

**Project: “Land of Eagles and Castles: Pilot Sustainable Tourism Model for  
the Albanian Adriatic Coastline”**

**Preliminary Report for Key Biodiversity Area  
Karaburun – Çika Mountain**



**Association for Protection and Preservation of Natural Environment in  
Albania**

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**Project: “Land of Eagles and Castles: Pilot Sustainable Tourism Model for  
the Albanian Adriatic Coastline”**

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**Prepared by:**

Mirjan TOPI,

Oresta SALIAJ

Kujtim MERSINAJ

## **Abstract**

This preliminary report for the Key Biodiversity Area (KBA) of Vlora - Karaburun - Çika Mountain is prepared on the frame of the project “**Land of Eagles and Castles: Pilot Sustainable Tourism Model for the Albanian Adriatic Coastline**”. This project is granted by the “Ecosystem Partnership Fund and Implemented” (CEPF) and implemented by the “Association for the Protection and Preservation of Natural Environment in Albania” (PPNEA) in collaboration with project partner “Bulgarian Society for Protection of Birds” (BSPB). “The Critical Ecosystem Partnership Fund is a joint initiative of l’Agence Française de Development, Conservation International, the European Union, the Global Environment Facility, the Government of Japan, the MacArthur Foundation and the World Bank. A fundamental goal is to ensure civil society is engaged in biodiversity conservation”. The project duration is 36 months and the ending date is 30 July 2016. More information on the project is available on this link: [http://ppnea.org/land\\_of\\_eagles\\_and\\_castles.html](http://ppnea.org/land_of_eagles_and_castles.html). The aim of this report is to provide a general description and context for the KBA, as a base for designing and implementing the further project activates in this area. This report has been prepared based on desk research alone.

## **Abbreviations**

CM-Council of Ministers

DCM-Decision of Council of Ministers

DFS-Directorate of Forest Services

FMO-Fisheries Management Organization

ICAA-International Center for Albanian Archeology

IFSV – Institute for Food Safety and Veterinary

KBA – Key Biodiversity Area

NCTM-National Council for Territory Management

NCW-National Council of Waters

NCNB-National Council of Nature and Biodiversity

MoE-Ministry of Environment

MoEFWA-Ministry of Environment Forest and Water Administration

MARDWA-Ministry of Agriculture, Rural Development and Water Administration

MAFCP-Ministry of Agriculture, Food and Customer Protection

MEDTE-Ministry of Economic Development, Trade and Enterprise

MTI-Ministry of Transport and Infrastructure

MPWTT-Ministry of Public Works, Transport and Telecommunication

MES-Ministry of Education and Sport

MUDT-Ministry of Urban Development and Tourism

MTCYS-Ministry of Tourism, Culture, Youth and Sports

REA-Regional Environmental Agencies

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## **1. Description of the Area**

### **1.1. Placement and Boundaries of the Area**

Key Biodiversity Area of Vlora Bay – Karaburun – Çika Mountain includes the Vlora Bay, the National Park of Llogara, the Marine National Park Karaburun-Sazan, the mountain range of “Rreza e Kanalit”, the Karaburun peninsula, the Orikumi Lagoon, the Dukati valley, and Çika Mountain. All the area is under the administration of the Vlora district and it includes and two municipalities: the municipality of Vlora and Orikumi.

### **1.2. Vlora Bay**

Vlora bay is one the largest bays in Albania. It borders with Narta Lagoon in the north and drops down until the northern corner of the Karaburun peninsula. Vlora bay represents a magnificent coastal landscape. The beaches are sandy in the Adriatic part of the bay whereas when approaching the line which divides the Adriatic Sea and Ionian sea coast becomes stony. Vlora bay stands just on the western side of the city of Vlora, which is one of the largest cities in Albania and has the second largest port in Albania after Durrresi.

### **1.3. National Park of Llogara**

The National Park of Llogara is situated in the north-western part of the mountain range Çika-Lungara. The Çika Mountain (2045m) and Pick of Qorre (2018m) are the two picks surrounding the gorge of Llogara (1027m) and the Dukati valley. From the geological point of view, Llogara is formed by carbon deposits from the Mesozoic era.

### **1.4. Mountain range of Rreza e Kanalit**

Mountain range of Rreza e Kanalit starts from the Llogara valley, getting separated gradually from the Karaburun peninsula from a “break” called “Pashaliman-Brisani bay”. This mountain range has a length of 24 km and is wide 4-7 km. It is composed mainly from limestone rocks. The highest pick is the one of “Shedellia” (1499 m). However there are other less elevated picks such as Pick of “Ali Hiles” (1318m), pick of “Shtruga e Gurit” (1238m), pick of “Gjikaj” (954m), pick of “Sinan Duka” (818m) which gradually drop to the Ionian sea in the western part and to the Dukati valley in the eastern part.

### **1.5. Dukati Valley**

The valley of Dukati is situated between the mountain of Lungara in the east and the mountain range of Rreza e Kanalit in the west. It nearly reaches the valley of Llogara in southern part, whereas in the northwestern part there is a nice open landscape of Dukati bay. It has a length of 20 km and several hundred meters of wideness in the upper part and 5-7 km in the lower part. The upper part of the Dukati valley is composed from limestone rocks whereas the lower part situated in the left side of the Dukati River represents the lowland of Dukati. The coastal part of Dukati valley has an alluvial origin and a surface of approximately 1000 ha. Here is the area where the Orikumi lagoon of 130 ha is placed.

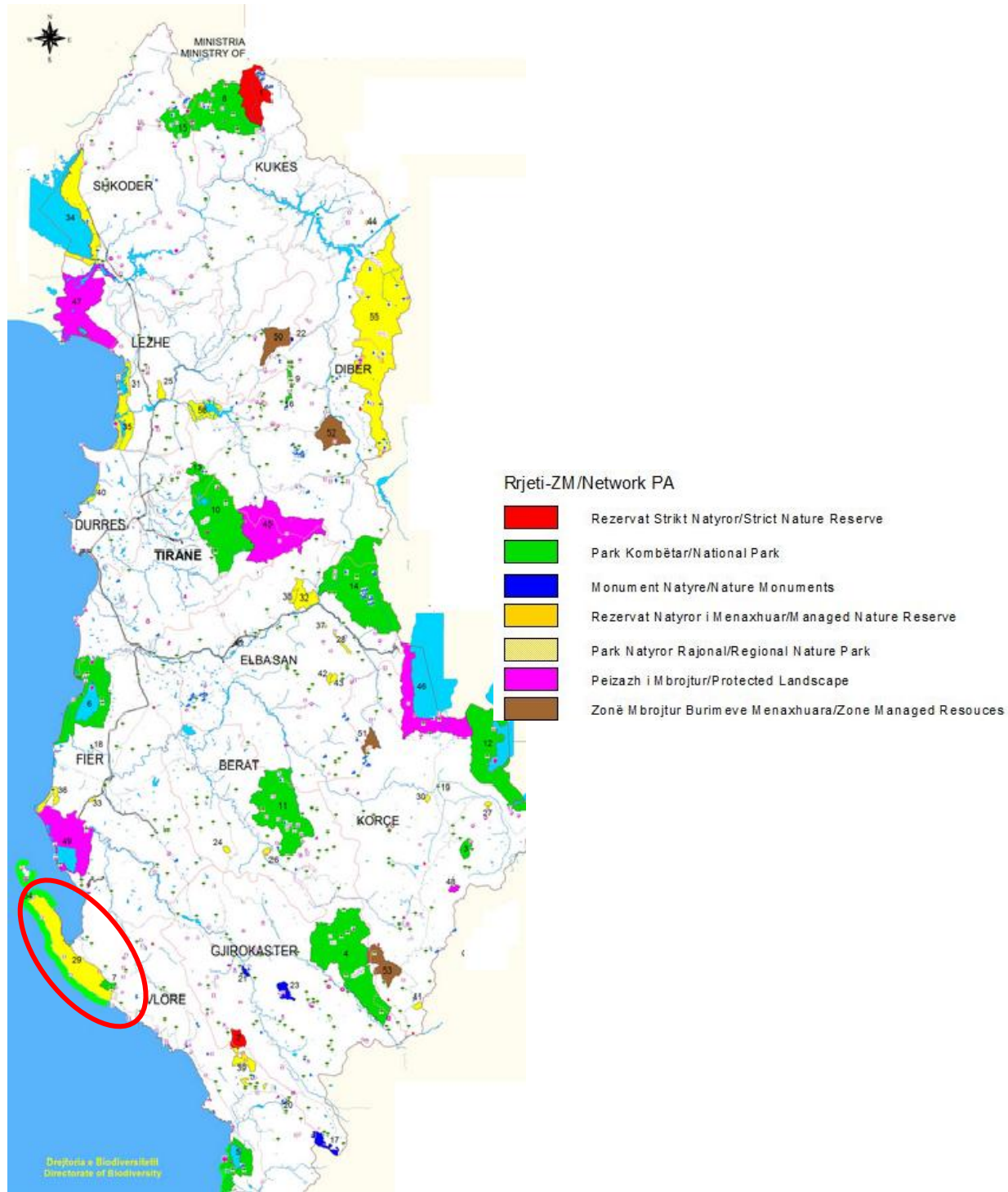
## **1.6. Orikumi Lagoon**

The lagoon of Orikumi is placed in the southern part of Dukati bay and is connected to the sea with a channel. Nowadays only 130 ha of the lagoon have remained, as 35 years ago as a result of a drainage process, 400 ha of the lagoon have been dried. In the mean time the huge deforestation range happened in the area during the last years has changed the hydrological patterns of the area. The amount of rainfall has dropped.

## **1.7. The Karaburun Peninsula**

Karaburun peninsula, part of the Marine National Park “Sazan – Karaburun” covers a surface of 62 square km, and is laid between Vlora bay in the east and Ionian Sea in the west. Mesokanali is called the area which divides the Karaburun peninsula and the Sazani Island. From the geological point of view, Karaburuni is composed from limestone rocks. The relief contains certain hills. The average altitude is 800 m with many picks. The highest picks are the pick of Ilqe (733 m), the pick of Flag (826 m) the pick of Caderi (839 m). The coastal profile of Karaburun peninsula is characterized from a cliff relief dropping vertically to the sea, including canyons and caves wide enough that permit the entrance of boats. Along the peninsula there are several small bays such as: the bay of Raguza, the bay of Shen Jani, the bay of Bristani, the bay of Dafina etc.

Figure 1: Map of Protected Areas of Albania (in red circle the KBA of Vlora bay-Karaburun-Çika Mountain)



## **2. Institutions and Administration of the KBA Karaburun-Çika Mountain**

Institutions involved in the administration of the area of Karaburun – Çika Mountain are different and include: central government, local government, nongovernmental organizations and other local stakeholders. In this chapter are described the rights and duties of each institution.

### **2.1. Central Government**

#### **2.1.1. Council of Ministers**

The Council of Ministers (CM) is the highest executive institution in Albania chaired by the prime minister. Under the CM there were three consular and decision maker bodies: The National Council for Territory Management (NCTM), National Council of Waters (NCW) and the National Council of Nature and Biodiversity (NCNB). However, after the elections of June 23, 2013 in Albania the government has changed. The new government gathered on 7 September 2013 is reorganized; however the detailed organization of the government is not yet published.

#### **2.1.2. The National Council for Territory Management (NCTM)**

NCTM is the highest decision maker body, which approves and makes changes on the studies and urban plans for the development of tourism, National Parks, airports, ports and infrastructure in regional and national level. NCTM branches are present in every Region (Qarku)<sup>1</sup> and District in Albania.

#### **2.1.3. National Council of Waters (NCW)**

NCW is the highest coordinating and decision-making body on water administration at central level. At local level are operating six Regional Councils of Waters, which are composed by representatives from local government institutions, regional government institutions, and water, use organizations. As executive bodies of this council act the six Water Basin Agencies.

#### **2.1.4. Ministry of Environment**

Ministry of Environment (MoE) is responsible for completing the legal framework needed for the management of protected areas and has to specify the standards for designing the management and monitoring plans for these areas. After the elections of 23 June 2013 and the creation of the new government on 7 of September 2013 the ex Ministry of Environment Forest and Water Administration (MoEFWA) has been named the Ministry of Environment and has been significantly reframed<sup>2</sup>, however the re-organization patterns are not yet published.

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<sup>1</sup> Administrative division in Albania, Region (Qarku) includes several Districts.

<sup>2</sup> The reference here stands on the word of prime minister when presented the new government

### **2.1.5. Ministry of Agriculture, Rural Development and Water Administration (MARDWA)**

The ex Ministry of Agriculture Food and Consumer Protection (MAFCP), was responsible for the sustainable management of agricultural land, irrigation and drainage system, and measures against flooding. With the new government of 7 September 2013, this Ministry is significantly reframed and the new organization is not yet published.

### **2.1.6. Ministry of Economic Development, Trade and Enterprise (MEDTE)**

The ex Ministry of Economy Trade and Energy (METE) through its Directorate of Licenses and Management of Contracts has been responsible for implementing the legislation on the allocation of licenses and concessions to the private subjects for the development of different activities inside the protected landscape area. With the new government of 7 September 2013, this Ministry is significantly reframed and the new organization is not yet published.

### **2.1.7. Ministry of Transport and Infrastructure (MTI)**

The ex Ministry of Public Works, Transport and Telecommunication (MPWTT), was responsible for the realization of public works and providing services such as: supplying potable water, controlling the urban development, treating the black waters, treating and management of wastes etc. This ministry is significantly reframed and named MTI after the elections of 23 June 2013, and the new organization is not yet published.

### **2.1.8. Ministry of Education and Sport (MES)**

The ex Ministry of Education and Science was responsible for designing and implementing the programs of education. Universities carry out fundamental and applied research for different environmental aspects. The scientific institutions are involved in the monitoring and programs of Environment. The closest university to the Protected KBA Karaburun-Çika Mountain is the University of Vlora. This ministry is reframed after the elections of 23 June 2013, and the new organization is not yet published.

### **2.1.9. Ministry of Urban Development and Tourism (MUDT)**

The ex Ministry of Tourism, Culture, Youth and Sports (MTCYS) before the elections of 23 June 2013 has designed and coordinated the policies in the field of tourism, through the public and private investments, and monitored this development. This ministry is significantly reframed after the elections of 23 June 2013, and the new organization is not yet published.

## **2.2. Local Government**

### **2.2.1. Regional Environmental Agencies (REA)**

The REAs are present in each prefecture of the country. The main role of REA consists on strengthening law enforcement, and implementing procedures that are related with environmental licenses as well as collecting and processing environmental data on district and county level.

### **2.2.2. Directorate of Forest Services (DFS)**

The DFS Vlore is under the administration of the MoE and is responsible for the administration, protection and management of forests and pastures within the territory of the district of Vlora including those that are part of the KBA Karaburun-Çika Mountain. DFS takes part in and designs programs for the development of Forests and Pasture's section, collects data on the development of public and private forests, moreover it reports to the institutions responsible for maintaining and managing documents for the design and implementation of breeding plans and forest inventory. It approves and issues licenses for the use of forests and pastures, as is the case of grazing permits given by this department within the park's territory. With the new government, this institution is expected to be significantly organized.

### **2.2.3. Councils of Water Basins (CWB)**

These are local institutions responsible for the management of water resources in the respective basins. For every river basin or group of basins, there is a basin water council. Such a council is operating also in Vlora. They used to be dependent from the technical secretariat of the National Water Council, part of ex MoEFWA.

### **2.2.4. Regional Government Institution of Vlora (Qarku Vlore)**

The KBA of Vlora bay – Karaburun - Çika Mountain is part of the Region of Vlora. The regional level is the most appropriate one to explore the possibilities of cooperation between municipalities and communes of the project area, in relation to environmental management and rural development.

### **2.2.5. Prefecture of Vlora**

The prefecture, legally confirms all decisions taken by the municipalities and communes (in this case those of Vlora and Orikumi). Its impact on the management of the KBA Karaburun-Çika Mountain is of the utmost importance, especially in relation to issues such as illegal construction, fires, floods, or by pressuring other institutions on increasing their vigilance and control, therefore reducing illegal activities inside the park's territory.

### **2.2.6. Municipality Councils**

The commune councils are the representative parties of the communes, which are elected every three years. The mayor stands as its executive body and is elected directly by local residents by secret ballot (local elections). Municipal councils have the right to delegate a part of their powers to the mayor. The functions of this governing level are among others, those relating to water supply, sanitation, sewerage, drainage and irrigation, construction, rehabilitation and maintenance of local roads, public transport, waste management, planning urban land and housing management. The commune councils play an important role in the procedures of approval of local management plans. According to the Law on the Organization and Functioning of Local Government (2000), the local level has been given the opportunity to expand its rights and powers. Based on the above-mentioned law, each local government unit shall have full discretion to exercise initiatives in the interest of the local community, pertaining to those issues, which are not exclusive legitimate rights of any other government body. Below we cite the legal

rights of local government, which may serve within the framework of a multi-lateral cooperation, to manage their territories that simultaneously are a part of the Park.

### **2.2.7. Rights of Local Government**

Local governments may establish administrative structures; perform their functions and exercise their powers; create economic units and other institutions under their supervision; they have the right to establish committees, boards, commissions; to exercise special functions and perform administrative territorial division within their jurisdiction.

#### **2.2.7.1. Property rights**

Local governments may exercise property rights, including the right to buy, sell or lease the property owned by them.

#### **2.2.7.2. The right to fiscal autonomy**

Local governments may receive income from expenses made in accordance to their functions (this is especially important in the use of "entry fee" or any other local tax in favor of local development). Economic rights, municipalities and communes have the right to undertake any initiative in the interest of their residents and of economic development, if these activities do not oppose government policies.

#### **2.2.7.3. Right of cooperation**

To perform specific functions for the benefit of their residents, two or more municipalities or municipality may exercise any power given by the law through effectuation of bilateral agreements or contracts. In addition, they can delegate specific powers to one or more third contracting parties. Rights as a legal person, local governments are considered as a legal person and can exercise all rights stipulated in the Civil Code of the Republic of Albania

## **2.3. Users and Non-Governmental Organizations**

### **2.3.1. Hunting and Fishing Association**

This association is responsible for managing the hunting and fishing activities in the area. The main interest of this association is the protection and rehabilitation of the habitats in order to provide favorable living conditions for the fauna. On this frame, the hunters and fishermen are interested to put strict rules against illegal hunting and fishing.

### **2.3.2. Non Governmental Organizations**

In the area of Protected Landscape Vjose-Narte, so far are identified six nongovernmental organizations (NGOs). These NGOs are listed below:

Association "Dukati"

Association "Organic Agriculture"

Association “Karaburuni”

Association of fishermen “Delfini”

Association “Laguna e Kalter”

NGO “Social Education and Environmental Protection”

NGO “Women for Tourism Development”

NGO “Albanian Environmentalist Network”

NGO “Center for Research, Cooperation and Development”

NGO “Center for Change”

NGO “Greening 2000”

NGO “Association for Protection and Preservation of Natural Environment Vlore”

NGOs play an important role on raising environmental awareness in the area.

### **3. Characteristics of Physical Environment**

#### **3.1. Climate**

With its coastline facing the Adriatic and Ionian seas, its highlands backed upon the elevated Balkan landmass and the entire country lying at latitude subject to a variety of weather patterns during the winter and summer seasons, Albania has a high number of climatic regions for such a small area. There are four climatic zones divided in 13 subzones which contribute to the rich biodiversity of the country. Karaburun peninsula and Çika Mountain area, as part of the coastal lowlands have typical Mediterranean weather. As a result of their geographical position, size and vertical placement, they can be divided into three climate zones: (i) southern-coastal-lowland, (ii) hilly, (iii) mountainous.

Precipitation is heavy; average values vary between 1000-1200 mm/yr whereas snowing is an unusual phenomenon, present only in the mountain area (Çika Mountain). Rainfall is heavier during winter, 70%-80% of the area's rainfall being registered from November to April, while 20% of it, is registered in springtime. The annual average temperature is 17 °C, it being estimated circa 8-10°C in January, while in July temperatures vary between 24-26 °C. Mediterranean winds have a direct impact on climate conditions, especially during summer.

#### **3.2. Geology, geomorphology and soils**

Albania is a very small country but it is characterized by a variety of geological formations of different periods. In the area, this diversity is represented by two distinguishable complexes, namely: Terrigenous deposits and Carbonate cliffs (limy and dolomitic).



Carbonate cliffs cover the most important part of the area. All mountain ranges: Çika Mountain-Reza e Kanalit- Ravene - Karaburun and from the Çika Mountain to Shashica ,are composed of limy and dolomites of the Upper Cretaceous.

Terrigenous formations (flish) and the Quaternary depositions of molasses are found mostly in the Dukati lagoon and the surrounding areas of the Dukati, Tragjasi and Radhima villages. These formations are endangered because of intensive development of erosion processes, at present time.

### **3.3. Hydrology**

The hydro-geological Llogara - Karaburuni region is characterized by limy high mountains with porous structure, easily permeable by waters coming through underground channels. That explains why the majority of flows and streams have seasonal or temporary beds. The only stream with permanent flowing waters is the Tragjasi one, derived from the carstic resources of Izvori.

### **3.4. Underground waters**

The area is rich in underground waters. Many carstic resources supply the area with fresh water, including the ones that go to the Orikumi lagoon. Some of these resources go directly to the sea through underground flowing channels and discharge under the sea level. The biggest carstic resource of the zone is the one of Izvori, near Tragjasi village. Underground waters are also used as drinking waters by the locals.

### **3.5. Superficial waters: irrigation and drainage**

The area is poor in superficial waters. Their regime is related to the distribution and amount of rainfall. The Superficial waters of Tragjasi streams have been used in the past for irrigation of the Tragjasi and Rradhima fields. Nowadays, almost all this entire network is not in use, because of neglect and damage caused following the fall of the Communist regime.

During the last 80 years of the past century, the main part of the Orikumi wetland surface was dried up (a part of it was under the sea level). A drainage network was built to get the water out of the drained zones, including the drainage channels and the pumping stations.

## **4. Ecological Characteristics**

### **4.1. Natural Habitats**

The area of Llogara-Karaburun is very rich on plant species: 1500 species (42% of the Albanian Flora). This high diversity is a consequence of the geographical position of the area, diverse orography, different geological formation and different microclimate layers.

Many relic endemic species of tertiary are present in this area, such as: *Hypericum haplophyloides*, *Leucjum valentinum subsp. vlorense*, *Taxus baccata*, *Aesculus hippocastanum*, *Quercus ithaburensis subsp. macrolepis*, etc.

This area constitutes an important crossroad for the migratory plant species of the Balkan region. A number of species are found here, in their northern distribution boundaries, such as *Quercus ithaburensis subsp. macrolepis*, *Abies borisii – regis* etc. Other species such as *Petteria ramentacea*, have here their southern distribution boundary. Other species like *Aesculus hippocastanum*, have here the western distribution boundary and *Teucrium fruticans*, *Brassica*

*incana* have the eastern distribution boundary. Around 102 endangered and rare plant species are present in this area.

## 4.2. Water Vegetation

Following a few random diatom studies in the area, more than 70 taxa were found, present only in the Orikum lagoon. The phytoplankton structure seems similar to the one of Butrinti, but with a lower cell density; centric diatoms were the most abundant, with dinoflagellates increasing in summer. Concerning the microflora as food base the lagoon could be a good site for shellfish production.

The biodiversity in the marine waters of the protected area of the area is rich in **rare species** and the littoral benthos has developed a typical Mediterranean composition. It is characterized by a high abundance of Mediterranean-Atlantic species. Meadows of Neptune grass *Posidonia oceanica* grow at 6 to 10 m depth and often deeper in sheltered sites of the rocky coastline. Seagrass communities (also called seagrass beds or meadows) often characterize sandy and muddy biotopes in Karaburuni coasts and Vlora bay. 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*.

Meadows of *Posidonia* and other plant communities host many species of microscopic algae, as well as animal species, including sponges, cnidarians, bryozoans, mollusks, annelid, crustaceans, echinoderms and ascidians. The mediolittoral coralline algae form a rim that extends locally to more than 1m in width, mostly in the western part of Karaburuni.

Other plant communities of interest are dominated by the red algae *Lithophyllum byssoides* and by species such as the brown algae *Cystoseira*.

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.

## 4.3. Evergreen wide leaf forests (Orno Quercetum ilcis)

A significant part of the Karaburun Peninsula and the mountain range of Rreza e Kanalit are covered with evergreen broad leaf forests at an altitude until 800m. The woody plant species found in this area are: *Quercus ilex*, *Fraxinus ornus*, *Quercus coccifera*, *Acer campestre*, which form dense forest strips 8 -10m high covering 80-90% of the surface. The most frequent Mediterranean species under this layer are: *Pistacia lentiscus*, *Quercus coccifera*, *Phillyrea angustifolia* etc.

#### **4.4. Macchia Vegetation**

It represents evergreen shrubby vegetation until 3m height, distributed considerably in the entire coastal region of Vlora. The density of macchia is a result of evergreen broad leaf forest degradation. The main macchia vegetation communities in the area are as follows:

##### **4.4.1. Communities of plants dominated by *Quercus coccifera* (Assoc. *Orno- Quercetum cocciferae*)**

These plants are spread mainly in limestone ground in the altitude range from 0 – 900m. A significant part of the Karaburun Peninsula, Rreza e Kanalit mountain range and Dukati are covered by dense 2-3 m high shrubs dominated by *Quercus coccifera*. Other evergreen shrubs are: *Pistacia lentiscus*, *Quercus ilex*, *Fraxinus ornus*, *Myrtus communis*, *Laurus nobilis*. The dense shrubby vegetation inhibits the development of the grassy vegetation, which stand poor under these layers and is represented mainly from: *Brachypodium ramosum*, *Trifolium stellatum*, and *Reichardia picroides*.

##### **4.2.2. Plant Communities dominated by *Arbutus unedo* and *Erica arborea***

A part of the area over “Pasha Liman” and “Cold Water” is covered by an evergreen shrubby macchia and small trees like: *Arbutus unedo*, *Erica arborea*, *Phillyrea angustifolia*, *Pistacia lentiscus*, *Rhamnus alaternus*, *Quercus coccifera*, etc. There are present also some certain broad leaf shrubs like: *Ostrya carpinifolia*, *Carpinus orientalis*, etc. Herbaceous cover is dominated by *Brachypodium ramosum*, *B.distachyum*, *Schlerocloa rigida*, etc.

#### **4.3. Mediterranean Pine Forests**

These forests cover the main hilly part of Dukati valley and also small parts of “Cold Water” area. The main dominant species of these forests are *Pinus halepensis* and more rarely *Pinus pinea*. They are present on the vegetation layer from 0 to 500 m. The forests are not natural but cultivated around 40 years ago in the Dukati Valley. In association with the pine forests are a number of shrubs such as: *Daphne gnidium*, *Rubus fruticosus*, *Lolium rigidum*, *Crucianella latifolia*, *Smilax aspera*, *Rubia peregrina*, *Pistacia lentiscus*, *Erica manipuliflora*, *Anthyllis hermanniae*, *Rhamnus alaternus*, *Quercus coccifera*, *Asparagus acutifolius*.

##### **4.4. Plant communities dominated by *Euphorbia dendroides* and *Pistacia lentiscus***

The western part of Karaburun peninsula and Rreza e Kanalit until the altitude of 100m is covered by a vegetation strip dominated by: *Euphorbia dendroides*, *Pistacia lentiscus*, *Phillyrea angustifolia*, *Quercus coccifera*, *Olea europea subsp. sylvestris*, *Prasium majus*, etc.

#### **4.5. Phrygana vegetation**

This vegetation is widespread in the Karaburun Peninsula in the dry and shallow lands over limestone formation at an altitude range from 0-900m and is represented by the species of: *Erica manipuliflora*, *Thymus capitatus*, *Phlomis fruticosa*, *Urginea maritima*, *Chrysopogon gryllus*, *Anthyllis hermanniae*, etc. This vegetation community is autochthonous in the area.

#### **4.6. Pseudo-steppe vegetation dominated by *Brachypodium ramosum* (Assoc. *Brachypodium ramosi*)**

Because of burning and overgrazing the area is populated by pseudo-steppe vegetation dominated by *Brachypodium ramosum*. Meadows inside the Karaburuni peninsula and Mountain range of Rreza e Kanalit are dominated by *Graminacea* and *Fabaceae* families with the most frequent species of: *Avena barbata*, *Aegilops ovata*, *Anthoxanthum odoratum*, *Poa trivialis*, *P. bulbosa*, *Bromus sterilis*, *Trifolium stellatum*, *Medicago minima*, *Lotus corniculatus*, *Cardus pycnocephalus*, *Orlaya daucorlaya*, *Malva sylvestris*, *Anthemis arvensis*, etc.

The major hilly parts of Dukati valley are cultivated by citrus and olives. When these plantations are cut and destroyed, the ground is covered by the shrubs: *Paliurus spina-christi*, *Asphodelus microcarpus* and *Chrysopogon gryllus*.

#### **5.7. Deciduous oak groves (Assoc. *Quercetum frainetto*)**

The western sides of mountain range of Rreza Kanalit in the altitude from 500-300m are populated by deciduous oak forest dominated by species: *Quercus pubescens*, *Quercus cerris*, *Quercus frainetto*, *Quercus trojana*. The developed oak forests are represented by *Quercus cerris* and *Quercus frainetto*.

In some places the land is covered: *Buxus sempervirens*, *Carpinus orientalis*, *Ostrya carpinifolia*, *Fraxinus ornus*, *Cornus sanguinea*, *Pistacia terebinthus*, *Juniperus oxycedrus*, *Crataegus monogyna*, *Acer monspessulanum*, *Pyrus spinosa*, etj.

#### **4.8. *Quercus ithaburensis* subsp. *macrolepis* (known as oak of Vlora)**

*Quercus ithaburensis* is the dominant species of broad leaf evergreen oak forest. This forest is present in different spots along the Karaburuni Peninsula in the altitude 0-800 m over the sea level.

*Quercus ithaburensis* subsp. *macrolepis* might be considered as relic forest of the Karaburun Peninsula, from the period of tertiary. The most frequent groves are composed from: *Hypericum empetrifolium*, *Trifolium campestre*, *Dactylis glomerata*, *Asparagus acutifolius*, *Quercus coccifera*, *Calicotome villosa*, *Medicago polymorpha*, *Crepis vesicaria*, *Carpinus orientalis*, *Cercis siliquastrum*, *Securigera securidaca*, *Anagallis arvensis*, *Avena barbata*, *Satureja graeca*, *Trifolium stellatum*, *Acer campestre*, *Galium aparine*, *Ostrya carpinifolia*, *Anthoxanthum odoratum*, *Cynosurus echinatus*, *Acanthus spinosus*, *Rhagadiolus stellatus*, *Psoralea bituminosa*.

#### **4.9. Mountainous Coniferous Forests (Assoc. *Pineto - Abietetum borissi-regis*)**

The woody cover occupies 80-90% of the surface and the shrubs 50-60% and herbaceous vegetation 20%. In the altitude range 750-130m over the sea level, the deciduous groves are replaced by mountainous coniferous forests composed mainly by *Pinus nigra* and *Abies borissi-regis* (mainly in the National Park of Llogara). The *Abies borissi-regis*, is more frequent in the eastern part of the National Park of Llogara. The road towards Llogara passes through well maintained forests which are dominated from the mentioned species. Here are also present a number of woody broad leaf species such as: *Acer obtusatum*, *Colutea arborescens*, *Cornus sanguinea*, *Cotinus coggygia*, *Fraxinus ornus*, *Ostrya carinifolia*, *Ilex aquifolium*, and also *Taxus baccata* even though very rare. Sometime in the forest are also present the species of *Buxus sempervirens*, *Daphne laureola*. In low altitudes these forests are frequently bordered by evergreen shrubs such as: *Quercus coccifera*, *Juniperus oxycedrus*, *Phillyrea latifolia*, *Crataegus monogyna*. The herbaceous vegetation is relatively rich by species of: *Euphorbia amygdaloides*,

*Bellis sylvestris*, *Agrimonia agrimonoides*, *Mercurialis perennis*, *Parietaria officinalis*, etc.

In an altitude over 1000m in the National Park of Llogara is found an individual of Pine Flag, a rare Monument of Nature, 13 m high. The meadows have a rich flora including: *Sternbergia lutea*, *Crocus spp*, etc. In the wet rocks of around a spring in Llogara (950m over the sea level) is found a big colony of insect eating plant *Pinguicula balcanica*. The dominant would species at the stream coasts inside the National Park of Llogara are: *Platanus orientalis*, *Salix alba*, *Salixeleagnos*, *Alnus glutinosa*, *Rhamnus saxatilis*.

#### 4.10. Forests dominated by *Pinus leucodermis* (Assoc. *Pinetum leucodermis typicum*)

These forests are found in the area at an altitude range from 1300 –1700 m over the sea level. These forests are widespread in the mountains of Qori and Çika, the woody cover is 40-50% and the height 10-12 m. In the Çika mountain in the altitude 1700-2045 m, has a diversity of open landscapes such as alpine pastures cored by: *Festuca*, *Sesleria*, *Poa*, *Stipa*, *Phleum*, *Alopecurus*.

**Table 1: Plant species in the terrestrial environment of the KBA Vlora bay –Karaburun – Çika Mountain**

Scientific name	Common name	Albanian name
<i>Abies borrisi-regis</i> (in Llogara NP)	Macedonian fir	Bredhi bullgar
<i>Arum italicum</i>	Italian arum	Kelkaza
<i>Athamanta macedonica</i>	Bubon	Atamanta maqedonase
<i>Brachipodium ramosus</i>	Bunch grass	Rudithi I degezuar,Stupec
<i>Brassica incana</i>	Mediterranean mustard	Lakra e thinjur
<i>Brassica oleracea ssp.oleracea</i>	Wild cabbage	Lakra e bardhe e eger
<i>Buxus sempervirens</i> (in Llogara NP)	European box	Bushi
<i>Capparis spinosa</i>	Caper bush	Kapari gjembor
<i>Cupressus sempervirens</i>	Cypress	Selvia
<i>Daphnie gnidium</i>	Flax-leaved daphne	Xerexelja gnidium
<i>Dezmazeria marina</i>		Desmazeria bregdetare
<i>Drimia maritime</i>	Sea squill	Bocka,Qepa e detit
<i>Ephedra distachya</i>	Sea-grape	Gjunjez
<i>Erica manipliflora</i>	Heath	Hamuriqui
<i>Euphorbia dendroides</i>	Tree spurge	Qumeshtore si dru,Flomi
<i>Ilex aquifolium</i> (in Llogara NP)	Holly	Ashja
<i>Juniperus foetidissima</i> (in Llogara NP)	Foetid juniper	Venje e bardhe,Bershen
<i>Juniperus phoenicea</i>	Phoenicean juniper	Dellinja fenikase,Venje
<i>Laurus nobilis</i> (relict)	Laurel	Dafina
<i>Lotus cytisoides</i>	Grey bird's-foot trefoil	Thuapule si vjexhes
<i>Myrtus communis</i>	Common myrtle	Mersina
<i>Orchis ssp.</i>	Orchids	Salepe te ndryshme
<i>Origanum vulgare</i>	Oregano	Rigoni i bardhe

<i>Phlomis fruticosa</i>	Jerusalem sage	Cfaka, Bexga
<i>Pinus halepensis</i>	Aleppo pine	Pisha e eger
<i>Pinus heldreichii</i> (in Llogora NP)	Bosnian pine	Rrobulli, Arneni
<i>Pinus nigra</i> (in Llogora NP)	Black pine	Pisha e zeze
<i>Pinus pinea</i>	Stone pine	Pisha e bute
<i>Pistacia lentiscus</i>	Mastic	Xina, Sqind, Bafra
<i>Prasium majus</i>	White hedge-nettle	Piperi i eger i madh
<i>Prunus webbii</i>	White almond tree	Bajame e eger
<i>Quercus coccifera</i>	Kermes oak	Prralli
<i>Quercus ilex</i>	Holly oak	Ilqe
<i>Quercus macrolepis</i>	Valonia oak	Valanidhi
<i>Taxus baccata</i> (in Llogora NP)	Yew	Tisi

## 4.11. Fauna

### 4.11.1. Invertebrates

In the area are observed around 151 species of insects of the order of *Coleoptera*, and 93 of the order of *Lepidoptera*. There is need for further studies in this field.

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. About 50 species of decapod crustaceans have been reported from this area, 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. 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.

In the area are present many species of national and international concern (Look at the Annex 1 and 2).

### 4.11.2. Fishes

The main fish species present in the lagoon of Orikumi are, sea bream, sea bass, eel, flathead mullet (look at table 2).

**Table 2: Fish species in the lagoon of Orikumi**

Scientific name	English name
<i>Mugil cephalus</i>	Grey mullet
<i>Chelon labrosus</i>	Thicklip grey mullet
<i>Liza saliens</i>	Leaping mullet
<i>Anguilla anguilla</i>	European eel
<i>Dicentrarchus labrax</i>	Sea bass
<i>Sparus aurata</i>	Sea bream
<i>Ruditapes decussates</i>	Clams
<i>Epinephellus marginatus</i>	dusky grouper
<i>Thunnus thynnus</i>	Atlantic bluefin tuna
<i>Xiphias gladius</i>	Swordfish
<i>Hippocampus guttulatus</i>	Seahorse
<i>Mola mola</i>	Sunfish

In the cold and fresh waters of the Tragjasi river is found the wild trout (*Salmo trutta fario*).

Fish species of Karaburun 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*) (look at annex 1)

#### **4.11.3. Amphibians and reptiles**

In this area are reported 10 species of amphibians (from 15 that are identified in all the country) and 28 reptiles (from 37 species that are identified the whole country). The rich hepertofauna is explained by the geographical feature of the area, diversity of climatic conditions and habitats. Three globally endangered sea turtles are present, Loggerhead turtle (*Caretta caretta*), Green turtle (*Chelonia mydas*) and the rare Leatherback turtle (*Dermochelys coriacea*).

#### **4.11.4. Birds**

About 105 species of birds have been counted; more than 60 are resident of the area, 30 are visiting species, 11 wintering species, 1 migrating species. The rocky section of Karaburuni, in particular the high cliffs, are perfect for nesting pelagic seabirds (i.e species of *Laridae*); amongst birds of prey, there are present the Egyptian vulture (*Neophron percnopterus*) and the Peregrine falcon (*Falco peregrinus*).

#### **4.11.4. Mammals**

More than 40 species of terrestrial mammals have been enlisted in the region. The freshwater wetlands of the Orikumi lagoon were visited by the Wild boar, which was abundant in the Karaburun forests. Moreover, several species of cetaceans are reported in Karaburun and Vlora bay, such as Shortbeaked common dolphin (*Delphinus delphis*) and Common bottlenose dolphin (*Tursiops truncatus*), considered endangered in the Mediterranean. The Mediterranean monk seal (*Monachus monachus*) has also been sighted in Karaburuni waters.

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.

#### **4.11.4. Other marine groups and values**

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 Annex-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.

### **5. Socio-economical characteristics:**

In this chapter there is a description of the socio-economic aspects of the Key Biodiversity Area of Vlorë Bay-Karaburun-Çika Mountain. This chapter will be focused more on the area of Orikumi, including the center of Orikumi, and the villages of Radhime, Tragjas, Dukat, Dukat i Ri, where the activities of this project for the development of eco-tourism will mostly take place.

#### **5.1. Population and villages**

The Key Biodiversity Area of Vlorë Bay Karaburun, Çika Mountain includes the city of Vlorë and the areas of Orikum – Tragjase- Rreza e Kanalit – Dukat- Radhime - Karaburun – Çika Mountain. The area is part of Vlorë Municipality and Orikumi Municipality (including Orikumi, Dukati, Tragjasi and Radhima villages). In Orikumi Municipality live 10,423 inhabitants, 2502 families (composed from 4 persons on average). Compared to year 1989 the population has increased with 1082 inhabitants. The biggest urban zone is the city of Vlorë with 124 000 inhabitants. The city of Orikumi has approximately 4000 inhabitants. Each family is composed from 4 persons in average. Migration has caused imbalance in the age structure of the area. Young people of age 17-30 years old generally leave the area and migrate towards neighbor countries or big urban centers. The number of emigrants in the area of Orikumi is estimated to be around 60% of the population.

#### **5.2. Education**

In the city of Vlorë is found the Regional University of Vlorë. In the area of Orikumi there are 5 primary schools, 2 secondary schools and 3 kindergartens.

#### **5.3. Employment**

In the city of Vlorë, the most important activities generating employment are services and tourism during the summer season. Construction has also been a significant employment activity along the last years in Vlorë.



In the area of Orikumi the most important sectors of employment are:

- Agriculture and livestock
- Forestry
- Public sector (education, social services, local administration)
- Business (tourism, hotels, bars, restaurants, construction ) and shops
- Fishing
- Mines and quarrying

Private sector provides 90% of workplaces, the public one only 10 %. Agriculture activities are not the main resources for the majority of locals, due to lack of agricultural market, lack of mechanization, and fragmentation of agricultural land. Livestock is the main income generating activity for 70% of families in the area of Orikumi.

## **5.4. Agriculture and livestock**

### **5.4.1. Agriculture:**

Traditionally, agriculture has not been a very important economic activity for the area of Orikumi, due to the limited surface of agriculture land and the low quality of it. The fields of Dukati, Tragjasi and Orikumi are affected by the sediments of Dukati River and are relatively poor. The agricultural crops cultivated in the area are mainly: corn, beans, alfalfa. Fruit growing is concentrated in the cultivation of: figs, pears, plums, peaches, khaki, almonds, pomegranate, oranges, mandarins, lemons, and vineyards.

### **5.4.2. Livestock**

Historically Livestock has been the most important economical activity in the area, and is characterized by herds of sheep and goats, which are mainly used for meat but also for milk and other dairy products. Cattle are also present in the area and are mainly used for milk production. Almost every household owns one or two cows, several sheep and goat, few chicken and turkey. Sheep herds grazes in the field of Ravena (in Karaburun), the valley of Tragjas-Orikum-Radhime. On the other hand the herd of goats graze in the mountainous area Dhermi – “Kepi i Gjuhezes” (area in Rreza e Kanalit – Karaburun).

Livestock grazes only in few places because the lack of water for livestock in other areas. This brings the overgrazing problem.

Bee keeping is slightly developed in the area apart from the tradition and for the great potential that this area holds for such activity. In the past bee keeping has been a significant economical activity.

### **5.4.3. Medicinal plants**

In the area there is a high diversity of medicinal plants. The number of medicinal and aromatic species present in the area is estimated to be 57. Locals know some of these species and collect them in the wild for self consumption and market. Two most collected medicinal plants are the mountain tea (*Sideritis reiserii*) and oregano (*Oryganum vulgare*).

**Table 3: Medicinal Plants present in the KBA Vlorë Bay – Karaburun – Çika Mountain**

<b>Latin Name</b>	<b>English Name</b>
<i>Alchemilla vulgaris</i>	Common Lady's Mantl
<i>Arbutus unedo</i>	Strawberry tree
<i>Asplenium trichomanes</i>	Maidenhair spleenwort
<i>Brassica oleracea</i>	Ornamental cabbage
<i>Buxus sempervirens</i>	Common box
<i>Carlina acualis</i>	Stemless carline thistle
<i>Centaurium erythrea</i>	Red Centaury
<i>Ceratonia siliqua</i>	St John's-bread
<i>Colchicum autumnale</i>	Autumn crocus
<i>Thymus capitatus</i>	
<i>Crataegus monogyna</i>	Common hawthorn
<i>Crithmum maritimum</i>	Sea Fennel
<i>Cyclamen hederifolium</i>	Sowbread
<i>Dictamnus albus</i>	Gas Plant
<i>Digitalis lanata</i>	Woolly Foxglove
<i>Ephedra distachya</i>	Sea grape
<i>Equisetum arvense</i>	Field Horsetail
<i>Eryngium maritimum</i>	Sea holly
<i>Galanthus nivalis</i>	Snowdrop
<i>Galium odoratum</i>	Sweet woodruff
<i>Geranium sanguineum</i>	Bloody cranesbill
<i>Glaucium flavum</i>	Yellow hornpoppy
<i>Ilex aquifolium</i>	Common holly
<i>Inula helenium</i>	Horse-heal
<i>Juniperus communis</i>	Common juniper
<i>Juniperus oxycedrus</i>	Prickly Juniper
<i>Laurus nobilis</i>	Bay Laurel
<i>Marrubium vulgare</i>	White Horehound
<i>Melissa officinalis</i>	Lemon balm
<i>Mentha pulegium</i>	Pennyroyal
<i>Myrtus communis</i>	Common myrtle
<i>Nerium oleander</i>	Oleander
<i>Opuntia ficus- indica</i>	Barbary fog
<i>Orchis spp.</i>	
<i>Oryganum vulgare</i>	Oregano
<i>Plantago major</i>	Broadleaf plantain
<i>Polygala vulgare</i>	Common Milkwort

<i>Polypodium vulgare</i>	Common polypody
<i>Primula veris</i>	Cowslip
<i>Ruscus aculeatus</i>	
<i>Salvia officinalis</i>	Sage
<i>Satureja montana</i>	Winter savory
<i>Saunguisorba officinalis</i>	Great Burnet
<i>Scilla bifolia</i>	Alpine squill
<i>Sedum acre</i>	Goldmoss Stonecrop
<i>Sideritis roeseri</i>	Mountain tea
<i>Smilax aspera</i>	Sarsaparille
<i>Stenbergia lutea</i>	Autumn daffodil
<i>Taxus baccata</i>	Yew
<i>Teucrium polium</i>	Felty germander
<i>Urginea maritima</i>	Sea squill
<i>Veratrum album</i>	White hellebore
<i>Viscum album</i>	Mistletoe
<i>Vitex agnus- castus</i>	Vitex
<i>Vitis sylvestris</i>	wild grape

#### 5.4.5. Forestry

The forests in the area lay mainly on inside the boundaries of protected areas (National Park of LLogara) thus the collection of timber products is forbidden. Only few parcels situated in the upper part of Dukati and some in the Karaburun peninsula are eligible for the collection of timber products, mainly firewood. However illegal logging is present in the area. Other factors damaging the forest are frequent fires.

#### 5.4.5. Hunting

In the past sportive hunting was allowed in the area of Karaburuni, for several species such as hair (*Lepus europeus*), boar (*Sus acrofa*), and Eurasian woodcock (*Scolopax rusticola*). However the number of these species has been decreased significantly thus the hunting was prohibited also in this area. Apart this, illegal hunting is very present in the area. Foreign hunters, hunters from different cities in Albania and local ones, hunt illegally in the area.

#### 5.4.6. Fishing and aquaculture

Aquaculture and fishing in this area is mostly practiced in the Orikumi Lagoon. The most frequent fish species fished in the lagoon are: Sea bream (*Sparus aurata*), flathead mullet (*Mugil cephalus*), Eel (*Anguilla Anguilla*) and Seabass (*Dicentrarchus labrax*). Bivalves in the lagoon are of significant importance in both economical and ecological aspects. *Ruditapes decussatus* and *Venerupis aurea* are the two main mussels in the area. They are grown in gravel substrates, around the channel connecting the lagoon with the sea.

Sea bream (*Sparus aurata*) is a good bio-indicator of the benthonic community of bivalves, also of hydrological and hydro-chemical conditions of the lagoon during summer season.

The most endangered fish species in the Lagoon are Sea bream *Sparus aurata*, because the benthonic communities of mussels, particularly those of *Mytilus galloprovincialis* are decreased because of limited communication among the lagoon and the sea. Whereas the two other species of mussels *R.decussatus* and *V.aurea* are very demanded in the market, bringing an overexploitation.

Along the last 20 years, illegal fishing has been increased, causing though significant damage to fish species. Annual average production of fish in Orikumi lagoon is 100kv. Each year the lagoon produces around 15-20 kv bivalves of a high quality and very preferred in the market.

Aquaculture is practiced aside the stream of Izvori by private subjects, producing trout (*Salmo trutta*). In the past, in the same place has been operating a big fish farm which got destroyed after the change of economic system in Albania in year 1991 from centralized to trade oriented.

Along the last years some aquaculture activities are operating near littoral waters of Karaburuni peninsula. They cultivate mostly Sea bream and Sea bass. The annual production is not very high (50-70kv/year for each cage). This activity is increasing every year, especially during summer time due to visitors in the coastal area of Vlora Bay.

#### **5.4.7. Tourism**

The area is well-known in the whole country for its magnificent landscape: high mountains, natural forests and artificial plantations, the vegetation of Mediterranean macchia and wide meadows, villages well placed in the landscape and surrounded by fruit trees (mainly olives and oranges), the lagoon of Orikumi, streams, carstic springs, and the magnificent coast make this area very attractive.

Apart this, Karaburuni area and Vlora bay are well-known for their historical and cultural values (Look at the map below). 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 thousands of years. On the rocks of Grama bay there are abundant inscriptions in old Greek and Latin languages, dating more than 2000 years ago. 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 20th 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.

The lowland area preserves a high level of traditions and cultural practices, due to (i) rural position and (ii) being part of a well known ethno-cultural region (they proudly call it Laberia).

This zone and especially Dukati and Tragjasi villages are known for their dancing, their polyphonic song and the traditional costumes. Traditional values are shown also in architecture and construction of houses. Something characteristic for them is the “guest room”. Other cultural values are presented in songs, folk dances and costumes. Recently, a lot of houses can be rented by visitors, especially during summer time. A new and modern hotel (Grand hotel) is built near Izvori (Tragjas), which offers rooms and food and other different services for leisure activities.



Name in Albanian	Name in English	Name in Albanian	Name in English
A. Monumentet e natyres	<b>Monuments of Nature</b>	B. Monumentet e Kultures	<b>Cultural Monuments</b>
1. Mbihipja e Çikes	Hill of Çika	1. Qyteti antik i Orikut	Ancient City of Orikum
2. Mbihipja aktive e Dukatit	Hill of Dukati	2. Kisha e Marmiroit	Church of Marmiroit
3. Shkeputje e re aktive e Llogarase	Hill of Llogara	3. Gjiri dhe shpella e Grames	Bay and Cave of Grama
4. Gjiri dhe shpella e Grames	Bay and Cave of Grama	4. Kalaja e Gjon Boçarit	Castle of Gjon Bocarit
5. Barrierat koralore te “Gryka e Djallit”	Coral barriers at “Evil Gorge”	5. Tragjasi i Vjeter	Old Tragjasi
6. Falezat e Sazanit	Cliffs of Sazani	6. Kulla e Dervish Aliut	Tower of Dervish Aliu
7. Shpella e Haxhi Aliut	Cave of Haxhi Aliu	7. Kalaja e Sofes	Castle of Sofo
8. Shpella e Duk Gjonit	Cave of Duk Gjoni	8. Ujesjellesi i Ferunit	The water supply of Feruni
9. Pisha Flamur- Llogara	Flag pine Llogara	9. Varret e Dukatit	Cemetery of Dukati
10. Rrapi i Dukatit	Platanus of Dukati		
11. Rrapi i Tragjasit te Vjeter	Platanus of Old Tragjasi		
12. Rrepet e Izvorit (Tragjas)	Platanus of Izovori		

Figure 2: Monuments of Nature and Monuments of Culture in the KBA Vlorë bay – Karabrun – Çika Mountain

#### **5.4.8. Water usage**

Potable water in the area of Orikumi is provided by the natural resources, the rivers of Dukati and Izvori (through a pumping system) and through boreholes. The village of Dukati receives the potable water from some natural springs, whereas the inhabitants of Dukat Fushe mainly use the boreholes they have in their gardens. The city of Orikumi, Pasha Limani, the village of Radhima and Tragjasi receive the potable water from a carstic source. Irrigation water is provided from the Izvori River (through a pumping system), Dukatis' River as well as by underground springs. Fields of Dukatiti use the flowing waters from the Dukati's River for irrigation through a drainage system that flows without the help of pumping stations. Farmers of Orikumi and a piece of land from Dukati fields use groundwater for irrigation.

#### **5.4.9. Research**

The area is used for scientific research by many academic institutions of Albania such as Universities and academy of science. Many foreign researchers have also carried out research work in the area (Look at annex 3).

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## Annexes

**Annex 1** 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>	x					x
<i>Cymodocea nodosa</i>						x
<b>Phaeophyta</b>						
<i>Cystoseira amentacea spicata</i>	x					x
<b>Rhodophyta</b>						
<i>Lithophyllum byssoides</i>	x					
<i>Lithophyllum trochanter</i>	x					
<b>Spongia</b>						
<i>Geodia cydonium</i>	x					
<i>Hippospongia communis</i>		x				x
<i>Spongia officinalis</i>		x				x
<i>Petrobiona massiliana</i>						x
<b>Cnidaria</b>						
<i>Corallium rubrum</i>		x				x
<b>Mollusca</b>						
<i>Ranella olearia</i>	x					x
<i>Tonna galea</i>	x					x
<i>Charonia tritonis</i>	x					x
<i>Zonaria pyrum</i>	x					x
<i>Pholas dactylus</i>	x					x
<i>Pinna nobilis</i>	x					
<i>Lithophaga lithophaga</i>	x					x
<b>Crustacea</b>						
<i>Homarus gammarus</i>		x				x
<i>Maja squinado</i>		x				x
<i>Scyllarides latus</i>		x				x
<i>Scyllarus arctus</i>		x				x
<i>Palinurus elephas</i>		x				x
<b>Echinodermata</b>						



<i>Paracentrotus lividus</i>		x				x
<i>Ophidiaster ophidianus</i>	x					x
<i>Centrostephanus longispinus</i>	x					x
<b>Pisces</b>						
<i>Anguilla anguilla</i>		x				
<i>Umbrina cirrhosa</i>		x				x
<i>Thunnus thynnus</i>		x				
<i>Sciaena umbra</i>		x				x
<i>Hippocampus guttulatus</i>						
<i>Epinephellus marginatus</i>		x				x
<i>Xiphias gladius</i>		x				
<b>Reptilia</b>						
<i>Caretta caretta</i>	x		x	x	x	x
<b>Pinnipedia</b>						
<i>Monachus monachus</i>	x		x	x	x	x
<b>Cetacea</b>						
<i>Tursiops truncatus</i>	x			x	x	x
<i>Delphinus delphis</i>	x		x	x		x

**Annex 2:** Marine species of national concern in Karaburun – Sazan area (Albanian Red Book 2006)

<b>Seagrasses</b>	<b>Annelids</b>	<b>Bivalvia</b>
<i>Posidonia oceanica</i>	<i>Sabella spallanzani</i>	<i>Mytilus galloprovincialis</i>
<i>Cymodocea nodosa</i>	<b>Gastropods</b>	<i>Lithophaga lithophaga</i>
<b>Seaweeds (algae)</b>	<i>Patella caerulea</i>	<i>Pinna nobilis</i>
<i>Cystoseira amentacea spicata</i>	<i>Monodonta turbinata</i>	<i>Pteria hirundo</i>
<i>Lithophyllum byssoides</i>	<i>Diodora graeca</i>	<i>Glossus humanus</i>
<i>Lithophyllum trochanter</i>	<i>Haliotis lamellosa</i>	<i>Ostrea edulis</i>
<i>Tenarea tortuosa</i>	<i>Aporrhais pespelecani</i>	<i>Pecten jacobaeus</i>
<i>Bornetia secundiflora</i>	<i>Ranella olearia</i>	<i>Solen marginatus</i>
<i>Catenella caespitosa</i>	<i>Charonia</i>	<i>Chamelea gallina</i>
<i>Digenea simplex</i>	<i>variegata</i>	<i>Tapes decussatus</i>
<i>Polyphysa parvula</i>	<i>Zonaria pyrum</i>	<i>Venus verrucosa</i>
<b>Sponges</b>	<i>Tonna galea</i>	<b>Crustaceans</b>
<i>Geodia cydonium</i>	<b>Echinoderms</b>	<i>Alpheus dentipes</i>
<i>Spongia officinalis</i>	<i>Paracentrotus lividus</i>	<i>Callinassa tyrrenna</i>
<i>Hippospongia communis</i>	<i>Ophidiaster ophidianus</i>	<i>Crangon crangon</i>
<i>Raspailia viminalis</i>	<i>Centrostephanus</i>	<i>Dardanus arrosor</i>

Petrobiona massiliana	longispinus	Eriphia verrucosa
<b>Cnidarians</b>	<b>Fishes</b>	Galathea intermedia
Aurelia aurita	Hippocampus guttulatus	Maja squinado
Chrysaora hysoscella	Mola mola	Paguristes oculatus
Actinia cari	<b>Reptiles</b>	Palaemon serratus
Bunodactis verrucosa	Caretta caretta	Palinurus elephas
Cladocora cespitosa	<b>Pinnipedia</b>	Penaeus kerathurus
Corallium rubrum	Monachus monachus	Scyllarus arctus
Eunicella singularis	<b>Cetaceans</b>	
Eunicella cavolinii	Delphinus delphis	
	Tursiops truncatus	

