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ANNEX I

**ACTION PLAN FOR THE CONSERVATION
OF BIRD SPECIES LISTED IN ANNEX II
TO THE SPA PROTOCOL AND BIOLOGICAL DIVERSITY**

FOREWORD

The Action Plan for the conservation of bird species listed in Annex II of the protocol SPA and biological diversity follows a series of four Action Plans adopted by the parties to the Convention for the Protection of the marine environment and the coastal region of the Mediterranean. These Action Plans deal respectively with the management of the monk seal, and the conservation of marine turtles, cetaceans, and marine vegetation. They identify and lay out priorities and activities that need to be undertaken to attain their specific objectives. They also urge and encourage co-ordination and co-operation amongst Mediterranean states to work towards the achievement of conservation of a species or a group of species within this region.

The elaboration of this Action Plan follows various initiatives taken by other organisations, such as BirdLife International Partners in the Mediterranean countries, WWF, IUCN, Medmaravis, Tour du Valat, on the conservation of biodiversity, particularly with respect to birds, and their important sites and habitats.

In 1995 the Parties to the Barcelona Convention adopted a new protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean. Annex II of this new protocol lists the endangered or threatened species found in the Mediterranean, including 15 bird species.

Various actions are being taken at national level and at species level by several NGOs, particularly BirdLife International partners in their respective countries, to counteract some of the threats, which are being faced by a number of the species dealt with by this Action Plan.

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DRAFT ACTION PLAN FOR THE CONSERVATION OF BIRD SPECIES LISTED IN ANNEX II TO THE SPA PROTOCOL AND BIOLOGICAL DIVERSITY

1. Introduction

1.1 General overview of the avifauna of the Mediterranean

Birds have always fascinated and captivated humankind's imagination. Their beauty and their song, as well as their power of flight have inspired humankind throughout the millennia. Their aesthetic, recreational, social and economical value is now recognized worldwide. Birds know no boundaries and they play an important part in nature's ecosystems. They are also good indicators of the health status of the environment. In spite of all this it has also been humankind who throughout the years has threatened their existence.

The Mediterranean is the home of several hundred bird species, some of which occur exclusively in this climatic zone. The seabirds that are found along the crowded coastal zone and the islands of this almost land-locked sea are the resilient ones and include, amongst others, the rare and localised species, *Larus audouinii*.

Pelagic bird species in the Mediterranean are relatively few, but one still finds several fine colonies of *Calonectris diomedea*, *Puffinus yelkouan*, *Puffinus mauretanicus* and *Hydrobates pelagicus* breeding along sea-cliffs or on small isolated rocky islands and islets.

Coastal seabirds, such as terns, occur in the river deltas and also on inland saltwater lagoons. Many coastal species, however, are also found breeding in sub-optimal and man-modified habitats such as salinas, while others rely on municipal waste dumps and discards from fishing boats for their food.

The ornithological year of the Mediterranean is dominated by the seasonal migrations of birds from Europe to Africa and vice versa, and several European bird species over-winter in the Mediterranean basin.

Bird Species as listed in Annex II – List of Endangered or Threatened Species

<i>Pandion haliaetus</i>	<i>Pelecanus onocrotalus</i>
<i>Calonectris diomedea</i>	<i>Pelecanus crispus</i>
<i>Falco eleonora</i>	<i>Phoenicopterus ruber</i>
<i>Hydrobates pelagicus</i> *	<i>Puffinus yelkouan</i> ***
<i>Larus audouinii</i>	<i>Sterna albifrons</i>
<i>Numenius tenuirostris</i>	<i>Sterna bengalensis</i>
<i>Phalacrocorax aristotelis</i> **	<i>Sterna sandvicensis</i>
<i>Phalacrocorax pygmeus</i>	

* The Mediterranean population belongs to *melitensis*

** The Mediterranean population belongs to *desmarestii*

*** This has recently been split into two species *Puffinus yelkouan* and *Puffinus mauretanicus*

1.2 An overview of threats

Among the species listed as endangered or threatened there are those:

- Which are globally threatened;
- Which are endemic to the region and have an unfavourable conservation status;
- Whose populations are not concentrated in the Mediterranean but which have an unfavourable conservation status in the region.
- Whose populations are not concentrated in the Mediterranean, have a healthy conservation status but are regarded as a flagship species.

Birds have something in common. They are all threatened by several threats including amongst others:

- Oil pollution
- Direct and indirect depletion of food resources
- Non-sustainable forms of tourism
- Disturbance
- Direct persecution (such as illegal hunting and the use poison)
- Mortality from by-catch
- Loss of habitats
- Degradation of habitat, particularly wetlands and small islands of high biological importance for birds.
- Introduction of and predation by alien species

1.3 Ecology and status of the species

The biology, ecology, distribution and conservation status of the 15 bird species has been presented in an information document entitled "List of Threatened Bird Species as Adopted by the Barcelona Convention". It is composed of an annotated List compiled by Medmaravis and edited by J. Criado, J. Walmsley and R. Zotier (April 1996) and gives the status, population size and trend, ecology, threats and conservation measures of each species. This has been complemented by other national, regional and global contributions, particularly by BirdLife International.

There are still many gaps in our knowledge concerning coastal and pelagic birds and their habitats in the Mediterranean, particularly seabird movements and their distribution at sea. There is a crying need for mapping of breeding, feeding, moulting and wintering areas of pelagic birds in the Mediterranean.

1.4 Geographical scope of the plan

The plan covers the sea and the countries, which have a Mediterranean coastline excluding the parts of these countries, which are not of a Mediterranean bio-climate. Some of the species, such as *Puffinus mauretanicus*, and *Puffinus yelkouan*, have a restricted breeding range in the Mediterranean. Others, such as *Falco eleonora*, have migration routes and/or wintering areas outside the Mediterranean. There are other species, such as *Pelecanus onocrotalus*, *Phoenicopiterus ruber*, *Pandion haliaetus*, *Sterna sandvicensis*, and *Sterna albifrons*, which are widespread elsewhere, but have a limited range and/or a small population in the Mediterranean. For one of the species, *Numenius tenuirostris*, which is a globally endangered species, the Mediterranean is part of its wintering range.

2. Action Plan objectives and targets

2.1 The main objective

The main purpose of the Action Plan is to maintain and/or restore the population levels of bird species found in the SPA Protocol's Annex II to a favourable conservation status and to ensure their long-term conservation.

2.2 Other objectives

1. To share knowledge and expertise between the Mediterranean countries.
2. To co-ordinate efforts among Mediterranean countries and other relevant initiatives and agreements to ensure the implementation of these activities.
3. To encourage a synergic approach among the Mediterranean countries in the protection of these bird species and their habitats.
4. To encourage research to fill the many gaps in our knowledge concerning coastal and pelagic birds in the Mediterranean, particularly seabird distribution and their movements, feeding, moulting and wintering areas at sea.

3. Strategic approach

In the implementation of the plan prioritisation will be addressed at three levels:

* **Species level**

- The present Action Plan should be implemented for all the species found in Annex II of the Protocol SPA and biological diversity.
- The conservation of those species, which are globally threatened, is to be considered one of the main priorities of the present Action Plan.
- The conservation of other species, which have an unfavourable conservation status at the regional level, should also be a priority.

* **National level**

- To map the distribution of the species on land as well as at sea.
- To identify important bird areas at sea.
- To identify and control threats.
- To identify, on the basis of the best available data, areas which should be protected.
- To carry out proper environment impact assessments for all proposed development where any one of the species is found.
- To elaborate and implement appropriate legislation.
- To pursue the principles and requirements of Agreements and Conventions.

***Regional (Mediterranean) level**

- To strengthen co-operation and exchange of information and experiences in research.
- To disseminate information.
- To promote and support the identification of important bird areas at sea.
- To promote the creation and monitor protected areas of coastal and marine important bird areas.
- To prevent and control the expansion of invasive alien species, particularly in small islands of high biological importance for birds .
- To identify and monitor the migratory hotspots

Collaboration at a broader international level with relevant Conventions/Agreements such as the Berne convention, the Bonn convention, in particular with AEWA Agreement, should be sought whenever appropriate.

4. Actions to achieve the objectives of the Action Plan

4.1 Protected areas

- Important bird areas at sea should be identified and should be given legal protection status.
- The breeding sites of all threatened species should be legally established as protected areas with an adequate management plan.
- Coastal and marine protected areas of importance to birds should be continuously monitored and properly managed.

4.2 Legislation

- Species should be afforded all round legal protection by the Contracting Parties in those countries where they breed as well as in those countries where they occur during other seasons, as per the guidelines provided by RAC/SPA (see para. 5).
- Legislation should include dissuasive penalties.
- Assessment of environmental impact on these species and their habitats by any type of development should be legally obligatory.

4.3 Research

- In view of the existing gaps in our knowledge concerning coastal and pelagic birds and their habitats in the Mediterranean, especially of their movements and distribution at sea, priority must be given to the mapping of breeding, feeding, moulting and wintering areas of the species concerned.
- Resources should be made available for researchers to fill the gaps of our knowledge, such as the establishment of a Mediterranean seabirds atlas, and monitoring population size and breeding success of less known species.

4.4 Awareness, Education & Training

- Contracting parties should promulgate the legislation concerning the endangered bird species.
- Contracting parties should seek and/or provide the training of personnel of monitoring, conserving and managing protected areas of importance to birds.
- The organisation of ornithological training courses *in situ* for trainers and personnel should be initiated and supported by RAC/SPA and the partners of the Action Plan.
- Public awareness and education programmes and campaigns highlighting the vulnerability of threatened species directed particularly to stakeholders and decision makers, should be planned and implemented in co-operation with non-government organisations.

4.5 National Action Plans

- Contracting Parties should establish National Action Plans for the conservation of endangered and threatened bird species in the Mediterranean.
- National Action Plans should take into consideration the implementation of the actions relevant to the respective countries proposed in this Action Plan.
- Future National Action Plans should address the current factors causing loss or decline of the bird species in Annex II, suggest appropriate legislative matters, give priority to the protection and management of sites, and ensure continued research and monitoring of populations and sites.
- Contracting Parties should apply and implement those Action Plans which are already in existence.

5. Implementation

5.1 Regional co-ordination structure

Regional co-ordination of the implementation of the present Action Plan will be guaranteed by the Mediterranean Action Plan's (MAP) secretariat through the regional Activity Centre for Specially Protected Areas. The main functions of the co-ordinating structure shall consist in:

- Promoting co-operation among contracting Parties in those actions executed in transboundary areas and at sea in national waters and beyond.
- Promoting the development of a regional network for monitoring populations and distribution of Mediterranean threatened bird species, in co-ordination with other organisations.
- Supporting and collaborate with contracting Parties in the establishment of important bird areas at sea.
- Providing elaborated guidelines to assist countries in their efforts to afford adequate legislative protection to the endangered species.
- Elaborating guidelines for monitoring and management plans in collaboration with experts and other interested organisations.
- Organising meetings of experts on specific subjects relating to the ecology and conservation of the bird species found in Annex II.
- Preparing reports on progress in the implementation of this Action Plan.

Complementary work done by other international organisations and aiming at the same objectives, shall be encouraged, promoting co-ordination and avoiding possible duplication of efforts.

5.2 Participation

- Any concerned international and or national organisation is invited to participate in the necessary actions for the implementation of this Action Plan.
- Links with other bodies responsible for Action Plans dealing with one or more species found in Annex II should be made to strengthen co-operation and avoid duplication of work.

5.3 Title of Partner of the Action Plan

To encourage and reward contributions to the work of applying the Action Plan, the Contracting Parties may at their ordinary meetings grant the title of "Action Plan Partner" to any organisation (governmental, Non-governmental, economic, etc.) that has to its credit concrete actions likely to help the conservation of birds found in Annex II of the Protocol. Conditions for the awarding of the Partner title shall be adopted by the Contracting Parties following the advice given by the meeting of National Focal Points for SPA.

The co-ordination structure shall set up a mechanism for regular dialogue between the participating organisations and where necessary, organise meetings to this effect. Dialogue should be made mainly by mail, including email.

5.4 Assessment and revision

National focal points, in collaboration with national experts, will be expected to:

- assess the implementation progress of the AP during their meetings.
- suggest recommendations to be submitted to the Contracting Parties.
- suggest adjustments to the implementation timetable.

5.5 Timing

The actions advocated by the present Action Plan are to be carried out over a three-year period, starting from when the Action Plan is adopted by the Contracting Parties. At the end of this period, RAC/SPA will prepare a report on the progress so far made in implementing the advocated actions, and will submit this to the National Focal Points for SPAs, who will make follow-up suggestions to the Parties.

5.6 Timetable

Action	Deadline	By whom
Organisation of the first Mediterranean symposium on ecology and conservation of the bird species found in Annex II.	Beginning of the year 2005	RAC/SPA and Partners
Launching of the procedures for legal protection of species	1 year after adoption	Contracting Parties
Establishment of research programmes to fill the knowledge gaps about the threatened species.	1 year after adoption	Contracting Parties
Establishment of a directory of organisations and experts concerned with the threatened and endangered bird species in the Mediterranean.	End of year 2004	RAC/SPA
Establishment of National Action Plans for the conservation of endangered and threatened bird species in the Mediterranean.	2004-2006	Contracting Parties
Application and implementation of any Action Plans where they are already in existence.	2004-2006	RAC/SPA & Contracting Parties
Setting up of a regional network for monitoring populations and distribution of Mediterranean threatened bird species, in co-ordination with other organisations .	End of year 2005	RAC/SPA & Partners
Legal establishment of breeding sites as protected areas with adequate management plans.	End of year 2005	Contracting Parties
Elaborating guidelines for monitoring and management plans in collaboration with experts and other interested organisations.	2004-2006	RAC/SPA & Partners
Identification of important bird areas at sea.	2004-2006	Contracting Parties
Mapping of breeding, feeding moulting and wintering areas of pelagic species.	2004-2006	Contracting Parties
Preparation of reports on progress in the implementation of this Action Plan.	End of year 2006	RAC/SPA
Training courses.	2004-2006	RAC/SPA, Partners & Contracting Parties

Proposed Specific Plans

These Action Plans should be implemented in all the Mediterranean states where the species breed, winter or occur on migration. They should be reviewed and updated every three years. If sudden major environmental changes occur, which may affect any of the species' populations where the species occur in the Mediterranean, an emergency review should be immediately undertaken. The current status given below covers the countries that have a Mediterranean coast. Proposed actions, which apply to all species should include *inter alia* the initiation of public awareness campaigns of the plight of these species and the preparation of National Action Plans. Other ongoing Action Plans, which have been developed by other institutions, and which cover some of the species, are listed below, and should be taken in consideration and implemented where these species occur.

Cory's Shearwater
Calonectris diomedea

▪ **Current status**

The nominate subspecies *Calonectris d. diomedea* is restricted to the Mediterranean. It breeds in sea-cliffs, and on rocky islands and islets. The population has been estimated at less than 76,000 pairs, but surveys in the eastern part of the Mediterranean and in the Adriatic are lacking. There has been a considerable decline of the species throughout the Mediterranean.

▪ **Current factors causing loss or decline**

Introduced mammals, such as *Rattus* sp., which affect breeding success; illegal hunting; taking of eggs and/or chicks; mortality from bycatch (longlines), development close to colonies and disturbance, and possibly oil spills and chemical pollution of the sea.

▪ **Status under international instruments**

Annex I - European Union Directive on the conservation of wild birds (79/409/EEC/1979).
European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).

▪ **Current Action Plans**

None

▪ **Action Plan objectives and target**

To halt the decline of the population and maintain healthy colonies.

▪ **Proposed action**

- Inventory and map critical habitats supporting the colonies, particularly in the eastern part of the Mediterranean.
- Confer strictly protected status on the species.
- Prohibit all type of disturbances to the breeding colonies, including the taking of eggs and young.
- Monitor and warden colonies, which are under the threat of disturbance.
- Create SPAs where the species' breeding colonies exist.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to known colonies.
- Prevent oil spills and chemical pollution of the sea.
- Monitor levels of Mercury and *Chlorinated hydrocarbons* in populations.
- Develop and implement management projects targeting the conservation of the breeding habitat and strict control of introduced mammals, as well as preventing the introduction of alien predatory species.
- Identify important bird areas at sea for the species.
- Elaborate an action Plan to reduce mortality at sea especially from by-catch

Mediterranean Shearwater ***Puffinus yelkouan***

▪ **Current status**

The two subspecies of the endemic Mediterranean Shearwater have recently been given species status and are now considered as two separate species Balearic Shearwater *Puffinus mauretanicus** and Levantine Shearwater *Puffinus yelkouan*. As both species still appear in the protocol under one species they are being treated jointly hereunder. The Balearic Shearwater breeds in the Balearic Islands while the Levantine Shearwater breeds the Thyrrenean, Adriatic and Aegean Seas. Both are pelagic species, which breed on rocky islands and islets. The population of the Balearic Shearwater has been estimated at about 1750 (2002 figures by Spanish Working Group on Balearic Shearwater) pairs, while that of the Levantine Shearwater probably at less than 16,500 pairs. Some pairs probably breed along the North African coast.

▪ **Current factors causing loss or decline**

Lack of food resources; lack of protection of breeding colonies; predation by Rats *Rattus* sp, Yellow-legged Gulls *Larus cachinnans*, and possibly feral cats; disturbance; collection for food (at least until 1970s); some mortality from bycatch (nets); and possibly oil spills and chemical pollution of the sea.

▪ **Status under international instruments**

Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).

European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).

▪ **Current Action Plans**

Species Action Plan for the Balearic Shearwater *Puffinus mauretanicus* in Europe prepared by BirdLife International on behalf of the European Commission (final draft December 1999). A national action Plan for the conservation of the *Puffinus mauretanicus* was adopted by Spanish government in 1999.

Official Working Group in Spain (Ministry of Environment) to reveal status and propose conservation actions for *Puffinus mauretanicus*.

▪ **Action Plan objectives and target**

To halt the decline of the two species, to restore their numbers to former status and to increase the knowledge about their biology.

▪ **Proposed action**

- Inventory and map critical habitats supporting the colonies.
- Confer strictly protected status on the species.
- Prohibit all type of disturbances to the breeding colonies, including the taking of eggs and young.
- Monitor the population dynamics of the species and warden colonies.
- Control and if possible eradicate rats and predators in the colonies affected by introduced mammals and prevent any further introduction of terrestrial mammals in breeding colonies.
- Ensure the protection of the breeding habitat and create SPAs where the species' breeding colonies exist.

* the Balearic Shearwater is classed as a critically threatened species by BirdLife International because of extreme risk of extinction in three generations (current decline over 7% annually).

- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to known colonies.
- Promote adequate fishing practices, which take into account the conservation of the species.
- Prevent oil spills and chemical pollution of the sea.
- Undertake surveys of colonies and research on the conservation biology of the species.
- Identify important bird areas at sea for the species.
- Elaborate an action Plan to reduce mortality at sea especially from by-catch.

Storm Petrel
Hydrobates pelagicus

▪ **Current status**

Pelagic species breeding in small to very large colonies mainly on islets and in caves along the coast. Subspecies *melitensis* is endemic to the Mediterranean. Important breeding colonies are found in Malta, Sardinia and Sicily. Breeding surveys are totally lacking for the Adriatic and eastern Mediterranean. A general decline has been recorded.

▪ **Current factors causing loss or decline**

Loss of habitat; disturbance; predation by *Rattus* sp. and Yellow-legged Gull *Larus cachinnans*; possibly oil spills and chemical pollution of the sea.

▪ **Status under international instruments**

Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).

Annex I - European Union Directive on the conservation of wild birds (79/409/EEC/1979).

European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).

▪ **Current Action Plans**

None

▪ **Action Plan objectives and target**

To halt its decline and maintain healthy breeding colonies.

▪ **Proposed action**

- Inventory and map critical habitats supporting the colonies, particularly in the eastern part of the Mediterranean.
- Confer strictly protected status on the species.
- Prohibit all type of disturbances to the breeding colonies.
- Monitor and warden colonies, which are under threat.
- Create SPAs where the species' breeding colonies exist.
- Plan, regulate and/or manage activities and processes, which may result in loss of habitat and the introduction and spread of invasive alien species, particularly mammals and Yellow-legged Gull *Larus cachinnans*.
- Control or eradicate alien species that have become invasive.
- Prevent oil spills and chemical pollution of the sea.
- Identify important bird areas at sea for the species.

Shag
Phalacrocorax aristotelis

▪ **Current status**

The Mediterranean Shag *Phalacrocorax aristotelis desmarestii* is an endemic subspecies, which is present in western Mediterranean (Balearic Islands, Corsica and Sardinia), and the Adriatic, Aegean and Black Seas, breeding along the coast on rocky islands and islets. Mediterranean population is less than 10,000 pairs.

▪ **Current factors causing loss or decline**

Human disturbance; oil pollution; habitat loss; mortality from bycatch; Seine net fishing and long-line hauling close to colonies and moulting areas.

▪ **Status under international instruments**

Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979) (79/409/EEC/1979).

European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).

▪ **Current Action Plans**

Species Action Plan for the Mediterranean Shag *Phalacrocorax aristotelis desmarestii* in Europe prepared by BirdLife International on behalf of the European Commission (final draft December 1999).

▪ **Action Plan objectives and target**

To ensure the survival of the Mediterranean populations.

▪ **Proposed action**

- Inventory and map critical habitats.
- Confer strictly protected status on the species.
- Prohibit all type of disturbances to the breeding colonies.
- Monitor populations.
- Create SPAs where the species' populations breed and encourage buffer zones surrounding breeding areas including adjacent sea area.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to breeding sites.
- Take measures to influence fishing policies in order to avoid negative effects on food stocks and food availability, and to avoid mortality from bycatch.
- Prevent oil spills and chemical pollution of the sea.
- Identify important bird areas at sea for the species.

Pygmy Cormorant
Phalacrocorax pygmeus

▪ **Current status**

The main breeding populations in the Mediterranean of this globally threatened species are found in Albania, Serbia, Greece, Turkey, with some pairs in Israel and Italy. It is restricted to lowland freshwater and brackish habitats, and in winter frequents coastal lagoons, deltas, rivers and riparian forests. The whole population of the Mediterranean countries is probably less than 2,500 pairs.

▪ **Current factors causing loss or decline**

Degradation and loss of wetland habitat; disturbance and hunting; destruction of breeding colonies.

▪ **Status under international instruments**

Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).

Appendix II - Convention on the Conservation of Migratory Species of Wild Animals (1979).

European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).

Listed in the AEWPA Action Plan (Column B Category 1)

▪ **Current Action Plans**

Action Plan for the Pygmy Cormorant (*Phalacrocorax pygmeus*) in Europe prepared by BirdLife International on behalf of the European Commission (February 1996).

Globally threatened birds in Europe Action Plans. Council of Europe – BirdLife International – EU Life-Nature (1996).

▪ **Action Plan objectives and target**

To maintain the recent increase of the species' population size and distribution.

▪ **Proposed action**

- Afford strict protection to the species and its habitat, particularly from hunting, disturbance and development.
- Manage wintering and breeding sites in order to meet the species' requirements.
- Monitor breeding and wintering populations.
- Monitor water levels and quality at breeding sites.
- Create SPAs where the species' breeding colonies exist.
- Research its feeding and dispersal ecology.
- Develop education campaigns hunters.
- Restore degraded wetlands used by the species.

White Pelican
Pelecanus onocrotalus

▪ ***Current status***

In the Mediterranean it breeds in Turkey and Greece. Numbers declined in the last thirty years. Nests on the ground in large reedbeds, bare earth or rocky islands, in isolation from the mainland to be safe from mammalian predators.

▪ ***Current factors causing loss or decline***

Habitat loss and destruction; depletion of fish stocks; persecution and disturbance; pollution, flooding; disease; collision with electric power lines.

▪ ***Status under international instruments***

Class A - African Convention on the Conservation and Natural Resources.

Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).

Appendix I (Pal.) II (Western Pal.) - Convention on the Conservation of Migratory Species of Wild Animals (1979).

European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean Current Action Plans (1626/94 (EC) 1994).

Listed in the AEWPA Action Plan (Column A Category 1a/3c).

▪ ***Current Action Plans***

None

▪ ***Action Plan objectives and target***

To reverse the decline of the breeding populations in the Mediterranean.

▪ ***Proposed action***

- Confer strictly protected status on the species.
- Prohibit all type of disturbances to the breeding colonies and their habitat.
- Monitor and warden breeding colonies.
- Create SPAs where the species' breeding colonies exist.
- Plan, regulate and/or manage activities and processes of: coastal development and infrastructure that impacts and/or fragments habitats; pollution; and overexploitation of fish stocks.
- Develop education campaigns aimed at local fishermen.
- Restore degraded wetlands used by the species.
- Create artificial nesting site close to foraging sites.

Dalmatian Pelican
Pelecanus crispus

▪ **Current status**

Vulnerable and globally threatened. In the Mediterranean small populations (totalling 1000 pairs) breed mainly in Albania, Greece and Turkey. Breeds on inland and coastal wetlands and nests on floating islands of reeds and on bare ground on islands, isolated from mainland to be safe from mammalian predators. Up to about 3000 birds winter in Albania, Greece, Syria and Turkey.

▪ **Current factors causing loss or decline**

Wetland drainage resulting in a sharp decline of available breeding sites; collisions with electric wires; persecution due to competition with commercial fisheries.

▪ **Status under international instruments**

Class A - African Convention on the Conservation and Natural Resources (1968).

Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).

Appendix I & II - Convention on the Conservation of Migratory Species of Wild Animals (1979).

Appendix I - Convention on International trade in Endangered Species of Wild Fauna and Flora (1973).

European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).

Listed in the AEWPA Action Plan (Column A Category 1a/1c).

▪ **Current action plans**

Action Plan for the Dalmatian Pelican (*Pelecanus crispus*) prepared by BirdLife International on behalf of the European Commission (April 1996).

Globally threatened birds in Europe Action plans. Council of Europe – BirdLife International – EU Life-Nature (1996).

A national action plan lead by the institute of ornithology in Croatia to re-introduce *Pelecanus crispus* in Croatia.

▪ **Action plan objectives and target**

To prevent any declines and to increase the population size to a level at which it can be regarded as safe.

▪ **Proposed action**

- Confer strictly protected status on the species and its habitat during breeding and wintering in all range states
- Establish wardened buffer zones around breeding colonies.
- Prohibit all type of disturbances to the breeding colonies.
- Create SPAs where the species' breeding colonies exist.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to known colonies.
- Manage in a sustainable way or restore where necessary all wetlands where the species occur.
- Replace overhead electricity wires by thick cables or lay them underground.
- Monitor continually the breeding and wintering populations
- Develop education campaigns for local fishermen and hunters, and decision- makers.

Greater Flamingo
Phoenicopterus ruber

▪ ***Current status***

In the Mediterranean, it breeds in localised sites in suitable wetlands, mainly in Spain, France and Turkey, as well as in Italy. Breeding colonies are established at sites free from human disturbance and secure from terrestrial predators. Breeding is irregular with numbers fluctuating from one season to another. Substantial numbers also occur in Greece and Cyprus but do not breed. Mediterranean population seems to be separated from Asiatic populations, with minimal exchange and overlap in Libya and Egypt.

▪ ***Current factors causing loss or decline***

Urban development; habitat loss for tourism development; disturbance; hunting.

▪ ***Status under international instruments***

Class A - African Convention on the Conservation and Natural Resources (1968).

Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).

Appendix II - Convention on the Conservation of Migratory Species of Wild Animals (1979).

Annex I - European Union Directive on the conservation of wild birds (79/409/EEC/1979).

European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).

Listed in the AEWPA Action Plan (Column B Category 2a)

▪ ***Current Action Plans***

None

▪ ***Action Plan objectives and target***

To maintain healthy breeding populations.

▪ ***Proposed action***

- Confer strictly protected status on the species.
- Prohibit all type of disturbances to the breeding colonies.
- Monitor and warden breeding colonies.
- Create SPAs where the species' breeding colonies exist.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to known colonies.
- Restore wetlands where the species used to breed.

Osprey
Pandion haliaetus

▪ ***Current status***

A cosmopolitan species, which is vulnerable in several regions. Less than 70 pairs have been known to breed regularly in the last fifteen years in the Mediterranean (Balearic Islands, Corsica, Morocco and Algeria). Some local small populations have disappeared from other islands (e.g. Ibiza, Sicily & Sardinia).

▪ ***Current factors causing loss or decline***

Habitat destruction and disturbance at breeding sites related to tourism. Some mortality also from illegal poaching and electrocution also occur.

▪ ***Status under international instruments***

Class B - African Convention on the Conservation and Natural Resources (1968).

Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).

Appendix II - Convention on the Conservation of Migratory Species of Wild Animals (1979).

Annex I - European Union Directive on the conservation of wild birds (79/409/EEC/1979).

European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).

▪ ***Current Action Plans***

None

▪ ***Action Plan objectives and target***

Reverse the decline of the breeding population in the Mediterranean.

▪ ***Proposed action***

- Make an inventory and map critical habitats supporting the remaining breeding pairs.
- Confer strictly protected status on the species.
- Prohibit the destruction of its habitat, and the disturbance, taking or trade of the species.
- Use area-based measures to protect and restore its habitats.
- Create SPAs where it breeds.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to known breeding sites.
- Research the causes for the decline of the species.

Eleonora's Falcon
Falco eleonora

▪ **Current status**

Breeds in colonies along the coast of the mainland or on rocky islands, which are often uninhabited. The total world population is estimated at 6,200 pairs but no comprehensive census has been carried out. Almost all the entire population breeds on rocky Mediterranean islands. The Aegean islands and Crete hold about 70% of the whole population, but other substantial colonies are also found in Spain, Italy and Tunisia.

▪ **Current factors causing loss or decline**

Predation by cats and rats; human disturbance in colonies; habitat degradation; taking of eggs and young; hunting; accidental poisoning from pest control methods.

Status under international instruments

Class B - African Convention on the Conservation and Natural Resources (1968).

Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).

Appendix II - Convention on International trade in Endangered Species of Wild Fauna and Flora (1973).

Annex I European Union Directive on the conservation of wild birds (79/409/EEC/1979).

Current Action Plans

International Species Action Plan Eleonora's Falcon *Falco eleonora* prepared by BirdLife International on behalf of the European Commission (final draft December 1999).

▪ **Action Plan objectives and target**

To maintain the colonies at the level of 1999, through preserving the breeding sites particularly the uninhabited islands.

▪ **Proposed action**

- Confer strictly protected status on the species.
- Prohibit all type of disturbances to the breeding colonies, including the taking of eggs and young.
- Monitor and warden colonies, which are under threat.
- Create SPAs where the species' breeding colonies exist.
- Plan, regulate and/or manage activities and processes, which may result in loss of habitat and the introduction/spread of invasive alien species.
- Control or eradicate alien species that have become invasive.
- Carry out breeding surveys in eastern Mediterranean countries.
- Prevent poisoning through awareness and cooperation of with farmers.

Slender-billed Curlew
Numenius tenuirostris

▪ **Current status**

Globally threatened. Once described as common in the Mediterranean region, it is now one of the rarest and least known species in the Western Palearctic. Migrates from Siberia across eastern and southern Europe to winter in North Africa. On passage, occurs in a wide range of habitats: salt marshes, saltpans, brackish lagoons, dry fishponds, steppe and freshwater marshes.

▪ **Current factors causing loss or decline**

Habitat loss in passage and wintering areas. Other factors unknown.

▪ **Status under international instruments**

Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).

Appendix I - Convention on the Conservation of Migratory Species of Wild Animals.

Appendix I - Convention on International trade in Endangered Species of Wild Fauna and Flora (1973).

Annex I - European Union Directive on the conservation of wild birds (79/409/EEC/1979).

European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).

Memorandum of Understanding concerning Conservation Measures for the Slender-billed Curlew under the Bonn Convention (CMS) (1994).

Listed in the AEWa Action Plan (Column B Category 1a/1b/1c).

▪ **Current Action Plans**

International Action Plan for the Slender-billed Curlew prepared by BirdLife International on behalf of the European Commission (February 1996).

Globally threatened birds in Europe Action Plans. Council of Europe – BirdLife International – EU Life-Nature (1996).

▪ **Action Plan objectives and target**

To provide safe passage and wintering grounds in the Mediterranean.

▪ **Proposed action**

- Confer strictly protected status on the species and on its “look-alike” species, where it occurs on passage and during winter.
- Monitor and warden wintering sites
- Afford appropriate protection and management of all passage and wintering grounds.
- Plan, regulate and/or manage activities and processes of development near wintering sites.
- Train wardens, ornithologists and hunters in the identification of the species.
- Increase public awareness of the species critically threatened status amongst politicians, decision-makers and hunters.
- Ratify the AEWa Agreement in those countries where it is lacking.

Audouin's Gull
Larus audouinii

▪ **Current status**

Endemic species to the Mediterranean. Its main breeding populations occur in the western Mediterranean in coastal and island sites in Spain and in Corsica. Other colonies occur in other parts of the Mediterranean including Greece, Turkey, Tunisia and Sardinia. It was close to extinction in the 1970s, but better enforcement protection measures resulted in an increase in the breeding population.

▪ **Current factors causing loss or decline**

Habitat alterations at breeding sites; changes in fishing practices and competition mainly with the Yellow-legged Gull *Larus cachinnans*; egg collection and human persecution and disturbance. The depletion of food resources and chemical pollution and spills as threats and limiting factors are not properly known.

▪ **Status under international instruments**

Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).

Appendix I & II - Convention on the Conservation of Migratory Species of Wild Animals (1979).

Annex I - European Union Directive on the conservation of wild birds (79/409/EEC/1979).

European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).

Listed in the AEWI Action Plan (Column A Category 1a/3a).

▪ **Current Action Plans**

International Action Plan for Audouin's Gull (*Larus audouinii*) prepared by BirdLife International on behalf of the European Commission (March 1996).

Globally threatened birds in Europe Action Plans. Council of Europe – BirdLife International – EU Life-Nature (1996).

Action Plan to restore the Audouin's Gull *Larus audouinii* by Government Committee of Palm Islands Nature Reserve in Lebanon.

Official Working Group in Spain (Ministry of Environment) to reveal status and propose conservation actions for *Larus audouinii*.

▪ **Action Plan objectives and target**

To maintain a healthy breeding population and increase the number of colonies.

▪ **Proposed action**

- Inventory and map critical habitats supporting the colonies, particularly in the eastern part of the Mediterranean.
- Confer strictly protected status on the species.
- Prohibit all type of disturbances to the breeding colonies, including the taking of eggs and young.
- Monitor and warden colonies, which are under threat.
- Create SPAs where the species' breeding colonies exist.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to known colonies.
- Control or eradicate invasive competitive species and terrestrial mammals at colonies.
- Prevent oil spills and chemical pollution of the sea.
- Identify important bird areas at sea for the species.
- Elaborate an action Plan to reduce mortality at sea especially from by-catch.

Lesser Crested Tern
Sterna begalensis

▪ **Current status**

In the Mediterranean, a small localised population (exact breeding population unknown but probably less than 4,000 pairs) of the endemic subspecies *Sterna bengalensis emigrata* breeds on two Libyan offshore islands. Occasional breeding has also been recorded in France, Greece, Italy and Spain.

▪ **Current factors causing loss or decline**

Occasional disturbance by fishermen; probably predation by Yellow-legged Gull *Larus cachinnans*; and possibly oil pollution and toxic chemicals.

▪ **Status under international instruments**

Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).

Appendix II - (African pops.) Convention on the Conservation of migratory Species of wild Animals (1979).

European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).

Listed in the AEWI Action Plan (Column A Category 1/c).

▪ **Current Action Plans**

None

▪ **Action Plan objectives and target**

To maintain a healthy population and possibly to increase the population size.

▪ **Proposed action**

- Confer strictly protected status on the species.
- Prohibit all type of disturbances to the breeding colonies, including the taking of eggs and young.
- Monitor and warden colonies, which may be under the threat of disturbance.
- Create SPAs where the species' breeding colonies exist and prohibit access to known sites except for scientific purposes.
- Investigate whether local fisheries impacts on the bird's breeding success.
- Prevent oil spills and chemical pollution of the sea.
- Establish population size and trends.

Sandwich Tern
Sterna sandvicensis

▪ ***Current status***

In the Mediterranean, a population of probably less than 3,000 pairs nests in colonies mainly in river deltas, on sandbanks and in salinas. Also migrates from elsewhere into the Mediterranean for wintering.

▪ ***Current factors causing loss or decline***

Coastal development; disturbance by humans and animals; predation.

▪ ***Status under international instruments***

Appendix II Convention on the Conservation of European Wildlife and Natural Habitats (1979).

Appendix II Convention on the Conservation of Migratory Species of Wild Animals (1979).

Annex I European Union Directive on the conservation of wild birds (79/409/EEC/1979).

Listed in the AEWA Action Plan (Column A Category 3a/3c).

▪ ***Current Action Plans***

None

▪ ***Action Plan objectives and target***

To maintain healthy breeding colonies

▪ ***Proposed action***

- Inventory and map critical habitats supporting the colonies, particularly in the eastern part of the Mediterranean, where breeding surveys are lacking.
- Confer strictly protected status on the species.
- Prohibit all type of disturbances to the breeding colonies.
- Monitor and warden colonies, which are under the threat of disturbance.
- Create SPAs where the species' breeding colonies exist.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development that impacts on wetlands and other breeding habitats.
- Restore wetlands sites where the species breed.

Little Tern
Sterna albifrons

▪ ***Current status***

Mediterranean population mainly along southern coastline and western basin, where its actual size is unknown. Quantitative data from the eastern Adriatic and eastern Mediterranean countries are lacking. Breeds in rivers and deltas, estuaries, lagoons and salinas.

▪ ***Current factors causing loss or decline***

Habitat loss; disturbance; predation; colony destruction.

Status under international instruments

Appendix II - Convention on the Conservation of European Wildlife and Natural Habitats (1979).

Appendix II - Convention on the Conservation of migratory Species of wild Animals (1979).

Annex I - European Union Directive on the conservation of wild birds (79/409/EEC/1979).

European Union Regulation laying down certain technical measures for the conservation of fishery resources in the Mediterranean (1626/94 (EC) 1994).

Listed in the AEWa Action Plan (Column A Category 3/a).

▪ ***Current Action Plans***

None

▪ ***Action Plan objectives and target***

To maintain healthy breeding colonies.

▪ ***Proposed action***

- Inventory and map critical habitats supporting the colonies, particularly in the eastern Adriatic and eastern Mediterranean countries where quantitative data are lacking.
- Confer strictly protected status on the species.
- Prohibit all type of disturbances to the breeding colonies.
- Monitor and warden colonies, which are under the threat of disturbance.
- Create SPAs where the species' breeding colonies exist.
- Plan, regulate and/or manage activities and processes of coastal and infrastructure development near to known colonies.
- Establish population size and trends.
- Restore wetlands where they are known to breed.

ANNEX II

DRAFT ACTION PLAN FOR THE CONSERVATION OF CARTILAGINOUS FISHES (CHONDRICHTHYANS) IN THE MEDITERRANEAN SEA

FOREWORD

Chondrichthyan fishes constitute a class within the zoological classification which includes the cartilaginous fish commonly named sharks, skates, rays and chimaeras. The skates and the rays, or batoids, are flattened shark-like fish.

The Action Plan for the Conservation of Chondrichthyan Fishes in the Mediterranean Sea is in line with :

1) the Barcelona Convention adopted by the Mediterranean countries, in particular the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean;

2) the International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks) proposed by FAO and adopted by the UN member states in 1999 [Note: in the FAO documents 'sharks' is used for chondrichthyans];

3) the UN Fish Stocks Agreement (UN Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks) in effect since 11th December 2001;

4) paragraph 31 of the Implementation Plan of the Resolution of the World Summit for Sustainable Development adopted in Johannesburg in September 2002.

In the implementation of the IPOA-Sharks, the Mediterranean Action Plan for the Conservation of Chondrichthyan Fishes constitutes a proposal for regional strategies, pointing out priorities and actions to be undertaken at national and regional level, since regional coordination is needed to ensure implementation of conservation measures. The IPOA-Sharks suggests that member states of the FAO should develop national action plans when their fishing fleets conduct target or by-catch fisheries for sharks. With regard to this recommendation, the Contracting Parties to the Barcelona Convention are strongly urged to elaborate national action plans according to the priorities herein defined, in order to ensure the conservation, management and long-term sustainable use of the chondrichthyan resources in their environment.

Within the framework of the Barcelona Convention, some chondrichthyans are already protected: namely the great white shark (*Carcharodon carcharias*), the basking shark (*Cetorhinus maximus*) and the Mediterranean devil ray (*Mobula mobular*). Also, some Mediterranean countries have taken specific protection measures for these species to reinforce their conservation status. Other chondrichthyans appear on the IUCN Red List and in the appendices to the Bern and Bonn Conventions, and some have been in the CITES appendices.

Although such conservation measures that focus on particular species have been proving to be useful at species level, they are not sufficient at ecosystem level. That is why habitat and environment parameters should be included in the Action Plan. As a result, the guidelines for elaborating an Action Plan are the following:

- species conservation
- biodiversity maintenance
- habitat protection
- management for sustainable use
- scientific research
- monitoring
- funding for research, implementation and monitoring
- public awareness
- international cooperation for controls in the open sea.

Thus, implementation of the Action Plan should involve a great number of stakeholders and its success requires increasing cooperation between different jurisdictions, professional fishermen, conservation and environmental bodies, recreational and game fishing associations, scientific and research organisations and academic institutions, and military and administrative bodies, at national, regional and international levels.

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**DRAFT ACTION PLAN
FOR THE CONSERVATION OF CARTILAGINOUS FISHES
(CHONDRICHTHYANS) IN THE MEDITERRANEAN SEA**

INTRODUCTION

1. The Contracting Parties to the Barcelona Convention, within the framework of the Action Plan for the Protection of the Marine Environment and the Sustainable Development of the Coastal Area of the Mediterranean (MAP Phase II), give priority to ensuring the protection of sensitive species, habitats and ecosystems in the Mediterranean Sea.
2. The decline of some chondrichthyan populations has become a matter for international concern, and a growing number of organisations have expressed the need for urgent measures to be introduced for the conservation of these fish. To this end, RAC/SPA was entrusted (Monaco, November 2001) by the Contracting Parties to the Barcelona Convention with the task of elaborating an action plan, herein presented, for the conservation of the chondrichthyan populations of the Mediterranean.
3. Chondrichthyan fishes have specific biological characteristics, such as low reproduction productivity due to late sexual maturity and low fecundity, which make them vulnerable to long-lasting stresses and disturbances and slow to recover once depleted.
4. For chondrichthyan fishes, there also exists a close relationship between the number of young produced and the size of the breeding biomass (stock-recruitment relationship) and complex spatial structures (size/sex segregation and seasonal migration) that contribute to their vulnerability to habitat deterioration, environmental pollution, and over-exploitation.
5. Most sharks and some skates and rays are apex predators and have an important trophic function in the marine ecosystem. Therefore, the ecosystem approach is particularly important to understand the role of these fishes in the structuring and functioning of this system. The integrated effects of irresponsible fishing¹, pollution, and habitat destruction can result in changes in abundance, size structure and biological features, and in the extreme could lead to extinction. The indirect impacts include changes in species prey/predator composition, with species replacement, since fishing tends to remove larger species and larger individuals from ecosystems. Exploitation of chondrichthyans should respect the principles of sustainability and the precautionary principle as defined in the FAO Code of Conduct for Responsible Fisheries.
6. The chondrichthyan fish fauna of the Mediterranean is relatively diverse, with a total 86 species including 47 species of shark, 38 species of batoid and one chimaera. Some of them have commercial importance and have been exploited over the ages as target species or by-catch; others are very rare and may never have been common. However, there is evidence of the important negative impact of unmanaged and irresponsible fisheries on the populations of these chondrichthyan species.
7. Today, the serious threats to the populations of chondrichthyan fishes are widely acknowledged: mainly unmanaged and irresponsible fishing, pollution and the negative

¹ The terms 'fishing' and 'fisheries' refer to both commercial and recreational fishing/fisheries throughout the entire text.

aspects of some littoral development. These threats affect both chondrichthyan biodiversity and abundance. The Mediterranean Sea being a semi-enclosed sea with strongly populated coastal countries, critical habitats have been damaged by some littoral development and pollution. Pollution may harm the marine ecosystem because contaminants, concentrating along the food webs, can alter the physiology and good functioning of individuals and populations.

8. Although the Mediterranean chondrichthyan fish fauna have been studied for a long time, scientific research still needs to be undertaken to study the biology, ecology, population dynamics and status of stocks of most of the species. These studies are necessary to better understand their ecological role. The taxonomic status of several species is still uncertain. A few species are endemic to the Mediterranean. Some Red Sea species penetrate into the eastern Mediterranean through the Suez Canal (Lessepsian migrants); the progression of the populations of these species, and the effect of these invaders on the Mediterranean ecology, should be carefully studied.
9. Since many chondrichthyans are wide-ranging and/or migratory, regional coordination is required for research, monitoring and enforcement. Also, information should be widely disseminated amongst the public to make it aware of the threats to chondrichthyans and the urgent need for their conservation and the management of their exploitation.

A. OBJECTIVES

10. The present Action Plan is aimed at promoting:
 - 10.1. The general conservation of the chondrichthyan populations of the Mediterranean, by supporting and promoting national and regional programmes for sustainable fisheries of commercial stocks either as they are target and accessory species;
 - 10.2. The protection of selected chondrichthyan species, whose populations are considered endangered;
 - 10.3. The protection and the restoration of critical habitats, such as mating, spawning and nursery grounds;
 - 10.4. The improvement of scientific knowledge by research and scientific monitoring, including the creating of regional standardised databases;
 - 10.5. The recovery of depleted chondrichthyan stocks;
 - 10.6. Public awareness and capacity-building about conservation of chondrichthyans.

B. PRIORITIES

11. The following general priorities are recommended:
 - 11.1. Urgent provision of legal protection status for the endangered species identified at regional and national level. To this end, the following species should have priority: sawfishes (*Pristis* spp.) (assessed as "Critically Endangered" (CR) in the IUCN Red List 2000), the sand tiger sharks (*Carcharias taurus* and *Odontaspis ferox*) and the gray skate (*Dipturus batis*), (preliminarily assessed as "Critically Endangered" (CR) and "Endangered" (EN) by the IUCN at the Mediterranean level, respectively), as has already been achieved at regional level for the basking shark (*Cetorhinus maximus*),

the great white shark (*Carcharodon carcharias*), and the giant devil ray (*Mobula mobular*).

11.2. Other species are currently data-deficient with inadequate information to assess extinction risk. Thus there is an urgent need to assess the threatened status of species such as hammerhead sharks (*Sphyrna* spp.), guitarfishes (*Rhinobatos* spp.), and the speckled skate (*Raja polystigma*).

11.3. Develop management programmes for sustainable fisheries catching, as target or by-catch, the following species:

*11.3.1. Primarily for the main commercial species: the dogfish (*Squalus acanthias*), the thresher sharks (*Alopias* spp.), the makos (*Isurus* spp.), the porbeagle (*Lamna nasus*), the blue shark (*Prionace glauca*).

*11.3.2. Secondly, for the other commercially important species: the angel sharks (*Squatina* spp.), the catsharks (*Scyliorhinus* spp. and *Galeus melastomus*), the hound sharks (*Mustelus* spp. and *Galeorhinus galeus*), the requiem sharks (*Carcharhinus falciformis*, *C. limbatus*, *C. obscurus* and *C. plumbeus*), the skates (*Leucoraja* spp., *Raja* spp.), and the stingrays (*Dasyatis* spp.).

11.4. Encourage fishing practices that reduce unwanted chondrichthyan by-catch and/or facilitate live release and ban wasteful practices such as finning.

11.5. Identify critical habitats for their protection and restoration, especially mating areas, and spawning and nursery grounds.

11.6. Develop research programmes on general biology, ecology and population dynamics especially for the above species, with particular regard to reproduction and growth parameters.

11.7. Develop both systems for the monitoring of fisheries and fishery-independent monitoring programmes.

11.8. Develop training to ensure capacity-building at national and regional level, mainly in the following fields: taxonomy, biology, ecology, monitoring methods and stock assessment.

11.9. Develop information and education programmes for professionals and public awareness.

C. IMPLEMENTATION MEASURES

In order to implement the above-mentioned general priorities, specific measures should be taken at national and regional level:

C.1. Protection

12. Legal protection should be given to endangered species (cf. paragraphs 10.2 and 11.1) in accordance with national and international laws and conventions. The status of Mediterranean chondrichthyans should be regularly reviewed in order to recommend, when necessary, legal protection for threatened species.

C.2. Fisheries management

13. According to the principles of the IPOA-Sharks and of the UN Straddling Fish Stocks Agreement, states that contribute to fishing mortality for a species or stocks should participate in their management.
14. Existing assessment reports and fisheries management programmes should be adjusted to chondrichthyan fishes or specific plans should be developed within the framework of the IPOA-Sharks.
15. It is urgent to collect precise fisheries statistics, mainly on catches and landings by species. For this purpose, field identification sheets should be published in appropriate languages, with the vernacular names included, and dispatched to fishery people. Also, data on fishing efforts should be collected, as far as possible.
16. Management programmes for chondrichthyan fishes should be based on sustainable management based on studies of the assessment of stocks and populations. Management should also concern by-catch and reduce incidental catches. To this end, guidelines for reducing and releasing unwanted by-catch and protected species should be published in the appropriate languages and circulated to all potential users.
17. Implementing a permanent monitoring of fisheries where chondrichthyans are target or by-catch species is a fundamental management measure, useful for the conservation or sustainable exploitation of these species. This action would permit the timely detection of an obvious decline in their biomasses, or capture, that could be an unequivocal sign of over-fishing. This monitoring could be done through surveys, landing-site observation and the examining of logbooks. This action should also address sightings (strandings and observations at sea) and incidental catches.
18. For most species, cooperative management is necessary at national, regional and international levels. The mechanisms for achieving a cooperative approach may consist of the following elements:
 - information on existing exploited resources and management systems;
 - the defining and provision of legal instruments;
 - the use of a participatory planning approach;
 - the defining of clear management agreements;
 - the building and development of national groups.
19. Mediterranean countries should ban finning (i.e. the wasteful practice of slicing off the shark's fins and discarding the body at sea).

C.3. Critical habitats and environment

20. Field studies are needed to inventory and map critical habitats around the Mediterranean.

21. Legal protection should be given to these habitats, in conformity with the national and international laws and conventions on the subject, to prevent their deterioration due to the negative effects of human activity. When these habitats have deteriorated, restoration programmes should be undertaken. One example of legal protection is the creation, where possible, of marine protected areas in which human activity is regulated.
22. Such protection measures could be part of fishery management programmes as well as of integrated coastal zone management.

C.4. Scientific research and monitoring

23. Parallel to protection and conservation measures, properly funded and staffed scientific research programmes should be undertaken or developed, mainly on species biology and ecology, emphasising growth, reproduction, diet, geographical and bathymetric distribution, migration, population genetics and dynamics and risk assessment. Regional tagging (conventional, pop-up and satellite tag) programmes should be developed for migratory species. Also, fishing efforts exploratory cruises and the status of resources within the precautionary principle, should be assessed. In the same way, discard should be evaluated in terms of quantity and composition. Research on tools to avoid or reduce by-catch should be fostered.
24. For the monitoring of fisheries, the standardised collection of data at landing places and fish markets should be supplemented and completed by on-board observation programmes to gather precise data on fisheries and on species biology. Also logbooks adapted to chondrichthyan fisheries should be distributed to fishermen. The following set of data would be required for commercial target and by-catch species:
 - species composition of the catch with length frequency distribution by sex;
 - retained catch by species in number and weight;
 - discarded catch in number and weight (+ reasons for discard);
 - product form (whole, headed, gutted, fillets, fins);
 - gear and vessel specifications and cruise characteristics;
 - trade and market values.

Furthermore samples (vertebrae, dorsal spines) should be taken and adequately preserved for age determination, and also tissue samples for genetic analysis (DNA).

25. Mediterranean countries should design, at both national and regional level, specific programmes, or widen existing ones, to cover the whole Mediterranean Sea, and to collect standardised quantitative data to estimate fish density (relative abundance). This would help evaluate the risk status of the various species.

C.5. Capacity building/training

26. The Contracting Parties should promote the training of specialists, fisheries officers and managers in the study and conservation of chondrichthyan fishes. To this end, it is important to identify already existing initiatives and to give priority to taxonomy, conservation biology and techniques for monitoring research programmes (cf. above paragraph on scientific research).
27. Training programmes should also focus on methods of fisheries data collection and stock assessment, especially data analysis.

C.6. Education and public awareness

28. For protection and conservation measures to be effective, public support should be obtained. In this respect, information campaigns should be directed at national authorities, residents, teachers, visitors, professional fishermen, sport anglers, divers and any other stakeholder. Publication materials should be produced to present the life history, and vulnerability, of chondrichthyans.
29. Also, guidelines for chondrichthyan watching should be published and widely distributed to potential observers such as anglers, yachtsmen, divers, shark-fans, etc, in order to make them actively involved in the conservation of chondrichthyan fishes.
30. In this process of education and public awareness, the help of associations and other bodies involved in nature conservation should be solicited.

C.7. Regional coordinating structure

31. All the above-mentioned recommended actions related to the protection and the conservation of species and their habitats, and the research and educational programmes, should be monitored and implemented, with as much regional cooperation between all the countries operating in the Mediterranean basin as is possible.
32. These actions should be undertaken in cooperation with, and with the support of, other regional fisheries organisations (e.g. GFCM, ICCAT), through establishing MoUs where necessary. Non-governmental organisations, associations and national environmental bodies should also be involved.
33. Implementation of the present Action Plan will be regionally coordinated by the Mediterranean Action Plan's (MAP) Secretariat through the Regional Activity Centre for Specially Protected Areas (RAC/SPA). The main functions of the coordinating structure shall consist in:
 - favouring and supporting the collection of data and publishing and circulating results at Mediterranean level;
 - promoting the drawing up of inventories of species and areas of importance for the Mediterranean marine environment;
 - promoting transboundary cooperation;
 - preparing reports on progress in the implementation of the Action Plan, to be submitted to the Meeting of National Focal Points for SPAs and to meetings of the Contracting Parties;
 - organising meetings of experts on specific subjects relating to Mediterranean chondrichthyans, and training courses;
 - promoting the review of status of species and fisheries by relevant organisations;
 - three years after the adoption of the Action Plan, coordinating the organisation of a Mediterranean symposium aiming at defining the state of knowledge on chondrichthyan fishes and taking stock of the progress made in implementing the Action Plan;
 - five years after the adoption of the Action Plan, organising a meeting to review the progress of the Action Plan and to propose a revision of the Action Plan if needed.

34. Complementary work done by other international organisations with the same objectives shall be encouraged by RAC/SPA, promoting coordination and avoiding possible duplication of effort.
35. Initiatives aiming at ensuring enforcement of the current Action Plan, particularly in international waters, should be promoted.

D. PARTICIPATION IN THE IMPLEMENTATION

36. Implementing the present Action Plan is the responsibility of the national authorities of the Contracting Parties. Parties should facilitate coordination between their national, environmental and fisheries departments to ensure implementation of activities directed at protected and non-protected chondrichthyan species. Organisations or bodies concerned are invited to associate themselves with the work of implementing the present Action Plan. At their ordinary meetings, the Contracting Parties may, at the suggestion of the Meeting of National Focal Points for SPAs, grant the status of 'Action Plan Associate' to any organisation or laboratory which so requests and which carries out, or supports (financially or otherwise) the carrying out of, concrete actions (conservation, research, etc.) likely to facilitate the implementation of the present Action Plan, taking into account the priorities contained therein. NGOs can submit their applications directly to RAC/SPA.
37. The coordinating structure shall set up a mechanism for regular dialogue between the Action Plan Associates and, where necessary, organise meetings to this effect. Dialogue should be conducted mainly by mail, including e-mail.

E. TITLE OF ACTION PLAN PARTNER

38. To encourage and reward outside contributions to the Action Plan, the Contracting Parties may at their ordinary meetings grant the title of 'Action Plan Partner' to any organisation (governmental, NGO, economic, academic etc.) that has to its credit concrete actions likely to help protect chondrichthyan fishes in the Mediterranean. The title of Action Plan Partner will be awarded by the Contracting Parties following recommendations made by the Meeting of National Focal Points for SPAs.

F. ASSESSING THE IMPLEMENTATION AND REVISION OF THE ACTION PLAN

39. At each of their Meetings, the National Focal Points for SPAs will assess the progress made in implementing the Action Plan, on the basis of national reports and of a report made by the RAC/SPA on implementation at regional level. In the light of this assessment, the Meeting of the National Focal Points for SPAs will suggest recommendations to be submitted to the Contracting Parties, and, if necessary, suggest adjustments to the timetable given in the Annex to the Action Plan.

Annex:

Implementation Timetable

ACTION	DEADLINE	BY WHOM
Tools		
1. Establishing of network (e.g. FTP site) and directory of collaborators (cf. § 33 of C.7 "Regional coordinating structure")	1 year after adoption	RAC/SPA
2. Field identification sheets available in appropriate languages (cf. § 15 of C.2. "Fisheries management")	1 year after adoption	Contracting Parties & RFMOs
3. Support the defining of a protocol for monitoring commercial landings and discards by species (cf. § C.2. "Fisheries management")	1 year after adoption	RAC/SPA and Contracting Parties
4. Protocols for recording data on rarely observed, endangered and protected species (cf. § C.1. "Protection")	1 year after adoption	RAC/SPA
5. Information campaigns and publishing materials for public awareness (cf. § C. 6 "Education and public awareness")	2 years after adoption	RAC/SPA
6. Guidelines for reducing the presence of sensitive species in by-catch and releasing them if caught, prepared and published in appropriate languages (cf. § 16 of C.2 "Fisheries management")	2 years after adoption	RAC/SPA
7. Guidelines for chondrichthyan watching (cf. § 29 of C.6 "Education and public awareness")	3 years after adoption	RAC/SPA
8. Symposium on Mediterranean chondrichthyan fishes (cf. § 33 of C.7 "Regional coordinating structure")	3 years after adoption	RAC/SPA
9. Meeting to review progress made on the Action Plan (cf. § 33 of C.7 and § F "Assessing the implementation and revision of the Action Plan")	5 years after adoption	RAC/SPA
Legal processes		
10 a. Legal protection established for endangered species, recommended in this Action Plan, identified by country 10 b. Urgent assessment of the status of data deficient species (cf. § 11.1. of B "Priorities"; C1 "Protection")	1 year after adoption	Contracting Parties, intervening at national and regional level
11. Regulations enacted for prohibiting "finning" (cf. § 19 of C.2 "Fisheries management")	2 years after adoption	Contracting Parties & RFMOs
12. Critical habitats legally protected to reduce negative effects of human activities (cf. § C.3 "Critical habitats and environment")	4 years after adoption	Contracting Parties

13. Facilitating the enforcement of legal measures aiming to set up a system for enforcement of monitoring fisheries in international waters (cf. § 35 C. 7 "Regional coordinating structure")	4 years after adoption	Contracting Parties and RAC/SPA
Monitoring and data collection		
14. Establishing research programmes, mainly on the biology, ecology and population dynamics of the main species identified by the countries (cf. § C. 4 "Scientific research and monitoring")	1 year after adoption	Contracting Parties
15. Implementing a monitoring system for commercial and recreational fisheries (cf. § C.2. "Fisheries management")	1 year after adoption	Contracting Parties
16. Support the establishing of, or feed the existing, centralised databases (cf. § C.7 "Regional coordinating structure")	1 year after adoption	Contracting Parties and RAC/SPA
17. Preliminary inventory of critical habitats (mating, spawning and nursery grounds) (cf. § 11.4 of "Priorities" and § C.3 "Critical habitats and environment")	2 years after adoption	Contracting Parties
Management and assessment procedures		
18. Review of the status of Mediterranean chondrichthyan species (cf. § 11.2 of B "Priorities"; 12 of C.1 'Protection'; 25 of C.4 "Scientific research and monitoring")	1 year after adoption	International organisations
19. Description of fisheries and identification of management needs (cf. § C.2. 'Fisheries management')	1 year after adoption	Contracting Parties & RFMOs
20. Elaboration of National chondrichthyan Plans (cf. § C.1 'Protection', C.2. "Fisheries management", & C.3 "Critical habitats and environment")	1 year after adoption	Contracting Parties
21. Elaboration of management plans for fisheries exploiting chondrichthyan fishes (cf. § 11.3.1 and 11.3.2 of B "Priorities")	4 years after adoption	Contracting Parties & RFMOs

ANNEX III

**ACTION PLAN
CONCERNING SPECIES INTRODUCTIONS
AND INVASIVE SPECIES
IN THE MEDITERRANEAN SEA**

FOREWORD

The problems resulting from the intentional or accidental introduction of non-indigenous species are thought to be among the most important threats to biological diversity. This was confirmed at the Johannesburg World Summit on sustainable development. The plan for implementation discussed at this summit asks for national, regional and international efforts to be stepped up to control invasive non-indigenous species and encourage the development, at every level, of efficacious work programmes on invasive species.

The proliferation of non-indigenous species at the level of a new receiver area is often called 'biological invasion', particularly when the introduced species develops in such a way as to enter into competition with native species and cause their decline. One can also talk about a 'biological invasion' when the introduced species constitutes, because of its excessive development, a considerable hindrance to certain human activities. The economic, or even social, cost caused by the biological invasion may be very high; several cases around the world bear this out.

Although most of the available data on the issue of introducing species concerns the negative aspects of the impact of introduction, there are cases where the effects are positive. These particularly concern the development of human activities, increase in income (e.g. fishermen and people working in aquaculture), and the creation of new jobs. The FAO's database on aquatic species (DIAS) mentions that 68% of the recognised socio-economic effects of species introductions are beneficial, while 16% are unfavourable effects.

For the Mediterranean, the introduction of marine non-indigenous species is a phenomenon that has long been known and studied. But it has recently grown, and certain of these species have proved invasive. Although only some of the invasive species manage to have stabilised new populations, the environmental consequences have in many cases been negative for the Mediterranean species.

And so the Mediterranean has been confronted over the past century with rapid, sizeable changes in its biotopes, as can be seen in the growth of the number of new species and the changes which persist in some ecosystems. Indo-Pacific-origin species which arrived in the eastern Mediterranean via the Suez Canal today form an important part of the biodiversity of the eastern Mediterranean. These species are called 'Lessepsian', a reference to Ferdinand de Lesseps, who opened the Suez Canal in 1869.

Although most of the introduced species in the Mediterranean are 'Lessepsian', several recent introductions are associated with other introduction vectors, such as, in particular, aquaculture and the discharging of ships' ballast water. Aquaculture is responsible for some of the intentional introductions of breeding species, and also for the accidental introduction of species that accompany the species, which was intended for aquaculture.

Taking into account the above-mentioned considerations, the Fifth Meeting of the National Focal Points for SPAs (Valencia, April 2001) recommended that a Regional Action Plan to strengthen the Mediterranean countries' capacities as regards preventing and controlling the introduction of species into the Mediterranean Sea, and coordinating their efforts on the subject, be elaborated. It was agreed at the said Meeting of Focal Points that the suggested Action Plan should provide for the elaborating of guidelines for the prevention and controlling of introductions into the Mediterranean of non-indigenous marine species.

On the basis of the recommendation made by the Fifth Meeting of National Focal Points for SPAs, the Contracting Parties to the Barcelona Convention requested the RAC/SPA to work on elaborating an action plan to control the introduction into the Mediterranean of species and marine non-indigenous species.

In elaborating the draft Action Plan presented below, RAC/SPA took into account, insofar as was possible, the initiatives of the IOC², the FAO³, the IMO⁴, the CDB⁵, the IUCN⁶ and the Council of Europe. The experience gained in the elaborating and implementing of the four Action Plans regarding the conservation of species (monk seal, marine turtles, cetaceans and marine vegetation) adopted within the MAP framework was also exploited.

A first version of the Action Plan was prepared by RAC/SPA in collaboration with several Mediterranean experts designated by the National Focal Points for SPAs. These experts were then convened for a meeting held in Barcelona (24-26 October 2002) thanks to the generous contribution made by the Autoritat Portuària de Barcelona and the Departament di Medi Ambient (Generalitat de Catalunya). The works of the expert meeting led to the finalisation of a further elaborated version of the Action Plan. This version is presented in the present document, as Draft Action Plan, for adoption by the Meetings of the MAP National Focal Points and of the Contracting Parties respectively.

² International Council for the Exploration of the Sea

³ Food and Agriculture Organisation of the United Nations

⁴ International Maritime Organisation

⁵ Convention on Biological Diversity

⁶ World Conservation Union

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ACTION PLAN CONCERNING SPECIES INTRODUCTIONS AND INVASIVE SPECIES IN THE MEDITERRANEAN SEA

INTRODUCTION

1. The Contracting Parties to the Barcelona Convention, as part of the Mediterranean Action Plan, give priority to the conservation of the marine environment and to the components of its biological diversity. This has been confirmed on several occasions, particularly by the adopting (Barcelona, 1995) of the new Protocol concerning specially protected areas and biological diversity in the Mediterranean (SPA Protocol) and of its Annexes.
2. Elaborating and implementing action plans to confront the threats hanging over the elements that make up biological diversity is an effective way of guiding, coordinating and stepping up the efforts made by the Mediterranean countries to safeguard the region's natural heritage.
3. The SPA Protocol invites the Contracting Parties to take "all appropriate measures to regulate the intentional or non-intentional introduction of non-indigenous or genetically modified species into the wild and prohibit those that may have harmful impacts on the ecosystems, habitats or species".
4. As to those species which have already been introduced, the SPA Protocol stipulates that when a scientific assessment has revealed that these are causing or are likely to cause harm to ecosystems, habitats or species, the Contracting Parties strive to implement all possible measures to eradicate them.
5. The Convention on Biological Diversity calls on in its Article 8 (h) each Contracting Party, as far as possible and as appropriate, to prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species.
6. The introduction of non-indigenous species into Mediterranean coastal waters has recently increased, and certain of these have proved to be invasive. Whether intentional or non-intentional, the introduction of a non-indigenous species can cause often irreversible damage to the receiving ecosystem, with harmful effects both ecologically and socio-economically.
7. It is recognized that aquatic organisms enter the Mediterranean from adjacent seas without human intervention through natural paths⁷ (e.g. the Strait of Gibraltar). It is also recognised that the fauna and flora of the Mediterranean Sea are mainly of Atlantic origin. The entry of species into the Mediterranean Sea has been increasing over the last few decades because of various factors, mainly of anthropic origin. The main known vectors of species introduction into the Mediterranean Sea are:
 - Entry of Red Sea organisms through the Suez Canal, built in the 19th century

⁷ Other less important causes of marine species introduction into the Mediterranean Sea are reported (sea birds, epibiontes on migratory animals and on drifting plastics, boat anchors, indigestible eggs and spores in predator stomachs, etc.).

- Shipping (ballast water⁸ and sediments, fouling⁹)
- Aquaculture¹⁰ (both marine and brackish water)
- Trade in live marine organisms (e.g. aquarium activities, fishing bait) and scientific research.

The same vectors may facilitate secondary introductions within and outside the Mediterranean.

8. Although only some of the non-indigenous species succeed in establishing viable populations, the environmental consequences are, in many cases, negative for the Mediterranean indigenous species. The invasive species are seen as being among the main threats to marine biological diversity in the Mediterranean. It is imperative to take immediate steps to prevent the introduction of non-indigenous species, control the spread of those already introduced and endeavour to mitigate the damage they cause to the marine ecosystem. The present Action Plan is being elaborated on the basis of the data available; it will be adapted, if necessary, as and when new data is available.
9. When implementing the present Action Plan, Parties will refer to the definitions and guiding principles set out in Decision VI/23, adopted within the CBD framework, until these are submitted for in-depth discussion at the workshop mentioned in paragraph 21 below, with a view to arriving at guiding principles and approaches to be included in the guidelines provided for in paragraph 20 of the Action Plan.
10. The actions advocated by the present Action Plan are to be carried out over a three-year period, starting from when the Action Plan is adopted by the Contracting Parties. At the end of this period, RAC/SPA will prepare a report on the progress so far made in implementing the advocated actions, and will submit this to the National Focal Points for SPAs, who will make follow-up suggestions to the Parties.
11. Considering the world-wide scope of the issue of non-indigenous species introduction, it is important that the implementation of the present Action Plan be done in consultation and collaboration with the initiatives undertaken in this field in other regions and/or by international organisations.

A. OBJECTIVES OF THE ACTION PLAN

12. The main objective of the present Action Plan is to promote the development of coordinated measures and efforts throughout the Mediterranean region in order to prevent, control and monitor the effects of species introduction, particularly by:
 - strengthening the capacity of the Mediterranean countries to deal with the issue of non-indigenous species introduction

⁸ Ballast water is used to weight and thus stabilise ships, especially during trips when they are empty. In the past, ships were weighted with solid materials (stones, sand etc.), but for several years now sea water has been commonly used for all modern ships. Although most species contained in the ballast water are no longer alive when they reach the place where the ballast is discharged, or do not survive in the environment they are poured into, some of these species do manage to settle and form viable populations.

⁹ Several species of alga and of marine invertebrate cling to ships' hulls and may thus travel over long distances and settle in new zones. Regular introductions happen all around the world through the movement of ships.

¹⁰ Importing live animals for aquaculture purposes is the main way of intentional introduction of marine species into the Mediterranean. It is impossible in practice to avoid species introduced for aquaculture purposes escaping from their breeding facilities and forming viable populations in the natural environment. Moreover, several cases of incidental introduction have been reported for those species that accompany species imported for the purposes of aquaculture.

- strengthening the institutional and legislative frameworks at the level of the countries of the region
- collecting reliable and pertinent scientific data that can be used for decision-making where necessary
- setting up mechanisms for cooperation and the exchange of information between the states of the region
- elaborating guidelines and any other technical documentation.

B. PRIORITIES

B.1 At regional level

13. Considering the breadth and complexity of the issue of non-indigenous species introduction, priority at regional level should be given to:

- coordinating and supporting the compiling and regular updating of Mediterranean-wide lists of non-indigenous species¹¹, including information on their ecology, biology and habitats. Lists should distinguish between species that are harmful to human health, invasive or both, and provide information on such a classification
- elaborating and adopting at regional level guidelines intended to assist the relevant national authorities
- coordinating the actions taken by neighbouring states to prevent and control the introduction of non-indigenous species
- Establishment of monitoring and early warning networks
- supporting cooperation at international level.

B.2 At national level

14. Considering the lack of the data and knowledge necessary for risk assessment and the implementation of preventive and control actions, priority at national level should be given to:

- encouraging all necessary actions (e.g. research work, data collection, monitoring, etc.) aimed at improving the available knowledge
- coordinating the actions that are necessary for the regular provision of supplementary information for the national and Mediterranean-wide reference lists of non-indigenous species
- supporting information exchanges and concerted actions at regional level
- encouraging the implementation of scientifically-backed regionally-harmonised measures of prevention and control.

C. ACTIONS REQUIRED TO ATTAIN THE OBJECTIVES OF THE ACTION PLAN

C.1 At national level

C.1.1. Data collection

15. The Contracting Parties are invited to assess the situation as regards the introduction of marine species and compile the available information to prepare national reports using the relevant forms available within the framework of the international organisations. To this end, they will be assisted by RAC/SPA, if necessary. The national reports will particularly deal with:

¹¹ The lists of exotic species being compiled within the framework of CIESM and any other recognised publication could be used as reference and a source of information.

- known or potential vectors for the introduction of marine species into the national territory
- steps taken at national level to prevent and control the introduction of marine species
- the national institutional framework that governs the controlling of species introduction
- inventorying the non-indigenous marine species reported in the national territory
- the relevant documentation available
- participation at pertinent international initiatives, including joining international agreements and bilateral cooperation.

16. The Parties are requested to prepare programmes for data collection and monitoring, particularly of:

- the presence of non-indigenous marine species and the state of their population trends, including those used in aquaculture
- the impact of non-indigenous species on the indigenous biodiversity¹²
- the origin of ballast water discharged into their territorial waters, using the monitoring protocols used by relevant International Organisations.

C.1.2. Legislation

17. Those Contracting Parties which have not yet enacted national legislation for controlling the introduction of marine species must do so as quickly as possible. All the Contracting Parties are strongly recommended to take the necessary steps to express in their national laws the provisions of the pertinent international treaties and guidelines and codes adopted on the subject within the context of international organisations¹³.

C.1.3. Institutional framework

18. A mechanism should be set up, if possible at the level of each country, to promote and coordinate the following actions:

- inventorying paths of introduction
- compiling an inventory of introduced species
- establishing a directory of relevant specialists and organisations
- setting up a group of experts who will be responsible for assessing suggestions for introduction, and analysing risks and possible consequences, in close consultation with the other Parties and relevant International Organisations.
- identifying and inventorying public and private actors whose activity could introduce marine non-indigenous species
- developing relevant training programmes

¹² (E.g.: ecology, biology, local distribution, etc.)

¹³ Many organisations have elaborated codes, guidelines or other tools providing technical and legal recommendations for the better control of species introductions and mitigation of their negative impacts. Those tools which are most pertinent for the Mediterranean region are:

- Guiding principles for the prevention, introduction and mitigation of impacts of alien species (elaborated within the framework of the Convention on Biological Diversity)
- Recommendation no. 57 on the Introduction of Organisms belonging to Non-Native Species into the Environment (adopted within the framework of the Bern Convention)
- The IUCN Guidelines for the prevention of biodiversity loss caused by alien invasive species
- The Code of Practice on the Introductions and Transfers of Marine Organisms (developed by the International Council for the Exploration of the Sea)
- Guidelines for preventing the introduction of unwanted aquatic organisms and pathogens from ships' ballast water and sediment discharges (adopted within the framework of the IMO)
- The precautionary approach concerning the introduction of species (developed by the FAO).

- strengthening and where necessary setting up systems to control the intentional import and export of non-indigenous marine species
- developing and implementing risk-assessment techniques
- promoting relevant scientific research
- cooperating with the concerned authorities in neighbouring states regarding the detection of introduced species and risk assessment
- participating in international initiatives on invasive species
- developing programmes to raise the awareness of the general public and target groups, including decision-makers, concerning the risks associated with species introduction
- developing monitoring programmes for hotspots (ports, coastal lagoons, aquaculture sites, sensitive zones, etc.).

C.1.4. National Plans

- 19.** To ensure more efficiency in the measures envisaged in the implementation of this Action Plan, Mediterranean countries are invited to establish National Plans to control the introduction of non-indigenous marine species and to mitigate their negative impact. Each National Plan, taking into account the concerned country's specific features, must suggest appropriate institutional and legislative measures. The National Plan shall be based on the available scientific data and will include programmes for (i) the collection and regular updating of data, (ii) training and refresher courses for specialists, (iii) awareness-raising and education for the general public, actors and decision-makers and (iv) coordination and collaboration with other states. The national plans must be brought to the attention of all concerned actors and, when possible, coordinated with the relevant National Plans.

C.2 At regional level

C.2.1. Data collection and dissemination

- 20.** With a view to providing the concerned national authorities with the necessary scientific and technical documentation, the two following tools will be elaborated, working hand in hand with the Mediterranean experts and international organisations:
- guidelines for controlling the vectors of introduction into the Mediterranean of non-indigenous species and invasive marine species
 - a guide for risk analysis assessing the impacts of the introduction of non-indigenous species.
- 21.** A workshop made up of experienced Mediterranean scientists should convene to review the available data on non-indigenous species in the Mediterranean, identifying the most important taxonomic and geographic gaps and suggesting a programme to rectify these. The workshop should also have a session that examines the different vectors of non-indigenous species introduction and proposes possible control measures for their prevention. The guidelines and the guide referred to in the above paragraph 20 will be reviewed during the workshop.
- 22.** A regional mechanism for collecting, compiling and circulating information on invasive non-indigenous species should be set up as part of the present Plan and harmonised with the Mediterranean Clearing House Mechanism developed in collaboration with the CBD Secretariat. It will in particular include:
- procedures for notifying the fact that non-indigenous marine species have been detected in the Mediterranean

- a database on invasive marine species (taxonomy, ecology, affected ecosystems or species, means of fighting the problem, specialists, etc.)
- systems for circulating information on the impacts due to the introduction of species and on the approaches to prevention and management
- a procedure for the rapid circulation of information on new introductions of species
- links of cooperation and exchange with the main pertinent world or regional initiatives.

C.2.2. Regional project on fouling and ballast water and sediments

23. Given the importance of shipping-mediated introductions of non-indigenous species into the Mediterranean, it is strongly recommended that within the context of the present Action Plan, a regional project be developed to overcome gaps for the Mediterranean countries, and strengthen the capacities of the countries to reduce the transfer of aquatic organisms via ships' ballast water and sediments and hull fouling. For elaborating and implementing the regional project, it is necessary to work closely with the IMO and the joint GEF-UNDP-IMO ballast water management programme.

C.2.3. Training

24. To support implementation of the present Action Plan, a regional training session should be organised in collaboration with the concerned international organisations. In particular, it will deal with the main following themes:

- The legislative and institutional aspects related to controlling the introduction of non-indigenous marine species
- Assessing the risks linked to the introduction of non-indigenous species and to the means of fighting against and eradicating them
- Management of ships' ballast water with a view to minimising transfers of marine organisms
- Identification of non-indigenous species.

C.2.4. Public education and awareness

25. With a view to promoting the Mediterranean countries' national programmes for raising the awareness of the general public and target groups, including decision-makers, about the risks associated with introducing non-indigenous marine species into the Mediterranean, it is recommended that RAC/SPA, in collaboration with the relevant national authorities and international organisations, prepare brochures, posters and other educational and awareness materials. These will be made available to the National Focal Points for SPAs for them to circulate in their respective countries.

D. REGIONAL COORDINATION

26. Regional coordination of the implementing of the present Action Plan will be guaranteed by the Mediterranean Action Plan's (MAP) Secretariat through the Regional Activity Centre for Specially Protected Areas. The main functions of the coordinating structure shall consist in:

- taking in hand the implementation of those actions required at regional level to attain the present Action Plan's objectives (Section C.2 above)
- insofar as its means permit, assisting the Contracting Parties in implementing the actions required at national level to attain the present Action Plan's objectives (Section C.1 above)

- identifying hotspots as regards non-indigenous species (at geographic and species level)
- regularly reporting to the National Focal Points for SPAs about the implementation of the present Action Plan, and preparing the report mentioned in paragraph 10 above
- collaborating with the concerned organisations and endeavouring to ensure that the Mediterranean region is involved in the pertinent international and/or regional initiatives
- promoting exchanges among Mediterranean specialists.

E. PARTICIPATION IN THE IMPLEMENTATION

27. Implementing the present Action Plan is the province of the national authorities of the Contracting Parties. The concerned international organisations and/or NGOs, laboratories and any organisation or body are invited to join in the work necessary for implementing the present Action Plan. In addition to collaborating and coordinating with the Secretariats of the relevant Conventions, RAC/SPA should invite IMO and FAO to join and contribute to the implementation of the present Action Plan. It will set up a mechanism for regular dialogue between the participating organisations and, where necessary, organise meetings to this effect.

Annex
IMPLEMENTATION TIMETABLE

Action	Deadline
1. Developing programmes to raise the awareness of the general public and target groups, including decision-makers, concerning the risks associated with species introduction (see paragraph 18 of the Action Plan)	As soon as possible
2. Setting up a mechanism to promote and coordinate the actions listed in paragraph 18	6 months
3. Preparation of National Reports (see paragraph 15 of the Action Plan)	9 months
4. Inventorying introduction vectors (see paragraph 18 of the Action Plan)	9 months
5. Elaborating the regional project on fouling, ballast water and sediment (see paragraph 23 of the Action Plan)	9 months
6. Elaborating education and awareness material (see paragraph 25 of the Action Plan)	9 months
7. Establishing a directory of relevant specialists and organisations (see paragraph 18 of the Action Plan)	1 year
8. Setting up a group of experts who will be responsible for assessing suggestions for introduction, and analysing risks and possible consequences (see paragraph 18 of the Action Plan)	1 year
9. Convening the workshop referred to in paragraph 21 of the Action Plan	1 year
10. Launching the procedures for enacting or strengthening national legislation governing the control of non-indigenous species introduction (see paragraph 17 of the Action Plan)	18 months
11. Organising the regional training session (see paragraph 24 of the Action Plan)	18 months

* Starting from when the Action Plan is adopted by the Contracting Parties

IMPLEMENTATION TIMETABLE (continued)

Action	Deadline
12. Developing programmes for data collection and monitoring (see paragraph 16 of the Action Plan)	2 years
13. Strengthening and where necessary setting up systems to control the intentional import and export of non-indigenous marine species (see paragraph 18 of the Action Plan)	2 years
14. Developing and implementing risk-assessment techniques (see paragraph 18 of the Action Plan)	3 years
15. Preparing the Guidelines for controlling the vectors of non-indigenous species and invasive marine species introduction into the Mediterranean (see paragraph 20 of the Action Plan)	2 years
16. Preparing the Guide for risk analysis and impact assessment as regards the introduction of non-indigenous species (see paragraph 20 of the Action Plan)	2 years
17. Setting up the Regional Mechanism for collecting, compiling and circulating information on invasive non-indigenous species (see paragraph 22 of the Action Plan)	2 years
18. Compiling an inventory of introduced species. Identifying and inventorying public and private actors whose activity could introduce marine non-indigenous species (see paragraph 18 of the Action Plan)	3 years
19. Elaborating the National Plans (see paragraph 19 of the Action Plan)	3 years
20. Preparing the report on the progress made in implementing the Action Plan (see paragraph 10 of the Action Plan)	3 years

* Starting from when the Action Plan is adopted by the Contracting Parties

ANNEX IV

CLASSIFICATION OF COASTAL (TERRESTRIAL AND WETLAND) HABITAT TYPES FOR THE MEDITERRANEAN REGION

FOREWORD

At their Tenth Ordinary Meeting (Tunis, 18-21 November 1997), the Contracting Parties to the Convention for the Protection of the Mediterranean Sea against Pollution adopted common criteria for preparing national inventories of natural sites of conservation interest. The criteria provide for drawing up a reference list of marine and coastal natural habitat types on the basis of a model classification to be established by the Regional Activity Centre for Specially Protected Areas (RAC/SPA).

Within this context and with a view to assisting the Contracting Parties to compile inventories of natural sites of conservation interest, RAC/SPA has, in collaboration with experts from the Mediterranean countries and the concerned international organisations, elaborated the following technical tools: (i) the Standard Data-Entry Form (SDF) for national inventories of natural sites of conservation interest, (ii) a classification of Mediterranean marine habitat types, (iii) a reference list of Mediterranean marine habitat types and (iv) a reference list of species.

After working on the technical tools related to the marine environment, RAC/SPA was requested by the Contracting Parties to complete these technical tools with a view to also covering terrestrial coastal environments.

A Meeting of Experts on coastal (terrestrial and wetlands) habitat types in the Mediterranean region (Montpellier, France, 1-3 November 2001) was held to define a reference classification of coastal (terrestrial and wetland) habitat types for the Mediterranean region and to draw up a list of Mediterranean coastal (terrestrial and wetland) habitat types of conservation interest.

As agreed by the above mentioned meeting, a working group including Mediterranean experts and Medwet representative met in Tunisia from 12 to 13 April 2003 to work on practical modes of simultaneous application of the two systems to inventory the Mediterranean coastal sites containing wetlands, and furthering the MedWet typology concerning marine areas to take into account the classification of marine habitat types adopted within the MAP framework.

The Meeting's work on this item led to a version of Draft Classification of coastal (terrestrial and wetland) habitat types for the Mediterranean region and Draft Reference List of Mediterranean coastal (terrestrial and wetland) habitat types of conservation interest. This new versions appears below.

**Classification of coastal (terrestrial and wetland) habitat types
for the Mediterranean region
(as harmonized with Medwet habitat classification and adopted
by the sixth meeting of Focal Point Meeting)**

**PROPOSED CLASSIFICATION OF COASTAL
MEDITERRANEAN HABITAT TYPES WITH EQUIVALENT CODES**

(New code , code, Palearctic codes and Medwet codes)

New Code	Habitats	Palearctic Code	MedWet Code Notes (dominant factors)
I	COASTAL AND HALOPHYTIC COMMUNITIES	1	
I.1	SALTMARSHES, SALT STEPPES, SALT SCRUBS	15	E-EP-- P-EP--
I.1.1	Annual salt pioneer swards	15.1	E-EPGB
I.1.1.1	Glasswort swards	15.11	E-EPGB/S <i>Thero-Salicornietea</i>
I.1.1.2	Mediterranean halo-nitrophilous pioneer communities	15.12	E-EPGB/F <i>Frankenietea</i>
I.1.2	Perennial salt pioneer swards	15.2	E-EPRB
I.1.2.1	Flat-leaved cordgrass (<i>Spartina</i>) swards	15.21	E-EPRB/M <i>Spartina maritima</i>
I.1.2.2	Rush-leaved cordgrass (<i>Spartina</i>) swards	15.22	E-EPRB/D <i>Spartina densiflora</i>
I.1.3	Mediterranean and thermo-Atlantic salt meadows	15.5	E-EPAB E-EPRB E-EPUB
I.1.3.1	Mediterranean tall rush saltmarshes	15.51	E-EPAB
I.1.3.2	Mediterranean short rush, sedge, barley, clover salt meadows	15.52	E-EPUB/T <i>Trifolion maritimi</i>
I.1.3.3	Mediterranean halo-psammophile meadows	15.53	E-EPRB/P <i>Plantaginion crassifoliae</i>
I.1.3.4	Mediterranean saltmarsh grass swards	15.55	E-EPUB/P <i>Puccinellion festuciformis</i>
I.1.3.5	Mediterranean saltmarsh driftlines	15.56	E-EPUB/S <i>Thero-Suaedetalia</i>
I.1.3.6	Mediterranean saltmarsh couch-wormwood stands	15.57	NW
I.1.3.7	Mediterranean fine-leaved rush beds	15.58	E-EPRB/J <i>Juncus subulatus</i>
I.1.4	Mediterraneo-nemoral saltmarsh scrubs	15.6	E-EP--
I.1.4.1	Mediterranean saltmarsh scrubs	15.61	E-EP--
I.1.4.2	Mediterranean <i>Limoniastrum</i> scrubs	15.63	E-EPU-/L <i>Limoniastrum monopetalium</i>
I.1.5	Mediterraneo-Canarian xero-halophile scrubs	15.7	
I.1.5.1	Mediterranean halo-nitrophilous scrubs	15.72	
I.1.6	Mediterranean salt steppes	15.8	P-EPU/-
I.1.6.1	Mediterranean sea-lavender salt	15.81	P-EPU-/L <i>Limonium spp</i>

	steppes		
I.1.6.2	Mediterranean esparto salt steppes	15.82	
I.1.7	Mediterranean gypsum scrubs	15.9	
I.1.7.1	South-eastern Iberian gypsum scrubs	15.93	
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I.2.1.1	Unvegetated sand beaches and microbial mats	16.11	M-SS-S
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I.2.1.3	Saharo-Sindian sand beach communities	16.14	
I.2.2	Dunes	16.2	
I.2.2.1	Shifting dunes	16.21	
I.2.2.1.1	Embryonic dunes	16.211	
I.2.2.1.1.1	Western Tethyan embryonic dunes	16.2112	
I.2.2.1.1.1.1	Western Tethyan sand couch dunes	16.21121	
I.2.2.1.1.1.2	Western Tethyan <i>Sporobolus</i> dunes	16.21122	
I.2.2.1.1.1.3	East Mediterranean embryonic dunes	16.21123	
I.2.2.1.2	White dunes	16.212	
I.2.2.1.2.1	Western Tethyan white dunes	16.2122	
I.2.2.1.2.1.1	Mediterraneo-Atlantic marram grass dunes	16.21221	
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I.2.2.1.2.1.4	Aegean white dunes	16.21224	
I.2.2.1.2.1.5	Southeastern Mediterranean white dunes	16.21225	
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I.2.2.2.2	East Mediterranean grey dune communities	16.224	
I.2.2.2.2.1	Adriatic grey dunes	16.2241	
I.2.2.2.2.2	Eastern Ionian <i>Ephedra</i> dune communities	16.2242	
I.2.2.2.2.3	Aegean <i>Ephedra</i> dune communities	16.2243	
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I.2.2.2.4.6	Southeastern Mediterranean <i>Inula</i> dune communities	SM	
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			<i>temporary</i>
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IV.1.2	Supra-Mediterranean oak woods	SM	
IV.1.3	Mixed thermophilous forests	41.8	
IV.2	TEMPERATE CONIFEROUS FORESTS	42.	
IV.2.1	Black pine forests	42.6	
IV.2.2	<i>Cedrus libani</i> forest	SM	
IV.2.3	<i>Abies cilicica</i> forest	SM	
IV.2.4	Mediterranean pine woods	42.8	
IV.2.5	Western Palaearctic cypress, juniper and yew forests	42.A	

IV.3	TEMPERATE RIVERINE AND SWAMP FORESTS AND BRUSH	44	P-FDTF (>6 m) P-UDTF (<6m)
IV.3.1	Riparian willow formations	44.1	P-FDTF/S (>6 m) P-UDTF/S (<6m) <i>Salicetea purpureae</i>
IV.3.2	Mixed oak-elm-ash forests of great rivers	44.4	P-FDTF/U (>6 m) P-UDTF/U (<6m) <i>Ulmenion minoris</i>
IV.3.3	Southern alder and birch galleries	44.5	P-FDTF/O (>6 m) P-UDTF/O (<6m) <i>Osmundo-Alnion</i>
IV.3.4	Mediterraneo-Turanian riverine forests	44.6	P-FDTF/P (>6 m) P-UDTF/P (<6m) <i>Populion albae</i>
IV.3.5	Oriental plane and sweet gum woods	44.7	P-FDTF/L (>6 m) P-UDTF/L (<6m) <i>Platanion orientalis</i>
IV.3.6	Southern riparian galleries and thickets	44.8	P-UDTF
IV.3.7	Alder, willow, oak, aspen swamp woods	44.9	P-FDTF/A (>6 m) P-UDTF/A (<6m) <i>Alnetea glutinosae</i>
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V.1.1	Reed beds	53.1	
V.1.1.1	Common reed beds	53.11	P-EP--/P <i>Phragmytes australis</i>
V.1.1.2	Common clubrush beds	53.12	P-EP--/R <i>Scirpus lacustris</i>
V.1.1.3	Reedmace beds	53.13	P-EP--/T <i>Typha spp</i>
V.1.1.4	Medium-tall waterside communities	53.14	P-EP--/O <i>Oenanthion aquatica</i>
V.1.1.5	Water-fringe grass beds	53.15	P-EP--/G <i>Glyceria + Leersia</i>
V.1.1.6	Reed canary-grass beds	53.16	P-EP--/A <i>Phalaris arundinacea</i>
V.1.1.7	Halophile clubrush beds	53.17	P-EP-B/M <i>Scirpion maritimi</i>

V.1.2	Large sedge communities	53.2	P-EP-F
V.1.2.1	Large <i>Carex</i> beds	53.21	P-EP-F/C <i>Carex</i> spp
V.1.2.2	Tall galingale beds	53.22	P-EP-F/Y <i>Cyperus</i> spp
V.1.2.3	Papyrus swamps	53.23	P-EP-F/E <i>Cyperus papyrus</i>
V.1.3	Fen-sedge beds	53.3	P-EP-F/D <i>Cladium mariscus</i>
V.1.3.1	Valencia <i>Cladium</i> islands	53.32	
V.1.3.2	Riparian <i>Cladium</i> beds	53.33	
V.1.4	Small reed beds of fast-flowing waters	53.4	P-EP-F/L <i>Glycerio-Sparganion</i>
V.1.5	Tall rush swamps	53.5	P-EPUF/A <i>Agropyro-Rumicion</i>
V.1.6	Riparian cane formations	53.6	P-EPUF
V.1.6.1	Ravenna cane communities	53.61	P-EPUF/I <i>Imperato-Erianthion</i>
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VI.1.2	Illyrian screes	61.5	
VI.1.3	North African screes	61.8	
VI.1.4	Rocky ridges	SM	
VI.1.5	Maltese Rdm communities	SM	
VI.2	CAVES	65	
VI.2.1	Troglobiont vertebrate caves	65.1	
VI.2.2	Continental subtroglophile vertebrate caves	65.2	
VI.2.3	Insular subtroglophile vertebrate caves	65.3	
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**Draft Reference List of
Habitat Types for the Selection of Sites
to be included in the National Inventories
of Natural Sites of Conservation Interest**

(AS harmonized with other habitats classifications)

COASTAL TERRESTRIAL HABITAT TYPES
(New codification, Palearctic codes and Medwet codes)

New codification	Habitats	Palearctic Code	MedWet Code Notes (dominant factors)
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I.1.8.1	Northern Sinai saltmarshes	15.C1	
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I.2.1.1	Unvegetated sand beaches and microbial mats	16.11	M-SS-S
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ANNEX V

**MEDITERRANEAN INITIATIVE
ON TAXONOMY**

FOREWORD

In accordance with the recommendations of the Twelfth ordinary meeting of the Contracting Parties (Monaco, November 2001), RAC/ASP prepared a Draft Mediterranean Initiative on Taxonomy.

This Draft Initiative was elaborated in collaboration with an ad hoc group of experts that met in Tunis from the 3rd to the 5th of April 2003.

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Preamble

During the Fifth Meeting of National Focal Points for SPAs (Valencia 23-26 April 2001), those taking part in the working group entrusted with examining the issue of the Mediterranean Initiative on Taxonomy (Work Group 3) stressed the importance of taxonomy for adequate knowledge of the constituent elements of taxonomy and for implementing assessment methods, and made a number of recommendations to be integrated in a Mediterranean strategy that should take other initiatives, particularly the world taxonomy initiative undertaken in the CBD context, into account.

Reviewing the taxonomy situation in the participants' countries, the work group highlighted the following main points:

In reviewing the situation of taxonomy in participants' countries, the Working Group identified the following points:

- The number of taxonomists is declining in the majority of the countries of the region. This is due to the fact that taxonomy does not number among the priorities set for research, and students are no longer drawn by this discipline;
- Authorities dealing with conservation of biodiversity call upon universities and researchers to assist them in taxonomy. The implementation of conservation programmes will be affected by the lack of taxonomists in the medium term if adequate measures are not taken;
- Natural history museums play an important role in taxonomy and in the maintenance of reference collections.

Based on the above items and in view to compensate for the gaps highlighted by those items, the working group put forward the following recommendations:

1. Invite the Contracting Parties to attach greater importance to taxonomy and to strive to increase the number of specialists in Mediterranean taxonomy;
2. Compile an inventory of taxonomy specialists in Mediterranean countries for those taxons that are important for the implementation of the SPA Protocol;
3. Prepare an inventory of laboratories with marine taxonomic competence, the capacities at their disposal, and their possibility of taking on students for training in taxonomy. The inventory should also encompass specialized scientific societies (e.g. societies for herpetology, ichthyology, etc.);
4. Identify the urgent needs of countries in the field of taxonomy;
5. Launch programmes to train taxonomists and to provide study grants and other means to encourage students to specialize in taxonomy. In this way, the bilateral cooperation mechanisms could be put to use;
6. Given the important role of reference collections in taxonomic work, it is important to carry out a study of the situation of reference collections of Mediterranean marine species. This study should lead to a programme for their development, continuance and networking as tools to support taxonomic work;

7. Promote the organization of thematic workshops on taxonomy to allow exchanges between Mediterranean taxonomists;
8. Elaborate and update guides for the identification of marine species;
9. The implementation of the above recommendations should be integrated into a Mediterranean strategy, which must take account of other initiatives, particularly the Global Taxonomy Initiative undertaken within the framework of the CBD.

I. Objectives of the Mediterranean Initiative on Taxonomy

The Mediterranean Initiative on Taxonomy should particularly enable us to work to revive taxonomy for the marine domain in the Mediterranean region, developing Mediterranean skills and encouraging the establishing of national strategies, coordination and exchange on the subject.

II. Priorities of the Mediterranean Initiative on Taxonomy

Putting the Initiative into effect requires organising tasks. Operational and temporal priority could be given to the following taxonomical groups:

- Species that build up habitats.
- Species that are indicators of environmental quality.
- Species that make a contribution to marine resources, either directly or indirectly, by their role in trophic networks.
- Endemic species.
- Threatened species.

III. Work programme of the Mediterranean Initiative on Taxonomy

On the basis of the recommendations made by the work group for the elaboration of a Mediterranean strategy on taxonomy, and bearing in mind other initiatives, particularly the world taxonomy initiative undertaken in the CBD context, three main lines of attack were followed with a view to defining the Initiative's terms of reference, which are : (i) inventorying national needs, (ii) training and (iii) reference collections and guides.

1. Inventorying national needs

To assess national needs, the following resources are to be inventoried:

- Specialists and other specialised persons.
- Guides.
- Inventories.
- Reference collections.
- Training.

We should make it clear that the term 'need' encompasses in its definition the idea of lack as well as the notions of biodiversity importance and specificity at national level. Needs change and must be assessed on the basis of forecasts.

The mode of assessment depends on the results of a survey based on the elaboration of a questionnaire concerning the following points:

- scientific and technical needs (disciplines, taxonomical groups, infrastructure, equipment, staff, training, etc.);
- needs for fulfilling the country's international obligations in terms of biodiversity and of institutions.

2. Training

Taxonomy skills around the Mediterranean remain extremely uneven; they are often insufficient for implementing the objectives of the SPA Protocol. Thus there is a need for a strategy to train and promote staff who are competent in this field. Implementing this Initiative must be integrated in a Mediterranean strategy. It must focus on the following points:

1. Distinguish beforehand two training stages: preliminary general training and specialist training.
2. Mention the lacks and take the survey on needs into account.
3. Establish criteria for priority.
4. Three levels must be taken into account:
 - Existence of reception laboratories.
 - Funding.
 - Level of training to be attained.
5. Inventory summer schools and the possibility of creating new ones.
6. Envisage means of access to training by inventorying:
 - the laboratories willing to receive young researchers.
 - current courses.
 - bilateral agreements.
 - computerized systematics networks.
7. Set up systems for assessing the existing training courses.
8. Envisage means of encouraging exchanges between countries.
9. Assess the possibility of creating means of training by RAC/SPA.
10. Establishing a quality protocol for classifying existing courses of study.
11. Assess the possibility of integrating training in pilot projects.
12. Make sure that the discipline that has to benefit from training cycles will be lasting.
13. Assess the possibility of coordinating training programmes.
14. Establish a tool for inventorying financing outlines.
15. Get accreditation for training centres.

To achieve these points, it is advocated that work should be done in the following manner:

2.1. Inventory

The starting point is a survey of the facts. A widely circulated questionnaire will enable the inventorying of people working in taxonomy in scientific institutions, laboratories and universities around the Mediterranean.

The questionnaire must contain:

1. A list, addresses, and CVs of the taxonomists in marine flora or fauna in your laboratory (their level of experience and specialisation).
2. Projects being worked on or completed over the last ten years.
3. Publications in marine taxonomy over the last ten years.
4. Your requirements for promoting work in marine taxonomy: specialisations that are lacking, training, taxonomical guides, other.
5. Staff who have enjoyed study or training grants where the taxonomy of a group of marine flora or marine flora in the Mediterranean is included.
6. A list of taxa to be checked.

The questionnaire will reveal the lacks and requirements. Bearing these identified gaps in mind, and based on the Initiative's priorities, an operational (temporal) **scale of priorities** between the taxonomical groups will be established, using criteria. The following criteria are suggested, but are not exhaustive:

- Species that build up habitats.

- Species that are indicators of environmental quality.
- Species that make a contribution to marine resources, either directly or indirectly, by their role in trophic networks.
- Endemic species.
- Threatened species.

Particular attention should be paid to selecting the staff whom this training will concern. The motivation and lasting nature of the elements selected must be guaranteed. One indispensable condition is that they are affiliated members of an institution or research centre concerned. It is also essential that the recruitment be geographically fair.

2.2. Training levels

Several levels must be considered:

▪ **In-work training** : The aim will be to promote the skills of researchers working in their respective institutions. Several measures must contribute to this goal:

- Make suitable documentation accessible, providing it in the form of guides, reference works, CDs or other digital forms
- Initiate researchers into the computer resources related to taxonomy and biodiversity
- Create distance-learning systematics modules
- Promote reference collections as a training tool
- Facilitate the sending of problematic material for consultation by experts, centres of renown and qualified museums or other international experts (CITES Rules)
- Set up a programme for short consultant expert assignments
- Integrate researchers in Pilot Projects under the direction of national or international experts
- Encourage participation at regional or international workshops and conferences
- Inform students about the demand for taxonomists.

▪ **Training through regional training courses**: This concerns young researchers whose experience is still limited. The aim is to perfect their knowledge through intensive theoretical and practical teaching done by experienced teachers.

Training will consist of traditional taxonomy with more recent techniques using molecular biology

To this end, RAC/SPA, in cooperation with the UNEP (MAP, Athens), will organise a series of regional training courses, in French and in English in turn. The programme for the courses will be established by the consultants, bearing in mind the needs of the countries bordering on the Mediterranean, as well as pre-established priorities

Existing training courses must be inventoried and made use of. They must be made accessible to young researchers recruited in the Mediterranean. Examples are: the courses organised by COI/UNESCO, CETAF's educational courses, the Consortium of European Taxonomic Facilities, and others.

▪ **Training through research** : The aim is advanced specialisation and will concern those researchers who have already reached a certain level of experience. The given training here is guided research in specialist laboratories under the direction of recognised, highly competent, experts.

For that aim, it is envisaged to :

- Promote the funding of theses that deal with taxonomy.
- Make an inventory of the experts and laboratories willing to receive young researchers as well as the fields of expertise available.
- Take advantage of the bilateral agreements and mechanisms that provide for the exchange of staff.

▪ **Training technicians** : To sort biological material, to conserve specimens in collections, and to computerize data.

2.3. Professional follow-up

Make sure that there are lasting jobs that correspond to the training received.

3. Guides and collections

3.1. Reference collections

With a view to inventorying and making best use of the existing reference collections in the Mediterranean and helping to circulate them and identify their weak points, it is recommended that:

1. a single questionnaire be established, of the kind that was suggested in the working document entitled " Assessing the state of taxonomy of marine plant organisms in the Mediterranean countries ", which would be used to collection information.
2. the National Focal Points be invited to designate a national consultant with responsibility for answering the questionnaire, and the RAC/SPA circulate this to the list of specialists the Centre has in its possession in order to have the most exhaustive information possible. RAC/SPA should also post this questionnaire on its web site.
3. the database generated by this questionnaire be continuously managed and updated, according to an appropriate schedule.
4. a request be made to prepare a technical handbook that would help in creating, keeping up, managing and maintaining reference collections.
5. each country identify at least one national institution that would be in charge of managing and maintaining in good condition its reference collection/s, or creating these, if necessary. It is suggested that the grouping of collections or of the institutions containing them be done on a national scale, dependent on one united authority.
6. the creation of a Mediterranean taxonomical society be promoted, one that would form a union of all the marine biology societies and associations (pertinent to taxonomy) and encourage the participation of volunteers interested in nature conservation and in environmental education.
7. a new mechanism be set up for subscribing to the Protocol on Specially Protected Areas and biological diversity in the Mediterranean, which would encourage the member states of the Barcelona Convention to create reference collections and train taxonomists, thus ensuring the continuity of existing collections and the creation of new collections.
8. that researchers be requested to place their personal collections with public collections, thus facilitating knowledge about these, and enabling them to be consulted.
9. that collections be equipped with documents referring to the entire collection, as well as the samples placed. These documents must also include observations on typical samples and their place of origin, for them to be processed on a Geographical Information System (GIS).

3.2. Guides

It is recommended that:

1. The National Focal Point designate a consultant with the following duties:
 - a. collecting and listing all the existing guides and inventories in his/her country,
 - b. inventorying the publications in his/her country's libraries that relate to taxonomy,
 - c. outlining current programmes and projects aimed at bringing out new guides and inventories.
2. The most pertinent existing guides be translated under the supervision of specialists, and circulated to help all the Mediterranean countries to inventory their biodiversity.
3. RAC/SPA, via its Focal Points, identify the most problematic taxonomical groups and develop specific guides on these groups.

4. Database and observatory

It is recommended that a regional Mediterranean 'observatory' be set up as part of the RAC/SPA's activities and attributions; its task would be collecting, managing and keeping up to date all the databases related to reference collections, taxonomists and guides, inventories and publications on marine diversity. These Mediterranean databases would help enrich world taxonomy.

Also, observations and sightings and personal communications must be gathered together, and accompanied by a validity scale.

In areas where there is a lack of national experts, it is necessary to assess the means of setting up a Task Force that will intervene, when the country so requests.

IV. Support for implementing the Initiative

Implementing and monitoring the Initiative must be supported, as well as by the points developed above, by the following main actions:

- Organization of thematic workshops.
- Monitoring and validating the information collected by a board which will validate the experts' database.
- Regularly assessing how far the Initiative has advanced.
- Once the inventorying of resources at country level has been done, it will be useful to check whether there is a total regional absence of knowledge concerning precise taxonomical groups. If so, skills from outside the Mediterranean could be used to fill the gaps.
- A career path should be promoted for the taxonomy profession.

Inventorying national needs, training and guides and collections require the circulation of a questionnaire. It is recommended that one single questionnaire be established, structured around four items:

- guides and collections,
- training,
- needs,
- specialists.

Circulating this questionnaire will call on the National Consultants, who will be responsible for answering the questionnaire.

V. Regional and international coordination

Implementing the present Initiative is the responsibility of the Contracting Parties' national authorities. The implementing will be regionally coordinated by the Secretariat of the Mediterranean Action Plan (MAP) via the RAC/SPA (Regional Activity Centre for Specially Protected Areas). RAC/SPA's functions in this respect will mainly consist of:

- Ensuring that the actions required at regional level to attain the objectives of the present Initiative are put into effect.
- Helping, as far as its means allow, the Contracting Parties to implement the actions required at national level to attain the objectives of the present Initiative.
- Assessing how far the Initiative has progressed, and preparing a report.
- Informing the National Focal Points for ASPs at each of their Meetings about the progress made in implementing the present Initiative, establishing regular consultation between the Associates for implementing the Plan, and organising, when necessary, Meetings to this effect (mention FAO, UNESCO, CIESM, OBIS).
- Collaborating with the concerned organisations and working so that the Mediterranean region participates in the pertinent international and/or regional initiatives. In this context, international and/or non-governmental organisations, laboratories and any concerned organisation or body are invited to join in the work of implementing the present Initiative.
- Ensuring that skills at regional level harmonize, on the basis of inventories of resources and needs, with the aim of setting up a regional network of skilled expertise on taxonomy in the Mediterranean.

VI. Financing the Initiative

Implementing the Initiative will mainly be based on resource networking and multilateral exchanges; this should have a multiplier effect on resources and permit a reduction in the cost of the Initiative. Also, funding should depend on all the existing programmes and conventions.

For that aim, RAC/SPA, with the support of the MAP Coordination Unit and, its national focal points for SPAs, should get in touch with the aforementioned programmes and conventions to invite them to support the working programme of the present Initiative as part of their intervention priorities.

Special attention should be accorded to scholarships, to allow mainly postgraduates enjoying long-lasting stays in specialised laboratories. In this regard, Mediterranean countries are invited to make taxonomy part of their priority topics while awarding postgraduate scholarships.

Moreover, the following bodies will be contacted in order to invite them to contribute in the financing of this programme: UNEP/MAP (Mediterranean Action Plan), the Mediterranean countries financing services of bilateral and multilateral cooperation, the European Commission and the GEF (Global Environmental Facility).

While promoting the diversification of the Initiative work programme financing sources, RAC/SPA should make sure that these financing sources are coherent. In this framework, integrated projects will be prepared and proposed to potential silent partners. A research for sponsors, including in the private sector, will be carried out in the early stage of this initiative implementing.

VII. Implementation timetable

Actions	References in the <i>document</i>	1st year (1)	2nd year	3rd year	4th year	5th year
Evaluation of resources	III.1, III.2, III.3.1					
Evaluation of needs	III.1, III.2., III.3.1					
Existing or planned guides	III.2.1, III.2.2, III.3.2.					
Elaboration of new guides	III.2.1, III.3.2					
Training	III.2.2					
Collections	III.2.2, III.3					
Collection Manual	III.3.1					
Thematic workshops	IV			*		*
Evaluation	IV			*		*

Legend

Extended action

* Limited action

(1) The years specified in the above timetable are counted from the date of adoption of the Initiative by the Contracting Parties to the Barcelona Convention

ANNEX VI

**PROPOSALS FOR INCLUSION IN THE
SPECIALLY PROTECTED AREAS OF THE MEDITERRANEAN
IMPORTANCE LIST (SPAMI)**

FOREWORD

In the context of implementation of article 8 and 9 of SPA and Biodiversity protocol, Spain has proposed two sites to be included in the SPAMI list.

The present document includes the English version of the Executive summaries of the studies of the sites proposed to be included in the SPAMI list.

The proposals comply with the provisions of Annex I to the SPA Protocol

1. PARQUE NACIONAL MARITMO TERRESTRE DEL ARCHIPIELAGO DE CABRERA (SPAIN)

Cabrera National Park is the first, and up until 2002, the only National Park in the Spanish network. It is unique in some of its physical, geographical, biological and ecological characteristics, and can be undoubtedly considered the main natural area in the Balearics. It is the only uninhabited archipelago of its size in the western Mediterranean and includes the best natural harbour – after Mahon harbour, Menorca.

The archipelago was declared a National Park in 1991. It consists of 19 islets situated some 9 km off the Southern tip of Mallorca (Balearic Islands), plus the surrounding sea. The total extension of the Park is 10,021 ha, of which 1,320 is land and the rest, 8,680 ha, open waters. The maximum depth in the Protected Marine Zone reaches 110 m. The islands do not support any agricultural practice and are uninhabited except for a standing population of between 12-25 people on the main island. The waters of the archipelago are characterised by their oligotrophy, accentuated by the low continental influence (there are no rivers or industry in the archipelago or in the vicinal Mallorca), and in consequence by an elevated transparency that can be compared, in summer, to that of tropical seas. The great heterogeneity of the seabed, harbouring a large number of the more characteristic benthic communities in the central Mediterranean, and their good state of conservation, makes the archipelago an ideal place for the study of marine biodiversity in the oligotrophic areas of the western Mediterranean, and the factors that determine its community structure. In addition, the presence of undisturbed, continuous underwater cliffs between 0 and -65 m are of major interest for carrying out studies on benthic zonation and on the environmental factors that encourage this.

The lowest bathymetric limits for the infralittoral zone (-40 to -45 m) and algal growth (-110 m) have been determined in the archipelago, and rank amongst the deepest in the W. Mediterranean. Due to the calcareous condition of the archipelago, the number of marine caves and tunnels is considerable.

Several anchialine caves harbouring endemic marine exist in the two main islands.

The marine biota inventoried consists so far of 455 species of marine plant (Diatoms, Macroalgae and Seagrasses) and 951 metazoans. Comprehensive inventories of many of these groups have been published in a monograph on the Natural History of the archipelago (Alcover *et al.* (eds), 1993); these include Diatoms, Macroalgae, Seagrasses, Cnidarians, Ctenophora, Plathelminthes, Nemerteans, Polychaeta, Sipunculids, Equiurids, Crustacea, Mollusca, Phoronida, Bryozoa, Brachiopoda, Foronidea, Chaetognata, Echinodermata, Ascidiacea, Thaliacea, Larvacea, Fishes, marine Mammals and Reptiles.

The archipelago is outstanding for its extraordinarily diverse fish assemblage, surpassing in number of species any other BIOMARE site except those in Macaronesia. 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 to the archipelago.

The landscape of Cabrera is dominated by two main scrubland communities: a coastal maquis, with sclerophyllous bushes prevalent (Al. *Oleo-Ceratonion*), and a shrubland dominated by malacophyllous bushes (Al. *Rosmarino-Ericion*) with an arboreal stratum of *Pinus halepensis* in some areas. Close to the sea in the main islands, and in the islets, there is a continuum belt of halonitrophilous vegetation, locally including remarkable endemic communities of spiny bushes (*Launaeetum cervicornis* and *Teucrietum subspinosum*). The calcareous cliffs are rich in crevices that host remarkable communities with some endemics

(As. *Hippocrepidetum balearicae* and As. *Micromerio-Allietum a.-boloss*). Nearly 500 terrestrial vascular plants have been inventoried so far, 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 in some cases (over 400 breeding pairs of *Hydrobates pelagicus* and *Calonectris diomedea*, 9-10 of *Falco peregrinus*, over 100 of *Puffinus mauretanicus*, 100 of *Phalacrocorax aristotelis* and >250. of *Larus audouinii* as the most relevant species). The archipelago hosts 80% of the world population of the endemic Balearic lizard, *Podarcis lilfordi*, a population split into several subspecies. Aracnids are rich in species, with some Balearic endemics like *Nemesiabrauni*. Two coleoptera (*Percus spagnoli* and *Phyllan nitidicollis*) are endemics of the archipelago. Other groups of terrestrial invertebrates are well represented, with several endemics. The terrestrial fauna has not been surveyed completely.

Human impact:

The potential human impacts on the site derive from the activity of a fishery fleet based on the vicinal ports of Mallorca (59 licensed ships, but only a maximum 20 permitted to operate per day), and from visitors. Only traditional artisanal selective fishing (gill nets, line) is allowed. The annual crop is unknown, since the ships also work outside the Park, but the volume could be around 100 Tm. In 2001, the Park received 60,000 visitors. Visits are very seasonal, 50% of total visitors concentrated in July-August. Landing is restricted and only permitted around the Cabrera harbour.

On-going research:

Cabrera is the research ground for the major biodiversity research laboratories of the Balearic Islands (i.e., IMEDEA, IEO and the University of the Balearic Islands) and Catalonia (CEAB, ICM and University of Barcelona). Seven scientists spend a significant proportion of their time on this research. Several NGOs carry out marine biological work in the archipelago. Apart from basic alpha-taxonomic work, the main projects focus on the effect of marine reserves on fish populations and *Posidonia* meadows.

Facilities:

The Park is only accessible by boat or helicopter. There is a 30-minute cruise in an inflatable boat from Colònia de Sant Jordi (the closest harbour to Cabrera on the Mallorca south coast, about 50 km from Palma de Mallorca). During the spring and summer, several tourist charter boats operate daily to the archipelago from Colònia de Sant Jordi and Porto Petro; the cruise lasts about 1 h. Tourist charter boats do not operate daily during the winter and fall, but can be arranged for a set date. In addition, access to charter boats is possible. The Park boats are not, in principle, accessible to researchers, and the facilities for scuba-diving in the Park depend on the availability of a compressor. There is no laboratory on the islands purposely built or equipped for marine biological work except the bench space available in Cabrera's main island harbour. Housing is available in the Park for up to 8 researchers, depending on demand.

Database available:

So far there are no on-line databases available on the archipelago's biota. Nevertheless, Alcover *et al.* (eds, 1993) include comprehensive chapters (and checklists) on Zoo- and Phytoplankton, Macrozoobenthos and Macrophytobenthos, and terrestrial fauna and flora.

Website:

The Spanish Ministry of the Environment holds an institutional website (<http://www.mma.es/parques/lared/cabrera/index.htm>) with general information on the management and biotic riches of the archipelago.

2. ACANTILADOS DE MARO-CERRO GORDO (SPAIN)

Acantilados de Maro-Cerro Gordo Natural Place is an area of great environmental value due to the singularity of its geological features and great marine and terrestrial biological diversity.

The main access is the N340 road. The human presence is mainly concentrated in the villages belonging to the area: Maro in Nerja (Malaga) and La Herradura in Almuécar (Granada), and in Rio de la Miel, Barranco del Pino and Cantarrijan.

The area is morphologically characterised by a set of cliffs from the intermediate unit of the Alpujarride Complex. These features belong to the Sierra Almijara, being the summit's last range in the area. The area contains dolomitic limestone, resulting in the formation of dark, medium consolidated soils over the areas with gentler slopes, and clear, poorly consolidated soils over the areas with steeper slopes.

The terrestrial flora of the area is diverse. The potential vegetation belongs to the Betic calcicolous of the *Quercus ilex*. Nowadays, the area holds Mediterranean scrub species such as *Pistacia lentiscus*, *Rosmarinus officinalis*, *Ulex* sp., *Chamaerops humilis*, and other species such as *Pinus halepensis*. Endemics are also important in the area, two endemics from southern Andalusia are considered in danger of extinction by the Andalusian Catalogue of Threatened Wild I flora (ACTWF); these species are *Limonium malacitanum* and *Rosmarinus tomentosus*, and two endemics from the western Mediterranean; both are included in the Habitat Directive and are *Buxus balearica* - in danger of extinction, according to ACTWF – and *Maytenus senegalensis* subsp. *europaea* – vulnerable, according to ACTWF.

As far as fauna is concerned, there are a number of seasonal and resident species in the area, such as *Vulpes vulpes*, *Felis silvestris*, *Mustela nivalis*, *Martes foina*, *Erinaceus europaeus*, *Meles meles*, *Hemidactylus turcicus*, *Malpolon monspesselanus*, *Chamaeleo chameleon* and *Bufo calamita*. The presence of metapopulations of *Capra pyrenaica hispanica* is also relevant.

The most relevant group is formed by the seabirds. Of special relevance are the following species: *Larus ridibundus*, *Larus cachinnans*, *Larus fuscus*, *Ardea cinerea*, *Hydrobates pelagicus* - in danger of extinction in Andalusia -, *Morus bassana*, *Milvus migrans*, *Pandion haliaetus* - winter populations catalogued as vulnerable in Andalusia -, *Circaetus gallicus*, *Hieraaetus fasciatus* - in danger of extinction in Andalusia -, *Buteo buteo*, *Falco tinnuculus*, *Falco naumanni*, and *Falco peregrinus* - vulnerable in Andalusia -.

The area's maritime strip presents a higher biological diversity than the terrestrial one. Many species live on the seabed. For the flora, species such as *Posidonia oceanica*, *Zostera marina* and *Cymodocea nodosa* develop complex meadows considered as priority habitats in the EU context. These meadows represent vital areas for spawning and nursery grounds for many fish species. In addition, many macroscopic algae can be found in the infralitoral area, present numerous genera of the three main groups of macroscopic algae being present.

The marine fauna presents high species richness.

There is a large number of invertebrates, specially Cnidaria, Corals, Anemones, Echinodermata and Mollusca. In the Crustacea there are as relevant species shrimps, spider crab and lobster. Of special importance are the populations of the vulnerable species *Astroides calycularis* (B.O.E. n. 148, 22/06/1999).

Within the fish group, diversity is related to the habitat heterogeneity due to the existence of marine phanerogam meadows and rocky beds. Main species are the *Gobius niger* and Blenidae, *Scorpaena porcus*, moray eel and *Epinephelus guaza* – this species is the most important predator in the Mediterranean, although almost extinct because of illegal fishing. Other species of interest are *Coris julis*, *Astronothus ocellatus*, *Apogon imberbis*, *Anthias anthias*, *Diplodus annularis*, *Diplodus cervinus*, *Sparus auratus* and *Mola mola*.

In addition, there are some protected species in the area such as *Caretta caretta*, the marine mammals, *Delphinus delphis*, *Stenella coeruleoalba*, *Tursiops truncatus* and *Balaenopteraa physalus*.

In spite of the control and monitoring of the area, illegal and/or sport fishing occur, and the human pressure increases in the summer, producing a high rate of disturbance in the area.

Because of the singularity of its coastal landscape, added to the extremely important species richness and the high natural value of its marine ecosystems, the Acantilados de Maro-Cerro Gordo Natural Place has become an area of great environmental importance, worthy of the highest degree of protection.