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**Proposals for inclusion in the SPAMI List**

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## **Proposals for inclusion in the SPAMI List**

### **NATURAL RESERVE OF BOUCHES DE BONIFACIO (FRANCE)**

#### **General Features**

The Bouches de Bonifacio Natural Reserve (RNBB) complies with several general criteria stipulated in article 8 of the SPA/BD Protocol for registration on the SPAMI list. The candidate area:

- contains local endemic species, endemic or threatened species with extinction on the Mediterranean level.
- contains ecosystems specific to the Mediterranean such as Posidonia meadows and coralligenous formations
- is of scientific interest (monitoring of the fishing reserve effect), aesthetic (unique superficial rocky formations) and educational (centre for visitors and exploration paths for the public)
- presents a model of trans-border cooperation with the creation of the International Marine Park of Bouches de Bonifacio between France and Italy: the RNBB (Corsica) and the La Maddalena Archipelago National Park of (Sardinia).
- presents a sustainable management model (management of fishing resources by the fishermen).

#### **Legal Status**

The RNBB has a legal status guaranteeing for it a long term protection (Decree).

#### **Protection, Planning and Management Measures**

The RNBB has protection measures, a management (presented in the annexes of the candidature dossier) and monitoring plan, a management unit, permanent staff, management and follow-up means.

#### **Conclusion**

This site complies with the minimum required criteria and is thus eligible for inclusion in the SPAMI List.

## **Annexe - Annotated format for the presentation reports for the areas proposed for inclusion in the SPAMI List – Abstract**

The Bouches de Bonifacio Natural Reserve constitutes the French part of the International Marine Park which is being set up between Corsica and Sardinia (cf. Point 10, page 47).

It has a 79 460 ha surface area and stretches along the coast of the communes of Monaccia d'Aullene, Pianottoli-Caldarellu, Figari, Bonifacio and Porto-Vecchio, as well as along the following land sectors:

- the Moines, Bruzzi, Lavezzi and Cerbicale archipelagos;
- brackish ponds of Ventilegne, Testarella and Pisciu Cane;
- Bruzzi peaks
- cliffs of Bonifacio

It benefits from global land management comprising 79 190 ha of maritime public domain, as well as islets and isles (119 ha) plus the Tre Padule de Suartone Natural Reserve (217 ha) and land acquisitions of the Conservatoire du Littoral (3 8000 ha).

The land has two main geological formations, a granitic base formed before the separation of the Corsico-Sardinian micro-continent, forming massifs and chaos at the origin of most of the isles and archipelagos, tabular calcareous deposits of marine origin, cut with valleys and rias, forming the Bonifacio cliffs. Violent winds are very frequent and enhance the existence of strong currents and the mixing of Tyrrhenian and Algero-Provencal masses of water.

The main habitats are as follows:

- *Posidonia oceanica* meadows, occupying a 9 604 ha surface area
- lagoons with a fish endemic to Corsica (*Aphanius fasciatus*) and the European pond turtle (*Emys orbicularis*)
- coastal vegetation cover characterized by the presence of Phoenician junipers (*Juniperis phoenicea* subsp. *Turbinata*) which is representative of the Mediterranean bio-geographical domain.
- "Reef" habitat regrouping 5 basic habitats, 37 associations or facies harbouring a large number of species with a strong heritage and halieutic value (*Palinurus elephas* – spiny lobster, *Maja squinado* – spiny spider crab, *Epinephelus marginatus* – dusky grouper, the gorgonian *Paramuricea clavata* and *Eunicella* sp.).

Amongst the Mediterranean habitats, there are 26 biocenoses, facies or associations adopted within the MAP framework. Biodiversity is particularly high.

- 766 recorded plants, including 2 marine phanerogames and 356 algae.
- numerous endemic species
- plants characteristic of temporary pools
- 973 animal species, including 22 of Community interest necessitating strict protection measures and 11 of Community interest necessitating the designation of Special Conservation Zones.
- 74 birds registered in the "Birds" Directive, including 16 species nesting in the perimeter and 41 registered in Annex 1, namely the European shag (*Phalacrocorax desmaresti*) and Audouin's gull for which there is an international action plan
- 64 marine animal species within the area are protected through international agreements, including 14 protected on a national level (*Patella ferruginea*, *Pinna nobilis*, *Tursiops truncatus*...)
- several species (*Epinephelus marginatus*, *Hippocampus ramulosus*, *Palinurus elephas*, *Homarus gammarus*, *Maja squinado*) are protected on a local level.

Amongst all these species, 55 are in the annexes of the SPAMI Protocol, including 39 (6 marine plants and 33 animals) in Annex II. It should not be forgotten that this area was formerly occupied by the monk seal (*Monachus monachus*).

This area (approx. 15 000 inhabitants) where agriculture and stock farming was practised for a long time, has become agriculturally less important (less than 10% of the active population) and this has been partly compensated by the development of tertiary activities especially those linked to tourism.

- residential accommodation especially concentrated around Porto Vecchio and Bonifacio,
- Figari airport (over 250 000 passengers per annum) and trading ports of Bonifacio (daily connections with Sardinia) and of Porto-Vecchio, representing approx. 300 000 passengers per annum.
- pleasure ports of Bonifacio, Porto-Vecchio and Pianottoli-Caldarello, representing a fifth of the absorption capacity of Corsica.
- organized visits of the isles, caves and cliffs, from Bonifacio and Porto-Vecchio (and from Sardinia to a lesser degree).
- underwater diving starting from Corsica or Sardinia.

Sea transport (all activities included) takes place under the control of semaphores of the French and Italian navy within the framework of regulations set up by the International Maritime Organisation (4 000 ships per year for approx. 80 000 t of dangerous materials).

With its low production and limited number of jobs (less than 100 direct jobs), artisanal fishing is a fragile activity but still important on a social level. Scientific monitoring over more than the last 20 years shows that the fishing is stable but still profitable and that the resource is not threatened. The management of this area is a model of sustainable development.

Apart from the pollution risk linked to sea trade and the dangerous nature of the straits, the main threats to the habitats and the species are linked to the high touristic frequentation in this area; anchorage of pleasure boats, trampling of meadows and dunes, leisure fishing, underwater fishing, high frequentation rate of some diving areas... The regulations on the natural reserve which prohibit underwater fishing and regulates leisure fishing over 15 % of the area, information disseminated for the general public, the adoption of charters of behaviour by the divers or passenger transport enterprises, the organisation of mooring or the most frequented access points, nevertheless limit the impact of these activities.

A management plan has been established for the 2007-2011 period and validated by numerous bodies (Territorial Assembly of Corsica, Scientific Council, Consultative Committee...) and is meant to continue and strengthen the actions already underway.

The site's protection had started with the creation of natural reserves at the Cerbicale (1981) and Lavezzi (1982) isles, the adoption of decrees on biotopes of the Moines islets and the Bruzzi peninsula. The fishermen's association of Bonifacio had set up two fishing areas in Porto-Vecchio and under the Bonifacio cliffs. The Conservatoire du Littoral acquired 3 800 ha at the land interface of this area.

France and Italy, in 1993, as well as the Corsican and Sardinian Regions, adopted a protocol defining the implementation modalities of a "Bouches de Bonifacio International Marine Park" project in the Bouches de Bonifacion. Since then the work done has lead to the creation of the Bouches de Bonifacio Nature Reserve (1999) managed by the Environment Office of Corsica. The latter has a permanent team of 30 to manage the protected area, including 5 for scientific monitoring, 3 for operations in a hyperbaric environment, 2 for awareness creation and information actions and 16 appointed and sworn officials as nature police.

Applying the regulation in this area makes it possible to preserve the fauna, flora and natural habitats as well as to control most of the activities:

- professional and leisure fishing
- underwater diving

- underwater hunting
- navigation and mooring
- camping, bivouac
- access to sensitive sites (landing prohibited on nesting islets...)

The Bouches de Bonifacio Natural Reserve is the French part of the International Marine Park project. Italy set up the La Maddalena Archipelago National Park and this constitutes the Italian part. This trans-border protection project has already contributed to setting up a monitoring and navigation assistance mechanism by the International Maritime Organisation (recommended route, compulsory reporting...). It is also under the protection of other international agreements: RAMOGE cooperation area (1976), Pelagos sanctuary for marine mammals in the Mediterranean (1999), decree for the creation of an Ecological Protection Zone along the Mediterranean French coasts (2004). There is also the classification and registration of the Bonifacio cliffs and the Lavezzi isles, as well as the sector's most remarkable environments in the inventory of the Natural Zone of Ecological interest, as well as Fauna and Flora (Z.N.I.E.F.F.), of the Special Protection Zone (Z.P.S.) in line with the "Birds" Directive and the inventory of the Special Conservation Zone (Z.S.C.) in line with the "Habitat" Directive.

The crystallisation of the Bouches de Bonifacio International Marine Park project should be based on the creation of the "Groupement European de Cooperation Territoriale – G.E.C.T (European Grouping of Territorial Cooperation), a European tool stemming from the EC Regulation No.1082/2006 adopted by the European Parliament and the Council on 5 July 2006. It was constituted at the initiative of its members as a legal entity, so that the G.E.C.T. has a real intervention capacity, to employ staff, make contracts, bids and manage a joint budget. Prior to its creation, it is necessary to adopt a European trans-border cooperation convention which would define its characteristics, the law applicable for its implementation, the statutes and working modalities. Several work meetings were organized in 2008 between the Environment Office of Corsica and the La Maddalena Archipelago National Park so as to agree on the modalities of setting up the G.E.C.T.

## **MARINE PROTECTED AREA CAPO CACCIA – ISOLA PIANA (ITALY)**

### **General Features**

The MPA contains ecosystems specific to the Mediterranean area (Coralligenous, Posidonia meadow, formation with *Lithophyllum byssoides*) or the habitat of endangered species (*Corallium rubrum*, *Pinna nobilis*, *Hydrobates pelagicus*), and is of special interest at the scientific (Monitoring of the caves (emerged and submerged), particularly the colonies of *Corallium rubrum*), aesthetic (presence of higher peaks by Mesozoic cliffs with Triassic and cretaceous facies), cultural (existence of broad and deep caves and underground lakes historically used by humans / the “Grotte Verde” and, in particular, educational level (educational activities involving local public schools).

### **Legal Status**

The MPA has an adequate legal status, Decree of the Ministry of Environnement and Territory, 23 March 2003.

### **Protection, Planning and Management Measures**

There are a Management body (Reserve Committee) and an annual management plan including the forecast of expenditure for the annual program, and on any suggestion for MPA zoning and perimeter.

### **Conclusion**

This area fills the minima criteria requested and is eligible for inclusion in the SPAMI List.

### **Annexe - Annotated format for the presentation reports for the areas proposed for inclusion in the SPAMI list - Abstract**

The marine protected area of Capo Caccia – Isola Piana is characterized in its in higher peaks by Mesozoic limestone cliffs, with Triassic and Cretaceous facies. Relict forms of a highly evolved continental paleo morphology, such as hanging valleys and truncated sides, are found in the promontory of Capo Caccia. Overall, the shapes of the relief show typical characters of limestone regions, with non-existent surface water drainage.

Due to the particular geomorphology, relatively deep bottoms are found in the submerged portion of the Promontory of Capo Caccia, while on the inner bay of Porto Conte, the bottom shows a more gentle slope.

The main mediolittoral habitat is the formation with *Lithophyllum byssoides*; its development seems to be favored by the limestone of cliffs, where intense hydrodynamic and wind conditions are present.

*Posidonia oceanica* beds are heterogeneous within MPA limits. On the western side of the MPA, the presence of *Posidonia oceanica* is limited, mainly spotted between 25 m and 35 m depth. Isolated shoots of *Posidonia oceanica* are also found on top of fallen boulders, frequently present on the bottom of this side.

Circalittoral habitats between 40 and 50 m depth are dominated by the biocenosis of coarse sands and fine gravels.

*Posidonia oceanica* meadow on the relatively sheltered Bay of Porto Conte is more extensive than the one on western cliffs; particularly, in Cala Tramariglio the local *P. oceanica* bed is well protected by SE winds, favoring its upper limit almost to the surface of the water (barrier reef).

Flowering of *P. oceanica* in the bay of Porto Conte coincides with that reported for other sites in the Mediterranean. The shallow circalittoral plan in this area, is characterized by fine homogeneous sand, and silt. Upper rocky infralittoral communities are dominated by calcareous red algae belonging to the genera *Jania* and *Corallina*. Middle infralittoral assemblages are well-structured with photophilous algae belonging to the families of Dictyotaceae and Gelidiaceae. Deeper assemblages on vertical or subvertical hard substrates are characterized by facies formed by *Halopteris*, *Dilophus* and various Corallinacea and other species such as *Codium bursa*, *Acetabularia acetabulum*, *Padina pavonica*.

Another well-represented facies is formed by the algae *Halimeda tuna* and several species of the genus *Peyssonnelia*.

From a faunistic point of view, this part is rather scarce. *Crambe crambe* sponge is easily found as it prefers exposed to light environments. *Spirastrella cunctatrix* and *Axinella verrucosa* and *Reniera cratera* are also common.

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

Deeper assemblages are often dominated by *Petrosa ficiformis*, with the associated nudibranch *Peltodoris atromaculata*, *Eunicella cavolinii*, *Leptopsammia pruvoti* and *Parazoanthus axinellae*. Other common sessile organisms are the Polichete *Serpula*

*vermicularis*, the Sebellide *Bispira mariae*, the Gastropod *Bolma rugosa*, the Briozoans *Myriapora truncata* and *Sertella beaniana*, the Tunicates *Halocynthia papillosa*.

Underwater caves are rather common and are typically colonized in the outer or middle portions by sciaphylous forms, sometimes dominated by recent colonies of *Corallium rubrum* with small size and low density, suggesting recent processes of recolonization.

A biocoenoses characterized by green algae of the genus *Halimeda* and *Flabellia* and by the Celerata *Cerianthus membranaceus* and *Eunicella cavolinii* is easily reported below 18 meters depth, on the western side of the MPA that is still rocky with large scattered boulders.

At this depth, small spots of *Posidonia oceanica* can be found on top of boulders, as already described.

Sponges belonging to the genus *Axinella* can be observed also between 45 and 50 m depth (AIBA).

Common open water fish fauna are small banks of *Boops boops* and *Spicara smaris*, together with *Chromis Chromis* and *Oblada melanura*, while in close contact with the seabed, *Coris julis* and *Thalassoma pavo* are more abundant species.

Capo Caccia peninsula has been affected by important karstic events, resulting in the existence of broad and deep caves and underground lakes historically used by humans.

The « Grotta Verde », in fact, gives us evidence of the ancient Neolithic human presence (6000 - 4000 BC). Quaternary fossils are also found.

The terrestrial troglobian fauna show elements of biogeographical interest.

Among the most famous submerged caves « Grotta dei laghi », « Grotta Falco », « Grotta del Bisbe » together with « Grotta di Nereo » the largest submerged cave in Europe, need to be mentioned. Typical circalittoral animal species are not uncommon even in shallow water underwater caves.

Due to singular and unique conditions occurring in the cave, food chain is composed of secondary producers (animals that live by import organic matter), true consumers (animals that eat the organic material produced in the cave) and reducers (animals that use the dead fraction of the organic matter), but even the migrant fauna plays a role of primary importance including organisms with larger bodies.

The Crustacean *Dromia vulgaris*, which eats sponges, and the Nudibranch *Flabellina affinis*, which feeds on Hydroids can be found in underwater caves together with *Oligopus ater* and *Thorogobius ephippiatus*.

The Crustaceans *Hommarus gammarus*, *Palinurus elephas*, *Scyllarides latus*, *Scyllarus arctus* and the Fish *Sciaena umbra* are among the fauna that migrates to the outside together with different shrimp belonging to the families Stenopodidea, Alfeidea, Ippolitidea, Palemonidea.

Vegetal assemblages on underwater caves are composed exclusively of algae, and are distributed close to the entrance according to a light gradient.

The red algae *Lithophyllum stictaeforme*, and the green algae *Flabellia petioata*, *Valonia macrophysa* and the brown alga *Dictyopteris polypodioides* are the most common.

The Porifera *Petrosa ficiformis*, *Oscarella lobularis*, *Agelas oroides*, *Clathrina clathrus* and *Haliclona rosea*, the Celenterata *Corallium rubrum*, *Parazoanthus axinellae*, *Leptosammia pruvoti*, *Caryophylli smithi*, *Hoplangia durotrix*; the polychaetes *Protula tubularia*, *Filograna* sp.; Briozoa *Adeonella calvet*, *Bugula avicularia*, *Membranipora membranacea* are the most abundant assemblages of submerged caves.

## **MARINE PROTECTED AREA PUNTA CAMPANELLA (ITALY)**

### **General Features**

The MPA of Punta Campanella has the aim to preserve one of the most beautiful and interesting traits of the Italian coast both for its terrestrial characteristics and for the marine peculiarities.

Presence of habitats that are critical to endangered, threatened or endemic species is clearly recorded in the documentation provided. There are 20 marine habitats in this MPA included in the Appendix B of the Standard Data-entry Form of the Barcelona Convention; Also, 47 threatened species present in the list of Annex II of the SPAMI Protocol, and 16 species present in the Annex III of the SPAMI Protocol. Common presence of many threatened sponges is a fact to remark.

The candidate has presented proof of particular values for activities of environmental education or awareness. Furthermore, the area has since 1871 represented an extremely valuable source of knowledge from the biological point of view and for marine sciences in general.

### **Legal Status**

The Marine Protected Area of "Punta Campanella" was established with Decreto Ministeriale dated 12 December 1997 which warrants long term legal protection, and published in the G.U. n. 47 dated 26/02/1998, modified with Decreto Ministeriale dated 13 June 2000 and published in the G.U. n. 195 dated 22 August 2000.

At present, the protection rules are ratified by the provisional Disciplines of the Management Committee and by the Rule n. 44/02 of the Capitaneria di Porto of Castellammare di Stabia.

The MPA of Punta Campanella is included in the Site of Community Importance (SCI) named "Fondali marini di Punta Campanella e Capri" - D.M. 03/04/2004.

Within the MPA of Punta Campanella, all the activities that may compromise the protection of the environmental characteristics of the area, are forbidden by the art. 19, comma 3, of Law 6 December 1991, n. 394.

At present, a new Regulation of MPA, which takes into account results of past experiences and monitoring programmes, has been performed. According to the reporting candidate, it will be published in the next months by the Italian Ministry for the Environment and Protection of Territory and Sea.

### **Protection, Planning and Management Measures**

The MPA of "Punta Campanella" pursues in particular:

- a) the environmental protection of the whole marine area;
- b) the protection and improvement of the biological and geomorphologic resources of the area; c) the diffusion and divulgation of ecological knowledge and biology of the marine environments of the MPA;
- d) the development of educational programmes for the cultural improvement in the field of ecology and marine biology;
- e) the realization of study and scientific research programs in ecology, marine biology, and environmental protection;
- f) the promotion of a sustainable socioeconomic development compatible with the naturalistic relevance of the area, favouring local traditional activities.

The Italian Ministry for the Environment and Protection of Territory (Ministero dell'Ambiente e della Tutela del Territorio) has committed the management of the MPA to a Consortium of 6 municipal districts (Massa Lubrense, Sorrento, Piano di Sorrento, Sant'Agnello, Positano and Vico Equense).

Mayors of municipalities appoint their representatives in the Board of the Directors of the Consortium. Components of the Board of the Directors name, among them, the President of MPA, which chairs the Board.

The MPA Director is appointed by the Ministry of Environment, on the basis of a list of names proposed by the Board of the Directors.

The Commission of the Reserve, appointed by the Ministry of Environment, is an advisory board that helps the Board of the Directors of Consortium in all the activities involved with the management of the MPA. In particular, it supplies proposals and suggestions for the MPA functioning.

The “Scientific Committee” represents an informal advisory organ, composed by scientists, elaborating proposals concerning the MPA scientific programs and environmental monitoring.

The “Observatory on Environment and Legality” is a sort of coordination of MPA representatives (namely the President and the Director) with the environmental associations, the Coastal Guard and other Police Corps (Excise and Revenue Police, Carabinieri).

Every year the MPA President submits a management plan to the Ministry for the Environment for the approval. The Marine Protected Area is divided into 3 zones distinguished by a different degree of protection:

- A: Integral Reserve
- B: General Reserve
- C: Partial Reserve

An adequate system of buoys indicates in the sea the boundaries and the different zones of the MPA. Boundaries of the MPA are signed also on land. The MPA surveillance is committed to the Coastal Guard.

The management plan is prepared on the basis of financial assessment and previsions, and considering the results of monitoring activities and of meetings with stakeholder, environmentalists and police forces (“Observatory on Environment and Legality”). At present 10 people are employed at the MPA in: accountancy office, administrative office, information/reception office, monitoring and field activities, coastal waters cleaning, educational activities. Every year the Ministry for Environment and Territory provides a core founding for basic staff, protection and information measures. Currently this founding, although it is insufficient for training and research activities, is sufficient (moderate adequacy) for basic activities of protection, information and education.

## **Conclusion**

**The candidate site fulfils the criteria required to be included in the SPAMI List, and consequently is eligible as such.**

## **Annexe - Annotated format for the presentation reports for the areas proposed for inclusion in the SPAMI List - Abstract**

The MPA "Punta Campanella" was identified as potential MPA according to the National Laws n. 979 of 1982 and n. 394 of 1991; it was officially established with Ministry of Environment Law of 12.12.1997 (modified with ML of 13.06.2000).

The Italian Ministry for the Environment and Protection of Territory and Sea (Ministero dell'Ambiente e della Tutela del Territorio e del Mare) has committed the management of the MPA to a Consortium of local public administrations, formed by the 6 involved municipal districts (Massa Lubrense, Sorrento, Piano di Sorrento, Sant'Agnello, Positano, and Vico Equense). The Consortium for the MPA management has an Administrative Board, formed by representatives of local public administrations and chaired by a President. The Director of the AMP is the head of a 10 people staff, that carry into effect the policy of address decided by the Administrative Board.

All of the involved municipal districts (especially Sorrento and Positano) are among the most famous touristic places of the Mediterranean Sea, together with the close Island of Capri.

Tourism (over than 2.000.000 presences, in Summer) is by far the main economic activity of the area, but also biological agriculture of typical products (lemons, oil, vine) is well developed. In recent times, artisanal fishery activities strongly decrease and recreational fishing activities increase.

The MPA has the aim to preserve one of the most beautiful traits of the Italian coasts, tourists attractive and naturalistically interesting both for its terrestrial and marine characteristics. In fact, the MPA is comprised in a marine landscape of very high heterogeneity and in an area of bio-geographic convergence that has always attracted scientists from all over the world, supported by the presence, in the near city of Naples, of important scientific institutions as the six Universities, the CNR laboratories and the very famous Zoological Station, founded in XIX<sup>th</sup> century by Anton Dohrn. Since the first systematic studies on biological communities of captain Colombo (1871), the Sorrento-Amalfi Peninsula have been among the most studied Mediterranean places by scientists of the different branches of marine sciences, so the MPA also represents a site of paramount importance in the history of the oceanography.

That's why the area group together a number of very particular environmental characteristics (geo-morphological, hydrological and bio-geographical), that determine the very peculiar and varied typologies of benthic communities.

The coastal geomorphology of the Sorrento-Amalfi peninsula is very different from the adjoining volcanic and alluvial parts of the Gulfs of Naples and Salerno. In fact, it is

characterized by steep calcareous cliffs, extending into the sea down to over 30-40 meters depth, where organogenous detritic bottoms extends till a wide muddy plain.

There are also differences between the Sorrento coast, overlooking the Gulf of Naples, and the Amalfi coast, overlooking the Gulf of Salerno. The former is formed by lower cliffs (few tens of meters) with relatively gentle erosive landscapes; the latter is, on the contrary, characterized by very high (even hundreds of meters) and steep cliffs, gradually increasing in height from distal to proximal part of the peninsula. There are a few exceptions from this general pattern of cliffs, mainly in proximity of stream outfalls. In these areas, typically found in small, shallow and sheltered coastal inlets, less steep slopes are present, and the coastline is formed by small pebbly or gravelly beaches, with the sea-bed composed by accumulated sediments (mostly pebbly, more rarely gravelly or sandy bottoms).

The very steep coastal slope has an enormous influence on the organization of the benthic communities because:

- it limits, in the littoral environment, the presence of soft substrata (sandy and muddy), determining the almost exclusive presence of rocky bottoms down to 30-40 m depth;
- it limits, within the same depth range, the surface area available to the settlement of benthic populations;
- it determines the widespread presence of particularly interesting species that usually are rare or absent on other substrata (i.e. the scleractinians *Astroides calycularis* and *Leptosammia pruvoti*, and the endolithic bivalve *Lithophaga lithophaga*, known as date mussel);
- it causes the scarcity of photophilic communities (typical of well illuminated habitats and characterized by the dominance of vegetal sessile organisms), and limits them to a narrow shallow stripe; on the opposite, it extends toward the sea surface the vertical distribution of sciaphilic communities (typical of scarcely illuminated environments and characterized by the dominance of animal sessile organisms), that generally are found in deeper habitats. For example, as a result of the steep slope, the coralligenous of rocky bottoms is present at a few meters depth, even though this biocenosis is typical of deeper environments.

The particular mineralogical composition of hard substrata (calcareous) influences the type of benthic assemblages because determines the formation of a complex of a number of caves, due to the intense karstic activity, many of them developing beneath the sea level, giving hospitality to a wide, interesting and rare range of very peculiar animals (i.e. *Halcampoides purpurea*, *Telmatactis forskali*, *Maasella edwardsi*, *Lysmata seticaudata*, *Plesionika narval*, *Oligopus ater*).

As far as the hydrology of the superficial water bodies of the Gulf of Naples is concerned, it is possible to pinpoint two systems: the coastal waters, a confined and polluted system, and the

offshore waters, subject to a strong mix with unpolluted deep sea waters. The boundary between these two systems is variable and mostly depends on the climatic regime; however, the coastal superficial body of water rarely extends over the first 5-6 miles offshore the inmost coast (namely the bays of Naples and Castellammare), and reaches at the most 50 m depth. Conversely, the central part of the Gulf is more concerned with the unpolluted offshore waters, that also lap the outmost coastal zones, such as the Ischia and Procida islands, on the North side, and the Island of Capri with the distal part of Sorrento Peninsula (where the MPA is located), on the South side. Here, the prevailing presence of a nutrient rich water body coming from offshore and constantly remixed, generates a particular luxuriance of benthic communities (high biomass), with sessile organisms forming multilayer biological covers on hard substrata. On this sea-bottoms it is possible to encounter, at all depths, a particularly high variety of zoobenthic and phytobenthic species, also coming from different bio-geographic districts (bio-geographical convergence).

According to the particular animal or vegetal community, the most peculiar marine biological community typologies may be summarized as follows:

- hard bottoms biocoenoses, of calcareous cliffs and of caves,
- soft bottoms biocoenoses, of organogenous coarse sands and gravels,
- *Posidonia oceanica* meadows.

The biocoenoses of calcareous cliffs (falaise) are the most common. They are characterized only in the top meters (within 5-10 m) by photophilic communities, mostly seaweeds well adapted to an exposed environment with high light intensity and water movement. The dominant biota are vegetal, mostly brown algae such as *Cystoseira* spp.

The most characteristic phenomenon is the presence, at a few meters depth, of sciaphilic communities (*Coralligenous* biocoenoses), that usually are present at deeper levels, on rocky bottoms over than 30-40m deep. This is mainly due to the steep slope of the substratum that favours the formation of semi-dark habitats.

The sciaphilic assemblages (puzzle of communities) enrich the underwater landscape. The vegetal organisms, although still present as red algae such as *Peyssonnelia* spp., *Mesophyllum* spp. and *Jania rubens*, are not the main element of the community. The dominant element is now represented by sessile animals such as Sponges, both erect and encrusting, Hydroids, Bryozoans, Anthozoans (actinia, sea anemones, madreporarians, gorgonians) and Annelidea Serpulidea. Other amazing and biologically important species are *Astroides calicularis*, *Cladocora caespitosa* and more rarely *Leptosammia pruvoti* and *Parazoanthus axinellae*. In some areas, it is possible to find spectacular walls with white gorgonians (*Eunicella singularis*), yellow gorgonians (*Eunicella cavolinii*) and red gorgonians

(*Paramuricea clavata*); the latter species is often parasitized by *Gerardia savaglia* or by *Alcyonium coralloides*.

The submarine caves may be considered uncommon and valuable laboratories for the study of life in atypical and extreme conditions. In the caves, a rapid extinction of the light intensity is evident; as a consequence, most of the living forms are of animal origin, which may be quite diverse, peculiar and even rare (therefore, very important for biodiversity studies). In particular, scientific studies on the life in the submarine caves of the Sorrento-Amalfi Peninsula are considered milestone of Mediterranean marine biology (e.g. Riedl's book *Biologie des Meereshohlen*). The MPA of Punta Campanella represents one of the richest area in the Mediterranean Sea in underwater caves. The caves are of a primary naturalistic marine richness, since they are habitats with peculiar physical-chemical and biological characteristics. Marine caves may give hospitality to a wide, interesting, and rare range of very peculiar animals (i.e. *Halcampoides purpurea*, *Telmatactis forskali*, *Maasella edwardsi*, *Lysmata seticaudata*, *Plesionika narval*, *Oligopus ater*) and may be considered uncommon and valuable laboratories for the study of life in atypical and extreme conditions. The species are very well adapted to semidarkness or total darkness, like the shrimps *Stenopus spinosus* and *Plesionika narval*.

The organogenous coarse sands and gravels are present mostly at the base of falaises and in the strait of Bocca Piccola, separating Punta Campanella from the Island of Capri. These sands are inhabited by quite particular animal communities such as the Amphioxus (*Branchiostoma lanceolatum*) community, increasingly rare, or the deeper calcareous red algae (Melobesioideae) that, encrusting the sediment particles, increase their size forming coarser living particles named *pralines* formations. Detritic bottoms and muddy detritic bottoms surrounds the MPA toward the offshore.

*Posidonia oceanica* does not form vast meadows in the MPA because there are few soft bottoms within the 30 m bathymetry, apart from some exceptions in the accumulating alluvial fan of sediment. However, the plant is quite common and shows a discontinuous distribution along the coastline.

## AL-HOCEIMA NATIONAL PARK (MOROCCO)

### General Features

The Al-Hoceima National Park (PNAH) complies with several of the general criteria stipulated in article 8 of the SPA/BD Protocol for registration on the SPAMI List. The candidate area:

- contains local endemic species (such as *Cystoseira elagans*, *Laminaria ochroleuca*, *Peyssonnelia squamaria*, etc.) and endemic or species threatened with extinction on a Mediterranean level (especially *Cystoseira amantacea* var. *stricta*, *Cystoseira zosteroides*, *Laminaria rodriguezii*, *Asteroides calycularis*, *Patella ferruginea*, *Pinna rudis*, *Caretta caretta*, *Phalacrocorax aristotelis*, etc.).
- contains ecosystems specific to the Mediterranean such as the *Cystoseira amantacea* associations and coralligenous formations.
- contains critical habitats for species which are disappearing, threatened or endemic, namely favourable habitats (suitable caves) for the monk seal, marine islets for limpets and Audouin's gulls, cliffs for reproduction and nesting for ospreys.
- is of scientific interest (presence of highly remarkable coralligenous formations of interest for their richness and spatial distribution, presence of sub-marine caves and ombrophilous species), of aesthetic interest (presence of sloping cliffs, islet and isles, spectacular and attractive beaches and bays. Landscapes within the Park provide a remarkable panorama with the rounded shapes of the hills separated by quite large valleys); of cultural interest (traces of an ancient civilisation, ruins of the Torres-de-Alcala fortifications (ex-town Jordana) from the XVI<sup>th</sup> century, mausolea and marabouts...) and of educational interest (presence of coralligenous in fairly shallow waters, favourable habitats for the monk seal and an overlap of Mediterranean and Atlantic species).

### Legal Status

The PNAH has a legal status whereby long term protection is assured (via decree). This status will be further reinforced by law (underway) on protected areas which will constitute the legal arsenal pertaining to protected areas in Morocco.

### Protection, Planning and Management Measures

PNAH has protection measures available for the two components, i.e. the land and the sea; namely two harmonious and coherent management plans for the two components (presented in the annexes of the candidature dossier) and a monitoring programme; a management unit; permanent staff and means for management and follow-up.

The protection, planning and management measures are to be further strengthened through programmes and initiatives underway which are supported on a local, national and international level.

## **Conclusion**

This site complies with the minimum required criteria and is thus eligible for inclusion in the SPAMI List.

## **Annexe - Annotated format for the presentation reports for the areas proposed for inclusion in the SPAMI list - Abstract**

The Al Hoceima National Park is on Morocco's Mediterranean side, approx. 150 km to the east of the Straits of Gibraltar, close to the Al Hoceima town. This 48 460 ha coastal Park has a 10 600 ha marine section. It is mountainous with a rough relief, with a shore composed of cliffs, caves and several islets and rocks. The National Park's human population is estimated at over 15 000 inhabitants.

The site's ecological and biological interest was demonstrated in 1983. The coastal zone extends from Cala Iris to Al Hoceima and a Management and Development Master Plan was drafted for the land area and for the marine area and was completed in 1993. A management plan was set up in 2002 for managing solely the marine area within the framework of the MedMPA project.

The National Park was officially created in 2004 (Development and Management Decree for the Al Hoceima National Park) (Decree No. 2.04.781 of 8 October 2004) with the following global objectives:

- conservation of samples which are representative of the natural heritage of Morocco's Mediterranean side
- maintenance of natural balances and vital ecological processes
- preservation of biological diversity and complementarity of natural habitats of the whole Park
- information, education and awareness creation amongst the different sections of the public
- protection of the Park's characteristic landscapes
- setting up particularly appropriate conditions for local development and for improving the living standards through integrated and participative development programmes.

- scientific research through ecological monitoring and the development of scientific research in the Park.

#### Physical Environment

Most of the Al Hoceima National Park stretches over the mountainous massif of Bokkoya. To the north it is limited by the sea, to the west by the Mestassa valley and in the south and east by the geographical limit between the catchment areas of the Rhis oued. The Bokkoya massif is a mountainous mass stretching over approx. forty km between the Al Hoceima town to the east and the Torres village. With its blunted forms this morphology is quite compartmentalized with maximum altitudes varying between 500 and 700 m.

The maritime fringes of the Bokkoya Massif have a steeply sloping relief, with steep cliffs which in some places exceed 300 m in height and cut into the carbonated materials of the calcareous Dorsal.

Bays and beaches are relatively scarce, escarpments are steep and inaccessible. The extensions of this chain constitute a mainly calcareous marine bed with, along the protected coast, caves and shallow underwater openings which could become siphons.

#### Biological Interest

The biological richness of the Al Hoceima National Park puts it amongst the main protected areas on a Mediterranean scale. This is the sole National Park on Morocco's Mediterranean side.

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

A sound forest cover: numerous Mediterranean ligneous species represented in the area and especially the arar tree (*Tetraclinis articulate* Vahl - Thuya de Berberie).

Marine biodiversity: the Al Hoceima National Park is close to the Atlantic where the area is influenced by vortical currents. The benthic marine flora of the Al Hoceima National Park is composed of 264 taxons. The National Park also has a great specific diversity and numerous threatened species such as the limpet, red coral, lobster (*Scyllarus latus*), and the dusky grouper. The flora too is most rich (Laminaria, Cystoseira...)

The integrity of the submarine habitats has not been affected much by human activities. The coast still has submarine caves which could shelter the monk seal which today is no longer seen in the area.

#### Cultural and landscape interest

The landscapes are massive. Protected by the rough nature of the terrain and as it is enclaved, most of the National Park has retained its wild nature.

#### Pressures

Even before the existence of the National Park was formalized, the marine and land areas of the protected area were protected from any major harm. The creation of the National Park strengthened the preservation goals mainly on the land where the management unit which was set up and supported by the forestry staff ensures regular monitoring and awareness creation amongst the agro-forestry populations. Pastoral pressure and the use of natural resources seem to be mostly under control in this area.

Urban pressure is very low in the National Park even if it seems to get increasingly stronger on its periphery due to a clear policy of dis-enclavement and socio-economic development based on the Kingdom's Mediterranean coastal tourism in general and especially on the coastal tourism of the Al Hoceima Province.

At sea the pressures on the halieutic resources are still perceptible causing conflicts between the artisanal fishermen and the industrial fishermen.

#### Initiatives underway and good practices

On a national and local level, the "Haut Commissariat aux Eaux et Forêts et à la Lutte contre la Désertification" (High Commissioner for Water, Forests and for Combating Desertification) is stressing the importance of promoting the conservation and development of the Al Hoceima National Park through an internally financed and short term programme-project and through the support of foreign donors.

On a local level regular activities undertaken by civil society will be stressed and which are of benefit to the National Park's population by supporting good practices in terms of tourism and agriculture.

The importance of international institutions will be stressed as well, such as IUCN and bilateral cooperation by setting up projects linked to sustainable management of biodiversity in the National Park.

As for sustainable practices, there is the initiative “Pays d’Accueil Touristique” (Country of Welcome & Tourism), the project “DESTINATION” in support of sustainable tourism as well as the “CAMP Morocco” (Coastal Area Management Programme) to initiate an integrated management process of the coastal zone of the Al Hoceima and Chefchaouen provinces. Part of this project is devoted to the study and management of sensitive zones of the CAMP area including the Al Hoceima National Park coastal area and its western continuity until Oued Laou.