represents the western part of the Vlora bay and together with Sazani Island has been identified as a priority area by many recent environmental policy documents of the Government of Albania. The peninsula has a surface of 62 km<sup>2</sup> and separates the Albanian coast of the Adriatic Sea from the Ionian Sea. A narrow sea channel, named Mezokanali (*in English: middle channel*) separates Karaburuni from the Sazani Island.

From the geological point of view Karaburuni is made up of carbonic limestone of Cretaceous, while in the north-western part, Bay of Shën Jani, it is composed of terrigenous deposits.

The relief comprises a number of hills, up to 800 m high. The highest peaks are Maja e Ilqes (733 m), Maja e Flamurit (826 m) and Çadëri (839 m).

The entire peninsula meets the sea in steep, inaccessible cliffs. The western shore is high, fragmented with many fissures, caves, gaps, and small beaches. The accessibility of the peninsula to its beaches and coast is difficult, if not impossible, in most areas due to the cliffs at the seashore. The eastern shore is less fragmented. Cape Gjuhezes at the northwestern tip of the peninsula is the westernmost point of Albania. The area is practically devoid of woody vegetation, except for sparse maquis and wild grasses, and has no freshwater sources.

In the Karaburun peninsula there are some small bays: The Bay of Raguza, the Bay of Shën Jan, The Bay of Bristan, the Bay of Dafina, etc.

Sazani Island is 4.8 km long, 2 km wide, and has a surface of 5.7 km<sup>2</sup>. It is composed mainly of limestone rocks of Cretaceous era, and in the eastern part partially of terrigenous and cleistogenic deposits.

The hill slopes of Karaburuni peninsula, mountain chain of Rrëza e Kanalit, and Sazani Island are characterized by a great diversity of vegetation types. Some of the interesting habitats are:

#### **Broad – leaves evergreen forests (Assoc. Orno –*Quercetum ilicis*)**

At Karaburuni peninsula and mountain chain of Rrëza e Kanalit the large rivulet courses (valley) from foothills up to the top of hills are bordered by these forests (in both sides, western and eastern parts). The most important trees in this type of forest are *Quercus ilex*, *Fraxinus ornus*, *Quercus coccifera*, *Acer campestre*.

#### **Plant communities dominated by *Quercus coccifera* (Assoc. Orno- *Quercetum cocciferae*).**

A large surface of hill slopes at Sazani Island, Karaburuni peninsula and mountain chain of Rrëza e Kanalit at altitudes 0-900 m are covered by rather dense shrubs, dominated by *Quercus coccifera*. Other evergreen shrubs, which create the shrub layer of these plant communities are: *Pistacia lentiscus*, *Quercus ilex*, *Fraxinus ornus*, *Myrtus communis*, *Laurus nobilis* (especially on western slopes of Karaburuni peninsula, nearby the Bay of Bristani).



Figure 3-22: View from the western sides of Karaburun peninsula

**Plant communities dominated by *Euphorbia dendroides* and *Pistacia lentiscus* (Assoc. Pistacchio – Euphorbietum dendroides).**

Towards the inner part of the Sazani Island and Karaburun peninsula a vegetation belt exposed to the sea, at low altitudes (ca. 50-100 m) is dominated by: *Euphorbia dendroides*, *Pistacia lentiscus*, *Phillyrea angustifolia*, *Quercus coccifera*, *Olea europea* subsp. *sylvestris*, *Prasium majus*, etc.

**The forests dominated by *Quercus ithaburensis* subsp. *macrolepis* (known as Valona oak).**

This type of forests is met in patches all over the Karaburun peninsula at altitudes 0-800 m within the evergreen forest belt (below 800 m) but it doesn't form a distinct forest belt.

*Quercus ithaburensis* subsp. *macrolepis* might be considered as a relict species that persisted on the Karaburun peninsula since Tertiary period.



Figure 3-23: Sazani Island. Plant communities dominated by *Euphorbia dendroides* (photo: L. Kashta, 2009)

### List of important species

**Relict species:** *Quercus ithaburensis* subsp. *macrolepis*; *Laurus nobilis*.

**Rare and threatened plant species:** *Athamanta macedonica*, *Brassica oleracea* subsp. *oleracea*, *Brasica incana*, *Laurus nobilis*, *Origanum vulgare*, *Prunus webbii*, *Quercus ilex*, *Limonium anfractum*, *Lotus cytisoides*, *Desmazeria marina*, *Capparis spinosa*, *Prasium majus*, *Ephedra distachia*, *Orchis* sp. div., *Daphne gnidium*.



Figure 3-24: The forest of *Quercus ithaburensis* subsp. *macrolepis* on the western side of Karaburuni peninsula (photo: S. Beqiraj)

### Coastal and marine habitats

**Coastal cliffs escarpments vegetation** is present in the Sazani Island and the Karaburuni peninsula, where most of shores are rocky. Sandy or gravel shores occur in small areas only. Vertical cliffs of 200-300 m are present in some areas (Gryka e Xhenemit, Shpella e Haxhi Alisë, etc.).

The lower belt (up to 5-6 m above sea level) is dominated by xero-halophytic Crithmo-Limonietea communities. It is characterized by the following species: *Crithmum maritimum*, *Limonium anfractum*, *Elymus pycnanthus*, *Desmazeria marina*, *Lotus cytisoides*, etc.

The upper belt is inhabited by the alliance Capparo - Putorion Lov. The characteristic taxa of this belt are: *Capparis spinosa*, *Putoria calabrica*, *Ephedra distachia* etc.



Figure 3-25: Sea cliffs vegetation in Sazan Island and Karaburuni peninsula (photos: V. Tilot, S. Beqiraj)

### Mediolittoral Stage

#### Biocenosis of the lower mediolittoral rocks

*Lithophyllum byssoides* (= *L. lichenoides*), a characteristic species of western Mediterranean and Adriatic Sea, is present on the mediolittoral of Sazani island and Karaburuni peninsula. This incrusting coralline algae grows slightly above mean sea level, in small caves, corridors and along cliffs. In this area it forms small cushions (hemispheric concretions) and rarely builds rims, usually known as “trottoirs”.

#### Biocenosis of mediolittoral caves

Mediolittoral caves correspond to crevices or the entrances of caves that are partially out of the water. There are several of these places along the western side of peninsula, where grow species like *Catenella caespitosa*, *Hildenbrandia prototypus*, *Phymatolithon lenormandii*, etc.



Figure 3-26: “Trotoire” - organogenic construction of *Lithophyllum byssoides* on the mediolittoral of Karaburuni western coast (photo: V. Tilot)



Figure 3-27: Mediolittoral caves along western side of Karaburuni peninsula (photos: S. Beqiraj, L. Kashta)

### **Biocenosis of the *Posidonia oceanica* meadows**

*Posidonia oceanica* meadows (=Association with *Posidonia oceanica*)

(Habitat Directive 92/43/EEC as priority habitat; Barcelona Convention, Annex II)

Seagrass communities (also called seagrass beds or meadows) often characterize sandy and muddy biotopes in Karaburuni coasts and Vlora bay.



**Figure 3-28: Fragment of *Posidonia oceanica* meadow in western site of Karaburuni (photo: L. Kashta)**

On the western side, *Posidonia oceanica* grow generally on rocky substrates and rarely on sandy seabeds, in front of small beaches.

Fragmented *Posidonia oceanica* meadows have been observed along the eastern coast of Karaburuni, in Vlora bay. The beds with coverage of 50% extend from 6 m to 15-18 m depth.

An inventory of *Posidonia* meadows have been done in Shen Vasil and Raguza bay, at the eastern coast of Karaburuni.

In Shen Vasil, the *Posidonia* meadows were very poor in benthic macrofauna. The most common species in this site were sponges *Crambe crambe* and *Axinella canabina*; bryozoans *Myriapora truncata*, *Smittina cervicornis* and *Membranipora sp.*, eunicid polychaetes (Fam. Eunicidae) and ascidian *Halocynthia papillosa*. It's worthy to emphasize the high abundance of *Halocynthia papillosa* and *Holothuria tubulosa* in the bare parts, without macrovegetation cover, between the patches of *Posidonia*.

In Raguza bay, benthic macrofauna was slightly richer, compared to the first site. It was recorded a very high abundance of *Holothuria tubulosa*, especially in the bare parts, without macrovegetation cover. It was also recorded a high species richness of sponges, where the most common were *Aplysina aerophoba*, *Crambe crambe*, *Ircinia variabilis*, *Petrosia ficiformis* and *Axinella damicornis*. Other species with high abundance were the anthozoan *Cladocora caespitosa*, gastropod *Hexaplex trunculus*, bivalves *Venus verrucosa* and *Pseudochama gryphina* and the ascidian *Botryllus schlosseri* with the anthozoan *Caryophyllia inornata* as epibiont.



Along with the regression of the *Posidonia oceanica* beds, it has also been distinguished a mass growth of the invasive *Caulerpa racemosa*, which was developed mainly on “dead mattes” from 2 m to 15 m depth. After its first record in Albania in 2002, this invasive alga seems to be common in wide ranges of depths and substrata along the coast of Vlora bay.

### Hard beds and rocks

#### Biocenosis of infralittoral algae

Perennial brown algae are dominant over extensive parts of shallow hard substrata in the western side of Karaburuni peninsula and Sazani island. The most important group is that of the brown algae *Cystoseira*, represented with 5 species (*Cystoseira amentacea* var. *spicata*, *C. barbata*, *C. compressa*, *C. crinita* and *C. spinosa*). The *Cystoseira* communities together with the *Posidonia* meadows are the main supporters of biodiversity in shallow water.

#### Association with *Cystoseira amentacea* var. *spicata*

This association is located in the first meter of the infralittoral (from –20 to –30 cm.) and creates belts in the photophilic biotopes, where there is a strong wave action and the rocky substratum is subvertical. *Cystoseira amentacea* is an indicator of the upper limit of the infralittoral stage and represents a threatened species (after Barcelona Convention, Annex II).



Figure 3-29: Karaburuni western site. *Cystoseira amentacea* var. *spicata* (photo: L. Kashta)

This association, including many strata, is characterized by great species richness; it shelters epibiont organisms and other benthic organisms mainly belonging to the algae, polychaetes, molluscs and crustaceans. Other associations to be mentioned here are: Association with *Cystoseira crinita*, Association with *Dictyopteris polypodioides*, Association with *Corallina elongate*, Facies with *Cladocora caespitosa*.



Figure 3-30: *Cystoseira* “forest” in the infralittoral stage of Karaburuni (photo: L. Kashta, 2009)



Figure 3-31: *Sargassum vulgare* in the infralittoral stage of Karaburuni (photo: L. Kashta, 2009)

### Some of infralittoral algae recorded for the area

*Gelidium spinosum* var. *hystrix*, *Amphiroa rigida*, *Corallina elongata*, *Lithophyllum trochanter*, *Pseudolithophyllum expansum*, *Catenella caespitosa*, *Dudresnaya verticillata*, *Acrosymphyton purpuriferum*, *Halymenia floresia* var. *floresia*, *Peyssonelia squamaria*, *Phyllophora crispa*, *Sphaerococcus coronopifolius*, *Digenea simplex*, *Laurencia papillosa*, *Halopteris scoparia*, *Dictyopteris polipodioides*, *Dictyota dichotoma*, *Padina pavonica*, *Cystoseira amentacea* var. *spicata*, *C. barbata*, *C. crinita*, *C. spinosa*, *Sargassum vulgare*, *Palmophyllum crassum*, *Acetabularia acetabulum*, *Polyphysa parvula*, *Cladophora prolifera*, *Anadiomene stellata*, *C. racemosa* var. *cylindracea*, *Halimeda tuna*, *Flabellia petiolata*, *Codium bursa*,

Some of these species are very interesting in a biogeographical point of view, such as *Catenella caespitosa*, with boreal affinity, *Polyphysa parvula* (Solms-Laubach) Schnetter et Bula-Meyer with tropical affinity and the lessepsian seagrass *Halophila stipulacea* (Forsk.) Ascherson. Until now Vlora Bay represents the northern limit of area distribution of *Halophila stipulacea* in the Mediterranean.



Figure 3-32: Underwater sciaphilic communities in Haxhi Alia cave - Nature Monument (photos: L. Kashta, S. Beqiraj, 2009)

### Coralligenous biocenosis

In the circalittoral zone, on hard substrata, the most important biocenosis is the coralligenous, with calcareous red seaweeds, gorgonians and bryozoans. This biocenosis is well developed on the western side of Sazani island and Karaburuni peninsula.

Other important biocenosis is that of semi-obscure caves, where the red coral *Corallium rubrum* and some sponges live.

The red coral (*Corallium rubrum*) is a species of the Annex-III of the Barcelona Convention, as a species whose exploitation is regulated.



Figure 3-33: *Corallium rubrum* from the western coast of Karaburuni (photo: L. Kashta 2007)

### Marine benthic macrofauna of Sazan – Karaburun area and Vlora bay

There are relatively richer data on marine fauna of this area, compared to many coastal areas of Albania. Most of the data belong to studies of specific groups, such as mollusks, crustaceans and echinoderms.

More than 150 mollusk species have been reported from this area and new species for Albania and for the area its self are being published from almost every study on malacofauna and the macrozoobenthos in general (after Dhora & Salvini-Plawen 1997; Beqiraj & Kashta 2007; Beqiraj et al. 2008; Kasemi et al. 2008; Panneta et al. 2009).

About 50 species of decapod crustaceans have been reported from this area (Vaso & Gjicknuri, 1993; Kasemi et al., 2008), of which many species belong to the national red list.

From 46 echinoderm species reported for the Albanian coast, 32 of them have been also found in Vlora Bay, including Karaburuni peninsula and Sazani Island (Gjicknuri, 1980). These species include 1 crinoid, 13 asterids, 4 ophiurids, 9 echinids and 5 holothuroids. Data on the bioecology, biometry, depth and habitat characteristics were given for every species in that publication.

A recent study on macrozoobenthos of shallow rocky coast of Vlora bay (Kasemi et al., 2008), in supralittoral, mediolittoral and upper limit of infralittoral, has also included the south-eastern coast of Karaburuni (Orikum). This study has reported about 140 species of benthic macroinvertebrates, including also isopods, cirripeds, amphipods, annelids, cnidarians, nematodes, bryozoans and sipunculids (besides mollusks, crustaceans and echinoderms, which were mentioned here above).

In the Red Book of Albanian Fauna (2006), from 64 species of marine benthic macroinvertebrates, 49 species were from Vlora Bay, of which 5 are sponges, 8 cnidarians, 1 annelid, 20 mollusks, 12 decapods and 3 are echinoderms.

Taking into account the Red List of Albanian Fauna 2007, too, (besides the Red Book 2006), among 220 species of marine fauna involved in this list, about 160 species (75%) have been reported also for Vlora area, including Karaburun – Sazan.

### Other marine groups and values

In the marine waters of Sazani – Karaburuni has been also recorded the presence of the dolphins *Delphinus delphis* and *Tursiops truncatus* and many other threatened species, protected by international conventions. The marine waters of Karaburuni are also visited by the Mediterranean seal (*Monachus monachus*), one of the most threatened species in the world.

Some important crustaceans like lobster (*Homarus gammarus*), the crawfish (*Palinurus elephas*), the greater locust lobster (*Scyllarides latus*), and the spiny spider crab (*Maja squinado*) live in this area. These species are involved in the Annexe-III of the Barcelona Convention, as species whose exploitation is regulated.

*Ophidiaster ophidianus*, a sea star of international concern, is a characteristic echinoderm of precoralligenous biocoenosis in this area.



Figure 3- 34: *Ophidiaster ophidianus* and *Hacelia attenuata* from Karaburuni coast (photos: L. Kashta)

Noteworthy fish species of Karaburuni waters, included in the Annex III of Barcelona Convention are: the dusky grouper (*Epinephellus marginatus*), the Atlantic bluefin tuna (*Thunnus thynnus*) and the swordfish (*Xiphias gladius*).

In autumn 2005 a survey was carried out, aiming to make a rapid assessment and gather information (existing data and interviews on site) on the status of the populations of monk seal (*Monachus monachus*) and loggerhead turtle (*Caretta caretta*) along the Albanian coast (White et al. 2006). It was suggested that suitable (potential) monk seal habitats exist along the southern coast of Albania, stretching from Karaburuni and Rreza e Kanalit to the area around Butrint. Fishermen reported two sightings of monk seal during the summer 2004, one in the Rreza e Kanalit-Karaburuni peninsula and the other close to Saranda harbor.

In another publication (Antolović et al. 2005), 17 caves that seemed to be of some importance as monk seal shelters were located between the small gulf of Grama and the northern tip of Karaburuni.

All caves identified as potential monk seal shelters during the 1999 survey (Antolović et al, 2005) were re-examined. Based on the researchers' experience on several similar surveys carried out in the Greek islands in the Ionian Sea, only one cave located in the west coast of Karaburuni peninsula could be characterized as an important monk seal shelter.

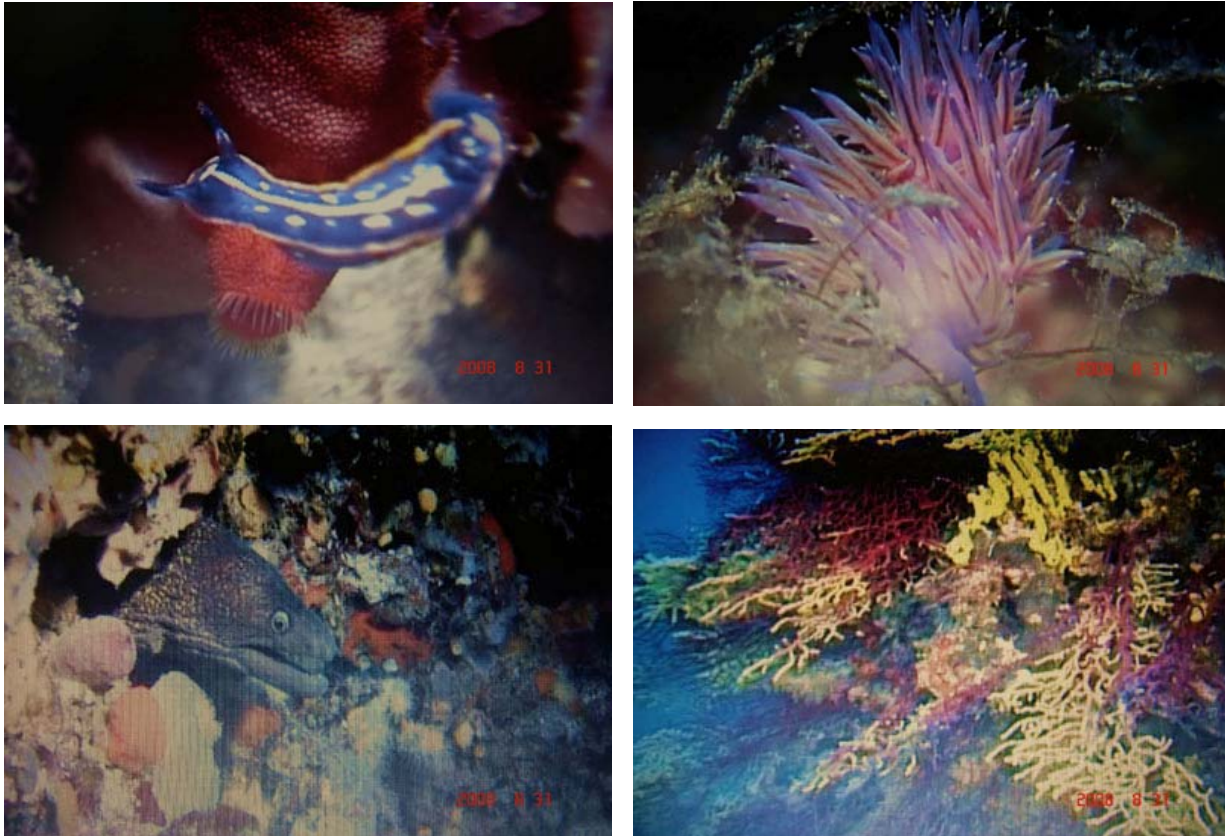


Figure 3-35: Different animal species from the coralligenous zone of Karaburuni (photos: BluSub, 2008)

### Historical and cultural values

Karaburuni area and Vlora bay are well-known for their historical and cultural values. Orik (Orikum), in the south-eastern part of Karaburuni peninsula has been an important economic and cultural center in the Mediterranean during the ancient Greek and Roman periods.

In the western coast of Karaburuni, Grama bay is the only suitable and safety place for ship anchoring and it was a famous harbor since thousand of years. On the rocks of Grama bay there are abundant inscriptions in old Greek and Latin languages, dating more than 2000 years. The series of caves have legends associated with them. Grama is considered as the richest “rocky diary” in the Mediterranean.

In the underwater habitats of Karaburuni, a considerable number of wrapped ships and many archaeological objects are testimony of the relations of this area with other civilizations of the Greek and Roman periods. Divers can also see the traces of the two world wars of the 20<sup>th</sup> century. These values make this area as one of the most potential area of the Albanian coast as a tourist destination in historic, cultural and archaeological aspects, besides the high variety of landscape in geomorphologic and environmental aspects. Underwater topography with interesting caves and very diverse microhabitats, as well as the presence of the wrapped ships are additional tourism values, especially for divers.



Figure 3-36: Grama bay at the Rreza e Kanalit ridge - Nature monument



Figure 3-37: Inscriptions on the rocky wall of Grama bay (photos: L. Kashta, 2009)



**Figure 3-38: The western shore of Karaburuni is spectacular, with small gulfs and isolated beaches with deep and clear water. Dafina bay and Grama bay (photos: L. Kashta, V. Tilot)**



Table 3-6: Marine species of international concern in Karaburun – Sazani area, listed in the most important Conventions

Species name	Barcelona protocol (1996)		Bon (2006)		CITES (2006)	Bern (1993)
	Ann. II	Ann. III	App. 1	App. 2		
<b>Magnoliophyta</b>						
<i>Posidonia oceanica</i>	+					+
<i>Cymodocea nodosa</i>						+
<b>Phaeophyta</b>						
<i>Cystoseira amentacea</i> var. <i>spicata</i>	+					+
<b>Rhodophyta</b>						
<i>Lithophyllum byssoides</i>	+					
<i>Lithophyllum trochanter</i>	+					
<b>Spongia</b>						
<i>Geodia cydonium</i>	+					
<i>Hippospongia communis</i>		+				+
<i>Spongia officinalis</i>		+				+
<i>Petrobiona massiliana</i>						+
<b>Cnidaria</b>						
<i>Corallium rubrum</i>		+				+
<b>Mollusca</b>						
<i>Ranella olearia</i>	+					+
<i>Tonna galea</i>	+					+
<i>Charonia tritonis</i>	+					+
<i>Zonaria pyrum</i>	+					+
<i>Pholas dactylus</i>	+					+
<i>Pinna nobilis</i>	+					
<i>Lithophaga lithophaga</i>	+				+	+
<b>Crustacea</b>						
<i>Homarus gammarus</i>		+				+
<i>Maja squinado</i>		+				+
<i>Scyllarides latus</i>		+				+
<i>Scyllarus arctus</i>		+				+
<i>Palinurus elephas</i>		+				+
<b>Echinodermata</b>						
<i>Paracentrotus lividus</i>		+				+
<i>Ophidiaster ophidianus</i>	+					+
<i>Centrostephanus longispinus</i>	+					+
<b>Pisces</b>						
<i>Anguilla anguilla</i>		+				
<i>Umbrina cirrhosa</i>		+				+
<i>Thunnus thynnus</i>		+				
<i>Sciaena umbra</i>		+				+
<i>Hippocampus guttulatus</i>					+	
<i>Epinephellus marginatus</i>		+				+
<i>Xiphias gladius</i>		+				
<b>Reptilia</b>						
<i>Caretta caretta</i>	+		+	+		+
<b>Pinnipedia</b>						
<i>Monachus monachus</i>	+		+	+	+	+
<b>Cetacea</b>						
<i>Tursiops truncatus</i>	+			+	+	+
<i>Delphinus delphis</i>	+		+	+		+

**Table 3-7: Marine species of national concern in Karaburun – Sazani area** (after Albanian Red Book 2006)

<b>Seagrasses</b>	<b>Gastropods</b>	<b>Echinoderms</b>
<i>Posidonia oceanica</i>	<i>Patella caerulea</i>	<i>Paracentrotus lividus</i>
<i>Cymodocea nodosa</i>	<i>Monodonta turbinata</i>	<i>Ophidiaster ophidianus</i>
	<i>Diodora graeca</i>	<i>Centrostephanus longispinus</i>
<b>Seaweeds (algae)</b>	<i>Haliotis lamellosa</i>	
<i>Cystoseira amentacea</i> var. <i>spicata</i>	<i>Aporrhais pespelecani</i>	<b>Fishes</b>
<i>Lithophyllum byssoides</i>	<i>Ranella olearia</i>	<i>Hippocampus guttulatus</i>
<i>Lithophyllum trochanter</i>	<i>Charonia tritonis variegata</i>	<i>Mola mola</i>
<i>Tenarea tortuosa</i>	<i>Zonaria pyrum</i>	
<i>Bornetia secundiflora</i>	<i>Tonna galea</i>	<b>Reptiles</b>
<i>Catenella caespitosa</i>		<i>Caretta caretta</i>
<i>Digenea simplex</i>	<b>Bivalvia</b>	
<i>Polyphysa parvula</i>	<i>Mytilus galloprovincialis</i>	<b>Pinnipedia</b>
	<i>Lithophaga lithophaga</i>	<i>Monachus monachus</i>
<b>Sponges</b>	<i>Pinna nobilis</i>	
<i>Geodia cydonium</i>	<i>Pteria hirundo</i>	<b>Cetaceans</b>
<i>Spongia officinalis</i>	<i>Glossus humanus</i>	<i>Delphinus delphis</i>
<i>Hippospongia communis</i>	<i>Ostrea edulis</i>	<i>Tursiops truncatus</i>
<i>Raspailia viminalis</i>	<i>Pecten jacobaeus</i>	
<i>Petrobiona massiliana</i>	<i>Solen marginatus</i>	
	<i>Chamelea gallina</i>	
<b>Cnidarians</b>	<i>Tapes decussatus</i>	
<i>Aurelia aurita</i>	<i>Venus verrucosa</i>	
<i>Chrysaora hysoscella</i>		
<i>Actinia cari</i>	<b>Crustaceans</b>	
<i>Bunodactis verrucosa</i>	<i>Alpheus dentipes</i>	
<i>Cladocora cespitosa</i>	<i>Callinassa tyrrhena</i>	
<i>Corallium rubrum</i>	<i>Crangon crangon</i>	
<i>Eunicella singularis</i>	<i>Dardanus arrosor</i>	
<i>Eunicella cavolinii</i>	<i>Eriphia verrucosa</i>	
	<i>Galathea intermedia</i>	
<b>Annelids</b>	<i>Maja squinado</i>	
<i>Sabella spallanzani</i>	<i>Paguristes oculatus</i>	
	<i>Palaemon serratus</i>	
	<i>Palinurus elephas</i>	
	<i>Penaeus kerathurus</i>	
	<i>Scyllarus arctus</i>	

**Note:** in the Red List of Albanian Fauna 2007 there are about 220 species of marine fauna. About 75% of them have been reported also for Vlora area, including Karaburun – Sazan.

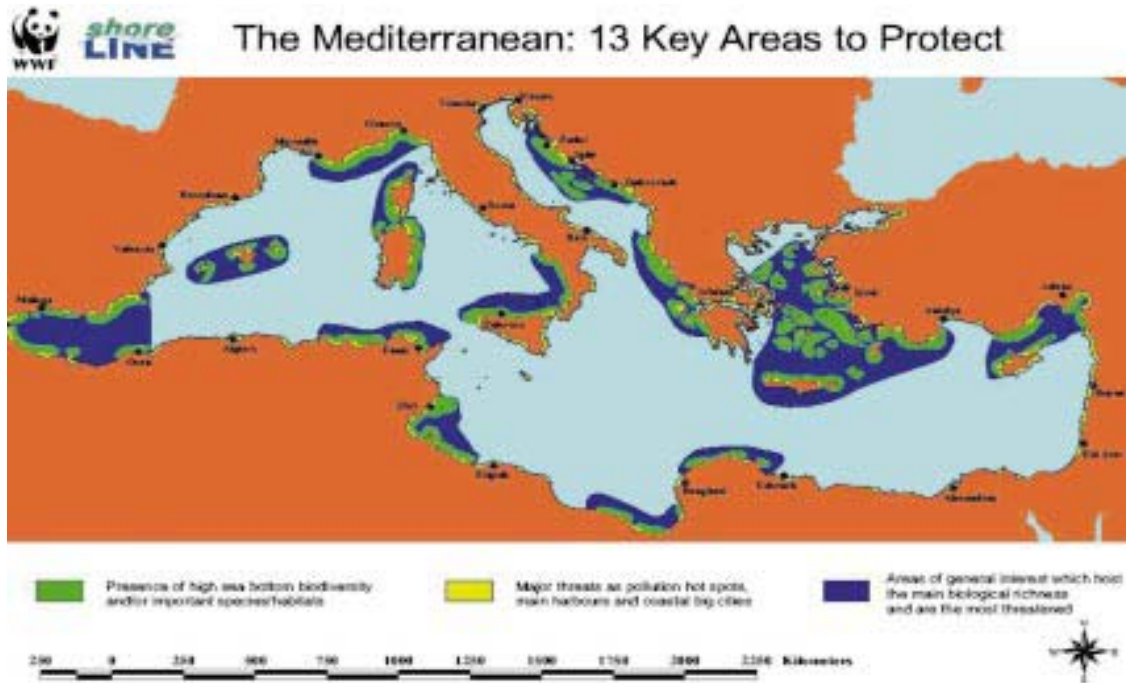


Figure 3-39: This map, produced by WWF International, show 13 key areas with priority for conservation in Mediterranean. Karaburuni – Sazani, in Albanian coast, is part of Eastern Ionian coast and islands area.

### 3.2.4. Canyon of Gjipe

Surface:	1200 ha;
Current protection status:	Landscape Protected Area;
IUCN Category:	V

The Canyon of Gjipe is situated in south Albania, between Dhermi and Vuno, two villages close to the small town of Himara. The canyon has been created from the Gjipe gorge, which flow through a calcareous bedrock until the sea, creating a small and beautiful beach.

Gjipe gorge and its canyon represent a unique geographical characteristic. The canyon measures a narrow strait 10-20 m wide and over 800 m long.

The scenery is wonderful and close by is the beach of Gjipe with clean sand and sea. On the both sides of the beach there is a typical rocky coast eroded by the waves and some small caves.

The typical vegetation cover is represented by the associations *Oleo-Ceratonietum*, with *Cerantonia siliqua* and *Olea europaea* subsp. *sylvestris*, which form fragmented patches.

The association *Chrysopogono-Phlometum fruticosae*, with *Phlomis fruticosa* as dominant species, is also present there.

In the upper part of the canyon grows up *Hypericum haplophylloides*, an endemic hedge plant.

Coastal vegetation on the beach has a low cover and is composed manly by the species *Cakile maritima*, *Salsola kali*, *Inula crithmoides* and *Otanthus maritimus*.

### Noteworthy plant species

Endemic and subendemic species: *Hypericum haplophyloides*, *Limonium anfractum*.

Relict species: *Quercus ithaburensis* subsp. *macrolepis*

Rare and threatened species: *Athamanta macedonica*, *Brassica oleracea* subsp. *oleracea*, *Prunus webbii*, *Limonium anfractum*, *Hypericum haplophyloides*, *Lotus cytisoides*, *Desmazeria marina*, *Capparis spinosa*.



Figure 3-40: Canyon of Gjipe and its small beach – Nature Monument (photo: L. Kashta)

### The most important marine habitats

#### Mediolittoral zone

#### Infralittoral zone

Biocenosis of the *Posidonia oceanica* meadows

Biocenosis of infralittoral algae

On the biocenosis of the lower mediolittoral rock it is important to note the presence of some calcareous algae, particularly *Lithophyllum byssoides* and *Lythophyllum trochanter*, which form small isolated cushioning bioconstructions.

#### *Posidonia oceanica* meadows (=Association with *Posidonia oceanica*)

In front of the beach and on its both sides, a continuous *Posidonia oceanica* meadow, which covers 60% of sea bottom, is relatively good developed. Due to the water clarity, *Posidonia oceanica* meadows have been observed occurring in waters exceeding 23 m in depth.

These meadows are generally continuous and dense, with isolated sand patches, where another seagrass *Cymodocea nodosa* grows up.

Considerable surfaces of degraded meadows are recorded at about 20 meters depth. Sand excavation and turbidity may have been the main factors of this heavy degradation (Kashta *et al.*, 2005).

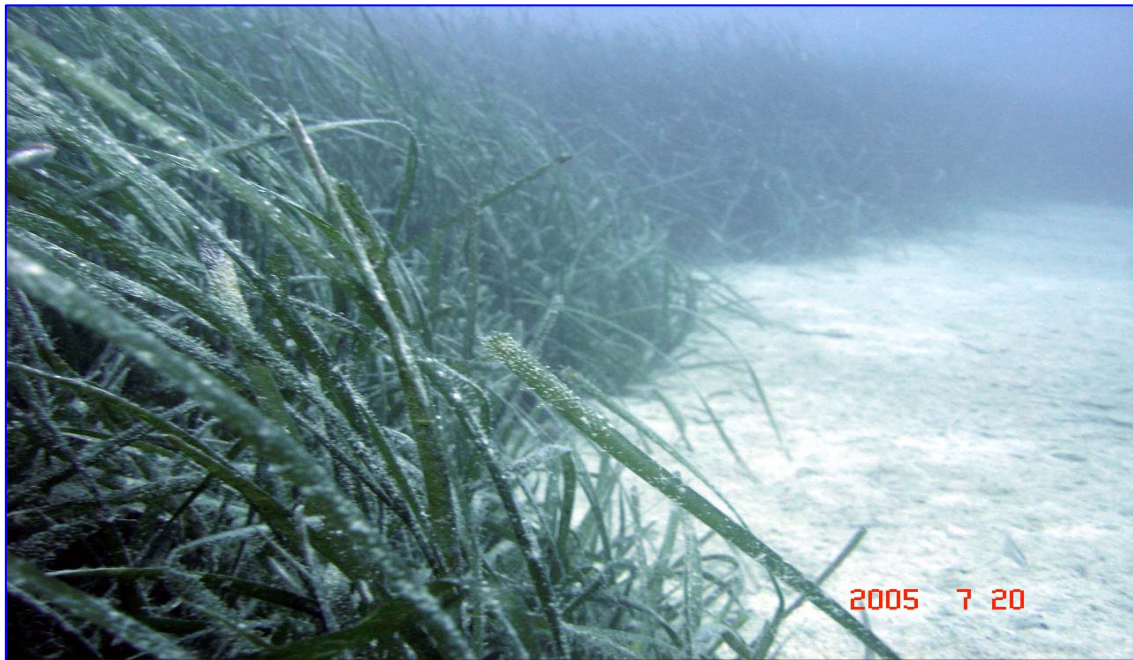


Figure 3-41: The lower depths limit growth of *Posidonia oceanica* meadow at 23 m in Gjipe (photo: L. Kashta)

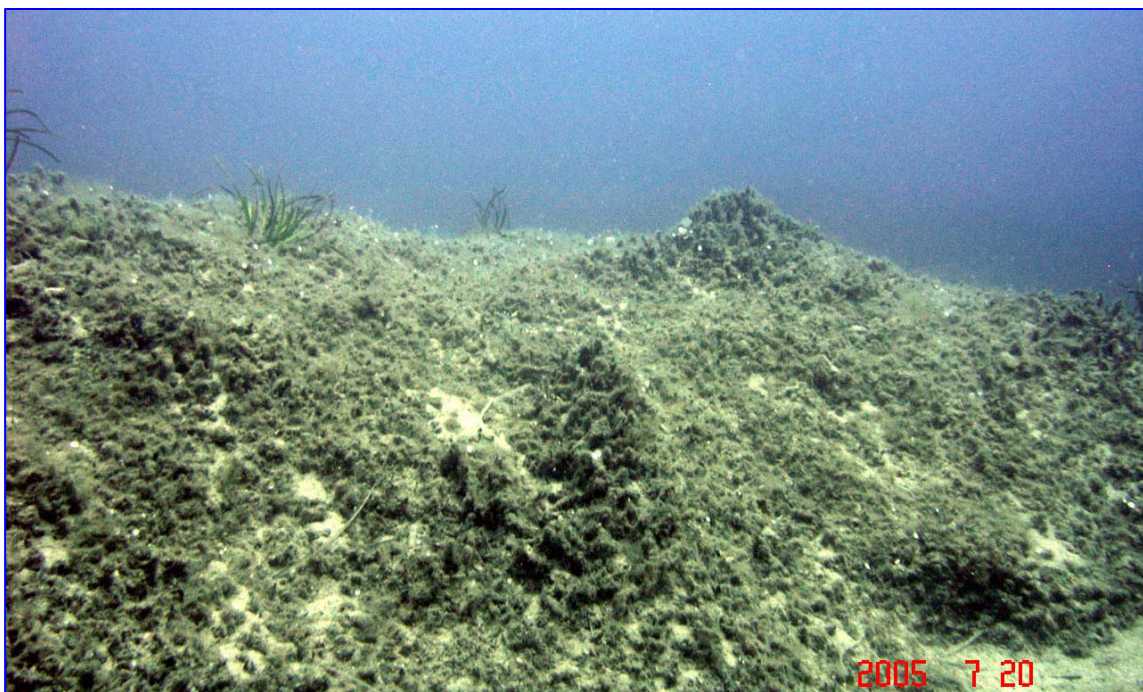


Figure 3-42: A dead *Posidonia oceanica* bed (about 18m depths). Only isolated shoots have been remained alive (photo: L. Kashta)

### Data on marine fauna

Studies on marine fauna in Gjipea area have been very limited. Most of data are gathered from sporadic collections. Despite the limited existing data, there is a considerable number of endangered species of international and national concern (see the lists below).

**Table 3-8: Marine species of international concern in Gjipe area, listed in the most important Conventions**

Species name	Barcelona protocol (1996)		Bon (2006)		CITES (2006)	Bern (1993)
	Ann. II	Ann. III	App. 1	App. 2		
<b>Magnoliophyta</b>						
<i>Posidonia oceanica</i>	+					+
<i>Cymodocea nodosa</i>						+
<b>Phaeophyta</b>						
<i>Cystoseira amentacea</i> var. <i>spicata</i>	+					+
<b>Rhodophyta</b>						
<i>Lithophyllum byssoides</i>	+					
<i>Lithophyllum trochanter</i>	+					
<b>Spongia</b>						
<i>Geodia cydonium</i>	+					
<i>Hippospongia communis</i>		+				+
<i>Spongia officinalis</i>		+				+
<i>Petrobiona massiliana</i>						+
<b>Crustacea</b>						
<i>Homarus gammarus</i>		+				+
<i>Maja squinado</i>		+				+
<i>Scyllarides latus</i>		+				+
<i>Palinurus elephas</i>		+				+
<b>Echinodermata</b>						
<i>Paracentrotus lividus</i>		+				+
<i>Ophidiaster ophidianus</i>	+					+
<b>Pisces</b>						
<i>Carcharodon carcharias</i>	+		+	+	+	+
<b>Reptilia</b>						
<i>Caretta caretta</i>	+		+	+		+
<b>Cetacea</b>						
<i>Ziphius cavirostris</i>	+					+
<i>Delphinus delphis</i>	+		+	+		+
<i>Tursiops truncatus</i>	+			+	+	+

**Table 3-9: Marine species of national concern in Gjipe area (after Albanian Red Book 2006 and National Red List 2007)**

#### Seagrasses

*Posidonia oceanica*  
*Cymodocea nodosa*

#### Seaweeds (algae)

*Cystoseira amentacea* var. *spicata*  
*Lithophyllum byssoides*

#### Gastropods

*Patella caerulea*  
*Patella rustica*  
*Patella ulyssiponensis*  
*Haliotis lamellosa*

#### Bivalves

#### Echinoderms

*Paracentrotus lividus*  
*Ophidiaster ophidianus*

#### Fishes

*Carcharodon carcharias*  
*Chimaera monstrosa*

*Lithophyllum trochanter*

**Sponges**

*Geodia cydonium*  
*Petrobiona massiliana*  
*Spongia officinalis*  
*Hippospongia communis*  
*Raspailia viminalis*

**Cnidarians**

*Bunodactis verrucosa*  
*Actinia cari*

*Mytilus galloprovincialis*

**Crustaceans**

*Brachynotus sexdentatus*  
*Calappa granulata*  
*Palaemon serratus*  
*Palinurus elephas*  
*Pinnotheres pisum*  
*Hippolyte longirostris*  
*Thorulus cranchii*  
*Homarus gammarus*  
*Maja squinado*  
*Pisa armata*  
*Scyllarides latus*

**Reptiles**

*Caretta caretta*

**Cetaceans**

*Ziphius cavirostris*  
*Tursiops truncatus*  
*Delphinus delphis*

### 3.2.5. Porto Palermo

Surface: 600 ha;  
Current protection status: Strict Nature Reserve;  
IUCN Category: I

Porto Palermo bay, known as Panorma bay in ancient times, is situated in southeast of Himara town, between peninsula of Panorma and peninsula of Kavadon, at the Ionian Sea.

Inside of the bay there is a small and attractive rocky peninsula, which enters about 300 meters to the sea. Here is a fortress, constructed by Ali Pasha of Tepelena at the end of 18<sup>th</sup> century in the honor of his wife, Vasiliqia.

Porto Palermo is a protected bay and had a very limited access in the former time (until 1991), as it was a military area. In the recent years a small fish farm has been established within the bay.

The surrounding area is barren, but the peninsula is covered by ever-green mediterranean vegetation.

### Thermo-Mediterranean and pre-desert scrub (Natura 2000)

Tree-spurge formations

Stands of *Euphorbia dendroides*, remarkable tertiary relict of Macaronesian origin;

The association with tree spurge (*Euphorbia dendroides*) is considered as the most interesting for this area and near unique in Albania. This area also represents the first degraded grade of *Quercus ilex*, growing on calcareous formation.

The floristic composition of this association consists mainly in: *Anagyrris feotida*, *Salvia triloba*, *Lotus cytisoides*, *Phlomis fruticosa*, *Glaucium flavum*, *Pistacia terebinthus*, *Calicotome villosa*, *Spartium junceum*, *Ruscus aculeatus*, *Urginea maritima*, *Asphodelus aestivus*, *Chrysopogon gryllus*, *Acanthus spinosus*.

The association with *Salvia triloba* L. is another characteristic association for this area.

**Relict species:** *Quercus ithaburensis* subsp. *macrolepis*, *Euphorbia dendroides*.

**Rare and threatened species (National Red List 2008):** *Athamanta macedonica*, *Brassica oleracea* subsp. *oleracea*, *Laurus nobilis*, *Origanum vulgare*, *Prunus webbii*, *Quercus ilex*,

*Limonium anfractum*, *Lotus cytisoides*, *Desmazeria marina*, *Capparis spinosa*, *Prasium majus*, *Olea europea* var. *sylvestris*.



Figure 3-43: General view of Porto Palermo bay with the peninsula and the fortress (photo: L. Kashta, 2009)



Figure 3-44: The characteristic association with *Euphorbia dendroides* and the fish Farm in Porto Palermo (photos: L. Kashta, 2009)

## The most important marine habitats

### Infralittoral stage

The meadow of *Posidonia oceanica* is in a good state from 3 m to 18 m depth. It is patchy in lower depths and the lowest depth limit has been recorded in 28 m. In the northern part of Porto



Palermo, at a depth of 2-3 m, there is a small meadow of the phanerogam plant *Halophila stipulacea*, a lessepsian species, which is a migratory from the Indian Ocean.

In the shallow waters of the area, in the mediolittoral and the upper part of infralittoral the following algae are encountered: *Corallina elongata*, *Jania rubens* var. *rubens*, *Lithophyllum incrustans*, *L. byssoides*, *L. trochanter*, *Tenarea tortuosa*, *Peyssonelia squamaria*, *Phyllophora crispa*, *Sphaerococcus coronopifolius*, *Osmundaria volubilis*, *Scitosiphon lomentarius*, *Cystoseira barbata*, *C. amentacea* var. *spicata*, *Halopteris scoparia*, *Dictyopteris polipodioides*, *Dictyota dichotoma*, *Padina pavonica*, *Ulva laetevirens*, *Cladophora prolifera*, *Acetabularia acetabulum*, *Halimeda tuna*, *Flabellia petiolata*, *Codium bursa*.

Marine fauna of Porto Palermo has not been well studied and the data are limited. Most of data are gathered from sporadic collections. Despite this limited data, many marine species of Porto Palermo are of national and international concern.

Although there are no studies related to environmental impact assessments, it is supposed that the fish farm within the Porto Palermo bay creates negative effects to marine biota, especially to *Posidonia* meadows.



Figure 3-45: Dense *Posidonia oceanica* meadow in Porto Palermo at 10 meters depth (photo: Xh. Mato)

Table 3-10: Marine species of international concern in Porto Palermo, listed in the most important Conventions.

Species name	Barcelona protocol (1996)		Bon (2006)		CITES (2006)	Bern (1993)
	Ann. II	Ann. III	App. 1	App. 2		
<b>Magnoliophyta</b>						
<i>Posidonia oceanica</i>	+					+
<b>Phaeophyta</b>						
<i>Cystoseira amentacea</i> var. <i>spicata</i>	+					+
<b>Rhodophyta</b>						
<i>Lithophyllum byssoides</i>	+					
<i>Lithophyllum trochanter</i>	+					
<b>Spongia</b>						
<i>Geodia cydonium</i>	+					
<i>Hippospongia communis</i>		+				+
<i>Spongia officinalis</i>		+				+
<i>Petrobiona massiliana</i>						+
<b>Mollusca</b>						
<i>Ranella olearia</i>	+					+
<i>Pinna nobilis</i>	+					
<b>Crustacea</b>						
<i>Homarus gammarus</i>		+				+
<i>Maja squinado</i>		+				+
<i>Scyllarides latus</i>		+				+
<i>Palinurus elephas</i>		+				+
<b>Echinodermata</b>						
<i>Paracentrotus lividus</i>		+				+
<i>Ophidiaster ophidianus</i>	+					+
<b>Pisces</b>						
<i>Carcharodon carcharias</i>	+		+	+	+	+
<b>Reptilia</b>						
<i>Caretta caretta</i>	+		+	+		+
<b>Cetacea</b>						
<i>Ziphius cavirostris</i>	+					+
<i>Delphinus delphis</i>	+		+	+		+
<i>Tursiops truncatus</i>	+			+	+	+

Table 3-11: Marine species of national concern in Porto Palermo (after Albanian Red Book 2006 and National Red List 2007)

**Seagrasses**

*Posidonia oceanica*  
*Cymodocea nodosa*

**Seaweeds (algae)**

*Cystoseira amentacea* var. *spicata*  
*Lithophyllum byssoides*  
*Lithophyllum trochanter*

**Sponges**

*Geodia cydonium*  
*Petrobiona massiliana*

**Gastropods**

*Patella caerulea*  
*Patella rustica*  
*Patella ulyssiponensis*  
*Haliotis lamellosa*  
*Monodonta turbinata*  
*Ranella olearia*  
*Stramonita haemastoma*

**Crustaceans**

*Brachynotus sexdentatus*  
*Calappa granulata*

**Echinoderms**

*Paracentrotus lividus*  
*Ophidiaster ophidianus*

**Fishes**

*Carcharodon carcharias*  
*Chimaera monstrosa*

**Reptiles**

*Caretta caretta*

**Cetaceans**

*Spongia officinalis*  
*Hippospongia communis*

**Cnidarians**

*Bunodactis verrucosa*  
*Actinia cari*

**Bivalves**

*Mytilus galloprovincialis*  
*Pinna nobilis*  
*Ostrea edulis*

*Palaemon serratus*  
*Palinurus elephas*  
*Pinnotheres pisum*  
*Hippolyte longirostris*  
*Thorulus cranchii*  
*Homarus gammarus*  
*Maja squinado*  
*Pisa armata*  
*Scyllarides latus*

*Ziphius cavirostris*  
*Tursiops truncatus*  
*Delphinus delphis*

**3.2.6. Kakomea Bay and Qefali Cape**

Surface: 2200 ha;  
Current protection status: Protected Landscape/Seascape Area;  
IUCN Category: V

The Bay of Kakomea is situated about 12 km north of Saranda, at the Ionian Sea. It represents an interesting landscape, vegetation, combination of high hills with the beach and a hidden monastery.



Figure 3-46: Views of Kakomea bay (photo: L. Kashta)

Characteristic vegetation with *Quercus ithaburensis* subsp. *macrolepis* and accompanying macquis species grow up very close to the sea.

The main accompanying species are: *Pistacia lentiscus*, *Osyris alba*, *Andropogon ischaemum*, *Quercus coccifera*, *Anthyllis hermannia*, *Phlomis fruticosa*, *Thymus capitatus*, *Chrysopogon*

*gryllus*, *Rubus ulmifolius*, *Urginea maritima*, *Origanum vulgare*, *Salvia officinalis*, *Teucrium chamaedrys*, *Dactylis glomerata* etc.

**Rare and threatened species (National Red List, 2008) recorded in the area:**

*Laurus nobilis*, *Origanum vulgare*, *Prunus webbii*, *Quercus ilex*, *Limonium anfractum*, *Lotus cytisoides*, *Desmazeria marina*, *Capparis spinosa*, *Prasium majus*, *Olea europea* var. *sylvestris*.

**Relict species:** *Quercus ithaburensis* subsp. *macrolepis*, *Laurus nobilis*.



Figure 3-47: Kakomea: (a) forest formation with *Quercus ithaburensis* subsp. *macrolepis* and (b) maquis (photos: L. Kashta)

### The most important marine habitats

#### Infralittoral stage

#### Biocenosis of the *Posidonia oceanica* meadows

*Posidonia oceanica* meadows (=Association with *Posidonia oceanica*)



**Figure 3-48: Exploring in *Posidonia* meadow, at 7 meters depth in Kakomea bay (photo: L. Kashta)**

Dense *Posidonia oceanica* meadows cover a large area of sandy bottom in the front of the bay and on its both sides. The meadows start to grow from 3 meters (the upper limit) and extends until more than 21 meters depth (the lower depth limit). In some places, where they are in regress and form dead mattes, the invasive green seaweed (*Caulerpa racemosa* var. *cylindracea*) is recorded.

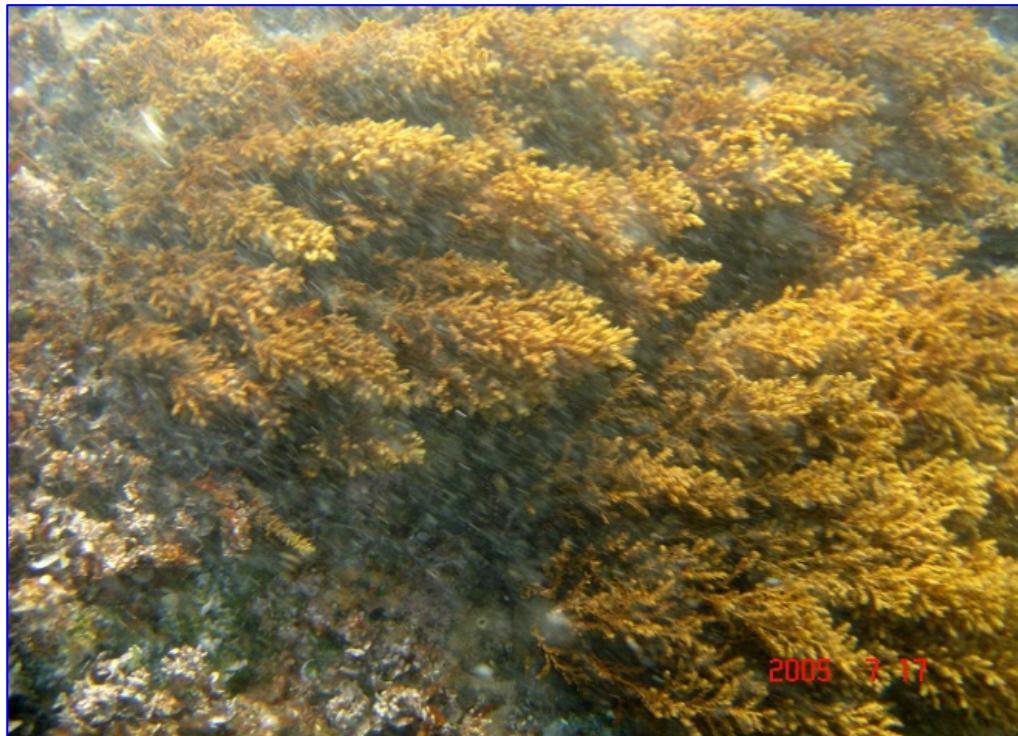
#### Biocenosis of infralittoral algae

Different photophilic algae grow on rocky bottoms of the area, including habitat formers like species of the genus *Cystoseira*. Sciaphilic seaweeds like *Peyssonelia squamaria*, *Halimeda tuna* and *Flabellia petiolata* are common species in underwater caves and cliffs.

On the upper infralittoral are recorded diferent invertebrates like sponges *Spiraastrella cunctatrix*, *Spongia officinalis*, *Cacopsongia* sp., anthozoans *Cladocora caespitosa*, *Balaniophylla europaea* and molluscs *Patella caerulea*, *Monodonta turbinata*.

Marine fauna of Kakomea is almost unstudied, except some surveys of macrofauna in the *Posidonia oceanica* beds and some collections from the mediolittoral and upper infralittoral.

Besides the beautiful landscape, nice beach and clean seawater, another tourist attraction is also the monastery of Saint Mary, situated on the hill over the beach. The monastery is comprised of residential buildings situated in the two corners of the courtyard and a church in the center, which is dedicated to Saint Mary. This is a small but interesting church, with frescoes and inscriptions dating from 1672.



**Figure 3-49: *Cystoseira amentacea* var. *spicata*, karacteristic species of upper infralittoral (photo: L. Kashta)**

Table 3-12: Marine species of international concern in Porto Palermo, listed in the most important Conventions

Species name	Barcelona protocol (1996)		Bon (2006)		CITES (2006)	Bern (1993)
	Ann. II	Ann. III	App. 1	App. 2		
<b>Magnoliophyta</b>						
<i>Posidonia oceanica</i>	+					+
<i>Cymodocea nodosa</i>						+
<b>Phaeophyta</b>						
<i>Cystoseira amentacea var. spicata</i>	+					+
<b>Spongia</b>						
<i>Hippospongia communis</i>		+				+
<i>Spongia officinalis</i>		+				+
<b>Mollusca</b>						
<i>Ranella olearia</i>	+					+
<i>Charonia tritonis</i>	+					+
<b>Echinodermata</b>						
<i>Centrostephanus longispinus</i>	+					+
<b>Pisces</b>						
<i>Carcharodon carcharias</i>	+		+	+	+	+
<b>Reptilia</b>						
<i>Caretta caretta</i>	+		+	+		+
<b>Cetacea</b>						
<i>Delphinus delphis</i>	+		+	+		+
<i>Tursiops truncatus</i>	+			+	+	+

Table 3-13: Marine species of national concern in Kakomea area (after Albanian Red Book 2006 and National Red List 2007)

**Seagrasses**

*Posidonia oceanica*  
*Cymodocea nodosa*

**Seaweeds (algae)**

*Cystoseira amentacea var. spicata*

**Sponges**

*Spongia officinalis*  
*Hippospongia communis*

**Cnidarians**

*Eunicella cavolinii*  
*Aurelia aurita*  
*Chrysaora hysoscella*

**Gastropods**

*Diodora graeca*  
*Patella caerulea*  
*Monodonta turbinata*  
*Charonia tritonis*  
*Ranella olearia*  
*Hadriana oretea*

**Bivalves**

*Mytilus galloprovincialis*  
*Ostrea edulis*

**Polychaetes**

*Sabella spallanzani*

**Crustaceans**

*Penaeus kerathurus*  
*Hippolyte longirostris*  
*Thorulus cranchii*

**Echinoderms**

*Centrostephanus longispinus*

**Fishes**

*Carcharodon carcharias*  
*Chimaera monstrosa*  
*Argyrosomus regius*

**Reptiles**

*Caretta caretta*

**Cetaceans**

*Tursiops truncatus*  
*Delphinus delphis*

### 3.2.7. Çuka Channel -Ksamili Bay and Islands

Surface:	1000 ha;
Current protection status:	Landscape Protected Area;
IUCN Category:	V

#### Islands of Ksamil

Ksamili islands consist in 4 small rocky islands with a total surface of 8,9 ha, close to the coast of Ksamili, south of Saranda town, the closest town with the Greek border. They have been created during the Jurassic, as a result of the disjunction of the mainland, due to the water activity. The biggest island is about 5 ha and it is situated 60 m from the coastline; the second one is 1,3 ha and 500 m distant from the coastline; the two other islands are respectively 1,1 ha and 0,8 ha and looks like emerged stones rather than real islands. The islands are covered by vegetation dominated by Mediterranean macquis.

#### The most important marine habitats

##### Mediolittoral zone

Biocenosis of the upper mediolittoral rock

Biocenosis of the lower mediolittoral rock

##### Infralittoral zone

Biocenosis of the *Posidonia oceanica* meadows

Biocenosis of infralittoral algae



Figure 3-50: Aerial view of Ksamili Islands. The dark patches show *Posidonia oceanica* meadows.

*Posidonia oceanica* meadows (=Association with *Posidonia oceanica*)

In Ksamil area *Posidonia oceanica* has created large end dense meadows, which extends more than 30 m depth. Small patches of *Posidonia* are also found in very shallow waters, with leaves almost emerging in the water surface, close to the coast of islands, in an area of coarse sand and gravel. Within this community in shallow waters (3m - 5m) there are also identified small areas with *Cymodocea nodosa* and *Halophila stipulacea*.

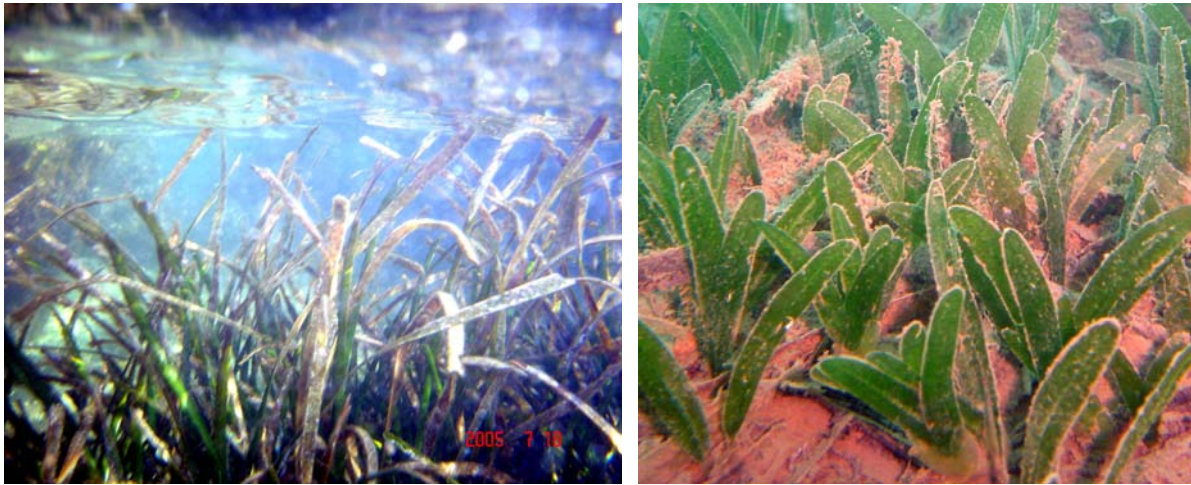


Figure 3-51: *Posidonia oceanica* growing near the surface and *Halophila stipulacea*, in Ksamili area (photos: L. Kashta, 2005)

In shallow waters of the rocky coast and gravel substrate, the most common benthic macroinvertebrates were the sponges *Ircinia variabilis*, *Spongia officinalis*; the gastropods *Patella caerulea*, *Patella ulyssiponensis*, *Monodonta turbinata*, *Gibbula ardens*, *Gibbula divaricata*, *Jujubinus exasperatus*, *Calliostoma zizyphinum*, *Rissoa ventricosa*, *Cerithium vulgatum*, *Hexaplex trunculus*, *Murex brandaris*, *Ocinebrina edwardsii*, *Pisania striata*, *Nassarius reticulatus*, *Columbella rustica*, *Vexillum ebenus*, *Conus mediterraneus*; the bivalves *Arca noae*, *Mytilus galloprovincialis*, *Lithophaga lithophaga*, *Ostrea edulis*, *Anomia ephippium*, *Cerastoderma glaucum*, *Venus verrucosa*, *Chamelea gallina* and an abundant population of pagurid crustaceans within the gastropod shells.

The following algae have been reported from Ksamil area: *Liagora distenta*, *G. spinosum* var. *hystryx*, *Amphiroa rigida*, *Halyptilon virgatum*, *Corallina elongata*, *Jania rubens* var. *rubens*, *J. rubens* var. *corniculata*, *Lithophyllum racemus*, *Pseudolithophyllum expansum*, *Peyssonelia squamaria*, *Hypnea musciformis*, *Ceramium ciliatum* var. *robustum*, *Laurencia obtusa*, *Rhytiphlaea tinctoria*, *Colpomenia sinuosa*, *Halopteris scoparia*, *Dictyopteris polipodioides*, *Dictyota dichotoma*, *Padina pavonica*, *Cystoseira crinita*, *C. corniculata*, *Sargassum vulgare*, *Cladophora prolifera*, *Anadiomene stellata*, *Acetabularia acetabulum*, *Dasycladus vermicularis*, *Caulerpa prolifera*, *Halimeda tuna*, *Flabellia petiolata*, *Bryopsis muscosa*, *Codium bursa*,

Ksamil is one the most impacted area in the Albanian Ionian coast. After 1991 a totally uncontrolled tourism and urban development occurred in the area. The consequences are the alteration and damage of natural habitats and the huge reduction of abundance for several species, like *Lithophaga lithophaga*, *Venus verrucosa*, *Pinna nobilis*, besides the reduction and



fragmentation of *Posidonia oceanica* meadows. Even nowadays, the collection of *Lithophaga lithophaga* and *Venus verrucosa* occur in Ksamil area.

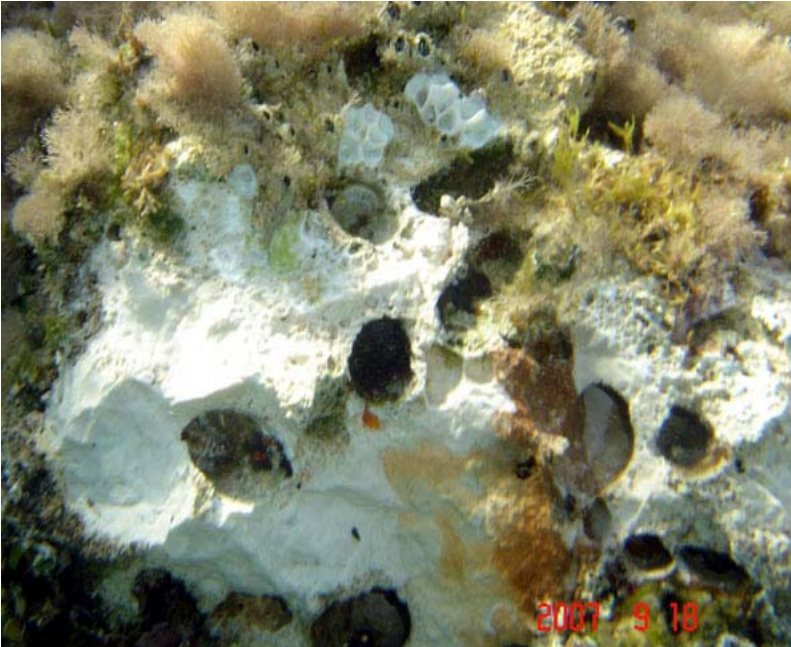


Figure 3-52: Damaged rocks, due to collection of the date mussel *Lithophaga lithophaga* in Ksamil (photo: L. Kashta, 2007)

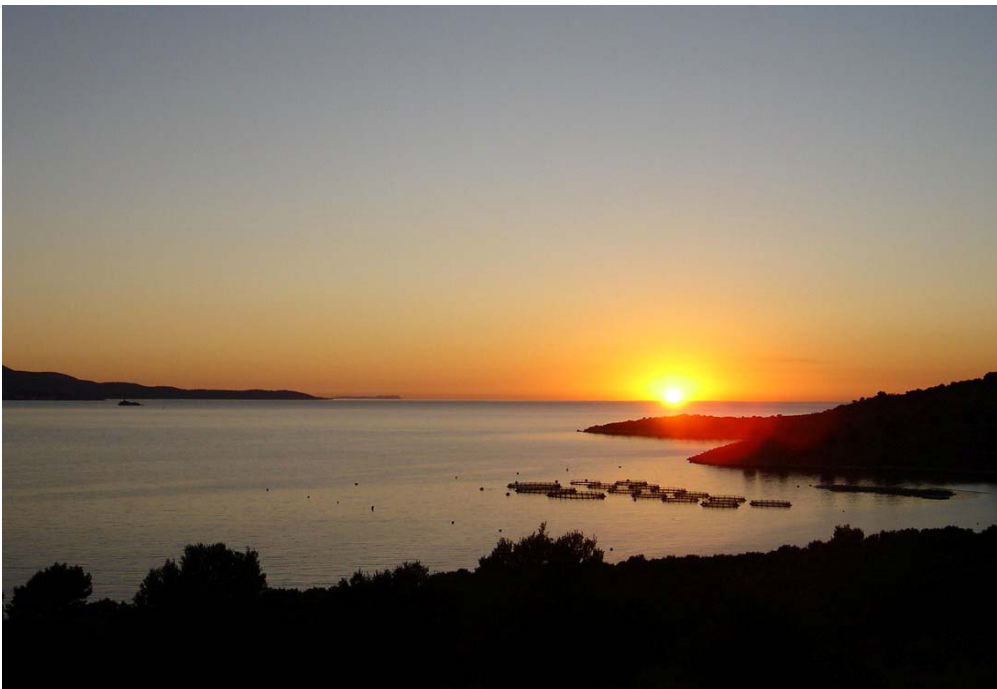


Figure 3-53: Fish Farm installed near the Ksamili islands in a sheltered place (photo: L. Kashta, 2007)

Table 3-14: Marine species of international concern in Ksamil, listed in the most important Conventions

Species name	Barcelona protocol (1996)		Bon (2006)		CITES (2006)	Bern (1993)
	Ann. II	Ann. III	App. 1	App. 2		
<b>Magnoliophyta</b>						
<i>Posidonia oceanica</i>	+					+
<i>Cymodocea nodosa</i>						+
<b>Spongia</b>						
<i>Geodia cydonium</i>	+					
<i>Hippospongia communis</i>		+				+
<i>Spongia officinalis</i>		+				+
<i>Petrobiona massiliana</i>						+
<b>Cnidaria</b>						
<i>Corallium rubrum</i>		+				+
<b>Mollusca</b>						
<i>Ranella olearia</i>	+					+
<i>Pinna nobilis</i>	+					
<i>Lithophaga lithophaga</i>	+				+	+
<b>Crustacea</b>						
<i>Homarus gammarus</i>		+				+
<i>Maja squinado</i>		+				+
<i>Scyllarides latus</i>		+				+
<i>Scyllarus arctus</i>		+				+
<i>Palinurus elephas</i>		+				+
<b>Echinodermata</b>						
<i>Centrostephanus longispinus</i>	+					+
<i>Paracentrotus lividus</i>		+				+
<i>Ophidiaster ophidianus</i>	+					+
<b>Pisces</b>						
<i>Carcharodon carcharias</i>	+		+	+	+	+
<i>Thunnus thynnus</i>		+				
<i>Anguilla anguilla</i>		+				
<b>Reptilia</b>						
<i>Caretta caretta</i>	+		+	+		+
<b>Cetacea</b>						
<i>Delphinus delphis</i>	+		+	+		+
<i>Tursiops truncatus</i>	+			+	+	+

**Table 3-15: Marine species of national concern in Ksamil area** (after Albanian Red Book 2006 and National Red List 2007)

**Seagrasses**

*Posidonia oceanica*  
*Cymodocea nodosa*  
*Halophila stipulacea*

**Sponges**

*Spongia officinalis*  
*Hippospongia communis*  
*Geodia cydonium*  
*Petrobiona massiliana*  
*Raspailia viminalis*

**Cnidarians**

*Actinia cari*  
*Bunodactis verrucosa*  
*Cladocora cespitosa*  
*Eunicella cavolinii*  
*Corallium rubrum*  
*Aurelia aurita*  
*Chrysaora hysoscella*

**Bivalves**

*Arca noae*  
*Mytilus galloprovincialis*  
*Lithophaga lithophaga*  
*Pinna nobilis*  
*Ostrea edulis*  
*Acanthocardia tuberculata*  
*Ensis minor*  
*Loripes lacteus*  
*Lucinella divaricata*  
*Macoma cumana*  
*Venerupis geographica*  
*Venus verrucosa*

**Gastropods**

*Haliotis lamellosa*  
*Diodora graeca*  
*Patella caerulea*  
*Patella rustica*  
*Monodonta turbinata*  
*Gibbula ardens*  
*Gibbula divaricata*  
*Jujubinus exasperatus*  
*Rissoa ventricosa*  
*Ranella olearia*  
*Hadriana oretea*  
*Stramonita haemastoma*  
*Hexaplex trunculus*  
*Murex brandaris*  
*Fusinus rostratus*  
*Galeoda echinophora*  
*Vexillum eburneum*  
*Nassarius reticulatus*  
*Naticarius stercusmuscarius*  
*Neverita josephina*  
*Ocinebrina edwardsii*  
*Sphaeronassa mutabilis*  
*Aporrhais pespelecani*

**Polychaetes**

*Sabella spallanzani*

**Crustaceans**

*Alpheus dentipes*  
*Brachynotus sexdentatus*  
*Eriphia verrucosa*  
*Palaemon serratus*  
*Palinurus elephas*  
*Galathea intermedia*  
*Penaeus kerathurus*  
*Pinnotheres pisum*  
*Hippolyte longirostris*  
*Thorulus cranchii*  
*Homarus gammarus*  
*Maja squinado*  
*Pisa armata*  
*Scyllarides latus*  
*Scyllarus arctus*

**Echinoderms**

*Centrostephanus longispinus*  
*Paracentrotus lividus*  
*Ophidiaster ophidianus*

**Fishes**

*Carcharodon carcharias*  
*Chimaera monstrosa*  
*Argyrosomus regius*

**Reptiles**

*Caretta caretta*

**Cetaceans**

*Tursiops truncatus*  
*Delphinus delphis*

### 3.2.8. Pagane – Stillo Cape and Island

Surface:	500 ha;
Current protection status:	Strict Nature Reserve marine and terrestrial;
IUCN Category:	I

This area is the most southern part of the Albanian coast. It is a hilly land with a maximal altitude 269 meters, with dense vegetation of Mediterranean macquis. The coast is rocky and deep. About 1 km south-east of the cape is located the small island of Stillo covered by vegetation characterized by the predominance of *Laurus nobilis*.

The main accompanying plant species were: *Spartium junceum*, *Phlomis fruticosa*, *Pistacia lentiscus*, *P. terebinthus*, *Quercus coccifera*, *Asparagus acutifolius*, *Ruscus aculeatus*.



Figure 3-54: View of the Stillo Cape (photo: L. Kashta, 2005)

**Rare and threatened plant species:** *Laurus nobilis*, *Origanum vulgare*, *Prunus webbii*, *Quercus ilex*, *Limonium anfractum*, *Lotus cytisoides*, *Desmazeria maritima*, *Capparis spinosa*, *Prasium majus*.

#### **The most important marine habitats** **Infralittoral stage**

#### **Biocenosis of the *Posidonia oceanica* meadows**

*Posidonia oceanica* meadows (=Association with *Posidonia oceanica*)

In this area *Posidonia oceanica* grows on rocks and coarse sandy bottom in depths ranging from 5 to 25 meters. Isolated shoots of *Posidonia* can arise deeper than 28 meters on sandy-silt bottom.

From 8 to 20 meters depth the seagrass meadows are generally continuous and dense, interrupted from rocks and dead mattes, especially around 10 meters depth. On the dead mattes grow the invasive green weed *Caulerpa racemosa* var. *cylindracea*.

The leaves of *Posidonia* are heavily epiphyted by crust-forming calcareous algae, hydrozoans and bryozoans.

### **Biocenosis of well sorted fine sands**

#### Association with *Halophila stipulacea*

Small meadows of *Halophila stipulacea* grow on sandy beds that are enriched with fine particles, especially at the edges of *Posidonia oceanica* meadow.

### **Biocenosis of infralittoral algae**

The most common benthic animal species recorded in Stillo Cape were sponges *Chondrilla nucula*, *Ircinia variabilis*, *Spirastrella cunctatrix*, *Cacospongia* sp., *Aplisina aerophoba*, *Phorbas tenacior*, anthozoans *Actinia equina* and *Cladocora caespitosa*, echinoderms *Echinaster sepositus*, *Marthasteria glacialis*, *Holothuria tubulosa*, gastropods *Diodora gibberula*, *Jujubinus striatus*, *Alvania lineata*, *Bittium reticulatum*, *Conus mediterraneus*, bivalves *Pinna nobilis*, *Acanthocardia tuberculata*, *Cardita sulcata*, scaphopod *Dentalium vulgare*, polychaete annelids of Serpulidae and Vermiculariidae, as well as accompanying fish schools of *Chromis chromis*, *Diplodus sargus*, *Sarpa salpa* etc.



**Figure 3-55: The upper infralittoral dominated by the biocenosis of photophilic algae of the rocky bottom in Stillo Cape (photo: L. Kashta, 2005)**

From 3m to 7m depth it was recorded an interesting and very dense community of sponges, dominated mostly by *Chondrilla nucula*, *Aplisina aerophoba* and *Spirastrella cunctatrix* (fig. 55).



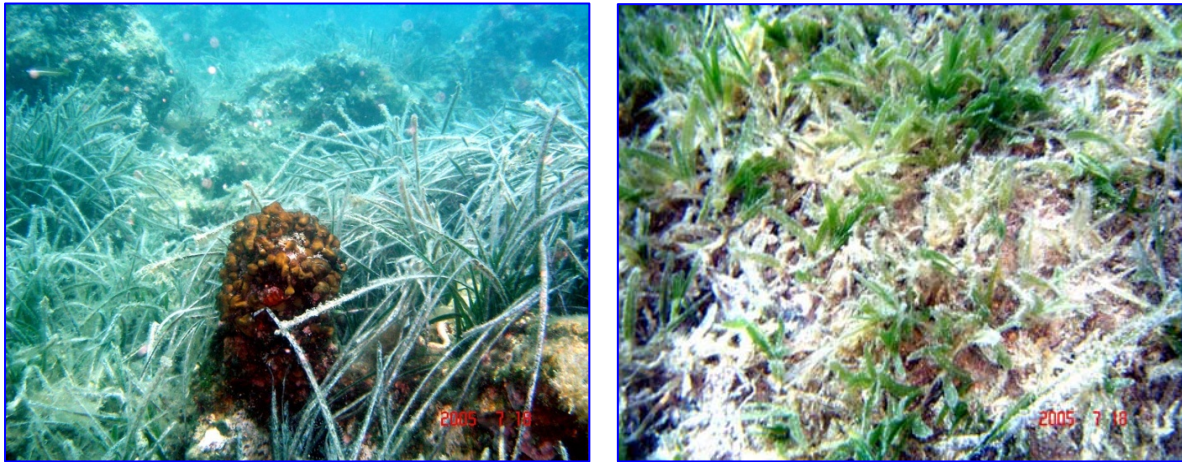


Figure 3-56: *Posidonia oceanica* meadow on rocky seabed and *Halophila stipulacea* meadow on sand in Stillo Cape (photos: L. Kashta 2005)



Figure 3-57: Different sponges grow up on rocky bottoms in Stillo Cape (photos: L. Kashta, 2005)

Table 3-16: Marine species of international concern in Stillo Cape, listed in the most important Conventions

Species name	Barcelona protocol (1996)		Bon (2006)		CITES (2006)	Bern (1993)
	Ann. II	Ann. III	App. 1	App. 2		
<b>Magnoliophyta</b>						
<i>Posidonia oceanica</i>	+					+
<b>Spongia</b>						
<i>Geodia cydonium</i>	+					
<i>Hippospongia communis</i>		+				+
<i>Spongia officinalis</i>		+				+
<i>Petrobiona massiliana</i>						+
<b>Mollusca</b>						
<i>Ranella olearia</i>	+					+
<i>Pinna nobilis</i>	+					
<i>Lithophaga lithophaga</i>	+				+	+
<b>Crustacea</b>						
<i>Homarus gammarus</i>		+				+
<i>Maja squinado</i>		+				+
<i>Scyllarides latus</i>		+				+
<i>Scyllarus arctus</i>		+				+
<i>Palinurus elephas</i>		+				+
<b>Echinodermata</b>						
<i>Centrostephanus longispinus</i>	+					+
<i>Paracentrotus lividus</i>		+				+
<i>Ophidiaster ophidianus</i>	+					+
<b>Pisces</b>						
<i>Carcharodon carcharias</i>	+		+	+	+	+
<i>Thunnus thynnus</i>		+				
<i>Anguilla anguilla</i>		+				
<b>Reptilia</b>						
<i>Caretta caretta</i>	+		+	+		+
<b>Cetacea</b>						
<i>Delphinus delphis</i>	+		+	+		+
<i>Tursiops truncatus</i>	+			+	+	+



**Table 3-17: Marine species of national concern in Stillo Cape** (after Albanian Red Book 2006 and National Red List 2007)

**Seagrasses**

*Posidonia oceanica*  
*Halophila stipulacea*

**Sponges**

*Spongia officinalis*  
*Hippospongia communis*  
*Geodia cydonium*  
*Petrobiona massiliana*  
*Raspailia viminalis*

**Cnidarians**

*Actinia cari*  
*Bunodactis verrucosa*  
*Cladocora cespitosa*  
*Eunicella cavolinii*  
*Aurelia aurita*  
*Chrysaora hysoscella*

**Bivalves**

*Arca noae*  
*Mytilus galloprovincialis*  
*Lithophaga lithophaga*  
*Pinna nobilis*  
*Ostrea edulis*  
*Acanthocardia tuberculata*  
*Ensis minor*  
*Loripes lacteus*  
*Lucinella divaricata*  
*Macoma cumana*  
*Venerupis geographica*  
*Venus verrucosa*

**Gastropods**

*Haliotis lamellosa*  
*Diodora graeca*  
*Patella caerulea*  
*Patella rustica*  
*Monodonta turbinata*  
*Gibbula ardens*  
*Gibbula divaricata*  
*Jujubinus exasperatus*  
*Rissoa ventricosa*  
*Ranella olearia*  
*Hadriana oretea*  
*Stramonita haemastoma*  
*Hexaplex trunculus*  
*Murex brandaris*  
*Fusinus rostratus*  
*Galeoda echinophora*  
*Vexillum ebenus*  
*Nassarius reticulatus*  
*Naticarius stercusmuscaris*  
*Neverita josephina*  
*Ocinebrina edwardsii*  
*Sphaeronassa mutabilis*

**Polychaetes**

*Sabella spallanzani*

**Crustaceans**

*Alpheus dentipes*  
*Brachynotus sexdentatus*  
*Eriphia verrucosa*  
*Palaemon serratus*  
*Palinurus elephas*  
*Galathea intermedia*  
*Penaeus kerathurus*  
*Pinnotheres pisum*  
*Hippolyte longirostris*  
*Thorulus cranchii*  
*Homarus gammarus*  
*Maja squinado*  
*Pisa armata*  
*Scyllarides latus*  
*Scyllarus arctus*

**Echinoderms**

*Centrostephanus longispinus*  
*Paracentrotus lividus*  
*Ophidiaster ophidianus*

**Fishes**

*Carcharodon carcharias*  
*Chimaera monstrosa*  
*Argyrosomus regius*

**Reptiles**

*Caretta caretta*

**Cetaceans**

*Tursiops truncatus*  
*Delphinus delphis*

## 4. THE FIRST MARINE PROTECTED AREA PROPOSED FOR ALBANIA

### 4.1. *Introduction*

All economic development activities are dependent to some extent on the quality of natural resources. The coastal (marine and terrestrial) natural resources are essential for the future development of any country, in particular for international communication and exchange and tourism, two sectors increasingly important and source of Government revenue.

However, excessive development, unregulated activities, and incompatible use can degrade the natural resources and put economic investments at risk. This report intends to propose to the decision makers an option for integrating sustainable development and conservation of natural resources through the declaration of the first marine protected area of Albania, associating different levels of management through a zoning of the marine area.

A summary presentation of the coastal-marine area proposed as MPA:

- Karaburuni peninsula was declared a natural reserve in February 22, 1966, but has been heavily impacted by fires, overgrazing, intensive hunting and military practice. Protection has been reactivated in 1986 when the area was declared a “Natural Managed Reserve” of fourth category. It includes natural recreational zones (among which one in the inner part of the Karaburuni peninsula and Rreza e Kanalit), two natural monument zones (at the tip of the peninsula, at pil Gallovecit and at Grames bay and cave, plazhi i Grames) and the presence of exceptional coralligenous, e.g. “Gryk a Djallit”, a buffer zone (Mali i Karaburuni, Ravena, Orikumi and an area extending to Dukati) and two natural recreational/touristic zones (Brisanit and the inner part of Karaburuni peninsula, within Vlores bay). The National park of Llogara (kampit i pushimit, a strictly protected zone) and the Cikes mountain (Mbihipja e Cikes, a natural monument zone) are included in this unit.
- Sazanit Island, separated from the northern tip of the Karaburuni peninsula by the Mezokanali strait. This island is a natural recreational/touristic zone with remarkable cliffs and landscapes.

The Vjose-Narta Wetland Complex extending North of Vlora to Vjose river, is classified as the Vjoses Narta Landscape Protected Area. This wetland complex is also a site of international importance as it fulfills the Ramsar criteria (Wetlands of International Importance) for the total number of wintering waterbirds.

- It includes strictly protected areas and natural recreational zones along the coastal part of the lagoon in contact with the Adriatic sea, buffer zones in the laguna, sustainable development zones in the inner part and a touristic activity zone in the south on the

Adriatic sea. The Pisha Poro forest managed nature reserve, the Sode Zvernecit forest and the Zvernecit island monastery are part of the Nartes area.

- Vlora bay covered by important *Posidonia oceanica* seagrass meadows and, at the bottom of the bay of Vlores, the Orikumi lagoon which includes a military zone on the bay of Vlores (Pasha Limani) and in the southern part of the lagoon, an area of natural recreation bordered by a buffer zone.

**The whole area displays the highest biodiversity values in the country** (NEA, 1999) due to its diversity of habitats and its richness in flora and fauna species. Many of them have a conservation concern at international, national and regional level, as follows:

- alpine and subalpine pastures and meadows,
- Macedonian fir (*Abies borissi-regis*) forest mixed with pine forests of *Pinus nigra*, *Pinus leucodermis*,
- mixed deciduous woodland with *Quercus coccifera*, *Q. macrolepis*,
- typical Mediterranean maquis,
- north limit of alliance *Oleo-Ceratinion*,
- typical rocky coastal vegetation,
- wetlands with residues of alluvial forests,
- lagoons and associated ecosystems highly valued for their natural and biodiversity resources,
- a well developed littoral and benthos,
- Posidonia meadows *Posidonia oceanica*,
- in the marine waters one can frequently find dolphins *Delphinus delphis*, *Tursiops truncatus*,
- the monk seal *Monachus monachus* may visit the caves and shores of the Karaburun peninsula,
- Endemic, subendemic, and many rare and threatened taxa occur inside the area,
- High potential for eco-tourism and recreation development.

Except for the wetlands, the coastal area is mainly rocky with, in some places, important calcareous limestone cliffs covered by typical Mediterranean vegetation and locally along the coast, pocket beaches of pebbles and sand. This entire rocky coast presents exceptional scenic quality especially by boat when visiting caves, canyons and small bays, e.g., Shpella e Haxhi Alisë and Duk Gjoni caves (Fremuth, 2000; Pergent, 2002; Qiriazzi and Sala, 2006; Sala *et al.*, 2006; Tilot and Jeudy de Grissac, 1994).

The underwater landscape is also of exceptional quality with cliffs, submarine caves and associated fauna and flora, and in some places archaeological remains (Tilot and Jeudy de Grissac, 1994; Upton, 2006). This area is certainly the best and most impressive part of Albanian

coast for the development of nautical activities such as scuba diving which is not well developed in Albania.

The Albanian marine fauna and flora are of special interest since this area is located at the border of three sub-regions: the western and eastern Mediterranean sea and the Adriatic sea. Therefore the fauna and flora include species from mixed origin: strictly mediterranean species, remnant fauna and flora from the Atlantic and migrant fauna from the Indian Ocean through Suez Canal (Peres and Picard, 1964).

The biological diversity is relatively high in the marine waters of Albania with rare species and the littoral benthos much-developed with a typical mediterranean physiognomy characterized by the abundance of Mediterraneo-Atlantic species. *Posidonia oceanica* meadows host a relatively high biodiversity of benthic macrofauna including sponges, cnidarians, bryozoans, mollusks, annelids, crustaceans, echinoderms and ascidians (Beqiraj *et al.*, 2008).

Coralligenous algae, a biogenic formation building a rim which can extend locally to more than 1m in width which, are present at the mediolittoral stage along the western coasts of Karaburuni, Sazanit Island and Rreza e Kanalit area.

Three globally endangered sea turtles, with high threatening status (IUCN Red List, 2006) are present in Albanian waters: loggerhead turtles *Caretta caretta*, green turtles *Chelonia mydas* and much more rarely leatherback turtle *Dermochelys coriacea*. The area is also a potential monk seal habitat (monk seals were reported in 1982).

Five species of cetaceans are reported in Albanian waters among which the short-beaked common dolphin *Delphinus delphis*, the common bottlenose dolphin *Tursiops truncatus* and the sperm whale *Physeter macrocephalus* which have been identified by ACCOBAMS as being in the greatest danger of disappearing from the Mediterranean.

The area is also important concerning fisheries. Artisanal fishing exists along the coasts of Rreza e Kanalit-Karaburuni and Sanzanit. Professional fishing use mainly lines and trawling. The fish fauna of commercial interest is made of several species and groups of demersals, small and big fishes, crustacean and molluscs.

Coastal lagoons and estuaries are important areas for wintering of migratory water birds; about 70 species of water-birds have been recorded among which the Dalmatian pelican *Pelecanus crispus* and the pygmy cormorant *Phalacrocorax pygmaeus* for which Albania is reknown. However the bird populations are decreasing dramatically due to several impacts, such as the drainage of wetlands during the communist regime and uncontrolled hunting. According to Birdlife International (2009), the area of Vlora Bay, Karaburuni Peninsula and the Cika Mountain (fact sheet AL010) is listed as an important bird area for Albania.

The coast is mainly composed of xeromediterranean sclerophyllic maquis, locally forest of eumediterranean evergreen forest with pines, cypresses and mainly oaks *Quercion ilicis* and *Oleo-Ceratonion* in the valleys and dry river canyons. Rocky coasts are usually covered by a

typical mediterranean maquis which is still quite abundant on Sazanit island and along Rreza e Kanalit - Karaburuni. The coastal wetlands and dunes are covered mainly by halophytes, psamophytes and other brackish and freshwater associations.

Several underwater archaeological and historical remains are present in the area in laguna e Nartes (Zverneçit island monastery), Oríkumi lagoon, Vlora bay, Karaburuni, e.g. Grames bay.

Based on all the present natural features and points of interest, and on the identified and potential threats (unregulated fishing, uncontrolled coastal development, pollution from land based source and from maritime traffic, tourism activities..), it is recommended to include an important part of the marine environment for surrounding all these features in order to develop an integrated approach (between all responsible administrations) for the management of all the coastal and marine activities for a proper conservation of the natural resources. This will need also a concerted policy for the management of all the sites under conservation to benefit activities such as fisheries and tourism (in particular ecotourism).

Based on the presence of different terrestrial protected areas in the region of Vlora, and in particular the Vjose-Narta Wetland Complex in the North, Oríkumi lagoon at the southern bottom of the bay of Vlores, the peninsula of Karaburuni on the western side of the same bay, it is proposed to link all these coastal sites by the creation of an overall marine protected area. The Karaburuni peninsula being the central element for nature conservation and the city of Vlora being the central element for development, it is proposed to designate the site as **the Karaburuni – Vlora Marine Protected Area**.

The zones will follow the international categories of IUCN and the Karaburuni – Vlora area will include a marine park and a different multiple use managed area and a strict marine reserve, therefore allowing, according to the sites, multiple opportunities for development and economic activities or strictly preserved sites for scientific research and monitoring.

Even if there is a lack of knowledge in some parts of the proposed marine protected area, its preliminary approval by the Government of Albania for its creation will attract donors for further surveys and support for the management of the marine environment in coordination with the existing terrestrial sites, for the benefit of tourism, traditional fisheries and any other sustainable activity.

The Marine Protected Area of Karaburuni-Vlora (K-V-MPA) is designed to attempt to provide a pragmatic approach aiming at establishing equilibrium between sustainable economic development and natural resource conservation ensuring long term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to support coastal communities' development.

The main objectives of its designation are:

1. To protect and maintain the biological diversity and other natural values of the area in the long term.

2. To promote sound management practices for sustainable production purposes.
3. To protect the natural resources from being alienated for other land-use purposes that would be detrimental to the area's biological diversity.
4. To contribute to the regional and national development.

Many management issues have been identified which include problems that critically could degrade the natural resources values of K-V-MPA such as the risk from maritime transport and coastal pollution, as well as opportunities such as development of tourism, ecotourism or the permanence of fishing and aquaculture activities.

The decision to create the K-V-MPA will necessitate the preparation of a management plan including the definition of the role and functions of the management unit, of the detailed regulations for each zone and for each activity allowed in the area, the recruitment and training of staff, the definition and installation of necessary infrastructures and the preparation of research, monitoring and communication plans. The plan will have to remain adaptive to change in local and regional conditions and responsive to new challenges and opportunities.

## **4.2. Main environmental features of the Vlora-Karaburunit area**

### **4.2.1. General Description**

The Vlora-Karaburuni area includes scenic marine and coastal areas characterized by outstanding canyons and caves sites (Karaburuni, Sazanit and Rreza e Kanalit), a large bay covered with important seagrass meadows (Vlora bay) and wetlands (Orikumi and Nartes lagoons).

Vlora bay, extends from Pasha Limani-Orikumi (Gjiri I Dukatit), to cape Gallovecit (west), the coastline passing by capes Kallogjeri, Ragueza, Sevasini, Shën Vasili, Gjatë, Dhim Kushta and Shën Jani. The sea bottom of this bay is covered by important *Posidonia oceanica* seagrass meadows. The coast can be divided in three parts:

- the eastern side of the bay, oriented N-S, with a coastline increasing in altitude from north to south.
- the southern section, 6 km long and oriented WSW-ENE, including Orikumi lagoon is named Dukati bay.
- the western side of the bay, oriented WSW-ENE, includes the eastern side of Karaburuni peninsula which is relatively lower than the western side of the peninsula.

The coast is mainly rocky with small gravel beaches except the eastern part which is sandy and the centre of the bay which is filled by sand and mud. The maximum depth in the central part of the bay is 55 m. The coast includes several gravel beaches: one at cape Kallogjeri, four in the bay of Ragueza, three between cape Ragueza and cape Sevasini, two between cape Sevasini and cape Shën Vasili, one before cape Gjatë, one after cape Dhim Kushta and one bigger beach after cape Shën Jani with military installations and a jetty; from the bay of Veriu to cape Gjuhëza, the coast

is about 6 km long and formed of low jagged rocks with low bushy vegetation shaped by the wind. A coastal trail gives access to the northern tip where was located a military base. The slopes are less important than on the eastern side of the peninsula, culminating to the north at 733 m (Mount Hilqe) and to the south at 826 m (Mount Koreta).

The wetland of Nartes-Zvernec, declared as Vjoses Narta Landscape Protected Area, (IV IUCN Category) is a wetland complex located in Vlora District. The altitude of the wetland site varies between 0-246 m. The main habitats include wetlands, (37%), agricultural land (33%), forests (6%) and urban areas. The core wetland is Narta lagoon, a shallow marshland with salinas (salt pans) in the North. The sand dunes in the former Nature Managed Reserve of Pisha-Poro are well developed. The remarkable Sode Zvernecit forest and the Zvernecit island monastery are part of the area. Kallenga is a shallow lagoon to the North.

Orikumi lagoon covers around 130 ha with a maximal depth of 3 m and is permanently in communication with the sea by a channel 50 m long and has a limited input of freshwater southwards. It is located in a restricted military area. Orikumi is an archaeological site of prime importance.

The island of Sazanit (16km long and 3-5km wide), in front of Vlora and north of Karaburuni peninsula, has an ellipsoid form oriented NNW-SSE and culminates at 345 m with Gryka e Djallit.

- The western side is characterized by high vertical cliffs which are incised by deep canyons extended by caves which appear mostly underwater as observed in Karaburuni peninsula. The most important canyons are at cape Pëllumbave and at Gryka e Ferrit.
- On the eastern side, the coastline is lower and is formed in the SW by slanted folds of limestone plunging into the sea.
- Most settlements are built in the center of the island in prolongation of the canyon of Gryka e Ferrit, crossing the island up to the well protected harbour on the bay of Shën Nikolla.

On the western side of the Vlora-Karaburuni area, the coastline of the Karaburuni peninsula extends to Rreza e Kanalit. It varies in altitude, from 15-30 m to 887 m at Mount Bitrit in Karaburuni and 1500 m above sea level at Mont Shendellit, (1499.5m) in Rreza e Kanalit. The slopes of Karaburuni peninsula are locally very steep on the western side and culminating in the central part. The western coast of the peninsula is incised by caves and deep canyons ending rarely by gravel or sand pocket beaches. It is characterized by high vertical cliffs diving underwater at great depths. These cliffs are quite eroded and numerous caves, mostly underwater, can be seen where freshwater springs often percolate. Karaburuni peninsula is the most evident site of mediterranean quality. It is characterized by a very low level of disturbance. The midlittoral environment is characterized by coralligenous formations sometimes over a meter large built by coralligenous algae *Lithophyllum lichenoides*, a protected species, which is exceptional geomorphologically, biologically and in a touristic aspect. This unit includes national park of Llogara (kampit i pushimit,) and the Cikes mountain (Mbihipja e Cikes) a natural monument zone).

#### 4.2.2. Climate, Geology, Geomorphology, Hydrology

##### Climate

The area is characterized by a Mediterranean climate with mild winters and abundant precipitation and hot and dry summers. Due to its varying altitude and proximity to the sea, it is subdivided in 3 subclimates: southern coastal plain, hilly zone and mountainous zone. Mean annual precipitations vary between 1000 and 1200mm and occur mostly in winter, from November to April. The annual solar radiation for the area is about 1540 kwh/m<sup>2</sup> with a peak in July (216.5 kwh/m<sup>2</sup>). The mean annual Air humidity is 66% and the mean annual temperature is 17°C varying between 24-26°C in July and 10°C in January. In winter, winds occur mainly from the North East and South with a mean velocity of 7.2m/s with peaks of southern winds reaching 40m/s (UNDP/ GEF/dhe Ministrisë së Mjedisit, 2005).

In the Vjoses Narta complex, the wind pattern is different, as winds are weaker (3.5 m/s), from the East, North-East and slightly stronger (5.2m/s) from the West in summer with the sea breeze. The water temperature in the lagoon is in average 14.9°C. During the dry season, 56% of the water evaporates which indicates that the ecosystem is in need of water resources.

##### Geology, topography, and geomorphology

The area encompasses two geomorphological units, terrigen formations which can be heavily eroded (flysh, e.g. and quaternary deposits of molas) and carbonate rocks (limestone and limestone-dolomite, with rudists or globotruncana, of upper-Cretacea, e.g. karstic mountains of Rreza e Kanalit-Karaburuni, Cika Mountain in Liogara) (UNDP/ GEF/dhe Ministrisë së Mjedisit, 2005).

Rreza e Kanalit-Karaburuni is characterized by a narrow and steep platform. Cliffs plunge vertically reaching rapidly great depths, with 20m and more at 200m from the shoreline.

The eastern side of Karaburuni peninsula is a succession of rocks of different ages, from Jurassic and Neogene (Aquitian, Helvetian, Tortonian and Pliocene) eras. The southern part is mainly constituted of Pliocene rocks and recent sediments. The eastern coast is from the upper cretaceous era, essentially composed of limestones.

The western part of Sazanit island is composed of Upper Cretaceous rocks (massive limestones or rudists and globotruncana) and the eastern part is composed of rocks of Burdigalian age (lithographic limestones).

The Vjoses Narta complex is composed of quaternary marine sands and gravels of tertiary molasses (sandstones, siltstones, shales and marls) headlands which overlie older carbonate sediments. North of the lagoon are quaternary marshy deposits of clayey silts and sand. The coastline is part of the Narta lagoon syncline formed by Neogene and Quaternary deposits.

##### Hydrology, drainage and water resources

The limestone formations in the area are characterized by a porous structure and often percolating waters run underground without any obstruction. Groundwaters are rich as displayed by the karstic springs flushing freshwater into the lagoons, e.g. Orikumi lagoon. Along Karaburuni peninsula, freshwater springs can be seen along the coastline, discharging colder



water from the seabottom to the surface. However the inner part of the peninsula is desolate and waterless.

Thus groundwater in the K-V-MPA is sufficient to respond to the demands of local population and to the present and future development of the area, in particular for tourism. The exploitation of groundwater and its management, in particular in the Karaburuni-Rreza e Kanalit area (Berxholi, 2001), must be tackled in the planning of the area to meet future demands by additional population, industrial activities and tourism.

The Vjoses-Narta complex is generally poor in groundwater which does not accumulate in shallow sandy deposits. However it can be extracted from hand-dug wells at varying depths (1-10m). Vjoses River is the primary surface water resource for the whole network of irrigation channels serving agriculture.

#### **4.2.3. Biodiversity Resources**

As seen in the above chapters in 3.2 (3.2.1 – 3.2.8), the data about natural values, biodiversity, landscape, historical, cultural and socio-economic aspects may have some gaps and these aspects are not completed for every site described there. This is mostly due to the lack of data, since the studies on the coastal and marine areas have been very limited and the available data are very fragmented in some cases.

However, based on the existing data and the analysis made in the previous chapter, the area Sazani Island – western side of Karaburuni Peninsula (analysed in 3.2.3) may be distinguished among the others and proposed as the targeted area for being claimed as the first Marine Protected Area in Albania. Other additional data are also provided by video and photo recording, especially including underwater habitats of this area, as well as other values related to archaeological, historical and cultural aspect. (A special documentary movie and a booklet have been produced recently for this area, aiming to highlight the relevant values for claiming it as a Marine Protected Area).

The coastal part (terrestrial) of Sazani Island and western side of Karaburuni Peninsula is aimed to be included together with the proposed marine protected area, due to its high values of biodiversity and natural habitats. In this context, although mentioning the terminology “Marine Protected Area” (MPA) as the most familiar, as a matter of fact, the proposed area fits to a “Marine and Coastal Protected Area” (MCPA), referring to the definition adopted by the AHTEG (Ad Hoc Technical Expert Group) of the Convention of the Biological Diversity in 2004. According to this definition, *“Marine and Coastal Protected Area” means any defined area within or adjacent to the marine environment, together with its overlying waters and associated flora, fauna, and historical and cultural features, which has been reserved by legislation or other effective means, including custom, with the effect that its marine and/or coastal biodiversity enjoys a higher level of protection than its surroundings.*

In the following there are summarized and highlighted the main features, characteristics and reasons, which distinguish the area Sazani Island – Karaburuni Peninsula among the other potential areas.

### Coastal dunes

The coastal dunes are covered mainly by halophytes, psamophytes and other brackish and freshwater associations.

The sand dunes, e.g. Narta complex, along the coast can reach 6-8 m, and compose a belt extending to 30m in shore. The biodiversity is high, with *Ammophila arenaria* subsp. *arundinaceae*, *Cakile maritima*, *Xanthium strumarium* subsp. *italicum*, *Salsola kali*, *Elymus farctus* and *Echinophora spinosa* communities.

### Lagoons

Nartes-Zverneq lagoon is dominated by the association *Zosteretum nanae* and occasionally *Ruppiaetum cirrhosa* and pleustiphytic populations of *Chaetomorpha linum*, from phytobentos origin. *Zostera* is the dominant species covering 30-40 % of the total surface. This represents the most important biocenosis.

At the borders of the lagoon occur halophytic communities such as *Salicornietum fruticosae*, *Salicornietum radicans*, and *Salicornietum europaea* and in brackish soils around the lagoon, *Juncetum maritima* communities. South of the channel there is a Mediterranean pine forest *Pinus maritima*.

In the vicinity of Orikumi lagoon, the vegetation in the southern part is composed of *Ammophiletum arundinaceae* (*Ammophila arenaria*, *Medicago marina*, *Echinophora spinosa*), *Sporobolium* (*Sporobolus pungens*), *Juncetum maritimi* (*Juncus maritimus*), *Juncus acuti*, *Holoschoenetum romani* (*Scirpus holoscoenus*), *Schoeneto-Plantaginetum crassifoliae* (*Schoeris nigricans*, *Plantago crassifolia*, *Saccharum ravennae*) associations (Mullaj, 1989). The S-SW borders of Orikumi lagoon are composed of maquis associations: *Pistacia lentiscus*, *Myrtus communis*, *Phyllirea* sp., the S-SE borders have associations of *Phragmitetum communis*, *Salicornietum fruticosae*, *Juncetum maritimi*, *J. acuti*, *Limnietum* sp...

The wetland complex of Vjosa-Narta is an important reservoir of biodiversity sheltering at least 747 species among which 287 insect species, 194 bird species and 102 of fish. Among these 747 species, 118 have a protection status, 189 are nationally threatened, 104 are rare for Albania and 26 are globally threatened as Globally Threatened Species of European Tree Frog *Hyla arborea*, Loggerhead *Caretta caretta*, Herman's Tortoise *Testudo hermanni* (UNDP/ GEF/dhe Ministrisë së Mjedisit, 2005b).

The main fish species living in Narta lagoon are: European eels (*Anguilla anguilla*), Sea breams (*Sparus aurata*), Sea bass (*Dicentrarchus labrax*), Grey mullets (*Mugil cephalus*) and sand smelts (*Aterina* sp.).

Also, coastal lagoons and estuaries are important areas for breeding and wintering for 192 species, more particularly for migratory and water birds, the most common being flamingos *Phoenicopterus ruber roseus*, shelducks *Tadorna tadorna*, pintails *Anas acuta*, goldeneyes *Bucephala clangula*, Kentish plovers *Charadrius alexandrinus* and golden plovers *Pluvialis squatarola*. Winter censuses undertaken during 1995-2004 registered 12,600-81,200 individuals of waterbirds with an annual average of 34,800 individuals.

The bay of Vlora is well situated for migratory birds but there are only a few suitable resting places for Ciconiiformes. Important fish stock increase the potential for cormorants; hundreds of great cormorants and some great white egrets and grey herons have been seen fishing in November 1992 (Vangeluwe et al., 1994).

### Rocky coasts

The rocky coastline of Rreza e Kanalit-Karaburuni, Sazanit island display, mostly on the western side is characterized by a high diversity of landscapes, with steep and inaccessible cliffs, fissures, caves, capes, small beaches and bays (bays of Bristan, Dafina, Grama etc.). These attractive formations for the visitor's eye take additional values from the well developed vegetation, which covers almost the whole peninsula from the mountain top until the coast.

Forest of *Quercus ithaburensis* subsp. *macrolepis* in the Karaburuni Peninsula is considered as the best preserved forest in Albania. Gryka e Xhenemit and Sazani Island are other important habitats for the extended beds of *Euphorbia dendroides* and the alliance Oleo-Ceratonion, which has scientific values in the bio-geographical and ecological aspects.

A high diversity of vegetation types characterizes the hill slopes and other habitats of the peninsula and the island. Some of the most interesting are: broad – leaves evergreen forests (Assoc. Orno –Quercetum ilicis); plant communities dominated by *Quercus coccifera* (Assoc. Orno- Quercetum cocciferae); Plant communities dominated by *Euphorbia dendroides* and *Pistacia lentiscus* (Assoc. Pistacio – Euphorbietum dendroides); as well as the forests dominated by *Quercus ithaburensis* subsp. *macrolepis* (known as Valona oak). The last one is considered as a relict species, together with the laurel *Laurus nobilis*, which is also present in natural conditions in this area.

A considerable number of terrestrial plant species, which belong to the Red Book of the Albanian Flora are present in this area, such as: *Athamanta macedonica*, *Brassica oleracea* subsp. *oleracea*, *Brasica incana*, *Laurus nobilis*, *Origanum vulgare*, *Prunus webbii*, *Quercus ilex*, *Limonium anfractum*, *Lotus cytisoides*, *Desmazeria marina*, *Capparis spinosa*, *Prasium majus*, *Ephedra distachia*, *Orchis sp.div.*, *Daphne gnidium*.

In the coastal and marine habitats, at the mediolittoral stage, biocenosis dominated by *Lithophyllum byssoides* is present in both Sazani Island and Karaburuni Peninsula. This incrusting coralline alga, which is a characteristic species of western Mediterranean and Adriatic Sea, grows slightly above mean sea level, in small caves, corridors and along cliffs. In this area it has created small cushions (hemispheric concretions) and rarely builds rims, usually known as “trottoirs”.

The mediolittoral is characterized by calcareous algae of *Lithophyllum* sp. which are good biological indicators of superficial pollution and fluctuant sea levels. *Lithophyllum byssoides*, present in both Sazani Island and Karaburuni Peninsula, is a characteristic species of western Mediterranean and Adriatic Sea, which grows slightly above mean sea level, in small caves, corridors and along cliffs. In Mediterranean Sea this is a protected species considered as a natural monument.

Among macroalgae, some rare individuals of *Fucus virsoides*, an Adriatic endemic species, which is mainly concentrated in upper Adriatic, can be found in the Treporti area; the southern limit of its distribution area corresponds to the geographic border of Adriatic sea; *Lithophyllum*

*byssoides*, a characteristic species of Western Mediterranean found in Eastern Mediterranean only in Crete and fossil formations of Holocen (Laborel, 1981), has been located in Himara and Karaburuni zone by Kashta (1992).

### Caves

Another biocenosis in the mediolittoral is that of mediolittoral caves, which correspond to crevices or the entrances of caves that are partially out of the water.

Four underwater caves at the tip of the Karaburum peninsula have been studied (Belmonte et al., 2006) and have shown very specific fauna different from the other side of the Adriatic. In particular a population of *Hypsichomus stichophthalmus* (Polychaeta) was present in the *Haxhi Ali* cave with abundant fishes, echinoderms, worms, crustaceans. At about 40 m deep, red cartilaginous algae *Faucheia sp.*, are exuberant and very often seen with brightly coloured sponges.

The canyons and caves, often inaccessible, represent an ideal habitat for monk seals (*Monachus monachus*) which were reported in the area still in 1982 (a juvenile has been captured in 1960 and its body is exposed at the museum of Natural Sciences in Tirana). Some of these caves are monumental (up to 50 m high) with stalactites along the walls and hosting freshwater fauna (kingfishers, mosquitoes, bats), such as the one located in the bay of Veriu. Freshwater resurgence happens very often in the caves and along the canyons.

### Infralittoral algae

In the hard beds and rocks of the infralittoral, perennial brown algae are dominant over extensive parts of shallow hard substrata in the western side of Karaburuni and Sazani. The most important group is that of the brown algae *Cystoseira*, represented with 5 species (*Cystoseira amentacea* var. *spicata*, *C. barbata*, *C. compressa*, *C. crinita* and *C. spinosa*). The *Cystoseira* communities together with the *Posidonia* meadows are the main supporters of biodiversity in shallow water. Other important associations are those of *Dictyopteris polypodioides*, *Corallina elongata* and *Cladocora caespitosa*.

Some other algae sampled and identified in the area are *Bangia atropurpurea*, *Porphyra leucostita*, *Nemalion helminthoides*, *Jania corniculata*, *J. rubens*, *C. officinalis*, *C. elongata*, *L. byssoides*, *Pseudolithophyllum expansum*, *Acrosymphyton purpuriferum*, *Dudresnaia verticillata*, *Peyssonelia rubra*, *P. squamaria*, *Phyllophora nervosa*, *Hypnea musciformis*, *Plocanium cartilagineum*, *Catenella repens*, *Botryocladia botryoides*, *Ceramium ciliatum*, *C. rubrum* v. *barbatum*, *Wrangelia penicillata*, *Hypoglossum hypoglossoides*, *Digenea simplex*, *Laurencia obtusa*, *Rhytiphloea tinctoria*, *Vidalia volubilis*, *Colpomenia sinuosa*, *Halopteris scoparia*, *Dictyopteris membranacea*, *Dictyota dichotoma*, *Dilophus fascicola*, *Nereia filiformis*, *Cystoseira barbata*, *C. compressa*, *C. crinita*, *C. stricta* v. *spicata*, *Sargassum vulgare*, *Palmophyllum crassum*, *Enteromorpha compressa*, *Ulva rigida*, *Cladophora prolifera*, *Anadiomene stellata*, *Valonia macrophysa*, *V. utricularis*, *Acetabularia acetabulum*, *Polyphysa parvula*, *Dasycladus vermicularis*, *Caulerpa prolifera*, *Halimeda tuna*, *Flabellia petiolata*, *Codium bursa* (Kashta, 1986).

The thermophile starfish *Ophidiaster ophidianus* and the sea cucumber *Holothuria helleri* have been located in the area (Vaso and Gjijnuri, 1992). Some of these species are included in Red List of Flora and Fauna of Albania.

#### Islands

Sazanit island on the eastern side (more protected) and the Zverneci small island are covered by evergreen forest of *Cupressus sempervirens* in association with *Quercus ilex*, *Quercus pubescens* and *Pinus spp.* The shrub layer (covering 50 – 60 % , at 1 – 2 m high) is dominated by the species such as: *Myrtus communis*, *Pistacia lentiscus*, *Laurus nobilis*, *Rubus spp.*, *Phillyrea angustifolia*, *Olea olaster*, etc. The herb layer is generally rare with representative species as: *Chrysopogon gryllus*, *Asparagus acutifolius*, *Dactylis glomerata*, *Desmazeria rigida* (UNDP/GEF/dhe Ministrisë së Mjedisit, 2005a).

#### Alluvial forests

These occur when bordering Vjosa River. The first floor is composed of associations characterized by a very high ecological plasticity, the class of Phragmitetalia, reeds *Phragmites australis*, and the class including *Typha angustifolia* (dominant species), *Lythrum salicaria*, *Polygonum hydropiper*, *Polygonum lapathifolium*, *Sium latifolium*, *Gratiola officinalis*, *Cladium mariscus*, *Alisma plantago-aquatica*, *Sparganium erectum*.

The second floor includes riverine forests belonging to the class *Alno-Populetea* and *Salicetea purpurea* such as *Populus alba*, *Populus nigra*, *Salix alba*, *Salix purpurea*, *Salix amplexicaulis*, *Salix elaeagnos* subsp. *angustifolia*, *Alnus glutinosa*, *Alnus incana*, *Platanus orientalis*, *Ulmus minor*, *Ulmus glabra*, *Fraxinus angustifolia*.

The grassland vegetation is generally poor. The most common species are *Equisetum telmateia*, *Equisetum ramosissima*, *Prunella vulgaris*.

#### Mediterranean macquis and pine forests

Rreza e Kanalit-Karaburuni, Sazanit island, hosts principally xeromediterranean sclerophyllic macquis with a dominance of *Pistacia lentiscus*, *Quercus coccifera*, *Juniperus phoenicea* and *Brachypodium ramosus*, locally eumediterranean evergreen forest (portions of the original natural forest *Cupressus sp.*) and pines *Pinus pinea*, *P. halepensis*, associations of mediterranean *Agropyretum* composed mainly of *Elymus farctus*, *Cyperus capitatus*, *Sporobolus pungens*, *Otanthus maritimus*, *Matiola tricuspidata*, *Calystegia soldanella*, associations of *Crithmo-Limonietum anfracti* characterized by *Crithmum maritimum*, *Limonium anfractus* and associations of *Crithmetum* (*Crithmum maritimum*) (Mullaj, 1989); there are mainly oaks *Quercion ilicis* and *Oleo-Ceratonion* in the valleys and dry river canyons (World Bank and Government of Albania, 1992 c). The macquis and mediterranean forest is the original Albanian vegetation which grows up to the edge of the coast.

The eastern side of Karaburuni has more areas deforested by fires in a landscape of macquis with a few pines and cypresses shaped by the wind; It is not as wild as the western part of Karaburuni however the vegetation comes very close to the sea level. Small dry river canyons fall into the sea almost vertically.

Pines were planted 30-40 years ago in order to stabilize the shoreline in Vlora bay; these forests are composed of *Pinus maritima*, *P. pinea* and *P. pinaster*. The shrub layer is represented by typical Mediterranean species such as *Pistacia lentiscus*, *Erica manipuliflora*, *Myrtus communis* etc, characteristic species of the Class *Quercetea ilicis* (40-50 % of total area, shrub < 2 m ).

#### Coastal vegetation in higher altitude

In the national park of Llogara, vegetation is mainly characterized by a mediterranean shrub zone up to 600 m with predominantly kermes oak, lentic, tree heather and prickly cedar (*Buxus sempervirens*, *Daphne laureola*, *Quercus coccifera*, *Evonimus europaeus* with single trees of *Taxus baccata* and small patches of *Pinus hedreichii* ); between 600-800 m Holm oaks, ash, hop-hornbeam and sow thorn mainly grow. Above this zone, from 800-1300 m the beech zone is dominated by beech, silver fir, black pine, maple, juniper and dog rose (*Pinus nigra*, *Abies alba*, *Acer pseudoplatanus*, *Fraxinus ornus*, *Ostrya carpinifolia*...). Endemic and rare species in the alpine zone of herbaceous species are scattered from 1400 m to 2000 m: *Colchicum autumnale*, *Sideritis roeseri*, *Lilium chalchedonicum*, *Hypericum haplophyllodes*....

#### **Specific communities**

- Pelagic communities
- Sea grass communities
- Marine turtles
- Birds
- Marine mammals

- Pelagic communities

The underwater coastal environment and fauna is quite diversified and relatively abundant especially on the western side of Rreza e Kanalit-Karaburuni and around Sazanit Island.

Pelagic fish communities are composed of *Merluccius merluccius*, *Trachurus trachurus*, *Parapenaeus longirostris*, *Mullus surmulletus*, *Exocetus volitans*... On rocky substrates closer to the coast, the following communities are present *Diplodus sargus*, *D. vulgaris*, *D. annularis*, *Serranus cabrilla*, *Spicara maena*, *Coris sp.*, *Thalassoma pavo*, a school of *Boops boops*, in cavities were *Anthias anthias*, *Phycis phycis*, large groupers *Epinephelus sp.* and moray eels. Other interesting species of large size have been recorded such as *Mola mola*, *Xiphias gladius*...

- Sea grass communities

In Vlora bay, on the seabed, there is locally an important coverage of algae and sea phanerogams (mainly *Posidonia oceanica*, *Cymodocea nodosa* and *Zostera noltii*). *Halophila stipulacea*, a sea phanerogame with subtropical and tropical affinity of Indian Ocean origin, has found shelter in the bay of Vlora and in Saranda areas (Kashta, 1992).

In the infralittoral stage the most important biocenosis is that of *Posidonia oceanica* meadows. This habitat belongs to the Habitat Directive 92/43/EEC as priority habitat, whereas *P. oceanica* as a species belongs to the Annex II (List of the endangered or threatened species) of the Barcelona Convention (Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean).

Patches of *Posidonia oceanica* meadows occur at 6-10m depth and deeper in sheltered sites of the rocky coastline of Rreza e Kanalit-Karaburuni and Sazanit Island. On the eastern side of the island, *Posidonia* beds are found closer to the coast at shallower depths. Both *Posidonia oceanica* and *Cymodocea nodosa* are protected by law in the Mediterranean sea since 1988.

On the western coast, *Posidonia oceanica* grows generally on rocky substrates and rarely on sandy sea beds, in front of small beaches.

On the western side of Sazanit Island a rocky substrate is found prolonging the island, some patches of *Posidonia oceanica* are located in sheltered areas where the depth does not increase as much as observed along Karaburuni.

Within the *Posidonia oceanica* meadows, benthic macrofauna encompasses about 190 species including sponges, cnidarians, bryozoans, mollusks, annelids, crustaceans, echinoderms and ascidians (Beqiraj *et al.*, 2008; Peja *et al.*, 1992).

Associated to the seagrass ecosystem, the crustacean decapods sampled in the area are the following: *Gennadas elegans*, *Parapenaeus longirostris*, *Sergestes sargassi*, *Lucifer typus*, *Plesionika sp.*, *Lysmata seticaudata*, *Athanas nitescens*, *Processa edulis*, *Palaemon adspersus*, *P. serratus*, *Palaeomonetes antennarius*, *Pontophilus spinosus*, *Callianassa subterranea*, *Anapagurus chiroacanthus*, *A. laevis*, *Pagurus excavatus*, *P. prideauxi*, *Munida bamffica*, *Porcellana platycheles*, *P. longicornis*, *Latreillia elegans*, *Homola barbata*, *Medorippe lanata*, *Ebalia cranchii*, *E. tuberosa*, *Carcinus aestuarii*, *Portumnus latipes*, *Liocarcinus depurator*, *Macropipus tuberculatus*, *Pilumnus spinifer*, *Goneplax rhomboides*, *Pachygrapsus marmoratus*, *Maja squinado* (Vaso and Gjijnuri, 1993).

Echinoderms are also present with holothurians, sea urchins, sea stars (cushion stars) and ophiurians. The thermophyle starfish *Ophidiaster ophidianus* and the sea cucumber *Holothuria helleri* have been located in the area (Vaso and Gjijnuri, 1992).

- Coralligenous biocenosis

Another important biocoenosis is that of semi-obscure caves, where the red coral *Corallium rubrum* and several species of sponges live. The red coral (*Corallium rubrum*) a Coelenterates of great interest, is a species of the Annex-III of the Barcelona Convention, as a species whose exploitation is regulated and also a species of the Annex III of the Bern Convention, as protected fauna species.

Coralligenous biocenosis is present in the circalittoral zone, on hard substrata, with calcareous red seaweeds, gorgonians and bryozoans. This biocenosis is well developed on the western side of Sazani Island and Karaburuni Peninsula.

- Marine turtles

In the marine waters of this area has been also recorded the presence of the loggerhead turtle *Caretta caretta*. This globally endangered species was commonly found in Patoku Lagoon. In this lagoon, the green turtle *Chelonia mydas* has been also recorded several times in the last years. Leatherback turtle *Dermochelys coriacea* is a very rare visitor in Albanian waters. These 3 sea turtle species are globally endangered species, with high threatening status (after IUCN Red List 2006).

This area seems to be an important migrating corridor for the loggerhead turtle *Caretta caretta*, from its nesting site in Zakynthos Island in Greece at the Ionian Sea, to the Patoku coast in Albania at the Adriatic Sea, which has been recently identified as an important foraging site for this species.

- Birds

Coastal lagoons and estuaries are important areas for breeding and wintering for 192 species, more particularly for migratory and water birds. Albania is a country of special importance for Dalmatian pelican *Pelecanus crispus*, a globally endangered species, and pygmy cormorant *Phalacrocorax pygmaeus*. Audouin's gull *Larus audouinii*, also present, is part of the globally endangered species.

Rocky substrates, in particular the high cliffs of Karaburuni and Sazanit island, are ideal for nesting pelagic seabirds, e.g. Laridae. The most representative bird species in the Karaburuni peninsula are Egyptian vultures and peregrine falcons *Falco peregrinus*. In Llogara national park, there are buzzards *Buteo buteo*, grey wagtails *Motacilla cinerea*, shithroats *Sylvia communis*, coal tits *Parus ater*, red-backed shrikes *Lanius collurio*, ciril buntings *Embriza cirulus*, blue rock thrush *Monticola solitarius*, ravens *Corvus corone*, egyptian vultures *Neophron percnopterus*, golden eagles *Aquila chrysaetos*, stock doves, turtle doves, goshawks *Accipiter gentilis*, sparrow hawks *Accipiter nisus* and rock partridges (Crockford and Sutherland, 1991; World Bank and Government of Albania, 1992 c).

- Marine mammals

The area is hosting a variety of habitats used by a great number of mammals of international, national and regional importance. Four species of small mammals, respectively two insectivores (*Talpa caeca* and *Talpa stankovici*) and two rodents (*Pitymys thomasi* and *P. felteni*) endemic of Western Balkans or Mediterranean Region have a part of their distribution range inside the area. *Rhinolophus blasii*, *R. euryale*, *Myotis myotis*, *Canis aureus*, *Lutra lutra*, *Meles meles*, *Mustela putorius* and *Mus spicilegus* (abboti) are resident threatened species that would be safeguarded with the conservation status of the area.

Albanian marine and littoral habitats are frequently visited by the rare marine mammals. The Monk seal (*Monachus monachus*) has been a visitor of coastal waters in Karavasta region and in Ionian Riviera (Stillo and Qefali capes in Saranda, Palasa and Karaburuni). Although the Monk seal is a very rare visitor in Albanian waters, it is thought that the coastline from Stillo Cape to Karaburuni peninsula at the Ionian Sea offers several caves as potential habitats for resting shelters.

Karaburuni-Rreza e Kanalit-Sazanit area would be a potential monk seal *Monachus monachus* habitat as they were still reported in 1982 in Karaburuni and in 1991 in Sazanit Island (Beudels and Vangeluwe, 1994).

The common dolphin *Delphinus delphis*, the bottlenose dolphin *Tursiops truncatus* and the Mediterranean monk seal (*Monachus monachus*), which are among the most threatened species in global scale, as well as many other threatened species of international concern in this area, are protected by several international conventions (Barcelona, Bonn, CITES, Bern).



Among the five species of cetaceans reported in Albanian waters (the striped dolphin *Stenella coeruleoalba*, the Cuvier's beaked whale *Ziphius cavirostris*, the short-beaked common dolphin *Delphinus delphis*, the common bottlenose dolphin *Tursiops truncatus* and the sperm whale *Physeter macrocephalus*, the three latter have been identified by ACCOBAMS as being in the greatest danger of disappearing from the Mediterranean.

### **4.3. Cultural Heritage Resources**

Historical and archaeological values of the sites are unique and would attract national and international tourism (Grama bay, Orikumi, St Marie church and monastery in Zverneçit Island, Triporti, Spinarica). St Marie church and the monastery are cultural monuments dating from the 13<sup>th</sup> Century which have been restored. Triporti, which has been discovered by archaeological excavations, displays antique buildings from the greek-roman period. Spinarica dates from the 12<sup>th</sup> century and one of the renowned medieval cities in the Adriatic Sea.

Several archaeological and historical remains are present in the area in Orikumi lagoon, Vlora bay, Karaburuni, e.g. Grames bay and some caves.

In the south-eastern part of Karaburuni Peninsula, in Orikumi lagoon is located the ancient Orikos, which has been founded in 4<sup>th</sup> century BC and mentioned as an important economic and cultural center in the Mediterranean during the ancient Greek and Roman periods until the Medieval period.

During the roman period, it was a strategic naval base taking part in the wars between Caesar and Pompey. Numerous shipwrecks of that period are supposed to lie in the bay and lagoon where most of ancient Orikos is still submerged. The archaeological importance of the remains (which are mostly still underwater) is assessed to be greater than the ancient town of Butrinti.

This area owns precious archaeological, historical and cultural values, too. As mentioned in the previous chapters (2.3), in the south-western coast of Karaburuni is situated Grama bay, a former famous harbor since thousands of years. On the rocks of Grama bay there are abundant inscriptions in old Greek and Latin languages, dating more than 2000 years that have made this bay to be considered as the richest "rocky diary" in the Mediterranean.

In the underwater habitats of Karaburuni, a considerable number of wrapped ships and many archaeological objects are testimony of the relations of this area with other civilizations of the Greek and Roman periods. Divers can also see the traces of the two world wars of the 20<sup>th</sup> century.

Numerous shipwrecks (mainly on the western coast), amphoras close to cape Shën Nikolla on the eastern coast of Sazanit island could be touristically attractive for underwater explorers.

Three shipwrecks are signaled in Vlora bay and two ancient quarries (one located north of Pasha Limani has sculptured red heads from the classical period) on the eastern coast have been reported in the area; these historical remains could also be touristically attractive for underwater explorers.

Llogara park is of historical interest as it has been recorded that Julius Caesar passed at "Qafa e Llogorase" at 1025 m altitude. It is known there also the toponym "Qafa e Cezarit".

#### **4.4. Main human activities and related potential threats in the MPA**

This section reviews the main human activities and related potential threats, to be considered by the management unit of the future K-V-MPA, and proposes for each specific management, objectives, policy, action and evaluation indicators.

##### **4.4.1. Sustainable management of coastal settlements**

The coastal settlement (towns and villages) of the Vlora area may have potential negative impacts on the MPA if current modes of development activities are left unchanged. There is a need to upgrade and enhance in particular the solid and liquid waste management. As counterpart, the population will benefit from the protected areas in term of revenues originating from tourism, ecotourism and other services liked to the marine and terrestrial protected areas. Grants and loans could be provided to local communities to develop tourism facilities and services.

##### **4.4.2. Sustainable Tourism and Ecotourism Development**

Tourism will be one of the most important use of K-V-MPA for its natural and cultural resources. It is a reliable source of sustainable and substantial economic growth in Albania if properly established and managed. In addition to creating economic opportunities and jobs for the private sector and generate benefits for the local community to enhance their standard of life, it is an important source of revenue for the PAMU to invest into its management. The facilitation and management of tourism and promotion of ecotourism in K-V-MPA is therefore one of the top management issues for the PAMU. Ecotourism is an activity that depends on, promotes a well-maintained natural environment, and has shown to be a reliable source of sustainable economic growth. K-V-MPA has excellent potential for ecotourism development given its unique natural and cultural heritage resources. A range of nature based tourism activities can be envisaged taking place in the K-V-MPA, including wildlife watching, diving, snorkelling or nautical tours as this area has a high potential for leisure, recreation, adventure, beach tourism, and cultural heritage tourism. K-V-MPA management must take into consideration the planned tourism development in the region that is expected to grow exponentially in the next five to ten years. Given the network of protected areas and other important features in the Vlora region, it is envisaged that the K-V-MPA will become a leading attraction for tourism as the region becomes better known.

##### **4.4.3. Maritime traffic and ships anchoring inside or around the MPA**

Most vessels operating in the MPA and in its surrounding areas can have an impact on the marine environment. The objective is to minimize these impacts, as well for ships and vessels transiting to and from Vlora harbour, for fishing boats entering Vlora or other small ports as for the future tourist boats entering the marine protected area for recreational activities. Damage can be related to the anchoring system, to the release of oil, fuel sewage water or solid waste. Strict regulations are necessary to reduce the potential impacts. Mooring systems will have to be

installed in the marine protected area at proximity of key features such as for landing points to beaches and other features or for sensitive sites if their access is opened to divers, snorkelers or for reaching.

#### **4.4.4. Marine tourism activities (except maritime transport)**

Impacts associated with the activities that tourists undertake during a visit, such as swimming, sailing, snorkeling and SCUBA diving can be a chronic source of disturbance to marine organisms and could result in localized physical destruction of seagrasses, algae or coralligenous formations, even under low levels of use.

#### **4.4.5. Solid Waste management in the MPA and its contiguous zones**

One of the most critical problems in K-V-MPA is solid waste not only inside the MPA but also in adjacent areas. Solid waste is largely generated from tourist and marine transport activities in the region. Solid waste affects vegetation, which traps the litter. The vision of trash embedded in the landscape or lying on a beach of K-V-MPA will give the impression of an efficient management and would lower the visitors' appreciation of natural resources. Thus visitors expect that waste management is one of the major visitor's services.

#### **4.4.6. Sewage water**

Following the decision of a zero discharge policy in the sea, there are no approved sewage outfalls in the MPA. New facilities are required to have treatment plants. Treated water is used for irrigation and the sludge is disposed in landfill sites, sometimes to be used as fertilizer.

#### **4.4.7. Major oil spill risk**

The risk of a major pollution event due to an accidental oil spill in the MPA is high given the volume of commercial shipping that passes through the area. An oil spill in or adjacent to the MPA would not only have detrimental effects on water quality but could also have significant ecological impacts on birds and intertidal assemblages in the MPA. Whilst the management of shipping is outside the scope of this plan, the risk of environmental damage associated to a spill is high given the incomplete knowledge on the spatial distribution of sensitive habitats in the MPA. In addition, there is a lack of spill control equipments.

#### **4.4.8. Sustainable fishing**

Individual and commercial fishermen fish in the area using a variety of methods.

Uncontrolled fishing in the coast may directly damage not only fishery resources, but indirectly affects also the bird species and mammals feeding on fish.

The breeding grounds of *Posidonia oceanica* have also severely deteriorated because of changes in the structure of the fishing fleet. More than 50% of fishing boats have small power motors (100 HP) and hence are able to apply deep fishing techniques (trawling) in shallow areas since they are unable to fish in zones more than 50 meters deep. The Albanian fishing fleet is characterized by a high presence of trawlers (62%) followed by gill-netter (Anonymous, 2002).

The intensity of fishing effort and their effect on local populations of target and by-catch species remains unknown. However, fishermen report that local fisheries resources are limited, and that their revenue is decreasing.

A very sensitive species is the dusky grouper *Epinephelus marginatus*, distributed along all the Karaburuni peninsula and Sazani island coast. After the fishermen's observations, nowadays the population of this fish species shows strong declines because of overexploitation.

#### **4.4.9. Fish farming**

In recent years some aquaculture activity has been developed in the littoral zone. In few localities along the eastern part of Karaburuni peninsula have been built sea cages cultivating sea bream (*Sparus aurata*) and sea bass (*Dicentrarchus labrax*), but the trend is for further increase of such activity, because the demand is steadily increasing from one year to the other.

The most widely known effect of fish farming is benthic enrichment, i.e. increased organic content of the sediment beneath the fish cages. The deposition of particulate organic material, i.e. faecal material and uneaten fish feed, in the immediate vicinity of the farm, leads to increased oxygen demand, a condition that often results in anaerobic metabolism and anoxia.

#### **4.4.10. Collection of marine invertebrates**

The trade and selling of marine curios, such as shells, can be the reason for the decline of some species and of the explosion of other populations. Illegal and destructive harvesting has caused the depletion of rocky shore as in the harvesting of the date-mussel *Lithophaga lithophaga* around the Karaburuni peninsula, from the superficialities to 6-10 m depth. Strong measures need to be undertaken to ensure that such practices do not cause desertification of marine life along the rocky areas of the coast. Regulations can reduce this activity.

#### **4.4.11. Rare, endangered and threatened species**

K-V-MPA is home to a number of globally, regionally as well as nationally rare, endangered and threatened species of fauna.

At least 36 marine species, which are of international concern and belong to the lists of endangered and/or protected species of several conventions (see 2.3) are present in Sazani – Karaburuni area. They involve seagrasses, seaweeds, sponges, cnidarians, mollusks, crustaceans, echinoderms, fishes, reptiles, pinnipeds and cetaceans.

In national scale, about 75% of endangered species of marine animals, mostly benthic macroinvertebrates, which belong to the Red Book of Albanian Fauna (2006) and to the Red List of Albanian Fauna (2007), have been recorded in Sazani – Karaburuni area

The conservation of these threatened species is an international obligation and one of the priorities of the National Biodiversity Strategy and Action Plan.

The most important and sensitive species and biocenosis in the area Karaburuni peninsula – Sazani Island are:

- Monk seal (*Monachus monachus*),
- Short-beaked common dolphin (*Delphinus delphis*),
- Loggerhead turtle (*Caretta caretta*),

- Red coral (*Corallium rubrum*),
- Date mussel (*Lithophaga lithophaga*),
- Dusky grouper (*Epinephelus marginatus*),
- Starfish (*Ophidiaster ophidianus*),
- Coralligenous biocenosis,
- Biocenosis of *Posidonia oceanica* meadows,
- Biocenosis dominated by *Lithophyllum byssoides* (*Lithophyllum byssoides* rims),
- Biocenosis of infralittoral algae- *Cystoseira* communities.

The Monk seal (*Monachus monachus*) is a very rare, occasional visitor to the Albanian coastal waters.

The canyons and caves of the area, often inaccessible, represent an ideal habitat for monk seals which were reported in Karaburun peninsula in 1982 and Sazani island in 1991 (Beudels and Vangeluwe, 1994).

Clear evidence of the presence of the monk seal was found in some caves i.e. impressions in the sand corresponding to a large body and excrement (Antolović J. et al., 2005).

It would seem that the caves along the Albanian coastline, especially those of the western coast of the Karaburuni peninsula, could serve as a bridge for possible future monk seal repopulation of the shores of the Central and Northern Adriatic Sea, rather than important shelters for “local” monk seal breeding populations.

#### 4.4.12. **Introduced and invasive species**

Alien invasive species is one of the most outstanding issues facing biodiversity today on a global scale. In temperate marine systems, invasive species are well-documented causes of marine community disruption. There is an important harbor in Vlora that regularly receives vessels from regional and international waters. Species introduced to these harbor could conceivably spread into adjacent waters. Alien species of marine fauna are also used in mariculture in various parts of the Mediterranean.

A potential threat to marine biodiversity is that of invasive species *Caulerpa racemosa* var. *cylindracea* that is widely dispersed in the Mediterranean basin, including the Albanian coast of Ionian Sea. The last years it is recorded also in Vlora bay and the eastern side of Karaburuni peninsula (Kashta et al., 2005). As reported by a number of marine biologists, this invasive species is decreasing the biodiversity values of the invaded sea waters.

#### 4.4.13. **Scientific research inside the MPA**

Although the PAMU is primarily a management body and not a research institution, effective conservation management requires accurate and relevant information. Thus, targeted and management issues oriented research is an important component of the PAMU’s scope of work. On the other hand, unplanned research lacking clear scientific objectives could be counterproductive. Indeed some research can be highly damaging to important natural resources, especially if research design calls for the collection of large numbers of specimens of fauna and flora or other samples. K-V-MPA is a valuable scientific resource that will increasingly attract scientists and researchers and these should be encouraged. Scientific research is one of the important activities, which MPAs seek to promote and facilitate.

## 4.5. *Rationale for the first Marine Protected Area of Albania*

### 4.5.1. The international and national levels

The designation of the first marine protected area in Albania is the result of the dedication of the Government to fulfil its commitments at the national and international levels and in particular concerning the **Convention on Biological Diversity (CBD)** and the **Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention)**.

The Protected areas form a central element of the work in the thematic areas and cross-cutting issues addressed by the Conference of the Parties to the Convention on Biological Diversity. Because oceans and seas cover 71% of the Earth, the under-representation of marine and coastal ecosystems in the current global protected areas system is particularly alarming. At the same time, global and regional assessments indicate that marine biodiversity globally continues to decline rapidly. In addition, there are increasing and urgent concerns about the effects of over-fishing and destructive fishing practices on biodiversity. Halting, and perhaps ultimately reversing, this trend represents for the global community a formidable challenge.

The seventh meeting of the Conference of the Parties to the Convention on Biological Diversity agreed, in 2004, that marine and coastal protected areas are one of the essential tools and approaches in the conservation and sustainable use of marine and coastal biodiversity (decision VII/5 on marine and coastal biological diversity). The Conference of the Parties also agreed that a national framework of marine and coastal protected areas should include a range of levels of protection, encompassing both areas that allow sustainable uses and those that prohibit extractive uses (i.e., so-called “no-take” areas). The Conference further recognized that protected areas alone could not accomplish everything, and that sustainable management practices are needed over the wider marine and coastal environment.

During the COP 8, the CBD has also fixed a target of 10% of the world oceans and seas to be declared as marine protected areas by 2012.

In addition, during the Conferences of Parties 9 (2008), the decision IX/20 adopted the scientific criteria for identifying ecologically or biologically significant marine areas in need of protection and the scientific guidance for designing representative networks of Marine Protected Areas.

The Barcelona Convention activities related to marine conservation and sustainable development are mainly the responsibilities of the two following Regional Activity Centres (RAC):

- the Specially Protected Areas (RAC/SPA) is responsible for the implementation of the Protocol concerning specially protected areas and biological diversity in the Mediterranean assisting the countries in the development of protected areas and mandated by the countries for the creation of a coherent and representative network of marine protected areas covering all the key elements of the Mediterranean at the regional, sub-regional and national level.
- The Priority Action Programme (PAP/RAC) is responsible for the implementation of the Protocol on Integrated Coastal Zone management in the Mediterranean (ICZM Protocol) soon entering into force and with the objective of establishing a common framework for the integrated management of the Mediterranean coastal zone in each country and at the

regional level. ICZM is a tool to manage in a sustainable manner all the natural resources and the human activities

The **Pan-European Biological and Landscape Diversity Strategy (PEEN)** (Council of Europe *et al.* 1996) represents a European response to support implementation of the Convention on Biological Diversity by promoting a co-ordinating and unifying framework for strengthening and building on numerous existing policy initiatives and programs (ECNC 1996, Council of Europe 1998 (Annex 3)). Its major function is to conserve larger natural areas and to prevent fragmentation or to restore connectivity. The PEEN will consist of core areas to conserve eco-systems, habitats, species and landscapes; biological corridors to improve the coherence of natural systems; restoration areas to repair or restore damaged elements of eco-systems, habitats and landscapes of European importance; buffer zones to support and protect the network from adverse external influences.

Under the **Convention on the Conservation of European Wildlife and Natural Habitats known as the Bern Convention** (1979), the **Emerald Network of Areas of Special Conservation Interest (ASCI)** to Europe has been established in 1996 by the Council of Europe (Council of Europe, 1979b). The Parties are to "take steps to designate Areas of Special Conservation Interest to ensure that the necessary and appropriate conservation measures are taken for each area situated within their territory". Albania having signed the Bern Convention in 1985 and ratified it in 1999, started in 2002 to join the EMERALD Network pilot project with six pilot sites selected as ASCIs and proposed as Strict Nature Reserves, among which Llogora National Park included in our present zone of interest.

**At the national level**, the Albanian Parliament approved in 2002 two important laws that together have created a new legal structure for protected areas: law no. 8934 dated 05.09.2002 "For the Protection of Environment" which is based within the concept of sustainable development and law no. 8906 dated 06.06.2002, "For the Protected Areas". The latter sets the framework for the proclamation, administration, management and sustainable use of protected zones and natural biological resources and provides the basis for the development and mitigation of 'environmental tourism' and other economic benefits and for the provision of information and education to the general public. The law "For the Protected Areas" provides special protection of the most important components of natural reserves, biodiversity and in general nature, through the implementation of a protected areas network based on the IUCN's categories system and defines the priorities and strategic objectives for the management of each category. Based on these laws, local governments compile action plans conforming to the priorities and requests of national environmental strategies. During the composition and the approbation of environmental plans and programs, local governments engage the public and NGOs.

The National Biodiversity Strategy and Action Plan has set to expand the present protected areas (about 6%) to 25% of Albanian land territory by 2020.

Following the numerous discussions with national and international experts, the realisation of a field mission to visit the proposed priority site and the revision of the existing documentation, including in particular:

- ✓ the national report on proposed marine protected areas,
- ✓ the reports of the different missions for Integrated Coastal Zone Management (ICZM),
- ✓ the description of the protected terrestrial sites surrounding the city of Vlora.

Based on all these elements, it appears evident that the region of Vlora has to be considered in an integrated manner and that the protection of terrestrial and marine sites is strictly linked to the proper management of all human activities.

At the **local level**, the area of Vlora includes different sites of interest for conservation:

- ✓ The wetland of Nartes lagoon (north of Vlora)
- ✓ Pasha Liman lagoon near Orikumi at the bottom of the bay of Vlora
- ✓ Karaburuni peninsula and the Sazanit Island
- ✓ The highlands and forest area of Kanalit

Each of these sites present major interest for conservation and for tourism and ecotourism: they include at the same time natural and cultural values.

The Government objective is to create the first marine protected area of Albania in the area of Vlora. The following areas were proposed in different reports:

- the area in front of Narta lagoon
- the area surrounding the island of Sazanit
- the external part of Karaburuni peninsula

Based on the previous paragraphs and considering the international commitments of the country, it is proposed to create a very large marine protected area with different zones corresponding to different categories of protected area (IUCN categories). This proposed marine protected area will be representative of most of the ecosystems of Albanian waters as they include most of the types of sea bottom and most of the examples of marine life present in the country and in the Adriatic region. This will fulfil part of the commitments in relation with the CBD: the criteria for selection of sites will have been applied; the proposed area will represent about 400 km<sup>2</sup> or 4% of the territorial and internal waters of Albania (about 10,000 km<sup>2</sup>) according to the selected borders for the MPA (1 nautical mile offshore or more).

*This will be part of the 10% target recommended by the CBD and will also represent one of the 10 most important marine protected areas declared by a country in the Mediterranean (RAC/SPA database). Thus it will attract the attention of international donors and tour operators.*

*The K-V-MPA would have all criteria to be proposed to join the list of Specially Protected Area of Mediterranean Importance (SPAMI) of the Regional Activity Centre for Specially Protected Areas (RAC-SPA). As the sites included in the area are "of importance for conserving the components of biological diversity in the Mediterranean; contain ecosystems specific to the Mediterranean area or the habitats of endangered species; are of special interest at the scientific, aesthetic, cultural or educational levels" (Article 8(2) of the 1995 Protocol*



*Concerning Mediterranean Specially Protected Areas and Biological Diversity in the Mediterranean).*

*By its outstanding biodiversity value interacting with education, sustainable management and economic development of local communities, the K-V-MPA could also be proposed to enter Unesco's World Network of Biosphere Reserves.*

#### **4.5.2. The proposed zoning of the Karaburuni-Vlora Marine Protected Area**

Based on the presence of different terrestrial protected areas in the region of Vlora, and in particular Nartes lagoon in the North, Orikumi lagoon at the southern bottom of the bay of Vlores, the peninsula of Karaburuni on the western side of the same bay, it is proposed to link all these coastal sites by the creation of an overall marine protected area.

##### *Considerations on the external boarder of the marine protected area*

The external border of a marine protected area could be defined by a depth, by a distance form the coast, by the presence of specific features easily visible at sea or according to existing national regulations for some activities, usually fisheries or exclusion zones. In Albania, the legislation concerning trawling fisheries indicates a limit at the depth of 100m. As this limit is very near the coast for the western part of the Karaburuni peninsula and of Sazanit Island, it could be better to select a distance of 1 nautical mile or more if considered appropriate for the preservation of coastal resources and the safety of marine activities. The sheltered bay of Brisanit could serve the purposes of K-V-MPA visiting center and parc infrastructures for patrolling, ecotourism and oceanographical/fishery research with an existing a road track access to Orikumi.

##### *Consideration of the limit within the Vlora Bay (between the tip of Karaburuni peninsula and the village of Orikumi)*

As the bay is important, it is recommended to consider the medium line of the bay between Cape Roghozes and the Cape Viroit, then to consider the full end part of the bay as part of the marine protected area. The presence of aquaculture activities in the southern part of the bay is not a problem for the marine protected area, as far as the production is respecting the national and international rules concerning the environment for aquaculture. An evaluation and an agreement with the aquaculture farm could be reached and the value of the production will benefit from the position of the infrastructure within a protected area.

##### *Consideration for the channel between Karaburuni peninsula and the island of Sazanit*

This area is indicated on the marine chart as the entrance channel to Vlora's harbour. Presently, this channel is very near the tip of Karaburuni peninsula and the navigation could be a threat for the natural resources and for the marine activities within the marine protected area. It will be necessary to relocate this channel by negotiation between the MPA management unit and the relevant authorities; the best option being in the middle between Karaburuni and Sazanit island. As the channel is inside the territorial waters of Albania, it is possible for the Directorate of Maritime transport to change the position of the channel due to the risk between the traffic linked to the port of Vlora and the traffic linked to the activities in the MPA. This decision can be acted by the Government and then transmitted to international maritime authorities (IMO and

UNCLOS). Nevertheless, it is recommended that this area should be included within the boundaries of the MPA in order to develop a permanent mechanism of cooperation between the maritime authorities and the MPA management unit, in particular in case of emergencies, accident or pollution.

*Consideration concerning the island of Sazanit*

Previously, a zone of the maritime environment was excluded from any activities in relation with the presence of military facilities on the island. This limit could be considered for the border offshore the island, but as previously indicated, a distance of 1 or 2 nautical miles could be considered for facilitating the management of activities and in particular fisheries. The sheltered harbour and building facilities could serve the purposes of K-V-MPA for patrolling, ecotourism and oceanographical/fishery research.

*Consideration for the marine area between Sazanit and the coast from the southern tip of the Darea-Zverneci area (Cape Triport) to the southern entrance of the Vjoses river.*

For this area, it is recommended to consider as part of the marine protected area all the area north of the navigation channel and to close it by a line between the southern mouth of the Vjoses river bordering the North of the Narta lagoon and the external limit of Sazanit Island. The exact delineation will have to take into account the project of extension of the harbour of Vlora and the proposed platform terminal. This area could be dedicated to traditional fishing activities for the fishermen operating around Narta lagoon.

*Consideration for the Public Maritime Domain*

As this domain is related to the marine environment, which is part of the state property and which includes a right of free passage, it is recommended to include it in the Marine Protected Area and to manage it jointly between the Protected Area Management Unit (PAMU) and the responsible national Authority.

*Consideration for the set back for development activities*

The set back is usually a distance from the public maritime domain where human activities are not allowed or restricted. With climatic change and related issues concerning sea level rise, this area is subject to risk and needs to be properly defined and respected. This area can be defined as the area under marine influence and can be identified as the first line of permanent non halophytic vegetation. The installation of infrastructures such as road and pathways is not recommended and all sensitive infrastructures have to be further inland to avoid protection expense. Identically, private properties and permanent commercial and industrial infrastructures have to be further inland, such as tourism development. It is recommended to include this area under the responsibility of the PAMU as development will take pace on part of the coast and there is a need to respect all the national and marine protected areas regulations.

**Draft proposal regulations for different zones (see map)**

Based on all the previous paragraphs notes and considerations, it is proposed to define in the area, 4 main zones, each covered by specific regulations developed and implemented jointly by the PAMU and by the relevant authorities concerned by each sector of activity.

***Zone 1. The western part and the northern tip of Karaburuni peninsula***

Limits:

From the southern limit of Rreza e Kanalit (Faqja e Langadhes) to the northern tip of Karaburuni peninsula including at the eastern tip of the area until Cape Gjate

Category(ies):

This area will be covered by different categories of conservation (precise limits to be defined), extending the existing terrestrial zoning. It includes Category II National Park , some areas as Category I Strict nature reserves, some Category III Natural Monuments and Category IV Habitat/Species Management Area.

Regulations:

- Strict reserves defined by the PAMU after additional study on sensitivity and monitoring sites,
- Areas could be declared natural monuments such as for caves or other geological features,
- No extractive use, no fishing, no spear fishing, no speed boats , no jet skis,
- Recreational activities (swimming, diving through authorised centres, sailing, windsurfing, kayaking,...) under agreement,
- Tourism transportation under agreement.

***Zone 2. The internal and southern part of Vlora bay***

Limits:

Inner part of Vlora bay including the bottom of the bay

Category:

VI Managed resource protected area

Regulations:

- Extractive use of marine resources is authorised under agreement (fishing using rod line and traps and aquaculture),
- Recreational activities (swimming, diving through authorised centres, sailing, windsurfing, kayaking,...) under agreement,
- Tourism transportation under agreement,

***Zone 3. The navigation channel***

Limits:

Navigation channel defined after negotiation

Category(ies):

I Strict nature reserve or VI Managed resource protected area

Regulations:

No other activity than navigation.

***Zone 4. The northern part including Sazanit Island and the waters in front of Narta lagoon***

Limits:

The northern part of the navigation channel including Sazanit Island until the border of Narta lagoon

Category(ies):

VI Managed resource protected area for most except that part of Sazanit Island could be II National Park and I Strict nature reserve after further study

Regulations:

VI: - traditional fishing activities (rod line and traps only) after study, inquiry and link with Narta lagoon management regulations,

- tourism activities are authorised except spear fishing, speed boat and jet-ski,

II: tourism and recreation except spear fishing, speed boat and jet-ski,

I: only scientific activities in areas defined by the management unit as sensitive and for monitoring areas

The remaining part of Vlora Bay, in particular the area in front of the urban area of Vlora, the planned development of an industrial zone in the north and the harbour area are considered under the regular management and regulations of the Maritime Authorities of Albania. The only strict restriction to be discussed with these Authorities will concern a full enforcement of a zero discharge policy (liquid and solid) from anchoring ships and vessels. In addition, anti-pollution equipment will have to be operational for any emergency and the staff of the marine protected area could be trained on anti-pollution procedure in case of accident. Fishing will not be permitted in this area as it is always the case in anchoring and harbour areas.

#### **4.5.3. Basic elements for the MPA**

MPAs are sites where limited or multiple activities are developed. Managed activities include research, monitoring, education, public awareness, economic activities such as tourism, fisheries...

#### **4.5.4. Conservation principles**

One should select the proper conservation category when designing a MPA. Within IUCN categories, in the Mediterranean, the most appropriate are Managed Resources Marine Protected Areas, but the national designation can be different, as Marine Protected Areas include often different management categories through a proper zoning and management plan.

*Conservation of natural heritage*

The objective is to protect the area's natural biological communities, habitats, ecosystems and processes, and the ecological services, uses and values they provide to the present and future generations.

*Conservation and sustainable use of natural resources*

The objective is for the MPA to be established and managed principally to support the continued sustainable extraction (or removal) of renewable living resources (fish, shellfish, plants..) by protecting important habitats and spawning, mating or nursery grounds.

*Conservation of cultural heritage*

The objective is to protect, understand, and interpret submerged cultural resources (e.g., shipwrecks, submerged archaeological sites..) that reflect the nation's maritime history and to

protect traditional and cultural connections to the sea.

*The three objectives of conservation can be present all together.*

## **5. THE ACTUAL LEGISLATION RELATED TO MARINE CONSERVATION IN ALBANIA AND THE PROPOSALS FOR IMPROVEMENT AND APPROACH TO THE RELEVANT EUROPEAN LEGISLATION.**

### **5.1. Introduction**

The objective of this report, as described in the terms of reference (TOR), is to identify the key gaps in the legislation on protected areas in Albania in general, and more specifically marine areas -as this has been the weakest element of the protected area (PA) system so far). This report consists of two parts. The first part provides an overview of the international and European legal framework in relation to marine protected areas. The second part of the report includes the gap analysis. In this part, the relevant legislation for the establishment of a marine protected area in Albania is also reviewed.

### **5.2. Legal international framework**

At present there is no single and comprehensive multilateral treaty or instrument that deals with marine protected areas (MPAs). However, there are numerous international instruments that aim at protecting particular marine areas. This protection is mainly based on addressing areas for a specific purpose; regulating the use and protection of species and habitats; and the prevention of environmental degradation (such as pollution). Some of these instruments have global coverage, while others have regional application.

#### **5.2.1. The overarching framework for establishing MPAs**

There are various global instruments that lay the modern groundwork for the conservation and protection of global (marine) biodiversity. Viewed in combination, these instruments establish the legal basis for the establishment of MPAs as well as the tools for their management. The more recent instruments explicitly call for the establishment of MPAs.

- **1982 UN Convention on the Law of the Sea**

The United Nations Convention on the Law of the Sea (LOSC)<sup>1</sup> provides the legal framework for all oceans activities. It defines ocean jurisdiction zones – including the territorial sea and the exclusive economic zone (EEZ) – and establishes rules governing all uses of the oceans and their resources.<sup>2</sup>

- **1992 Convention on Biological Diversity**

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<sup>1</sup> United Nations Convention on the Law of the Sea, Montego Bay, 10 December 1982. In force 16 November 1994, 1833 *United Nations Treaty Series* 396; <[www.un.org/Depts/los](http://www.un.org/Depts/los)>.

<sup>2</sup> Albania ratified LOSC on 23 June 2003.

The most important international legal instrument that addresses protected areas and provides support for national and multilateral efforts is the Convention on Biological Diversity (CBD).<sup>3</sup> It has three objectives: the global conservation of biodiversity; sustainable use of biological resources; and the fair and equitable sharing of benefits arising from the utilisation of genetic resources. Its clauses cover a range of topics, varying from the requirements to establish protected areas to the promotion of indigenous practices and the knowledge relevant to conservation and sustainable use.

- **1992 Climate Change Convention**

The Intergovernmental Panel on Climate Change confirms that sea level rise is affecting coastal ecosystems, including coral reefs, mangroves and salt-marshes.<sup>4</sup> The 1992 Climate Change Convention<sup>5</sup> underlines in its preamble the awareness of the role and importance in terrestrial and marine ecosystems of sinks and reservoirs of greenhouse gases.

- **2002 World Summit on Sustainable Development**

The WSSD Plan of Action calls for the application of an ecosystem approach to fisheries by 2010 as well as the restoration of depleted fish stocks by 2015.<sup>6</sup>

### **5.2.2 Prevention of pollution of the marine environment**

- **1972 London Convention**

The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter is one of the first global conventions to protect the marine environment from human activities and has been in force since 1975. Its objective is to promote the effective control of all sources of marine pollution and to take all practicable steps to prevent pollution of the sea by dumping of wastes and other matter.

- **1973 MARPOL Convention**

The Convention on Prevention of Pollution from Ships (MARPOL 1973, 1978, and Protocol) restricts vessel discharges of noxious substances and allows for the designation of areas that require special protection from maritime activities.

- **1995 Global programme of action for the protection of the marine environment from land-based activities**

The Global Program of Action for Protection of the Marine Environment from Land Based Activities (GPA) is a voluntary framework agreement covering pollution abatement based on source categories such as sewage, radionuclides, and nutrients. It also includes provisions for the protection of critical habitat. At the national level, states are called on to identify critical habitats,

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<sup>3</sup> Convention on Biological Diversity, Rio de Janeiro, 5 June 1992, entry into force: 29 December 1993, 31 *ILM* (1992), 818. Albania is a party to the CBD since 5 January 1994.

<sup>4</sup> Dudley, N. (2003), No place to hide : Effects of Climate Change on Protected Areas, WWF Climate Change Programme.

<sup>5</sup> United Nations Framework Convention on Climate Change (UNFCCC), New York, 9 May 1992, entry into force: 21 March 1994, 31 *ILM* (1992)), 849.

<sup>6</sup> See 2002 WSSD, Recommendations 29(d) and 30(a) respectively.

such as coral reefs, wetlands, seagrass beds, coastal lagoon and mangrove forest and “specially protected marine and coastal areas”.

- **1991 Espoo Convention**

The Convention on Environmental Impact Assessment in a Transboundary Context establishes a framework to consider environmental factors in domestic decisions concerning large-scale industrial projects and to notify other states of potential impacts.<sup>7</sup> The Espoo Convention makes it possible for EIAs to be required in respect of proposed activities located in or close to (marine) areas of special environmental sensitivity or importance.

- **1998 OSPAR Convention**

The Convention for the Protection of the Marine Environment of the North East Atlantic covers the Nordic countries and requires them to take all possible steps to prevent and eliminate pollution, protect the maritime area, conserve marine biodiversity, and use marine resources sustainably.

### **5.2.3. The use and protection of species and habitats**

- **1946 International Convention for the Regulation of Whaling**

The International Convention for the Regulation of Whaling (1946) seeks to protect whales from overhunting and to regulate the international whale fishery to ensure proper conservation and development of whale stocks.

- **1971 Ramsar Convention**

The Convention on Wetlands of International Importance especially as Waterfowl Habitat calls on parties to protect migratory stocks of waterbirds and their wetland habitats and to apply the principle of “wise use,” as defined by the convention. In doing so, it is an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. Under the Ramsar Convention, countries designate wetlands of international importance as Ramsar sites.

- **1972 UNESCO World Heritage Convention**

The Convention Concerning the Protection of the World’s Cultural and Natural Heritage calls on parties to designate natural areas and cultural sites of outstanding universal value and to preserve them. The convention provides for the identification of world heritages sites which are situated within the territory of the state.

- **1973 CITES Convention**

The Convention on Trade in Endangered Species is designed to conserve wildlife species by controlling international trade in endangered flora, fauna, their parts, and derivative products through a system of import and export permits.<sup>8</sup>

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<sup>7</sup> Albania ratified the Espoo Convention on 4 October 1991. Following, Albania also ratified the amendments and the protocol.

<sup>8</sup> Accession by Albania on 27 June 2003.

- **1979 Bern Convention**

The Bern Convention on European Wildlife and Natural Habitats (1979) is intended to conserve wild flora and fauna and their natural habitats with particular emphasis on rare and endangered species. The aim of the Convention is described as “to conserve wild flora and fauna and their natural habitats, especially those species and habitats whose conservation requires the co-operation of several States, and to promote such co-operation [while] particular emphasis is given to endangered and vulnerable species, including endangered and vulnerable migratory species”.<sup>9</sup>

- **1982 World Charter for Nature**

The World Charter for Nature, a resolution of the United Nations General Assembly, acknowledges that humans are a part of nature and receive benefits from it. Ecosystems and organisms used by humans are to be managed to achieve optimum sustainable productivity, but not at the expense of other species or ecosystems with which they co-exist.

- **1983 Bonn Convention**

The Convention on the Conservation of Migratory Species of Wild Animals aims to protect endangered migratory species and migratory species with an unfavourable conservation status. The convention is concerned with the conservation of wildlife and habitats on a global scale and aims to conserve terrestrial, *marine* and avian migratory species throughout their range. It facilitates species agreements among countries within the range of that species.

- **1995 UN Fish Stocks Agreement**

The Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, New York, 4 December 1995 (UN Fish Stocks Agreement)<sup>10</sup> builds on the provisions of LOSC concerning fish species that move between EEZs and the high seas, (i.e. international waters) or migrate over long distances. It aims to optimise use and ensure the long-term conservation and sustainable use of target species while avoiding negative impacts on other species.

- **1995 FAO Code of Conduct**

The FAO Code of Conduct for Responsible Fishing is a non-legally binding code, but with important links to UNCLOS. The Code expects States to implement appropriate measures within the precautionary principle framework to minimise waste, discards, ghost-fishing, and negative impacts of fishing on associated or dependent species.

#### 5.2.4. Specific tools for the Mediterranean Sea

- **1976 Barcelona Convention**

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<sup>9</sup> Article 1(1) and (2) of the 1979 Bern Convention.

<sup>10</sup> Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, New York, 4 December 1995; 2167 UNTS 3.



The Barcelona Convention (adopted in 1976 by 16 countries and the European Community as part of the Regional Seas Programme of the United Nations Environment Program (UNEP)) can be considered as the foundational document for regional cooperation with respect to the protection of the environment in the Mediterranean. Many of the diverse international cooperation initiatives in the Mediterranean are directly or indirectly targeted at the implementation of the Convention and its Protocols.

### **5.2.5. European Framework**

- **Directive 2008/56/EC (Marine Strategy Framework Directive)**

The Marine Strategy Framework Directive (which came into force in July 2008) requires Member States to put measures in place to achieve or maintain Good Environmental Status (GES) in their waters by 2020. For this purpose, marine strategies of the member States shall be developed and implemented in order to:<sup>11</sup>

a) protect and preserve the marine environment, prevent its deterioration or, where practicable, restore marine ecosystems in areas where they have been adversely affected; (b) prevent and reduce inputs in the marine environment, with a view to phasing out pollution as defined in Article 3(8), so as to ensure that there are no significant impacts on or risks to marine biodiversity, marine ecosystems, human health or legitimate uses of the sea.

It moreover aims to protect the resource base upon which marine-related economic and social activities depend. The Directive provides the Member States with the option to decide which measures are implemented to achieve GES. It does however explicitly refer to MPAs as an important contribution to achieve GES. These should address all human activities that have an impact on the marine environment. A specific target under the Directive is the establishment of a coherent and representative network of MPAs by 2016.

- **NATURA 2000**

Natura 2000 is an EU-wide network of nature protection areas with the objective to assure the long-term survival of Europe's most valuable and threatened species and habitats. Its focus is to create a coherent network of protected areas, which includes both Special Protection Areas (SPAs) under the 1979 Birds Directive, and Special Areas of Conservation (SACs) under the 1992 Habitats Directive. The protection of the marine environment has been made part of this programme.

*Directive 79/409/EEC (the Birds Directive)*

Under the Birds Directive, Member States are required to select the most suitable sites and designate them as a Special Protection Areas (SPAs) after which they automatically become part of the Natura 2000 network.

*Directive 92/43/EEC (the Habitats Directive)*

Under the Habitats Directive, Member States are required to draft a list of Sites of Community Importance (SCI). The criteria for selecting these sites need to be in accordance with annex III of

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<sup>11</sup> Article 1(2) of the Marine Strategy Framework Directive.

the Habitats Directive and relevant scientific information.<sup>12</sup> Once a site of Community importance has been adopted, the Member State concerned shall designate that site as a special area of conservation.<sup>13</sup>

### *Marine protection*

The 6th Environmental Action Programme of the European Community identifies ‘nature and biodiversity’ as one of the priority themes. Objectives and priority areas for action on nature and biodiversity include to (further) promote the protection of marine areas, in particular with the Natura 2000 network as well as by other feasible Community means.<sup>14</sup>

## **5.3. Legal gap analysis**

Despite the existing international and European legal framework on MPAs, it remains a challenge to incorporate this into national law and policy. This chapter will assess the Albanian legislation and identify the main gaps for the establishment of MPAs. From that perspective, related legislation has been reviewed to assess its relevance or possible contribution to the establishment and management of MPAs. This main focus of this legal gap analysis will be on the assessment of the law on protected areas. The Albanian relevant laws include:

- Law No.8906 dated 6.6.2002 “On protected areas”
- Law No. 9868, dated 4.2.2008 “On some supplements and changes in Law No. 8906, dated 6.6.2002 “On protected areas””
- Law No. 7908, dated on 05.04.1995 “On fishery and aquaculture”
- Law No. 8870 dated on 21.03.2002 “On amendments to law No. 7908 dated 05.04.1995 for fishery and aquaculture”
- Law No. 9587 dated 20.07.2006 “On biodiversity protection”

### **5.3.1. Legislation on protected areas**

The establishment and management of protected areas is regulated by Law No. 8906, dated 6.6.2002, “On protected areas” (hereinafter the “PA Law”). This law, which was amended in 2008, aims at the declaration, preservation, management and usage of protected areas and their natural and biological resources. In addition, the objectives, as formulated in Article 1, include “the facilitation of conditions for the development of environmental tourism, for the information and education of the general public and for economic profits, direct or indirect, by the local population, by the public [state] and private sector”.<sup>15</sup> To achieve the purpose of the law – to

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<sup>12</sup> Article 4(2) of the Habitats Directive. Member States identify and carry out an assessment (at national level) of the relative importance of sites for each natural habitat type in Annex I and each species contained in Annex II (including priority natural habitat types and priority species) on the basis of which the Member State proposes a list of SCI to the EC.

<sup>13</sup> Article 4(4) of the Habitats Directive.

<sup>14</sup> Article 6(2) of Decision No. 1600/2002/EC of the European Parliament and of the Council of 22 July 2002 laying down the Sixth Community Environment Action Programme.

<sup>15</sup> In case of review of the Law on protected areas, the objectives should be subject to review. A further and more detailed level of the objectives can be included, such as for example in the 2007 Marine Parks Act of Australia.

provide special protection of important components of nature – the regulation of protected areas is based on six IUCN categories.<sup>16</sup>

By their nature, MPAs present particular management and protection challenges that may require a different approach as to protected areas in terrestrial environments. IUCN takes the view that marine sites should not be operated under a separate definition. The current definition of ‘protected area’ in the Albanian legislation suggests that protected areas can be declared in the marine areas.<sup>17</sup>

Protected areas are declared land, aquatic, marine and coastal territories determined for the protection of biological diversity, natural and cultural resources, associative, which are managed legally and by contemporary scientific methods.

This definition is not without ambiguity in terms of MPAs. The main issue of concern is the use of the term “territories”, which normally applies to land. Even though the definition includes reference to “aquatic, marine and coastal”, with the term “territories” it is not evident whether it applies only to the seabed, or whether this notion can also include the water column or surface.<sup>18</sup>

Article 3.1 of the PA Law and Article 3.1(a) of the Law “On Biodiversity Protection” do not specify whether the marine areas only cover the Territorial Sea or also cover the EEZ. Article 3(a) of the 1995 Law “On Fisheries and Aquaculture” stipulates that the law applies to the waters of Republic of Albania, which include “the territorial marine waters and any other marine area reserved exclusively for the Republic of Albania based on the law of international right, as well as rivers, lakes, lagoons, hydro-graphic habitats and other waters of the territory of Albania”.<sup>19</sup>

### ***Protected Area or Marine Protected Area?***

The Albanian legislation does not include a separate definition on *marine protected area*; it is part of the definition of *protected area*. There is no internationally agreed definition on marine protected area; however all the definitions are built upon similar elements.

Revision of the Albanian definition should be discussed, while taking into account that it is important for Albania to have the option to include waters/coast near the sea in one protected area.

### ***Definition of categories and levels of protection***

The 2002 Law “On Protected Areas” is based on the IUCN categories, covering a wide range of management tools with an overall objective of biodiversity protection. As a result of their broad

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<sup>16</sup> Article 2(3) of Law No. 8906, dated 6.6.2002 on protected areas. It can be noted that the IUCN uses seven categories. Category I of the IUCN is divided in IA and IB. IA contains a ‘strict nature reserve/wilderness area (science/research)’ which, as a protected area, is managed for scientific and research purposes. Category IB contains a ‘strict nature reserve/wilderness area (protection) which, as a protected area, is managed for wilderness protection purposes. From the wording of Article 5 on ‘strictly nature reserve’ is can be concluded that this reflects IUCN Category IB.

<sup>17</sup> Article 3(1) of Law No. 8906, dated 6.6.2002 on protected areas.

<sup>18</sup> In the process of drafting the law on protected areas discussion has taken place on the use of the term ‘territories’ or other terms such as ‘spaces’. This discussion should also be placed in context of language/translation, as according to Department of Protected Areas, the term territories includes more dimensions (such as seabed and the water column).

<sup>19</sup> Formulations are from the Compendium of Environmental Legislation of Albania, established by the Republic of Albania Ministry of Environment, March 2004.

formulations, the categories can apply to all types of geographical space and are commonly used for MPAs. Review of the 2002 Law on Protected Areas identifies a number of issues that should be subject to consideration when discussing the establishment of a marine protected area.

The Albanian law on protected areas includes IUCN six categories that describe ‘territories’ that are subject to certain levels of protection. In doing so, the law has not copied the exact wording of the IUCN guidelines. Both the description of the areas (included in the first paragraphs of Articles 5, 6, 7, 9, 10 and 11) and the related level of protection (described in the second paragraph of Articles 5, 6, 7, 9, 10 and the third paragraph of Article 11) have been written with a strong terrestrial focus.

The different types of activities that are now listed in the PA legislation (for all 6 categories of conservation) have no relevance for the regulation of marine protected areas.

To (better) fit the inclusion of marine areas in the Albanian system of protected area law, a necessary step would be to ensure that the categories (and the related level of protection) apply to all types of protected areas (including terrestrial, marine or freshwater or brackish water systems). The current lists of prohibit activities have a strong terrestrial focus and can complicate the application of the law on marine protected areas.

The definition of categories and the established level of protection also need to fit transnational or regional marine protected areas. This would require Article 26 of the PA law (on network of protected areas) to include provisions for cross-border MPAs to regulate conservation and the joint management of straddling and or migratory fishery resources.

### ***Zoning within the MPA***

The 2008 amendment to the PA Law introduces the principle of internal zoning. According to Article 4/2 of the amendment, the territory of the protected area can be divided into subzones, according to the importance of habitats and ecosystems which are part of. The purpose of zoning becomes clear from the second paragraph of Article 4/2, stipulating that internal zoning “may contain central area, recreation area, the area of traditional use, the area of sustainable development and other subzones which fit to the territory”. Here, zoning can be used as an important management tool to establish MPAs that can provide multiple benefits, such as combining fisheries management with nature conservation or sustainable tourism. Article 4/2(4) of the 2008 Amendment to the Law on Protected Areas refers to the “degree of protection” that shall be established by the decision of the Council of Ministers. The identification of the different levels of protection can moderate this task, while providing a high level of uniformity in the system of protected areas.

### ***MPA and Specially Protected Areas***

In addition to the introduction of zoning, the 2008 Amendment mainly places its orientation on Directive 92/43/EEC on the conservation of natural habitats and wild life fauna and flora. It adds several definitions which find their origin on the 92/43/EEC Directive (and 79/409/EEC) to the law and further elaborates on the *special protected areas*.<sup>20</sup> It should be underlined that the definitions included in the Habitats Directive are divided amongst the 2008 amendment of the law on protected areas and the 2006 law on biological diversity. This provision corresponds to

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<sup>20</sup> It should be noted that the 2008 amendment to the PA law uses the term ‘special protected area’ which is central in the Birds Directive, whereas the definition of this term closely resembles the definition of ‘special areas of protection’, which is central in the Habitats Directive.

the definition of special area of conservation, as set out in Article 1(l) of the Habitats Directive (consolidated version).<sup>21</sup>

### ***Stakeholder involvement***

The establishment of MPAs involves another issue which is public participation. It is increasingly acknowledged that the success and sustainability of protected areas relates directly to collaboration with stakeholders. Stakeholders form a broad group of people or agencies that are interested in, impact on or are influenced by (the level of protection established in) a protected area. The IUCN underlines in that “the identification of zones in MPAs should be based on the best available science and judgement, and also should be developed following consultation with relevant stakeholders”.<sup>22</sup>

A participative approach can be found in the 2002 Law on Protected Areas. Article 13(1) formulates that a declaration of a protected area shall be made “upon receipt of opinion from local government organs, specialised institutions, non-profit organisations and from private owners in case their estate is included in the protected area”. The managing ‘agency’ in the protected area system is the Ministry of Environment; consisting of departments involving fisheries and forestry. Although this process should not necessarily be included in the legislation, a protocol that lays down the involvement of the relevant agencies is generally recommended.

### ***Enforcement***

The issue of enforcement – sanctions in the case of violations – is minimally addressed in the current PA law. The law does not stipulate who is responsible for its enforcement. For the enforcement of the MPA regulation, the law should not only include environmental inspectorates, but also the fisheries inspectorates and the Coastal Guard.

### ***Monitoring of Protected Areas***

The task of monitoring of the protected area is laid down in Article 20 of the PA law. The formulation of this crucial article is too vague. In the process of review of the protected area legislation, amendment should provide for more specific information on the procedures for monitoring.

### **5.3.2. Fisheries legislation**

The management of marine protected areas can be complemented by existing legislation regulating fisheries activities. The main legislation currently in force on the management of fisheries are ‘Law No. 7908, dated on 05.04.1995 on fishery and aquaculture’ and ‘Law No. 8870 dated on 21.03.2002 on amendments to law No. 7908 dated 05.04.1995 for fishery and aquaculture’. When considering the establishment of a MPA, the law on fisheries management should be carefully taken into account.

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<sup>21</sup> Article 1(l) of the Habitats Directive formulates that *special area of conservation* “means a site of Community importance designated by the Member States through a statutory, administrative and/or contractual act where the necessary conservation measures are applied for the maintenance or restoration, at a favourable conservation status, of the natural habitats and/or the populations of the species for which the site is designated”.

<sup>22</sup> Dudley, N. (ed.), (2008) IUCN, Guidelines for Applying Protected Area Management Categories, p. 57.

One of the overarching objectives of the Albanian fisheries legislation is to ‘provide protective conservation measures in order to ensure the protection of biological water resources’ as well as to ‘support the sustainable development of fishery and aquaculture sectors, as well as create better social-economical conditions for producers’.<sup>23</sup> Law No. 7908, dated on 05.04.1995 on fishery and aquaculture contains several connecting factors to marine protected areas:

### ***Fisheries licences***

Article 16 of the law lays down criteria on the conditions and the duration of professional fishing licences. In addition, a legal basis for the establishment of measures to regulate fisheries (gear restrictions, seasonal restrictions etc) can be found in Article 24(1)(a) of the 1995 Law on Fisheries Management. These criteria can form important management tools in regulation of fisheries activities in protected zones.

### ***Minimum protection measures***

The 1995 fisheries legislation establishes a minimum level of protection which applies throughout all Albanian waters, including all types of marine protected areas. These measures include that “fishing of corals and sponges shall be prohibited”.<sup>24</sup> Article 24(1)(b) formulates a general prohibition of “the use of explosive matters, of chemical or poisoning matters, of electrical energy capable of stun, paralyse or kill water organism, as well as during the aquatic life activity”.<sup>25</sup> The amendment to the 1995 fisheries law moreover prohibits sport fishing in protected marine zones.<sup>26</sup>

The fisheries law moreover sets out the minimum requirements that apply to aquaculture.

### ***Management of lagoons or other areas***

The 1995 fisheries legislation provides the Ministry of Environment with the ability to “sign agreements with public and private subjects for the management of lagoons or other areas of water...aiming at the preservation of ecological equilibrium and rational utilisation of fish resources of these areas”.<sup>27</sup> This can overlap with the protection provided on the basis of the Law on Protected Areas. According to the Fisheries Directorate, there are several measures that apply in lagoons (such as seasonal fishing).

### ***Co-management of fisheries communities***

The 2002 amendment to the 1995 fisheries law adds to the objective of the law the involvement of “communities of fishermen in the decision-making process by instituting co-management of the fishing resources in the sectors of fishing and aquaculture”.<sup>28</sup> In this context, it introduces the

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<sup>23</sup> Article 2(c) and (ç) of Law No. 7908, dated on 05.04.1995 on fishery and aquaculture.

<sup>24</sup> Article 22 of Law No. 7908, dated on 05.04.1995 on fishery and aquaculture.

<sup>25</sup> Article 39(B) of Law No. 7908, dated on 05.04.1995 on fishery and aquaculture adds that “the use of explosives, chemical or poisoning matters, electrical energy capable of stun, paralyse or kill fish and other water organisms...shall be condemned in accordance with provisions of the Criminal Code”.

<sup>26</sup> Article 6 of the Law No. 8870 dated 21.03.2002 on some addition and changes to law no. 7908 dated 5.04.1995 on fishing and aquaculture (with reference to Article 23 of the 1995 Fisheries law).

<sup>27</sup> Article 31(1) of Law No. 7908, dated on 05.04.1995 on fishery and aquaculture.

<sup>28</sup> Article 1 of the Law No. 8870 dated 21.03.2002 on some addition and changes to law no. 7908 dated 5.04.1995 on fishing and aquaculture.

Organisation for Fishing Management.<sup>29</sup> The establishment of these organisations can be relevant for the management of marine protected areas; they present organised groups of stakeholders which have their organisational infrastructures in place.

### ***Monitoring and control***

For the purpose of the monitoring of the marine protected areas, the management organisations can make use of Article 25 (and also 16(1)(c)(d)) of the fisheries law. They oblige both professional and sports fishermen to submit statistical data on fish stocks and use of equipment.

### **5.3.3 Protection of biological diversity**

Finally, Law No. 9587, dated 20.7.2006 on biodiversity protection is relevant for the establishment of marine protected areas. The overall objective on the law on biodiversity protection is “to ensure the protection and the preservation of biological diversity” and to “regulate the sustainable use of the biological diversity components, through the integration of the key elements of biodiversity in strategies, plans, programs and in decision making at all levels”.<sup>30</sup> The scope of the law on biodiversity includes aquatic and marine areas.<sup>31</sup> The definitions included in the Albanian law on biological diversity, are based on the Habitats Directive and have been transposed by both this law and the 2008 amendment on protected areas. The biodiversity law moreover foresees in terms and/or tools that can be used to prohibit or limit certain uses of the protected area. “Use” as such is defined as the shooting, killing, injury, capture, collection, harvest, eradication, uproots, cutting, destruction, processing, embalment /mummification, transport, consumption, sale or removal of a type, of its life forms, its parts or derivatives, as well as attempts to engage in these actions.<sup>32</sup>

### ***Planning instruments of biodiversity protection***

The law provides for the protection of biodiversity through the adoption of planning instruments: The national Strategy plan, which should be adopted every 10 years, and the action plan for biodiversity. A network of inventory and monitoring is established through this law. An action plan that foresees disasters that specifically would relate to marine areas – such as oil spills at sea or waste from land – would be complementary to a MPA system.

### ***Preservation of ecosystems, habitats and landscapes***

Chapter IV of the law on biological diversity regulates the preservation of ecosystems, habitats and landscapes, placed outside of the protected areas network. This means that all areas defined as *ecosystem*, *habitat* and/or *landscape* (see Articles 1.5; 1.7 and 1.21 of the law), is assigned a minimum level of protection.

### ***Protective measures for land, water and marine species***

In case the protected species (“types”) are listed after approval of the Council of Ministers includes marine species, Article 20 provides a legal basis for additional MPA management

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<sup>29</sup> Article 2 of the Law No. 8870 dated 21.03.2002 on some addition and changes to law no. 7908 dated 5.04.1995 on fishing and aquaculture. This organisation is created “in accordance with Article 26 of the Civil Code of the Republic of Albania and Article 31/1 of the same law”.

<sup>30</sup> Article 1 of the Law No. 9587, dated 20.7.2006 on Biodiversity Protection.

<sup>31</sup> Article 3, defining the scope of the law of biodiversity, refers to “aquatic and marine areas” without further specifications.

<sup>32</sup> Article 1.33 of Law No. 9587, dated 20.7.2006 on Biodiversity Protection.

measures. This Article finds its basis in Article 14 of the Habitats Directive. Most of these measures provide overlap with measures that can be taken under other relevant laws, such as the law of protected areas and the fisheries legislation. The measures that see on the “adjustments related to the access to certain properties”; and the “regulating the purchase, sale, offer for sale, keeping for sale or transport for sale of types” can provide possibilities that further broaden the scope of the MPA regulation.<sup>33</sup>

### ***Public information and participation***

Although Article 13.1 of the 2002 Law of Protected Areas includes a participative approach in establishing the protected area, the law on biodiversity further elaborates on the importance of participation.

### ***Control***

Control on the measures imposed on marine protected area can be considered as one of the most important aspects of legislation. This aspect is currently not included in the protected area legislation.

No specific structure for cooperation between the state bodies and institutions is included.

## **5.4. Main findings**

In sum, the main gaps that have been identified in the law on protected areas include:

- The use of the term ‘territories’ in the PA law is ambiguous. Although the law on protected areas applies to “marine territories”, it is not clear whether this term includes seabed, water column, surface and air.
- The description of the categories (territories) and the activities that are prohibited are written from a purely terrestrial perspective and are not or are hardly relevant for marine protected areas. The provisions moreover provide non-exhaustive lists of prohibited activities, which create gaps. Reformulation of these categories might lead to the inclusion of the activities described in more general terms that not allow for exclusion or gaps (such as the extraction of natural resources rather than hunting or fishing).
- The current PA law includes possibilities for exceptions on the basis of an environmental permit. It is not listed what types of activities can be covered by this, neither this has been subject to (parliamentary) debate.
- The 2008 amendment of the PA law, which is mainly based on the Birds and Habitats Directives, provides several relevant definitions in relation to zoning. Revision of the PA legislation as a whole could lead to a better connection between the two laws and their interrelationship.
- Article 13(1) of the PA law indicates the important position of stakeholders in the process of establishing a marine protected area. Revision of the law could lead to the inclusion of further and more specific stakeholder involvement, both in the process of the establishment and management.

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<sup>33</sup> Article 20.3 (a) and (f) of the 2006 Law of biological diversity.



- Legislation closely related to the PA law includes valuable terms and tools that can be relevant for the regulation of MPAs. Revision of the law on protected areas could lead to the inclusion of cross-references of these relevant provisions.
- The provision that sets out the obligation for monitoring provides minimal information. The provision that formulates the task for monitoring could include more information about the process of monitoring, such as indicators or specific objectives of the management plan.
- The legislation should clearly indicate the responsibilities that are attributed to the management committee. The management organisations, tasks and responsibilities should be described in a more comprehensive and detailed manner.
- The issue of enforcement should be explicitly included in the revised PA law. From the current PA law it is not clear who enforces the legislation. In the case of enforcement of the MPA regulation, the law should not only include environmental inspectorates, but also the fisheries inspectorates and the Coast Guard.

The gaps or omissions identified in the current PA law should lead to a revision of the law as a whole.

## **Bibliography**

- Agardy T.S. (1997): *Marine Protected Areas and Ocean Conservation*. R.G. Landes Company and Academic Press, Inc: Georgetown, TX.
- AHTEG (2004): Technical Advice on the Establishment and Management of a National System of Marine and Coastal Protected Areas. *CBD Technical series Nr. 13*. Secretariat of the Convention on Biological Diversity.
- Anonimous (1999): Shqipëria: Administrimi i Integruar i Zonës Bregdetare: Raporti Përfundimtar. KMM, MAP-UNEP, METAP, DMI (Eds.). Tirana. First Phase: 1-128 +22 maps; Second Phase Second: 1-90 (in Albanian).
- Anonimous (2002): Republic of Albania. *National Report on Marine and Coastal Biodiversity*, Tirana, March 2002.
- Anonimous (2003): The Ramsar Convention on Wetlands: Information Sheet on Ramsar Wetlands (RIS) - Albania, Butrinti. 1-15. [//www.ramsar.org/ris/ris\\_albania\\_butrint.htm](http://www.ramsar.org/ris/ris_albania_butrint.htm)
- Anonimous (2005): Karaburun, Llogora, Rreza e Kanalit, Orikum and Narta Ecosystems. Ecological values, natural, historical and cultural monument. Ed. Albania MedWetCoast. Tirana. 1-47
- Anonimous (2005): The National Strategy for the Development of the Forestry and Pastures in Albania, GDFP.
- Anonimous (2006): Management Plan Llogora-Rreza e Kanalit-Dukat-Orikum-Tragjas-Radhime-Karaburun. Final Draft. Ed. MedWrtCoast (in English and Albanian): 1-221.
- Anonimous (2007): Biodiversity Enabling Activity. Ministry of Environment, Forest and Water Administration, Tirana. 1-370
- Anonimous (2008): Udhëzues për zonat e lagura bregdetare të Shqipërisë / Guida alle zone umide costiere dell'Albania / Guide to the Coastal Wetlands of Albania. Progetto

- A.M.Jo.We.L.S. (Adriatico Meridionale & Jonio Wet Lands System). Provincia di Bari: 1-96.
- Antolović, J., Vaso A., Kashta L., Shutina V., Anagnosti S., Bogdanović S., Adamić L., Antolović N. 2005: Protection of the Mediterranean Monk Seal (*Monachus monachus*) and its Habitats. EURASLIC 11. 11th Biennial Conference of the European Association of Aquatic Sciences Libraries and Information Centres, 4-6th May 2005, Split, Croatia
- APAWA ed. (2007): The Action Plan for the Conservation of Cetaceans in Albanian Waters. / Plan Veprimi për Mbrojtjen e Cetaceve në Ujërat Shqiptare. Association for Protection of Aquatic Wildlife of Albania (APAWA). WB, MMPAU, GEF, Tirana. 1-37 (In English and Albanian)
- Arap D., Sadikaj R. (2006): Mbi kultivimin gjysëm-intensiv të karkalecit të detit (*M. japonicus*) në Shqipëri. Buletini i Matematikës dhe Shkencave Natyrore, University of Tirana, BMSHN (UT) 3/2006: 72-82
- Baraj B., Cullaj A., Dibra A., Goci M. & Hysa M. (2002): The Strategy of the Albanian Environmental Non-Governmental Organizations (Survey). - Milieukontakt Oost-Europa, pp 84.
- Batisse M., Jeudy de Grissac A. (1995): Marine Region 3. Mediterranean. In: *A Global Representative System of Marine Protected Areas*, vol. 1, Keller G, Bleakley C, Wells S (eds). The World Bank: Washington, DC; 77–104.
- Bayle-Sempere J., Ramos-Espla A. (1993): Some population parameters as bioindicators to assess the ‘reserve effect’ on the fish assemblage. In: *Qualité du milieu marin. Indicateurs biologiques et physico-chimiques*, Boudouresque CF, Avon M, Pergent-Martini C (eds). GIS Posidonie: Marseille; 189–214.
- Belmonte G., Costantini A., Moscatello S., Denitto F., Shkurtaj, B. (2006): Le grotte sommerse della penisola del Karaburun (Albania): primi dati. *Thalassia Salentina*, vol. 29, suppl., pp. 15-28.
- Beqiraj S. (2003): Malakofauna. In: Raport mbi monitorimin e komplekseve ligatinore të Velipojës, Kunes, Vainit, Patokut, Karavastasë e Sarandës. Ministria e Mjedisit. Tirana.
- Beqiraj S. (2004): A comparative taxonomic and ecological study with biogeographic data on malacofauna of Albanian coastal lagoons. Doctorate theses, Faculty of Natural Sciences, University of Tirana (in Albanian).
- Beqiraj, S. (2006-a): Data on sharks, cetaceans and sea turtles of the Albanian coast- In “*Cetaceans, sea turtles and sharks of the Adriatic Sea*”. Fondazione Cetacea, Rimini: 21 – 30.
- Beqiraj, S. (2006-b): Zoobentosi – In: Biodiversiteti në Gjirin e Lalzit e Rodonit. Haxhiu, I., Halimi, E. edit. MSHN – Mash Eds., Tirana. 21-28.
- Beqiraj S., Pinna M., Basset A., Nikleka E., Fetahu B., Doka E., Ismailaj M., Barbone E., Sangiorgio F., Fedele M. (2007): Preliminary data on the macrozoobenthos of the Albanian coastal lagoons (lagoons of Patok, Karavasta, Narta). *Transitional Waters Bulletin*, TWB, Transit. Waters Bull. 3, 37-43 <http://siba2.unile.it/ese/twb>
- Beqiraj S. & Kashta L. (2007): Preliminary data on benthic macrobenthos of *Posidonia oceanica* meadows in Albanian coast. – *Universiteti i Shkodrës “Luigj Gurakuqi”, Bul. Shk., Ser. Shk. Nat.*, nr. 57: 179-194.
- Beqiraj, S., Kashta, L., Kuci, M., Kasemi, D., Mato. Xh., Gace. A. (2008): Benthic macrofauna of *Posidonia oceanica* meadows in the Albanian coast. *Natura Montenegrina* 2008/7(2): 55 – 69.

- Beqiraj A., Çullaj A., Kotorri P., Gjoka F. (2008): High-contaminated soil with mercury in Bay of Vlora (Albania) and its possible remediation. *Carpth. J. of Earth and Environmental Sciences*, 2008, Vol. 3, No. 2, p. 19 - 32
- Beqiraj, S., Selimi, D. (2009): Data on macrozoobenthos of Shengjini rocky coast. *Buletini i Shkencave Natyrore, Universiteti i Shkodrës "Luigj Gurakuqi"* (in press).
- Beqiraj, S., Kashta, L., Kuçi, M. (2009): Data on macrozoobenthic community of Saranda Bay. *Buletini i Shkencave Natyrore. FSHN. Universiteti i Tiranës* (in press).
- Berxholi A. (2001): Human activity and resources exploitation in the Narta's lagoon, Orikum, Karaburum peninsula, Kanal, Sazan Island. *MedWet Coast, UNDP/GEF*, 42 pp.
- Berxholi A. (2001): The Vjose-Narta Wetland Complex
- Bino T., Tourenq C., Kayser Y., Bussuttil S., Crozier J., Dore B. J., Bego F. (1996): *Recensement des oiseaux d'eau hivernants en Albanie (14 - 31 janvier 1996)*. Rapport de la Station Biologique de la Tour du Valat, Museum des Sciences de la Nature de Tirana, ASPBM et LIPU. 102pp.
- BIO SAP National report, 2002.
- Boudouresque C.F. (1990) : Réserves et parcs marins: des outils pour la valorisation économique des espaces littoraux. In: *Parchi marini del Mediterraneo, Atti del 1 ° Conevgnò internazionale*, I.CI.MAR, San Teodoro, 28–30 April 1989, Cossu A, Gazale V, Milella I (eds); 21–37.
- Cabioc'h J., Floc'h J.Y., Le Toquin A., Meinesz A., Verlaque M. (1992): Guide des algues des mers d'Europe. Editions Delachaux et Niestlé.
- Casale, F. & Bino, T. (2000): Albania. Pp. 67-76. in M. F. Heath and M. I. Evans, eds. *Important Bird Areas in Europe: Priority sites for conservation. 2: Southern Europe*. Cambridge, UK : BirdLife International (BirdLife Conservation Series No. 8).
- Chemello R., Riggio S. (1995): An essay of use of the habitat evaluation procedures in the planning of a marine reserve (pelagian Islands, south Mediterranean). *Rapports et Procès verbaux de la Commission internationale d'Exploration de la Mer Méditerranée* 34: 24.
- CE, (2006): Vers une politique maritime de l'Union: une vision européenne des océans et des mers. CE publications, 139pp.
- Conception M-D., Bernard G., GARSIA-Charton J. A. & Peres-Ruzafa A. (2000): Methods for studying impact on *Posidonia oceanica* meadow. - In: introductory guide to methods for selected ecological studies in marine reserves. Goni R., Harmelin-Vivien M., Badalamenti F., Le Direach L., Bernard G. edit., GIS Posidonia publ.
- Crivelli A. J. (1996): Action plan for the Dalmatian Pelican (*Pelecanus crispus*) in Europe. Pp. 53-66. In Heredia, B., Rose, L. & Painter, M. *Globally threatened birds in Europe. Action plans*. Council of Europe Publishing. Germany.
- Crockford N. J., Sutherland W. J. (1991): A visit to Albania, July 1991. Report 1: Some information on environmental status. Report 2. Some albanian important bird areas.
- Dauvin J. C., Bellan G., Bellan-Santini D., Castric A., Francour P., Gentil F., Girard A., Gofas S., Mahe C., Noël P., de Reviers B. (1993): Typologie des ZNIEFF-Mer, liste des paramètres et des biocénoses des côtes françaises métropolitaines. In *Coll. patrimoines naturels*, vol. 12. Secrétariat Faune-Flore/MNHN: Paris; 1–46.
- Davis D., Tisdell C. (1995): Recreational SCUBA-diving and carrying capacity in marine protected areas. *Ocean & Coastal Management* 26: 19–40.
- Defos du Rau P., Bino T., (1998): The colonial charadriiformes of Narta saltworks : recommendations for management and conservation, p130-133. In: *Zekhuis M.*,

- Templemen D., (editors). *Breeding birds of Albanian wetlands*, WIWO-Report Nr 64, Zeist.
- DGFP, FAO, 2003. National strategy of forestry sector in Albania.
- Dhora, Dh., Salvini-Plawen, L.v. (1997): Preliminary list of Gastropoda and Bivalvia from off the Albanian coast. *La Conchiglia*. Nr. 284: 10 – 20. Roma
- Dinga L., Hoda P., Miho A., Bego F., Bino T. (2000): Albania- Guide to its Natural Treasures. *Klemp*. ECAT-Tirana and EURONATURE. ISBN 3-931323-06-4: 144 pp
- Floko A., Rakaj N., Kapidanbi E. (1988): Ichthyofauna of Albania, 456pp.
- Francour P. (1989): Les peuplements ichthyologiques de la réserve de Scandola: influence de la réserve intégrale. *Travaux scientifiques du Parc naturel régional et des Réserves naturelles de Corse*, 21: 33–93.
- Francour P. (1991): The effect of protection level on a coastal fish community at Scandola, Corsica. *Revue d'Ecologie (La Terre et la Vie)*, 46: 65–81.
- Francour P. (1992): Ichthyofaune de la réserve naturelle de Scandola (Corse, Méditerranée nord-occidentale). Analyse pluriannuelle de l'effet réserve. *MEDPAN News* 3: 3–14.
- Francour P. (1994): Pluriannual analysis of the reserve effect on ichthyofauna in the Scandola natural reserve (Corsica, northern-occidental Mediterranean). *Oceanologica Acta* 17: 309–317.
- Francour P. (2000): Evolution spatio-temporelle à long terme des peuplements de poissons des herbiers à *Posidonia oceanica* de la réserve naturelle de Scandola (Corse, Méditerranée nord-occidentale). *Cybium* 24(3): 85–95.
- Fremuth W. (2000): Albania - Guide to its Natural Treasures. ECAT-Tirana & Euronature. Klemp. 1-80. [www.Herwig-klemp.de](http://www.Herwig-klemp.de).
- Frissell, C A (1997): Ecological principles. in J E Williams, C A Wood, and M P Dombeck (eds.), *Watershed restoration: principles and practices*, pp: 96-115, American Fisheries Society, Bethesda, Maryland, USA
- Gallardo T., Gomez Garetta A., Ribera M.A., Cormaci M., Furnari G., Giaccone G., Boudiuresque C. (1993): Check-list of Mediterranean Seaweeds. *Botanica Marina*, 36, 399-421.
- GFCM & RAC/SPA (2007): Report of the Transversal Workshop on Marine Protected Areas (MPAs) - Salammbô, Tunisia, 24 and 25 May 2007.
- Gjijknuri L. (1980): Rezultate të studimit të ekinodermatëve të bregdetit tonë. Doctorate theses. University of Tirana, Faculty of Natural Sciences
- Göthel H. (1998): Guide de la faune sous-marine; La Méditerranée Invertébrés et poissons. Ulmer éditions. 318pp.
- Gray J.S. (1999): Using science for better protection of the marine environment. *Marine Pollution Bulletin* 39: 3–10.
- Groom M., Meffe G., Carroll R. (2006): Principles of Conservation Biology. Sinauer. Third Edition. 405pp.
- Guelorget O., Lefebvre A. (1994): Les ecosystèmes littoraux albanais. Organisation et fonctionnement. Laboratoire d'Hydrobiologie Marine, Université' Montpellier II, France, Institut des Pêches, Albanie. 1-148
- Hagemeijer, W.J.M., Schepers, F., Hallmann, B. (1993): *Wintering waterbirds in the coastal wetlands of Albania, 1993*. WIWO-Report Nr. 49.

- Harmelin J.G. (1984): Suivi des peuplements ichtyologiques du Parc national de Port-Cros (Méditerranée, France). Mise en place d'un suivi périodique. *Travaux scientifiques du Parc national de Port-Cros* 10: 165–168.
- Harmelin J. G. (1987): Structure et variabilité de l'ichtyofaune d'une zone rocheuse protégée en Méditerranée (Parc national de Port-Cros, France). *P.S.Z.N.I. Marine Ecology* 8: 263–284.
- Harmelin J. G. (1990): Ichtyofaune des fonds rocheux de Méditerranée: structure du peuplement du coralligène de l'île de Port-Cros (Parc National, France). *Mesogée* 50: 23–30.
- Harmelin J.G. (1999): Visual assessment of indicator fish species in Mediterranean marine protected areas. *Il Naturalista siciliano* 23: 83–104.
- Harmelin J.G. Bachet F., Garcia F. (1995): Mediterranean marine reserves: Fish indices as tests of protection efficiency. *P.S.Z.N.I. Marine Ecology* 16: 233–250.
- Haxhiu, I. (1995): Result of studies on the *Chelonias* of Albania. *Chelonias Conservation and Biology* 1.(4) , 234-237.
- Haxhiu, I. (1998): The Reptilia of Albania: Species composition, distributing, habitats. *Bunn Zool. Beitr* bd 48, 35-37
- Haxhiu M., Tekke R. (1993): The Albanian coast: unknown and undeveloped coastline. European Union for coastal conservation magazine 1993, 2.
- Haxhiu I., Halimi E., (2006): Biodiversiteti në Gjirin e Lalzit e Rodonit. MSHN – Mash Eds., Tirana. 1-84.
- <http://www.cawthron.org.nz/about-cawthron/overview.html>
- <http://en.wikipedia.org/wiki/Albania>
- <http://en.wikipedia.org/wiki/Butrint>
- IBR (2002): Monitorimi i flores te bregdetit Adriatik. Academia e Shkencave, Instituti Kerkimeve Biologjike. Report 147 p..
- IBR (2003): Monitorimi i flores dhe gjendjes trofike te lagunave te bregdetit Adriatik. Academia e Shkencave, Instituti Kerkimeve Biologjike. Report 138 p. + 1 annex (125 p).
- IBR (2005): Monitorimi i pasurive floristike te ekosistemeve ligatinore te Velipojes, Patok – Fushekuqes, Ohrit dhe Prespes. Academia e Shkencave, Instituti Kerkimeve Biologjike. Report 166 p. + 1 annex (125 p).
- Imeri A. (2008): Flora dhe vegetacioni në Gjirin e Lalzit. (Doctorate theses). Faculty of Agronomy, Agricultural University of Tirana. 1-149
- Institute of Geological Researches, 1983. Geological map of Albania. Scale 1:200000.
- IUCN (2003): Proceedings of the World Park Congress, Durban.
- IUCN (1994): Parks for Life: Action for Protected Areas in Europe. IUCN, Gland.
- IUCN (ed.), (2004): The IUCN Red List of Threatened Species. <http://www.Redlist.org>
- IUCN (2004): Action Plan for the Protected Areas in Europe.
- IUCN (ed.), (2006): The IUCN Red List of Threatened Species. <http://www.Redlist.org>
- Jones G.P., Cole R.C., Battershill C.N. (1993): Marine reserves: do they work? In *Proceedings of the Second International Temperate Reef Symposium*, NIWA Marine, Wellington, 7–10 January 1992, Battershill CN, Schiel DR, Vones GP, Creese RG, MacDiarmid AB (eds); 29–45.
- Jones P.J.S. (1999): Marine nature reserves in Britain: Past lessons, current status and future issues. *Marine Policy* 23: 375–396. Jouvenel JY.
- Kabo M., ed. (1990–91): Gjeografia Fizike e Shqipërisë, Vol. I (400 pp.) dhe II (590 pp.). Albanian Academy of Sciences. Geographic Centre, Tirana.

- Kasemi, D., Beqiraj, S., Ruci, S. (2008): Macrozoobenthos of the rocky coast of Vlora, Albania. *Natura Montenegrina* 2008/7(2): 133 – 145.
- Kashta L. (1987): Ecological and geographical data of green algae of Vlora bay. - *Buletini i Shkencave Natyrore, Tiranë*, nr.1: 97-103.
- Kashta L. (1987): Alga makrofite të brigjeve të Shqipërisë. (The macrophyte algae of Albanian coast) - (Doctorate Thesis) Tiranë, 1-187.
- Kashta L. (1992-93): Rezultate të studimit të florës detare të brigjeve shqiptare të Adriatikut. (Some results of the study of marine flora of the Albanian Adriatic shore) *Buletini i Shkencave Natyrore, Tiranë*, seria B, Kimi-Biologji, nr. 1-4.
- Kashta L. & Pizzuto F. (1995): Sulla presenza di *Halophila stipulacea* (Forskaal) Ascherson nelle coste dell'Albania. - *Boll.Acc. Gioenia Sci. Nat. Catania*: 161-166.
- Kashta L. (1995 – 1996): Rreth përhapjes dhe ekologjisë së *Fucus virsoides* J. Agardh në brigjet e Shqipërisë. - *Universiteti i Shkodrës “Luigj Gurakuqi”*, *Bul. Shk. Ser. Shk. Nat.*, nr. (48)1: 60 – 65.
- Kashta L. (1996): Dati sulla distribuzione floristica di alghe rosse (*Corallinales*) lungo le coste dell'Albania. - *Atti Mus. Civ. Stor. nat. Trieste* (47): 137-141.
- Kashta L., Beqiraj S., Mato Xh., Xhulaj M., Gaçe A. & Mullaj A. (2005): The inventory of habitats with *Posidonia oceanica* and littoral habitats in Albania. *Technical Report, APAWA, Tirana, supported by Ministry of Environment* (Unpublished report, in Albanian and Italian).
- Kashta L., Beqiraj S., Mato Xh., Xhulaj M., Gaçe A., Mullaj A. (2005): Marine underwater meadows – green lungs of the Mediterranean. APAWA, Ed. Julvin. Tirana. 1-48 (In Albanian)
- Kashta L., Xhulaj M., Mato Xh., Beqiraj S., Gaçe A. (2007): The state of *Posidonia* meadows along the Albanian coast: general evaluation. *Proceedings of the Third Mediterranean Symposium on Marine Vegetation, Marseilles, 27-29 March 2007*: 272 – 273.
- Kayser Y., Bino T., Bego F., Fremuth W., Jorgo G. (1997): *Recensement des oiseaux d'eau hivernants en Albanie (3 - 19 Janvier 1997)*. Rapport de la Station Biologique de la Tour du Valat (France) et Museum des Sciences de la Nature (Tirana; Albanie). 52 pp
- Kromidha G. et al, (2007): Working plan and the strategy for increasing the surface and strengthening the administration of protected areas in Albania. MEFWA 2007
- Laborel J. (1981): Peuplements fossils des niveaux marins surélevés holocènes dans l'arc Egéen. *Journées Etud. Systèm. et Biogéogr. Médit.* Cagliari, C.I.E.S.M., pp. 151-154.
- Langhammer P., Bakarr M., Bennun L., Brooks T., Clay R., Darwall W., De Silva N., Edgar G., Eken G., Fishpool L., da Fonseca A.B., Foster M., Knox D., Matiku P., Radford E., Rodrigues A., Salaman P., Sechrest W., Tordoff A., Valentine P. (2007): Identification and Gap analysis of key biodiversity areas; a target for comprehensive Protected Area systems. *Best Practice Protected area Guidelines Series N° 15*. James Cook University, Rainforest CRC, World Commission on Protected areas. 116pp.
- Lazo P., Çullaj A., Kotorri P., Pjeshkazini L. (2006): «Biomercury : Worldwide remediation of mercury hazards through biotechnology », Case Study 2: WP2 Hot Spot of Pollution (Vlora, Albania). *Report on pollution including own data, published and unpublished data; Sixth Framework Programme, Priority 3 NMP of Commission of European Community, 2005-2006*.
- Lipej, L., De Maddalena, A. & Soldo, A. (2004): Sharks of the Adriatic Sea. *Knjiznica Annales Majora, Koper*, 254 pp.

- Lundberg P., Jonzen N. (1999): Spatial population dynamics and the design of marine reserves. *Ecology Letters* 2: 129–134.
- McNeill S.E. (1994): The selection and design of marine protected areas: Australia as a case study. *Biodiversity and Conservation* 3: 586–605.
- McNeill S.E., Fairweather P.G. (1993): Single large or several small marine reserves? An experimental approach with seagrass fauna. *Journal of Biogeography* 20: 429–440.
- Miho A. (1994): Qualitative and quantitative data on the phytoplankton of Butrinti lake (Saranda). FNS, UT, Tirana. 1-145. (Doctorate theses) (in Albanian).
- Miho A., Witkowski A. (2005): Diatom (Bacillariophyta) Flora of Albania Coastal Wetlands Taxonomy and Ecology: A Review. Proceedings of the California Academy of Sciences. Vol. 56, No. 12: 129-145, 1 figure, 2 plates, Appendix
- Mima M., Fitoka E., Bego F. (2004): Wetland Inventory in Albania. Special Publication produced in the framework of the project: *Wetland Inventory in Albania*, financed by the Greek Environmental Ministry, under DAC programme.
- Misja K. (1999): A contribution on “Red data book of European butterflies, Rhopalocera”. (National compilers).
- Misja K. (2001): A contribution on “Identifying Prime Butterfly Areas in Europe” (National compilers).
- Misja K. (2006): Libri i Kuq i Faunës Shqiptare. Ministria e Mjedisit, Pyjeve dhe Administrimit të Ujërave. Tiranë. 1-256.
- MMPAU. (2007): Lista e Kuqe e Faunes. 14 – 26. Tirane.
- MOE and RAC/SPA (2002): Strategic Action Plan for the conservation of marine and coastal Biodiversity (BIO-SAP), National report.
- Morhange C. F., Laborel-Deguen F., Sartoretto S., Laborel J. (1992): Recherches sur les bioconstructions à *Lithophyllum lichenoides* en Méditerranée occidentale. Méditerranée N°3, 4-1992. Note.
- MoTA and T. (2003): National strategy of tourism development in Albania
- Mullaj A. (1989): Vegjetacioni bregdetar i Shqipërisë (Coastal vegetation of Albania).- Doctorate theses. University of Tirana, Faculty of Natural Sciences, Tirana.1-224.
- Mullaj A., Ruci B., Vangjeli J., Kashta L. (1999): Flora and vegetation of Vlora Bay, Biological Studies, Nr.1, Tirana, Albania.
- NEA, (NBSAP) (1999): Biodiversity Strategy and Action Plan -Albania. NEA (Ministry of Environment).
- NEA/AKM (1999): Albania: Convention on Biological Diversity. Biodiversity Strategy and Action Plan (National Report), National Environmental Agency (NEA), Tirana. NEA/AKM ed., 100pp. <http://planet.uwc.ac.za/nisl/Biodiversity/pdf/al-nbsap-01-en.pdf>
- NEA/AKM ed., (1999): Albania: Convention on Biological Diversity. Biodiversity Strategy and Action Plan (National Report), National Environmental Agency (NEA), Tirana. 1-100 <http://planet.uwc.ac.za/nisl/Biodiversity/pdf/al-nbsap-01-en.pdf>
- Panayotidis P., Montesanto B. & S. Orfanidis. (2003): Phytobenthos as quality element for the evaluation of the ecological status: a case study of the implementation of the water frame directive (2000/60/ec) in the Mediterranean eco-region - Actes du deuxième symposium Méditerranéen sur la végétation marine (Athens, 12-13 December 2003).
- Panneta, P., Mastrototaro, F., Beqiraj, S., Matarrese, A. (2009): Molluscs of soft bottoms in Valona Bay. 40° Congresso della Società Italiana di Biologia Marina, Livorno, 26-29 May 2009 (in press).

- Pano N., Frasherri A., Avdyli B., Gjoka K., Bukli M. & Bozdo Sh. (2007): Hydro Geomorphological Classification of the Albanian Coastline in the Mediterranean Sea.- *Hydrology Days*
- Peja N., Vaso A., Miho A. (1993): Synthèse sur les lagunes albanaises. Rapport interne (non publié) de l'Université de Tirana, Faculté des Sciences naturelles préparé pour la Tour du Valat. 38pp.
- Peres J.M., Picard J. (1964): Manuel de bionomie benthique de la mer Méditerranée. Extrait du recueil des Travaux de la Station Marine d'Endoume, Bulletin n°31 fascicule N°47.
- Pergent G. (1992): Field study in Albania on the state of prospection of marine and coastal sites of ecological interest and endangered species. MAP/RAC/SPA, Report, 32 pp.
- Pergent G. (Coordinator) 2002: Handbook for interpreting types of marine habitat for the selection of sites to be included in the national inventories of natural sites of conservation interest Types of marine habitat for the selection of sites to be included in the national inventories of natural sites of conservation interest. -*UNEP, Action Plan for the Mediterranean, RAC/SPA*
- Pinnegar J.K., Polunin N.V.C., Francour P., Chemello R., Harmelin-Vivien M., Hereu B., Milazzo M., Zabala M. (2000): Trophic cascades in fisheries and protected area management of benthic marine ecosystems. *Environmental Conservation* 27: 179–200.
- Pinna et al. ed. (2007): Rivers and citizens – Cross-border experiences in environmental protection and sustainable development. Universita di Salento Italy.
- Qirjazi P., Bego F. (1999): Natural Monuments of Albania, 116 pp
- Qirjazi P., S. Sala, V. Melo, S. Laçi, Bego F. (1999): Ekosistemet karstike te Shqiperise (Karstic Ecosystems of Albania). AEDP: 73 pp.
- Qiriazhi P., Sala S. (2006): Monumentet e Natyrës së Shqipërisë. Ministria e Mjedisit, Pyjeve dhe Administrimit të Ujërave. Ed. IDEART. Tiranë. 1-160
- Ramade F. (1990): *Conservation des écosystèmes méditerranéens. Enjeux et perspectives.* Programmes des Nations Unies pour l'Environnement: Paris.
- Rakaj N. (1995): Ihtiofauna e Shqipërisë. ShBLSh. Tiranë
- REC (ed.) (1997): Red Book (Endangered plants, plant associations and animals). Regional Environmental Center (REC), Tirana. 1-312.
- Ramsar Convention on Wetlands, (2003): Information Sheet on Ramsar Wetlands (RIS) - Albania, Butrinti. 1-15. [//www.ramsar.org/ris/ris\\_albania\\_butrint.htm](http://www.ramsar.org/ris/ris_albania_butrint.htm)
- Roberts C., Branch G., Bustamante R., Castilla J.C., Dugan J., Halpern B., Laferty K., Leslie H., Lubchenco J., McArdle D., Ruckelshaus M., Warner R. (2003): Application of ecological criteria in selecting marine reserves and developing reserve networks. *Ecological Applications*, 13(1) Supplement, 2003, pp 5215-5228.
- Rose P. M., Scott D. A. (1997): Waterfowl population estimates-second edition. Wetlands International Publication 44, Wageningen. The Netherlands.
- Rowley R.J., (1994): Marine reserves in fisheries management. *Aquatic Conservation: Marine and Freshwater Ecosystems* 4: 233–254.
- Sala S., Krutaj F., Meçaj N. (2006): Gjeomorfologjia e Bregdetit Jonian. Ak. Shk. Shqipërisë, Qendra e Studimeve Gjeografike. Tirana. 1-146
- Salm R.V., Clark J. R. (1984): *Marine and Coastal Protected Areas: A Guide for Planners and Managers.* IUCN: Gland, Switzerland.
- Scott M. J., Davis F. W., Cusuti B., Noss R., Butterfield B., Groves C., Anderson H., S. Caicco F., D'Erchia, T., C. Edwards, J. Ulliman, and R. G. Wright (1993): GAP Analysis: A



- Geographic Approach to Protection of Biological Diversity, Wildlife Monographs 123:1-41
- Scott, M J, F W Davis, R G McGhie, R G Wright, C Groves and J Estes (2000): Nature reserves: do they capture the full range of America's biological diversity? *Ecological Applications* 11(4): 999-1007
- Sobel J., Dahlgren C. (2004): *Marine reserves; A guide to Science, Design and Use*. Island Press, 384pp.
- Sutherland W. (2000): *The conservation handbook; research, management and policy*. Blackwell science. 278 pp.
- SPA/RAC, UNEP/MAP (1996): *Coastal Zone Management Program (CZMP) in Albania. Phase I and II*.
- Tekke R. M. H. (ed.), (1996): *Management of coastal lagoons in Albania. Proceedings of International Seminar. EUCC. Tirana, May 29 – June 4, 1994. 1-210.* [www.coastalguide.org/pub](http://www.coastalguide.org/pub), item P06.
- Tempelman D., Defos du Rau, P. (1998): Nesting waterbirds of Narta complex. p. 50-56. *In* Zekhuis, M. & Tempelman, D. (editors). *Breeding birds of the Albanian Wetlands*. WIWO - Report Nr. 64, Zeist.
- Tempelman D. (1998): Semani delta – *In*: Breeding birds of the Albanian wetlands, spring 1996. Zekhuis M. J. & Tempelman D. WIWO – report. Nr. 64: 45 – 47.
- Tilot V., Jeudy de Grissac A. (1994): Diagnostic of the marine and coastal environment of northern and southern Albania. Dobbin Milus International and The priority Actions Programme of United Nations Environmental Plan/Mediterranean Action Plan (UNEP-MAP). 105pp.
- Tunesi L., Diviacco G. (1993): Environmental and socio-economic criteria for establishment of marine coastal parks. *International Journal of Environmental Studies* 43: 253–259.
- UNDP/GEF/Ekolëvizja /dhe Ministrisë së Mjedisit, (2006): Aty ku fillon Joni. Vlerësimi i mangësive në Sistemin e zonave të mbrojtura detare. Brochure and DVD.
- UNDP/ GEF/dhe Ministrisë së Mjedisit, (2005a): Management Plan. of Vjose-Narta Wetland Complex. MedWetCoast, 148pp.
- UNDP/ GEF/dhe Ministrisë së Mjedisit, (2005b): Management Plan. Complex: Llogora-Rreza e Kanalit-Dukat-Orikum-Tragjas-Radhimë-Karaburun. GEF UNDP-Conservation of Wetland and coastal Ecosystems in Mediterranean Region project. Ed. Albania. Final Draft. Ed. MedWetCoast (in English and Albanian): 221pp.
- UNDP/ GEF/dhe Ministrisë së Mjedisit, (2005): Karaburun, Llogora, Rreza e Kanalit, Orikum and Narta Ecosystems. Ecological values, natural, historical and cultural monument. GEF UNDP-Conservation of Wetland and coastal Ecosystems in Mediterranean Region project. Ed. Albania, 47 pp.
- UNEP (1987): Guidelines for the selection, establishment, management and notification of information on marine and coastal protected areas in the Mediterranean, UNEP, Mediterranean Action Plan, Regional Activity Centre for Specially Protected Areas, Tunis.
- UNEP and MAP (1996): *Coastal Management Plan (CZMP) in Albania. Phase I and II*.
- UNDP (1999): *Capacity Building for Environmental Management: A Best Practice Guide*, New York, 56 pp.

- Upton M. (2006): A diving survey of the Albanian coast between Saranda and Vlora to assess the potential for Diving Tourism. Government of Albania and World Bank Pilot Fishery Development project, marine eco-tourism planning and development (Phase 1). 69pp.
- Vangjeli J., Ruci B., Mullaj A. (1995): Libri i Kuq – Bimët e kërcënuara dhe të rralla të Shqipërisë. Akademia e Shkencave, Instituti i Kërkimeve Biologjike, Tiranë. 1-169
- Vaso A., Gjikhuri L. (1993): Decapod Crustaceans of the Albanian Coast. Brill pub., Crustaceana, Volume 65, Number 3: 390-407(18).
- Walters C.J., Holling C.S. (1990): Large-scale management experiments and learning by doing. *Ecology* 71: 2060–2068.
- Ward T. J., Vanderklift M. A., Nicholls A. O., Kenchington R. A. (1999): Selecting marine reserves using habitats and species assemblages as surrogates for biological diversity. *Ecological Applications* 9: 691–698.
- White, M., Kouroutos, V., Plytas, A., Gace, A., Vaso, A., Beqiraj, S., Haxhiu, I. (2006): Sea turtles in Albania: Results of a rapid assessment of possible foraging and over-wintering habitats (October – November 2005). 26-th Annual Symposium on sea turtle biology and conservation. Crete, Greece.
- Wood L. J. (2007): MPA Global: A database of the world's marine protected areas. Sea Around Us Project, UNEP-WCMC & WWF. [www.mpaglobal.org](http://www.mpaglobal.org)
- World Bank and the Government of Albania (1992): Environmental review and environmental strategy studies: final report for Phase 1, Action Plan and phase II priorities. TEI s.p.a. ingegneria dell'ambiente and ELC electroconsult s.p.a. September October 1992.
- World Bank/Ministry of Environment, Forest and Water administration and GEF (2007): The Action Plan for the Conservation of Cetaceans in Albanian Waters. / Plan Veprimi për Mbrojtjen e Cetaceve në Ujërat Shqiptare. Association for Protection of Aquatic Wildlife of Albania (APAWA), WB, MMPAU, GEF. Tirana. 1-37 (In English and Albanian).
- Xhulaj M., Kashta L. (2007): *Halophila stipulacea* (Forsskål) Ascherson and *Caulerpa racemosa* (forsskål) J. Agardh in Albania. – Proceedings of the 3<sup>rd</sup> Mediterranean symposium on marine vegetation (Marseilles, 27-29 March): 299-300.
- Xhulaj S., Miho A. (2007): Seasonal data on phytoplankton of some Albanian lagoons. Proceedings of the Third Mediterranean Symposium on Marine Vegetation, Marseilles, 27-29 March 2007: 215 – 222
- Xhulaj S. (2008): Mbi prodhimtarinë parësore të disa lagunave Adriatike. FSHN, UT. Tirana. 1-198, Doctorate thesis (in Albanian).

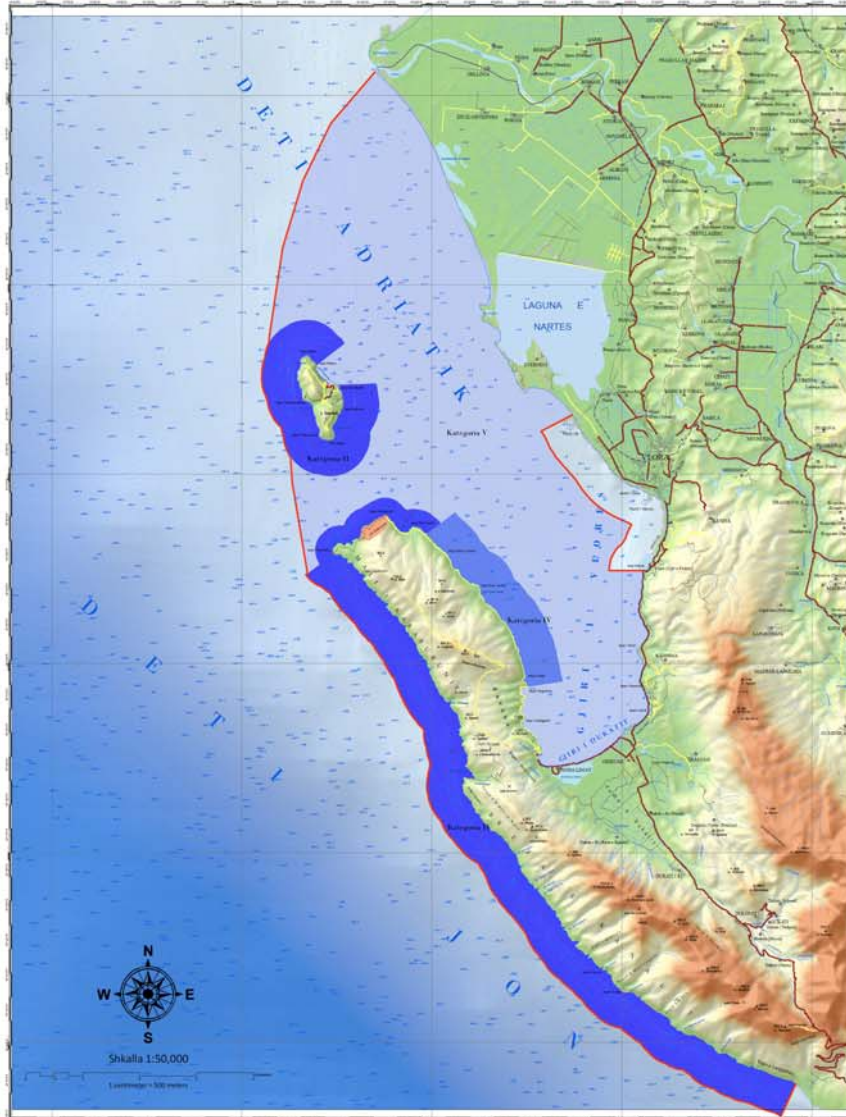
## Annexes - Relevant maps

### Proposed Terrestrial and Marine Protected Area: Llogara-karaburun-Sazan





VLERESIMI I MANGESIVE NE SISTEMIN E ZM DHE ZHVILLIMI I ZMD NE SHQIPERI  
Zona e mbrojtur detare e propozuar Gjiri i Vlores - Karaburun - Sazan



LEGENDE

- |                               |   |                      |
|-------------------------------|---|----------------------|
| ○ Qender qyteti               |   |                      |
| ● Qender fshati               |   |                      |
| — Hekurudhe                   |   |                      |
| — Rruge e kategorise se pare  | ■ Kategoria II - Park Kombetar Detar  | ■ Lartesia 0 - 65    |
| — Rruge e kategorise se dyte  | ■ Kategoria III - Monument natyre (Gjiri i Grames; Shpella e Haxhi Allut)     | ■ 65 - 205           |
| — Rruge e kategorise se trete | ■ Kategoria IV - Zone e Menaxhimit te habitateve/lojeve                       | ■ 205 - 385          |
| — Rruge te zonave te banuara  | ■ Kategoria V - Pejsazh detar i mbrojtur                                      | ■ 385 - 580          |
| — Lumenj                      | — Kufiri i zones se mbrojtur detare (i propozuar) per Sazanin dhe Karaburunin | ■ 580 - 780          |
| — Perrenj                     | — Kufiri i parkut kombetar  | ■ 780 - 990          |
| — Izoipse                     |   | ■ 990 - 1220         |
| ■ Rezervuare, liqene          |   | ■ 1220 - 1800 meters |

Marine habitats of Sazan and Karaburun



Distribution of key species in medio- and infralitoral of Sazan and Karaburun

