

## **PRELIMINARY RESULTS OF THE MARINE SPATIAL PLANNING PROCESS IN VLORA BAY**

**Simone MODUGNO**

Senior Expert - Via G. Byron, 26 - 44121 Ferrara (FE), Italy -  
info@ilbludelmare.it

**Alain Jeudy DE GRISSAC**

Avda generak Caffarena 56, 29130, Alhaurin de la Torre, Spain -  
jeudy2g@gmail.com

**Genc MYFTIU**

Team leader Genc Myftiu Company, Rruga Vaso Pasha, Pall 13/1, kat.2,  
Tirana, Albania - gencmyftiu@hotmail.com

**Zamir DEDEJ**

The National Agency of Protected Areas(NAPA)

**Anis ZARROUK**

UNEP/MAP-SPA/RAC Specially Protected Areas Regional Activity Centre,  
Boulevard du Leader Yasser Arafet - B.P. 337 - 1080 - Tunis Cedex - Tunisia-  
Via G. Byron, 26 - 44121 Ferrara (FE), Italy - info@ilbludelmare.it

---

### **ABSTRACT**

Land Use and Marine Spatial Planning (MSP) are often considered as two separate tools. In the concept of Integrated Coastal Zone Management, instead they are both unavoidably and strictly related. MSP represents analyzing process to allocate spatial-temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives. Competition for maritime space highlighted the need to manage Albanian waters more coherently. As MSP works across borders to ensure human activities at sea take place in efficient, safe and sustainable way, the European Union adopted legislation to create MSP common framework. During MSP preliminary initial assessment report of Vlora area in Albania project (2019-20) funded by Specially Protected Areas Regional Activity Centre (SPA/RAC) and implemented by company “Genc Myftiu”, the first MSP process Guidelines in Albania were prepared within the framework of IMAP, ICZM Protocol and MSP Decision. According to European Commission MSP fulfils four objectives and First Albanian MSP Guidelines make them easy to follow: reducing conflict on access to maritime spaces; reducing cumulative impact of maritime activities on environment; reducing coordination costs for public authorities; improving predictability for private

investments. Guidelines make possible to implement GIS-based MSP, including monitoring and regular evaluation. The follow up and administration have to be carried out by a team including legal, institutional, scientific, social, economic, educational and communication expertise, supervised by a board including representatives of the main concerned Ministries/Administrations. This publication defines the workflow process that brought our team to Final First Guidelines.

**Keywords:** land use; Marine Spatial Planning; competition, marine space, human activities, guidelines

## 1. INTRODUCTION

Land Use Planning and Marine Spatial Planning (MSP) are often considered as two different tools. In the concept of Integrated Coastal Zone Management (ICZM), they are both essential and have to be strictly linked. For the Protocol on ICZM in the Mediterranean Sea, Spatial Planning of the coastal zone is considered an essential instrument for its implementation, as described in the text of this paper. One of the main objectives of ICZM process is to “facilitate, through the rational planning of all activities, the sustainable development of coastal zones by ensuring that both environment and landscapes are taken specially into account, ensuring the harmony equilibrium with economic, social and cultural development” (art. 5) in the same area. Planning is also recalled in many other articles of the Protocol, as in the case articles dealing with the protection of wetlands, estuaries and marine habitats (art. 10) or the protection of coastal landscape (art. 11). Marine Spatial Planning (MSP) is a process that brings together multiple users of marine spaces (including energy, industry, governments, conservation and recreation activities) to make informed and coordinated decisions about how to use marine resources sustainably. MSP generally uses and produces maps and GIS-based systems, in order to create a more comprehensive and “interactive” global vision of a specific marine area, identifying where and how marine area is being used and what natural resources and habitats exist there: it’s almost similar to land-use planning, but applied to marine waters and coastal lands. Through the planning and mapping process of the marine ecosystem, planners and managers can consider the cumulative effect of maritime activities, seek to make these activities more sustainable and proactively minimize conflicts between them seeking to utilize the same marine area. This process is summarized under the European Commission (EC) definition of the four objectives of MSP: i) reducing conflict on access to maritime space, ii) reducing cumulative impact of maritime activities on environment, iii) reducing coordination costs for public authorities and, iv) improving predictability for private investments.

During the MSP preliminary assessment report of Vlora area in Albania project (October 2019 - January 2020) funded by Specially Protected Areas

Regional Activity Centre (SPA/RAC) and implemented by “Genc Myftiu” company, the first Guidelines for MSP process in Albania were prepared within the framework of IMAP, ICZM Protocol and MSP Decision [25].

### Site description

Vlora bay is located in Vlora County, Albania (Figure 1), and the coastline is approximately 36 km long. Vlora County is one of the 12 Albanian counties, and encompasses 7 municipalities (Vlorë, Delvinë, Finiq, Himarë, Konispol, Sarandë and Selenicë), further subdivided into administrative sub-units and villages for a total area of about 2706 km<sup>2</sup>. As of January 2019, Vlora County has a population of 189.311 inhabitants. Administratively, the county is led by a Prefect representing the central authority and a County Council representing the Regional authority. The municipality is the first level of local governance while the County is the second level. The County includes a great number of stakeholders with interest on the coastal area and the sea. The eastern coast of Karaburun peninsula starts from Pasha Limani up to Cape Galoveci by passing capes Kallogeri, Rraguza, Sevasini, Shen Vasili, Gjata, Dim Kushta and Shen Jani [1,2,3].

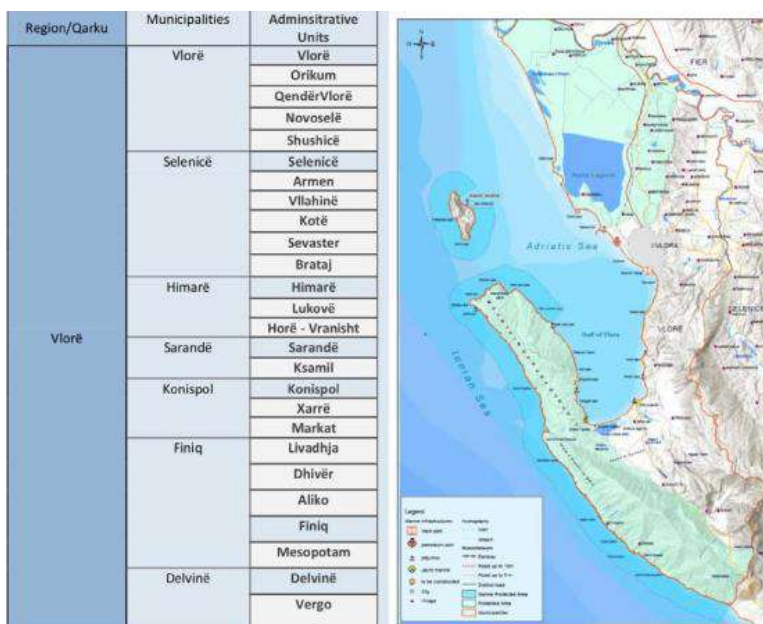


Fig. 1: Vlora area map including administrative units.

Geologically, the eastern side of the bay is a succession of rocks of

different ages, since Jurassic and Neogene (Aquitanean, Helvetian, Tortonian and Pliocene) era. The southern part consists of Pliocene rocks and recent sediments. The eastern coast dates since the Upper Cretaceous era, essentially composed of limestone [8].

For the terrestrial environment, the eastern side of Karaburuni has areas deforested by fires among a landscape of maquis with a few pines and cypresses shaped by the wind. It is not as wild as the western part: however, the vegetation comes very close to the sea level. Small dry river canyons fall into the sea almost vertically. Orikumi lagoon is nearby a restricted military area; it covers around 130 ha, has a maximal depth of 3 m and is permanently in communication with the sea by a 50 m long canal. In the southern portion of the lagoon, there is a limited input of fresh water [17]. According to recent surveys, the lagoon is not polluted by nitrates and pesticides [24].

Vlora Bay is a quasi-enclosed water area collecting the pollution coming from open sea [6,7,9,10]. The moderate West and North-West winds drive the pollution factors at the end of the bay serving as dumping pocket, while the small bays along the coast serve as temporary or permanent pollution collectors. It will be important to develop a network for monitoring and emergency response in case of oil pollution in the bay [19, 20].

The depth in the bay goes up to 54 meters in SE of Rogozhe (Raguza) bay [21]. The 50 m isobathic line comes about 100m from the coast near to cape of Kala and starts going seaward reaching around 1000m from the coasts at western quay of Vlore's port. There are about 7 shipwrecks, since WW II and later, which compound an historical sites and biodiversity for created during the years. They are: "Rosandra 3", "Regina Margherita", "Intrepido", "Rovigno", "Lucian", "Stampella", "Andromeda", "Po" and represent a cultural heritage that could be of interest for tourism diving activities.

The marine environment of the Vlora bay reveals a coastline mainly rocky with small gravel beaches except the southern part that is sandy and the center of the bay that is filled by sand and mud. On this substratum, there is locally an important coverage of algae and phanerogams (mainly *Posidonia oceanica*, *Zostera* sp. and *Cymodocea nodosa*) [3,4,5]. Large *Posidonia* sp. meadows [22,23,26], ideal nursery areas and swell shields, as well as *Cymodocea* sp. are seen in shallower depths on the eastern side of Karaburuni. Both *Posidonia* and *Cymodocea* sp. are protected in the Mediterranean Sea by law since 1988 [12,13,14]. The first MPA in Albania was proclaimed on 28th April 2010, embracing the coastal and marine area of Sazan Island – Karaburuni Peninsula with the National Marine Park status, covering 12,570 ha (Figure 2).



Fig. 2: Karaburuni Sazan National Park and Marine Protected Area.

## 2. MATERIALS AND METHODS

MSP is a public process of analysing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic and social objectives that have been specified through a planning method. MSP is not an end in itself, but a practical way to create and establish a more rational use of marine space and the interactions among its users, to balance demands for development with the need to protect the environment, and to deliver social and economic outcomes in an open and planned way.

The following actions increase the effectiveness of MSP: i) gaining resources and political support. Here, responsible bodies for MSP should ensure adequate financial and skills resourcing and support, ii) data-collection

to support the monitoring and evaluation of the implementation of marine spatial plans; iii) addressing key priorities, i.e., focusing the marine spatial plan on achievable, clearly stated objectives, reflecting wider policy goals; iv) ensuring integration with other planning frameworks: there should be coordination across land and sea, in cross-border areas and with sectorial plans; v) gaining meaningful stakeholder participation: ensuring that MSP is conducted in an inclusive and culturally sensitive manner; vi) maintaining flexibility in MSP practice: the planning measures that are used should reflect the context and needs of the plan area and bodies affected; vii) committing to plan implementation: consideration should be given from the outset to how a plan's proposals are going to be put into practice and, viii) giving greater consideration to costs and benefits of MSP: a more systematic approach to economic valuation should be developed, as well as integrating economic analysis of trade-offs, and building into the MSP cycle.

To better understand the need for marine spatial planning, it is important to identify both apparent current trends, and project what future trends might look like in areas such as: i) increased demand in fresh water for local population, tourism, agriculture, industry, etc., ii) increased demands for energy in Albania, the Adriatic and globally and the trends in both non-renewable (oil and gas development) and renewable energy sources found in the marine environment (offshore wind, wave or current energy), iii) increased shipping and marine transport in the Adriatic, both increase in shipping and the size of vessels, iv) increased demand for tourism development and recreational uses as Albania is recognized as an emerging tourism destination because of its pristine environment and cultural attractions, v) increased demand for fish and seafood with average per capita increase in consumption predicted globally, a similar trend is likely in the Adriatic, vi) increased demand for agriculture which is expanding and becoming increasingly focused on efficiency and output resulting in discharges of phosphorous, nitrogen and other pollutant causing eutrophication of marine ecosystems vii) increased demand for infrastructure development including the building of ports and harbors, bridges and roads, solid waste and waste water systems, for both resident and tourists – all to meet the growing influx and uses of the coastal and marine environment [10,11].

Demographic changes (emigration and immigration) caused land abandon (Orikumi area), land occupation, sprawl, and abusive construction because of internal migration and lack of control (Novesela commune); increase of human pollution and wastes etc.

It is important to present here some conflicting perceptions between central and local level, conflicting activities and perceptions amongst institutions at the same level, and conflicting activities between local user



groups of populations. In particular: i) conflicting interest between central and local level in the resource use expressed in the local population concerns related to their ownership rights and reluctance towards government decision to include project areas under the status of special protected areas, ii) conflicting interests between business / industry and local population: salt plant and fishermen, fishermen organized in associations and individual fishermen, fishermen using the former marshlands and farmers, iii) conflicting interests between business and central or local government branches: malfunction of the communication canals between the seawater and the lagoon, variation of the hydric cycle of the lagoon, reduction of the drainage capacity and the fresh water influx to the lagoon, iv) conflicting interests amongst various individuals or groups of users: fishermen and hunters, wetland and wood ecosystem reduction to increase the arable land, use of pesticide and fertilizers versus organic agriculture, urban waists discharges to lagoon, tourist influx, etc. Conflicting interests between illegal activities: tree cutting, forest fires, fishing with explosives,

In addition to natural changes, human induced changes have to be taken into account, the first being often a reaction to the impacts of the second, being interlinked.

It is possible to identify impacts or risks coming from one sector of activity, but very difficult to reach a consensus on the cumulative impacts of all the sectors together. Considering the marine environment and the coastline, identification of the impact of each activity is nevertheless possible, as shown in the Table 1.

**Table 1.** Activities related to the marine environment and associated risks for the marine and coastal environment

Activity	9	Impacts
Industrial and Artisanal fishing activities	Lack of control	Overfishing Pollution, oil, plastics, lost and discarded nets Bottom trawling impact on ecosystems and species
Date mussels collection	Lack of control Lack of quotas	Habitat destruction
Aquaculture activities	Lack of monitoring Introduction of invasive species Introduction of pathogens and viruses	Impact of organic load on the water column and sea-bottom
Sport fishing	Lack of control	Illegal fishing and selling

Recreational and subsistence fishing	Lack of control Lack of data	Gap in management knowledge
Navigation scheme, maritime traffic	Risk of collisions Lack of control Lack of data	Pollution (accidental from oil and daily from navigation by garbage, plastic and others)
Karaburun-Sazan National Park (marine and coastal) protected area) [27]	Risks form ship accidents and pollution, old and recent sources Uncontrolled land and sea frequentation	Presence of marine debris Locally oil pollution from boats Habitat destruction, animal derangement, illegal fishing
Southern Vlorë tourism development zone	Increased water demand Coastal erosion Risk of tsunami if earthquake	Coastal pollution
Military activities	Risks from military operation (collision) and from dumped military material on land and at sea	Oil pollution Noise pollution
Narta saltpans [18]	Coastal erosion Land use change	Water discharge
Harbor and jetties (for fisheries, fret, petroleum, passengers, military and tourism activities)	Accidental pollution (oil and chemicals) related to maritime and land transport, processing and distributing). Alteration of currents and sediment transport by jetties and harbors	Impact from maritime traffic (pollution) Locally, erosion or over sedimentation near infrastructures and impacts on marine ecosystems such as seagrass Marine debris and oil pollution

### 3. RESULTS AND DISCUSSIONS

Currently, the first set of data addressing the status of the Vlorë area [15], and the limited information on the vision and orientations for the future of the country and the southern region, merely sketch the future planning and management of the marine environment. Given the present pressures and demands for this coastal region, its development unavoidably increases these pressures, and the needs for fresh water, energy, infrastructures (for transport, industry and tourism) and food supply (from agriculture, fisheries and aquaculture), particularly. On the marine side, the MSP process motivates in



particular five main domains of activities that impact, risk or reduce the equality of the marine environment: i) fisheries, ii) aquaculture, iii) maritime transport and ports, iv) tourism and recreation, and v) conservation areas, cultural and historical sites.

The fisheries [11] need a physical delineation of the different types of fishing: industrial or semi-industrial, artisanal and recreational, taking into account all the existing legislation, the restriction of fishing in specific areas (military areas, harbors, navigation channels, near the mouth of rivers of lagoons outlets, setback for specific activities such as aquaculture sites, cultural and historical remains underwater, obstructions, dumping sites, etc.) and allocating the remaining areas for the agreed activities (fisheries management plan), with new legislation if necessary and adequate penalty and strict enforcement. For aquaculture [11, 13, 16], the existing zones allocated to this activity in the south western part of the Vlora bay needs to be evaluated and an adapted aquaculture management plan has to be set-up with the professional and approved, defining precisely the area, the rules of procedures, the species, the food quality, the level of production and the emergency measures in case of disease, accident or mass mortality, and an independent monitoring program financed by all the aquaculture companies operating in the area. As for fisheries, new legislation could be enacted, with adequate penalties and strict enforcement, considering the closure of operation in case of breach of the agreed rules of procedures. For maritime transport and ports, a specific management plan is needed, as the petroleum harbor, the fisheries harbor, the ferry harbor, the military harbor and the multiple jetties in front of hotel or restaurant for tourism transport are operating all together in a very small area, where accident could occur, entailing the quality of the bay and the attractiveness of the area for tourism. At this stage, it is recommended to request that all the boats related to petroleum products, transport of goods and passengers, and industrial fisheries will use for access to the bay the northern entrance, wider and less risky than the channel between Karaburun and Sazan ferries. The Sazan Karaburuni channel will be only used for nautical tourism and recreational activities and by the control boats of the Navy and other services. For the tourism and recreation activities at sea, it is also necessary to prepare a management plan, with sites selected for swimming (usually coastal area), for diving (specific sites), for small sailing boats (sailing schools in the coastal area) and that all the mortised activities are excluded from the bay and proposed in an offshore area. For the transport of tourists for recreational activities by motorized boats for different activities (tours, transport to the marine protected area, pescatourism, etc.) it is recommended to concentrate the departures in two or three points along the coast in order to be able to control the movement and ensure the security and safety of the passengers. Among these sites a

departure could be in the fishing harbor, one in the ferry harbor and another one along the coast south of Vlora. By reducing the number of operators and setting a restricted number of transports to the Karaburun peninsula or to the Sazan Island, this will allow to reduce the pressure on the national park and to reduce the risk of fire, the amount of garbage and the damage to the terrestrial environment. For the access by private boat to the marine protected area, a system has to be set up, mooring installed and a reservation system in place, by half or full day, remaining on site at night being forbidden, including a fee for the maintenance of the moorings. During the process, some elements have been identified as missing or needing more data or information. It will be necessary to complete a survey and to gather information on these elements or to develop research and monitoring plan for following them or selected indicators for the environmental, social and economic quality of the area. In particular, the following needs and gaps have been identified: i) a research plan for identified knowledge gaps, ii) a monitoring plan for following changes in ecosystems and species (present and expected), the environment, the climate, iii) identification of suitable indicators (in line with MSFD and UNEP MAP – IMAP-ECAP for environmental, social and economic aspects, iv) a report on all the sources of pollution, and the associated risks, precautionary measures and emergency plans, v) evaluation of the potential climate changes impacts at the local level, and vi) identification of all the dumping sites sewage water, dumping areas at sea, rain/storm water outfalls [28,29].

The current trend of increased pressure from tourism development and other economies (such as aquaculture, commercial harbor, marine traffics, marine protected area, etc.) calls for a Marine Spatial Plan (MSP) to protect and revive rich marine biodiversity and cultural heritage of Vlora bay. The proposed MSP for Vlora Bay in Albania considers the anthropogenic activities such as conservation, different types of fisheries, different type of recreational and cultural activities, maritime transport & services (anchorage, etc.) and military, as well as to precise the option for the final zoning of the area based on the report of MSP Guidelines for Albania, a priority. The following table-matrix presents the proposed type of activities, responsible authority with a mandate on the activity and basic regulations to implement (Table 1).

**Table 2.** Proposed type of activities, responsible authority with a mandate on the activity and basic regulations to implement

Type of activity	Responsible authority with a mandate	Basic regulation
Military activities	Military Authority to define and delineate the areas and their accessibility	Surface: navigation to be restricted Water column: no tourism activity Sea bottom: no fishing, no tourism activities
Conservation activities: natural and cultural	Environment and Cultural authorities to define and delineate the areas, their accessibility, the types of activities and the number of visitors on land and at sea	Refer to the management plan of each area: National Park, Marine Protected area, wetlands or cultural sites on land and at sea. For example, exclusion of fisheries, definition of sites open for visits, adoption of a chart for tour operators (land and sea, trekking and diving, etc.), definition of entry fee, ...
Exclusion zones for fisheries (any type)[11]	Fisheries authority in connection with all other authorities.	Exclusion zones: Military areas Marine protected areas Buffer zones (500m) around cultural sites or wrecks Buffer zones (500m) around aquaculture sites 2km around lagoons or river mouths (Narta, Orikum, and river at the north according to legislation) 250m buffer zone for tourism activities along the coast during the touristic season Inside harbours In mooring zones In all navigation channels for petroleum, ferries, and industrial fisheries In polluted or dumping areas 500m buffer zones for sea

Type of activity	Responsible authority with a mandate	Basic regulation
Professional industrial fisheries[11]	Fisheries Authority, excluding the zones allocated to Military, Environment and Maritime transport, and defining precisely the areas and the technics to be used	Develop a management plan for fisheries (model GFCM) for each species of economic importance, define the areas and the depths allowed (80m and below), improve control, define dissuasive penalties, register catch and develop a monitoring plan...
Professional artisanal fisheries [11]	Fisheries Authority, excluding the zones allocated to Military, Environment and Maritime transport, and defining precisely the areas and the technics to be used	Develop a management plan for artisanal fisheries, defining the areas, the technics, water column or sea bottom according to species and ecosystems, identify the areas and depths, improve control, register catches and develop a monitoring plan.
Aquaculture sites	Already identified by fisheries authority To be delineate with a buffer zones of at least 500m around the installations	No tourism, No fisheries No diving Monitoring by environmental authorities
Recreational fisheries	Environment, fisheries and tourism authorities Areas to be define precisely and controlled	Exclusion of recreational fisheries of the zones allocated to other fisheries activities and aquaculture and define the techniques and catch limit per day per boat or person
Maritime transport activities	Maritime transport authorities to define the safer channels for petroleum, trade, ferries and passengers ships, while respecting the areas under the responsibility of Military and Environment authorities and the sensitivity of species and ecosystems	Redefine the entry and departure routes for petroleum products, trade, passengers and professional industrial fisheries, better through the bay northern entrance than in the pass between Karaburun and Sazan

Type of activity	Responsible authority with a mandate	Basic regulation
Maritime transport for tourism activities	Maritime transport authorities to define the safest channels for tourism activities, separating the tour operators for diving, dolphin watching and long sailing tours of transport of tourist to Karaburun and Saza	A management plan has to be prepared, reducing the number of departure points, for example using the passengers harbor for all tour operators (signing a code of conduct) and reducing the number of departure points from the south-eastern area of the bay (in front of hotels and facilities to two or three with for each control of safety measures and information on and respect of the area regulations

For the first time a tentative map of the first draft of Spatial Planning paving the way to stakeholder discussion to include the proposal of Sazani Strait PSSA or Vlora PSSA has been compiled. This proposal was made during the SPA/RAC “Adriatic Region Workshop on PSSAs” in Tirana, on December 10-13, which was a perfect opportunity to intensify this communication and to discuss marine planning issues with high relevance to this study



**Fig. 3.** Tentative MSP Map of Vlorë county and bay.

## REFERENCES

- [1] **Airoidi L, Beck MW. 2007.** Loss, status and trends for coastal marine habitats of Europe. *Oceanography and Marine Biology*, 45: 345–405.
- [2] **Allen J; Blackford, J, Radford P. 1998.** A 1-D vertically resolved modeling study of the ecosystem dynamics of the Middle and Southern Adriatic Sea. *Journal of Marine Systems*, 18: 265–286.
- [3] **Anonymous 2002.** National Report on Marine and Coastal Biodiversity. Tirana, Albania: Regional Activity Center for Specially Protected Areas, 49p.
- [4] **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*, 7(2): 55–69.
- [5] **Beqiraj S, Kashta L, Macic V, Zenetos A, Katsanevakis S, Poursanidis D. 2012.** Inventory of marine alien species in the Albanian and Montenegrin coasts. Conference MarCoastEcos 2012. Book of Abstracts. Ed. Julvin. Tirana: 48.
- [6] **Bihari N, Mičić, M, Batel R, Zahn, RK. 2003.** Flow cytometric detection of DNA cell cycle alterations in hemocytes of mussels (*Mytilus galloprovincialis*) off the Adriatic coast, Croatia. *Aquatic Toxicology*, 64: 121–129.
- [7] **Celo V, Babi D, Baraj B, Cullaj A. 1999.** An assessment of heavy metal pollution in the sediments along the Albanian coast. *Water, Air, and Soil Pollution*, 111: 235–250.
- [8] **Costanza R, d’Arge R, de Groot R, Farber S, Grasso M, Hannon B, Limburg K, Naeem S, O’Neill RV, Paruelo J, Raskin RG, Sutton P, van den Belt M. 1997.** The value of the world’s ecosystem services and natural capital. *Nature*, 387: 253–260.
- [9] **Cullaj A, Hasko A, Miho A, Schanz F, Brandl H, Bachofen R. 2005.** The quality of Albanian natural waters and the human impact. *Environmental International*, 31, 133–146.
- [10] **Cullaj, A, Lazo P, Baraj B. 2004.** Investigation of mercury contamination in Vlora Bay (Albania). *Materials and Geo-environment*, 51(1): 58–62.
- [11] **EMOFAP: 2017.** European Market Observatory for Fisheries and Aquaculture Products: Monthly Highlights, 9: 1-25.
- [12] **Kashta L, Xhulaj M, Mato Xh, Beqiraj S. Gace A. 2007.** The state of *Posidonia* meadows along the Albanian coast: general evaluation. In: Proceedings of the Third Mediterranean Symposium on Marine Vegetation (Marseilles, France, UNEP), pp. 272–273.
- [13] **Kashta L. 1988.** Ecological and geographical data about green algae

in the Bay of Vlora. *Buletini i Shkencave Natyrore*, Tirane, 1: 97–103.

[14] **Kashta L; Beqiraj S, Mato X, Xhulaj M, Gae A, Mullaj A. 2005.** The Inventory of Habitats with *Posidonia oceanica* and Littoral Habitats in Albania—Technical report. Tirana, Albania: Protection of the Aquatic Wildlife of Albania and Ministry of Environment, Forests and Water Administration of Albania, pp. 1–81.

[15] **Mangoni O, Magiotta F, Saggiomo M, Santapia I, Budillon G, Saggiomo V. 2011.** Trophic Characterization of the Pelagic Ecosystem in Vlora Bay (Albania). *Journal of Coastal Research*, 58: 67- 69.

[16] **Mangoni O, Saggiomo M, Santapia I. 2003.** Il trofismo dell'Adriatico meridionale: distribuzione quali-quantitativa dei popolamenti fitoplanctonici lungo le coste pugliesi ed albanesi. *Biologi Italiani*, Anno XXXIII 1, 46–51 [in Italian].

[17] **Moscattello S, Belmonte G. 2006.** A preliminary plan for the study of zooplankton in the Gulf of Vlore (Albania). Preliminary article. (info: [genuario.belmonte@unile.it](mailto:genuario.belmonte@unile.it)) 2282-2374-1-PB

[18] **Munari, C, Tessari, U, Rossi R, Mistri M. 2010.** The ecological status of Karavasta Lagoon (Albania): closing the stable door before the horse has bolted? *Marine Environmental Research*, 69, 10– 17.

[19] **MWH Consulting. 2003.** Final Environmental Impact Assessment—Vlore Combined. Albania Ministry of Industry and Energy. <http://www.unece.org/env/pp/compliance/C2005-12/Response/FinalEIA.pdf> (accessed September 28, 2010). 11p.

[20] **Orescanin V, Lovrencic I, Mikelic L, Barisic D, Matasin Z, Lulic S, Pezelj D. 2006.** Biomonitoring of heavy metals and arsenic on the east coast of the Middle Adriatic Sea using *Mytilus galloprovincialis*. *Nuclear Instruments and Methods in Physics Research*, 245(B): 595–600.

[21] **Pano N, Frasheri A, Simeoni U, Frasheri N. 2006.** Outlook on seawaters dynamics and geological setting factors for the Albanian Adriatic coastline developments. *Albanian Journal of Natural and Technical Sciences*, 19/20: 152–166.

[22] **Pérès JM, Picard J. 1964.** Nouveau manuel de Bionomie benthique de la Mer Méditerranée. *Recueil des Travaux de la Station Marine d'Endoume*, 31(47): 45–100.

[23] **Pérès JM. 1967.** Les biocoenoses benthiques dans le systè`me phytal. *Rec. Trav. St. Mar. Endoume*, 42(58): 1–113.

[24] **Perugini M, Visciano P, Giammarino A, Manera M, Di Nardo W, Amorena M. 2007.** Polycyclic aromatic hydrocarbons in marine organisms from the Adriatic Sea, Italy. *Chemosphere*, 66(10): 1904–1910.

[25] **Piante C, Ody D. 2015.** Blue Growth in the Mediterranean Sea: The Challenge of Good Environmental Status. *Med Trends Project WWF- France*, PP. 192.



**[26] Pittito F, Ventrice A, Greci S, Dedej Z, Kashta L, Beqiraj S, Gace A, Acunto S, Bulgheri G, Cinelli F, Sivini N, Greco R, Torchia G. 2009.** Cartografia e protezione delle praterie di *Posidonia oceanica* lungo la costa Albanese. *Biologia Marina Mediterranea*, 16(1): 324–325.

**[27] Relini G. 2008.** Checklist della Flora e della Fauna dei Mari Italiani. *Biologia Marina Mediterranea*, 15(1): 1–385.

**[28] Rubino F, Saracino OD, Moscatello S, Belmonte G. 2009.** An integrated water/sediment approach to study plankton (a case study in southern Adriatic Sea). *Journal of Marine Systems*, 78(4): 536–546.

**[29] Saracino OD, Rubino F. 2006.** Phytoplankton composition and distribution along the Albanian coast, South Adriatic Sea. *Nova Hedwigia*, 83(1–2): 253–266.