



United Nations Environment Programme  
Mediterranean Action Plan  
Regional Activity Centre for Specially Protected Areas

# Specially Protected Areas of Mediterranean Importance

## *SPAMIs*



**Specially Protected Areas  
of Mediterranean Importance**

*SPAMIs*

**Note** : The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of UNEP concerning the legal status of any State, Territory, city or area, or of its authorities, or concerning the delimitation of their frontiers or boundaries.

© 2010 **United Nations Environment Programme(UNEP)**  
**Mediterranean Action Plan**  
**Regional Activity Centre for Specially Protected Areas (RAC/SPA)**  
**Boulevard du Leader Yasser Arafat**  
**BP 337 –1080 Tunis Cedex –TUNISIA**  
**E-mail : [car-asp@rac-spa.org](mailto:car-asp@rac-spa.org)**

This publication may be reproduced in whole or in part and in any form for educational or non-profit purposes without special permission from the copyright holder, provided acknowledgement of the source is made. UNEP-MAP-RAC/SPA would appreciate receiving a copy of any publication that uses this publication as a source.

No use of this publication may be made for resale or for any other commercial purpose whatsoever without permission in writing from UNEP-MAP-RAC/SPA.

For bibliographic purposes this volume may be cited as :

**UNEP-MAP-RAC/SPA, 2010 . The SPAMIs of the Mediterranean Sea.**  
**RAC/SPA edit., Tunis : 59 p.**

**Conception & coordination** : Marion Brichet & Christine Pergent-Martini

**with contributions from :**

The RAC/SPA National Focal Points ( Algeria, France, Italy, Monaco, Morocco, Spain and Tunisia), the managers and the staff of the concerned SPAMIs, and L. Ben Nakhla.

**Copyright of cover photos :**

Cover : M. Putuz, A. Bouajina, G.Pergent, H.Azafzaf

**This document should not be considered as an official United Nations document**

# Specially Protected Areas of Mediterranean Importance

The 1975 Mediterranean Action Plan and the 1976 Barcelona Convention enabled close regional cooperation to be established between the Mediterranean states several years ago and provided a suitable framework for the protection and conservation of marine and coastal biodiversity. This was particularly shown in the creation, between 1975 and 1995, of 122 protected areas (UNEP-MAP-RAC/SPA, 1997).



With the adopting of the new Protocol on Specially Protected Areas and Biological Diversity (SPA/BD) in 1995 and its entry into force in 1999, a new key phase was begun. This SPA/BD Protocol started the drawing up of a List of Specially Protected Areas of Mediterranean Importance (SPAMIs) and offered the Contacting Parties the possibility, for the first time ever, of creating protected marine areas outside the waters that come under their national jurisdiction (UNEP-MAP-RAC/SPA, 1995).



## Definition and objectives of a SPAMI

A SPAMI is an Area (UNEP-MAP-RAC/SPA, 1995, Art. 8) that:

- presents importance for the conservation of elements that make up biological diversity in the Mediterranean;
- contains ecosystems that are specific to the Mediterranean region or habitats of species threatened with extinction or;
- or presents particular interest at scientific, aesthetic, cultural or educational level.

The basic objectives of a SPAMI are protecting the natural heritage, scientific research, and environment education, provided that these are compatible with conservation objectives (UNEP-MAP-RAC/SPA, 1995, Art. 8).

In the context of the Barcelona Convention, and in order to promote cooperation on managing and conserving natural areas and protecting endangered species and their habitats, the Parties have drawn up a List of SPAMIs (UNEP-MAP-RAC/SPA, 1995, Art. 9).



The SPAMIs appearing on the List, and their geographical distribution, must be representative of the Mediterranean region and of its biodiversity. The List must represent the greatest possible number of kinds of habitat and ecosystem.

SPAMIs, because of their legal status, the measures of protection and management applied therein, and the approaches and means of management implemented, are intended to serve as examples of the conservation of the Mediterranean heritage.



## How to create a SPAMI?

### Where can one create a SPAMI?

SPAMIs can be created in any area under the jurisdiction of a Contracting Party to the SPA/BD Protocol and also in areas in the Mediterranean Sea located outside the jurisdiction of the states. Several possible scenarios can therefore coexist (Figure 1):

1. A marine and/or coastal area completely located inside an area subject to the sovereignty or jurisdiction of a Party.
2. A cross-border marine and/or coastal area completely located inside areas subject to the sovereignty or jurisdiction of two or more Parties.
3. A marine and/or coastal area located inside an area subject to the sovereignty or jurisdiction of a Party and also extending outwards into the high sea.
4. A cross-border marine and/or coastal area located inside areas subject to the sovereignty or jurisdiction of two or more Parties and also extending outwards into the high sea.
5. A marine area totally located in the high sea.

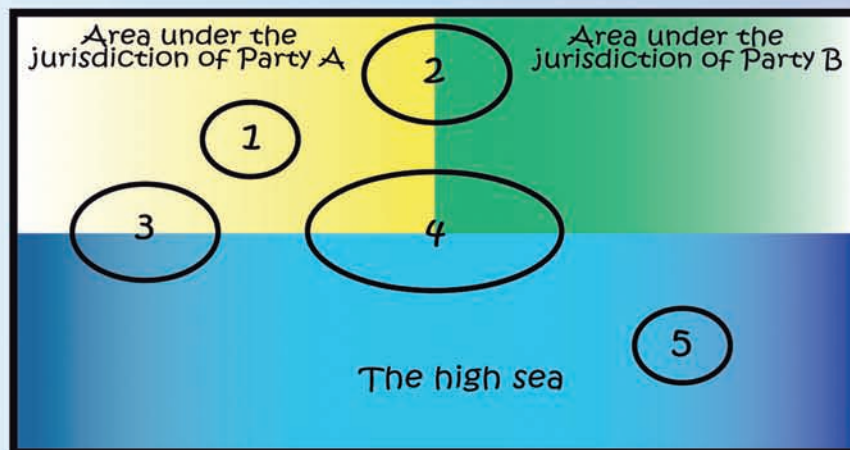


Figure 1: Different scenarios as to the position of a SPAMI vis-à-vis states' jurisdiction

### Who can create a SPAMI?

A SPAMI is created when it is included in the List after a decision by the Contracting Parties on the grounds of criteria defined by the Protocol Annex 1 (UNEP-MAP-RAC/SPA, 1995).

*When the SPAMI only concerns one country:*

For areas that lie completely within areas under the jurisdiction of one Party, the procedure for including that area in the SPAMI List is initiated by the concerned Party.

*When the SPAMI concerns several countries:*

For sites lying partially or totally outside the states' limits of jurisdiction, the proposal to include it in the List must come from one or several neighbouring Parties.



## What is the procedure for requesting the creation of a SPAMI?

The choice of SPAMIs must be made on scientific grounds, and only sites that suitably meet the criteria established by the Protocol will be allowed to appear on the SPAMI List.

Parties making a proposal for inclusion on the SPAMI List provide a presentation report (including information on the site's geographic location, its physical and ecological features, its legal status, its management plan and the means for implementing this, plus a summary justifying the area's Mediterranean importance) and submit this, via the Regional Activity Centre for Specially Protected Areas, for the opinion of the Contacting Parties to the Barcelona Convention. Looking into the proposal involves assessing the site's Mediterranean importance and the protection and management measures implemented therein.

When making the decision to put an area on the List, the Parties make sure that the sites included possess legal status, protection measures, and adequate methods and means of management.

A consensus is required for sites that lie outside the areas of states' jurisdiction or in places where the limits of national sovereignty or jurisdiction have not yet been defined.

### Tools made available to the Parties:

In the context of the Barcelona Convention, and for a quantitative and qualitative improvement of knowledge about habitats and species of Mediterranean interest, the Contacting Parties have adopted an operational tool the Standard Data-Entry Form\* (UNEP-MAP-RAC/SPA, 2002).



This form was designed with the main aims of:

- helping decision-making on the management, and if need be the protection, of the site described
- providing a tool for long-term monitoring of the site.

Furthermore, to help identify the most remarkable and rarest facies, a Habitat Guide, adapted to the Mediterranean, has been produced with 2 parts, one for marine habitats\* (BELLAN-SANTINI *et al.*, 2002) and the other for coastal habitats\* (UNEP-MAP-RAC/SPA, 2009).



## What is the procedure for assessing a SPAMI?

An assessment procedure was adopted with the aim of assessing SPAMI sites in order to decide whether they satisfied the Protocol's criteria (UNEP-MAP-RAC/SPA, 2008). This procedure can be gone through in an ordinary or extraordinary review.

\* Documents that can be downloaded on [www.rac-spa.org](http://www.rac-spa.org)

## Ordinary review

An ordinary review is carried out regularly through the national reports drawn up by the countries every two years at their meetings. It is a simple way of allowing frequent revision to spot any change or problem in the running of the SPAMI. Indeed, in these reports the countries have to clearly state any situation that could endanger the ecosystems of the SPAs or the survival of the species of fauna and flora.

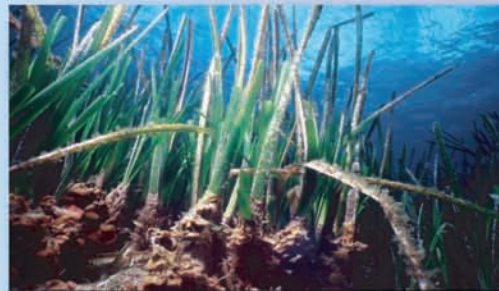
In addition to this regular investigation, a regular ordinary review is planned every six years starting from the date the site appeared on the SPAMI List. It consists of a detailed examination of the SPAMI, via a questionnaire on the state of conservation, legal status, resources, knowledge, real dangers, laws, management, protection measures, human resources, financial and material means, and cooperation and how the network is working.

The review is entrusted to a joint Advisory Technical Committee, made up of :

- the National Focal Point concerned and/or the person responsible for managing the SPAMI,
- a national expert in biology and in the ecology specific to the area and,
- two independent experts.

This committee, after looking into the documents provided by the managers of the site before the visit and in the light of their observations during the visit, fills in the questionnaire and makes a detailed report (Figure 2).

In the event of an ecological disaster, or a serious harmful event or an emergency in the SPAMI, an extraordinary review procedure may be set in motion.



## Extraordinary Review

An extraordinary review is intended to reach an objective decision as to the causes and degree of seriousness of the problem which confronts the SPAMI. Many causes may lead to it: an unsatisfactory report by the joint Advisory Technical Committee after an ordinary assessment, remarks in the countries' reports, a request coming from either that country or from outside sources.



The extraordinary review procedure is like an ordinary review in terms of the committee's make-up, criteria taken into account and approach (Figure 2).

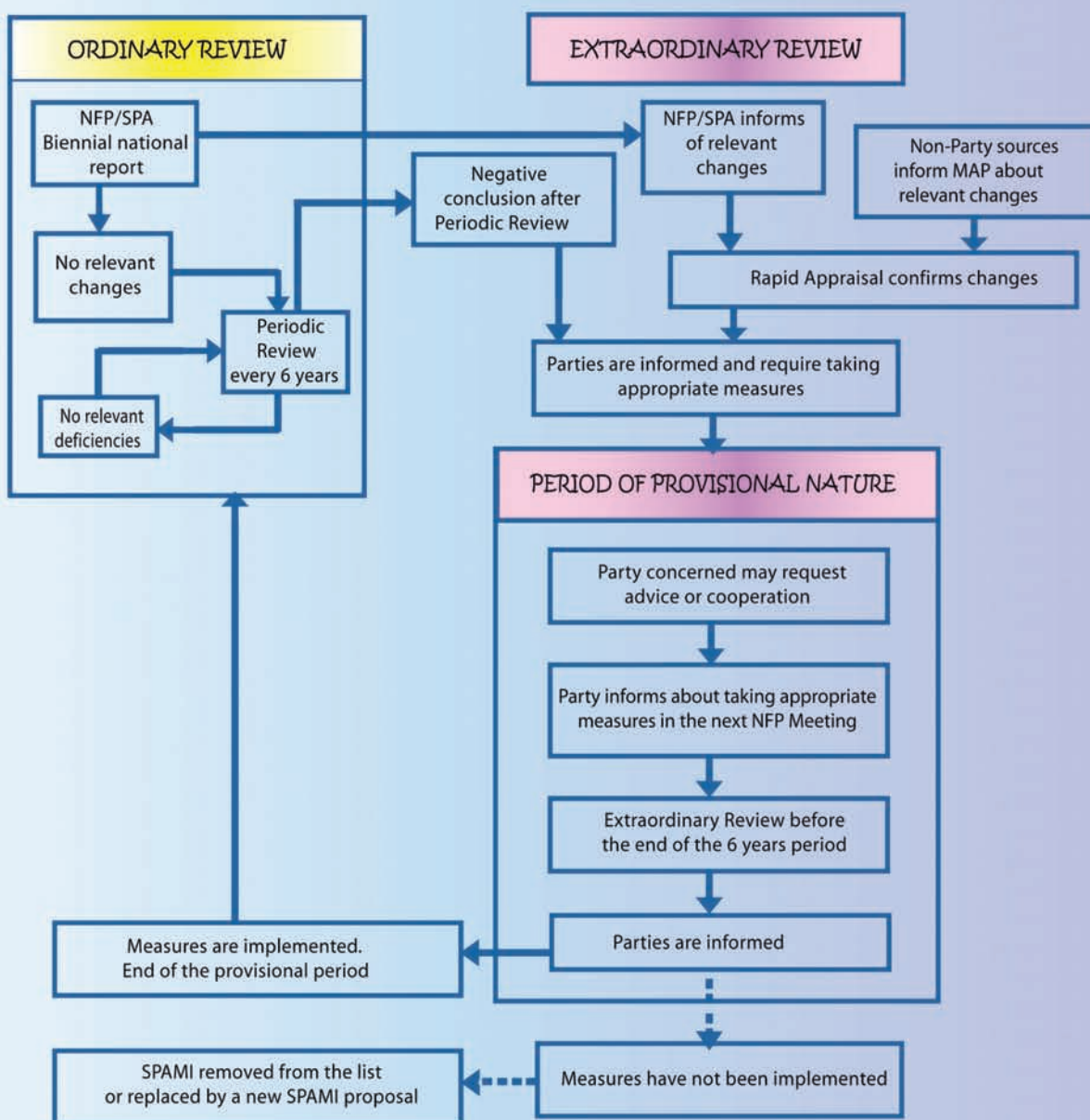


Figure 2: Stages of an Extraordinary Review

In the light of the results, if the situation of the SPAMI represents a real threat to its objectives, it enters on a six-year period of a provisional nature during which the recommendations made by the joint Advisory Technical Committee, and the necessary measures, must be taken and put into effect.

After this period, if the extraordinary review concludes that 1/ the recommended measures have been put into effect and 2/ the legal protection and ecological status has improved, the SPAMI goes back to the normal monitoring process. But if the recommendations and advocated measures have not been followed, the SPAMI will be taken off the List. The country may then propose another SPAMI.







## Bibliography

BELLAN-SANTINI D., BELLAN G., BITAR G., HARMELIN J.G. & PERGENT G., 2002. Handbook for interpreting types of marine habitat for the selection of sites to be included in the national inventories of natural sites of conservation interest. G. Pergent edit., RAC/SPA publ., Tunis: 255 p.

UNEP-MAP-RAC/SPA, 1995. Protocol concerning Specially Protected Areas and Biological Diversity. RAC/SPA publ., Tunis: 25 p.

UNEP-MAP-RAC/SPA, 1997. Protected Areas in the Mediterranean from Geneva 1982 to Barcelona 1995. RAC/SPA publ., Tunis: 27 p.

UNEP-MAP-RAC/SPA, 2002. Standard data-entry form (sdf) for national inventories of natural sites of conservation interest. RAC/SPA publ., Tunis: 58 p.

UNEP-MAP-RAC/SPA. 2008. Procedure for the revision of the areas included in the SPAMI List. RAC/SPA publ., Tunis : 17 pp.

UNEP-MAP-RAC/SPA, 2009. Handbook for interpreting types of coastal habitat for the selection of sites to be included in the national inventories of natural sites of conservation interest. RAC/SPA publ., Tunis.



Code	Name of the SPAMI	Year of inscription
DZ1	Banc des Kabyles	2005
DZ2	Habibas Island	2005
FR1	Port cros	2001
FR2	Bouches de Bonifacio	2009
IT1	Plemmirio	2008
IT2	Portofino	2005
IT3	Miramare golfo di trieste	2005
IT4	Tavolara - punta coda cavallo	2008
IT5	Torre guaceto	2008
IT6	Punta campanella	2009
IT7	Capo caccia – isola piana	2009
MA1	Al-hoceima	2009
SP1	Acantilados de maro-cerro gordo	2003
SP2	Archipelago de cabrera	2003
SP3	Cabo de gata nijar	2001
SP4	Cabo de creus	2001
SP5	Fondos marinos del levante almeriense	2001
SP6	Isla de alboran	2001
SP7	Islas columbretes	2001
SP8	Islas medas	2001
SP9	Mar menor	2004
TN1	Galite	2001
TN2	Kneiss islands	2001
TN3	Zembra and zembretta	2001
TB1	Pelagos Sanctuary	2001

# Banc des Kabyles

Legal status	Marine reserve
Foundation year	1984
Foundation text	Presidential decree no. 84-328
Management body	National Commission for the Coast
Superficy	600 ha



## Territory



The Banc des Kabyles marine reserve are shallows located approximately 3.4 miles off the nearest coast, 6.5 miles north-west of Jijel. It is part of the Taza National Park, and includes both a terrestrial and a marine part.

The Banc des Kabyles has been a SPAMI since 2001 since the species present are much bigger than usual and it is an outstanding spawning area.



## Physical features

The Banc des Kabyles is the top of a volcanic underwater mountain. There is not much sedimentation, for almost the entire site is rocky. However, loose sediment covers certain flat areas, offering a substratum that is favourable to plant development.

Caves, caverns, holes and arches are found in succession.

## Specificities and Importance



All underwater habitats are present in the Banc des Kabyles. The horizontal or fairly level parts are carpeted with a Posidonia meadow that is often over one metre high.

The species that live there are numerous (groupers, striped groupers, ferreous limpets and manta rays), giving the site interest and a regional aspect. The specimens are often of impressive size, with some striped groupers weighing over 8 kilos and spiny lobsters up to 5 kilos.

The Banc des Kabyles is a spawning area, a nursery for almost all the species that depend on the hard substrata.

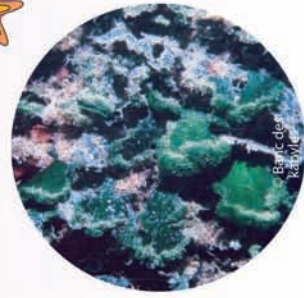


## Threats and pressures



Sufficiently far out from the coast and the big towns to not directly suffer degradation due to human activity, the Banc des Kabyles is not subject to major risks of chronic or creeping pollution.

The area's problem is linked to fishing, both authorised and, especially, unsupervised.



## Management

The management plan currently being crafted takes on board the principles of conservation within a sustainable development context.

It will be crafted with the purpose of gradually extending the marine reserve westwards in order to include the western part of the cape.

Diving is relatively controlled due to the visible logistic means that it usually requires.

For several decades the Banc des Kabyles has been observed frequently, with much diving with and without an aqualung, and this has provided relatively precise information on the bathymetry and the marine populations. 75% of the knowledge has been ecological knowledge, either of habitats or species.



# The Habibas



Legal status	Marine nature reserve
Foundation year	2003
Foundation text	Decree n° 03-147
Management body	National Commission for the Coast
Superficy	2684 ha
Management category (IUCN, 1994)	III

## Territory

The Habibas Islands lie about 26 miles west of Oran, 5.8 miles from the nearest continental point at Madagh II, west of Cap Cigale, better known as Cap Blanc. The islands, located in water under Algerian jurisdiction, are on a NE-SW axis.



The Habibas Islands have been a SPAMI since 2005 because of their remarkable marine diversity and their untouched heritage character



## Physical features

The Habibas are almost entirely made up of volcanic rocks (brown dacite in the north, pale whitish-greenish rhyolite in the south), the two formations being separated by green gypseous marl. Limestone sediment (calcareous-clayey silts) carpets the islands' circumference.

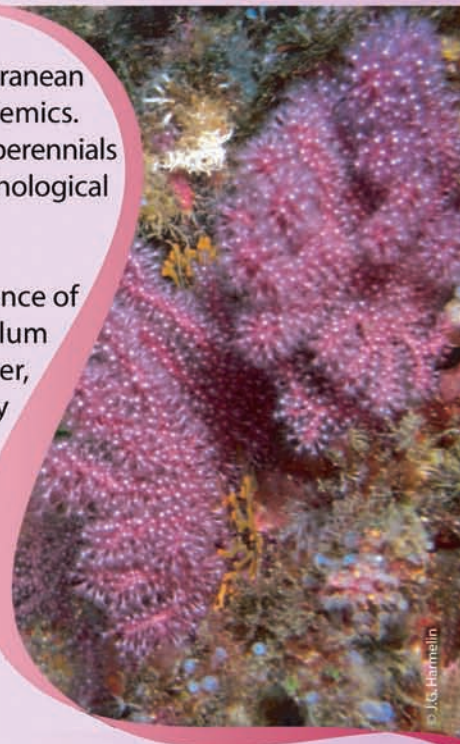
Shelly sand covers all the flat surfaces and clays extend to the depressed peri-littoral areas, there replaced by silts.

## Specificities and importance

The Habibas islands possess a floristic basis that is common to the western Mediterranean basin, among 97 recenssed species, 9 North African endemics or strict Oran endemics. The great diversity of the environments, including areas of bushy vegetation with perennials and areas of cliffs and rocks, offers ecological niches that are essential to the ornithological fauna.

The marine fauna and flora present a remarkable diversity marked by the presence of various species that are protected in the Mediterranean, particularly *Lithophyllum* banks, the ferreous limpet, the *Centrostephanus longispinus* urchin, the grouper, the noble pen shell and the dolphin. There are many dolphins, though not very diversified.

There is a great diversity of fish species: sea-bream, wrasse, sea-perch, and scorpion-fishes.

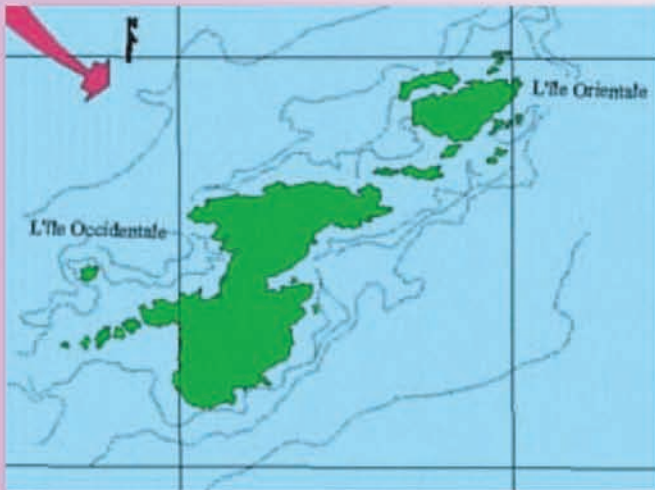


## Threats and pressures

Only the halieutic resources present an interest and make fishermen cast covetous eyes at the Habibas. The sophistication of the semi-commercial fishing gear pushes fishermen to approach the Islands to tap part of the stocks that have so far been preserved.

Also, there is a danger from demographic pressure and tourism.

Various tourist projects have been started in the coastal area precisely because of the presence of the Islands.



The geographical location of the Habibas Islands gives them a monitoring facility for the exploitation of the soil and subsoil, which is strictly regulated in Algeria, so much so that any exploitation is easily ruled out.

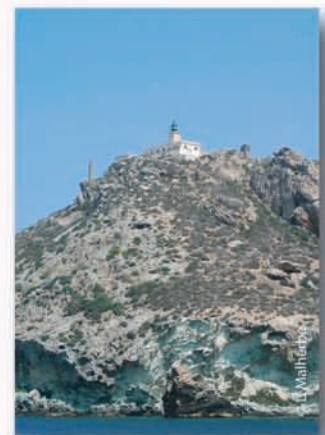
As for the sea, the basically halieutic activity can also be easily controlled from the Bou Zedjar port.

Part of the oceanographic scientific community has made the Habibas Islands a model for studying the marine environment.

## Management

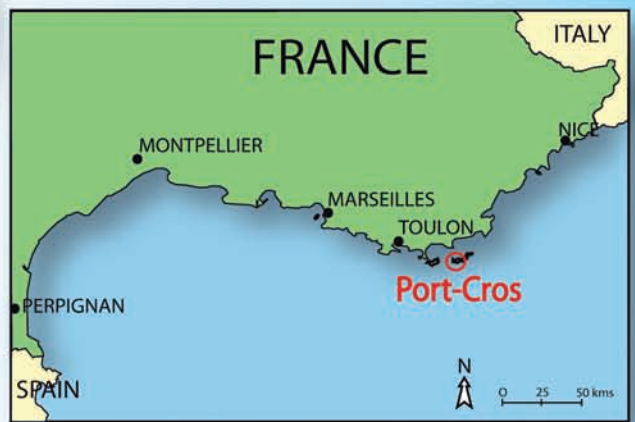
A management plan is in the process of being crafted.

The edges of the reserve are marked by luminous markers and giant buoys adapted to the very unruly open sea and able to resist the drift current.



# Port-Cros

Legal status	National park
Foundation year	1963
Foundation text	Decree no. 63-1235
Management body	Port-Cros National Park public institution
Superficy	2000 ha
Management category (IUCN, 1994)	II
Council of Europe certificate	



Port-Cros has been a SPAMI since 2001 for its management is exemplary and it is exceptionally rich in land and sea species

## Territory

The Park consists of the island of Port-Cros, the Bagaud, La Gabinière and Le Rascas islets, listed as an integral reserve and a 600-metre-wide marine perimeter. The Park also manages 1,000 hectares made up of the natural perimeter of Porquerolles island, and, on the continent, the Conservatoire du Littoral lands of Cap Lardier (325 hectares) and the Giens peninsula (110 hectares).



## Physical features

Port-Cros island, with a surface area of 650 hectares, is mountainous and has heavy vegetation. The old metamorphic rocks of gneiss and micaschist form the base of the archipelago. Port-Cros peaks at 196 m., with steep cliffs dominating the island's southern coast. Only a few coves and three little beaches offer easy access to the sea.

## Specificities and Importance

The island is covered with very dense vegetation, dominated by maquis with oleo-lentisk plants and a mixed population of Aleppo pines and holm oaks.

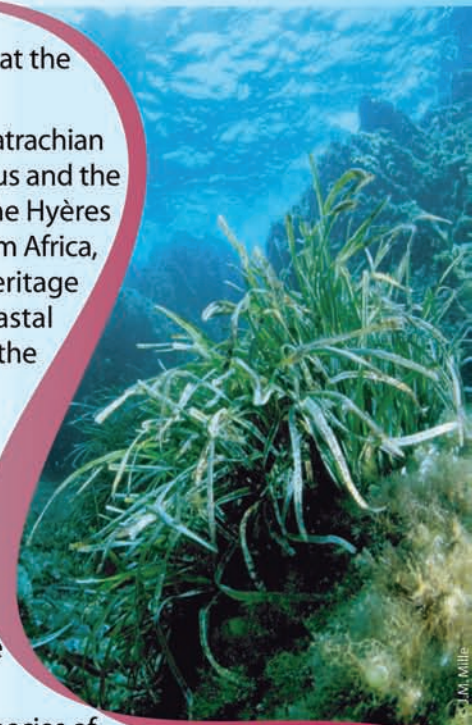
There is also an interesting vegetation of coastal cliffs, dunes at the back of the beach, some wetland areas with a Mediterranean water system and a small dam at the centre of the island. Lichens and fungi are very well represented.

Several species of terrestrial fauna are remarkable, such as *Discoglossus Sardus*, a batrachian endemic to Corsica and Sardinia, and the specifically Mediterranean *Phyllodactylus* and the *Hemidactylus*, both of these geckos that are mainly active at night and find in the Hyères islands favourable environments. Port-Cros, the first land reached when coming from Africa, is an important place for migratory avifauna and also offers nesting for many heritage species (peregrine falcon, European nightjar, common Scops owl). Also, the coastal cliffs shelter colonies that are of national importance for two marine bird species, the Balearic shearwater and the Cory's shearwater.

The underwater domain extends over 1,300 hectares and also offers a great richness of landscapes and two main, particularly remarkable, ecosystems:

- the Posidonia meadow extends down to about 40 metres, and is a true source of biodiversity. It shelters a fine population of *Pinna nobilis* noble pen shells,
- the coralligenous, present on rocks from about twenty metres down, is made up of many fixed invertebrates, gorgonians, Bryozoa and sponges. It is a host to the dusky grouper, an emblem species – 550 individuals listed in 2008 – the grande cigale, *Centrostephanus longispinus*, and other species.

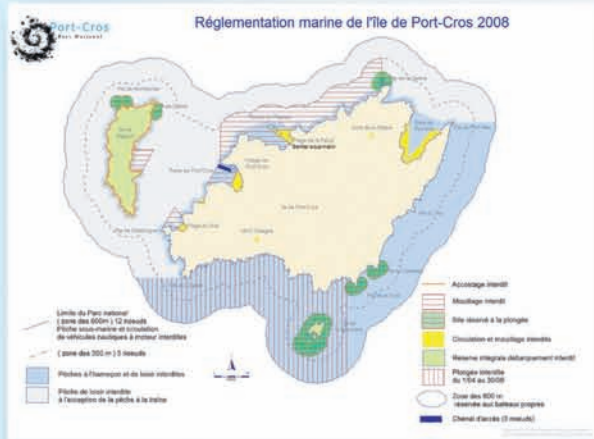
In all, over 180 species of fish, 265 species of crustacean, 92 species of sponge, 53 species of echinoderma and 173 species of mollusc have been found in the Park.



## Threats and pressures

Human pressure on this territory is basically linked to summer tourism. During the months of July and August, nearly 3,000 visitors land every day to discover its exceptional landscapes dotted with a line of forts of great architectural and historical interest. In all it is estimated that there are 120,000 visitors a year, plus about 8,000 pleasure boats anchoring there, which gives a total of over 200,000 visitors. Over 60,000 dives were done in 2008 in the waters of the Park.

The introduction of exogenous animal (haret cat and black rat) and plant (carpobrotus sp., *Caulerpa taxifolia*) species can undermine certain biological balances, and thus it is necessary to regulate such 'undesirables'. Each year, a campaign to find and wipe out the alga *C. taxifolia* is organised in the marine part of the Park.



## Management

The 5-year management plan has been updated to correspond to changes in the environment and human pressure. The (DOCOB) 'Natura 2000' Objective Document is a supplementary version of the management plan that applies to habitats and species of Community interest.

The long-term research programme, drawn up with the Scientific Council, is based on the permanent monitoring of species and environments. These observations enlighten the Park teams as to priority management measures to be introduced and how these will be put into effect.

Protecting the landscape capital of heritage species and habitats is done by the statutory or conventional supervision of usage (partnership charters) and by fittings and improvements that limit the impacts of frequentation: integrated parking for bicyclers, biological and landscape development of the area behind the beaches, ganivelles (fencing), barriers, and permanent ecological moorings for divers and pleasure boaters.

Charters negotiated in consultation with the users like commercial fishermen and underwater divers define the conditions in which such activities can be carried on and the places that are set aside for these.

Markers allow a visual grasp of the edges of the regulated areas: speed limits and mooring and sailing areas. The National Park is also responsible for managing the port of Port-Cros. It thus decides on the number of places on the dock, the sectors where there are mooring buoys, and the places where the passengers disembark.

'Park gate' notice-boards, an information office, an exhibition, an underwater trail and many theme-based publications are made available to visitors to teach them about the riches, the fragility of the natural environments and the rules of conduct that are essential for their protection.

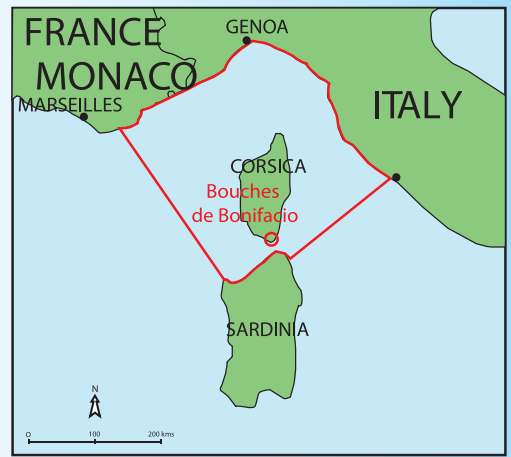
Special attention is paid to pedagogical action for schoolchildren. Discovery trips are organised at the Fort de l'Eminence for them, in partnership with the Good Planet association and the Educational League.





# Bouches de Bonifacio

National status :	Nature reserve
Year of creation :	1999
Founding text:	Ministerial decree (legal status )
Management organization:	Corsican Environment Office
Surface area:	79 460 ha
Management category:	Ia (IUCN 1994)



the bouches de Bonifacio has been a SPAMIs since 2009 thanks to the presence of huge posidonia meadows, lagoons, clumps of coastal vegetation and reefs.

## Territory

The Bouches de Bonifacio Nature Reserve, the French part of the Bouches de Bonifacio International Marine Park stretches from the southern tip of Corsica over the whole French territorial waters between the Roccapina cove to the west and the "Punta a Chiapa" cape, the end part of the Porto Vecchio gulf to the east.



## Physical characteristics

The territory has two main geological formations, a granitic base formed before the separation of the Corso-Sardinian micro-continent, forming massifs and blocks of land which gave rise to most of the isles and archipelagos and tabular calcareous deposits of marine origin intersected by valleys and rias forming the cliffs of Bonifacio.

## Specificity and Importance

The main habitats characteristic of the Bouches de Bonifacio Nature Reserve are the huge posidonia meadows, lagoons, clumps of coastal vegetation and reefs.

In the Bouches de Bonifacio Nature Reserve there are 973 animal species ( 18 mammals, 163 birds, 7 reptiles, 2 amphibians, 187 fishes, 11 protochordata, 13 echinodermata, 261 insects, 11 arachnids, 6 bryozoa, 103 crustaceans, 143 molluscs, 7 annelids, 23 cnidarians and 19 porifera ). 22 of these are of community interest necessitating strict protection measures and 11 of community interest necessitating the designation of Special Conservation Areas. Amongst these species are the bottlenose dolphin (*tursiops truncatus*), marine molluscs, brackish water fish, the Aphanius of Corsica (*Aphanius fasciatus*) and the loggerhead marine turtle *caretta caretta*.

The huge posidonia meadows constitute the sole habitat of the pen shell (*pinna nobilis*) and the hippocampus (*hippocampus ramulosus*). The rocky coastline of the nature reserve is one of the last refuges of the giant limpet (*patella ferruginea*). In the rocky depths are forests of *cystoseira* and corraligenous biocenoses rich in sponges, corals and echinoderms.

The reefs shelter a large number of species of interest for reasons of heritage and sea value such as the common spiny lobster (*Palinurus elephas*), spider crab (*Maja squinado*), yellowbelly rockcod (*Epinephelus marginatus*), brown meagre (*sciaena umbra*), gorgonian *Paramuricea clavata* and *Eunicella* sp..

Amongst the birds, the European shag (*Phalacrocorax aristotelis aristotelis*) and Audouin's gull (*Larus audouinii*) are considered as priority species and there is an international action plan for them. The nesting population of Cory's shearwater (*Calonectris diomedea*) of the nature reserve represents half of the French population of this species.



## Threats and Pressure

Apart from the pollution risk due to maritime traffic and the dangerous nature of the detroit, the main threats to the habitats and the species stem from frequent touristic trips to this area as well as the anchors of the pleasure boats, trampling on the grasslands and dunes, pleasure fishing, submarine fishing, some diving spots being used very often etc.



## Management

A management plan was set up for the 2007 – 2011 period and it was validated by numerous bodies (the Advisory committee of the Bouches de Bonifacio Nature Reserve, Prefect of Corsica, Executive Council of the Territorial Authority of Corsica (Conseil Executif de la Collectivité Territoriale de Corse) and the Corsican Assembly) and the activities already underway will be continued and reinforced.

The Corsican Environment Office has a staff of 31 who are permanently managing the protected area, 5 are responsible for scientific follow-up, 2 for operations in a hyperbaric environment, 2 for awareness-creation and information actions and 15 are engaged and sworn-in as “nature police”.

The nature reserve team has a continuous monitoring programme and is responsible for the scientific follow-up. In addition to this programme some of the actions can be entrusted to external service providers such as consultancies and research laboratories.

The results of the scientific monitoring programme are analyzed as they go along by the manager and reviewed at the meetings of the Scientific Council (one meeting per annum). This makes it possible to eventually re-orientate any actions undertaken in terms of monitoring human activities, looking after the environment, catering for the populations and providing information for the public.



# Miramare

Legal status	Marine Protected Area
Foundation year	1986
Foundation text	Interministerial decree
Management body	Ministry for the Environment and Protection of the Territory and the Sea - WWF
Superficy	127 ha
Management category (IUCN, 1994)	IV



## Territory

The protected area is located at the foot of the Miramare promontory, a section of coast between the tourist port of Grignano and the Barcola riviera, a summer resort for local residents.



© Archives Miramare MPA

Miramare has been a SPAMI since 2008 thanks to its important biocenosis, its measures (management, protection), and very clear and adapted resources, based on a serious knowledge.

## Physical features

The environment of the area is a section of shore made up of rock at the coast itself, becoming blocks, pebbles and sandy bottoms that are increasingly muddy progressing offshore. The seabed consists of rock, pebbles and sand down to a depth of about 8 meters, and then mud, to a maximum depth of 18 meters. The coast is made up of limestone rock typical of the Carso, a territory of which the Miramare promontory represents a small extension of the coastline.

## Specificities and importance

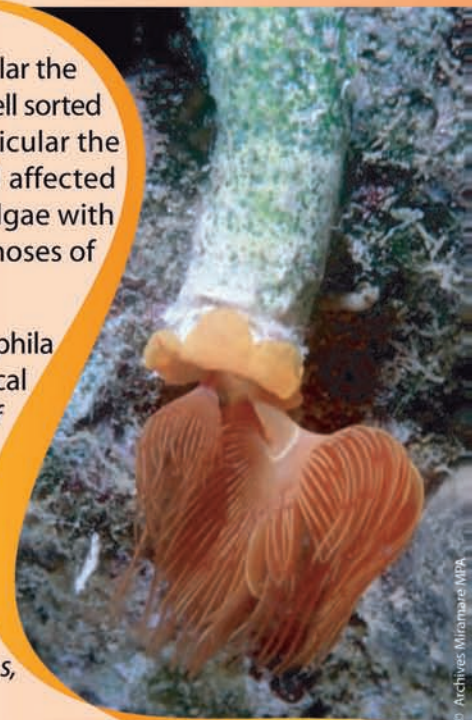
There is a significant tidal zone which encompasses endemic species, such as *Fucus virioides* and other species at the boundaries of their diffusion zone.

The most representative habitats are the mediolittoral rock biocenosis, in particular the association with *Lithophyllum bissoides* and *Fucus virioides*; the biocenosis of the well sorted fine sands; the biocenosis of the surface muddy sands in calm waters, in particular the association with *Zostera noltii*; the biocenosis of the coarse sands and gravel affected by bottom currents with the Maërl facies; the association of the infralittoral algae with *Cladocora caespitosa*, *Cystoseira crinita* and *C. compressa*, and finally the biocenoses of the bathyal muds.

The flora is very strong heterogeneous, with establishment of pre-coralligenic sciaphila populations, *Peyssonnelietum squamariae*, and almost single-type situations typical of port waters, with *Ulva laetevirens*, *Gracilaria armata*. A residual meadow of *Cymodocea nodosa* is present.

The species found are characteristic of the main habitat and biocenoses in the Reserve : calm mode muddy sands, coastal terrigenous muds, coastal deposit, well sorted, *Posidonia* meadows, photophilic algae et mud deposit...

Fish commonly found include the *Blennoïdes*, all seabreams types, *Dicentrarchus labrax* and *Corvina nigra*. The main crustaceans observed include: *Eriphia spinifrons*, *Maja squinado*, *Maja verrucosa*, *Homarus gammarus*.



© Archives Miramare MPA

## Threats and pressures

The biodiversity is exposed to the classic threats of two contexts (urban and industrial pressure), where contamination by heavy metals is common to all mobile sediments (muds) of the Gulf of Trieste.

Possible impact could result from illegal fishing whether as a sport/hobby or as underwater fishing.

A further phenomenon typical of the waters of the Gulf of Trieste is their low transparency, due to the high levels of production, increased by suspended matter brought in by the rivers and discharges. These affect the development of the vegetation, in particular the marine phanerogams.



## Management

A management plan was established in 1989 and is monitored every year.

The State Reserve currently comprises a zone 'A' of integral reserve with an area of 30 ha; this is surrounded by a section of sea of 97 ha, zone 'B', subject to Port Authority Order.

Twelve people are employed in the area, 8 collaborate with, allowing it to be run properly.

The funding is adequate; this derives mainly from the Italian Ministry for the Environment, integrated by the Regione Friuli-Venezia Giulia, by WWF-Italy and from autonomous incomes (visiting and educational activity, services provided to the local scientific community such as on-the field support to monitoring activity).

The area falls under the protection of the Port Authority Police, which provides regular patrolling activity. Miramare MPA is completing the installation of a video-surveillance network operated by "Web-cameras" with 3 observation points

In view of the logistics and secure conditions for instrumentation and equipment, the zone has been used over the years as an experimental training ground by research institutes and universities. A lot of Scientific and monitoring activities have been done through institutional collaboration.

Biophysical, socio-economic and governance data are collected after the indication of IUCN-WWF guidebook "How is your MPA Doing?" in order to assess MPA's management effectiveness.

The institutional goals of the Miramare Marine Protected Area include provision of opportunities for establishing programmes for education about the environment and for training in natural resource management. Within the Reserve, therefore, a Centre for Education in Marine Environment (CEAM) was opened in 1989. The Centre's goals are to organise and execute educational programmes for schoolchildren at all levels, to give them an opportunity to discover and study the marine ecosystem.

To encourage a 'contact' with the seabed underfoot, visitors walk bare-foot on a floor covered in sand, shells and marine plants. The educational facilities at Miramare begin at the Visitors Centre, a 'communicate through play' area that takes the visitor on a virtual trip to the various habitats of the Reserve



# Plemmirio

Legal status	Marine Protected Area
Foundation year	2004
Foundation text	Ministerial Decree n° 32
Management body	Consortium between the Province of Siracusa and the City of Siracusa
Superficy	2500 ha
Management category (IUCN, 1994)	IV - V



## Territory

The Plemmirio MPA is off the Maddalena Peninsula, a few kilometres south of the city of Siracusa; it stretches from Punta Castelluccio to Golfetto della Fanusa.



Plemmirio has been a SPAMI since 2008 thanks to the exceptional wealth of natural resources : 25 priority habitats and 42 species listed in Annex II and a high interest in education for everyone.

## Physic features

The Maddalena Peninsula is for the most part a calcarenitic platform featuring major sequences of faults and fissures aligned, and lesser faults. The coastline is formed by cliffs, subject to forms of local erosion, where calcarenitic rockslides are frequent.

In terms of sedimentation, the sea beds are mostly hard rock with occasional patches of coarse sediment.

Starting from the coastline, underwater morphology chiefly features a hard substrate outlined by a series of terraces alternating with submerged inlets and presenting loose sediments composed mostly of coarse sand and debris.

## Specificities and Importance

The intertidal zone (0-15m) and its coves and caves, contain a photophyllic and a sciophilous association, considered high priority habitats. The mid-tide zone (15-30 m) is characterized by *Cystoseira* species and *Flabellio-Peyssonnelieturn squamariae*. Between depths of 30 to 50 metres, on the detritic bottom, the biocoenosis of the coastal detritic strip spreads across the whole area and contiguous to the mid-tide zone Algae, with the coralligenous biocoenosis and beyond -40 metres, is bound above by the *Posidonia* meadow and below by the coastal detritic bottom.

At Punta Tavernara, between depths of 36 and 45 metres, there is a sciophilous population, colonized in a higher layer by a population of *Phyllariopsis brevipes* due to very strong currents. On loose substrates, we find the meadow of *Posidonia oceanica*, sometimes discontinuous, and alternates with the biocoenosis of the mid-tide zone Algae.

The sea bottom is rich in benthic fauna, in numerous species of fish and in meadows of *Posidonia oceanica* often with *Pinna nobilis*. Higher up and nearer the coast, there is a strong presence of colonial corals.

Capo Murro di Porco is an ideal place from which to observe some of the large pelagic fish, as well as marine mammals.

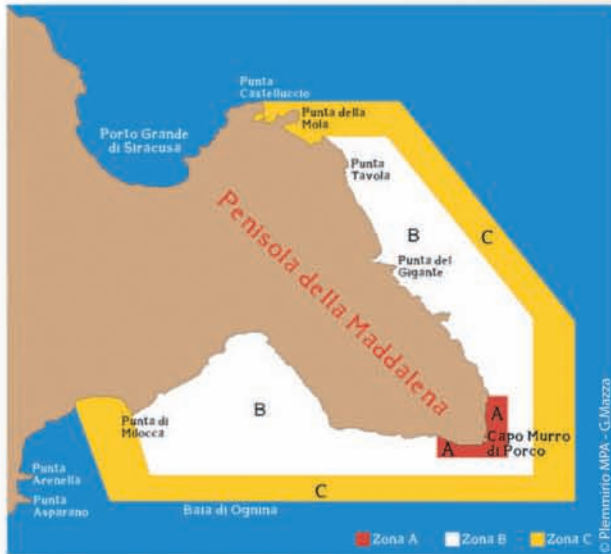
The benthic fringe just before the marine area is teeming with Mediterranean biodiversity, thanks to a variety of naturally-occurring factors. They have all helped the development of numerous species.



## Threats and pressures

The area is particularly popular with divers and fishermen.

As many as 150 divers a day enjoy the area in high season. The presence of a strong flow of diver-tourists constitutes a potential nuisance for the species. At the present time, the area seems to be keeping the external human pressure under control. The major threat is represented by the high number of craft used for diving.



## Management

No management plan has established so far. Indications and buoys are efficient and well-organized.

The Plemmirio marine area is divided as follows:

- Zone A full reserve for scientific research and guided underwater tours
- Zone B general reserve where some activities are allowed
- Zone C partial reserve not really restricted

Surveillance of the MPA is carried out by Siracusa Harbour Police, as well as by the security forces of the local bodies responsible for managing the area.

A staff is composed by 5 full-time members and 5 short-term contract.

There is a scientific partnership with the University and since 2005 there is a project which provided for the monitoring of the natural conditions and the effects of underwater activities in zone A.

A number of programmes have been developed specifically for differently-able people, and partnership agreements have been drawn up with scuba diving clubs, environmental associations, local fishermen and tour operators and hospitality providers.

Professional training courses have been sponsored by the Ministry for Equal Opportunities, the Ministry of Labour and Social Policy and by the regional department for family matters.

The Plemmirio MPA has striven to achieve total access for differently-able persons. Educational itineraries have been devised, seven access points, have been identified and the role of escort to accompany differently-able persons while at sea has been created.

The most original project, is the creation of two underwater itineraries designed for blind people, and making use of Braille to provide informative materials on this very special underwater visit, in absolute safety, in a spirit of education and information.



# Portofino

Legal status	Marine Protected Area
Foundation year	1999
Foundation text	Ministerial Decree
Management body	Consortium between the Municipalities, Province of Genoa and the University of Genoa
Superficy	385 ha
Management category (IUCN, 1994)	IV



## Territory

The Promontory of Portofino (Ligurian Sea), with its roughly quadrangular shape, stretches itself into the sea for more than 3 km, extending itself along the coast for about 13 km. The Promontory is characterised by several small inlets like the bays of Cala dell'Oro, San Fruttuoso, Portofino, and Paraggi.



Portofino has been a SPAMI since 2005 thanks to its spectacular environment of coralligenous formations, the high knowledge of its biodiversity and an efficient management of activities.

## Physic features

The coastal line is characterized from the eastern end of the Promontory by a rocky spur of about 200 m. Several bays are present along the coast which are covered, in their inner part, by beaches formed by the deposits of small streams. Along the south coast, the Portofino Promontory is characterised by high rocky cliffs with calcareous clasts. On the contrary, on the two sides, the limestone of Mt. Antola outcrops with its stratified sedimentary rocks dominates.

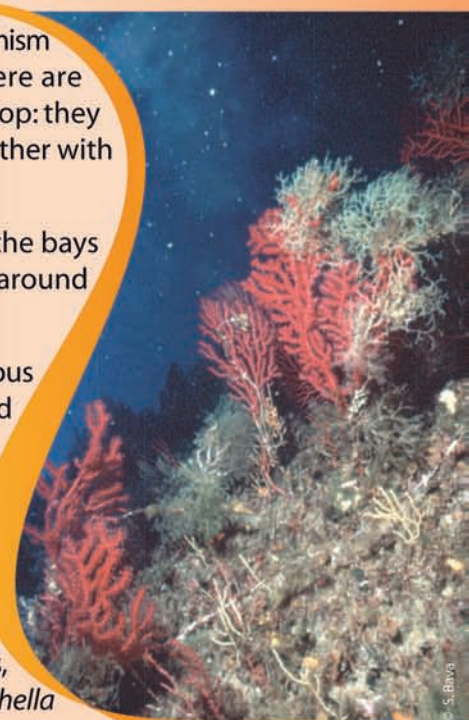
Underwater cliffs reach about 40-50 m depth and leave place to large rocks, then to partly biogenic sands and mud.

## Specificities and Importance

Immediately underlying tide area, a belt is formed by *Cystoseira spp.* where hydrodynamism is great and in the most sheltered points. In the coastal stretches where there are supplies of freshwater, the green algae *Enteromorpha spp.* and *Ulva spp.* develop: they are gauges of high concentrations of nourishing elements, and they grow together with the *Mytilus galloprovincialis*.

On the sandy seabed, there are the *Posidonia* beds, almost exclusively within the bays and along the sides of the Promontory. Sparse *Cymodocea nodosa* beds grow around the 10-15 m of depth in the sea.

Typical biocenoses of the southern slope of the Promontory are the precoralligenous characterised by *Eunicella singularis*, *Parazoanthus axinellae*, *Leptopsammia pruvoti* and *Cladocora caespitosa*, and the coralligenous with different facies characterized, according to the local conditions, by different species of horny corals (*Paramuricea clavata*, *Eunicella cavolinii*) and red coral (*Corallium rubrum*). Between the 20 and 45 meters of depth, coral colonies find the ideal conditions for their development and reach very high densities even if the dimensions remain reduced. The seabed is characterized near the coast by the gorgonian *Leptogorgia sarmentosa* forming sparse beds at about 15 m of depth. Beyond the 100 m, on modest rocky outcrops, the great hydroid *Lytocarpia myriophyllum* develops, accompanied by the *Antipathella subpinnata*, one of the few Mediterranean representatives of the Anthipatharia, to which the tropical black corals belong.



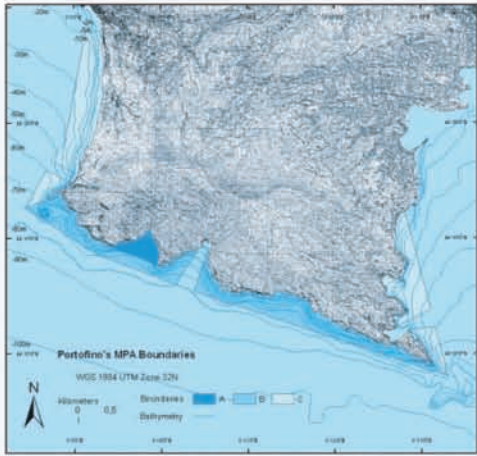
## Threats and pressures

The main danger comes from mass tourism taking in account that about 200,000 tourists can be present monthly in the summer.

Yachting activities seem have a strong impact mainly on coralligenous biocenosis, taking in account that a around the MPA 10,000 boat berths are available.

The diving activities are impressive: about 60,000 dive/year and 34 Diving Center have the permission to operate inside the MPA.

The Posidonia beds has also been seriously endangered by the dumping activity of earth material in the area of the Covo of the North-East, and although the dump has been idle for a long time, it does not seem possible to recover in a short time the damages it caused.



## Management

A "enforcement and organization regulations" was adopted with the establishment of the MPA.

The delimitation of the MPA Portofino is divided into the 3 areas:

- Zone A: No take zone
- Zone B: General Reserve where swimming, scuba diving, yachting and fishing activities are regulated
- Zone C: Partial Reserve where the transit and the diving are free and the sport fishing is checked.

The Portofino MPA staff is constituted by 7 members. The finance and the accounting activities of the MPA area are carried out according to the directives established.

A surveillance is assured during the summer by 2 seasonal wardens, helped by a staff from the University of Genoa, in monitoring research programs.

Portofino is a site with a high marine biodiversity: probably the highest of Italy. At the moment in the MPA several studies are carried out, on the biodiversity, some specific taxa, the structure and dynamics of benthic communities to evaluate the protection effect. Other researchs are conducted to study physical and chemical parameters at different level.

The educational level of the population living inside the MPA Portofino is high. The MPA Management has several projects regarding the education inside the primary and secondary school of the zone.





# Tavolara - Punta Coda Cavallo

Legal status	Marine Protected Area
Foundation year	1997
Foundation text	Ministerial Decree
Management body	Consortium of three littoral local administrations
Superficy	15091 ha
Management category (IUCN, 1994)	IV



## Territory

The MPA boundaries are delimited by Ceraso Cape, in the North, and Finocchio Creek, in the South including the Islands present in this zone (i.e. Tavolara, Molaro and Molarotto Rossa and Piana).



Tavolara-Punta Coda Cavallo has been a SPAMI since 2008 because it shelters some threatened species, holds archeology sites and has an effective management based on adapted regulations

## Physic features

The South part of the Island, is characterised by an almost level rocky line that divides two different sides: the Eastern side presents several pebbles inlets delimited by granitic rocks and the Western side forms a large sandy gulf that ends at the base of an high limestone cliff rich in conglomerates. The North and Western part of Tavolara Island, facing the open sea, is characterised by a hill whose base resembles a wide cone. Pink granular pegmatite constitutes the granitic basement and Pegmatite outcrops constitute the concave base. The Island is surrounded by active cliffs incised in limestone and dolomites. In the North and Eastern sector of the Island, more exposed to the wind and sea action, there are many caves and littoral arches. The submerged bottoms are characterised by isolated relieves.

## Specificities and Importance

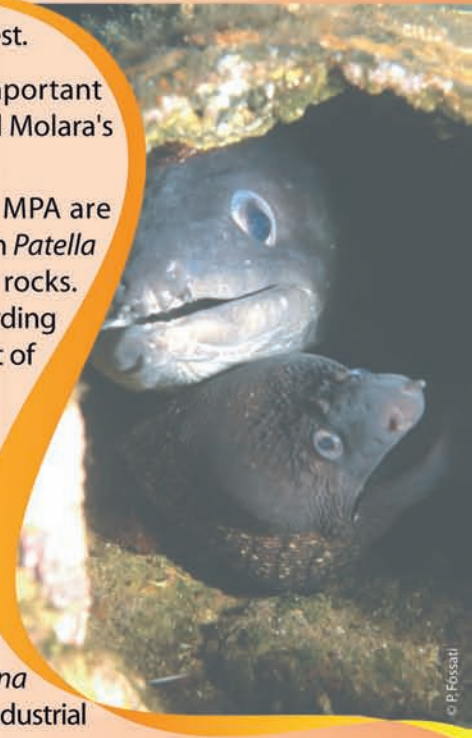
The terrestrial vegetation is very rich with 34 endemic species. Among the 34 endemic plants 7 create a particular biotope of high scientific interest.

The islands use to shelter important species of marine birds. (i.e. the most important colonies of mediterranean shearwater (*Puffinus yelkouan*) nests on Tavolara and Molaro's islands.)

The marine biocenosis of the lower mediolittoral rock present in Tavolara MPA are characterised by *Lithophyllum byssoides* bends, a coralline algae, associated with *Patella ferruginea*, the *Posidonia oceanica* meadows and the paleo-beaches or beach rocks. Deeper, the bottoms are populated by photophilic communities developed according to a light gradient. Brown, red and green algae create the base for the development of high biodiversity.

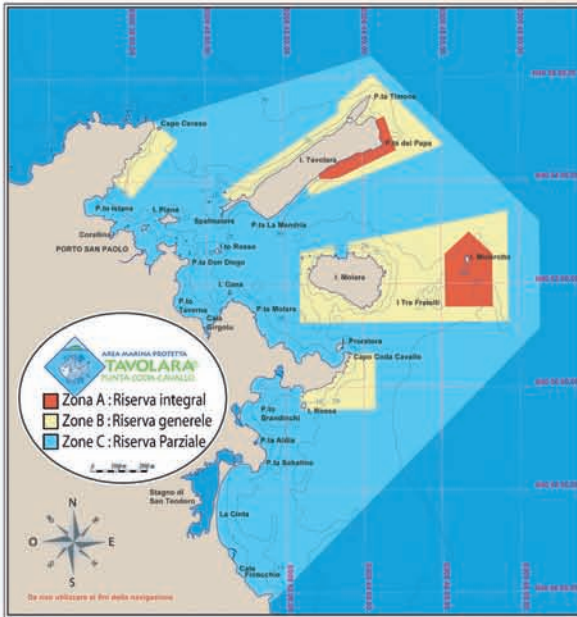
Among the benthos fauna, the big Mediterranean bivalve *Pinna nobilis* is well represented. The Mollusca distribution, resembling that found for the Liguria Sea with the presence of two Eolidi rather rare in the Mediterranean. Regarding the fish fauna young, *Epinephelus marginatus* individuals are common in the infralittoral while bigger individuals are mainly present in the circalittoral. The bottoms of Pope's point (Tavolara) and Arresto Point (Molaro) are rich in Gorgonians.

In the submerged cliffs it is common to find different fishes such as moray (*Muraena helena*), conger (*Conger conger*) and several groupers. Tavolara is considered a site of industrial archaeology because of the presence of lime furnaces of the 1800.



## Threats and pressures

The main exploitation activity of natural resources is represented by the fishery and the high human pressure during the summer related production of solid waste is the higher threat to the environment of the Island.



## Management

The Management Plan has been approved in 2006.

The delimitation of the MPA Tavolara as well as its division into the 3 areas:

- Zone A : no take zone
- Zone B : general reserve
- Zone C : partial reserve.

The staff is compounded by 14 members, supported by the help of the volunteers of the Marine Mammals Research Centre.

The MPA is annually financed by the Environmental Ministry and by the local administrations involved in the Management Body.

The surveillance service is present the whole year.

The scientific interest allowed a well knowledge on both terrestrial and marine parts. As a result, different maps of the area have been produced. Many monitoring programmes are led such as Monitoring of *Paracentrotus lividus* populations, Monitoring of the fishery, etc.

The MPA collaborates with the Institute of Marine Civilities concerning archaeological finds, and also with the Centre for the Recovery of Marine Mammals where an Info Point has been created to distribute information about the MPA and its rules.

Monitoring Projects and scientific researches are conducted with the collaboration of universities and national research centers.

The MPA promotes important actions of awareness and environmental education, addressed to the local communities and the visitors.



# Torre Guaceto

Legal status	Marine Protected Area and Natural reserve
Foundation year	1991
Foundation text	Interministerial decree
Management body	Consortium between the Municipalities of Brindisi and Carovigno and W.W.F
Superficy	2227 ha
Management category (IUCN, 1994)	IV



## Territory

The Marine Protected Area, falling within the municipalities of Brindisi and Carovigno, is about 8 km long from the zone of Apani till the littoral of Punta Penna Grossa.



Torre Guaceto has been a SPAMI since 2008 thanks to its habitats, most of which threatened, a good coordination which carries out efficient management measures.

## Physic features

The coastline is characterized, along the western sector, by a series of small subrectangular coves with pocket beaches. At East, the coast is mainly sandy, with reduced rocky formations and low rocks emerging right, characterized by a regular, sinuous coastline. The eastern coastal sector is incised by ten little valleys, some continuing underwater.

The emerged coast, is characterized by two primary grooves that generate two coastal coves. Numerous secondary grooves, can be detected in the whole submarine area, forming a late-pleistocenic hydrographic reticulum with parallel pattern. The marine bottoms are always characterised by the presence of two submarine cliffs, running parallel to the coast line, with a medium slope, whose physiognomy is articulated and presents a convexity.

## Specificities and Importance

The euryhaline, eurythermic, brackish water community is characterized by the presence of the marine phaneroga *Zostera noltii*.

The rocky midlittoral is characterised by the presence of red algae as *Laurencia* sp, and *Corallina elongata* and by a *Cystoserietum* that forms belts along the rocky littoral.

The rocky infralittoral is characterized by photophylous algae and by sea urchin barrens and encrusting alge accompanied by the few animal species that resist the grazing activity of sea urchins. *Posidonia oceanica* meadows are one of the most characteristic habitats of the sandy infralittoral. The intricate morphology of the meadows forms a series of microhabitats that provide both food and shelter to numerous organisms, from fish and crustaceans to sponges, bryozoans, hydroids, anthozoans and bivalve molluscs.

Some traits of precoralligenous formations, mostly localised in front of the Tower of Guaceto, at 15-17 meter depth, are characterised by patches of high density of gorgonians of the species *Eunicella cavolinii*, *E. singularis* and *E. seeranova*.



## Threats and pressures

The use of maritime national properties and adjacent areas present may impacts on natural resources such as: impact on aquatic populations deriving from the collection of coastal benthic organisms by visitors of the Reserve; impact on the abiotic compartment of the aquatic environment, etc.

Non controlled discharges of undetermined organic and inorganic pollutants have impact on the soil compartment of the coastal zone. Marine pollution due to the stranding of solid inorganic reject and to the organic charge that is transported along the littoral from the Northern Adriatic and from Albania due to winds and currents, cause their accumulation near the Promontory in the Zone A.

The invasive species *Caulerpa racemosa* is also very common.

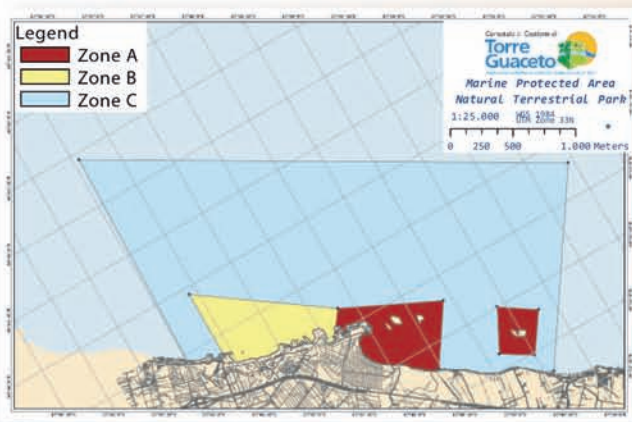


## Management

A management plan has been formulated by an expert team with the participation of institutions and stakeholders and was approved in 2002.

A zoning shares the MPA in 3 zones:

- Zone A: no-take zone
- Zone B: general Reserve, where fishing, harvesting; entry, sailing and approaching of all kinds of craft are forbidden
- Zone C: partial Reserve where fishing is allowed



11 members are involved in the MPA. The funding for the basic staff, protection and information measures are provided by the Environmental Ministry.

The management body of Torre Guaceto integrate the activity of surveillance of the national and local institutions with own personnel (five units). The adequacy of the surveillance and protection is very high, this is demonstrated by international scientific publication.

The knowledge of the MPA is high, considering the main ecological processes, habitat distribution, inventories of species and socio-economic factors. This is due to the numerous research programme that have been realized, with the production of the biocenotic map.

The programmes of environmental education envisage a fundamental relationship with the school system and the Reserve of Torre Guaceto, after years of continuous activity, is now an important benchmark for environmental education in the whole Apulia Region, being visited thousands of students every year.

Activities of environmental information, formation and education are parts of a wider regional strategy, since the Experience Centre of Torre Guaceto, located in the Visitors Centre at Serranova.



# PUNTA CAMPANELLA

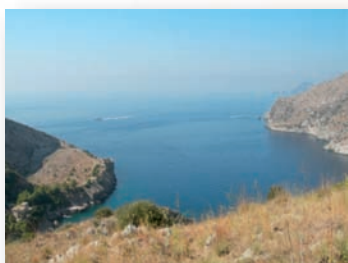
National status: Marine Protected Area  
Year of creation: 12 December 1997  
Founding text: Ministerial decree  
Management body: Italian Ministry of the Environment,  
Protection of the Territory and the Sea

Surface area: 1 549 ha  
Management category: IV  
(IUCN 1994)



## Territory

Extreme point of the Sorrento peninsula with its high coast, meets the sea between the Gulf of Naples and the Gulf of Salerno. A splendid view over Capri with its Faraglioni and the Bay of Leranto.



## Specificity and Importance

In the Punta Campanella MPA the typologies of the most curious marine biological communities can be summarized as follows:

- Biocenoses of hard sea beds, calcareous cliffs and caves
- Biocenoses of loose sea beds, coarse sand and organogenic gravel
- Posidonia oceanica* meadows

Most common are the biocenoses of the calcareous cliffs. They are characterized, but only in the first few meters under the sea (within 5 to 10 m), by photophilic communities, mainly algae which are well adapted to an exposed environment which is strongly sunlit and washed by the sea waves. The dominant plant is mainly the brown algae such as *Cystoseira spp.*

The most characteristic phenomenon is the presence, at a few meters deep, of sciaphile communities (biocenoses of Coralligenous) which are usually present at greater depths, on rocky beds at a depth of over 30 to 40 m. The main reason is the steep slope of the substrate which promotes the formation of semi-dark habitats.

The sciaphile assemblages (puzzle of communities) enrich the underwater scene. The plant organisms, still mostly red algae such as *Peyssonnelia spp.*, *Mesophyllum spp.* and *Jania rubens*, do not constitute the main element of the community. The dominant element is now represented by sessile animals such as the upright and encrusted sponges, Hydrozoa, Bryozoa, Anthozoa (*actinia*, sea anemones, madrepores, gorgonians) and *Annelida Serpulida*. Amongst the other surprising and important species from the biological viewpoint are *Astroides calycularis*, *Cladocora caespitosa* and more rarely *Leptosammia pruvoti* and *Parazoanthus axinellae*. In some areas it is possible to find spectacular walls covered with white gorgonians (*Eunicella singularis*), yellow gorgonians (*Eunicella cavallinii*) and red gorgonians (*Paramuricea clavata*).

The Punta Campanella MPA is one of the richest areas of the Mediterranean in terms of submarine caves. The submarine caves may harbor a great, interesting and rare range of very strange animals (such as *Halcampoides purpurea*, *Telmatactis forskali*, *Maasella edwardsi*, *Lysmata seticaudata*, *Plesionika narval*, *Oligopus ater*). The species are well adapted to the semi-darkness or total darkness such as the shrimps *Stenopus spinosus* and *Plesionika narval*.

The coarse organogenic sands and gravel are mainly at the bottom of the cliffs and in the strait of Bocca Piccola separating Punta Campanella from the island of Capri. These sands are inhabited by highly specific animal communities such as the community of Amphioxus (*Branchiostoma lanceolatum*) or, more rarely, calcareous red algae at a greater depth (*Melobesioideae*).

*Posidonia oceanica* does not form great meadows in the MPA because of the few loose and crumbly sea beds in the bathymetric zone between the surface and -30 m.

The Punta Campanella MPA has several species of fish and the most abundant are *anthias Anthias*, *chromis Chromis*, *julis Coris*, *Thalassosoma pavo*. Many rocky bottom fish are present such as the yellowbelly rockcod (*Epinephelus marginatus*), brown meagre (*Sciaena Umbra*), sea bream (*Diplodus spp.*), moray eel (*Muraena Hélène*) and the conger (*Conger conger*).

The Punta Campanella MPA has been a SPAMIs since 2009. It is one of the richest areas of the Mediterranean in terms of submarine caves which may harbor a great, interesting and rare range of very strange animals

## Physical characteristics

The coastal geomorphology of the Sorrento-Amalfi peninsula is very different from the contiguous volcanic and alluvial parts of the Gulfs of Naples and Salerno. It is characterized by steep calcareous cliffs plunging into the sea at a depth of over 30 – 40 m where the organogenic detrital sea beds extend up to a large muddy plain.

There are also differences between the coast of Sorrento overhanging the Gulf of Naples and the Amalfi coast overhanging the Gulf of Salerno. The cliffs of the former are not so high (approx. ten meters) with a relatively regular landscape due to phenomena of erosion whereas the latter has very high and steep cliffs (hundreds of meters) increasing progressively from the distal part to the proximal part of the peninsula. There are some exceptions to the general appearance of these cliffs mainly near the mouths of the streams. These areas are usually to be found in sheltered shallow small coastal creeks whose slopes are not so steep and the littoral is made up of small rocky or pebbly beaches with marine beds composed of accumulated sediments. The very high coastal slope has a tremendous influence on the organization of the benthic communities.



## Threats and Pressure

Despite the anthropogenic pressure on the MPA mainly due to nautical tourism, the benthic habitats, because of the geomorphological and hydrological particularities of the whole area, are in general well conserved. Habitats of great interest such as the submarine caves, coralligenous and rhodolites are in an optimal state of preservation.

The greatest threat for the marine environment is the great number of boats in the marine protected area or areas in the vicinity.



## Management

The Italian Ministry of the Environment, Protection of the Territory and the Sea is involved in the management of the MPA through a consortium of 6 municipal districts (Massa Lubrense, Sorrento, Piano di Sorrento, Sant'Agnello, Positano and Vico Equense ).

The mayors of the municipalities designate their representative to the Bureau of the Consortium Directors. The members of the Bureau of Directors designate, amongst themselves, the president of the MPA who then presides over the Bureau.

Each year the MPA president submits a management plan to the Ministry of the Environment for approval. The MPA is divided into 3 distinct areas with different levels of protection:

- A: Whole reserve
- B: General reserve
- C: Partial reserve
- 

The scientific commission represents an informal advisory body composed of scientists who submit proposals about the scientific programme and environmental follow-up.

An appropriate system of buoys demarcate the limits of the Reserve at sea and the different areas of the MPA. On land the limits of the MPA are demarcated as well. The Coast Guard watches over the MPA.

The Management Plan is prepared on the basis of financial estimations and previsions, taking into account the results of the follow-up activities and meetings with the decision-makers, the environmentalists and the police force ("Observatory on the Environment and Legality").

Each year the Ministry of the Environment and Management of the Territory contributes to the financing of the basic team, protection measures and information purposes.



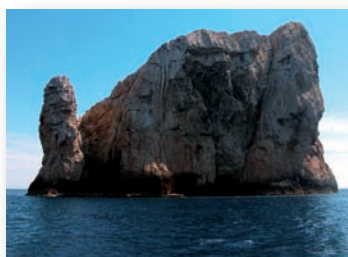
# CAPO CACCIA - ISOLA

National status :	Marine Protected Area
Year of Creation :	23 March 2003
Founding text:	Ministerial decree
Management body:	the Alghero municipality
Surface area:	2 631 ha
Management category:	IV (IUCN 1994)



## Territory

The Capo Caccia – Isola Piana marine protected area is on the north-west coast of Sardinia. The land frontiers are as follows: the Mesozoic calcareous cliffs of Capo Caccia to the west, the southern edge of the plain of central Nurra (Gulf of Porto Conte) and the calcareous cliffs of Punta Giglio and Capo Galera to the east.



## Specificity and Importance

The marine protected area has ecosystems which are specific to the Mediterranean (coralligenous, *Posidonia meadows*, *Lithophyllum byssoides* and habitats of endangered species (*Corallium rubrum*, *Pinna nobilis*, *Hydrobates pelagicus*) and is of particular scientific interest.

The flowering of *P. oceanica* in the Porto Conte bay coincides with the flowering noted in other sites of the Mediterranean. The shallow circalittoral level of this area is characterized by fine, homogenous sand and silt. The communities of the upper rocky infralittoral are dominated by calcareous red algae belonging to the genus *Jania* and *Corallina*. The assemblages of the medium part of the infralittoral level are well structured with photophile algae belonging to the families of the Dictyotaceae and Gelidiaceae. Deeper assemblages on the vertical or sub-vertical hard substrates are characterized by facies made up of *Halopteris*, *Dilophus* and various Corallinacea and other species such as *Codium bursa*, *Acetabularia acetabulum* and *Padina pavonica*.

Another well represented facies are the *Halimeda tuna* algae and several species of the *Peyssonelia* genus.

Fauna are rather rare in this area. The sponge *Crambe Cramb* is found easily as it prefers sunlit environments. *Spirastrella cunctatrix*, *Axinella verrucosa* and *Reniera crater* are also commonly found.

*Arbacia lixula* and *Paracentrotus lividus*, followed by order of importance by *Sphaerechinus granularis* and *Echinaster sepositus* the sea star, are the most common echinoderms.

The deeper assemblages are often dominated by *Petrosa ficiformis* in association with the nudibranch *Peltodoris atromaculata*, *Eunicella cavalinii*, *Leptopsammia pruvoti* and *Parazoanthus axinellae*. The other common sessile organisms are the polichaete *Serpula vermicularis*, *Sabella Bispira mariae*, the gastropod *Bolma rugosa*, the Bryozoan *Myriapora truncata*, *Sertella beaniana* and the tunicate *Halocynthia papillosa*.

Submarine caves are rather common and the external and central parts are in general colonized by sciaphile forms and sometimes dominated by recent small low density colonies of *Corallium rubrum* which is suggestive of a recent process of recolonisation.

the Capo caccia-Isola MPA has been a SPAMIs since 2009 due to the presence of ecosystems which are specific to the Mediterranean (coralligenous, *Posidonia meadows*, *Lithophyllum byssoides* and habitats of endangered species (*Corallium rubrum*, *Pinna nobilis*, *Hydrobates pelagicus*) and is of particular scientific interest.

## Physical characteristics

The Capo Caccia – Isola Piana marine protected area is characterized by Mesozoic calcareous cliffs on its higher peaks with Triassic and Cretaceous facies. In the Capo Caccia promontory are reminders of a strongly evolved continental paleomorphology such as hanging valleys and truncated sides. In general the forms of the relief have typical features of calcareous regions with non-existent drainage of surface waters. The main mediolittoral habitat is the formation composed of *Lithophyllum byssoides* and its development seems to be favoured by the limestone of the cliffs where the hydrodynamic and wind conditions are most intense.



## Threats and Pressure

The Capo Caccia MPA littoral with its alternating cliffs and sandy coasts is facing both natural threats and those of human origin. The present erosion of the coast was detected along the sandy coast mainly due to the dynamics of the waves and also the exploitation of the coast for tourism purposes. As for the rocky coast with its calcareous cliffs, the threat of erosion and landslides due to the precarious static conditions is quite evident in some areas.



## Management

The annual management plan is established by the MPA Management in line with the suggestions of the Committee and approval of the Alghero municipality.

The annual Management Plan is approved by the National Ministry of the Environment.

Surveillance is carried out by the national Coast Guards, police, forest wardens and the police force. Information boards have been set up in the Alghero port and in all the other marinas. The present protection could be deemed to be adequate in terms of the objectives of the MPA Declaration even if there are still some illegal activities going on.

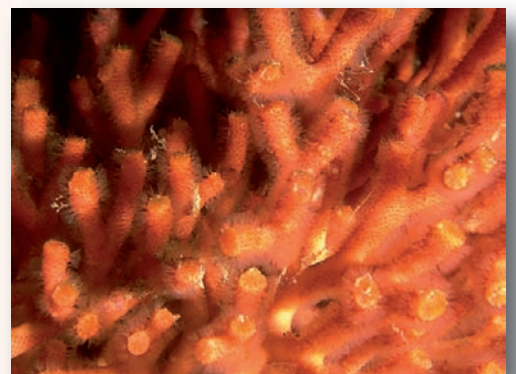
The laws in force and any subsequent sanctions are considered to be adequate to dissuade most of the offences but the MPA personnel is not authorized to impose any sanctions.

At present 10 persons are available for the following tasks:

- Chief manager
- Administration and secretariat, research
- Project development and coordination, support for information and surveillance of the MPA
- Boats and public relations support

Basic financing stems from an annual activity plan which is tied to the management plan.

Both are fine-tuned by the MPA director in line with the reservations and suggestions of the Committee and approval of the Ministry of the Environment.





# AL HOCEIMA

National status :	National park
Year of creation :	2004
Founding text:	Decree No. 2.04.781 of 8 October 2004
Management body:	High Commission for Water & Forests and combating desertification
Surface area:	48 460 ha
Management category:	II (IUCN 1994)



The Al Hoceima National Park was classified as a SPAMI in 2009 and this classification is justified due to the presence of numerous habitats and species of importance for the conservation of the Mediterranean biodiversity.

## Territory

The Al Hoceima National Park is on the Mediterranean side of Morocco, approx. 150 km to the east of the Straits of Gibraltar, to the west of the town of Al Hoceima. This is a marine and coastal protected area. The land surface area amounts to 28 860 ha and the marine area to 19 600 ha.



## Physical characteristics

Most of the Al Hoceima National Park covers the Bokkoya mountainous massif. To the north is the sea and the Mestassa valley to the west and to the south and the east it is limited by the watershed with the oued Rhis.

The maritime sides of the Bokkaya Massif are steep with rising cliffs which exceed 300 m in some places and which are made of carbonate material of the calcareous dorsal. Bays and beaches are relatively rare and the steep slopes are inaccessible. The extensions of this range form a basically calcareous sea bed and, along the protected coastline, there are caves and shallow submarine openings likely to form siphons.

The relief is imposing and tortuous with the shore made up of cliffs and caves and several islets and rocks. The seascape is characterized by a rocky sea bed, made up of fallen rocks and blocks of rock, crumbly sea beds and submarine cliffs in sub-vertical bands whose slope becomes less steep as it meets the loose sea bed at 40 - 45 meters. These cliffs are an attractive part of the landscape and have a remarkable biodiversity (fucal forests, coralligenous biocenoses etc.).

## Specificity and Importance

The Al Hoceima National Park is one of the main protected areas in the Mediterranean due to its biological richness. This is the only National Park on the Mediterranean coast of Morocco.

This area is of interest due to its closeness to the Atlantic which exerts a physical as well as a bio-ecological influence.

Avifauna: nesting of species of high heritage value such as the fish eagle, Audouin's gull and other emblematic species such as the golden eagle, Bonelli's eagle, imperial eagle and the long-legged buzzard.

There is a healthy forest cover with numerous Mediterranean ligneous species represented in the area and the *Barbary thuya* in particular.

The fucal forests and coralligenous biocenoses are well represented in this sector of the coast. There are also some caves which might be used by the monk seals.

The site has 42 species of heritage interest. They are represented by 12 species of algae, namely the three *Cystoseira*, *C. camentacea*, *C. elegans*, *C. zosteroides* and two laminarians: *Lochroleuca* and *L. rodriguezii*, 11 invertebrates *Astroides calycularis*, *Corallium rubrum*, *Charonia lampas* and *Patella ferruginea* and 19 vertebrates such as *Epinephelus marginatus*, *Caretta caretta*, *Dermochelys coriacea*, *Delphinus delphis*, *Stenella coeruleoalba*, *Tursiops truncatus*, and birds such as *Calonectris diomedea*, *Falco eleonora*, *Hydrobates pelagicus*, *Larus audouinii* and *Pandion haliaetus*.



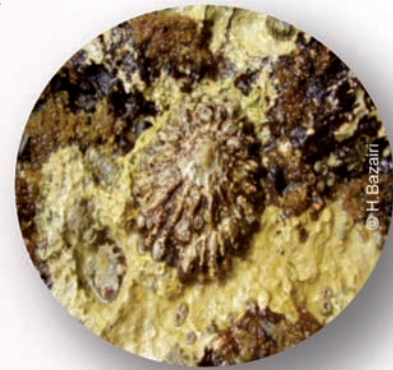
## Threats and Pressure

Urban pressure is very low in the National Park even if it seems to be getting stronger on the periphery because of the determined policy to open up and to promote socio-economic development based on tourism along the Kingdom's Mediterranean littoral in general and the littoral of the Al Hoceima Province in particular.

Pressure on sea resources is still perceptible leading to conflicts between the traditional fishermen and industrial fishing. The impact of illegal fishing practices is perceptible on the habitats and the biodiversity. The spawning grounds and sea resources have suffered a lot of damage because of this.

Other external factors exert their influence or constitute a risk for the Park's coastal environment such as hydrocarbon pollution from the fishing boats of Al Hoceima and Cala Iris due to tourism and the risks of a major accident on the International Maritime Route Gibraltar – Suez Canal in view of the unfavourable wind which could directly affect the integrity of the national Park's littoral and its maritime side.

Particular attention should be paid to the great development works and the impact they could have because of increased turbidity due to additional sediments brought in due to the excavations.



## Management

The national Park has two management plans; one management plan from 1993 for the land and marine components and a second plan elaborated in 2004 by RAC/SPA within the framework of the MEDMPA project which made it possible to update the management challenges pertaining to the marine aspect.

There is zoning and regulation in the national park for the land and marine areas. The Park's land area is demarcated physically.

The National Park administration consists of a director, an office technician, two field technicians and two guards. The management team has the necessary equipment for control purposes.

The conservation and development programme-project of the Al Hoceima National Park adopted by the High Commission of Water and Forests and combating desertification (2007 -2010 ) aims to strengthen the capacity of the management unit of the national Park in terms of human resources and equipment.

Cooperation programmes with international bodies aim to initiate, amongst other things, training programmes for the Park's personnel. The actions are mainly supported by financing from foreign donors.

The National Park has established sound partnerships with international NGOs and works with a network of very active local associations providing socio-economic support for conservation measures.

The draft law for protected areas should considerably strengthen the institutional and legal basis for this protected coastal and marine area and impart a new management impetus in line with the conservation challenges.



# Alborán

Legal status	Natural Park and Marine Reserve
Foundation year	2003
Foundation text	Law n° 3/2003
Management body	Department for the Environment of the Andalusian Regional Government Ministry of the Environment, and Rural and Marine Affairs, Government of Spain
Superficy	26500 ha
Management category (IUCN, 1994)	IV



## Territory

Alborán island is located halfway between the coast of Melilla in North Africa and Almería, in south-eastern Spain. In addition to the main island, to the northeast, there is the island of Nubes. It is a rocky island separated from Alborán by the Morenas Channel.



Alborán Island has been a SPAMI since 2003 because it is an important resting place in the migration of diverse groups of wildlife, such as fish, marine reptiles, birds and marine mammals.

## Physical features

Alborán island is of volcanic origin and is formed mainly by andesites. Its average height is 15 meters above sea level. The part above the water is flat, contrasting with the irregularity of the part below the water. The coast is formed by cliffs that are 10 to 12 meters high, around almost the entire perimeter of the island, with only two little beaches. The seabed is rocky, forming lined structures like dykes where sediments and remains of echinoderm, red algae and molluscs are deposited.

## Specificities and Importance

The area shows several interesting marine habitats, complex ecosystems and a high biodiversity as a result of the interaction between the cold Atlantic and warm Mediterranean waters.

Because the lack of phanerogams, algae have become the genuine owners of the seabed. Brown algae such as *Cystoseira*, *Laminaria* and *Saccorhiza* are dominant in vegetal communities. However red algae such as *Predaea pusilla* var. *alboranensis* are also present. *Diplotaxis siettiana* which is critically endangered under IUCN Criteria should be mentioned between the terrestrial plant species in the island.

Apart from cetaceans and marine turtles migrating and feeding through the Alborán sea, marine fauna is mainly represented by invertebrates such as red and orange corals, sponges and sea worms. Aoudouin's Seagull nesting area in the area is also important for wildlife conservation.

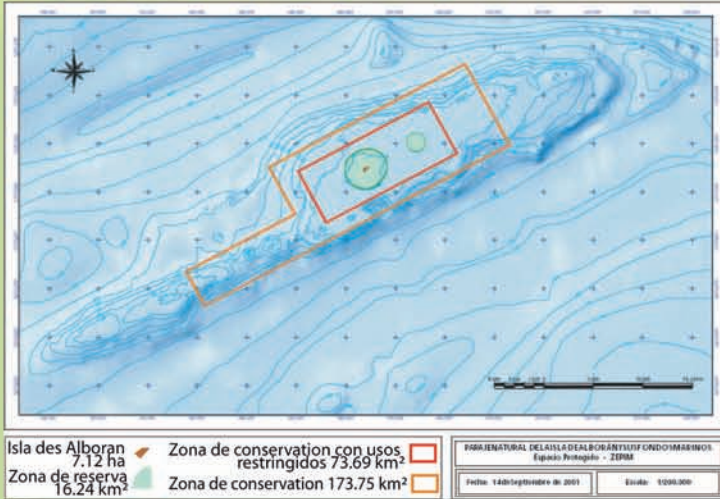
The biological richness of this area is responsible for the high interest in the exploitation of commercial fishes and prawns.



## Threats and pressures

The main dangers come from commercial overfishing and illegal sports fishing. Drag fishing affects the red prawn populations and similarly the fishing of red coral affects its capacity to regenerate. These problems are a consequence of a permanent human presence in such a small area.

Finally, it is worth mentioning the growth of underwater sports fishing, which puts a lot of pressure on certain species.



## Management

Legal protection allows the management and basic regulation of natural resources and activities in this area.

Demarcation of Alborán area is not simple because of the different remits of legal bodies for its conservation.

First, as a Marine Reserve for Fisheries, there are three zones:

- (a) Marine Reserve – no activities allowed ;
- (b) Protected Zone – no fishing allowed ;
- (c) Fish Reserve – controlled fishing.

Additionally, regional jurisdiction covers other supervised activities in the area. Both legal bodies are complementary and successfully implement conservation protection.

The funding for this protection comes from the Department for the Environment of the Andalusian Regional Government, and the General Secretariat of the Sea (Ministry of the Environment, and Rural and Marine Affairs of the Government of Spain).

The area is also use for scientific research. Scientific support is given by Almería, Granada and Málaga Universities and the Higher Council for Scientific Research (CSIC) in Spain, as well as the Aula del Mar, a NGO in Málaga.



# Cabo Gata-Nijar

Legal status	Natural Park and Marine Reserve
Foundation year	1987 and 1995
Foundation text	Decreet n° 31/1987 and Order 3 July 1995
Management body	Protected Areas and Environmental Services, Environment Council of the Assembly of Andalucia
Superficy	38000ha
Management category (IUCN, 1994)	V



## Territory

The Cabo de Gata – Nijar is located in the southeastern limit of the province of Almeria. It covers a territory of 38,000 ha and one nautical mile (12,000 ha.) starting from the coastline (about 45 km long).



Cabo de Gata – Nijar has been a SPAMI since 2001 thanks to the presence of endemic habitats and species, both on land and in the sea.

## Physical features

Cabo de Gata – Nijar is a natural space with structural and biological complexity, since it extends from the ocean floor to coastal mountains of a volcanic origin, passing through wetlands and coastal areas. The particular geological formation enabled to formation of one of the most unique Volcanic Complexes in Europe. Domes, volcanic taps (extracted slowly like a mantle), chimneys, furnaces and pyroclastic rocks (produced by brusque explosions that threw material that was later deposited in beds or layers due to the effect of gravity) are the most characteristic mechanisms of the formation of this rock complex.

The relief of the space is hilly in its interior and very abrupt on the coast, essentially with many cliffs.

## Specificities and Importance

The zone is one of the most peculiar floral units in the entire Peninsula. The scarce annual rainfall explains the abundance of ephemeral annual plants. Among the underbrush there appear some very singular elements in the European context and 8 different endemic elements.

The great diversity of terrestrial fauna is presented in direct relation with the great quantity of environments in this space, with the most notable being the presence of the *Testudo graeca* and impressive bird communities associated with the steppe formations.

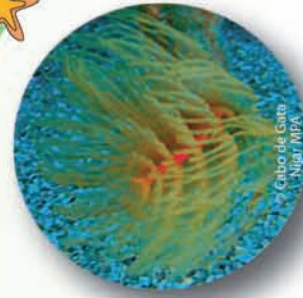
The principal marine species correspond to phanerogams of a great ecological interest such as *Posidonia oceanica* or *Cymodocea nodosa*, as well as the communities of brown and red algae with *Cystoseira* spp., *Lythophyllum incrustans*, *Janica rubens*, *Corallina granifera*, *Mesophyllum lichenoides*, *Spongites notarisii*, as the most representative species or indicators of quality.

The most marine notable are the communities on the soft, rocky sea floor in their distinct levels or bands (*Astroides calycularis*, *Pinna nobilis*, *Scyllarides latus* or *Epinephelus marginatus*), though there also exist species that are live in the sea such as sea turtles (*Caretta caretta*) and the marine mammals.

Among the sea floor communities there are some important species in danger of extinction or that have reduced the area such as some emblematic fishes and crustaceans.

## Threats and pressures

The main exploitation of natural resources is the commercial fishing industry with 280 small scale boats, and of these 80 are of a traditional style. In the past the mining activity has been important here, but currently there is only one exploitation of clay.



## Management

The regulation approved under the Natural Resources Organisation Plan and the Governing Plan for use and Management is permitting managing of the natural resources and a regulation of the activities of the Natural Park.

The zoning prospect for the Natural Park takes into account various zones: 4 grade zones on the land and 2 grade zones at the sea: integral reserve and a marine reserve where some activities are permitted and others prohibited.

The existing personnel ( 8 permanent members) in the central offices are working to realise the objectives of protection and conservation of the resources. The number of guards is the minimum necessary to comply with the objectives. The main financing for the Natural Park comes from the Regional Environmental Ministry, the Autonomous Andalusian Government and for the Marine Reserve, from the Ministry of the Environment and Rural and Marine Affairs.

A guard system of the Natural Park and the Marine reserve maintains the land and the sea portion of the area under surveillance.



The Environmental Ministry of the Regional Andalusian Government is carrying out individual programmes in relation with education and awareness of the value of nature, scientific collaboration for the study of sensible zones and protected species, and organizes one-day and multi-day courses for the training of environmental monitors.

# Cabrera archipelago

Legal status

National parc

Foundation year

1991

Foundation text

Law n°14/1991

Management body

Department of Environment of the Balearic Islands, Regional Government and the Ministry of the Environment, and Rural and Marine Affairs

Superficy

10021ha

Management category

II

(IUCN, 1994)



## Territory



Cabrera is a small archipelago, compounded with 19 islets, situated to the south of Majorca (Balearic Islands). The main islands are Cabrera Gran (1118 ha) and Conillera (137 ha) with a subset of 17 rocky islets of variable size, ranging from 0.1 ha (Illot de l'Olló) to 10.7 ha. Islands and islets are aligned approximately in a NE to SW direction. Cabrera is the only uninhabited archipelago of its size in the western Mediterranean,



Cabrera archipelago has been a SPAMI since 2003 thanks to its richness in marine birds, fauna and flora and its endemics species



## Physical features

The waters of the Archipelago are characterised by their oligotrophy, accentuated by the low continental influence, and in consequence by an elevated transparency. The bottoms are very heterogeneous. The maximum depth in the protected marine zone reaches 110 m.

Cliff morphologies are dominant in the shores of Cabrera, ranging from very high rocky cliffs to complex and stepped ones. Cliffs higher than 50 m are common. Sea caves, either aerial or submarine are frequent and spectacular in some cases.

## Specificities and Importance



The landscape of Cabrera is dominated by two main shrublands communities: a littoral *màquia* with the prevalence of sclerophyllus bushes, and a shrubland dominated by malacophyllus bushes with an arboreal stratum in some areas.

Close to the sea, there is a continuum belt of halonitrophilous vegetation. The calcareous cliffs are rich in crevices that host remarkable communities with some endemics. Nearly 500 of terrestrial vascular plants are present, including 30 endemic taxa.

Cabrera is the main site for seabirds and sea-cliff raptors in the Balearic Islands, hosting breeding populations of all the species that can be found in the western Mediterranean, with remarkable numbers of breeding pairs. The archipelago hosts 80% of the world population of the endemic Balearic lizard (*Podarcis lilfordi*) a population splitted into several subspecies. Aracnids are rich in species and two coleoptera are endemics of the archipelago.

The marine biota has 455 species Diatoms, Macroalgae and Seagrasses and 951 metazoans. The Archipelago is outstanding for its extraordinarily diverse fish assemblage. The great abundance of the thermophilic decapod crustacean *Scyllarides latus* is also remarkable. Anchialine cave fauna is noteworthy, with up to 8 endemic species exclusive of the archipelago.



## Threats and Pressures

The potential human impacts on the site derive from the activity of a fishery fleet based on the near ports of Mallorca and from the visitors.

Only traditional artisan selective fishing (gill nets, line) is allowed and professional fishing is accepted and integrated in the park's management objectives

On 2001, the Park received 60.000 visitors. The regime of visits is very seasonal, 50% of total visitors concentrating on July-August. Landing is very restricted and only permitted around Cabrera's harbour



## Management

A management plan was established in 1995 and a new one is used since 2003. Nowadays, a new one is expected in few months.

Like every Spanish National Parc, Cabrera defines four different areas for zonification:

- Reserves (no public use at all, only management and scientific activities allowed)
- Special use areas (buildings and paths connecting them)
- Restricted use areas (public use allowed with strict limitations)
- Moderate use areas (public use allowed with limitations and regulations).

The staff is compounded by 21 permanent members and more others for reinforcing in summer time.

Basic financing is ensured by means of budget from the Spanish National Park Authority (Ministry of the Environment, and Rural and Marine Affairs).

Cabrera is the ordinary research playground for the major biodiversity research laboratories of either the Balearic Islands (i.e., IMEDEA (CSIC), Spanish Oceanographic Institute (IEO) and the University of the Balearic Islands) and Catalonia (CEAB, ICM and University of Barcelona). Seven scientists of these laboratories spend a significant proportion of their time on this research at present.

The park carries out and finances an educational program called Discover Cabrera. Since 1991, a total of 32982 students have visited the park by means of this project, but also to social groups and collectives of particular interest: third age, special educational centers, youth clubs, etc.





# Columbretes

Legal status	Marine reserve
Foundation year	1990
Foundation text	Ministerial order of april 1990
Management body	Secretaria General del Mar
Superficy	4450 ha
Management category (IUCN, 1994)	IV



## Territory



The Columbretes Islands are located 30 miles off the coast of Catello. This is a small archipelago, composed by f groups of islets, L'Illa Grossa, LaForadada, La Ferrera & El Carallot, 30 nautic miles off the coast of Castellón.

The sea around the islands protects up to 122 Km<sup>2</sup>.



© J.M. Dalmau

Columbretes Island has been a SPAMI since 2001 thanks to the presence of terrestrial endemics, the importance of shelter both to benthic and pelagic species and its educational programmes.



## Physical features

The Columbretes Islands are of volcanic origin. They rise over the continental platform from the sea bottom 80-90 m depth in form of submerged reefs and emerged islands. This volcanic field is considered as one of the scarce examples of Quaternary vulcanism in the continental shelf of the Mediterranean.

The sea around Columbretes islands is quiet rocky with caves and volcanic structures. The submerged reefs cover 5.000 ha, with platforms, pithons and underwater caves.



## Specificities and Importance

Mediterranean infralitoral and circalitoral communities are well represented and preserved in the Columbretes Island Marine reserve. *Cymodocea nodosa* meadows occur around parts of La Ferrera, La Foradada and El Carallot islets.

Hard substratum communities, ranging from photophylic algal communities to coralligenous assemblages, are present around the four main islets groups, as well as in rocky submerged banks. Maërl beds cover most of the deep substrata in the Columbretes archipelago.

Many fragile species and communities are present in this area. Deep algae communities (*Cystoseira spp.* and *Laminaria rogriguezii*) are well developed in the bottoms surrounding the islands. Significant *Pinna nobilis* and *Pinna rudis* populations are distributed in the *Cymodocea nodosa* meadows, maërl beds and rocky substrate. Fragile benthic colonial cnidarians such as *Cladocora caespitosa* and *Paramuricea clavata* have developed important facies in the Columbretes sea bottom. And fish assemblages, scarce in Mediterranean waters, have an important presence in these waters.

Turtles (*Caretta caretta*) and cetaceans (i.e. *Tursiops truncatus*) are present in the Marine Reserve. In the last 10 years over 1750 individuals of five cetacean species have been recorded.

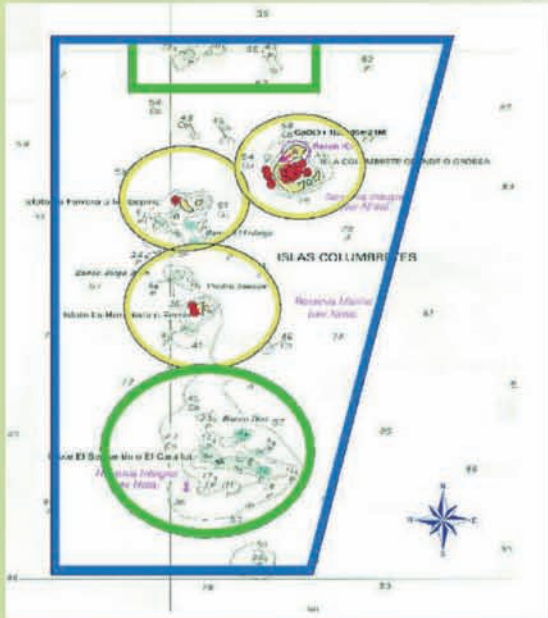


D.K. Medisina Reserva Marina

## Threats and pressures

Restrictions in activities and uses in the Marine Reserve waters are essential to grant an efficient protection of this location. The main activities attached to these limitations are scuba diving and recreational fishing.

Commercial fisheries take place in the Marine Reserve outer boundaries, taking advantage of the spillover effect of the protected area.



## Management

Since 1994 Management Plan is in force. The management plan concerns only the terrestrial part, the marine part is elaborating.

The terrestrial zoning offers 1% of the total emerged land for public use.

The Marine reserve special protection areas cover 2676 ha, including 2 Integral Marine Reserve and 3 Zones of Restricted Uses.

The staff is basically adequate with 8 permanent members.

Basic financing ensured through cooperation protocol between Regional Environmental Authority and Ministry of Agriculture, Fisheries.

Vigilance in the Marine reserve is granted by 2 warden teams working and living in the islands in 15 days shifts. Scientific and management activities are supported by 2 persons in the Marine Reserve offices in Castellon.

Thanks to the protection granted by the Marine Reserve, Columbretes Islands are nowadays a reference of well preserved Mediterranean habitats, making this little archipelago a very interesting site for marine scientific research. Scientific activities are supported by Columbretes Reserve wardens and a marine biologist. The Marine reserve is outfitted with oceanographic instruments, a ROV and a pneumatic boat for marine surveys.

The main Island, L'Illa Grossa, is equipped with a building which includes the wardens and scientific staff housing and laboratory, although in the near future the restored lighthouse of L'Illa Grossa will offer improved accommodations and laboratories.

Scientific collaboration with scientific organizations such as the Instituto Espanol de Oceanografia (I.E.O.), Consejo Superior de Investigaciones Cientificas (C.S.I.C) and many spanish Universities, is crucial in developing the previous monitoring studies.

Columbretes Information Centre, located in Castellón coast, offers educational programmes and exhibition to 20.000 visitors/year.

A snorkel itinerary is trying to be implemented in summer.



# Cap de Creus

Legal status	Nature park
Foundation year	1998
Foundation text	Regional law no. 4-98
Management body	Cap de Creus Nature Park public institution
Superficy	13824 ha
Management category (IUCN, 1994)	VI



## Territory

The Cap de Creus Nature Park is part of the Cap de Creus peninsula, which constitutes the easternmost tip of the Pyrenean mountain chain and the easternmost point of the Iberian peninsula. It is entirely located in Girona province and the Catalonia region.



Cap de Creus has been a SPAMI since 2001 because of its remarkable faunistic and floristic richness and its being enclosed, and is one of the most productive in the whole Mediterranean.

## Physical features

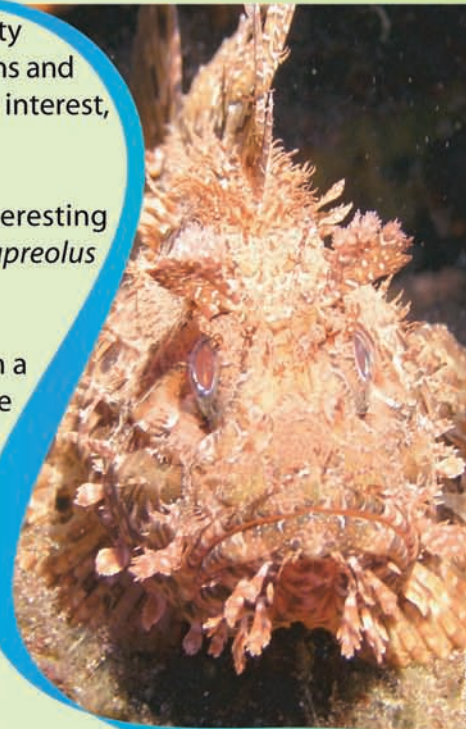
Cap de Creus forms a length of rocky coast that is high and steep, made up of Cambrian-Ordovician dark schist cut into by cliffs and with a number of inlets and outlets. Generally speaking, the coast is subject to strong dynamic pressure from the sea. Added to the diversity of this fairly mountainous and high place is a system of valleys forming a complex hydrographical network. The Cap de Creus area offers a very complete sequence of old rocks subject to a regional type of metamorphism.

## Specificities and Importance

The Cap de Creus peninsula offers an enormous diversity and striking peculiarity of plant communities and landscapes. Mediterranean forests, shrubby populations and dry meadows occupy much of the peninsula. The coastal fringe presents most interest, with the presence of some remarkable endemic plants.

The bird community is extremely varied and the nature park has rich and interesting mammal populations such as the stone marten (*Martes foina*) and the roe (*Capreolus capreolus*).

Out at sea, the vegetation is composed of coastal and benthic populations with a great diversity of species in good conservation condition. The biocenoses are important for their presence in the phanerogam meadows or prairies (*Posidonia oceanica*, *Cymodocea nodosa* and *Zostera noltii*), as well as those on hard substrata, and host a large number of invertebrate species like the spiny lobster (*Palinurus elephas*), the red coral (*Corallium rubrum*) and the red gorgonian (*Paramuricea clavata*). The Cap de Creus seabed has a great abundance and diversity of western Mediterranean species of fishes and marine mammals, such as the red scorpion fish (*Scorpaenopsis diabolus*), the corb (*Sciaena umbra*) and the striped dolphin (*Stenella coeruleoalba*).



## Threats and pressures

Conservation of the physical environment is affected by erosion due to the urbanisation of the territory, the abandoning of cultivated land and the great number of fires. Many piles of detritus, small-scale work, and movement of earth also change the environment.

Forest fires are among the main agents that have shaped Cap de Creus's current landscape, these fires occurring very frequently in the summer period.

Out at sea, pleasure boats very frequently anchor over Posidonia meadows and this is a major cause of impact on this protected plant.

Sport fishing is an activity that has an impact because of the great number of fishermen who use several fishing techniques (fishing from boats, boatless fishing and underwater



fishing and underwater

## Management

A Management Plan for the whole Nature Park was approved in 2006, but a management plan that specifically concerns the marine part is in the process of being crafted, and will set out measures for the various marine protected areas (partial reserve, integral reserve, park).

The team is made up of 10 permanent staff and, because of its agreements, the Park can count on about 10 people during the summer season to monitor and inform users about the Nature Park *in situ*.

The Cap de Creus Nature Park is funded by the Environment Department of the Catalonia Generalitat.

The area is patrolled by the Rural Police Service (Environment Department) and by the Guardia Civil out at sea. Rescue services are also most important.

Permanent anchorage was provided in the coves that were most frequented and for the diving centres' boats.

Management of Cap de Creus has been made effective through involving and collaborating with the local administrations.

There are currently two public information centres: Palau de l'Albat (the St. Pere de Rhodes Monastery) and the Cap de Creus Lighthouse (Cadaqués).



# Levante de Almeria

Legal status	Site of Community Importance, including several Natural Monument
Foundation year	1999
Foundation text	Regional Decree n°225/1999
Management body	General Directorate of Natural Protected Areas and Environmental Services of Andalucía
Superficy	6313,5 ha
Management category (IUCN, 1994)	VI



## Territory

This space is found in the northeast of the province of Almeria, and constitutes a wide band of marine area of some 50 km long distributed parallel to the coast. It is totally submerged under the seawater with the exception of two small islands: the island of San Juan de los Terreros measuring 1.1 ha and Isla Negra of 0.6 ha.



Fondos Marinos del Levante Almeriense has been a SPAMI since 2001 because it presents a high grade of naturalness over a very significant surface, thanks to the enormous development and extension of the *Posidonia oceanica* beds and the recent presence of the sea turtle.

## Physical features

The surroundings of the zone present three large units: basin that collects the Quaternary materials between Vera and Cuevas de Almanzora, and finally some mountain reliefs from the tertiary period corresponding to the Alpujarride mantle in the northern most part of the area. The sea bottoms closest to the coast are for the most part sandy, though some rocky bottoms are found, which have a volcanic origin, in the meridian portion of the area. The farthest bottoms from the coast are made up predominately of mud.

## Specificities and importance

The terrestrial flora is all included in the framework of typical specimens in the biogeography of Murcia and Almeria, which due to its climatic and geological characteristics is one of the spots with the most unique flora in the entire Peninsula. The scarcity of annual rainfall is the main factor that explains the abundance of ephemeral annual plants with two endemic species

The most significant elements in the terrestrial areas are the colonies of marine birds that nest in the two islands in the north of the space. Among the most representative species are *Calonectris diomedea*, *Hydrobates pelagicus*, *Egretta garzetta* and *Bubulcus ibis* that nest in the zone, as well as *Larus audouinii*, or *Phalacrocorax aristotelis*, that use the zone as a resting and feeding point.

At the sea, the principal species corresponds to seagrass of great ecological interest such as *Posidonia oceanica* and *Cymodocea nodosa*, as well as communities of brown algae with *Cystoseira mediterranea* as the most representative species or quality indicator. Other important species are *Pinna nobilis*, *Asterina pancerii*, *Dendropoma petraeum* and *Centrostephanus longispinus*.

The variety of environments and types of soil that appear in the marine medium is in direct relation with benthic communities with soft bottoms, rocky floors in their different kings, and extensive seagrass beds. There also exist notable swimming species among which *Caretta caretta*.



## Threats and Pressures

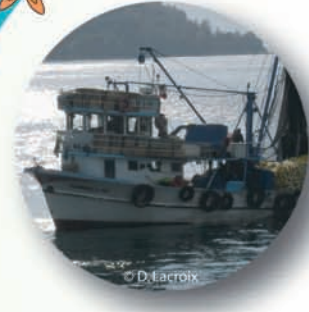


The principle impacts come from an excessive pressure from commercial fishing and illegal sport fishing. Trawling fisheries, is altering the dynamic of the marine ecosystem in the zone.

The main exploitation of natural resources is the commercial fishing industry with small scale boats, and of these a large number are of a traditional style.

It is worth mentioning the intensification of underwater sport fishing, which is provoking a great pressure on some species, in particular grouper (*Epinephelus spp.*).

The marine medium has pollution due to spills of industrial waters in just one point of the entire zone.



## Management

A Management Plan was adopted in 2005

The main financing comes from the Regional Environmental Department, of the Andalusian Autonomous that covers all aspects of personnel, vigilance, research, species conservation, information, value diffusion.

In the case of illegal fishing activities, the zone is under vigilance by State authorities of the Ministry of Environment, and Rural and Marine Affairs.

Exhaustive catalogues of the marine medium of the zone exist, as well as a knowledge and cartography of the principle habitats and species that characterise them, especially the beds of *Posidonia oceanica*, that dominate in the zone.



# Mar Menor



**Legal status** Sites of Community Importance, including Protected Landscapes and a Marine Reserve

**Foundation year** 1992 (Protected Areas and 1995 (Marine Reserve)

**Foundation text** Law n° 4/1992, Decree 15/1995 (31-3-1995) and Order 22-6-1995

**Management body** Department of Sustainable Development and Planning of Murcia regional Government, and the Ministry of the Environment, and Rural and Marine Affairs

**Superficy** 27500 ha

## Territory



The area is located in the Southeast of the Region of Murcia, limiting in its Northern end with the province of Alicante. Toward the East and the South embraces a portion of the submerged coastal fringe, as well as the Hormigas, Grosa and Farallón Islands.

The western limit follows the shore line of the Mar Menor interior lagoon, incorporating three wetlands area.

The Southern limit includes the submerged coast fringe between Palos Cape and Negrete Cape.



Mar Menor and oriental Mediterranean zone of the Murcia Region Coast has been SPAMI since 2001 thanks to the great *Posidonia oceanica* meadows, the high population of aquatic birds and the ecosystem of the considerable lagoon.



## Physical features

The geomorphology of the area has been due fundamentally to the volcanic and sedimentary processes that gave origin to the sandy bar of La Manga, and the biggest interior lagoon in Spain (Mar Menor). Associated to the lagoon there are coastal salt marshes, salt flats (salt steppes) and some volcanic mountains. The morphology of the coast is shallow (6.5 m. maxi). The south coast is characterized by an alternation between rocky (sea) cliffs and small creeks and beaches. The submarine coast registers the same heterogeneity.

## Specificities and Importance

The zone presents a high number of terrestrial habitats. It is presented in the area the unique "sabinar of dunes" (*Juniperus turbinata*) of the Region, which is not very abundant in the rest of the Iberian Peninsula.

It is presented vegetation of salt environment in a good conservation state and a great variety of communities characteristic of shoreline dunes.

The ecosystem of the lagoon is unique in the western Mediterranean coast. It is the biggest interior lagoon in the western Mediterranean coast and presents environmental conditions different of the Mediterranean Sea.

The area is an important area for aquatic birds, Isla Grosa is a very important colony in the world of *Larus audouinii*.

The seagrass *Posidonia oceanica* covers approximately 8 400 ha.

There are a lot of marine invertebrates and other important species like *Caretta caretta* and *Tursiops truncatus*.

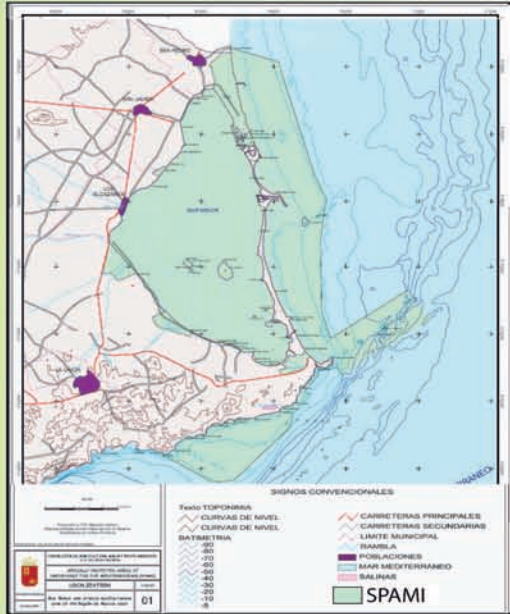


## Threats and pressures



The main threats on the natural resources of the area come from the exterior, fundamentally around the zone, especially for the modification and intensification of cultivation practices and touristic uses.

A second threat on the natural resources is the abandonment of traditional extensive land uses of the area.



## Management

At the moment, doesn't exist a common Management Plan for the whole area, but a draft is available.

Protection, planning and/or ordering measures at the present time, come from Salinas y Arenales de San Pedro del Pinatar Regional Park and Espacios Abiertos e Islas del Mar Menor Natural Site.

The basic financing comes from own resources of the Regional Government of the Murcia Region, and the Ministry of the Environment and Rural and Marine Affairs for the external waters of the Marine reserve..

The surveillance of the area are carried out for the Regional Government in land area and the Government of Spain in marine area.



In the area, academic and investigators activities are developed (mainly of the University of Murcia).

There are volunteer programmes and non-governmental organisations activities related to investigation and monitoring



# Maro-Cerro Gordo

Legal status	Natural Area
Foundation year	1989
Foundation text	Act 2/1989
Management body	Ministry of Environment and Ministry of Agriculture, Fisheries and Food
Superficie	1814.685 ha



## Territory



Acantilados de Maro-Cerro Gordo Natural Place is located at the Southern border between the provinces of Málaga and Granada. It is a narrow strip of 12 Km length along the coastline, extended 1 nautical mile from coast into the Alborán Sea.



Acantilados de Maro-Cerro Gordo has been a SPAMI since 2003 thanks to the singularity of its coastal landscape and great environmental importance worthy of the highest degree of protection.



## Physical features

Strong swell causes a recurrent marine erosion, and that has sculpted the current cliffs and coves landscape. Cliffs contain by a strip of rocky materials from erosion and collapse, and it is formed a narrow strip extended along the shore to 10 m depth. Beaches are limited to the less exposed areas, or in the case they are embedded by all sides; this kind of beach is characterised by pebbles and coarse sand as well as by steep slopes. The most important geological features in the formation of landscape have been caused by the sea effect and superficial waters, as well as the type of material.

## Specificities and Importance



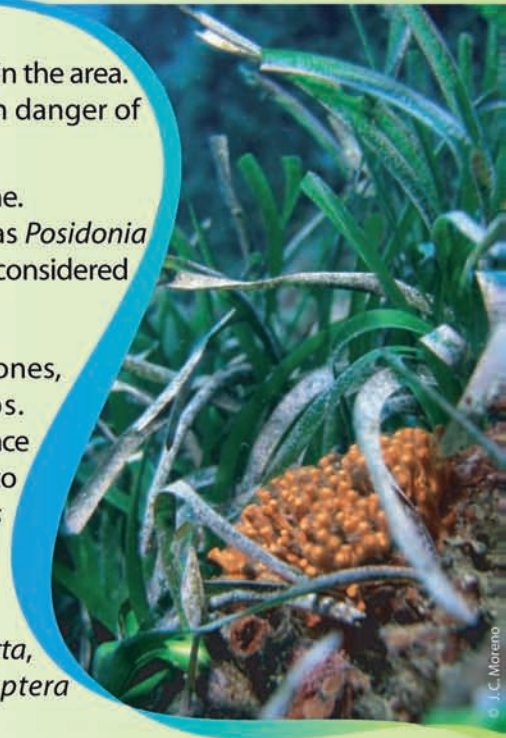
The terrestrial flora of the area is diverse.

As fauna is concerned, there is a high number of seasonal and resident species in the area. The most relevant group is the marine birds, many species are considered as in danger of extinction or vulnerable in Andalusia.

The maritime area presents a higher biological diversity than the terrestrial one. Many species are resident of the marine floor, with the flora, species such as *Posidonia oceanica*, *Zostera marina* and *Cymodocea nodosa*, develop complex meadows considered as priority habitats.

There is a wide number of invertebrates, specially Cnidaria, Corals, Anemones, Echinodermata and Mollusca and Crustacea are very relevant groups. Within fish group, diversity is related to the habitat heterogeneity due to the existence of marine phanerogam meadows and rocky beds. As main species, it needs to highlight *Gobius niger* and Blenidae, *Scorpaena porcus*, moray eel and *Epinephelus guaza*.

Other groups of special interest are Sparidae, Serranidae or Labridae. In addition, there are some protected species in the area such as *Caretta caretta*, *Delphinus delphis*, *Stenella coeruleoalba*, *Tursiops truncatus* and *Balaenoptera physalus*.



## Threats and pressures

Ocasionalmente ilegal fishing activities take place, which could affect the Posidonia meadows.

The increase of visitors, specially in summer, can be considered a pressure indicators on coastal habitats, although this situation has been minimized in the last years through more control and surveillance in the zone.

Agriculture activities can not cause serious problems of erosion and pollution because of the current local regulations.

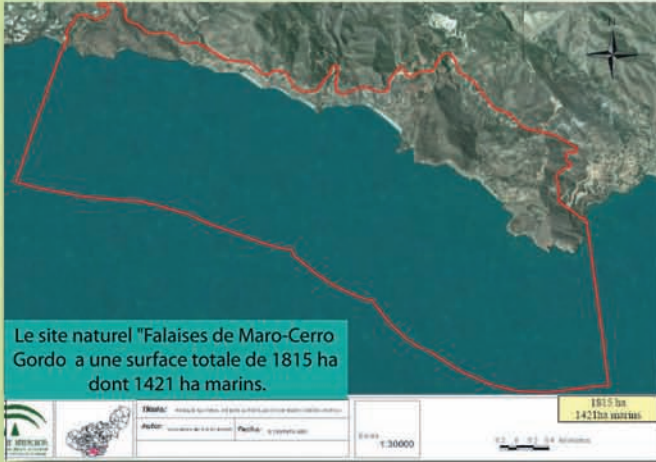
The improvement of touristic infrastructures in the neighbouring towns is adding to an increase of visitors, and sailing crafts.



## Management

There is not a mangement plan so far but the Department for the Environment of the Andalusian Regional Government is currently developing a Management Plan, which will regulate the use and planning of the natural resources in the area. It is developing by a multidisciplinary group of experts in several fields.

The existing staff of the Department for the Environment of the Andalusian Regional Government are located in Granada and Málaga, is adequate for the objectives of protection and conservation of the area. The core funding is provided by the Department for the Environment of the Andalusian Regional Government.



Regional Catalogue of Flora and Regional Catalogue of Fauna of the terrestrial zone have been developed, and one of the marine environment is being elaborated.

There are basic studies of the flora and fauna, although it should be review and update all the information of the whole area, specially the endangered species.



There is an adequate co-ordination between the different competent bodies for the natural resources protection in the area.

The co-ordination is achieved by the Provincial Council of Environment, and the research by agreements between the Regional or Central Government and the University.

# Medes Islands



Legal status	Protected Area
Foundation year	1990
Foundation text	Law n°19-90
Management body	Departement of Environment
Superficy	511 ha
Management category (IUCN, 1994)	IV

## Territory

The small archipelago of the Medes Islands, is made up of seven small islands and some reefs situated scarcely a mile from the village of L'Estartit, in the Catalan coast of Empordà in the middle of the "Costa Brava". The islands are a geologically the extension of de Montgri Massif into the sea.



Medes Islands has been a SPAMI since 2001 thanks to the extraordinary biological and ecological value for its variety of sub-species and micro-environmental and for their exceptional scientific value.

## Physical features

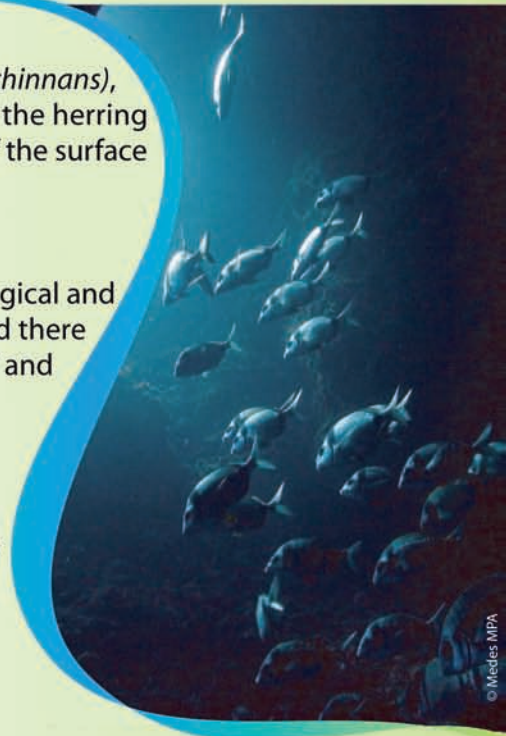
The adjacent coastline and the estuary of the River Ter, which provides a source of organic material; the influence of northerly winds and currents that contribute to deep-water circulation, which in turn provides organic nutrient enrichment of the environment, different depths of seawater around the islands; contrasting sea-bed formations (of both rock and sand); and karst-type land formations, with numerous tunnels, cavities and caves.

## Specificities and importance

The most spectacular bird colony is that of the yellow-legged gull (*Larus cachinnans*), which until very recently was considered to be a more common variety of the herring gull (*Larus argentatus*). Numbering over 8,000 pairs, it occupies almost all of the surface area of the islands, with the breeding season.

Medes islands underwater communities constituted an extraordinary biological and ecological value, due to the wide variety of environments and species found there (1345 marine taxa in the plant and animal groups studied), in the setting of and extremely beautiful landscape that is unique in Catalonia.

A cornice of calcified algae (*Lithophyllum Tortuosum*), situated at sea level in the wave-break area, comprises around 75% of the perimeter of the Medes Islands.



## Threats and Pressures



Although there is a limited number of daily diving allowed, the number of scubadivers is very high.

Otherwise, the extraction of the natural resources is regulated in the protected area and totally prohibited in the highly protected area.

In spite of the heavy pressure of tourism, on-going developments involving the natural heritage are positive, as a result of existing legal safeguards.

Scientific monitoring shows that conservation and developments are favourable.



## Management

Management Plan was approved in 2004 by the Advisor Council of Islas Medes Protected Area.

Four-year plans regulates the different activities (majority are tourist activities) done at the zone. Temporary plans allow getting a well-maintained development.

The zoning establishes two protection levels:

- the protected zone where game fishing/angling with just one rod, diving and sailing are permitted
- the highly protected zone where diving with a permit, mooring in pre-established places, sailing up to a speed of 3 knots and mooring only between sunrise and sunset, are permitted.

Financing comes from Department of the Environment of the Government of Catalonia and Supramunicipal Administration Authorities. It is also self-financing as a result of concessions for diving and other activities.

The difficulty of controlling the different forms of use permitted in the area and access by fishing activities, because of difficulty of permanent guarding.

A large number of scientific studies have, and continue to be, undertaken in the protected area of the Medes Islands. Study series of up to 10 years exist for certain species and its wealth of natural resources has been made widely known and it is now well-known by the population.



# Kneiss islands

Legal status	Nature reserve
Foundation year	1993
Foundation text	Law no. 88-20
Management body	Forestry Commission at the Ministry of Agriculture
Superficy	5850 ha



## Territory

The Kneiss Islands lie in Skhira Bay (gouvernorat of Sfax), about 25 km. south-east of the town of Mahrès. This archipelago is located about 3.5 km. off the continent. The Kneiss archipelago is made up of 4 islets (Dziret el Bessila, Dziret el Hjar, Dziret el Laboua, and Dziret el Gharbia).



The Kneiss Islands archipelago has been a SPAMI since 2001 because of its having one of the Mediterranean's biggest estran ecosystems with exceptional avifauna.

## Physical features

The entire archipelago is that part of the shallows that has emerged above the waterline, belonging to a shallow extended platform cut into by tidal channels that become visible at low tide. The highest point is only 7 m. above the shore, and the altitude is usually less than 2 m.

All the islets have a backbone of calcareous sandstone, and Bessila is occupied by sebkhas, chotts and, especially, maritime marshes. Everywhere the soft material of the islands' shores is the victim of erosion.

The originality of the site's appearance is a result of the existence of a very big sandy-silty estran, crossed by channels.

## Specificities and Importance

The estran encourages the presence of many halophilous species, covering over 80% of the soil surface.

These vast stretches are a favourite site for aquatic avifauna, basically migratory and wintering birds, which occupy all the niches in the various available water levels. Because it lies in pre-Saharan Tunisia, this site is a major stopover for migratory birds. There are a great many birds: 70% of Tunisia's birds winter in the Kneiss Islands, and there may be more than 100,000 of them.

Over 75% of the marine plant populations are marine phanerogams, including several thousand hectares of Cymodocea lawns.

The archipelago is obviously of heritage interest: partially submerged classical ruins appear above the surface. Many other sites are present on the coast, such as a mausoleum with a pyramidion; there are also cisterns and a large number of amphora; on the El Laboua islet there are the remains of a monastery and of a little church, and all along the cliffs, stripped bare by erosion, there are classical ruins including a funerary monument.

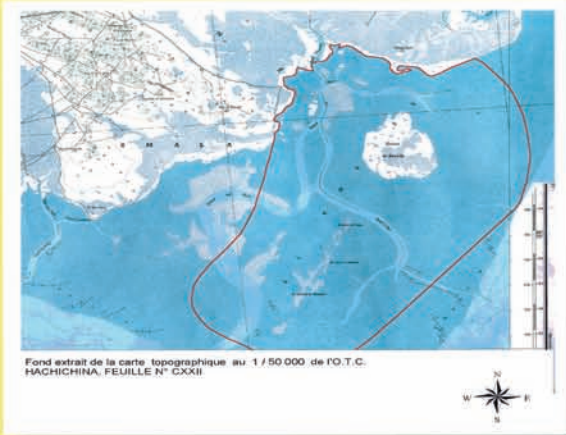


## Threats and pressure

The Kneiss islands environment is suffering from considerable pollution through hypertrophication, basically due to the consequences of the phosphate processing industry and the dumping of hydrocarbons. The presence of hundreds of boatless fishermen in the islands, especially El Bessila, seriously harms the conservation of the environment, since it greatly disturbs the nesting birds or even prevents them making any attempt at nesting.

Marine turtles present in the area are caught sporadically.

For the entire marine coastal area, the scraping of the seabed is very likely to lessen the area's biodiversity.



## Management

The Kneiss Islands do not have any management plan in force; one is being finalised by the APAL.

Since the area is marked out by nature, there is no zoning; only 2 boards indicate that this is a nature reserve.

Monitoring is carried out by one occasional guardian (forest warden), who does not have a boat. But in the event of breaches of the law, there are fairly severe punishments for practices that harm the site.

Protection measures have gone ahead with the aim of preserving the site's natural, cultural and landscape potential. This basically means protecting the flora and fauna by managing local uses and extraction activities, protecting the archaeological heritage, stepping up the wardens' activities, and paying attention to the problem of erosion observed in the site by carrying out regular monitoring.

These measures have enabled the site's fitness to receive light development that takes account of both the vulnerability of the Kneiss archipelago and the environmental context of the continental coast, to be envisaged.



# The Galite

Legal status	Nature reserve
Foundation year	1980
Foundation text	Order of the Minister of Agriculture
Management body	Agency for the Protection and Development of the Coast
Superficy	2715 ha
Management category (IUCN, 1994)	IV



## Territory

Located in northern Tunisia 81 km. from Bizerta and 64 km. from Tabarka, the Galite archipelago is made up of six islets: the main island (La Galite), Le Galiton and La Fauchelle to the south-west and the 'dog' islets (Gallo, Gallina and Pollastro) to the north-east.



The Galite archipelago has been a SPAMI since 2001 because of its great biodiversity, its halieutic riches, its landscapes and its diversified cultural heritage

## Physical features

The Galite archipelago conceals a sumptuous landscape heritage mainly because of its geological formations that are pretty well unique in Tunisia.

## Specificities and Importance

The marine and coastal protected area of the Galite presents a rich archaeological heritage, important agronomical know-how and an exceptional biological and ecological richness, both marine and terrestrial, with many rare species such as the Greek turtle or the *Discoglossus* that are threatened and protected.

The richly coloured rocky shallows, the extensive phanerogam meadows and the coralligenous beds shelter many species of purely ecological or commercial interest and which have major potential for the spawning and feeding of halieutic species. A host of species of biological interest for the Mediterranean are distributed over many underwater landscapes, such as the organogenic formations of vermetids (*Dendropoma petraeum*, *Goniolithon byssoides*, *Astroides calycularis*, *Cladocora caespitosa*), forests of *Cystoseiras*, forests of *Laminaria rodriguezii*, and populations of *Dictyopteris polipodioides*, and there are maerl beds.

The archipelago is a natural nursery for many vulnerable fish species like groupers and also has great potential for the spawning and feeding of halieutic species.



## Threats and pressures

The La Galite archipelago is too far out from the coast to be subjected to outside threats coming from the continent. The main attacks on the natural heritage are:

- Fishing, which visibly continues to be done illegally
- The relative deterioration of the meadow in the La Galite bay due to anchoring in unauthorized moorings
- The risk inherent in the potential appearance and proliferation of invasive species, with boats and anchoring being the main vectors.



## Management

As part of the project to establish a vast marine and coastal protected area on the Galite archipelago, the management mode advocated for this space falls within the heritage approach, with its three overall objectives:

- protecting biodiversity gains by implementing specific programmes to protect rare and threatened marine and terrestrial endemic species

- rehabilitating halieutic, landscape and forest potential and harmonising life in the village of the Galite with the requirements of conservation management of an exceptional site

- making best sustainable use of its trump cards, i.e. the archaeological remains, and the richness of its terrestrial and underwater landscapes.

Zoning in the archipelago concerns three areas:

- a strongly protected area or a *protected natural area*: on land, this means the islets of the archipelago that contain endemic fauna, and out at sea the NE part of the archipelago (the eastern Galitons and the water north-east of La Galite), and the western part of the archipelago (water of western Galitons)

- a medium protected area or *managed natural Sanctuary*: on land, west and east of La Galite, and out at sea the area covers the water and underwater seabed north and west of the big island,

- a weakly protected area or *natural resource management area*: on land, this includes the village, the plain and their immediate surroundings, and out at sea the southern and eastern waters of the big island.





# Zembra and Zembretta

Legal status	National park
Foundation year	1977
Foundation text	Decree no. 77-340
Management body	Agency for the Protection and Development of the Coast
Superficy	5090 ha
Management category (IUCN, 1994)	II



## Territory

The archipelago lies north-east of the Gulf of Tunis, opposite the Cap Bon peninsula, and is made up of the island of Zembra (389 hectares) and the islet of Zembretta (2 hectares).

Zembra is surrounded by two rocks: the Entorche to the north and the Cathedral to the west.



The archipelago of Zembra and Zembretta has been a SPAMI since 2001 for it is a site that is rich in marine flora and fauna and where the monk seal live.

## Physic features

The main island, Zembra, presents a complex, very steep relief with three big clefts and fallen structures. The stratigraphic series runs from the calcareous massifs of the Higher Cretaceous to the clays and fine sandstones of the Middle Miocene. The entire coast is rocky and made up of cliffs, caves and underwater slopes.

Several caves and rocky areas can host the monk seal.

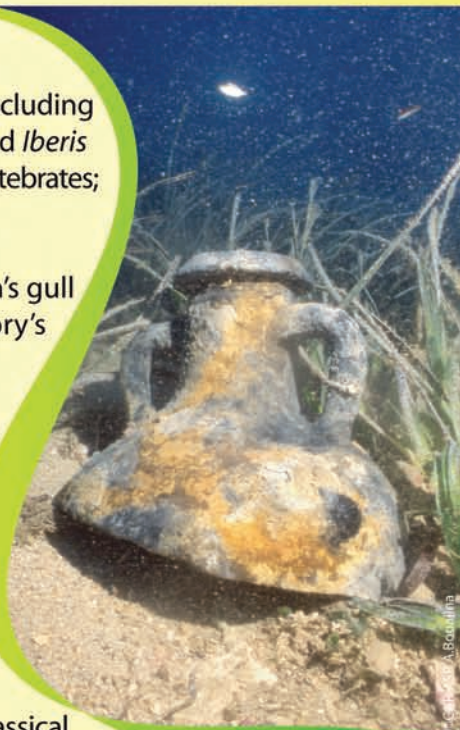
## Specificities and Importance

The land flora is made up of 230 species (four of these threatened in the world, including 2 endemics of Tunisia: *Silene barrattei*, *Anthyllis barba-jovis*, *Scabiosa farinosa* and *Iberis semperflorens*) and forms a maquis. Zembra presents a highly diversified fauna of invertebrates; the most important land vertebrates are the wild rabbit and the mouflon.

The site is of great avifauna interest, being a reproduction area for the Audouin's gull and the Mediterranean shag, with 11 pairs of peregrine falcons and 20,000 Cory's shearwaters. It used to have a monk seal colony.

The Zembra and Zembretta National Park presents many habitats including the Posidonia meadow, rocky seabed and caves where the monk seal can live. The marine fauna is characterised by a hard substratum benthos, where the ferreous limpet coexists with a fauna of diversified fishes, rich in sea-bream and groupers. The area has several monk seal-friendly caves and is also much frequented by dolphins, and is an important site for nesting of the Cory's shearwater.

The islands are a Punic and Roman archaeological site and many prehistoric and classical remains are found there.



## Threats and pressure

The islands are not inhabited; access to the public and the removal of natural resources is forbidden in the land environment and over a 1.5 sea mile strip around the island of Zembra.

There are some forms of illegal fishing and poaching. Many fragments of fishing tackle brought by the currents and the sinkers that ballast trammels are sources of erosion of the loose seabed.

Some exotic and invasive species have been observed in the water or environs of the Zembra archipelago.



## Management

Crafting a management plan for the marine part of the Zembra and Zembretta National Park comes under the implementing of the MedMPA Project.

The National Park has a zoning plan, divided into three parts:

- the central integral protection area where all activity is forbidden, except for studies and the necessary movement for research and monitoring ;
- a buffer area of partial protection to guarantee logistical back-up for site management and site conservation activities, and
- an area of transition and eco-development.

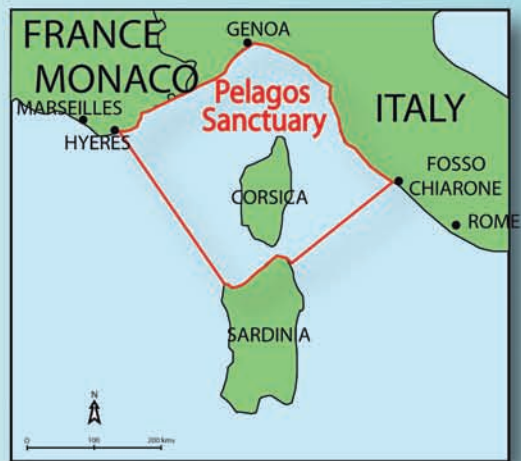
The management plan advocates carrying out many actions to ensure logistical coordination of the work and of welcoming visitors and the public, to make best use of what the National Park can offer for environmental education and popularising nature, or to manage possible future tourist frequentation.

Many forms of scientific monitoring have been done in Zembra and Zembretta, such as:

- monitoring of the limpet population,
- monitoring of the ichtycs populations using fixed transects,
- monitoring of benthic sessile communities and,
- monitoring of the impact on ecosystems and biodiversity, sea pollution, piscicolous communities, or changes in the Posidonia meadow.



# Pelagos Sanctuary



Legal status	Sanctuary
Foundation year	1999
Foundation text	Tripartite Agreement
Management body	Tripartite Steering Committee (France, Italy, Monaco)
Superficy	87 500 km <sup>2</sup>
Management category (IUCN, 1994)	IV

## Territory



The French-Italian-Monacan Sanctuary, set up by a Tripartite Agreement between the three Governments signed in Rome on 25 November 1999, in the Tyrrhenian-Corsican-Provençal basin, including the coastal waters and pelagic domain of the area.



© Regard du Vivant - F. Larrey / T. Robert



## Physical features

The coasts that surround it are basically rocky, except for the eastern coast of Corsica and the Tuscany coast, which present areas of plain.

The terrestrial domain is characterised by the presence of big islands like Corsica and, partially, Sardinia, as well as islands of smaller size. The continental slope is very narrow along the rocky coasts but better developed along the plain coasts. The bathymetry is great in the Corsican-Provençal basin (2,500-2,700m.). All the rocky coasts are deeply cut into by underwater canyons which increase the morphological and hydrodynamic diversity.

## Specificities and Importance



Compared to the rest of the Mediterranean, the Sanctuary is characterised by extremely rich pelagic life, marked by the presence of big pelagics such as the cetaceans (*Balaenoptera physalus*, *Ziphius cavirostris*).

Some are totally pelagic, linked to the continental slope, others to the deep canyons in the area; they represent 12 different species and have greater or smaller populations according to species (*Stenella coeruleoalba*, *Delphinus delphis*, *Tursiops truncatus*, *Grampus griseus*, *Globicephala melas*, *Physeter macrocephalus*).

The species of cetacean that form the central argument for creating the Sanctuary are not uniformly distributed and their distribution is linked to the existence of several ecological facies that constitute a diversified habitat.

Other major zoological groups are protected by the conservation measures all down the trophic chain: birds, turtles, big cephalopods and pelagic selachians.

The Sanctuary for the Conservation of Marine Mammals has been a SPAMI since 2001, for the ensemble of its physical and climate conditions make it a Mediterranean pelagic area that is exceptionally productive and rich in living things; it is a hot spot of pelagic biodiversity and a good example of collaboration between the actors involved



© Regard du Vivant - F. Larrey / T. Robert



UNEP



RAC/SPA

**Regional Activity Centre for Specially Protected Areas (RAC/SPA)**  
Boulevard du leader Yasser Arafet, B.P. 337 - 1080 Tunis CEDEX - TUNISIA  
**Tél.** : +216 71 206 649 / 485 / 851 - **Fax** : +216 71 206 490  
**E-mail** : [car-asp@rac-spa.org](mailto:car-asp@rac-spa.org)  
**[www.rac-spa.org](http://www.rac-spa.org)**

