

# NEWSLETTER OF SPA/RAC

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# EDITO

In recent months there have been several important events for SPA/RAC.

In late November, the 2016 Forum of Marine Protected Areas in the Mediterranean was held in Tangier, a unique process in the region to improve the conservation of the Mediterranean Sea and its biodiversity through an effective MPA network.

The centre also closed the MedKeyHabitats project. Several achievements have been ac-

complished within the framework of this project, we propose to discover some of them in this issue of the newsletter.

2016 was also marked by the launching of MedMPAnet II, the EcAp-Med II and Deep-Sea Lebanon projects, we will be pleased to provide you news in future issues.

**Khalil Attia,**  
SPA/RAC Director

## ABOUT THE MEDKEYHABITATS project

“Mapping of key marine habitats in the Mediterranean and promoting their conservation through the establishment of Specially Protected Areas of Mediterranean Importance (SPAMI)”

The MedKeyHabitats project of SPA/RAC aims at establishing cartographic inventory of marine habitats of conservation interest to extend the Specially Protected Areas of Mediterranean Importance network (SPAMI), as required by Barcelona Convention's Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD Protocol).

It has enabled the relevant national authorities in Algeria, Morocco, Montenegro and

Tunisia to have maps of marine habitats' distribution in five pilot sites, respectively in Rachgoun Island, Jbel Moussa, Platamuni & Ratac and Cap Serrat - Sidi Mechreg.

This project was set up by SPA/RAC as part of its assistance to the Mediterranean countries to implement actions that are necessary for the priorities of the SAPBIO and the recommendations of the Action Plans for the conservation of marine vegetation, coralligenous and other calcareous bio-concretions in the Mediterranean and dark assemblages.

The MedKeyHabitats Project was funded by the MAVA Foundation for Nature and SPA/RAC.



# THE 2016 FORUM OF MARINE PROTECTED AREAS IN THE MEDITERRANEAN

300 key actors involved in the marine environment and the Marine Protected Areas have participated in the 2<sup>nd</sup> edition of the forum of the Mediterranean MPAs and published the Tangier Declaration

MedPAN, SPA/RAC, the Moroccan Haut Commissariat aux Eaux et Forêts et à la Lutte Contre la Désertification (HCEFLCD) and numerous other partners organized the 2<sup>nd</sup> forum of Marine Protected Areas in the Mediterranean in Tangier (Morocco) from the 28<sup>th</sup> November to the 1<sup>st</sup> December 2016.

300 key actors involved in the marine environment and the marine protected areas participated in the event so as to share their experience and discuss solutions in order to improve the conservation of the Mediterranean Sea by 2020 while supporting local economies.

They published the Tangiers Declaration which is to update the 2020 MPA Roadmap elaborated at the 2012 Forum of the Mediterranean MPAs in Antalya. This Roadmap aims to support the implementation of the international objective as fixed by the Convention on Biological Diversity which is to protect 10 % of the Mediterranean Sea through an effective MPA network by 2020.

For further details on all the sessions and to download the PowerPoint presentations, consult the web pages of each session on [www.medmpaforum.org](http://www.medmpaforum.org).

## GO FURTHER

- The 2016 status of Marine Protected Areas in the Mediterranean - Main findings.
- Tangier Declaration (available in English, French and Arabic).



### SPA/RAC sessions

- **Towards a coherent MPA network: protect the sea, connect the areas !**

This workshop was an opportunity to discuss the progress made since 2012 so as to create a representative and connected ecological MPA network in the Mediterranean and to present those projects which have contributed towards the achievement of this objective.

- **Open seas: out of sight, always in mind !**

This workshop's topic was the conservation and the management of marine biodiversity in the areas located beyond national jurisdictions. Both legal and scientific aspects were discussed, namely through the presentation of the new Oceana project, the "Deep-Sea Lebanon project", undertaken in collaboration with SPA/RAC and other partners.

- **From individual MPAs to coherent networks: let's move on !**

The session's main objective was to stress and to highlight the importance of setting up a coherent MPA network in the Mediterranean which could be used as a tool for the protection of the biodiversity and the functions of the

ecosystems. The event was an opportunity to discuss the existing scientific tools in order to promote the connectivity of the MPAs in the Mediterranean.

- **Marine key habitat mapping and MPAs planning and management: MedKeyHabitats Project**

This special session was dedicated to the presentation of the results of the MedKeyHabitats project implemented by SPA/RAC and the testimonies of the countries involved in the project.

- **SPA/RAC and ACCOBAMS: 20 years of collaboration..**

This side-event was organized by SPA/RAC and ACCOBAMS and was an opportunity to present an effective collaboration model between two regional Mediterranean organisations for the conservation of cetaceans.

SPA/RAC was particularly involved in other workshops, such as the one on the "Interface between science and policies in the framework of marine biodiversity in the Mediterranean" organized by Plan Bleu in collaboration with SPA/RAC, and the special session on the MPAs of Morocco, organized by the HCEFLCD.

## Raising awareness on environmental issues for youth in Tangier

At the 2016 Forum of the Marine Protected Areas in the Mediterranean, SPA/RAC organised on Wednesday 30 December the projection of the documentary film "Océans" at the Rif Cinema for the Tangier children aged from 9 to 11 years.

A total of 61 school children were able to participate in the event thanks to the collaboration of the team of the Cinémathèque de Tanger and the personnel of the Assadaka social complex who accompanied the children the whole afternoon at the cinema.



After the film was screened, Atef Limam, in charge of the MedMPAnet II project at SPA/RAC, and Hocein Bazairi, teacher-researcher at the Mohammed V University of Rabat, animated the debate with the children and responded to numerous questions on marine biodiversity, over-exploitation of resources, pollution and the protection of the oceans.

Finally the children were able to discover on the Cinema's premises the temporary exhibition on the seabeds at Jbel Moussa and at the Cap des Trois Fourches, which was set up by SPA/RAC.

### The Tangier Cinema library

The Cinémathèque de Tanger (CDT) aims to develop the film culture in Morocco. This association is located in the premises of the Rif Cinema which was built in the 1930s close to the old town.

The Cinémathèque de Tanger aims to:

- Promote the world cinema in Morocco and the Moroccan cinema in the world ;

- Create a collection of documentary films. Films and videos from artists and experimental cinema;
- Propose pedagogical actions and animations;
- Create a platform for dialogue and meetings for cinema professionals.

For further information visit the association's website [w.cinemathequedetanger.com](http://w.cinemathequedetanger.com) or consult its [Facebook](#) page.



## PORTRAIT

Yazid Sakhire and Wadie Jaouahiri are two young enthusiasts for photos and videos. They learned a lot of things at the Assadaka Social Complex in Tangier. Their passion

enabled them to hang on to their studies so that, later on, the audiovisual arts could become their profession. Today, aged 19 and 20, they continue to frequent the centre in order to transmit their knowledge to their young comrades. At the forum of the marine

protected areas, they visited with us the future marine protected area of Jbel Moussa and attended some of the sessions to take photos and share with their friends their impressions of the forum. On this [link](#) you will find some of their photos.

# ZOOM on the FORSATY ASSADAKA project

The Assadaka Social Complex is a socio-educational establishment in Tangier with the objective of improving the quality of life of the children, youngsters and families in the region who find themselves in a situation of social risk. It is co-managed by the "Entraide Nationale" (National Mutual Aid), the "Association Raouabit Assadaka" and the Spanish Paideia Association.

At present, the "Forsaty Assadaka" project (literally: My chance, and friendship) is being

implemented for the benefit of children and youth who frequent the establishment. It is based on three main axes :

- On cultural and sports activities, through the organisation of audiovisual workshops and theatre, and the setting up of an "educational" football school in partnership with Real Madrid;
- Professional insertion, where youth are trained and initiated into the work environment through professional

training courses and where they are prepared for job interviews ; and

- Community dynamics where activities are organized with the local associations (there are 7 of them) in order to impart "positive" dynamics in a collaborative spirit within the town quarters.

For further information, contact Brahim Jerdouj, head of the Forsaty Assadaka project at the following address: [BrahimJerdouj@yahoo.fr](mailto:BrahimJerdouj@yahoo.fr) or consult the Facebook page of the project ([@forsatyassadaka](#))



# THE MAVA FOUNDATION, A KEY PARTNER FOR THE CONSERVATION OF THE MEDITERRANEAN SEA

The MAVA Foundation has financed the MedKeyHabitats project up to 75%.  
3 questions for Paule Gros, to present the foundation and its future priorities for the Mediterranean region

- *Can you present the MAVA foundation ?*

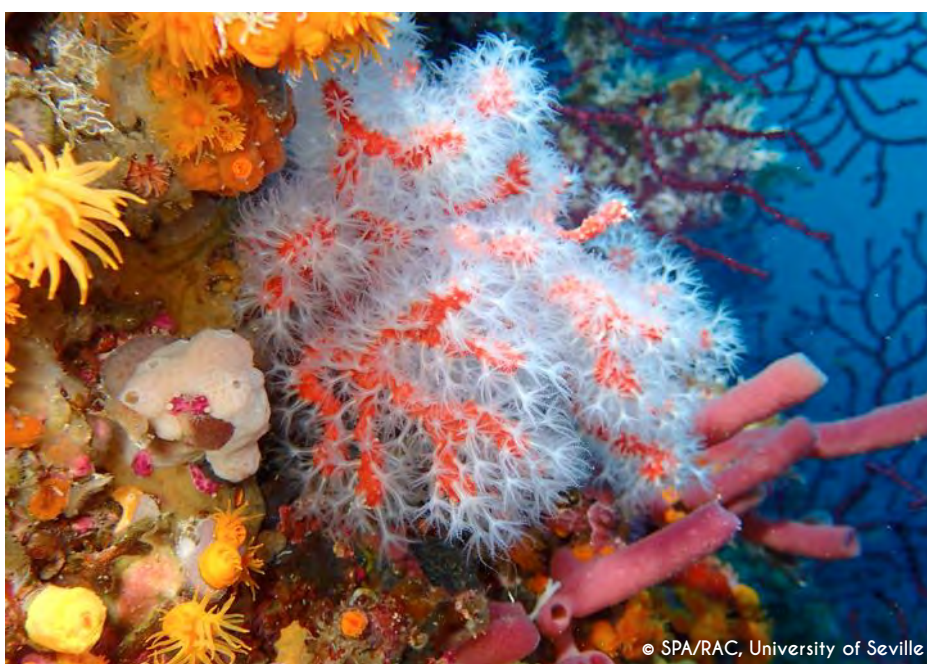
The MAVA Foundation is a private foundation founded in 1994 by Dr Luc Hofmann in order to support the conservation of biodiversity in the Mediterranean, along the coast of West Africa and in the Alpine Arc. More recently the foundation has added other interests, namely the conservation of natural resources and sustainable economy. In the Mediterranean the foundation basically supports civil society organisations, but also collaborates with institutional partners to support the implementation of international conventions.

- *How is the MedKeyHabitats project in line with the priorities and programmes of the MAVA Foundation ?*

One of the foundation's principles is to ensure that the conservation actions which it supports are based on solid scientific knowledge. The mapping and characterisation of *Posidonia* meadows and coralligenous beds is an indispensable prerequisite for the protection and management of its habitats. It is also a reference for the implementation of the commitments of the Mediterranean countries within the framework of conventions which they signed such as the Barcelona Convention and the Convention on Biological Diversity.

- *What are the foundation's future priorities for the Mediterranean region ?*

In the next six years the foundation will concentrate on the reduction of fishing impacts on the priority marine species and habitats as well as the high trophic level fish stocks; on the more rational utilisation of water and the mitiga-



© SPA/RAC, University of Seville

tion of development impacts in some of the watersheds and coastal marshes; on maintaining cultural landscapes; and finally on the reduction of some specific threats to migratory birds, vultures and marine turtles. This is to be done by focusing on a small number of demonstration sites and by addressing, on the Mediterranean basin scale, more cross-cutting themes such as capacity building or influencing the policies.

▲  
Coralligenous biocenosis at Jbel Moussa, Morocco

**Paule GROS** obtained her doctorate in Ecology at the University of California (Davis) by studying the status of cheetahs in East Africa, then continued with her research work on mammals and birds of the tropical forests of Nicaragua, before focusing on the ancestral knowledge of the Mayangna Indians on the environments and aquatic species of these same forests. She is in charge of the Mediterranean programme of the MAVA Foundation since 2009.

## GO FURTHER

- [Information brochure](#) & [short video](#) on the MedKeyHabitats project
- [Website of the MAVA Foundation](#).

# The RACHGOUN island, the MEDITERRANEAN of 2000 years ago !

The abundance of some rare species in the Mediterranean and the generally good ecological state of the marine environment mean that the Rachgoun island is a witness to the past, or an overview of “the Mediterranean of 2000 years ago !” as Pr Alfonso Ramos Espla, from the University of Alicante, would say.  
Images of a visit of the island.

**Contributors:** Mouloud Benabdi (Abyss), Yassine Ramzi Sghaier (SPA/RAC).



The giant limpet *Patella ferruginea* is a Mediterranean endemic species deemed to be endangered or threatened. It is particularly abundant around the Rachgoun island where its population seems to be one of the largest in the region



The 0 to 1 m deep seabed is characterized by an almost continuous belt all around the island made up of *Cystoseira amentacea* and *Sargassum trichocarpum*, and this bears witness to the very good quality of the waters.



Among the most remarkable communities observed on Rachgoun Island are the coralligenous and marine caves dominated by anthozoa, particularly *Astroides calycularis*.



© SPA/RAC, Mouloud Benabdi

In addition to being a habitat of conservation interest, the *Posidonia oceanica* meadows on Rachgoun Island have the scientific interest of being located in the eastern border of the Alboran Sea and close to the boundary distribution of the species in the West African coast. A permanent monitoring system was set up at Rachgoun Island to study the evolution of the lower limit of the meadows.



© SPA/RAC, Mouloud Benabdi

The marine area around Rachgoun Island feeds the entire western Algerian fishery and forms, with the Habibas islands and the Alidade bank, strategic areas for fishing activity. However, the fishing pressure, both professional and amateur, is very intense. The declaration of Rachgoun Island as a marine protected area would preserve its important natural features. The rocky bottoms around the island represent an ideal habitat for the recovery of populations of species targeted by fishing, as evidenced by the presence of juvenile groupers.



© SPA/RACA, Alfonso Ramos Espla





© SPA/RAC, Yassine Ramzi Sghaier

Nine species of birds populate the Rachgoun islet: Cory's shearwater, shag, yellow-legged gull, Audouin gull, little egret, cattle egret, Peregrine falcon, Eleonora's falcon and the wood pigeon. In the photo background is the islet's lighthouse which was built in 1879.



© SPA/RAC, Association Barbarous

Eleonora's falcon, *Falco eleonora*.  
The world population would not exceed 4,000 specimen.

## GO FURTHER

- Cartographie des habitats marins clés de Méditerranée et initiation de réseaux de surveillance autour de l'île de Rachgoun. (in French)



# JBEL MOUSSA, THE LAST REFUGE OF THE COMMON SEA GRASS IN THE MOROCCAN MEDITERRANEAN

**The Jbel Moussa site has the only *Zostera marina* meadows remaining in the Moroccan Mediterranean and even in North Africa. Its sighting has been confirmed in this area within the framework of the MedKeyHabitats project of SPA/RAC.**

**Contributor :** Hocein Bazairi, researcher at the Mohammed V University in Rabat.

The marine phanerogam meadows constitute complex ecosystems with multiple ecological and biological functions. They provide the habitat, source of food, spawning ground and refuge for numerous organism (Duarte and Chiscano, 1999). These ecosystems are amongst the most productive marine ecosystems and represent a considerable carbon sequestration potential within the context of climate change. They thus constitute a habitat of remarkable ecological importance and of considerable interest for the conservation of marine biodiversity.

In the Mediterranean, the marine phanerogam meadows constitute the first « hot spot » of marine biodiversity (Boudouresque 2004). Amongst the five strictly marine species acknowledged in the Mediterranean, the magnoliophyta *Zostera marina* Linnaeus is a cold-water affinity species, which is found generally in coastal lagoons and the innermost areas of fairly shallow bays (less than 5 m depth ).

In Morocco, the knowledge on the marine phanerogam meadows is most incomplete. Within the framework of the MedKeyHabitats project of SPA/RAC, two *Zostera marina* meadows have been identified in the marine part of 'Jbel Moussa' located on the Moroccan side of the Straits of Gibraltar. The two meadows of Jbel Moussa are in the most protected bays of Belyounech and Al Marsa on the sandy bottoms at depths up to 17 m. These are deep meadows similar to those existing in the open bays in Southern Spain in the Alboran Sea.

The presence of deep meadows in the marine part of Jbel Moussa is probably due to the strong influence of Atlantic waters through the Straits of Gibraltar, which is thought to enhance the presence of subtidal meadows of *Z. marina*, as this species is more common in the Atlantic rather than in the Mediterranean. Furthermore, these are the only *Zostera marina* meadows still remaining on the Mediterranean coast of Morocco and even in North Africa. Recent surveys have confirmed its disappearance

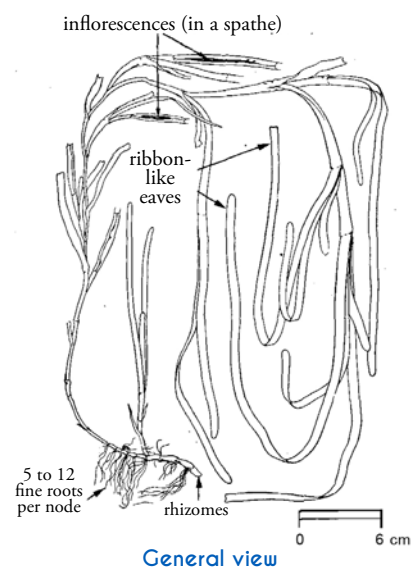
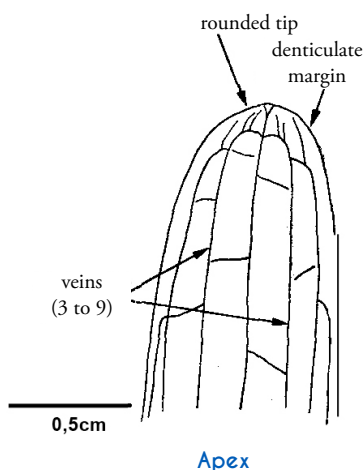


from certain areas of the Mediterranean coast of Morocco where it was historically referred to, like the Cap des Trois Fourches and the Nador lagoon. The main reasons of its regression are thought to be due to eutrophication, mechanical degradation, pollution and global warming.

The general decline in the distribution and abundance of the *Zostera marina* meadows immediately necessitate regular monitoring programmes and management measures for their restoration and protection.

## GO FURTHER

- [Maroc : Site de Jbel Moussa. Cartographie des habitats marins clés de Méditerranée et initiation de réseaux de surveillance \(in French\)](#)
- [Photos of seabed taken in Jbel Moussa \(captions in Arabic and French\).](#)



*Zostera marina* - source FAO

# MAPPING MARINE KEY HABITATS: 2 CASE STUDIES IN SOUTHERN AND NORTHERN MEDITERRANEAN

**Within the framework of MedKeyHabitats project of SPA/RAC, surveying and mapping activities have been carried out in Cap Negro in Tunisia and in Platamuni and Ratac in Montenegro. The studies provided a significant contribution in improving the knowledge of the distribution of the benthic biocenoses and species in these countries.**

**Contributors:** Giovanni Torchia, Francesco Pititto (Golder Associates).

The map of marine habitats is one of the most important and powerful tools to foster the conservation and the spatial planning of marine areas.

Some basic actions must be achieved for the creation and the management of MPA:

- 1) the selection of areas to be protected;
- 2) the definition of the zonation and management plans of the establishing marine protected area; and
- 3) the setting-up of monitoring plans.

The drawing-up of thematic maps - including the habitats - at the sea, has historically encountered more difficulties (particularly related to the technology and costs) than the map elaboration on land. Currently there is still a gap in terms of quality and quantity between the marine and the terrestrial maps, but the technology to discover the marine habitats presence, extension and geographical distribution has had a significant development in the last decades.

## Advanced technologies and direct observation for the map of marine habitats

The MedKeyHabitats Project coordinated by SPA/RAC aimed at assisting five Mediterranean countries (Algeria, Libya, Montenegro, Morocco and Tunisia) in compiling cartographic inventories of marine habitats of conservation interest, also in view of extending the network of Specially Protected Areas of Mediterranean Importance (SPA-MI). Within the framework of MedKeyHabitats Golder Associates (Golder) has been appointed by the SPA/RAC to carry out the surveying and mapping activities in one area in Tunisia (Cap Negro) and two areas in Montenegro (Platamuni and Ratac). Golder conducted these studies in partnership with Okianos and in strict collaboration with the Institute of Marine Biology of Kotor, local academics and national authorities and institutions in Tunisia and Montenegro.

In each of the study areas, to obtain a full coverage, the mapping activities were carried out by integrating **geomorphological and bathymetric data** - collected using respectively a side scan sonar and a single beam echo sounder - and **biological data** gathered via scuba diving, underwater video and photographic samplings, underwater towed camera and sediments collection with grab. Moreover, in both countries monitoring nets of key habitats - *Posidonia oceanica* meadows and coralligenous biocenosis - were put in place according to the most relevant methodology currently adopted: Pergent (2007) for the seagrass meadows and Garrabou *et al.* (2014) for the coralligenous.

## Vast Coralligenous platforms and rare species never reported before in Tunisia

The study area investigated in Cap Negro was about 47 km<sup>2</sup>. Three priority habitats were identified: *Posidonia oceanica* meadows; Coralligenous (*Eunicella singularis* facies and *Eunicella cavolinii* facies); Coralligenous platforms (*Eunicella singularis* facies and *Leptogorgia sarmentosa* facies).

The sum of these three key habitats covers 30 km<sup>2</sup>, corresponding to the 63 % of the investigated study area localized between Cap Negro and Sidi Mechreg. **The main key features** of the Cap Negro area are the wide extension of the Coralligenous plat-



◀ The benthic assemblage of the semi-dark caves habitat documented in the main cave of the Platamuni cliff, at about 8,6 km south from Bigova. The assemblages is dominated by sponges and wide spread colonies of the coral *Polycyathus muelleriae*.



forms and *Eunicella* facies, and the overall good status of conservation of the marine habitats (mainly due to the limited human activities along the coastline and the difficulties to reach the area).

Among the identified 147 benthic species (31 plants and algae, and 116 animals), 16 are listed in international conservation conventions or are key species for priority habitats. Three species recorded in the study area - the rare mollusk *Felimare gasconi*, the rare cnidarian *Cervera atlantica* and the fish *Gobius fallax* - were apparently never reported before in the North African Mediterranean coast.

Based on the maps of the habitats distribution a zonation of the areas including specific **protection measures** was proposed within the study.

Considering the achieved results and the extension of the key habitats, the Cap Negro area presents the biological characteristics to be selected as future SPAMI area.



▲ The Posidonia meadow lower limit on Greben Kalafat, a key zone (hot spot) for biodiversity in the area.



▲ A school of *Seriola dumerili* swimming in the coralligenous platforms of Cap Negro. This habitat has a wide extension covering more than 16 km<sup>2</sup> in the study area.

### Towards the first marine protected area in Montenegro

In the **Ratac** the study area was about 0,9 km<sup>2</sup>. Five protected species were recorded, among them the Porifera *Sarcotragus foetidus* and the mollusk *Tonna galea*. A particularly complex habitat was mapped in the area, it is characterized by the presence of *Posidonia oceanica* settled on hard organogenous bottoms (bioconstructions) with enclaves of coralligenous and sciaphylus biocenoses and covers about 0,27 km<sup>2</sup>.

Considering the biological results and the overall extension of the area, the Ratac site doesn't present the characteristics to be selected as future SPAMI area. However, considering the limited bathymetry, the easy access and the relevant value of the submarine landscape of the mapped key habitat, it is likely that the **protection** of this area could promote a local increase of emblematic (and also protected) fishes and macro-invertebrates species. Within this framework, the Ratac area could play a relevant educational role and become a reference site for snorkelers and scuba divers, fostering the development of sustainable tourism. If so, the area may play a promoter role of the positive tangible effects of the protection of the marine environment. Some specific **measures of protection** and relevant management measures were suggested.

In **Platamuni** an area of about 8,4 km<sup>2</sup> was studied. The site is characterized by the dominance of the biocenosis of the Coastal detritic bottoms (about 83 % of the sur-

face), while the hard substrata covers about the 12 % of the study area.

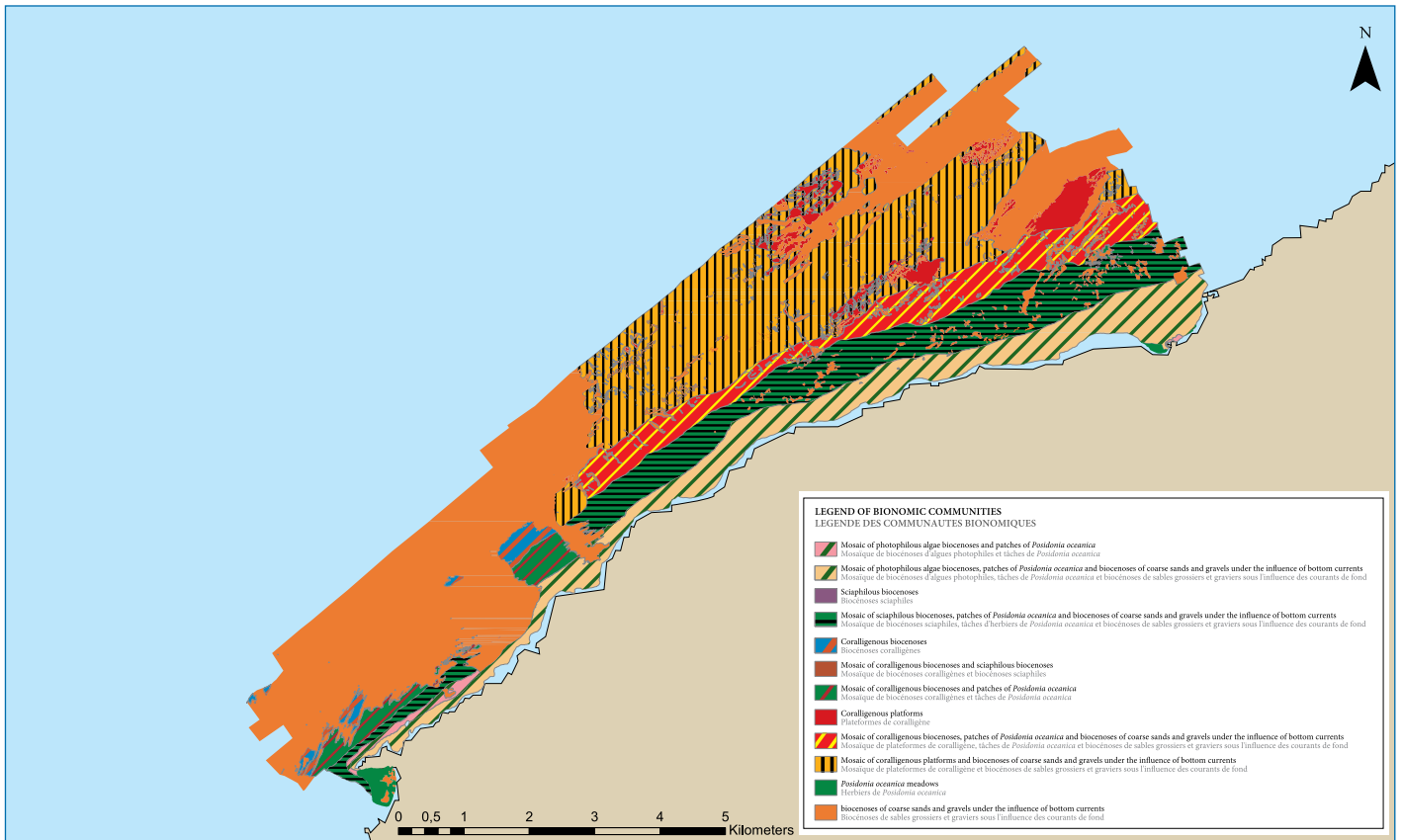
Twelve protected species according to Annex II of the SPA/BD Protocol, 10 species listed in the Appendix II of the CITES and 3 priority habitats (*P. oceanica* meadow, Coralligenous and Biocenosis of the semi-dark caves) were documented and mapped in the Platamuni area.

In particular **two interesting zones** were mapped: the main cave of the cliff south of Bigova and the Greben Kalafat area.

The studied cave is settled by key benthic assemblages dominated by madreporaria, sponges and erect bryozoans. The cave is inhabited by protected species like the sponge *Sarcotragus foetidus* and the star fish *Ophidiaster ophidianus*. The colonies of the madreporaria *Polycyathus muelleriae* are wide extended in the cave and characterize the environment.

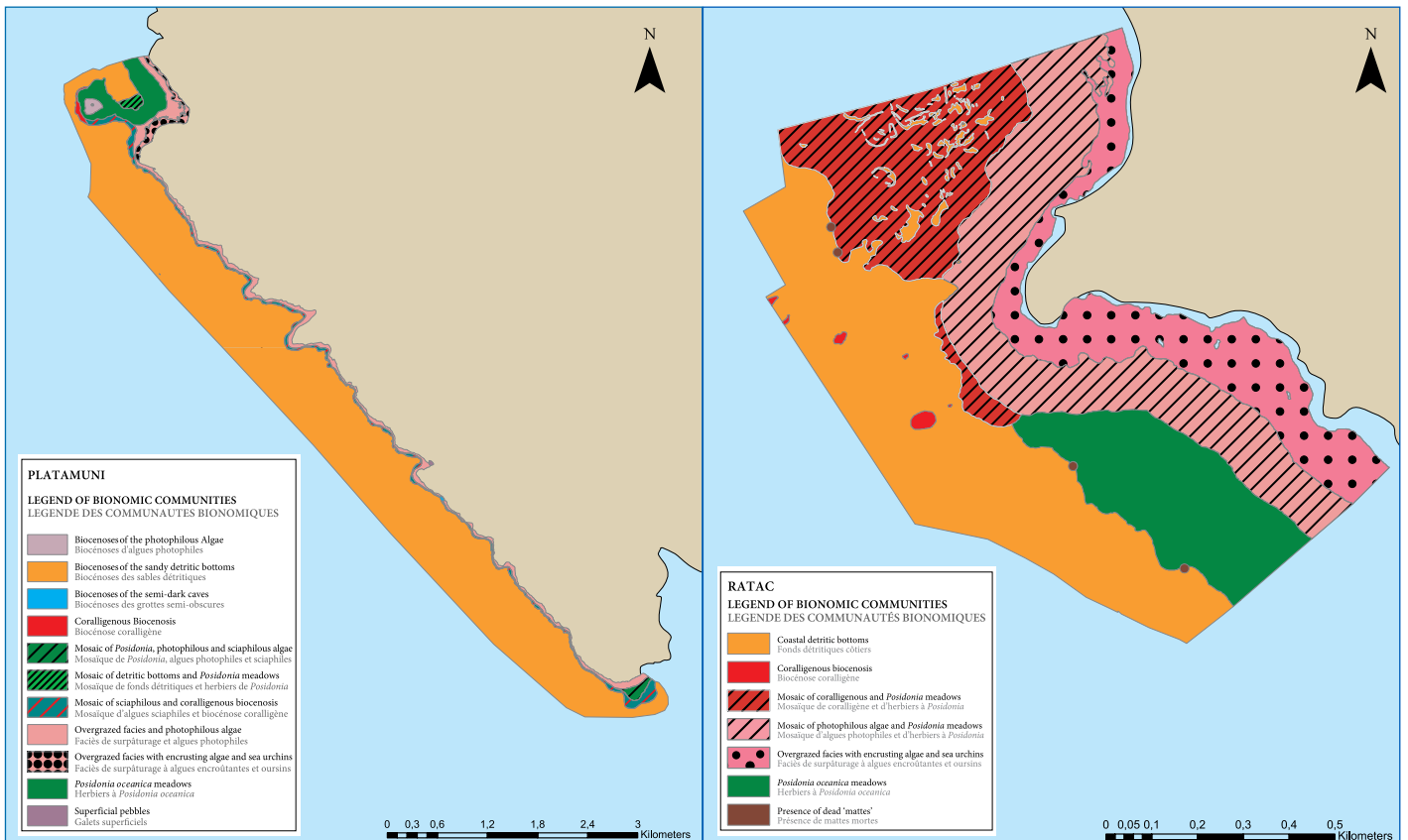
The Greben Kalafat area is characterized by the presence of coralligenous biocenoses and the most extended seagrass meadow in the area.

The establishment of a marine protected area and the boundary of a zonation (with three levels of protection) were proposed for the Platamuni area. According to the study, the zone is also a good candidate for the inscription in the SPAMI List.

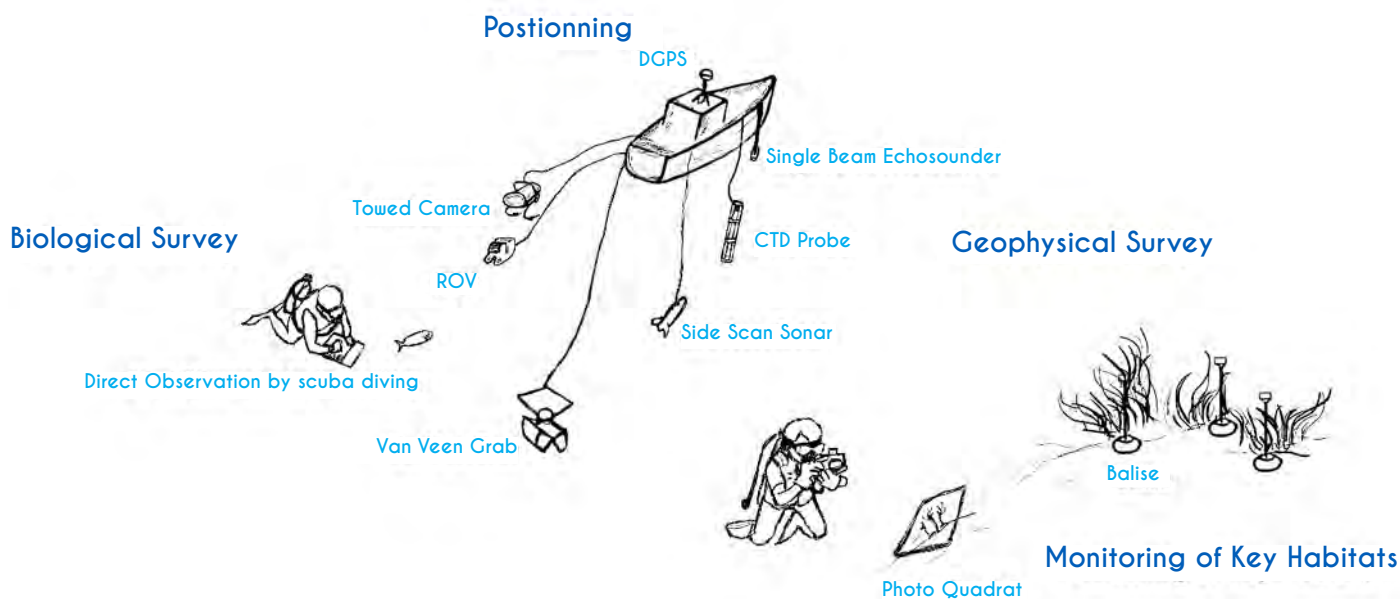


Biocenotic map of the Cap Negro area. The Coralligenous platforms interest in particular the Northern portion of the study area, while in the southern portion, hard substrata colonized by spots of *Posidonia* and gorgonian are particularly frequent.

Extract of the biocenotic map of the Platamuni area. The Greben Kalafat site constitutes one of the few sectors of coast with an important extension of hard substrata far from the coastline. *Posidonia* meadow and benthic assemblages ascribing to coralligenous inhabit this site







### Geophysical survey

The side scan sonar is used to acquire acoustic images of the seabottom and to distinguish geomorphological features (e.g. hard and soft bottoms) and habitats (e.g. the seagrass meadows). The single beam echosounder is used to record bathymetric data, when the CTD probe is used to correct the bathymetric measures.

### Positioning

The DGPS is used to collect positioning data with a submetric accuracy thank to the EGNOS differential correction.

### Biological survey

Direct observation are made by scuba diving to characterize the seabottom features on big scale and visual censuses. Underwater videos and photos are taken to identify species and biocenoses. The Van Veen grab is used to collect sediment samples to analyze the benthic fauna of soft bottoms. Underwater towed camera and ROV are used to verify the side scan sonar interpretation (ground-truth) and also to identify the different benthic biocenoses on hard substrata.

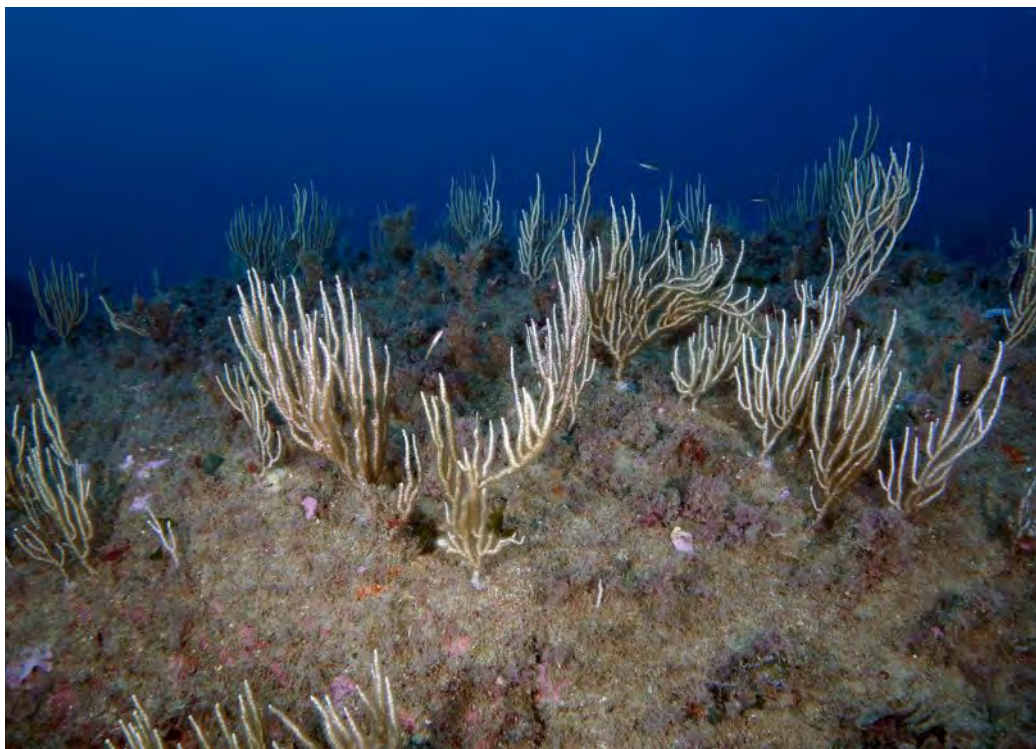
### Monitoring key habitats

The coralligenous biocenosis is monitored by photo-quadrats and the analysis of some morphological features. The *Posidonia oceanica* meadows are monitored by balises to follow the lower limits.

**Golder Associates** is a global organization that provides consulting services. Golder was firstly established in Canada, in 1960, and is now present with 165 offices worldwide and more than 6500 employees. The Italian branch of Golder Associates is established since 1977 and counts a resident staff of 180 employees, with a team of 30 person specialized in marine and terrestrial environmental/ecological studies.

## GO FURTHER

- [Mapping of Marine Key Habitats and initiation of monitoring network in Montenegro](#) (English)
- [Tunisie : Cap Negro-Cap Serrat. Rapport final](#) (French)



The *Eunicella singularis* facies is widespread throughout the marine area of Cap Negro. Other two gorgonian species, *Eunicella cavolinii* and *Leptogorgia sarmentosa*, are also abundant in the area.

# YOUNG RESEARCHERS,

SPA/RAC is supporting scientists, MPA managers and young researchers through its conferences and training sessions since 1989. The objective is to strengthen national capacities for the protection and management of natural heritage and to promote regional cooperation in this field.

Presentation of two students from Tunisia and Morocco who received support from SPA/RAC, in the framework of their research on species listed in the List of Endangered or Threatened Species of the Barcelona Convention (Annex II of the SPA/BD Protocol), namely the *Cystoseiras* and the *Zostera marina*.

## The objective is to study the *Cystoseira* in Tunisia

Cyrine Bouafif is a PhD student at the Faculty of Sciences of Tunis. She is studying the brown algae of the *Cystoseira* genus in Tunisia, their diversity and their bio-geography.

*Cystoseiras* are of great heritage value in the Mediterranean, as they build marine « forests » which, from an ecological viewpoint,

are akin to land forests. These species characterize remarkable ecosystems in terms of biodiversity and productivity.

Compared with other Mediterranean countries, in particular the north-western basin, the *cystoseiras* have not been studied that much in Tunisia. The research work undertaken by Cyrine will make it possible to gain a deeper knowledge of these species in Tunisia, but also in the Mediterranean from the taxonomic, ecological and chemical viewpoint.

This thesis was supported financially by the MedKeyHabitats project. The first results of this survey have led to two scientific articles published in a journal specializing in phyco-logy in the Mediterranean (*Cryptogamie-Algologie*).

These results were also presented at the 5<sup>th</sup> Mediterranean Symposium on Marine Vegetation organized by SPA/RAC in Slovenia, to which Cyrine was invited.

## GO FURTHER

- Bouafif C., Verlaque M. & Langar H., (2014). *Cystoseira* taxa new for the marine flora of Tunisia. *Cryptogamie-Algologie* 35(3): 269-283.
- Bouafif C., Verlaque M. & Langar H., (2016). New contribution to the knowledge of the genus *Cystoseira* C. Agardh in the Mediterranean Sea, with the reinstatement of species rank for *C. schiffneri* Hamel. *Cryptogamie-Algologie* 37(2): 133-154.
- Cyrine Bouafif, Ouerghi A. & Langar H. (2014). *Cystoseira sedoides* (Desfontaines) C. Agardh des côtes Tunisiennes : Etat actuel des connaissances". In PNUE/PAM-CAR/ASP, 2015. Actes du 5<sup>ème</sup> symposium méditerranéen sur la végétation marine (Protoroz, Slovénie, 27-28 octobre 2014). Langar H., Bouafif C., Ouerghi A., édit., CAR/ASP publ., Tunis : 264 p.





# WE BELIEVE IN YOU !

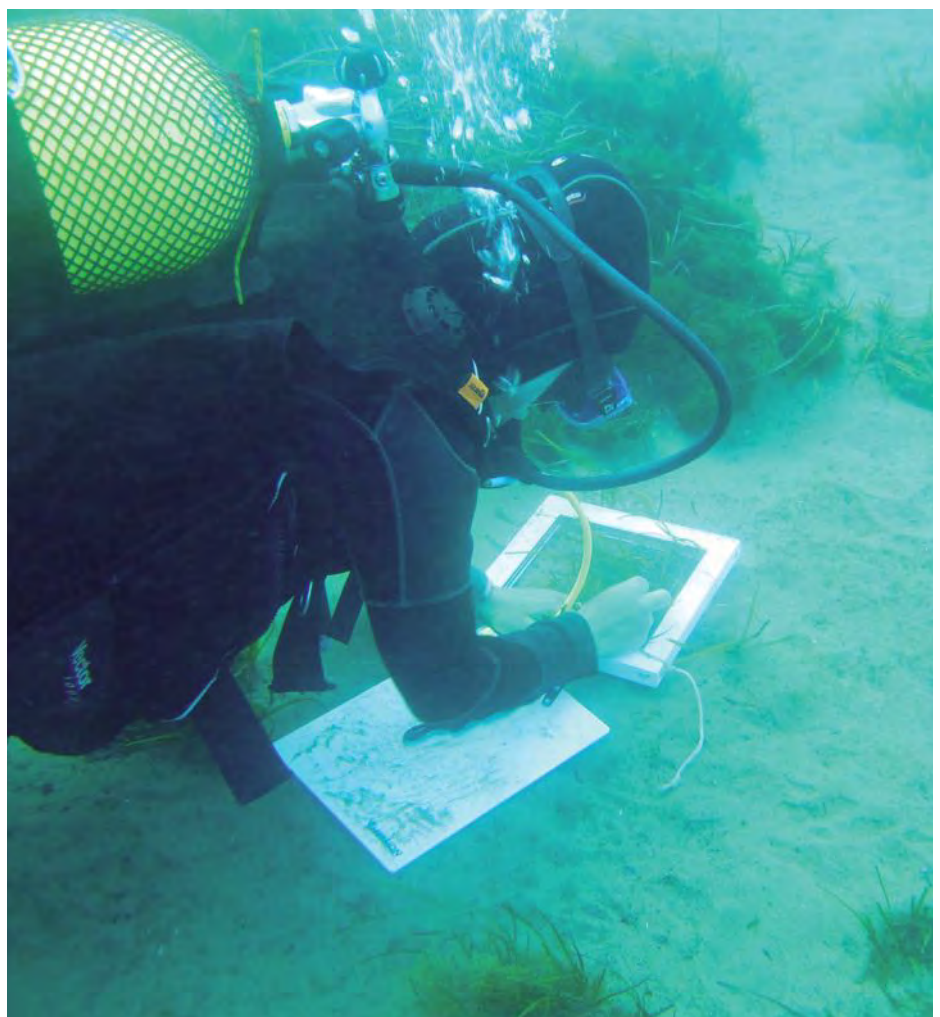
## Shed light on the *Zostera marina* meadows in Morocco

Since 1993 the Jbel Moussa site has been identified as a Site of Biological and Ecological Interest (SIBE) by the Master Plan of the Protected Areas in Morocco. It is located on the southern side of the Straits of Gibraltar.

As for the « on-job-training » of SPA/RAC, organised by the MedKeyHabitats project, Loubna Boutahar, is a student at the Faculty of Sciences of the Mohammed V University in Rabat, and participated actively in all the marine surveys carried out in Jbel Moussa. She was initiated into the survey techniques of the marine phanerogam meadows as well as in the field and in the laboratory.

At present Loubna is preparing a doctorate thesis, jointly between the Mohammed V University in Rabat and the University of Seville on these key habitats in the Mediterranean. Her research work is on the *Zostera marina* meadows in Jbel Moussa, the only ones remaining on the Mediterranean side of Morocco, and their comparison with those on the northern side of the Straits of Gibraltar, on the Spanish coast.

This thesis aims in particular to shed light on the dynamics and the functioning of these ecosystems in terms of the distribution, abundance and biomass, as well as to come up with some elements on the biodiversity of the associated benthic macrofauna, the interactions in terms of trophic networks, the state of the



ecological quality, contamination and the impact of invasive species especially of the *Caulerpa racemosa* algae on the meadows.

The results of this research work will help towards a better management and conser-

vation of the *Zostera marina* meadows in the Mediterranean, especially in the marine part of the SIBE of Jbel Moussa, which are amongst the priority sites which deserve to become Specially Protected Areas on Morocco's Mediterranean side.

# NEW PUBLICATIONS

## Guides



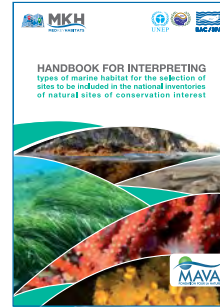
**BIOGENIC FORMATIONS IN THE SLOVENIAN SEA**



**Guidelines for the standardization of mapping and monitoring methods of marine Magnoliophyta in the Mediterranean**  
Lignes directrices pour la standardisation des méthodes de cartographie et de surveillance des Magnoliophytes marines en Méditerranée



**Standard methods for inventorying and monitoring Coralligenous and Rhodoliths assemblages**  
Méthodes standardisées pour l'inventaire et le suivi des peuplements de Coralligènes et de Rhodolithes

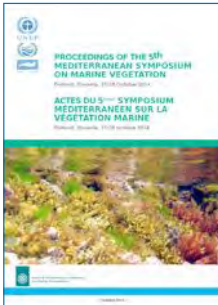


**Handbook for interpreting types of marine habitat for the selection of sites to be included in the national inventories of natural sites of conservation interest**



**Manuel d'interprétation des types d'habitats marins pour la sélection des sites à inclure dans les inventaires nationaux de sites naturels d'intérêt pour la conservation**

## Proceedings



**Proceedings of the 5<sup>th</sup> Mediterranean symposium on marine vegetation**  
Actes du 5<sup>ème</sup> symposium Méditerranéen sur la végétation marine

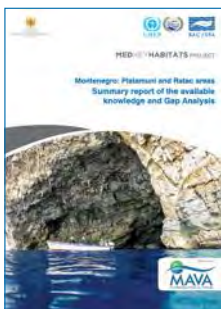


**Proceedings of 2<sup>nd</sup> Mediterranean symposium on the conservation of coralligenous and other calcareous bio-concretions**  
Actes du 2<sup>ème</sup> symposium Méditerranéen sur la conservation du coralligène et autres bio-concrétions

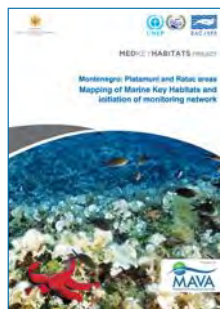


**Proceedings of the 1<sup>st</sup> Mediterranean symposium on the conservation of dark habitats**  
Actes du 1<sup>er</sup> symposium méditerranéen sur la conservation des habitats obscurs

## Reports



**Montenegro: Platamuni and Ratac areas**  
Summary report of the available knowledge and gap analysis



**Montenegro: Platamuni and Ratac areas**  
Mapping of marine key habitats and initiation of monitoring network



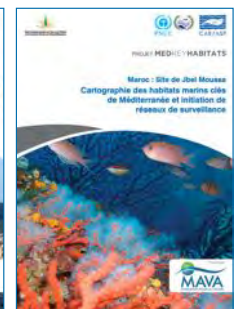
**Tunisie : Cap Negro-Cap Serrat**  
Synthèse des connaissances disponibles et analyses des lacunes



**Tunisie : Cap Negro-Cap Serrat**  
Cartographie des habitats marins clés de Méditerranée et initiation de réseaux de surveillance



**Algérie : Île de Rachgoun**  
Cartographie des habitats marins clés de Méditerranée et initiation de réseaux de surveillance



**Maroc : Site de Jbel Moussa**  
Cartographie des habitats marins clés de Méditerranée et initiation de réseaux de surveillance



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