"Preparation of a Strategic Action Plan for the conservation of Biological Diversity in the Mediterranean Region - SAP BIO"

NATIONAL REPORT FOR GREECE

JULY 2002

National Correspondent: S. Spyropoulou, Ministry of Environment, Physical Planning and Public Works (co-editor).

MedWet Focal Point: D. Spala, Ministry of Environment, Physical Planning and Public Works (co-editor).

Consultant: Greek Biotope/Wetland Center (EKBY).

Contributors: T. Lazaridou and H.M. Mihalatou (editors), P. Panayotides (*Posidonia* meadows), H. Fytoka and H.M. Mihalatou (lagoons), D. Dimopoulos and C.Teneketzis (marine turtles), D. Portolou and K. Papakonstantinou (birds of marine and coastal habitats), A. Frantzis (cetaceans), V. Zavras (Mediterranean monk seal).

Reviewed at the national level by:
Ministry of Agriculture:
General Directorate (G.D) of Forests and Natural Environment-Division of Aesthetic Forests, Parks and Game Management
G.D. of Agricultural Applications and Research-Division of Spatial Planning and Environmental Protection,
G.D. of Fisheries-Divisions of Marine Fisheries and of Aquacultures and Inner waters,
Ministry of Environment, Physical Planning and Public Works:
G.D. of Environment -Divisions of Environmental Planning and of Physical Planning-Special Environmental Service
Ministry of Mercantile Marine:
Port Police- Division of Port Police- Section for Fisheries

National Stakeholder Consultation Procedure organized by: the National Center of Environment and Sustainable Development (NCESD)

Preface

The report at hand is the contribution of Greece to the SAP- Bio project, the result of a joint communication exercise among several independent experts, government authorities, elected representatives at local authorities and professional associations, environmental NGOs, research institutes, consulting companies and the rest of stakeholders.

It has been both an honor and a challenge to try and coordinate this exercise; I am grateful to everyone who has contributed in one way or another and I very much hope that the work initiated in the frame of this project will bear fruits in the coming years for the benefit of people and biodiversity in Greece and in the whole of the Mediterranean region.

Stavroula SPYROPOULOU

National Correspondent

Preface

LIST OF CONTENTS

LIST OF ACRONYMS

ACCOBAMS:	Agreement on the Conservation of Cetaceans of The Black Sea, Mediterranean Sea and Contiguous Atlantic Area
EKBY:	Greek Biotope/Wetland Centre
EU:	European Union
FAO:	Food and Agriculture Organization of the United Nations
FFEM:	Fonds Francais Pour l' Environnement Mondial
GEF:	Global Environmental Facility
IUCN:	International Union for Conservation of Nature
JMD:	Joint Ministerial Decision
MAP:	Mediterranean Action Plan
METAP:	Mediterranean Environmental Technical Assistance Programme
NCESD:	National Center of the Environment and Sustainable Development
NMPANS:	National Marine Park of Alonnissos Northern Sporades
PD:	Presidential Decree
pSCI:	Proposed Sites of Community Interest (Directive 92/43/EU)
RAC/CP:	Regional Activity Centre/Cleaner Production
RAC/PAP:	Regional Activity Centre/Priority Actions Program
RAC/SPA:	Regional Activity Centre/Specially Protected Areas
RINT:	National Rescue and Information Network
SAP:	Strategic Action Program
SAP MED:	Strategic Action Program to address pollution from land-based activities in the Mediterranean Region
SDFs:	Standard Data Forms
SES:	Specific Environmental Study
SPAs:	Special Protection Areas (Directive 79/409/EU)
SPA:	Specially Protected Area (Protocol 4, Barcelona Convention)
SPAMIs:	Specially Protected Areas of Mediterranean Importance (Protocol 6, Barcelona Convention)
STRC:	The Seal Treatment and Rehabilitation Centre in Alonnissos
UNEP:	United Nations Environment Programme
WHO:	World Health Organization
WWF:	World Wide Fund for Nature

Procedures for the preparation of the Greek National Report

Following the relevant proposal to the Regional Activity Centre for Specially Protected Areas (RAC/SPA), a contract was signed between the Goulandris Natural History Museum - Greek Biotope/Wetland Centre (EKBY) and RAC/SPA, appointing EKBY to act as the "national consultant". Complementary funds to the national consultant, enabling them to act as coordinators of a wider working group, were also made available from the Ministry of Environment, Physical Planning and Public works.

From the outset it was decided that this report should follow a pragmatic approach at the species and habitat levels. The "key issues" were decided to include important habitat types, namely *Posidonia* meadows, and lagoons, and important species, namely marine turtles, birds of islets, rocky coasts and sea, birds of coastal lagoons, cetaceans and the Mediterranean monk seal.

Potential contributors were identified and contacted and a scientific working group was formed. The group met once in February 2002 to clarify the scope and method of work, in the presence of the National Correspondent and the involved competent authorities (Ministry of Environment, Physical Planning and Public Works and Ministry of Agriculture). Each member of the scientific working group undertook the task to provide information on a key issue as specified in chapters III to V of the National Report. Following bilateral communications all texts were finally collected and edited by EKBY into a first draft in April 2002.

An extract of the first draft of the report was translated into Greek and was sent for comments to the involved government services, along with an invitation for a working meeting in May 2002. Comments were made on the text, which was edited accordingly with a view of presenting it to the National Consultation Meeting.

The National Centre for Environment and Sustainable Development (NCESD) had agreed to organize the national consultation procedure and participated in both meetings. At a later stage, a contract was signed by NCESD and RAC/SPA appointing NCESD organise the national consultation meeting, and complementary funds were made available by NCESD for that reason.

The modified Greek draft was sent in good time by NCESD, along with an invitation to the meting of July 4, 2002, to 250 individuals representing major stakeholders: the public services and the wider public sector, important for implementation of specific actions, issuing of regulations, funding of projects, awareness raising, the NGOs, important for awareness raising, implementation of conservation initiatives, surveys, the private sector including fishermen cooperatives, hotel owners associations, ship owner companies, consulting companies and National Committees on several crosscutting issues (Physical Planning, Desertification, Sustainable Development, Eco-tourism, Fisheries).

The full text, drafted in English, was sent by EKBY for comments to various experts, who were also invited to participate at the meeting. The participation to the meeting was satisfactory (about 60 individuals) and the discussions referred mainly to the threats to marine and coastal biodiversity that are addressed in the National report, the relevant priorities for action and the investment portfolio. Participants were also invited to transmit written comments within a given deadline.

Following the procedure established by NCESD, the National Correspondent and EKBY, the proposals that were made during the consultation procedure were collected and evaluated, mainly on the basis of their potential of implementation at a national scale and of their priority character. Several of the proposals concerning priorities for action at a national scale were finally included in the National Report.

A final draft in English, as amended by all types of comments, was delivered by EKBY in the beginning of August 2002, to the "national correspondent" who undertook the final editing.

I. INTRODUCTION

I.1. Background information

The Mediterranean Action Plan (MAP) for the protection and development of the Mediterranean Sea was approved in 1975, within United Nations Environment Program (UNEP) on the regional seas program. The Barcelona Convention for the protection of the Mediterranean Sea against pollution was signed the following year, by 14 States as well as the European Community. It has since been completed by six protocols developed and approved for the protection of the marine environment and was revised in Barcelona in 1995.

The new (6^{th}) "Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean" entered into force on 12 December 1999, replacing the 4^{th} Protocol concerning Mediterranean Specially Protected Areas (adopted in 1982). The new Protocol represents a strengthening of the replaced Protocol in several important respects:

- the extension of the Protocol to the protection and management of endangered and threatened species, and to the conservation and sustainable use of biodiversity,
- the extension of its geographical coverage to the international waters of the Mediterranean,
- the establishment of a new international category of protected area, the Specially Protected Areas of Mediterranean Importance (SPAMIs)
- the drawing up of a list of endangered or threatened species and of a list of species whose exploitation should be regulated,
- the introduction of provisions concerning environmental impact assessment, establishing inventories, and the introduction of non-indigenous or genetically modified species.

A project proposal on "Determination of priority actions for further elaboration and implementation of the Strategic Action Program for the Mediterranean Sea" was submitted to GEF by the MAP Coordinating Unit in association with the Regional Activity Centers (RAC/SPA, RAC/PAP, RAC/CR), FAO, WHO, METAP, FFEM, IUCN and WWF. The project, approved by the GEF Council in April 2000, includes the "Preparation of a Strategic Action Plan for the Conservation of Biological Diversity in the Mediterranean Region" (SAP BIO), with RAC/SPA as the Lead Agency.

The main objective of the SAP BIO project is to establish a logical base for implementing the new Protocol of Barcelona Convention. At the same time it should provide an outline of activities over a 30 month period, in order to produce a SAP for the conservation of marine and coastal biodiversity. The SAP BIO document will be presented and adopted at the Thirteenth Ordinary Meeting of the Contracting Parties.

National Reports and National Action Plans of each country participating in the Program as well as regional reports (i.e. FAO documents to face the impact of fishing activities on biological diversity) will represent the major inputs to the SAP BIO. For this reason,

these documents have to be conceived, elaborated and formatted in a way that is compatible and consistent with the SAP BIO.

The work under three other major international conventions is also related to the SAP-Bio project: One is the Convention on Biological Diversity, signed in Rio (1992), and especially the work undertaken within the Jakarta Mandate (1997), specifically for marine and coastal biological diversity. The second is the Convention for the conservation of wetlands, signed in Ramsar (1974), and especially the work undertaken for Mediterranean Wetlands within MedWet, a formal inter- regional structure for the implementation of the Ramsar Convention.

Finally, the works of ACCOBAMS, the Agreement for Cetaceans in the Mediterranean and the Black seas, signed in the framework of the Bonn Convention for Migratory species is related to the SAP-BIOproject.

I.2. Objectives of the National Report

The objectives of the national report were identified bearing in mind the main objectives of the SAP-Bio project, and they are presented below:

- To identify specific problems affecting coastal and marine biodiversity and their proximate causes, by focusing on thematic components- “key issues”. The “key issues” should be selected taking into consideration the range of protected species and habitats in the Mediterranean, the extended coastline of Greece, the existing scientific knowledge and information, the wide range of potential threats to marine and coastal biodiversity
- To assess the relative importance of the threats identified, their trends, their distribution in space and the means available for arresting the threats. It should be noted that the wide categories of threats cannot be removed totally nor permanently and therefore continuous attention should be paid in order to ameliorate and/or safeguard existing protection measures.
- To present existing national conservation priorities and identify any additional priorities, including remedial actions for the “key issues” analyzed at the national level.
- To elaborate a text to be used as a tool in communicating at a wider scale on the status, the threats, the progress, the gaps and the possibilities for further actions for the conservation of marine and coastal biodiversity at the national level.
- To contribute in approaching a strategic plan for biodiversity and identify proposals at the Mediterranean level

II. BASIC INFORMATION ON STATUS IN THE COUNTRY

II.1 General biodiversity features in Greece

Greece is situated in Europe at the southern end of the Balkan peninsula, a part of the Central/ Eastern Mediterranean Region. Its territory expands in approximately 132,000 km^2 with a coastline of about 17, 250 km long. Greece is characterized by a complex physical relief and presents a great variety of rock formations. A wide range of climate types occur, ranging from the semi-arid, semi-desert climate in south east to the cold, humid continental climate in the north. The diversity of bio-climates is reflected in the diversity and mosaic of vegetation and the high number of plant and animal species.

Four factors have been identified as responsible for the high biodiversity values of Greece, one of the richest in Europe and the Mediterranean: a) the bio-geographic position of the country at the crossroad of three continents, b) the high topographic diversity, c) the complex geological and ecological history and d) the relatively mild human interference. The high level of endemism in many animal and plant groups observed is mainly due to the geographical and ecological fragmentation of Greece into many isolated areas such as islands, mountains, gorges etc., and to the refuge provided to species during the Pleistocene glaciations.

The main floristic regions found in Greece are the Mediterranean, the European (Eurasian) and the Irano-Caspian and the number of approximately 6,000 phanerogamous plants has been recorded, with a significant proportion of endemic plant species and subspecies. The flora of lower plants (Bryophyta, Pteridophyta) has not yet been systematically studied. The number of fungi species that have been described so far is around 2,000, but the group has only been sporadically studied. The vegetation of Greece is distinguished in five vegetation zones, each with distinct ecology, physiognomy, flora and history. The main habitat types are classified into 25 groups, according to the Palearctic classification[1] of habitats,.

The total vertebrate number encountered in Greece is around 670 species and subspecies, whereas invertebrates are estimated to reach 20,000 although an invertebrate check- list for Greece has not yet been produced.

II.2. Marine and coastal habitats and species

All the marine Mediterranean habitat types are represented in Greece, and there are seven groups of marine and coastal habitats in Greece, according to the Palearctic classification, presented in Box 1.

About 31 marine and 132 coastal (terrestrial and wetland) vegetation types (Associations, Aliances, etc.) have been identified and described so far in the country (see ANNEX I).

[1] The extension of the CORINE habitat classification in Europe, which is used as a basis for the implementation of relevant European Union legislation (interpretation of the habitats of Annex I of the Directive 92/43/EEC)

As for plants, according to Haritonidis *et al*. (1999), 515 taxa of marine macrophyceae and 7 taxa of marine and brackish angeiosperms have been recorded. More than 1,500 terrestrial plant taxa have been recorded on the Greek coasts, according to Dimopoulos *et al. (1995).*

Box 1. Groups of marine and coastal habitat types

1. Marine Habitats
2. Lagoons
3. Reefs
4. Coastal Marshes and Salt Meadows
5. Salt Steppes
6. Shingle and Sandy Beaches, Sand dunes
7. Rocky Coasts

The total number of macrofaunal benthic taxa (Zoobenthos) recorded in the Greek Seas amounts to more that 2,650, (according to scientific research and to rough estimations by Stergiou *et al.* 1997), distributed in main groups as follows in Box 2:

Box 2: Main groups of zoobenthic taxa	
Polychaeta: 570 taxa	Amphipoda, Isopoda, Anisopoda and Cumacea: 370 taxa
Bivalvia: 300 taxa	Porifera (Demospongiae): 117 taxa
Gastropoda: 637 taxa	Actiniaria (Anthozoa): 23 taxa
Echinodermata: 107 taxa	Bryozoa: 200 taxa
Decapoda Crustacea: 231 taxa	Miscellanea taxa: 100 taxa

Should the fauna of the hard bottom communities of the littoral and bathyal zones also be taken into account, it is evident that the number of zoobenthic species is much higher that 2,650.

The total fish species encountered in the Greek Seas is around 450 species (Stergiou *et al.* 1977). The Greek Seas are characterized by a thermophile tropical and subtropical fauna which originated from relicts from the Tethys Sea and immigrants arriving at different times from the Indian Ocean and the Red Sea.

Greek Seas present an unexpectedly high diversity in cetacean species (Frantzis et al. 2001a, Frantzis and Alexiadou in press). Currently 12 species have been recorded in the Greek Seas: fin whale (*Balaenoptera physalus*), sperm whale (*Physeter macrocephalus*), Cuvier's beaked whale (*Ziphius cavirostris*), Risso's dolphin (*Grampus griseus*), bottlenose dolphin (*Tursiops truncatus*), striped dolphin (*Stenella coeruleoalba*) and common dolphin (*Delphinus delphis*), the harbour porpoise (*Phocoena phocoena*), killer

whale (*Pseudorca crassidens*), the humpback whale (*Megaptera novaeangliae*), the Sowerby's beaked whale (*Mesoplodon bidens*) and minke whale (*Balaenoptera acutorostrata*). The first 7 of them are permanently present and commonly observed in one or more of the Greek Seas.

The threatened Mediterranean monk seal (*Monachus monachus*) is widely distributed throughout the country (source:Hellenic Society for the Study and Protection of the Monk seal – MOm). The minimum number of the monk seals recorded in the areas, where consistent monitoring is being conducted (Northern Sporades and Kimolos and Polyaigos islands in the Aegean Sea, the islands of Saria and Karpathos in the Dodekanese and the islands of Zakynthos, Kefalonia, Ithaka and Lefkada in the Ionian Sea), is not less than 110 animals.

Two species of sea turtles, the loggerhead turtle (*Caretta caretta*) and the green turtle (*Chelonia mydas*) occur regularly in Greek territorial waters while *Dermochelys coriacea* is infrequently encountered (source: Sea Turtle Protection Society of Greece – ARCHELON). Of these three species, only *Caretta caretta* nests on Greek coastline.

II.3. Activities implemented in relation to the Protocols of the Barcelona Convention concerning Specially Protected Areas and Biological Diversity

The conservation of marine and coastal biodiversity is a priority for Greece, as the extensive coastline is endowed with important economic, cultural and biodiversity values. It is estimated that about 33 % of the country's population live in coastal municipalities (European Commission - COM (95) 511) and about 85 % of the total population live within 50 km from the coast.

Greece has ratified the Barcelona Convention for the protection of the Mediterranean Sea against Pollution along with its Protocols 1 and 2 since 1978 (Law 855/23-12-78), while Protocols 3 and 4 were ratified in 1986 (Law 1634/17-7-86). Under the provisions of Protocol 4, nine coastal and marine protected areas have been characterized as Specially Protected Areas (SPA), (see Box 3). Their terrestrial surface covers 0,32 % of the total surface of Greece while their marine part covers an area of 214,790.8 hectares. The Section of Management of Natural Environment, Environmental Planning Division, General Directorate of Environment of the Ministry of Environment, Physical Planning and Public Works has been appointed as the National Focal Point for the Specially Protected Areas.

The amendment of the Barcelona Convention and the amendment of the Protocol 3 have been ratified by the Greek Parliament in 2002, while the ratification procedure of the new Protocol, number 6, is underway.

Even though the new Protocol has not yet been ratified, most of its provisions related to national activities are being approached and/or implemented through the implementation of existing national and European Union legislation.

Box 3: Specially Protected Areas under the Barcelona Convention/ Protocol 4	
Name of site	**Size (ha)**
Nicopoli-Mytikas, Aesthetic Forest	66
Pefkias-Xylokastron Aesthetic Forest	27,5
Samaria Gorge (Lefka ori) National Park	4.850
Northern Sporades Marine National Park	208.713
Sigri petrified forest	15.000
Skiathos island Aesthetic Forest	3.000
Sounio National Park	3.500
Vai Aesthetic Forest	20
Amvrakikos Gulf Wetland	25.000

II.3.1. Activities related to Article 3 (General Obligations)

i. In the field of cooperation in the conservation and sustainable use of biological diversity, the identification and inventorying of its components, the adoption of strategies, action plans and programmes and their integration in the relevant sectoral and intersectoral policies, it is important to note the following activities:

- Greece has ratified most international agreements on biodiversity and nature conservation (see Annex II).

- A National Programme for the Sustainable Development of Coastal Areas and Islands was carried out in 1997-1998 by the Ministry of Environment, Physical Planning and Public Works and the Ministry of Finance and included a section devoted to biodiversity of the coastal zone. Its most noteworthy results have been the drafting of a new law for the delineation of the coastline, the drafting of principles for the integrated management of the coastal areas and islands, and the identification of important biodiversity features of the coastal zone.

- Following the Wetland Inventory elaborated in 1993 by EKBY, the National Wetland Strategy has been elaborated in 1997-1998 and was finalized in 1999 by the Ministry of Environment, Physical Planning and Public Works after consultation with all relevant Government Services and NGOs, according to guidelines of the Ramsar Convention.

- A Master Plan for the Natural Environment was elaborated for the Ministry of Environment, Physical Planning and Public Works, in 1999, addressing targets and priorities with regard to nature conservation. Three action plans were elaborated within this framework: 1-for the establishment of a network of protected areas,2- for the conservation of protected species outside protected areas, and 3- for wider biodiversity issues.

-A draft Biodiversity Strategy and the related Action Plans have been elaborated for the Ministry of Environment (1997- 2001) and is currently under evaluation and discussion.

-The National Strategy for combating Desertification has been elaborated and approved in 2001

-The National Strategy for Sustainable Development has been elaborated and approved in 2002.

-The legal adoption of the National Framework on Land Use Planning and Sustainable Development in 1999, which provides the basic guidelines and priorities for the formulation of the national and regional land use planning policies.

-Data collections on biodiversity components, are maintained by Universities, Scientific Societies, NGOs and other institutions, and are updated more or less on a regular basis. The most important ones for coastal and marine biodiversity are listed below (Box 4).

ii. In the field of monitoring of the components of biological diversity and monitor the effects of processes and categories of activities with potentially adverse impacts on biodiversity, noteworthy activities were the following:

- The establishment and operation of the Specific Agency for the Environment, within the General Directorate of Environment, responsible for EIAs and environmental inspections concerning public works at a national level.

Box 4: Data collections on biodiversity components
-GRFAUNA, created by the Hellenic Zoological Society, on the animals of Greece.
- Database on the fauna of Southern Greece, created by the Natural History Museum of the University of Crete
-Database on birds created by the Hellenic Ornithological Society (HOS) - CORINE- biotope database, created by the National Technical University of Athens.
- The database system for "Flora Hellenica" that includes information on about 5.600 plants, maintained by the University of Patras.
- The "Chloris" database on endemic, rare and threatened plants of Greek flora, created by the Section of Botany of the University of Athens.
- The database on floral diversity, especially with regard to mountains, created by the Section of Plant Ecology of the University of Patras.
- The BIOGREECE- NATURA 2000 site databases (EKBY- Ministry of Environment , Physical Planning and Public Works).
- The BIOMAP database on habitats (EKBY- Ministry of Environment, Physical Planning and Public Works).
National inventories include: - Red Data Book of Threatened Vertebrates Species of Greece (1992) - Inventory of Greek Wetlands as Natural Resources (1994) - Red Data Book of Rare and Threatened Plants of Greece (1995)

- The National Network of Environmental Information, which is under development by the Ministry of Environment, Physical Planning and Public Works. It will store and manage all environmental data and information at local, regional and national level. This network will be linked to the European Information and Observation Network (EIONET), in collaboration with several thematic organizations (for Biodiversity the correspondents are EKBY and the University of Athens).
- The establishment and operation of the Observatory for Physical Planning, in the Ministry of Environment, Physical Planning and Public Works, where a GIS database with data concerning permits issued for important categories of activities are maintained.

II.3.2. Activities related to Protection of Areas

1. Specific studies on land use planning for critical areas, in the coastal zone and islands, and for particular sectors of the economy, like tourism and aquaculture, have been elaborated. These studies provide the scientific basis for the legal enactment of Land use Planning Guidelines, or Zones of Housing Control at the local level.
2. Under the provisions of Law 1650/86, 2 National Marine Parks and 1 National Park have been designated since 1992. The first National Marine Park was established in Alonnisos-Northern Sporades Islands (PD 519/28-5-92), in the Aegean Sea, with the main objective to protect the population of the monk seal *Monachus monachus* and the marine and coastal diversity of this site. The management measures implemented so far (guarding and site regulations) have led to an increase in the species' birth rate. The establishment of the Management Organisation of the Park is underway.
3. The National Marine Park of Zakynthos island was established in 1999 (PD 906/22-12-99) aiming at the conservation of the sea turtle *Caretta caretta* and its nesting beaches, the monk seal and its habitats, the *Posidonia oceanica* meadows and the rest of the coastal and marine habitat types of European and Mediterranean importance. It includes the coastal and marine areas of Laganas Gulf of Zakynthos Island and Strofades Islands, in the Ionian Sea. Its Management Organisation was the first of its kind that was formed one year after the establishment of the Park.

4. The National Park of Schinias – Marathonas was established in 2000, (PD 395/3-7-00) at the coastal and marine site of Schinias – Marathonas, Prefecture of Attica. The oblectives of the Park include the protection of a wetland, with its surrounding pine forest, the sand dunes and the marine prairies of Marathon Gulf. The Management Organisation of the Park has not been set up yet, but its Management Plan has been elaborated and a Management Committee has been appointed.

5. An inventory of Sites with ecological importance has been created in 1995 (BIOGREECE), in preparation for the European Ecological Network NATURA 2000[2],

[2] This network will include all Special Areas of Conservation and Special Protection Areas that each member state will designate in its territory. The selection of each Special Area of Conservation is related to the habitat types of Annex I and the flora and fauna of Annex II of Directive 92/43/EEC, while each Special Protection Area is selected in relation to the bird species of Directive 79/409/EEC.

which is now under establishment within the European Union (EU), and has a strong marine and coastal component. BIOGREECE is a site-oriented base with SDFs for each pSCI, which does not provide for the separate elaboration of data for the marine and coastal areas, as many of the sites identified present conservation interest both in their terrestrial and marine parts.

6. In establishing the NATURA 2000 network, 238 sites were included in the Greek National List of proposed Sites of Community Importance, and were inserted in the NATURA 2000 database .Of these, 121 host marine and coastal habitats and habitats of important species. (see ANNEX III) and several of them are also classified as SPAs due to their importance for birds of coastal habitats and sea birds.

7. The project "Identification and Description of Habitat Types in Areas of Interest for the Conservation of Nature" was carried out by the Ministry of Environment (1999-2001), and resulted in the creation of the BIOMAP database. The marine and coastal habitat-mapping sub-project was carried out in 67 sites spread throughout the country's coastline. It was undertaken by a consulting firm in collaboration with the main marine research institutes of Greece, and has proceeded in the phyto- sociological analysis of about 15,000 releves of marine vegetation.

II.3.3. Activities related to Protection of Species

It is noteworthy that the majority of vertebrate species in Greek waters which are listed in Annex II and Annex III of Protocol 6, are also included in the Annexes of Directives 92/43/EEC or 79/409/EEC. However, this does not hold true for the invertebrate species of Protocol 6, which are less represented in the Annexes to Directive 92/43/EEC. With regard to the plants listed in Annex II of Protocol 6, it is noted that all of them are found within habitat types of Annex I of the Directive 92/43/EEC, present in Greece. In the field of providing protection to the listed species, it is important to note the following:

1. A document with the lists of the marine species included in Annex II and Annex III of the new Protocol that are found in Greek waters and information on their distribution in the Greek seas and protection status has been prepared (Lazaridou, 1998), in view of preparing the implementation of the new Protocol.

2. Actions for the conservation of monk seals (*Monachus monachus)* have been implemented since the 80s. A Strategy and a 10 year National Programme for this species is being implemented since 1997. The proposals for the establishment of three new protected areas for the species are being evaluated by the authorities (for details, see chapter III.2.7)

3 Actions for the conservation of marine turtles are being implemented since the 80s. In 1999 the competent authorities issued, for the whole country, guidelines for the management of the nesting beaches of *Caretta caretta* . Further to the National Marine Park of Zakynthos, the most important nesting sites are proposed to be included in new protected areas (for details, see chapter III.2.3)

4. Actions for the conservation of birds in coastal habitats (wetlands, rocky coasts, small islands) have been implemented in 8 Ramsar wetlands, which are to be designated as National Parks in the near future and in several other areas including wetlands, rocky

coasts and small islets, all classified as SPAs, for which management proposals have also been elaborated. So far, in the framework of LIFE-Nature projects, two Greek National Action Plans have been produced, for *Anser erythropus* and *Phalacrocorax pygmaeus***.** (for details, see chapter III.2.3)

5. Actions for the conservation of Cetaceans have been implemented since the 90s (for details, see chapter III.2.6)

6. The development of sustainable fisheries policy has been in the scope of the EU Common Fisheries Policy and a relevant EU Biodiversity Action Plan for Fisheries has been elaborated. Furthermore, according to EU regulations, trawlers are not allowed to fish on *Posidonia* prairies. Further to these measures, the use of driftnets is not allowed in Greek waters, nor by fishing vessels by the Greek flag. The establishment of aquaculture units is subject to EIA and specific measures are taken to avoid deterioration of *Posidonia* prairies when a new unit seeks permit to be established.

II.3.4. Activities related to Both Areas and Species

i. Greece has strengthened institutional, administrative and legislative arrangements for the development of integrated management of marine and coastal ecosystems, although there is not any overall legislative frame working place, specific to the coastal zone (see legal framework, Annex II)

Major fields of the institutional/legislative/administrative framework comprise:

- Establishment of protected areas, their zones and allowed activities, their management organizations, site management plans and regulations
- Protection of wild flora and fauna and their habitats, as well as of natural habitats; Issuing of permits for scientific research; List of protected species; Regulations on hunting, fishing, agriculture, aquaculture, forestry.
- Procedures for Environmental Impact Assessment of infrastructure and other development projects of the private and public sectors (including industry, hotels, extension of urban areas, etc)
- Regulations on town planning, land uses and constructions; Policies for sustainable Urban Development
- Physical Planning procedures, making use of Regional Land Use Plans and Zones for Housing Control, in sites of outstanding character (outside settlements), where specific measures are taken with regard to land uses and human activities.
- Prevention of Marine Pollution by the implementation of contingency plans (at the national, regional, and port facility levels) for oil spill and hazardous substances prevention and clean-up. The national system of prevention was recently reformed and is supported by surveillance of Greek seas and coast, in accordance with international law, with proper devices from air, land and sea.
- Waste management procedures according to the relevant EU Directives
- Monitoring the quality of inland and coastal waters: (a) *National Monitoring Network for Water Quality*: Nation-wide sampling for a number of rivers and

lakes (190 sampling points) by various agencies, coordinated by the Ministry of Environment, Physical Planning and Public Works and the Ministry of Agriculture - National Data Bank of Hydrological and Meteorological Information (HYDROSCOPE). Moreover, stations for automatic measurement of water quality have been installed at the transboundary rivers Evros, Nestos, Strymon and Axios, at their entrance points to the country. *(b) National Monitoring Programme of Bathing Water*:Data for microbiological and physico-chemical parameters are collected nation-wide, since 1988, by various agencies for a number of coasts (1862 sampling points- European Directive 76/160/EEC), coordinated by the Ministry of Environment, Physical Planning and Public Works *(c) National Programme for the monitoring of the Sea Pollution*, coordinated by the Ministry of Environment, Physical Planning and Public Works for MEDPOL. Data are collected from 246 sampling stations in Greek Gulfs and in the open waters of the Aegean and Ionian Seas, since 1983, by various bodies *(d) Monitoring the quality of groundwater, coordinated by the Ministry of Environment, Physical Planning and Public Works*. Data are collected from 400 sampling points (Directive 91/676/EEC). *(e) Monitoring of inland waters* appropriate for the support of fish species, coordinated by the Ministry of Agriculture (since 1988, DIR 78/659/EEC). *(f) Monitoring of toxic substances*, coordinated by the Ministry of Environment, Physical Planning and Public Works: Data are collected from surface water in 100 sampling points (Directive 76/464/EEC).

ii. Gaps identified in basic and applied research and surveys concerning coastal and marine biodiversity concern: (a) information lacking for the majority of the invertebrates listed in Protocol 6, (b) information lacking for the alien and invasive species in the coastal and marine environment (c) lack of a clearing house mechanism for systematic collection of scattered research information, (d) lack of common technical specifications on the different research areas, which does not permit, in most cases, data comparison.

iii. A serious gap is the lack of national biodiversity monitoring programs, as existing monitoring activities for species or habitats are usually short – lived, with a few exceptions.

iv. The present level of capacity in the country in terms of human resources, infrastructure and funds can be considered high. There are three Marine Research Institutes, four University Departments of Biology offering Marine Biology courses, and a University Department of Marine Sciences. Policy oriented institutions exist as well, namely EKBY and the National Center for Environment and Sustainable Development. There are several environmental NGOs, especially active in marine and coastal conservation issues, with considerable expertise. Ichthyologists, biologists, marine scientists and environmental scientists are employed in the Ministry of Agriculture, General Directorate for Fisheries, the Ministry of Environment, Physical Planning and Public Works, General Directorate for Environment, the Regional Environmental Services and also in the Environment or Fisheries departments of Prefectures. It must be noted, however, that the number of scientists trained in relevant matters and employed by the Public Sector is not high, taking into account the extended coastline and the importance of marine and coastal environment in the country. Enforcement usually lies

within the Port Police authority of the Ministry of Mercantile Marine, a Servicewhich has been recently upgraded in terms of infrastructure and personnel. Improvements can be made in the fields of co-ordination amongst authorities and in networking of scientists.

v. The number of public awareness campaigns for the marine and coastal environment has been increasing during the last decade in Greece, as part of raising general environmental awareness. The active involvement of NGOs in nature conservation projects has significantly contributed to this fact. Some NGOs have invested their efforts in nation-wide issues with local hot spots of conservation projects e.g. sea birds, the monk seal, the loggerhead turtle, cetaceans. Several Information Centres and Environmental Education Centres have been established throughout Greece, by the Ministry of Environment, Physical Planning and Public Works, the Ministry of Education, the Prefectures and Municipalities as well as NGOs, constituting permanent information and awareness infrastructure. Wildlife Rescue Centres have been also operated, by NGOs, and have influenced the favourable public attitude. The production of printed and audiovisual material for the promotion of public awareness has increased and the occasions of organized information and policy - making meetings between ministries and regional-local authorities and the public have also been multiplied. However, there is still a need to continue and multiply communication efforts with target groups at the important sites and also nation-wide.

II.4. Priorities and means set at the national and EU levels

A set of priorities for the conservation of biological diversity have been identified at the national and EU levels (2000- 2006). National priorities will be implemented mainly through the National and Regional Operational Programmes, funded in the framework of the 3rd Community Support Programme by National and EU funds. EU priorities will be implemented mainly through the existing Community Funds. These priorities are further presented below :

II.4.1. Establishment of a protected area network; protection of species and landscapes

The E.U. Biodiversity Action Plan for the Conservation of Natural Resources has been approved by the European Commission in 2001. Its main component is the establishment of the NATURA 2000 Ecological Network and its integration within the rest of the environmental legal framework of the European Union.

At the national level, the Operational Programme for the Environment (*Ministry of Environment, Physical Planning and Public Works)* provides for the following relevant actions:

- Priority 1 and in particular Action theme 1.1, on the monitoring of water quality, aims to the continuation of the projects that are being implemented for the monitoring of surface inland waters and groundwater, of bathing and coastal waters and of toxic substances, in accordance to the obligations arising from the relevant European Directives, including the new Water Framework Directive (2000/60/EU).
- Priority 3, on the civil protection and protection of landscapes and maritime environment, aims to the organisation and the institutionalization of civil protection in order to prevent and to confront situations caused by major accidents and to the protection of the sea from pollution (e.g. development of the necessary infrastructure for the treatment of oil spills and chemical residues in the sea). Eligible actions include public awareness activities.
- Priority 8 and in particular Action theme 8.1, for the protection and enhancement of the natural values of habitats, targets at the conservation of eligible sites to NATURA 2000 network. The main aim is to accomplish the protection, administration and management of at least 25 protected areas. The elaboration of action plans for high priority species of flora and fauna, the mapping of the distribution of the most important species and pilot implementation of protection measures and management actions for Landscapes of Outstanding Natural Beauty are also included in the objectives. Eligible actions include studies, operational costs for Management Organisations, establishment of a monitoring system, construction of interpretation facilities, public awareness campaigns, operation of environmental interpretation projects, conservation and management of species, management and enhancement of the natural values of habitats.

II.4.2Conservation of natural resources

The Biodiversity Action Plan for Agriculture and the Biodiversity Action Plan for Fisheries have been approved by the European Commission in 2001. They contain important directions for action, which are being examined and decided upon jointly by Member States.

At the national level, the Regional Development Programme for the Primary Sector, *(Ministry of Agriculture)* provides for the following relevant actions:

- Priority 3 foresees actions for the conservation and protection of natural resources and agricultural landscape. In particular, the environmental problems caused by agriculture, are to be addressed through :biological (organic) agriculture, actions for the reduction of pollution caused by the use of nitrates in agriculture, long – term set-aside of agricultural land, preservation of native races of farm animals, preservation of extensively cultivated crops which are endangered by genetic degradation, extensification of animal farming, development of biological (organic) animal farming, maintenance and reconstruction of terraces in sloping areas for the protection of soil against erosion. It is important to note that areas adjacent to wetlands constitute priority sites for the implementation of these measures. Specific management projects are already defined for three Ramsar wetland sites (Nestos Delta and Keramoti Lagoon, lakes and lagoons of Thrace and Lakes Volvi – Koronia).

Further actions are provided for by the Operational Programme for Fisheries *(Ministry of Agriculture*), as follows:

- Priority 3 and in particular Action theme 3.1 foresees the conservation and sustainable development of fisheries by: the pilot management in an area of 15 km^2 (aiming at 10% increase in fish production, increase in biodiversity and biomass and retention of employment)
- Priority 6 and in particular Action theme 6.1 foresees, among others, the following actions: construction of fishing ports on islands and areas with intense fishing activities, hydraulic works in lagoons and lakes,management – protection of lagoons, with particular reference to areas with high fish production and ecological value, continuation of the monitoring the quality of inland waters.

Furthermore, the Operational Programme on Competitiveness *(Ministry of Development*), provides for the following :

- Priority 7 and in particular Action theme 7.3 includes, among others, the following priorities for action: studies on the sustainable use of water resources, implementation of water policy projects according to the obligations arising from the Water Framework Directive (2000/60/EU), studies and plans for the management of water resources.

II.4.3. Prevention of water pollution

All Regional Operational Programmes include priorities for construction and operation of sewage treatment, with apriority to coastal towns and solid waste management actions according to the standards set by EU legislation.

II.4.4 Integrated coastal zone management

In 2000, based on the experiences and outputs of the Demonstration Programme(1996-1999), the European Commission adopted the Communication from the Commission to the Council and the European Parliament on "Integrated Coastal Zone Management: A Strategy for Europe" (COM/00/547 of 17 Sept. 2000). The Strategy has been complemented by the "Recommendations of the European Parliament and of the Council of 30 May 2002, concerning the implementation of Integrated Coastal Zone Management in Europe". The Recommendations to the member states of EU propose the formulation of national strategies and measures based on the principles of ICZM, which include "working with natural processes and respecting the carrying capacity of ecosystems".

At the national level work is being carried out by the Ministry of Environment, Physical Planning and Public Works.

II.4.5. Capacity building

- The Sixth Framework Programme (FP6) (2002-2006) of the European Community for research, technological development and demonstration activities aims at the creation of the European Research Area and to innovation. Seven key areas for the advancement of knowledge and technological progress have been chosen, among which, “food quality and safety” and “sustainable development, global change and ecosystems” have been identified. Amongst its priorities are included: (a) understanding marine and terrestrial biodiversity, marine ecosystem functions, protection of genetic resources, sustainable management of terrestrial and marine ecosystems and interactions between human activities and the latter, and (b) strategies for sustainable land management, including ICZM and integrated concepts for the multipurpose utilisation of agricultural and forest resources and the integrated forestry-wood chain,
- At the national level, priorities for environmental awareness raising, training and sensitization actions are included in the Operational Programme for Employment and Professional Training (*Ministry of Labour*), the Operational Programme for Education and Professional Training (*Ministry of Education)* and the Operational Programme for Sustainable Tourism (*Ministry of Development*).

III. ANALYSIS OF THE PRESENT SITUATION

III.1.Selection of "key issues" or "indicators"

In order to identify specific problems affecting coastal and marine biodiversity and their proximate causes, it is important to select "key issues", to be used as "indicators" of the current situation. The "key issues" should be selected taking into consideration the range of protected species and habitats in the Mediterranean, the extended coastline of Greece, the existing scientific knowledge and information, the wide range of potential threats to marine and coastal biodiversity.

Six "key issues" were selected and discussed according to Boxe 5, namely *Posidonia* meadows, lagoons, bird habitats, marine turtles, cetaceans and monk seals. They either represent sensitive habitats and ecosystems, in danger of deterioration or protected by law or threatened /endangered /proteced species, with a need of further conservation management. The list of potential threats used in Table 5 is actually the checklist provided in the Guidelines for the Elaboration of National Reports.

Box 5: Selection of "key issues"

Potential threat	*Posidonia* meadows	lagoons	bird habitats	marine turtles	cetaceans	monk seals
Eutrophication	*	*	*			
Tourism/urban development	*	*	*	*	*	*
Infrastructure devlopment	*	*	*			
Hunting/ fishing	*	*	*	*	*	*
Pollution hot spots	*	*	*	*	*	*
Invasive species	*	*				
Erosion-desertification	*	*		*		
land use change	*	*		*		*
Illegal practices	* trawler fisheries	* waste disposal, building, fishing	* hunting	* persecution, driftnets	* persecution, driftnets	* persecution, driftnets
Overexploitation of resources		*				
Harmful agricultural practices	*	*				
Forest fires	*	*				
Disasters-natural phenomena-climate change		*		*		*

III.2.Analysis of the present status of "key issues"

In presenting the threats, care must be taken to avoid misunderstandings. The first table on each "key issue" presents an overall picture of the status of the problems in the country, mostly in a qualitative approach. The second table presents the scientific rational and the mechanisms for understanding the problem. The reference of a type of activity in the threats is a judgment indicating existing or potential problem, and does not automatically mean that the activity should be eliminated; In most cases it rather means that impacts of certain activities must be dealt with in a more effective way.

III.2.1. Posidonia meadows

Posidonia meadows form the structural base for one of the most productive ecosystems of the world, as they provide substrate, habitat and shelter for other plants and animals (about 200 and 700 species, respectively), including economically important species. Since the canopy of leaves diminishes wave energy and currents, they also significantly affect sediment stability and the retention of particles.

Posidonia oceanica is among the species of marine plants listed in Annex II of the New Protocol of the Barcelona Convention and in Annex I of the Habitats Directive of the EU[3] in which it is considered as a priority habitat type.

The abiotic parameters controlling the distribution of this habitat type are light penetration and hydrodynamic conditions. Most of the meadows are found between 5 and 30 m depth. In sheltered coasts, the upper limit reaches the surface and south of the 39th parallel the deeper limit extends down to 40 m depth.

Posidonia meadows are found in 65 of the 238 sites that have been proposed for inclusion in the NATURA 2000 network, which have been recently mapped at a 1:10.000 scale. The total surface of the meadows in these sites is 67,665 ha and their conservation status[4] ranges as follows: in 37 sites the conservation status has been characterized as A (excellent conservation[5]), in 24 sites as B (good conservation[6]) and in 4 sites as C (average or reduced conservation[7]).

---

[3] Directive 92/43/EEC, code number 1120*

[4] The conservation status, refers to the degree of conservation of the structure and functions of the natural habitat type concerned and to the restoration possibilities, and comprises sub-criteria :i) degree of conservation of the structure, ii) degree of conservation of the functions, iii) restoration possibility.

[5] A: excellent conservation= excellent structure, independent of the grading of the other two sub- criteria, structure well conserved and excellent prospects independent of the grading of the third criterion

[6] B: good conservation= structure well conserved and good prospects independent of the grading of the third sub-criterion,= structure well conserved and average/ maybe unfavourable prospects and restoration easy or possible with average effort,= average structure/partially degraded, excellent prospects and restoration easy or possible with

Apart from these sites, *Posidonia* meadows can be found in every coastal area, with the exception of semi-enclosed bays and river mouths. *Posidonia* meadows are threatened mainly by water pollution, tourism and urban development and the use of trawls. The installation of aquaculture units above this kind of meadows is also a problem, as there is usually a local deterioration of the natural habitat caused by eutrophication. (Tables 1 and 2).

---

average effort,= average structure/partially degraded, good prospects and restoration easy

[7] C: average or reduced conservation= all other combinations

Table 1. Major issues regarding *Posidonia* meadows conservation in Greece.

Issue	Problems	Status	Trend
Tourism and urban development	Untreated wastewater disposal	Wastewater treatment facilities have been constructed or are under construction in big coastal towns. In addition, all hotels are obliged by the law to have their own treatment facilities. A detailed study concerning this problem has not been conducted yet in the marine areas of the Greek National List of the candidate sites to NATURA 2000 network.	Stable with a tendency to decrease
	Leisure vessels	It is particularly evident during summer months. No detailed study concerning this problem has been conducted in the marine areas of the National List.	Increasing
	Ports/Marinas construction	By law, the Environmental Impact Assessment precedes the construction of ports or marinas. However, the impacts on *Posidonia* meadows are examined on a case by case basis and an overall assessment has not yet been undertaken.	Increasing
Agriculture	Unwise use of agrochemicals	Efforts towards the application of wise agricultural practices are realized. However, the effects of agrochemicals in sites of the National List hosting *Posidonia* meadows have not yet been assessed.	Stable with a tendency to decrease
Fisheries	Use of trawls	The use of trawls is not permitted in areas hosting *Posidonia* meadows. However, problems are encountered due to the low level of fishermen awareness and law enforcement and the absence of information concerning the distribution of *Posidonia* meadows along the Greek coasts.	Decreasing
	Game fishing	The effects of mooring in sites of the National List hosting *Posidonia* meadows have not been thoroughly examined	Increasing
	Aquaculture units	Their installation is preceded by EIAs, and it is common practice to prefer positions with adequate water renewal and grater depths and avoid positions hosting important meadows.	Decreasing
Invasive (alien) species	Replacement of native species	Despite the frequent scientific reports concerning this issue in Greek waters, no research on the presence of invasive species in the marine sites of the National List hosting *Posidonia* meadows has been conducted.	Increasing

Table 2. Major threats regarding *Posidonia* meadows conservation in Greece.

Issue/Problem	Threats	Causes	Impacts	Significance
TOURISM AND URBAN DEVELOPMENT				
Untreated wastewater disposal	Eutrophication	Increase in nutrients and suspended matter concentration	Habitat degradation, decrease in productivity	Relatively high
Leisure vessels	Destruction of rhizomes	Mooring	Habitat degradation/ destruction	Relatively high
Ports/Marinas construction	Changes in the natural dynamics of the coast	Change in hydrodynamic conditions	Gradual loss of habitat	High
AGRICULTURE				
Unsustainable use of agrochemicals	Eutrophication, heavy metal contamination	Increase in nutrients, suspended matter and heavy metals concentration	Habitat degradation, decrease in productivity, bio-accumulation of heavy metals in *Posidonia* tissues	Relatively high
FISHERIES				
Use of trawls	Destruction of rhizomes	Trapping of rhizomes by the trawls	Direct habitat destruction	High
Game fishing	Destruction of rhizomes	Mooring	Habitat degradation/ destruction	Relatively high
Aquaculture units	Eutrofication	Increase in nutrients and suspended matter concentration	Habitat degradation, decrease in productivity	
INVASIVE SPECIES				
Replacement of native species	Decrease in the surface covered by *Posidonia* meadows	Competition	Habitat degradation (confinement of *Posidonia* meadows)	Relatively high

III.2. Lagoons

Lagoons are dynamics ecosystems characterised by frequent fluctuations (mainly of water temperature and salinity), affecting the abundance and distribution of organisms. They are the spawning places and nurseries for many forms of aquatic life, including many commercially important species of fish and crustaceans. Lagoons are favoured wintering grounds for many species of birds as well as important stop-over for the migratory ones.

Many aquatic organisms flourish in lagoons, forming highly productive systems in terms of both plant and animal biomass, in which various food webs can be distinguished. In the non-eutrophicated Greek lagoons the vegetation is characterized mainly by the presence of the angiosperms *Zostera noltii* and *Ruppia* spp., while in the eutrophicated ones the chlorophytes *Ulva* spp. *Enteromorpha* spp. and *Gracilaria* spp. dominate.

Migratory euryhaline fish, such as the grey mullet (*Mugil cephalus*), bass (*Dicentrarchus labrax*), bream (*Sparus auratus*) and eel (*Anguilla anguilla*) as well as other commercial species like the shrimp *Penaeus kerathurus* are the most abundant and commercially important. Fish species usually migrate to the lagoons as young fry, returning to the sea as adults to breed, and most of them are caught by the fishermen as they leave the lagoons.

The mean yearly yield from Greek lagoons comes to 63 kg per hectare (Tsouknides and Georgopoulos, 1992). The lagoons are exploited as natural fisheries by co-operatives and municipal corporations but there are also individual fishermen who fish occasionally.

According to the Inventory of Greek Wetlands (Zalidis and Mantzavelas 1994), 85 lagoons are found along the Greek coastline. The majority of these coastal wetlands are found in the Eastern and Central Macedonia (25), in Crete and the Aegean islands (16), in the islands of the Ionian Sea (12) and in Western Greece (9). The update of this inventory was implemented through a similar project, in 2001, by the Faculty of Agriculture of the Aristotle University of Thessaloniki in cooperation with EKBY. The information gathered, by using more advanced and detailed methods, included abiotic and biotic features of Greek wetlands, threats, functions, and data have been introduced into the MedWet database.

A study on the organisation and development of fisheries in 76 lagoons situated in 18 Prefectures, covering an area of about 345,000 ha, was carried out by ICHTHYKA (the Aquaculture Centre of Acheloos S.A), in collaboration with the Ministry of Agriculture, Greek universities and fisheries institutes (2000 – 2001). The study aimed at the collection and evaluation of available data on the present situation of lagoons so as to contribute to:

a) the modernisation and progress of policy measures on the management and exploitation of lagoons, at national and local level, in order to ensure the sustainable use of these ecosystems,

b) the implementation of projects on the management of fisheries in each lagoon, taking into account the ecological, economical and social parameters as well as the present and requisite infrastructure of the areas under consideration.

According to the aforementioned study, data on water quality for the majority of lagoons are scarce. Some measurements are being recently implemented only in a few cases. In addition, half of the studied lagoons have no source of fresh water flow, only 15 % of them receive fresh water (directly or indirectly) from rivers. As far as stock enrichments are concerned, 30 % of the lagoons are being enriched mainly with cultivated and to a lesser extend with wild species, during the last decade. Apart from fisheries, 22 other types of activities have been recorded in the vicinity of the lagoons, the most important being agriculture, illegal fishing, hunting, urban and tourism development.

Greek lagoons host a great diversity of bird species; for example, one of the European major bird sanctuaries is located in Amvrakikos wetlands where over 250 bird species winter, rest on their migration or breed in the summer. At least 75 of these are rare or threatened, such as the Dalmatian pelican (which in Amvrakikos wetlands has one of its five or six breeding grounds in the whole Europe), the spoonbill, the glossy ibis and the purple heron.

Lagoons are one of the priority habitat types, of Annex I of the EU Habitats Directive[8]. The majority of Greek lagoons, covering an area of about 39,000 ha, are present in 35 pSCIs, with conservation ranging as follows: in 3 sites the conservation status (see p. 35) has been characterized as A (excellent conservation), in 26 sites as B (good conservation) and in 6 sites as C (average or reduced conservation). The most important Greek lagoons in terms of area and ecological value are included in the wetlands of international importance according to the Ramsar Convention (Table 3).

Greek Ramsar wetlands are protected by national legislation through the issuing of relevant Joint Ministerial Decisions by which regulations and confinements for land uses and activities are defined within a zonation system. In addition, the procedure for their designation as protected areas according to the national legislation is under way. The sites have also been designated as Special Protection Areas[9], and are proposed pSCIs[10]. Amvrakikos Ramsar wetlands have also been characterized as Specially Protected Area under the Protocol 4 of the Barcelona Convention.

[8] Directive 92/43/EEC, code number 1150*

[9] according to the Joint Ministerial Decision 414985/85, transposing Directive 79/409/EEC "On the conservation of wild birds"

[10] Directive 92/43/EEC "On the conservation of natural habitats and of wild fauna and flora" (JMD 33318/3025/1998

Table 3. Greek Wetlands of International Importance, that include lagoons and the Prefecture in which they are located .

Greek Ramsar wetlands that include lagoons	Prefecture
Evros Delta	Evros
Vistonida Lake, Porto Lagos Lagoon, Ismarida Lake and adjacent lagoons	Rodopi, Xanthi
Nestos Delta	Xanthi, Kavala
Axios, Loudias, Aliakmon Delta	Thessaloniki, Imathia, Pieria
Amvrakikos Gulf	Preveza, Arta
Mesolonghi Lagoons	Aitoloakarnania
Kotychi Lagoon	Ileia, Achaia

The lagoons within Ramsar sites and another 13 lagoons within coastal wetland systems benefited from actions and measures that were promoted for the conservation and wise use of wetlands as part of the Operational Programmes for the Environment (1991-1999) of the Ministry of Environment, Physical Planning and Public Works, funded by the 1st and 2nd Community Support Framework of the EU.

Actions carried out included: Inventorying of land ownership in wetlands and their perimetric (buffer) zones as part of the National Cadastr; Financial support for the implementation of agro-environmental (sustainable) management measures in rural areas neighbouring wetlands; Construction and operation of information centers and interpretation facilities; Guarding and public awareness; Elaboration of management proposals.

In the Ramsar sites in particular, preliminary management schemes were established for the implementation of Programme Agreements between the Ministry of Environment, the Prefectural and Regional authorities. The Agreements included the implementation of priority conservation measures, the operation of Information Centres and the implementation of public awareness projects and activities.

Efforts were also invested in the promotion and active support of international co-operation for the sustainable management of wetland resources in the Mediterranean basin.

Three important demonstration projects have also been recently initiated with regard to lagoons, funded by Life – Nature funds of E.U.: Implementation of management plan for Pylos lagoon and Evrotas delta, Conservation management of Amvrakikos wetlands, Restoration and conservation management of Drana lagoon in Evros delta.

According to the 1994 Wetland Inventory, the most important anthropogenic activities which have produced or are producing drastic changes in Greek lagoons, mainly as

regards their structural characteristics (abiotic and biotic) and their functions are the following: 1) establishment or expansion of cultivated fields, 2) drainage, 3) land filling, 4) irrigation schemes, 5) construction or expansion of housing and tourist facilities, 6) aquaculture, 7) over-fishing, 8) change in water salinity, 9) illegal or unsustainable hunting.

The most important factors affecting the ecological character of lagoons are: 1) municipal wastewater and solid waste, 2) point and non-point source agricultural pollution, 3) industrial wastewater and solid waste, 4) transboundary pollution.

The most important problems of Greek lagoons are presented in Tables 4 and 5.

Table 4. Major issues regarding lagoon conservation in Greece

Issue	Problems	Status	Trend
Agriculture	Unsustainable use of agrochemicals in lagoon watersheds	Some efforts towards the application of sound agricultural practices and organic farming are realised. However, a specific asessment of the effects of agrochemicals in Greek lagoons has not been conducted yet.	Stable
	Change in land uses in lagoons watersheds	This problem refers mainly to the drainage of lagoons for expansion of agriculture during previous decades. Today there is a tendency to restore these lagoons.	Decreasing
Water management	Increase in water demand within the watersheds of lagoons	It is considered as very important factor, resulting usually in drastic decrease of fresh water flowing in the lagoons.	Increasing
	Transboundary pollution	It is considered as very important factor, for that reason monitoring of physico-chemical parameters is implemented within the framework of bilateral agreements.	Increasing
Aquaculture	Enrichments with non-indigenous species	A significant problem due to the continuous and uncontrolled enrichments for the last 15 years. However, an assessment of the problem nation-wide has not been conducted yet.	Increasing
	Enrichments with cultivated indigenous species	A significant problem due to the continuous and uncontrolled enrichments for the last 20 years. However, an assessment of the problem nation-wide has not been conducted yet.	Probably increasing
	Empirical opening and dredging of ditches	A significant problem due to the continuous and inefficient opening and dredging of ditches for the last 20 years. However, an assessment of the problem nation-wide has not been conducted yet.	Increasing

Table 4. (continued)

Issue	Problems	Status	Trend
Tourism and urban development	Illegal building in the vicinity of lagoons	The situation is considered important for at least the last two decades.	Probably increasing
	Untreated wastewater disposal	An assessment of the problem nation-wide has not been conducted yet.	Stable
	Illegal dumping in the vicinity of lagoons	It is a common practice due to low level of public awareness and law enforcement. Efforts towards the creation of sanitary landfills are realised.	Stable
Fisheries	Illegal fishing	It is a relatively common practice due to low level of public awareness and law enforcement.	Stable

Table 5. Major threats regarding lagoon conservation in Greece

Issue / Problems	Threats	Causes	Impacts	Significance
AGRICULTURE				
Unsustainable use of agrochemicals in lagoon watersheds	Eutrophication	Increase in nutrients and suspended matter concentration	Decrease in species diversity of planktonic and benthic communities	High
Change in land uses in lagoon watersheds	Confinement of natural habitats, drainage	Expansion of agriculture	Degradation of lagoons, habitat loss	High
WATER MANAGEMENT				
Increase in water demand within the watersheds of lagoons	Changes in water chemistry and changes in water availability	Over-consumption of water resources mainly for irrigation, over - pumping of ground water, construction of dams and dykes	Salinisation of soils, changes in species diversity of planktonic and benthic communities and fish fauna, degradation of the functions of lagoons	High
Transboundary pollution	Chemical pollution	Pollution originating in neighboring countries	Degradation of wetlands functions	High
AQUACULTURE				
Stock enrichments with non-indigenous species	Loss of genetic integrity of indigenous species	Cross-breeding - hybridization between indigenous and non - indigenous species	Decline of indigenous fish population, changes of fish species diversity	High
	Spread of fish parasites	Introduction of parasites	Increase in fish mortality	High
Stock enrichments with cultivated indigenous species	Exceed of the carrying capacity of the ecosystem, decrease in genetic diversity of fish population	Mass introduction of cultivated fish genetic stock	Decline in fish population	Unknown
Empirical opening and dredging of ditches	Change of hydrodynamics (disruption in the natural pattern of water circulation)	Lack of data on water circulation	Changes in species diversity of fish fauna and benthic communities, increase in fish mortality	Critical

Table 5. (continued).

Issue / Problems	Threats	Causes	Impacts	Significance
TOURISM AND URBAN				
Illegal building in the direct vicinity of lagoons	Confinement of natural habitats, disturbance of fauna and vegetation	Low level of law enforcement	Habitat fragmentation, habitat degradation and loss	Increasing
Untreated wastewater disposal	Eutrophication	Increase in nutrients and suspended matter concentration	Degradation of wetland's functions	Increasing
Illegal dumping in the vicinity of lagoons	Land filling, pollution of soil and of aquifers	Low level of law enforcement	Habitat fragmentation, habitat degradation and loss	Increasing
FISHERIES				
Illegal fishing	Capture of non-commercial species	Non-selective fishing	Decline in fish population	Relatively high

III.3. Marine turtles

Sea turtles spend their lives in marine habitats and their only remaining reptilian ties to the terrestrial habitats are for nesting. A generalised habitat model may be constructed for sea turtles based on four ontogenic stages: Early juvenile nursery habitat (usually pelagic); Later juvenile developmental habitat (usually demersal and neritic); Adult foraging habitat; Adult internesting and/or breeding habitat.

All sea turtles move immediately to the sea after hatching, usually after dark, and swim actively offshore. Most then undertake a mostly passive, denatant migration, drifting pelagically in the open sea gyre systems. Subsequently, after a period of years, these now large juveniles actively recruit to demersal neritic developmental habitats in the tropical and temperate zones. When approaching maturity, pubescent turtles move into adult foraging habitats. Upon maturity as the nesting season approaches, adults make a contranatant migration toward the nesting beaches. Most mating occurs at poorly defined courtship areas that are close to nesting beaches. Courtship areas may be directly off the nesting beaches. After mating, females move to their respective nesting beaches.

During the nesting season, females become resident in the internesting habitat in the vicinity of the nesting beach. Sea turtle eggs are deposited in a large clutch in a nest excavated by the female in a sandy beach. Incubation requires 7 to 10 weeks during which, the sea turtle embryo grows from a few cells to a fully formed organism capable of independent existence. The nesting beach is the incubator for the turtle embryonic development and operates by producing a climatic condition appropriate for embryonic development. Successful incubation of the eggs depends on the presence of suitable conditions in the beach substrate. Among these conditions are temperature, humidity or water potential, salinity and levels of respiratory gases.

The loggerhead turtle, *Caretta caretta*, and the green *Chelonia mydas* occur regularly in Greek territorial waters. *Dermochelys coriacea* is infrequently encountered. Of these, only *Caretta caretta* nests on Greek coastline.

Caretta caretta is listed as a priority species under Annex II (Animal and plant species of Community interest whose conservation requires the designation of Special Areas of Conservation) of Habitats Directive (92/43/EEC) and is nominally protected by P.D. 617/80 (Official Journal 163A/18-7-1980) and 67/81 (Official Journal 23A/30-1981 and 43A/18-2-1981)

Nesting activity of *Caretta caretta* in Greece has been found significant after investigation of the long Greek coastline during the 18 years of systematic monitoring. All known nesting areas have been classified, according to certain criteria, into three categories: “major”, “moderate” nesting areas and areas of “diffuse” nesting. This classification is used for the assessment of the relative significance of a nesting site and the determination of conservation measures accordingly.

The total number of nests estimated annually in Greece fluctuate between 2,335 and 5,287. Of these, 1,643 to 3,873 are found in 5 “major” nesting beaches which account for an average of 72% of nesting activity in Greece. These “major” nesting areas (in total 97 km) are found in Zakynthos island, in Peloponessus (Bay of Kyparissia, Bay of Lakonikos) and in the island of Crete (Rethymnon and Bay of Chania).

Despite the 18-year systematic collection of data, nesting population trends cannot be distinguished, apparently due to the long maturation time (30-50 years) and the longevity of the species. It is certain, however, that all life stages of *Caretta caretta* species can be found along migratory pathways and feeding areas, throughout Greek waters, although they are currently poorly known

A rather regular occurrence of immature loggerhead and green turtles is observed in Lakonikos Bay, where a pilot project on incidental catch was conducted and another possible feeding/wintering areas has been identified in northern Greece. Following long-distance tag recoveries of turtles tagged in Greece, feeding/wintering areas have been discovered in Tunisia (Gulf of Gabes) and the northern Adriatic Sea.

Monitoring programmes, under permit of the Ministry of Agriculture, and public awareness programmes are run by the NGO ARCHELON every year at all major nesting beaches. It is estimated that over 160,000 tourists are approached annually through slide shows, information stations and beach patrols. Over 10,000 students participate annually in the environmental education projects run by ARCHELON in co-operation with the Ministry of Education. A Rescue Centre at Glyfada (suburb of Athens) is operating since 1994 by the same NGO under a permit issued by the Ministry of Agriculture and partially supported by the Ministry of Environment. Injured or sick turtles are reported through a national network with the co-operation of the Ministry of Mercantile Marine. Every year about 250 strandings are reported, of which about 30 injured/sick turtles are sent to the Rescue Centre for rehabilitation. To date, over 250 turtles have been admitted, of which 60% were released to the wild.

The main issues concerning the conservation of marine turtles in Greece are related to tourism, fishing, natural events and predation by natural enemies (Tables 6, 7). Many nesting beaches in Greece are under pressure from tourism. It is estimated that intensive tourism has developed in 36.6% of the 97 km of "major" nesting beaches. Pressure for more development in already developed areas exists and in many cases has rendered rookeries as unsuitable for further nesting, and coastal encroachment in relatively undeveloped or pristine areas is mounting.

Beach furniture are obstacles to emerging nesters, may destroy existing nests or later incubation attempts. Lights disorient emerging hatchlings or deter emerging nesters. Human presence at night on a nesting beach may deter emerging nesters or force a nesting turtle to discontinue egg-laying. Sand compaction may also be deterrent to nesting. Buildings and roads next to nesting beaches may alter the composition of substratum and hence render the beach unsuitable for nesting.

Sea turtles distribute their nests in a somewhat variable manner on the beach with regard to distance from the surf. Consequently, at times of high surf and storms many nests become inundated with seawater. This inundation causes suffocation of eggs and poisoning by the increased chlorine levels. Severe storm conditions can alter the structure of beaches by accretion and erosion. Erosion of beaches may cause the exposure and even the destruction of nests. The nesting areas of Kyparissia Bay, Rethymnon and Chania, with a total length of about 35 km, suffer most from inundation and beach erosion due to the prevailing weather conditions.

Turtle nests provide a high protein diet for several opportunistic predators, mainly foxes (*Vulpes vulpes*) and, in some parts of the Peloponnese, jackals. Other minor predators are ghost crabs (*Ocypodes cursor*) and martens. Feral dogs can also predate actively on nests in certain locations. Higher rates of nest predation occur in the Peloponnese, due to its more rural and natural conditions. Natural predation rates were found to be around 60% in Kyparisia Bay, approaching 80% in Lakonikos Bay. Predation pressure is of minor importance in Zakynthos island. Tourism in Crete seems to contribute to the discouragement of predators from approaching nesting beaches.

Swimming turtles are threatened by powered water sports, especially by speedboats, and fishing. Turtle mortality by fishing is caused by (a) direct mortality (i.e. the turtle is hauled dead), (b) indirect (or delayed) mortality (i.e. the turtle dies after release from fishing gear) and (c) deliberate killing or mutilation leading to death. Sea turtles are incidentally captured in various fishing gear, mainly trawls, stationary nets and long-lines, suffering direct mortality. Prolonged submergence after capture in trawls may cause anoxia to turtles and brings them to a comatose state. Comatose are usually thrown back into the sea and most of them are usually drown. Capture in long-lines and stationary nets can cause injuries to turtles, which, if not treated properly, usually die.

Turtles caught incidentally in fishing gear may cause damage to the gear, especially in the case of stationary nets and long-lines. Furthermore, fishermen consider turtles as competitors. In addition to these, the prejudice and ignorance of most fishermen result in the direct killing or mutilation of the incidentally captured turtles. Killing attempts are usually delivered by blows to the head of the turtle. Nevertheless, as has been assessed from various studies, turtles with severe head injuries usually die as a result of drowning, weakness and secondary infections. However, practice has shown that head injured turtles can be rehabilitated with 46% success.

Management plans for the "major" nesting beaches of Crete and Peloponnesus exist, whereas nesting beaches of Zakynthos are protected since they are included within the limits of the National Marine Park of Zakynthos. However, the enforcement of existing legislation and the implementation of management plans by the local authorities are not at a satisfactory level, allowing the persistence of threats to the nesting populations.

The most important problems of marine turtles are presented in Tables 6 and 7.

Table 6. Major issues regarding marine turtles conservation in Greece

Issue	Problems	Status	Trend
Fisheries	Use of trawls and illegal driftnets	Problems are encountered due to the low level of fishermen awareness and law enforcement	Decreasing
	Killing of turtles	Hostility is expressed by a small number of fishermen.	Unknown
Tourism development	Increase of tourism and recreational facilities in the coastal zone	The problem is considered as significant at nesting beaches. There is a tendency to address the problem.	Increasing
	Leisure vessels in the sea	The number of vessels is dramatically increased during the summer months.	Increasing
Natural events	Sea inundation	Relatively important.	Unknown
	Beach erosion	Relatively important.	Unknown
Natural enemies	Predation by foxes, ghost crabs and martens on nests	The problem is important at some nesting beaches	Potential decrease

Table 7. Major threats regarding marine turtle conservation in Greece

Issue / Problems	Threats	Causes	Impacts	Significance
FISHERIES				
Use of driftnets and trawls	Entanglement	Non-selective fishing, accidental capture	Decrease of nesting populations	Unknown
Killing of turtles	Deliberate killing	Fishermen shoot on turtles that have been caught in fishing gear	Decrease of nesting populations, injured turtles	Unknown
TOURISM DEVELOPMENT				
Increase of tourism and recreational facilities in the coastal zone	Beach erosion, disorientation of turtles, destruction of nests	Destruction of hedges and of coastal vegetation. Disturbance of turtles (by light, noise, human presence)	Habitat degradation, decline of nesting population	Unknown
Leisure vessels in the sea	Direct killing or injury of turtles	Propellers of vessels injure or kill swimming turtles	Decrease of nesting populations, injured turtles	Unknown
NATURAL EVENTS				
Sea inundation	Suffocation of eggs	Flooding of nests	Loss of nesting sites, decrease in hatching success	High at some nesting beaches
Beach erosion	Destruction of nests	Movement of sand	Loss of nesting sites, decrease in hatching success	Unknown
NATURAL ENEMIES				
Predation by foxes, ghost crabs and martens on nests	Reduction in egg numbers	Predators scavenge beaches for food	Low hatching rates	High at some nesting beaches

III.4. Birds of islets, rocky coasts and sea, birds of coastal lagoons

III.4.1. Birds of islets, rocky coasts and sea

This group contains several seabirds and one raptor, the Eleonora's Falcon, which nest, usually in colonies, almost exclusively on uninhabited islets and inaccessible rocky coasts and feed at sea as even the Eleonora's Falcon hunts migratory birds over the sea.

Small uninhabited islets and remote inaccessible rocky coasts free from human disturbance and terrestrial predators are valuable and irreplaceable breeding sites for these species, while the habitat types occurring are of secondary importance. Birds choose these islets for breeding precisely because they are uninhabited and free from predators and it may be useful to treat these islets as a "habitat type for birds" of their own. The species in this group are:

Calonectris diomedea (Cory's Shearwater)

Summer visitor (March – early November) in Greek waters. Breeding season from May to October. It feeds exclusively on fish and squid caught near the surface. Main breeding sites are found in the Aegean region, around Crete and in the south Ionian Sea. Greek breeding population is currently estimated at about 5,000 pairs but no census has ever been carried out. The largest known colony, estimated at about 1000 pairs, is found on Dionysades islands, off North East Crete.

Larus audouinii (Audouin's Gull)

Breeds exclusively on uninhabited islets in the Aegean region. It feeds on fish along rocky coasts. Young birds seem to disperse widely over the Mediterranean. The population in Greece is 700 - 900 pairs.

Puffinus yelkouan (Yelkouan Shearwater)

Partial migrant in Greek waters. Breeding season lasts from February to July. It feeds exclusively on fish. Main breeding sites are in the Aegean region. Greek breeding population is currently estimated between 8,000 and 15,000 pairs, although no census has ever been carried out.

Hydrobates pelagicus (Storm Petrel)

Partial migrant in Greek waters. Very little is known about this species and recorded breeding sites are extremely few. Breeding season lasts from May to August. It feeds on small fish and planktonic organisms. Main breeding sites seem to be in the Aegean Sea. Greek breeding population is tentatively estimated in the range of 50 to 500 pairs but no census has ever been carried out.

Phalacrocorax aristotelis (Shag)

The Mediterranean subspecies of Shag (*Phalacrocorax aristotelis desmaresti*) is a resident breeder in Greece. Breeding season starts from early winter and young have fledged by April. It feeds on fish caught by diving in coastal waters. Main breeding sites are in the Aegean region. Total Greek population is estimated at about 1,000 pairs although no full census has been carried out.

Falco eleonorae (Eleonora's Falcon)

Summer visitor in Greece (April – October). Breeds from late July to October, raising its young on a diet of migratory birds. At least 70% of the global population of the species breeds in Greece (about 6,000 pairs), in the Aegean and Crete regions (Ristow 1999). More than 90 % of the breeding sites are included in the Important Bird Areas of Greece.

Threats

All species in this group share similar conservation problems of which human - induced threats on breeding sites (disturbance, introduction of carnivorous pets) are by far the most critical. Human disturbance and development on uninhabited islets cause breeding failure and population decline. The introduction of predators on islets (including *Rattus rattus*) cause breeding failure, population decline and, in some cases, total abandonment of the colony.

Over-fishing may be a potential threat to seabirds, through the decline of their food sources. The use of long-lines (mainly affecting Cory's Shearwater) and illegal driftnets (mainly affecting Yelkouan Shearwater) pose another threat due to the accidental capture of birds to the nets. Many incidents of accidental capture have been recorded, because seabirds try to eat the bait before the line submerges. The few incidents of bird capture in driftnets involved mass deaths. The effects of accidental capture to these nets on the population of birds has not been assessed.

Pollution due oil spills, although its occurrence is not yet documented, may threaten the more localized species and those spending much time on the water (such as the Shag).

Competition with the abundant Yellow-Legged Gull (*Larus cachinnans*) results in breeding habitat loss and reduced breeding success (mainly affecting Audouin's Gull).

Poisoning from baits laid for birds and rats is considered a threat, causing population decline of Eleonora's Falcon in Crete.

Conservation efforts

During 1997 – 1999, the Life – Nature project "Conservation actions for *Larus audouinii* in Greece (LIFE96 NAT/GR/003221)" was executed by the Hellenic Ornithological Society of Greece. Management proposals for 5 sites concerning and the species were formulated during the project and the sites were classified as SPAs in 2001. In 2001 several small islets in the Prefectures of Cyclades and Dodekanisa were given specific protection status by the Ministry of Aegean.

III.4.2. Birds of coastal lagoons

Coastal lagoons are a prime habitat for a wide range of birds. Species of this group breed on inaccessible islets in the lagoons or are winter visitors and passage migrants.

The species in this group are:

Pelecanus crispus (Dalmatian Pelican)

Resident and partial migrant to Greece. It breeds on islets of coastal lagoons and freshwater lakes. The two breeding sites are the lagoons of Amvrakikos Gulf and the lake Mikri Prespa. The total breeding population is in the range between 540 and 680 pairs. The colony in Mikri Prespa, 500 - 600 pairs, is the largest in the world. It feeds on fish.

In winter, it occurs in coastal lagoons along Western and Northeastern Greece. All nesting and wintering sites in Greece are under protection status. The population, due to conservation efforts and, perhaps, to the degradation of habitats elsewhere, is increasing.

Phoenicopterus ruber (Greater Flamingoes)

Winter visitor or non-breeding resident in Greece. The wintering population currently numbers up to 10,000 individuals, mainly in North and Northeast Greece, West Greece and the Aegean islands. Although many birds remain in Greece during the breeding season, breeding has only been attempted few times with no success.

Pandion haliaetus (Osprey)

Migrant in Greece, mainly during autumn when large numbers of birds coming from Northern Europe pass mainly through Western Greece. Only a few birds winter in the same area.

Numenius tenuirostris (Slender-Billed Curlew)

Passage migrant. Greece holds the largest number of recent records for this critically threatened species (Vangeluve et al. 1999). However, in recent years only one or two records annually have been observed. Main areas of occurrence are coastal wetlands in North and West Greece.

Sterna sandvicensis (Sandwich Tern)

Mainly a winter visitor and passage migrant. It breeds in small numbers in coastal wetlands. Colonies are situated on sandy islets in coastal lagoons. Greek population does not exceed 100 pairs (in Amvrakikos Gulf and Evros Delta).

Threats

All species share similar conservation problems like habitat degradation, human disturbance on breeding sites and illegal hunting. Habitat destruction and degradation through changes in hydrological regime can cause population decline. Human disturbance and colony destruction on breeding sites cause breeding failure and colony abandonment. For Greater Flamingo, disturbance appears to be the main factor preventing breeding.

Pollution with heavy metals and pesticides can cause breeding failure (mainly affecting dalmatian pelican), while collisions with overhead power lines contribute to bird mortality (mainly affecting dalmatian pelican).

Illegal hunting seems to be a major cause of bird deaths for most species in this group and specially for Slender-Billed Curlew.

In Tables 8 and 9 the most important threats to the conservation of the above-mentioned species are summarized. The listing of threats is based on the severity of their impact on the targeted species.

Table 8. Major issues regarding the conservation of birds of islets, rocky coasts and sea and birds of coastal lagoons in Greece.

Issue	Problems	Status	Trend
Stock raising	Introduction of predators Presence of domestic animals	The situation is relatively important on islets and rocky coasts.	Unknown
Marine pollution	Introduction of heavy metals in the food web	No systematic research has been conducted.	Unknown
Tourism and urban development	Increase of tourists on coastal zones Constructions and roads Introduction of predators Housing development on coastal zone	The situation is relatively important during summer, a period that does not coincide exclusively with the reproduction period of birds. Even that no systematic research has been conducted, it is considered that habitats are diminishing.	Increasing Increasing Unknown Increasing
Hunting	Illegal hunting	Despite of local regulations, the problem is important due to the low level of public awareness and guarding by the pertinent authorities	Stable
Fisheries	Use of longlines, illegal driftnets and purse seining nets	Problems are encountered due to the low level of fishermen awareness and survellance	Unknown

Table 9. Major threats regarding the conservation of birds of islets, rocky coasts and sea and birds of coastal lagoons in Greece.

Issue / Problems	Threats	Causes	Impacts	Significance
STOCK RAISING				
Introduction of predators	Reduction of egg and chick numbers	Direct predation by carnivores and rodents on nests	Decrease in hatching success, population decline	High to Critical
Grazing (Domestic animal presence)	Destruction of nests, disruption of breeding	Disturbance and trampling by domestic animals	Decrease in hatching success, nest abandonment	High to Critical
MARINE POLLUTION				
Introduction of heavy metals in the food webs	Bioaccumulation in bird tissues	Heavy metal contamination	Unknown	Unknown
TOURISM AND URBAN DEVELOPMENT				
Increase of tourists in coastal zones	Disruption of reproduction	Disturbance	Population decline, local extinction	High to Critical
Constructions and roads	Habitat degradation, displacement from feeding grounds	Uncontrolled and illegal changes of land use, disturbance	Habitat loss, population decline	Medium to high
Introduction of predators	Reduction of egg and chick numbers	Direct predation on nests by carnivores and rodents	Decreased survival of chicks, population decline	High to Critical
Urban development on coastal zone	Disruption of reproduction	Disturbance	Population decline, local extinction	High to Critical
HUNTING				
Illegal hunting	Direct killing	Hunters shoot on birds	Population decline	Unknown
FISHERIES				
Use of longlines, illegal driftnets and purse seining nets	Entanglement	Accidental catch of seabirds in fishing gear	Population decline	Unknown

III.5. Cetaceans

Very little is known concerning the cetacean population units that inhabit the eastern basin of the Mediterranean Sea. Until recently, basic information (e.g. cetacean species present) was missing, and even today, a significant gap of knowledge remains for the southern part of the eastern Mediterranean basin, from where there are no data at all. Most of the information that is available for the cetaceans of the eastern Mediterranean comes from its northeastern part, i.e. the Greek Seas: east Ionian, Aegean, north and south Cretan Sea. An important effort has been dedicated to this geographical area during the last decade and recent research revealed that the Greek Seas present an high diversity in cetacean species (Frantzis et al. 2001a).

During the last 10 years (1991-2001), data from surveys, strandings, occasional sightings, and published or unpublished photographic and video documents have been systematically gathered in a database accounting for 618 sightings and 709 stranded cetaceans in 668 stranding events (Frantzis and Alexiadou, in press). These data revealed that 12 cetacean species have been recorded in the Greek Seas (Table 10).

Table 10. Cetacean species that have been recorded in the Greek Seas. Conservation priorities are given for species that have a regular or local presence.

Scientific name	Common name	Presence in Greek Seas	Conservation priority
Balaenoptera physalus	Fin whale	Regular	B
Physeter macrocephalus	Sperm whale	Regular	A
Ziphius cavirostris	Cuvier's beaked whale	Regular	Insufficiently known
Grampus griseus	Risso's dolphin	Regular	Insufficiently known
Tursiops truncatus	Bottlenose dolphin	Regular	A
Stenella coeruleoalba	Striped dolphin	Regular	C
Delphinus delphis	Short-beaked common dolphin	Regular	A
Phocoena phocoena	Harbour porpoise	Local	A
Pseudorca crassidens	False-killer whale	Occasional	Unknown
Megaptera novaeangliae	Humpback whale	Accidental	Unknown
Balaenoptera acutorostrata	Minke whale	Occasional	Unknown
Mesoplodon bidens	Sowerby's beaked whale	Rare	Unknown

Seven of the above species are permanently present and commonly observed in one or more of the Greek Seas: fin whale (*Balaenoptera physalus*), sperm whale (*Physeter macrocephalus*), Cuvier's beaked whale (*Ziphius cavirostris*), Risso's dolphin (*Grampus griseus*), bottlenose dolphin (*Tursiops truncatus*), striped dolphin (*Stenella coeruleoalba*) and common dolphin (*Delphinus delphis*). In addition, the harbour porpoise (*Phocoena phocoena*) that was considered absent from the entire Mediterranean is definitely present locally in the North Aegean, although its exact range and degree of residency have to be

assessed (Frantzis et al. 2001b). The false killer whale (*Pseudorca crassidens*) is an occasional species; the humpback whale (*Megaptera novaeangliae*) has been sighted once; the Sowerby's beaked whale (*Mesoplodon bidens*) and minke whale (*Balaenoptera acutorostrata*) have been found floating dead only once. Four other species (beluga, Blainville's beaked whale, pilot whale and killer whale) had been erroneously included in the Greek cetacean fauna in the past, due to one wrong assumption (Cebrian and Papaconstantinou 1992), two false identifications (Cebrian and Papaconstantinou 1992, Androukaki and Tounta 1994) and lack of irrefutable evidence (McBrearty et al. 1986, Hammond and Lockyer 1988), respectively. Pilot and killer whales are permanently and occasionally present in the western Mediterranean, respectively. Although their occasional occurrence in the Greek Seas cannot be refuted, it should still be regarded as unconfirmed.

It has to be noted that no abundance estimation surveys have been conducted in the Greek Seas at national or local levels (even sighting frequencies are available only for 3-4 small geographical areas). Consequently, because of the variety of methods used to gather data, the number of recorded sightings and strandings cannot be used as an index of relative abundance and such estimations do not exist. Sightings are biased in favour of species and areas for which more effort has been dedicated during some surveys (e.g. sperm whales off south-west Crete). Similarly, strandings are biased towards species that are easily identifiable (Cuvier's beaked whales and large whales) or species that draw the attention of people and the press (sperm and fin whales). Keeping in mind the above remarks, we can however conclude the following:

- If we consider the Greek seas as a whole, there is no doubt that striped dolphins are the most abundant cetacean species in the pelagic waters, followed by bottlenose dolphins in the coastal waters. Both species can be encountered almost everywhere in Greece.
- Common dolphins are found only locally, in a few areas (in the coastal and open waters of Ionian Sea and in the north Aegean Sea). They are absent from some wide sea areas (Greek part of north Ionian Sea and off south-west Crete) and there are no sightings or strandings recorded south of 36° 05' latitude.
- Although Risso's dolphins are less frequent than the other dolphin species, they have been recorded in all Greek Seas.
- Both sightings and strandings indicate that Cuvier's beaked whales and sperm whales occur all along the Aegean Arc (the end of the continental shelf around the Aegean and Greek Ionian Seas), with sighting frequencies higher than anywhere else in the Mediterranean Sea. Both species are also present in the north and south Aegean Sea, mainly over deep basins.
- Finally, the fin whale is common in the pelagic waters of the Ionian Sea, but seems to rarely enter the Aegean Sea.

Although still not complete, the existing image of the Greek cetacean fauna, in terms of species presence and distribution, is now close to the real situation. Nevertheless, quantitative data regarding the absolute abundance and the population status of any

species do not exist and are urgently needed. Without such data, it is very difficult to place conservation priorities. Thus decisions regarding the proper conservation policy for cetaceans have to be based on assumptions. Further, the effectiveness of any conservation measure cannot be monitored and assessed. Therefore, future effort has to focus on: i) the estimations of abundance for each cetacean species, ii) the assessment of population status and trends for cetacean species that constitute conservation priorities at the local or regional level, iii) the identification of critical areas for these species, and iv) the establishment of a properly organised, national stranding network, in collaboration with the secretariat of ACCOBAMS. This network should be based on strictly scientific methods and rules, according to the international standards.

The above mentioned difficulties and measures to be taken regarding future research are applicable to the entire eastern basin of the Mediterranean Sea. Of course, due to the almost complete lack of data concerning cetacean presence and status in the largest part of the south-east Mediterranean, even basic information (like species presence) from exploratory surveys would be a significant progress. Rare data coming from time to time from this area show that unexpected results could arise, in the way this occurred in Greece during the last years. It is obvious, that if there is no significant improvement regarding our knowledge on the cetaceans of the eastern Mediterranean, some species population units could disappear before we ever know about their presence. This worrying conclusion arose recently from photo-identification results regarding the best-studied cetacean population unit in the eastern Mediterranean basin: rarefaction of the common dolphins, continuously monitored during the last decade in the Greek Ionian Sea is advancing with extremely high rate (Politi and Bearzi 2001).

While attempting to identify the main problems and threats for the cetacean populations of the Greek Seas, it becomes obvious that it is very difficult (sometimes impossible) to estimate their status, trend and significance, since no relevant studies or assessments have been conducted up to now. Another remark that has to be made concerns the significance of a threat and its impact, which depend on the population status of each species. A similar threat to two species with very different population status can be of low or medium significance to the large-healthy population species and critical to the small-vulnerable population species. In general, the eight species that have regular or local presence in Greece Seas are affected differentially by the problems. Therefore, they have been categorised according to four basic ecological criteria, which also define the significance of a threat for each species (Table 11). These are: a) their food type, b) their habitat, c) their body size and d) their relative population size. Taking all the above into consideration major issues and problems are listed in Table 12 and the relative threats and impacts for cetacean species in Table 13.

Table 11. Regular and local cetacean species of the Greek Seas categorized according to criteria that define the problems that are threatening them. (*): These species can be found close to the coasts in some geographical areas.

Scientific name	Food type	Habitat	Body size	Population size
Balaenoptera physalus	plankton	pelagic	large	medium
Physeter macrocephalus	squid	pelagic (*)	large	small
Ziphius cavirostris	squid	pelagic (*)	medium	small
Grampus griseus	squid	pelagic	small	small-medium?
Tursiops truncates	fish	coastal	small	medium-large?
Stenella coeruleoalba	squid-fish	pelagic	small	large
Delphinus delphis	fish	coastal (+ pelagic?)	small	small-medium?
Phocoena phocoena	fish	coastal	small	very small (local)

Table 12. Major issues regarding cetacean conservation in Greece.

Issue	Problems	Status	Trend
Fishing	Over - fishing	Very important	Stable ?
	Illegal use of driftnets	Limited	Stable ?
	Illegal practices (Dynamite)	Important	Unknown
	Cetacean killing	Important	Probably increasing
	Uncontrolled use of Acoustic Deterrent Devices ("pingers")	Limited	Increasing
Tourism	Uncontrolled whale watching	Limited	Increasing
	Leisure vessels in the middle of cetacean pods	Limited	Increasing
Human-cetacean contacts	Introduction of new viruses	Limited	Stable
Use of chemicals	Introduction of organochlorine compounds	Unknown	Unknown
	Introduction of heavy metals	Unknown	Unknown
Military exercises	Use of low and mid frequency active sonar technologies	Limited ?	Increasing
Marine traffic	Noise pollution	Important	Increasing
	Collisions (vessel-cetacean)	Relatively limited	Increasing
Oil industry activities	Seismic surveys and drilling	Limited	Potential increase

Table 13. Major threats regarding cetacean conservation in Greece (Dd; *Delphinus delphis*, Tt: *Tursiops truncatus*, Pp: *Phocoena phocoena*, Pm: *Physeter macrocephalus*, Bp: *Balaenoptera physalus*, Zc: *Ziphius cavirostris*, Sc: *Stenella coeruleoalba*)

Issue / Problems	Threats	Causes	Impacts	Significance
FISHERIES				
Over-fishing	Malnutrition	Prey depletion	Low reproduction rate and population decline	Critical for Dd, Tt, Pp
Use of driftnets	Entanglement	Non-selective fishing	Important death rate for small populations	Critical for Pm
Illegal practices (dynamite fishing)	Decrease or loss of cetacean hearing abilities	High level sound from underwater explosions	Vulnerable cetaceans	High for Pm, Zc and coastal species
Cetacean killing	Direct killing	Fishermen shoot on dolphins that are trapped in fishing gear	Rapid decline of resident population units	High for Tt, Dd, low for Sc
Uncontrolled use of Acoustic Deterrent Devices ("pingers")	Displacement from feeding grounds, malnutrition	Introduction of high level noise in feeding grounds	Habitat loss, low reproduction rate and population decrease	High for Tt, Dd and Pp?
TOURISM				
Uncontrolled whale watching	Disruption of feeding and reproduction	Disturbance	Rapid habitat degradation and decline of local population units	Critical for Pm and medium for all other species
Leisure vessels in the middle of cetacean pods	Disruption of feeding and reproduction	Disturbance	Rapid habitat degradation and decline of local population units	

Table 13. (continued)

Issue / Problems	Threats	Causes	Impacts	Significance
HUMAN-CETACEAN CONTACTS				
Introduction of new viruses	Epizootics	No defenses in cetacean immune systems	Die-off and risk of disappearance of entire population units	Critical for all species
USE OF CHEMICALS				
Introduction of organochlorine compounds	Immunosuppression and susceptibility to diseases	Bio-accumulation in cetacean tissues	Epizootics, die-off and risk of disappearance of population units	High for all species
Introduction of heavy metals	Liver, kidney and other cetacean organ failure	Bio-accumulation in cetacean tissues	Chronic illness in populations	Medium
MILITARY EXERCISES				
Use of low and mid frequency active sonar technologies	Indirect killing and physiological damage	Introduction of extremely high level noise in the marine environment	Death of local population units & possible cetacean displacement from wide areas if used regularly	Critical for Zc and possibly Pm, high for other species
MARINE TRAFFIC				
Noise pollution	Displacement or reduction of auditory sensitivity	Increase of the number of large vessels	Habitat degradation and increase of collisions	Medium
Collisions (vessel-cetacean)	Severely injured or dead cetaceans	Increase of the speed of large vessels	Important death rate for small populations	High for Pm and Bp, low for other species
OIL-INDUSTRY ACTIVITIES				
Seismic surveys and drilling	Displacement or reduction of auditory sensitivity	Introduction of very high level noise in the sea	Habitat loss or reduced abilities	Potentially high

III.2.7. Mediterranean monk seal

Currently, the largest remaining Mediterranean monk seal population or group of populations occurs in Greece (Reijnders et al. 1993, 1997), especially after the severe die-off, which affected the large monk seal colony of Capo Blanco in May 1997 (Aguilar et al. 1998, Forcada et al. 1998). The species remains widely distributed throughout the country, as shown by the results obtained through the extensive and long-term National Rescue and Information Network (RINT)[11], which is part of the Greek National Programme for the Conservation of the Mediterranean monk seal.

The Mediterranean monk seal *(Monachus monachus*) and its habitat is under strict legal protection in Greece. The study of the species and the identification of particular populations in Greece presents several difficulties, due to the extensive coastline, the large number of isolated rocky islands, the large number of sea-caves, many of which have underwater entrances.

As monk seals are found on isolated locations and seek refuge in coastal caves and there is limited knowledge on the movements of the animals, there is no accurate estimation of the total size of the monk seal population in Greece. Estimates based on the size of particular populations from specific parts of the country give a total number of individuals that varies between 200 to 300 (Reijnders et al. 1993, 1997).

In contrast to the above general picture, the status of the species in specific areas of the country has been monitored consistently for a number of years. In particular, the best studied breeding populations are in the Northern Sporades islands and the islands of Kimolos, Polyaigos, Karpathos and Saria in the Aegean Sea and the islands of Zakynthos, Kefallonia, Ithaca and Lefkada in the Ionian Sea (Monk Seal Status Report, LIFE-Nature B4/3200/96/500, MOm 1999)

The current estimates for the monk seal population in the Ionian Sea, provide a minimum population of 12 individuals for the island complex of Kefallonia-Ithaca-Lefkada and a minimum population of 9 individuals for the island of Zakynthos (Karavellas et al., 1996, Panou et al. 1996). [12]

In the North Sporades and especially in the protected area of the National Marine Park of Alonnissos Northern Sporades, through the up to date analysis of the data collected from 1990 until 2001, at least 55 different adults have been identified.[13]

---

[11] RINT, established in 1991 by MOm (the Hellenic Society for the Study and Protection of the Monk Seal), is a network of more than 1000 contacts in coastal Greece, with which there is a continuous communication through questionnaires received by mail and/or direct interviews. Furthermore, the sightings of new-born pups, recorded through RINT in a number of different areas, which are indeed closely matched with the areas with high frequency of seal sightings, and the consistency of such observations during the last 7 years, provide evidence that several breeding populations are found within the species range in Greece (Adamantopoulou et al. 1996, 1998).

[12] In the Ionian Sea, fieldwork has been conducted separately by different researchers on the island of Zakynthos and the island complex of Kefallonia-Ithaca-Lefkada. In addition, births have been recorded every year in both areas (2 per year on the island of Zakynthos and 1-4 per year on the islands of Kefallonia and Ithaca). Furthermore, a fact that must be taken into consideration is that these two study areas are in close geographic proximity. Thus, there may be significant amount of interchange between the two sub-populations or they may even form a single interbreeding population.

[13] The highest number of pups of the same cohort ever recorded in a single population in the Mediterranean. In total, 85 different new-born pups, have been identified (Dendrinos et al., 1996, 1998; MOm/HSSPMS, unpubl. data). The oldest animal recorded in the area was determined to be a 44 years old male (MOm 1995).

The current estimates for the monk seal population in the islands of Kimolos and Polyaigos in the central Aegean provide a minimum of 24 different individuals, while the total population may vary between 30 and 45 animals.[14] This population reproduces at an average rate of 7 pups per year.

The current estimates for the monk seal population in the northern Karpathos and Saria islands in the south-east Aegean provide a minimum of 10 different individuals, while the total population may vary between 15 and 25 animals. This population reproduces at an average rate of 2 pups per year.

Taking into consideration the above data, it may be concluded that the minimum number of monk seals recorded in the areas, where consistent monitoring is being conducted, is not less than 110 animals.

Description of threats and their impact on the species or its habitat

1. Disturbance, degradation and destruction of the monk seal habitats

Description: Increasing human activities (tourism, urban development and fisheries) in isolated coastal areas, the typical habitat of the Mediterranean monk seal, bring in closer contact of the animals to humans. This is quite common during the summer, when boat traffic in these areas increases drastically. Pollution and noise resulting from increased human activities degrade the coastal and the marine habitats of the species. Uncontrolled urban development (housing, road construction, etc.), as well as mining in coastal areas may even result in the physical destruction of the species breeding sites (sea caves).

Location: Throughout the coastal and marine area of Greece.

Impact on the species or its habitat: Disturbance and degradation of the species habitat result in a decrease of the population birth rate (e.g. abortions), as well as in the abandonment of particular breeding sites and even in the complete displacement of a population, leading to a decrease in population numbers.

2. Deliberate killing of monk seals

Description: Mediterranean monk seals often remove fish caught in the nets during fishing. This behaviour results in the direct loss to the fishermen's catch, as well as in a decrease in the efficiency of the specific gear. In addition, fishermen consider the time spent in repairing damaged gear as an additional loss of income, since it could be spent in more productive activities. The fishermen's frustration over this decrease in income, in conjunction with the overall problems facing the fishery sector, has caused a hostile attitude towards seals. This often results in fishermen actively seeking and killing animals.

Location: Throughout the marine area of Greece.

[14] From up to date results of the monitoring fieldwork in Kimolos and Polyaigos, the high importance of the area for the conservation of the species is clearly evident. In support of this, it is noticeable that the 9 newborn pups recorded represent the second highest number of pups of the same cohort ever recorded in one geographic region within the Mediterranean. Furthermore, the fact that the local monk seal population is not only considerable in size, but also uses intensively the monitored area, reaffirms the necessity for the establishment of a permanent monitoring system that will provide the necessary data for the management of the species and will offer important information for its conservation in general.

Impact on the species or its habitat: The overall impact of this threat is the decrease of monk seal populations.

3. Overfishing

Description: The marine area of Greece is considered as an important fishing ground. The approximate 17,253 km of coastline, in combination with a large number of isolated rocky islands, makes the enforcement of the existing legislation by the port police authorities a very difficult task. Thus, fishermen may use dynamite, night spear gun fishing and trawling equipment close to the coastal zone.

Location: Throughout the marine area of Greece.

Impact on the species or its habitat: Degradation of the species habitat result in a decrease of the population birth rate (e.g. abortions), as well as in the abandonment of particular breeding sites and even in the complete displacement of a population, leading to a decrease in population numbers. Excessive and illegal fishing is also the main source of decrease of local fish stocks.

Other factors, such as accidental deaths of seals due to entanglements in fishing gear, pollution, disease and intrinsic biological factors may prove to be important in the future (Archipelagos-MOm/HSSPMS 1996).

Initiatives for the conservation of the monk seal in Greece

Because one of the largest remaining monk seal population in Mediterranean is found in Greece, several initiatives have been taken for the protection of the species. These initiatives were based on guidelines and recommendations set forth by national and international experts.

In 1997, following a proposal of Archipelagos and Mom (1996) for a National Strategy, the Ministry of Environment, Physical Planning and Public Works has formulated the National Programme for the Protection of the monk seal in Greece, targeting both the known important for the species sites and the rest of the country, which is already in effect[15] . The Programme includes several actions, of which the establishment and effective management of special areas of conservation and the reduction of human caused mortality, accompanied by public awareness campaigns, are considered to be of highest priority. During the last years a number of initiatives have been taken, the main of which can be summarised as follows:

- **The establishment and effective management of "Special Areas of Conservation"**

The first National Marine Park of the country was established in Alonnissos - N. Sporades, on May 1992, in order to conserve the most important monk seal population in the country and its habitat.[16]

The NMPANS, ten years after its establishment, is considered a successful example in combining the enforcement of regulations and the provision of opportunities to the

[15] It should be mentioned that non-governmental organisations play a key role in the implementation of the above plan of actions.

[16] Within the area of the National Marine Park of Alonnisos - N. Sporades (approx. 2200 km^2), tourism and other human activities are regulated, through a zoning system with different degrees of protection measures. Especially in areas where important monk seal breeding sites are located human activities are prohibited. In the last 10 years the regulations of the Park have been enforced through the wardening of the park.

local community towards the sustainable development of the area. A management body for the park is to be legally established in the immediate future.

In 1995, a reserve for the protection of monk seal habitats was created at the NW coasts of the island of Samos, within the framework of the physical planning of the island, (Presidential Decree 100/27-2-1995). Furthermore, 35 sites important for the species, are included in the pSCI list.

A key result of a project carried out in 1997-1999, was the elaboration of integrated Management Plans[17] for three new areas namely the area of Kimolos and Polyaigos in Central Aegean, the area of Northern Karpathos and Saria in the Dodecanese and the area of Zakynthos in the Ionian Sea.

A new project is currently being implemented (execution period 2001-2004) in two of these areas, namely the area of Kimolos and Polyaigos in Central Aegean, and the area of Northern Karpathos and Saria in the Dodecanese aiming to the *in situ* implementation of specific management actions addressing specific threats to the monk seal and its habitat in these sites.[18]

- **The reduction of human caused mortality related to fisheries**

  Continuous communication and collaboration with the Port Police authorities throughout the country has in many cases promoted the enforcement of the legislation. This is especially true in the case of the NMPANS, where regulations are enforced and where for almost a decade no deliberate killing has been recorded (MOm/HSSPMS 1995, Androukaki et al. 1998).

  A number of public awareness campaigns have been carried out at a local level, especially on the Northern Sporades islands, in the Aegean Sea and on the islands of Zakynthos, Kefallonia, Ithaca and Lefkada in the Ionian Sea. Furthermore, at national level, the Rescue and Information Network is operated by MOM throughout Greece, aiming to establish a good working relationship with fishermen and authorities.

- **The information to and education of the public**

  In terms of information/education projects, apart from the already mentioned information network, an array of informative material addressing the problem of the monk seal conservation has being published and distributed to the Greek general public and to tourists/ visitors of important sites. The mass media have covered these efforts to a great extent during the last few years and special attention has been given to children awareness by conducting environmental education projects to schools throughout Greece.[19]

- **The research on the biology of the Mediterranean monk seal**

[17] These Management Plans, submitted to the relevant national authorities in December 1999, were prepared following a consultative procedure with the local and regional authorities, providing full justification for the establishment of Special Areas of Conservation in these sites, a detailed zoning system and specific management proposals.

[18] The management actions in both NATURA 2000 sites, which are based on the already elaborated Special Environmental Studies during the LIFE-Nature project (B-4/3200/500), take into consideration the particular socio-economic conditions in each site and thus involve local authorities and people in the activities foreseen.

[19] Educational projects have been conducted for a number of years at the local level especially in coastal areas (Archipelagos 1996, MOm 1995, 1996), and a large scale environmental education program has been in operation by MOm for the last 9 years. It is estimated that up to date, approximately 120,000 pupils have participated (MOm 1991, 1992, 1993, 1994, 1995, 1996, 1997).

Researchers who conducted monitoring work on specific populations within Greece had the opportunity to advance the existing knowledge on the species biology especially on the basic seal ecology, behaviour, habitat choice, identification techniques, genetics, infectious diseases, pollution, diet choice and interaction with fisheries (Panou et al. 1993, 1996, Dendrinos et al. 1994, 1996, 1998, Karavellas 1994, Karavellas et al. 1995, Adamantopoulou et al. 1999, Glain et al. 2001, Dosi et al. 2002).In addition, advances have been made in the methods of collecting and analysing data from observations from non-specialists in order to monitor the status of the species through the operation of the Rescue Information Network mentioned above. Data on the species has been collected with respect to the development and behaviour in captive condition, handling, rehabilitation and veterinary care of seals through the operation of the Seal Treatment and Rehabilitation Centre (STRC) in Alonnissos (MOm 1997).

- **The rescue and rehabilitation of sick, wounded or orphan animals**

  The aim of the rehabilitation activities is to increase the survival possibilities of animals needing aid and to release them healthy to their natural environment[20]. For that purpose a specialised monk seal rehabilitation centre operates in Steni Valla, Alonissos since 1990.

  During the animals' rehabilitation period, apart from the veterinary care, animals are also prepared for their reintroduction to the wild life (HSSPMS and SRRC 1991, MOm/HSSPMS 1995, 1996a, 1997, 1998, 1999, 2000, 2001, 2002). The rehabilitation centre[21] operates with all necessary official permits from the relevant state authorities following specific operational protocols.

  Until now, 22 monk seals (14 pups and 8 adults) have been treated. Thirteen animals (6 pups and 7 adults) were released back to their natural environment. The release of these animals and their successful reintroduction to the natural environment provides a further incentive for the continuation of the efforts to protect the species and its habitat.

  Apart from the main aim of the project, further positive results are also achieved during the operation of the rehabilitation program in the fields of research[22] and public awareness[23]. Lastly, the creation of a bank of samples from the animals treated, may

[20] MOm, the Hellenic Society for the Study and Protection of the monk seal, considering the status of the Mediterranean monk seal as precarious and recognising the fact that rescue and rehabilitation of sick, wounded or orphan animals is a priority action for the conservation of the species, initiated a rehabilitation programme for the Mediterranean monk seal in Greece.

[21] The centre operates with trained personnel and in collaboration with the Seal Treatment and Research Centre of Pieterburen, the Netherlands and the Veterinary School of the University of Thessaloniki.

[22] The data collected from the animals submitted in the rehabilitation centre relative to the development, physiology, parasitology, immunology, virology, bacteriology and behaviour are of considerable importance, since similar information is difficult, if not impossible, to collect from animals in the wild. Furthermore the acquisition of knowledge and experience on the species in captivity, will be essential for the effective conservation of the species in cases of emergency (epidemics, catastrophes, breeding in captivity) (Androukaki et al. 2002).

[23] Rehabilitation activities proved to be a very powerful public awareness tool. In particular, the establishment of the Seal Treatment and Rehabilitation Centre and the operation of the rehabilitation program in Alonnissos, within the area of the first National Marine Park of the country, have played a significant role in the sensitisation of the local community. Local people and especially fishermen

prove to be of considerable importance in studies of the species biology (e.g. identification of genetic constitution and relationships between populations).

- **The reduction of over-fishing**

  Even though specific initiatives have not been taken in the issue, in the context of specific monk seal projects, steps taken on a local scale for the establishment of conservation marine areas and the enforcement of special fishing regulations have been a tool towards the reduction of over-fishing. The case of the NMPANS is a good example, where within a conservation area for the monk seal, fishing activities are regulated so as to protect fishing grounds from over-fishing. The same rationale is being followed in the design of future conservation areas for the species.

- **The breeding in captivity and the introduction to/establishment of colonies**

  Even though captive breeding and translocation projects have significantly contributed to the conservation of some endangered species, the results obtained at the Workshop on the Population and Habitat Viability Assessment for the Greek Population of the Mediterranean monk seal (IUCN 1994) indicated that, at present, such a project is not necessary, as the release of animals from a captive breeding project will not make a significant contribution to the conservation of the species unless all the other measures outlined in the monk seal conservation strategy are also implemented. Thus, up to date, no such measures have been initiated.

considered the monk seal as a competitor and a nuisance, since most of their encounters with the species are when they find damages to their fishing gear.

Table 14. Major issues regarding Mediterranean monk seal in Greece.

Issue	Problems	Status	Trend
Development in coastal areas	Increased human activities and presence on the coastline	Very Important	Stable
	Low level of authorities awareness	Important	Decreasing
	Low level of local population awareness	Very Important	Decreasing
Fisheries	Over-fishing	Very Important	Decreasing
	Illegal practices	Very Important	Decreasing
	Killing of monk seals	Very Important	Unknown
Tourism	Increasing tourist exploitation of the coastal and marine environment in the absence of a sustainable national plan	Very Important	Increasing
Legal and institutional protection of habitats	Bureaucratic procedures resulting in very big delays in the establishment of protection measures on habitats	Important	Stable
Conservation	Lack of continuity in funding conservation activities	Important	Stable

Table 15. Major threats regarding Mediterranean monk seal conservation in Greece.

Issue / Problems	Threats	Causes	Impacts	Significance
DEVELOPMENT IN COASTAL AREAS				
Increased human activities and presence on the coastline	Destruction of monk seal habitats	Increased pollution levels, disturbance, physical alteration of coastline	Habitat loss, population decline, low reproduction rate	Critical
Lack of local authorities awareness	Destruction of monk seal habitats	Increased pollution levels, disturbance, physical alteration of coastline	Habitat loss, low reproduction rate	Critical
Lack of local population awareness	Destruction of monk seal habitats	Disturbance	Population decline	Critical
FISHING				
	Over-fishing	Decrease of food availability	Population decline	Critical
Illegal practices	Direct killing of monk seals, over-fishing	Mortality of individuals, decrease of food availability	Population decline	Critical
Killing of monk seals	Direct killing of monk seals	Fishermen shoot on monk seals that are trapped in fishing gear	Population decline	Critical
TOURISM ACTIVITIES				
Increasing tourism exploitation of the coastal and marine environment with no specific sustainable national plan	Disruption of reproduction, degradation of habitats	Disturbance during reproductive period, marine pollution	Low reproduction rate, habitat loss	Critical
LEGAL AND INSTITUTIONAL PROTECTION				
Delays in the establishment of protection measures	Degradation of monk seal habitats	Disturbance, marine pollution	Habitat loss, population decline, low reproduction rate	Critical
COST OF CONSERVATION ACTIVITIES				
Lack of continuity in funding conservation activities	Degradation of monk seal habitat, killing of monk seals	Disturbance, marine pollution	Habitat loss, low reproduction rates	Critical

IV.1. Overall conclusions for the status of marine and coastal biodiversity in Greece

An attempt to generalize the findings of the analysis presented in the previous chapter, in the lights of the discussions held at the consultation meeting will be made, even though it may contain inaccuracies. The results of this attempt are presented in Table 16.

Table 16: Overall assessment of potential threats to biodiversity

Potential threat	***Overall assessment***
Eutrophication	It presents a very localized problem for the marine vegetation in some points of the coastline, with a stable or decreasing trend. The increasing number of facilities for the collection and treatment of sewage in coastal towns is expected to contribute significantly to its decrease in closed gulfs. Still, it comprises a threat to lagoons, as most stakeholders agree that there is significant run off from agrochemicals to the sea.
Tourism/urban development	It presents an important problem for biodiversity, expressed in many ways. Building constructions (hotels, secondary housing), roads and marinas are expanding, however at a slower pace compared to the previous decades and with more environmental control. The issue of the increased and uncontrolled presence of private vessels for recreation in virtually the whole of the coastline during summer months was raised and emphasized.
Infrastructure development	It does not represent a significant threat, due to existing environmental control mechanisms. Industrial wastes are reported to represent a threat in a few lagoons.
Hunting/ fishing	It does not represent a significant threat, when carried out according to existing regulations. More information on the presence and status of endangered habitats or species would be welcome by all stakeholders in order to improve regulations and enforcement. Awareness as a whole is considered an essential tool for better enforcement. Aquacultures are subject to EIA ; there is opposite opinion concerning the management of lagoons as fisheries and its potential for biodiversity.
Pollution hot spots	It is not considered a priority for biodiversity, but rather an issue adequately dealt with by competent authorities. There is room for improvement of the implication of incidents of pollution to certain species of wild life, after the establishment of new protected areas and their management organsations.
Invasive species	The situation was characterized as alarming, due to lack of data and networking amongst scientists.
Erosion-desertification	The problem is thought to exist, but there is no estimation of its implications for marine and coastal biodiversity. The application of the relevant national strategy is the required direction for action.
Land use change	The abandonment of traditional agriculture it many parts of the coast and islands and their conversion to tourist destinations has been an issue since 1960, and its implications on biodiversity and wild life have been evident during the past 20 years. Today it is occurring at a much slower pace, in fewer sites and with much

	more controlled for environmental impacts. The abandonment of fisheries in lagoons has been identified as a possible deterioration factor for these habitats. There is a slight trend to re-apply traditional practices and to restore damaged habitats for the benefit of biodiversity such as lagoons.
Illegal practices	A wide range of threats both at sea as in the terrestrial part of the coast has been reported, mainly due to the lack of public awareness, the difficulty of sufficiently patrolling the extensive coastline and inadequate systematic environmental controls. Persisting problems such as solid waste disposal in lagoons, or at torrent beds have been emphasized. Occupation of public land on the coast is also often, due to the lack of Cadastre and the lack of delimitation of the public coastal zone in many sites.
Overexploitation of resources	An important issue for biodiversity conservation, especially related to water resources, land reclamations for agriculture and fisheries. They are expected to be addressed by the application of EU legislation concerning the Water Management Policies, and EU Common Agricultural and Fisheries Policies
Harmful agricultural practices	There has been no relevant input except agricultural run off affecting water quality.
Forest fires	There has been no relevant input
Disasters-natural phenomena-climate change	The situation with regard to climate change was characterized as alarming due to lack of data and networking amongst scientists

IV. PRIORITIES FOR ACTION

Specific proposed priorities for action concerning the "key issues' presented in Chapter III , are presented under the following categories:

- Research- Surveys
- Action Plans – Management Plans- Monitoring
- Management Applications
- Training- Awareness- Education

It must be noted that the Priority Actions were presented and discussed at the national consultation meeting (4/7/02); Some actions were added after the meeting on the basis of written comments; Some of the actions presented in the meeting have been redrafted following the discussions. Agreements on financing the actions were not announced, so each action remains at the stage of a preliminary proposal, of the responsibility of the organization/ expert who introduced it

IV.2.1. Research- Surveys

PRIORITY ACTION 1	**Inventory and mapping of *Posidonia* meadows on the Greek coasts**
Justification	Maps of *Posidonia* meadows, at 1:10.000 scale, exist only for 65 sites of the National List of the candidate sites to NATURA 2000 network, corresponding to about 3,000 km of the Greek coastline (from 17,253 km in total). However, at national level, mapping of *Posidonia* meadows has not been yet undertaken. As a result, their presence, status and total coverage at national scale is yet unknown and, due to their presence in relatively shallow waters, are threatened by various activities in the coastal zone. Mapping of *Posidonia* habitats along the Greek coasts will provide the required baseline information for defining wise management goals and monitoring purposes.
Description	Data collection and mapping will be based on the method already used for the mapping of *Posidonia* meadows in the above mentioned sites of NATURA 2000 network. This includes a standardised protocol for data collection and a GIS mapping method combining photo interpretation, echo-soundings and *in situ* verification. A database for data storage is also included in the GIS. The database can support monitoring purposes.
Targets	Production of maps of *Posidonia* meadows at 1:10.000 scale. Storing of inventory data in the database which can be used as the baseline information for management and monitoring purposes.
Introductory Body	National Centre for Marine Research
Prerequisites needed for implementation	Funding
Support needed	

PRIORITY ACTION 2	**Inventory, mapping and development of a typology of Greek lagoons and small coastal wetlands**
Justification	Lagoons and other small coastal wetlands are included in the "Inventory of Greek Wetlands as Natural Resources" (2001). In addition, a limited number of lagoons have been mapped according to the MedWet method. However, at national level, their delineation has not been yet undertaken. As a result, their exact number and coverage is yet unknown and, due to their transitional nature, they are threatened by human activities and land use changes and are often neglected in the production of regulatory acts. The proposed action will result in accurate and up-to-date information to be used for wise management purposes and for monitoring, since changes with previous inventories and maps can be revealed. In addition, the development of a typology for these ecosystems would contribute to the identification of specific management measures.
Description	Data collection and wetland habitat mapping will be based on the MedWet inventory method. The method includes a standardised procedure for data collection, a mapping method accompanied by conventions for photo interpretation and mapping and a database for data storage. The MedWet database can support monitoring purposes. Development of a typology for lagoons and small coastal wetlands based on ecological and socio-economic parameters.
Targets	Production of wetland habitat maps (to support wetland delineation and monitoring of wetland area). Storing of inventory data in the MedWet database which can be used as the baseline information for management and monitoring purposes. Typology of lagoons and small coastal wetlands.
Introductory Body	Greek Biotope Wetland Centre, Aquaculture Centre of Acheloos S.A.
Prerequisites needed for implementation	Funding
Support needed	

PRIORITY ACTION 3	**Research and monitoring of marine turtle populations**
Justification	Systematic research projects and monitoring programmes are needed for the evaluation of the state of health and viability of marine turtle populations. Specifically trends in the growth of populations and assessing their life cycle (i.e. foraging areas, migratory routes) should be assessed. Monitoring is also a mean to evaluate the effectiveness of protection measures and could also provide alarm signals in case that local immediate recovery actions are needed.
Description	Genetic analysis will provide information on turtle stocks. Nests and nesting females will be monitored every year in the major nesting areas in Greece.

	Application of satellite transmitters will provide information on migratory routes, foraging/wintering areas.
Targets	Determination of population trends. Determination of critical habitats. Determination of management priorities to enhance survival of populations.
Introductory Body	ARCHELON
Prerequisites needed for implementation	Funding
Support needed	

PRIORITY ACTION 4	**Studies on the effects of fishing on seabirds**
Justification	There are very worrying cases of mass deaths of seabirds caught by fishing gear (longlines and nets). The effects of these incidents on seabirds population are difficult to estimate and monitor due to the lack of baseline data and the long cost and time involved in field studies. Furthermore, the effects of over-fishing to seabirds, which is a well documented cause of fish stock depletion, have not been studied.
Description	Studies on the diet of priority seabird species and on their fish prey population dynamics in relation to fisheries. Data gathering on fishing activities should include not only "official" statistics collected by the pertinent authorities but should also include field data (data on by-catch, on amount of discarded fish and, if possible, on illegal fishing activities).
Targets	Better knowledge, based on scientific research, on the effects of fishing to seabirds with specific reference to areas surrounding important seabird colonies.
Introductory Body	Hellenic Ornithological Society (HOS)
Prerequisites needed for implementation	Information on key feeding areas.
Support needed	

PRIORITY ACTION 5	**Data collection on the present situation of cetacean population units inhabiting the Greek Seas**
Justification	No quantitative data regarding species abundance are available. No critical areas have been defined for any cetacean species. Lack of such data does not allow decision making regarding conservation priorities.
Description	Dedicated surveys using joint visual and acoustic methods. Research vessels and aerial surveys will cover the entire geographical area of the Greek Seas. Sighting and acoustic encounter frequencies will be estimated per species and geographical areas. Abundance estimation models will be applied on the data collected.
Targets	Abundance estimations for the population unit of each cetacean species inhabiting the Greek Seas Definition of critical areas for conservation priority species
Introductory Body	Pelagos Cetacean Research Institute
Prerequisites needed for implementation	Funding
Support needed	Co-ordination at the regional level for common scientific methods and criteria in the entire Mediterranean Sea

PRIORITY ACTION 6	**Assessment of the magnitude and impact of the seal-fisheries interaction and implementation of measures to alleviate this conflict**
Justification	Even though deliberate killing of seals by fishermen still remains an important threat for the species in the country, seal-fisheries interaction has not been evaluated at the national or local scale, in terms of its magnitude and impact to either seals or fishermen. Proposed measures to this conflict (legislative, compensatory or technical) have never been properly assessed in terms of their feasibility and effectiveness at both spatial scales.
Description	A study on the extend, magnitude and impact of this interaction (to both seals and fisheries) will conducted, using appropriate methodologies, at such geographic units that will allow for the extrapolation of the results at both the national and local scales. All potential measures (legislative, compensatory, technical) that can reduce this conflict should be examined and evaluated based on their feasibility, sustainability and short and long-term effectiveness.
Targets	Assessing the impacts of seal - fisheries interaction. Evaluation of possible measures and identification of appropriate measures to alleviate the conflict.
Introductory Body	Hellenic Society for the study and protection of the Monk seal (Mom)
Prerequisites needed for Implementation	Funding, cooperation of pertinent authorities
Support needed	

IV.2. Action Plans – Management Plans- Monitoring

PRIORITY ACTION 1	**Elaboration of a specific management guidelines for the conservation of *Posidonia* meadows**
Justification	*Posidonia oceanica* meadows are important ecosystems of Mediterranean Sea and are considered as quality indicators for the evaluation of the ecological status of coastal waters. Despite their relative abundance and significance in Greek coastal waters, no management measures have ever been elaborated. The production of a specific management guide for the conservation of *Posidonia* meadows would assist in the implementation, in Greek coastal waters, of the Mediterranean Action Plan of Marine Vegetation, that has been produced within the framework of the Barcelona Convention.
Description	The specific management guidelines will be elaborated in compliance with the Mediterranean Action Plan of Marine Vegetation. Methodologies, management measures, and budget will be identified.
Targets	Identification of measures and actions for the sustainable management of *Posidonia* meadows in the Greek coast.
Introductory Body	Greek Biotope/Wetland Centre, National Centre for Marine Research
Prerequisites needed for implementation	Funding, inventories and maps of *Posidonia* meadows covering the Greek coast.
Support needed	

PRIORITY ACTION 2	**Elaboration of water management plans at lagoons watersheds**
Justification	Unsustainable use of water resources and the lack of water management plans at watershed level is the main reasons for the degradation of lagoon ecosystems. The production of water management plans at watershed level will be produced in relation to the water management plans for each Water District in the country according to the European Water Framework Directive 2000/60.
Description	Water management plans will be produced according to the specifications set by the European Directive 2000/60. Lagoons will be considered as the final recipient of all human activities within watershed and their needs in water will be evaluated. Water management plans will cover legislation issues and will define specifications for monitoring of water quality and quantity. Monitoring of the effectiveness of the proposed measures will be included.
Targets	Identification of measures and actions for sustainable water management in lagoons' watersheds.
Introductory Body	Greek Biotope/Wetland Centre
Prerequisites needed for implementation	Advancement of legal and administrative procedures related to Water Framework Directive, a common set of specifications for monitoring nationwide. Funding.
Support needed	

PRIORITY ACTION 3	**Assessment of the functions of lagoons and determination of the necessary measures for their restoration**
Justification	Assessment of wetlands' functions is a prerequisite for the management planning as the procedure includes the recognition of degraded functions and the determination of the necessary measures for their restoration. Priority should be given to lagoons included in the National List of the candidate sites to NATURA 2000 network.
Description	Assessment of lagoons' functions is based on a series of chemical, physical, morphological and biological parameters. Then the watershed of each lagoon is being simulated, using contemporary hydrological models and the alternative scenarios for lagoon restoration are studied. The best scenario for the rehabilitation of wetlands' values is determined.
Targets	Determination of the necessary measures for the sustainable management of lagoon ecosystems.
Introductory Body	Greek Biotope/Wetland Centre
Prerequisites needed for implementation	Funding
Support needed	

PRIORITY ACTION 4	**Elaboration of management plans for fisheries in lagoons**
Justification	Management plans for fisheries (including aquaculture) in Greek lagoons are lacking. Most of these activities of the primary sector of country's economy are implemented without taking into account the carrying capacity of ecosystems and the environmental impacts on lagoons.
Description	Management plans for fisheries will include the determination of a) fish stocks, b) the carrying capacity of the ecosystems and c) the environmental impacts of these activities. Priority should be given to lagoons included in the National List of the candidate sites to NATURA 2000 network.
Targets	Sound management of fisheries in terms of biodiversity conservation.
Introductory Body Responsibility	Aquaculture Centre of Acheloos S.A.
Prerequisites needed for implementation	Funding, accurate and up-to-date baseline data.
Support needed	

PRIORITY ACTION 5	**Elaboration of a National Action Plan for the conservation of marine turtles**
Justification	Management plans have been elaborated for the major nesting areas (Crete and Peloponnesus) of *Caretta caretta* but there is not a National Action Plan for the conservation of marine turtles in Greece.

	The National Action Plan will provide guidelines and measures for the conservation of marine turtles and for addressing emergency local incidents. It could also be used by the central and regional government and by local authorities during the preparation of development plans in areas hosting marine turtle habitats.
Description	The National Action Plan will cover all aspects of marine turtles lifecycle on land and at sea and it will comply with international initiatives on marine turtles conservation (IUCN - Global Strategy for the Conservation of Marine Turtles, UNEP/MAP - Action Plan for Mediterranean Marine Turtles).
Targets	A comprehensive document to be useful to natural resources managers and competent authorities for future development or exploitation plans in or near marine turtle habitats.
Introductory Body	ARCHELON
Prerequisites needed for implementation	Funding, co-ordination of involved agencies.
Support needed	

PRIORITY ACTION 7	**Collaboration with fishermen on the conservation of marine turtles**
Justification	Incidental capture of sea turtles in fishing gear poses a major threat to their survival. In addition, many turtles are intentionally killed after being caught in fishing gear. Close collaboration with fishermen is required in order to quantify the damage turtles cause to their gear. Compensatory measures should be sought.
Description	Collaboration with fishermen in monitoring incidental captures.
Targets	Reduced mortality of turtles at sea.
Introductory Body Responsibility	ARCHELON
Prerequisites needed for implementation	Co-ordination of competent authorities, law enforcement, funding.
Support needed	

PRIORITY ACTION 8	**Operation of a rescue centre, first aid stations and stranding network for marine turtles**
Justification	No stranding network for marine turtles exists in Greece. Fast transportation to a first aid station or to a properly equipped rescue centre may save many animals that can be returned to sea. In Greece, a rescue centre under-staffed and under-funded operates in Athens, mainly on a voluntary basis. However, it is essential that it is established, organised and equipped on a professional basis following the specifications set by the Ministry of Agriculture. Such a centre may play a major role in raising public awareness, much needed in a country with extensive coastline as Greece, in order to reduce mortality at sea.

Description	A rescue centre should be officially established in Athens where it can be easily accessed from all over Greece. In addition, at selected sites in Greece first aid stations can help light injured turtles to get appropriate treatment before being released to the sea.
Targets	Reducing mortality of sea turtles.
Introductory Body Responsibility	ARCHELON
Prerequisites needed for implementation	Funding
Support needed	

PRIORITY ACTION 9	**Elaboration of management plans for protected areas with uninhabited islets and coasts and priority bird species**
Justification	Activities negatively affecting breeding seabirds and Eleonora's Falcon should be addressed in management plans. Therein measures should be clearly defined for the conservation of uninhabited islets and coasts. This action is particularly important for 20 SPAs with the above mentioned habitats and species.
Description	Measures to prevent disturbance, transportation and introduction of alien species, oil spills and pollution, intense and illegal fishing activities and uncontrolled infrastructure development should be defined in the management plans of 20 SPAs.
Targets	Management plans for 20 SPAs with uninhabited islets and coasts and priority bird species
Introductory Body Responsibility	Hellenic Ornithological Society (HOS)
Prerequisites needed for implementation	Funding.
Support needed	

PRIORITY ACTION 10	**National Action Plans for priority bird species**
Justification	With the exception of the Osprey and Sandwich Tern, National Action Plans are essential for the conservation of all priority species.
Description	National Action Plans will take into account existing international initiatives (Birdlife International, European Union). They will result in proposals for the conservation of the species.
Targets	National Action Plans for 9 priority species (cory's and yelkouan shearwater, storm petrel, shag, audouin's gull, eleonora's falcon, dalmatian pelican, greater flamingo, slender-billed curlew).
Introductory Body Responsibility	Hellenic Ornithological Society (HOS)
Prerequisites needed for implementation	Baseline data on populations and trends, breeding sites, threats and conservation actions already undertaken.
Support needed	

PRIORITY ACTION 11	**Establishment of a national stranding network for cetaceans**
Justification	No properly organised cetacean stranding network exists in Greece. Data on organochlorine and heavy metal bioaccumulation in cetacean are not available. Information on causes of death is scarce and cannot be analysed statistically. Data on the ecology of cetaceans in Greek Seas are also lacking (feeding, reproduction, etc.).
Description	Establishment of a properly organised, national stranding network, in collaboration with the secretariat of ACCOBAMS. Sample collection and laboratory analysis for evaluation of chemical pollution levels, viruses, diseases, genetic identity etc. in dead cetaceans.
Targets	Monitoring of cetacean population health and causes of death.
Introductory Body	Pelagos Cetacean Research Institute
Prerequisites needed for implementation	Funding
Support needed	Co-ordination at the regional level for common scientific methods in the entire Mediterranean Sea

PRIORITY ACTION 12	**Monitoring of priority cetacean species population units**
Justification	There is no data on the rate of decline of cetacean population units that need urgent conservation measures. The effectiveness of any conservation measure cannot be assessed without monitoring of priority species population trends.
Description	Long-term research projects on population dynamics of sperm whales, common dolphins, bottlenose dolphins and harbour porpoises
Targets	Estimations of population trends for priority cetacean species
Introductory Body Responsibility	Pelagos Cetacean Research Institute
Prerequisites needed for implementation	Funding and personnel. Research undertaken.
Support needed	

PRIORITY ACTION 13	**Establishment and management of a national network of protected areas for the conservation of Mediterranean monk seal**
Justification	The fact that Greece holds the largest population of Mediterranean monk seal in conjunction with the existing evidence that the species is widely distributed throughout the country, with several breeding populations, necessitates the conservation of the areas that host the key populations.
Description	Designation of key habitats for the species as protected areas. Elaboration of management plans for these areas with key objective the conservation

	of the species populations and their habitats. Implementation of specific measures to diminish the threats to the conservation of the species within these areas.
Targets	Conservation of the important breeding populations and the key breeding habitats of the species in the country.
Introductory Body Responsibility	MOm
Prerequisites needed for implementation	Designation of protected areas through the issuing of the relative regulatory acts.
Support needed	

PRIORITY ACTION 14	**National Action Plan for the conservation of Mediterranean monk Seal**
Justification	Most activities for the conservation of monk seals fall, at present, within the National Strategy for the conservation of the species, which was drafted in the mid 1990s. These activities are implemented as part of the National Program for the Conservation of the monk seal, which is conducted jointly by the Ministry of Environment, Physical Planning and Public Works and MOm. However, there is no National Action Plan for the Mediterranean monk seal to provide all the necessary measures for the conservation of the species, in short and mid-term.
Description	A National Action Plan, for the next 5 years, will be elaborated based on the analysis of the current status and trends of the species and of its populations and habitats, the effectiveness of the measures already implemented and the experience from conservation actions for other relevant species. The National Action Plan will result in proposals for the conservation of the species and will identify the necessary synergies at local, national and international scale.
Targets	National Action Plan for the conservation of the species.
Introductory Body Responsibility	MOm
Prerequisites needed for implementation	Funding
Support needed	

PRIORITY ACTION 15	**Monitoring of the status of monk seal populations at a national scale through the operation of the National Information Network for the Mediterranen monk seal**
Justification	The wide distribution of the species and the difficulties (e.g. financial) arising in establishing adequate in number specialised research teams that can operate throughout the country do not allow for the monitoring of the species status at a national scale. The operation of the already existing National Rescue and Information Network for the species has shown that it can, to a large extent, compile the necessary data to assess the status of the species (distribution, important breeding areas, movements of

	individuals, identify and respond to emergency cases) at the national scale.
Description	Continuation and expansion of the operation of the National Rescue Information Network throughout the country. Creation of an inventory of monk seal populations, through which the status of the monk seal at a national scale will be monitored. The inventory could be achieved through the continuous collaboration with the already 1200 members (including local authorities) of the network, research surveys conducted at regular time intervals in key areas for the species and the application of GIS technology.
Targets	Assessment of species status and trends at the national scale. Identification of important incidents (epidemics) that will allow for immediate response (national stranding network). National inventory on the seal populations (habitats, populations, individual animals).
Introductory Body Responsibility	MOm
Prerequisites needed for Implementation	Funding
Support needed	

IV. 3. Management Applications

PRIORITY ACTION 1	**Prevention of disturbance by visitors and by transportation and introduction of mammals on uninhabited islets and rocky coasts**
Justification	The survival of 6 priority bird species is totally dependent on maintaining small uninhabited islets and remote coasts free from human disturbance and terrestrial mammals, such as cats, dogs and rats. Human constructions, even though may occupy limited space, could lead to increased human presence and have long – term effects on bird populations.
Description	Code of practices designed to reduce the impact of human disturbance to nesting birds and to prevent transportation and introduction of mammals (and any alien species in general) on uninhabited islets and rocky coasts, including strict control of development on islets should also be outlined.
Targets	Regulations of activities for all islets and rocky coasts for the conservation of breeding birds. Disturbance of breeding birds and transportation of mammals on nesting areas identified as a strictly illegal action.
Introductory Body Responsibility	HOS
Prerequisites needed for implementation	
Support needed	

PRIORITY ACTION 2	**Preparation and enforcement of national legislation for the conservation of cetaceans**
Justification	No legislation covers most of the major issues regarding cetacean conservation. Increasing threats come from various human activities, such as interaction with fisheries, new technologies, tourism development, whale-watching etc.
Description	Study and comparison of existing legislation and regulations in other countries. Preparation of national laws and regulations.
Targets	Create a legislative framework and guidelines regulating activities that are compatible or incompatible with cetacean conservation.
Introductory Body Responsibility	Pelagos Cetacean Research Institute
Prerequisites needed for implementation	
Support needed	

IV. 4. Training, public awareness, environmental education

PRIORITY ACTION 1	**Training and public awareness on the conservation of *Posidonia* meadows**
Justification	The main threats to the conservation of *Posidonia* meadows come mainly by activities that are not sited or operated in such a way as to conserve the values of the ecosystem. This is partly due to the low appreciation of the conservation values of *Posidonia* meadows by local people.
Description	Organisation of seminars on topics related to sustainable management of *Posidonia* meadows. The seminars will involve three main target groups: fishermen, farmers, and decision makers. Production of leaflets providing information on *Posidonia* meadows functions and values.
Targets	Increased appreciation of the local communities for the conservation values of *Posidonia* meadows and the potential economic benefit from their sustainable use. Raising the appreciation and environmental awareness level of different kind of stakeholders (locals, public services etc).
Introductory Body Responsibility	EKBY- NMRI
Prerequisites needed for implementation	Funding
Support needed	

PRIORITY ACTION 2	**Training and public awareness on the conservation of lagoons**
Justification	The main threats to the conservation of lagoon ecosystems come mainly by activities that are not sited or operated in such a way as to conserve their values. This is partly due to the low appreciation of the conservation values of lagoons by local people.
Description	Organisation of seminars on topics related with wise lagoon management. The seminars will be targeted to 3 groups: fishermen, farmers, decision makers. Production of leaflets providing concise information on lagoon values for humans.
Targets	Increased appreciation by the local communities of the conservation values of lagoons and of the potential economic benefit from their sustainable use. Raised appreciation and environmental awareness level of different kind of stakeholders (locals, public services etc).
Introductory Body Responsibility	EKBY- ICHTHYCA SA
Prerequisites needed for implementation	Funding
Support needed	

PRIORITY ACTION 3	**Public awareness, environmental education and training on the conservation of marine turtles**
Justification	The main threats to the conservation of marine turtles come mainly by activities that are not sited or operated in such a way as to conserve their populations. This is partly due to the low appreciation of the conservation values of marine turtles by local people, tourists and fishermen. There is also a lack in trained personnel working in protected areas.
Description	Establishment of information stations in the vicinity of nesting areas. Creation and dissemination of information material, especially for particular groups (e.g fishermen). Preparation of live presentations and portable kits for educational purposes. Organisation of school visits to nesting areas, information and rescue centres. Organisation of specific seminars for teachers. Co-operation with mass media. Organisation of training courses in Greece and participation in relative courses abroad addressed to personnel working in protected areas. Training of fishermen to tag and release turtles (especially when in comatose state).
Targets	Participation of local people in conservation efforts. Involvement of local authorities in conservation measures. Raised appreciation and environmental awareness level of different kind of stakeholders (locals, public services, fishermen etc). Capacity building of management bodies in protected areas.
Introductory Body	ARCHELON
Prerequisites needed for Implementation	Co-operation with local authorities and Ministry of Agriculture. Experience in the training courses addressed to personnel working in protected areas. Funding.
Support needed	

PRIORITY ACTION 4	**Raising the awareness on the importance of uninhabited islets and rocky coasts for birds**
Justification	Proper wardening of all islets and coasts in Greece will never be possible. At the same time at least 80% of the disturbance cases of birds and all cases of transportation of pets on islets are results of ignorance. Public, all too often, do not realise the severe effects of disturbance and presence of mammals on the breeding sites.
Description	Public awareness campaigns on the importance of islets and coasts for breeding birds and the negative effects of human disturbance and terrestrial mammals. Awareness actions targeting the pertinent authorities (port police, coast guard, forest services etc) involved in the management and safeguarding of islets.
Targets	Raising awareness of local communities and tourists of the importance of islets and coasts for breeding seabirds. Raising awareness of pertinent authorities of the importance of islets and coasts for breeding seabirds and the role in preventing disturbance and

	transportation of mammals on breeding seabirds. Actions should be implemented to all SPAs and to the IBAs that are important for the 6 priority bird species.
Introductory Body	HOS
Prerequisites needed for implementation	Funding, collaboration with local authorities and public services.
Support needed	

PRIORITY ACTION 5	**Education and public awareness on the conservation of cetaceans**
Justification	The public is unaware of the presence, the ecological significance and the risk of extinction of most cetacean species. Fishermen are unaware of the role of cetaceans in regulating fish stock health and the alternative ways of exploiting marine resources.
Description	Preparation and distribution of educational material (leaflets, books, CDs, internet page etc.), seminars, presentations.
Targets	Active involvement of the public in general and particularly local communities in the conservation of cetaceans
Introductory Body	Pelagos Cetacean Research Institute
Prerequisites needed for implementation	Funding.
Support needed	

PRIORITY ACTION 6	**Implementation of a public awareness campaign at national and local scale for the conservation of Mediterranean monk seal**
Justification	All major threats for the conservation of Mediterranean monk seal are either directly or indirectly related to human activities. Thus, it is necessary to increase the awareness and the appreciation of the general public and the local people for the conservation values of Mediterranean monk seal, in terms of the potential for sustainable development in the areas where it is found.
Description	The campaign will be designed for all relevant stakeholders (fishermen, tourism operators, local and national decision makers, tourists, local communities and general public) at national and local scale. Production of printed and electronic material, communication with mass media.
Targets	Increased awareness of local communities and of the general public for the need to conserve the Mediterranean monk seal and its habitat and the natural environment in general. Raised environmental awareness of relevant stakeholders and policy makers so as to promote sustainable development measures in their policy agendas.
Introductory Body	MOm
Prerequisites needed for implementation	Funding
Support needed	

IV. INVESTMENT PORTFOLIO

Please note that the costs are only indicative, and of the proponents responsibility; the proponent should be contacted for further analysis or justification

V.1. *Posidonia meadows*

Priority Actions	Targets	Estimated cost in US $
Inventory and mapping of *Posidonia* meadows on the Greek coasts	Production of maps of *Posidonia* meadows at 1:10.000 scale. Storing of inventory data in the database which can be used as the baseline information for management and monitoring purposes.	1,500,000
Elaboration of a specific management guide for the conservation of *Posidonia* meadows	Identification of measures and actions for the sustainable management of *Posidonia* meadows in the Greek coast.	150,000
Training and public awareness on the conservation of *Posidonia* meadows	Increased appreciation of the local communities for the conservation values of *Posidonia* meadows and the potential economic benefit from their sustainable use. Raising the appreciation and environmental awareness level of different kind of stakeholders (locals, public services etc).	300,000

V.2. Lagoons

Priority Actions	Targets	Estimated cost in US $
Inventory and mapping of Greek lagoons and small coastal wetlands	Production of wetland habitat maps (to support wetland delineation and monitoring of wetland area). Storing of inventory data in the MedWet database which can be used as the baseline information for management and monitoring purposes. Typology of lagoons and small coastal wetlands.	470,000
Assessment of the functions of the lagoons and determination of the necessary measures for their restoration	Determination of the necessary measures for the sustainable management of lagoon ecosystems.	1,500,000
Elaboration of water management plans at lagoons watersheds	Identification of measures and actions for sustainable water management in lagoons' watersheds.	2,200,000
Elaboration of management plans for fisheries in lagoons	Sound management of fisheries in terms of biodiversity conservation.	2,421,130
Training and public awareness on the conservation of lagoons	Increased appreciation by the local communities of the conservation values of lagoons and of the potential economic benefit from their sustainable use.	500,000

	Raised appreciation and environmental awareness level of different kind of stakeholders (locals, public services, etc).	

V.3. Marine turtles

Priority Actions	Targets	Estimated cost in US $
Research and monitoring of marine turtle populations	Determination of population trends. Determination of critical habitats. Determination of management priorities to enhance survival of populations.	320,000 annually
Elaboration of a National Action Plan for the conservation of marine turtles	A comprehensive document to be useful to natural resources managers and competent authorities for future development or exploitation plans in or near marine turtle habitats.	20,000
Establishment of proposed protected areas at major nesting sites of marine turtles	Legal protection of major nesting sites. Application of existing management plans	
Operation of a rescue centre, first aid stations and stranding network for marine turtles	Reduce mortality of turtles at sea	100,000 annually
Collaboration with fishermen on the conservation of marine turtles	Reduced mortality of turtles at sea.	
Public awareness, environmental education and training on the conservation of marine turtles	Raised appreciation and environmental awareness level of different kind of stakeholders (locals, public services, fishermen etc). Capacity building of management bodies in protected areas.	450,000

V.4. Birds of islet, rocky coasts and the sea, birds of coastal lagoons

Priority Action	Targets	Estimation cost in US$
Studies on the effects of fishing on seabirds	Better knowledge, based on scientific research, on the effects of fishing to seabirds with specific reference to areas surrounding important seabird colonies.	120,000
Elaboration of management plans for protected areas with uninhabited islets and coasts and priority bird species	Management plans for 20 SPAs with uninhabited islets and coasts and priority bird species	110,000
National Action Plans for priority bird species	National Action Plans for 9 priority species (cory's and yelkouan shearwater, storm petrel, shag, audouin's gull, eleonora's falcon, dalmatian pelican, greater flamingo, slender-billed curlew).	60,000

Safeguarding and law enforcement of lagoons	Diminishing of illegal activities at Ramsar wetlands and at all major SPAs.	100,000
Raising the awareness on the importance of uninhabited islets and rocky coasts for birds	Raising awareness of local communities and tourists of the importance of islets and coasts for breeding seabirds. Raising awareness of pertinent authorities of the importance of islets and coasts for breeding seabirds and their role in preventing disturbance and transportation of mammals on breeding seabirds.	55,000
Prevention of human intrusion on uninhabited islets and rocky coasts with specific reference to disturbance, transportation and introduction of mammals	Regulatory acts for all islets and rocky coasts for the conservation of breeding birds. Disturbance of breeding birds and transportation of mammals on nesting areas identified as a strictly illegal action.	

V.5. Cetaceans

Priority Action	**Targets**	**Estimation cost in US$**
Data collection on the present situation of cetacean population units inhabiting the Greek Seas	Abundance estimations for the population unit of each cetacean species inhabiting the Greek Seas. Definition of critical areas for conservation priority species.	550,000
Establishment of a national stranding network for cetaceans	Monitoring of cetacean population health and causes of death.	400,000
Monitoring of priority cetacean species population units	Estimations of population trends for priority cetacean species.	2,400,000
Preparation and enforcement of national legislation for the conservation of cetaceans	Create a legislative framework and guidelines regulating activities that are compatible or incompatible with cetacean conservation.	20,000
Education and public awareness on the conservation of cetaceans	Active involvement of the public in general and particularly local communities in the conservation of cetaceans.	80,000

V.6. Mediterranean monk seal

Priority Action	Targets	Estimation cost in US$
Assessment of the magnitude and impact of the seal-fisheries interaction and implementation of measures to alleviate this conflict	Assessing the impacts of seal - fisheries interaction. Evaluation of possible measures and identification of appropriate measures to alleviate the conflict.	250,000 (for the next three years)
Establishment and management of a national network of protected areas for the conservation of Mediterranean monk seal	Conservation of the important breeding populations and the key breeding habitats of the species in the country.	3,750,000 (for the next three years)
National Action Plan for the conservation of Mediterranean monk seal	National Action Plan for the conservation of the species.	100,000
Monitor the status of the species at a national scale through the operation of the National Information Network for the Mediterranean monk seal	Assessment of species status and trends at the national scale. Identification of important incidents (epidemics) that will allow for immediate response (national stranding network). National inventory on the seal populations (habitats, populations, individual animals).	400,000 (for the next three years)
Implementation of a public awareness campaign at national and local scale for the conservation of Mediterranean monk seal	Increased awareness of local communities and of the general public for the need to conserve the Mediterranean monk seal and its habitat and the natural environment in general and Raised the environmental awareness of relevant stakeholders and policy makers so as to promote sustainable development measures in their policy agendas.	1,340,000 (for the next three years)

VI. SUGGESTED FOLLOW – UP

VI.1. National Biodiversity Strategy

Follow up proposals are approached on the basis of gaps identified and presented in Chapter II.3, the thematic analysis of the "key issues" and the overall assessment in Chapter III. Under this light, the priorities already set at the national level and presented in Chapter II.4, should be complemented and / or specified for the benefit of the coastal and marine biodiversity conservation, and should appear in the final edition of the National Biodiversity Strategy of the country, and the respective Action Plan on Marine and Coastal Biodiversity.

VI.2. The setting up of a network of protected areas

A specific issue to be addressed is to ensure that sites hosting protected coastal and marine habitats and species are given priority in the establishment and management of protected areas. The sites included in the National List of pSCIs and the already classified SPAs are considered to adequately represent the marine and coastal biodiversity of the country, and therefore efforts must be invested in setting up and managing the NATURA 2000 sites, ensuring the appropriate short, medium and long term funding mechanisms. The requirements for each site separately are:

- elaboration of a documentation and zoning study (the Specific Environmental Study, by Law 165/86),
- approval and consequent issuing of relevant legislation,
- institutional arrangements for its management (establishment of management organization, or management agreement or any other type foreseen by Law 2742/99),
- the elaboration of a Management Plan and its implementation, with regard to
  - management of species and habitats,
  - management of natural resources,
  - visitor management, education and interpretation,
  - buildings, infrastructure, equipment,
  - administration, public relations and affiliations,
  - research, surveys and monitoring

  The requirements of setting up and supporting a network of protected areas should also be addressed mainly by
    - maintaining national databases on the protected areas,
    - developing national monitoring databases,
    - developing guidelines on specific issues at the national level
    - ensuring communication between site managers and central authorities
    - providing legal assistance, training and management guidance to site managers
    - developing national policies for the support of the sites

Future work should also be oriented towards the designation of coastal sites of the NATURA 2000 Network as SPA and progressively contribute to the building up of the SPAMI list at the Mediterranean level.

VI.3. Endangered / protected habitats and species of the coastal zone

The endangered /protected habitats and species represent an area where continuous attention is required, whether or not they are considered "flag species" like marine turtles, or monk seals, or they are inside/outside protected areas. Follow up actions in this direction should include:

- Complete inventories of distribution,
- Common criteria for evaluation of conservation status at the national level
- Evaluation of threats and management guidelines based, if possible to applied research
- Monitoring guidelines
- Public awareness actions
- Implementation mechanisms of the above

The actions mentioned above could be all included in the elaboration of National Action Plans, in order to be given priority for funding.

VI.4. Improvement of management applications at the national level

The need to improve the management applied to the coastal zone with regard to biodiversity, at a national scale (i.e. also outside protected areas) has been a common position of all contributors and participants to the consultation process. This would include

- enhancement of surveillance and control mechanisms,
- continuous public awareness actions and
- communication between stakeholders;
- enhancement of collaboration and co-ordination amongst competent authorities;
- addressing negative interactions between the users of the coastal zone and protected species/ habitats;
- updating of regulations.

It was also thought that it is possible to improve existing management applications in the coastal and marine environment for the benefit of biodiversity, with the available information and means. Some of the actions indicated to this direction were the following:

- Delineation of the public land on the coastline, with emphasis on the NATURA 2000 sites (Ministry of Finance)
- More systematic surveillance of the coastline in the NATURA 2000 sites, with regard to fishing activities (Ministry of Mercantile Marine)
- Delineation of the known *Posidonia* meadows and better enforcement of existing prohibitions of trawlers (Ministry of Agriculture- Fisheries, Ministry of Mercantile Marine, National Fishermen Co-operative)
- Joint development of management guidelines for lagoon fisheries that favor biodiversity (Ministry of Agriculture-Fisheries, Ministry of Environment)
- Elaboration of an updated list of protected species (Ministry of Agriculture-Ministry of Environment)
- Examination of prerequisites in the view of developing schemes for the compensation of coastal fishermen for damages caused by marine protected species (Ministry of Agriculture-Ministry of Environment)

- Strengthened application of existing regulations for technical works in the marine environment, for constructions of ports, for collection and disposal of wastes from ships and land based infrastructure, existence of equipment for the implementation of contingency plans (Ministry of Mercantile Marine)
- Evaluation of impacts of anchoring of recreation vessels on *Posidonia* prairies (Ministry of Mercantile Marine)
- Inventories and mapping of important parts of the coastal zone; Elaboration of Integrated Coastal Zone Management Plans; Collaboration of relevant authorities in monitoring and evaluating environmental parameters, as well as in taking measures for dealing with "crisis" events; Public awareness campaigns; Enhancement of control mechanisms; Compensation for loss of income; Compilation of water resource management plans (Ministry of Agriculture-Ministry of Environment)

VI.4. Strategic development of know-how at the national and Mediterranean levels

The need to develop techniques and know-how for the effective management of the coastal and marine ecosystems and biodiversity is thought as a very important follow up direction.

One strategic approach to this would include:
large scale assessment and description of biotic communities of the coastal and marine ecosystems;

- development of evaluation criteria for their conservation status
- development of indicators,
- development of monitoring programmes,
- scientific net-working and clearing house mechanism for relevant information

Another strategic approach would include the further development of techniques at the on the basis of existing know –how and their implementation at a Mediterranean scale for key issues already identified. Such work can surely be achieved for the following actions:

- Inventory and mapping of *Posidonia* meadows
- Inventory and mapping of lagoons and small wetlands according to the MedWet method in the Mediterranean countries
- Further implementation of monitoring programmes for marine turtles in the Eastern Mediterranean
- Inventory and monitoring of sites hosting sea birds/Studies on the effects of fishing on seabirds
- Data collection on the present situation of cetacean population units/ establishment of guidelines for stranded animals
- Assessment of the magnitude and impact of the monk seal-fisheries interactions and implementation of measures to alleviate this conflict, in sites currently holding importance for the species.

-

LITERATURE

ACCOBAMS. 2002. Cetaceans of the Mediterranean and Black Seas. State of knowledge and conservation strategies. G. Notarbartolo di Sciara (ed.) Document ACCOBAMS/MOP1/Inf.6 presented to the 1st Meeting of the Parties of ACCOBAMS, February 2002, Monaco, 219pp.

Adamantopoulou, S., E.Androukaki, P. Dendrinos, E. Tounta and S. Kotomatas. 1999. Evidence on the movements of the Mediterranean monk seal *Monachus monachus* in Greece. 13th Biennial Conference on the Biology of Marine Mammals, Maui, Hawaii, 28 November - 3 December 1999.

Adamantopoulou, S., E. Androukaki and S. Kotomatas.1996. The distribution of the Mediterranean monk seal in Greece. 7th International Congress on the Zoogeography and Ecology of Greece and the Adjacent Regions. Athens, May 1996.

Adamantopoulou, S., E. Androukaki and S. Kotomatas. 1996. The distribution of the Mediterranean monk seal, *Monachus monachus*, in Greece. The World Marine Mammal Science Conference. Workshop on the Biology and Conservation of the World's Endangered Monk Seals, Monaco, January 1998.

Aguilar, A., L. M. Gonzalez and L. F. Lopez-Hurado. 1998. The Mediterranean monk seal die-off in the Western Sahara. The World Marine Mammal Science Conference. Workshop on the Biology and Conservation of the World's Endangered Monk Seals, Monaco, January 1998.

Androukaki, E. and E. Tounta. 1994. A study of the distribution and pathology of cetaceans in Greece. In European Research on Cetaceans – 8 (P.G.H. Evans, ed.), European Cetacean Society, Cambridge, pp. 203-205.

Androukaki, E., S. Adamantopoulou, P. Dendrinos, E. Tounta and S. Kotomatas. 1996. Mortality causes of the Mediterranean monk seal (*Monachus monachus*) in Greece. 7th International Congress on the Zoogeography and Ecology of Greece and the Adjacent Regions. Athens, May 1996.

Androukaki, E., S. Adamantopoulou, P. Dendrinos, E. Tounta and S. Kotomatas. 1996. Causes of death in the Mediterranean monk seal (*Monachus monachus*) in Greece. The World Marine Mammal Science Conference. Workshop on the Biology and Conservation of the World's Endangered Monk Seals, Monaco, January 1998.

Androukaki, E., E. Fatsea, L. Hart, A. D. Osterhaus, E. Tounta and S. Kotomatas. 2002. Growth and development of Mediterranean monk seal pups during rehabilitation. 16th European Cetacean Society Annual Conference, Liege 7-11 April 2002.

Archipelagos-Mom. 1996. Strategy for the Protection of the Mediterranean monk seal in Greece. Archipelagos-MOm, Athens, Greece.

Cebrian, D. and C. Papaconstantinou. 1992. Distribution of Cetaceans in Greece, 1990-1992. Rapp. Comm. int. Mer Médit., 33, 287-288.

Dafis ,S., E. Papastergiadou, K. Georghiou, D. Babalonas, T. Georgiadis, M. Papageorgiou, E. Lazaridou and V. Tsiaoussi. 1996. Directive 92/43/EEC, the Greek "Habitat" Project NATURA 2000: An Overview. Life Contract B4-3200/94/756, Commission of the European Communities DG XI, The Goulandris Natural History Museum - Greek Biotope/Wetland Centre (EKBY). 917 p.

Dendrinos, P., E. Tounta and S. Kotomatas. 1998. Status and Conservation of the Monk Seal population in the Marine Park of Alonnissos - N. Sporades, Greece. The World Marine Mammal Science Conference. Workshop on the Biology and Conservation of the World's Endangered Monk Seals, Monaco, January 1998.

Dendrinos, P., E. Tounta and S. Kotomatas. 1999. A field method for age estimation of Mediterranean monk seal pups. 13th Biennial Conference on the Biology of Marine Mammals, Maui, Hawaii, 28 November - 3 December 1999.

Dendrinos, P., E. Tounta, S. Kotomatas and A. Kottas. 1993. Recent data on the Mediterranean monk seal population of the Northern Sporades. 6th International Congress on the Zoogeography and Ecology of Greece and the Adjacent Regions.

Dendrinos, P., S. Kotomatas and E. Tounta. 1996. Monk seal pup production in the National Marine Park of Alonnissos - N. Sporades. 7th International Congress on the Zoogeography and Ecology of Greece and the Adjacent Regions. Athens, May 1996.

Dimopoulos, P., E. Papastergiadou, K. Sykora, Th. Georgiadis, D. Babalonas and S. Dafis. 1995. Inventory of phytosociological data on the vegetation of Greece. The Goulandris Natural History Museum, Greek Biotope /Wetland Centre (EKBY), 94 p. (in Greek)

Dosi, A., S. Adamantopoulou, P. Dendrinos, S. Kotomatas, E. Tounta and E. Androukaki. 2002. Analysis of heavy metals in blubber and skin of Mediterannean monk seal. 16th European Cetacean Society Annual Conference, Liege 7-11 April 2002.

European Commission - COM (95) 511. Communication from the Commission to the Council and the Parliament concerning Integrated Coastal Zone Management. Brussels.

Frantzis, A., Swift R., Gillespie, D., Menhennett, C., Gordon, J. and S. Gialinakis. 1999. Sperm whale presence off south-west Crete, Greece, eastern Mediterranean. In European Research on Cetaceans – 13 (P.G.H. Evans, J. Cruz & J.A. Raga eds), European Cetacean Society, Valencia, pp. 214-217.

Frantzis, A., Alexiadou, P., Politi, E., Gannier, A. and M. Corsini-Foka. 2001.- Cetacean fauna of the Greek Seas: Unexpectedly high species diversity. In European Research on Cetaceans – 15 (P.G.H. Evans ed.), European Cetacean Society, Rome, *in press*.

Frantzis, A., Gordon, J., Hassisdis, G. and A. Komenou. 2001. The enigma of harbor porpoise presence in the Mediterranean Sea. Mar. Mam. Sci., 17, 4, 937-944.

Frantzis, A. and P. Alexiadou. Cetaceans of the Greek Seas. Monographs on Marine Sciences – 5, National Centre for Marine Research, Athens, *in press*.

Glain, D., S. Kotomatas and S. Adamantopoulou. 1999. Fishermen and seal conservation: Survey of attitudes towards monk seals in Greece and grey seals in Cornwall. 13th European Cetacean Society Annual Conference, Seal Workshop, Valencia, Spain, 5 April 1999.

Hammond, P.S. and C. Lockyer. 1988. Distribution of killer whales in the eastern North Atlantic. Rit Fiskideildar, 11, 24-41.

Haritonidis, S., E. Lazaridou and S. Orfanidis. Checklist of the benthic marine algae of the Greek coasts. Mediterannean Marine Science. (in press).

Harwood, J. 1987. Population Biology of the Mediterranean monk seal in Greece. SMRU report 72p.

Hiby, A.R. and J.S. Jeffrey. 1987. Census techniques for small populations, with special reference to the Mediterranean monk seal in Greece. Report to the European Communities. Contract no. ENV 853 (UK).

Jacobs, J.† and A. Panou. 1988. Conservation of the Mediterranean monk seal, *Monachus monachus*, in Kefallonia, Ithaca and Lefkada island, Ionian Sea, Greece. Institute of Zoology, University of Munich, Germany. Final report to the EC. Contract 6611/28. 221 p.

Jacobs, J.† and A. Panou. 1996. Conservation Program for the Ionian: Activity 1: Kefallonia & Ithaca. WWF project GR0034, Final progress report.

Karavellas, D. 1994. The state of fisheries in the Ionian Sea with particular reference to the habitat of the Mediterranean monk sea, *Monachus monachus*. WWF-Greece, First draft report.

Karavellas, D., C. Papaconstantinou, C. Vassilopoulou and P. Papageorgiou. 1996. Coastal fisheries survey on Zakynthos, Greece. WWF-Greece, Project report.

Karavellas, D., G. Ioannou and A. Samaras. 1996. Integrated Ionian project for the study and conservation of the Mediterranean monk seal, *Monachus*, on Zakynthos. WWF-Greece, Final progress LIFE-project report.

Lazaridou, E. 1998. Report for the species of Annexes II and III of the new Protocol (1995) of the Barcelona Convention (species that are present in the Greek Seas and their conservation status). Ministry of Environment, Physical Planning and Public Works - Greek Biotope/Wetland Centre (EKBY). 32 p.

IUCN/SSC, Seal Specialist Group, Captive Breeding Specialist Group, Elliniki Etairia. 1994. Mediterranean monk Seal (*Monachus monachus*). Greek population and habitat Viability Assessment. 1st draft.Workshop report. 180 p.

Ministry of Environment, Physical Planning and Public Works, 1999, National Master Plan for the natural environment, contractor: OIKOS – Nature Management Ltd

Ministry of Environment, Physical Planning and Public Works, 2000, Study of Guidelines for Protected Area Management, contractor: OIKOS – Nature Management Ltd

McBrearty, D.A., Message, M.A., and G.A. King. 1986. Observations on small cetaceans in the north-east Atlantic Ocean and the Mediterranean Sea: 1978-1982. In Research on dolphins (M.M. Bryden & R. Harisson eds), Clarendon Press, Oxford: 225-249.

MOm/HSSPMS. 1993. Continuation of Establishment of a Rescue Network for Orphan, Wounded and Sick Seals and Gathering of Seal Observations from the Whole of Greece. Progress Report. April 1992 - March 1993. pp. 1 - 16 + Appendices.

MOm/HSSPMS. 1994. Continuation of the Monitoring of the Monk Seals in the National Marine Park of Northern Sporades. Progress report. January 1993 -December 1993. 12 p.

MOm/HSSPMS. 1997. Environmental education in schools with emphasis on the Mediterranean monk seal. Activities report 1996-1997.

MOm/HSSPMS. 1999. Monk Seal Status Report. The Mediterannean Monk Seal in Greece: Conservation in Action, LIFE - Nature B4/3200/96/500, Athens, January 1999.

MOm/HSSPMS and SRRC. 1991. The rehabilitation of an orphaned Mediterranean monk seal (*Monachus monachus*) in the National Marine Park of the N. Sporades, Greece. Report. 31 p.

MOm/HSSPMS. 1995. Surveillance and Safeguarding of the Sensitive Area of the Northern Sporades. Final report. Co. EU 4-3010(92) 7829.

MOm/HSSPMS. 1995. The Seal Treatment and Rehabilitation Centre. Activities 1994.

MOm/HSSPMS. 1995. The Seal Treatment and Rehabilitation Centre. Activities 1995-1996.

MOm/HSSPMS. 1996. Monk Seal Conservation in Greece. Part 1. Coastal and Island Greece. Final Report for the European Commission Project B4-3040/95/009/AO/D2

MOm/HSSPMS, (1998). The Seal Treatment and Rehabilitation Centre. Activities 1997.

MOm/HSSPMS, (1999). The Seal Treatment and Rehabilitation Centre. Activities 1998.

MOm/HSSPMS, (2000). The Seal Treatment and Rehabilitation Centre. Activities 1999.

MOm/HSSPMS, (2001). The Seal Treatment and Rehabilitation Centre. Activities 2000.

MOm/HSSPMS, (2002). The Seal Treatment and Rehabilitation Centre. Activities 2001.

NOTARBARTOLO DI SCIARA, G. & DEMMA, M. 1997.- Guida dei Mammiferi Marini del Mediterraneo. Franco Muzzio Editore, Padova, 264 pp.

Notarbartolo di Sciara, G. and J. Gordon. 1997. Bioacoustics: A tool for the conservation of cetaceans in the Mediterranean Sea. *Mar. Fresh. Behav. Physiol.* 30:125-46.

Panou A., J. Jacobs and D. Panos (1993). The endangered Mediterranean monk seal *Monachus monachus* in the Ionian Sea, Greece. Biological Conservation, 64: 129 - 140.

Politi, E. and Bearzi, G. 2001.- Evidence of rarefaction for a coastal common dolphin community in the eastern Ionian Sea. In European Research on Cetaceans – 15 (P.G.H. Evans ed.), European Cetacean Society, Rome, *in press*.

Reijnders, P., S. Brasseur, J. van der Torn, P. van der Wolf, I. Boyd, J. Harwood, D. Lavigne and L. Lowry. 1993. Seals, Fur Seals, Sea Lions and Walrus. Status Survey and Conservation Plan. IUCN/SSC Seal Specialist Group. 88 p.

Reijnders, P., G. Verriopoulos and S. Brasseur. 1997. Status of the Pinnipeds relevant to the European Union. IBN Scientific Contributions 8. pp. 12 - 26.

Reijnders, P.J.H. and E.H. Ries. 1989. Release and Radiotracking of two Rehabilitated Monk Seals in the Marine Park of Northern Sporades, Greece. Rep. RIN to EEC, IFAW. 17 p.

Ristow, D. 1999. International Species Action Plan for the Eleonora's falcon (*Falco eleonorae*). BirdLife International. 34 pp.

Stergiou, K. I., E.D. Christou, D. Georgopoulos, A. Zenetos and C. Souvermezoglou. 1997. The Hellenic seas: physics, chemistry, biology and fisheries. – Oceanography and Marine Biology: an Annual Review, 35: 415-538.

Hart, L. and E.J. Vedder. 1990. The rehabilitation of two new-born Mediterranean monk seals (*Monachus monachus*) in the Seal Rehabilitation and Research Centre (SRRC) in Pieterburen, the Netherlands. Report SRRC, January 1990. pp. 1-17.

Tsouknides, A. and A. Georgousopoulos. 1992. Present situation - problems – in lagoons and inland waters (lakes-rivers). Fisheries News. 128: 128: 70-84. (in Greek).

Vangeluwe D., S. Kazantzidis and G. Handrinos (editors). 1999. Conservation action for the Slender-billed Curlew. Final Report, LIFE NATURE Contract No. b4-3200/95/853. Greek Ministry of Agriculture, Institure Royal des Sciences Naturelles de Belgique, Federiationdes Associations de Chaseurs de l' UE, Budesampt fur Naturschutz, Sea Mammal Research Unit. Athens, 91 pp.

Zalidis C. G. and A. L. Mantzavelas (editors). 1994. Inventory of Greek wetlands as Natural resources (First approximation). Greek Biotope/Wetland Centre (EKBY). English edition. xvi + 448 p.

ANNEX I

Table 1. List of marine habitat types, according to the Palaearctic Classification, identified in the frame of the project: "Identification and description of habitat types in areas of interest for the conservation of nature of Greece".

11. OCEAN AND SEAS, MARINE COMMUNITIES
11.1 Open marine waters
11.12 Shelf and slope waters
11.122 Offshore waters
11.12242 Mediterranean offshore waters
11.123 Continental slope
11.125 Shoals
11.2 Benthic communities
11.215 Hydrothermal benthic communities
11.22 Sublittoral soft seabeds
11.23 Sublittoral pebbly seabeds
11.24 Sublittoral rocky seabeds and kelp forests
11.25 Sublittoral organogenic concretions
11.252 Encrusting algae pavements
11.26 Sublittoral cave communities
11.27 Soft sediment littoral communities
11.28 Pebbly shore littoral communities
11.29 Rocky shore littoral communities
11.295 Mediolittoral rock pools
11.296 Supralitttoral rocks
11.297 Supralitttoral rock pools
11.2A Littoral communities of organogenic concretions
11.3 Sea-grass meadows
11.331 Mediterranean *Cymodocea* beds
11.332 Mediterranean *Zostera* beds
11.3322 Mediterranean eelgrass beds
11.34 *Posidonia* beds
11.362 Mediterranean *Halophila* beds
12. SEA INLETS AND COASTAL FEATURES
12.1 Open linear coasts
12.2 Semi – enclosed coasts
12.4 Enclosed embayments
12.7 Sea - caves
13.2 Estuaries
14. MUD FLATS AND SAND FLATS
21. COASTAL LAGOONS

Table 2. List of terrestrial coastal habitat types, according to the Palaearctic Classification, identified in the frame of the project: "Identification and description of habitat types in areas of interest for the conservation of nature of Greece".

1 . COASTAL AND HALOPHYTIC COMMUNITIES
15. SALTMARSHES, SALT STEPPES, SALT SCRUBS
15.11 Glasswort swards
Thero-Salicornietea
15.5 Mediterranean and thermo-Atlantic salt meadows
15.6 Mediterraneo-nemoral saltmarsh scrubs
15.72 Mediterranean halo-nitrophilous scrubs
15.8 Mediterranean salt steppes
16.12 Sand beach driftline communities
16.211 Embryonic dunes
16.212 White dunes
16.223 Mediterraneo-Atlantic grey dune communities
16.224 East Mediterranean grey dune communities
16.228 Tethyan dune deep sand therophyte communities
16.27 Dune juniper thickets
16.28 Dune sclerophyllous scrubs and thickets
16.29 Wooded dunes
16.3 Humid dune-slacks
16.35 Dune-slack reedbeds, sedgebeds and canebeds
17.2 Shingle beach drift lines and pioneer swards
18. SEA-CLIFFS AND ROCKY SHORES
18.22 Tethyan sea-cliff communities
32. SCLEROPHYLLOUS SCRUB
32.1 Arborescent matorral
32.12 Olive and lentisc matorral
32.131 *Juniperus oxycedrus* arborescent matorral
32.132 *Juniperus phoenicea* arborescent matorral
32.2 Thermo-Mediterranean shrub formations
32.21 Thermo-Mediterranean brushes, thickets and heath-garrigues
32.211 Oleo-lentisc brush
32.2123 Eastern *Erica manipuliflora* heath-garrigues
32.213 Thorny burnet brush
32.214 Lentisc brush
32.215 *Calicotome* brush
32.216 Laurel thickets
32.217 Coastal *Helichrysum* garrigues
32.218 Myrtle thickets
32.2193 Hellenic thermo-Mediterranean kermes oak brush
32.21A4 Eastern *Phillyrea* thickets
32.22 Tree-spurge formations
32.23 Diss-dominated garrigues
32.24 Palmetto brush
32.25 Euro-mediterranean pre-desert scrub

Table 2. (continued).

32.26 Thermo-mediterranean broom fields (*retamares*)
32.3 Meso-Mediterranean silicicolous maquis
32.4 Western meso-mediterranean calcicolous garrigues
32.5 Eastern garrigues
32.51 Eastern kermes oak garrigues
32.53 Eastern *Cistus* garrigues
32.54 Eastern spurge garrigues
32.56 Eastern lavender garrigues
32.57 Eastern sage and other labiates garrigues
32.58 Christ's thorn garrigues
32.5A *Ebenus* brushes
32.5B Eastern *Helichrysum* and other composite garrigues
32.5C Eastern *Erica* garrigues
32.5D Andrachne garrigues
32.5E Eastern *Globularia* garrigues
32.5F Eastern *Helianthemum* and *Fumana* garrigues
32.5G Eastern *Thymelaea* garrigues
32.5H Eastern *Bupleurum* garrigues
32.9 Ermes
32.A Spanish-broom fields
32.B Illyrian garrigues
33. PHRYGANA
33.3 Aegean phryganas
33.31 Aegean *Sarcopoterium* phryganas
33.32 Maritime *Centaurea spinosa* phryganas
33.33 Lesbian *Centaurea spinosa* phryganas
33.331 Lesbian *Centaurea-Sarcopoterium* phryganas
33.332 Lesbian *Sarcopoterium* phryganas
33.333 Lesbian steppe-phrygana
33.34 Cycladian *Centaurea* phryganas
33.35 Aegean heather phryganas
33.36 Aegean thyme phryganas
33.37 Aegean *Genista* phryganas
33.38 Aegean savory phryganas
33.39 Aegean spiny spurge phryganas
33.3A Aegean gromwell phryganas
33.3B Aegean *Anthyllis* phryganas
33.5 *Hypericum* phryganas
33.A Pantelleria phrygana
34.5 Mediterranean xeric grasslands
34.6 Mediterranean tall-grass and wormwood steppes
34.623 Cretan esparto steppes
34.8 Mediterranean subnitrophilous grasslands
34.81 Mediterranean subnitrophilous grass communities
34.84 Eastern Mediterranean subnitrophilous herb communities
35. DRY SILICEOUS GRASSLANDS

Table 2. (continued).

37. HUMID GRASSLAND AND TALL HERB COMMUNITIES
37.4 Mediterranean tall humid grasslands
37.7 Humid tall herb fringes
41. BROAD-LEAVED DECIDUOUS FORESTS
41.734 Aegean *Quercus anatolica* woods
41.735 Aegean *Quercus brachyphylla* woods
41.8 Mixed thermophilous forests
41.81 Hop-hornbeam woods
41.811 Mesomediterranean hop-hornbeam woods
42.8 Mediterranean pine woods
42.83 Stone pine forests
42.838 Hellenic stone pine forests
42.84 Aleppo pine forests
42.848 Hellenic Aleppo pine forests
42.85 Aegean pine forests
42.851 Aegean pine forests of Crete
42.852 Aegean pine forests of Lesbos
42.853 Aegean pine forests of Samos
42.854 Aegean pine woods of Chios
42.855 Aegean pine forests of Thasos
42.856 Aegean pine woods of Samothrace
42.857 Aegean pine forests of Rhodes
42.858 Aegean pine forests of Karpathos
42.859 Aegean pine forests of the Dodecanese
42.A Western Palaearctic cypress, juniper and yew forests
42.A1 Western Palaearctic cypress forests
44. TEMPERATE RIVERINE AND SWAMP FORESTS AND BRUSH
44.123 Balkan riverine willow scrub
44.4 Mixed oak-elm-ash forests of great rivers
44.514 East Mediterranean alder galleries
44.6 Mediterraneo-Turanian riverine forests
44.61 Mediterranean riparian poplar forests
44.615 East Mediterranean poplar galleries
44.6151 Nestos riparian forests
44.6152 Hellenic white poplar riparian forests
44.62 Mediterranean riparian elm forests
44.63 Mediterranean riparian ash woods
44.636 Hellenic ash galleries
44.71 Oriental plane woods
44.711 Helleno-Balkanic riparian plane forests
44.72 Sweet gum woods
44.721 Rhodian sweet gum woods
44.81 Oleander, chaste tree and tamarisk galleries
44.811 Oleander galleries
44.812 Chaste tree thickets
44.813 Mediterraneo-Macaronesian tamarisk thickets

Table 2. (continued).

44.8133 East Mediterranean tamarisk thickets
44.81343 Saline eastern tamarisk stands
44.9 Alder, willow, oak, aspen swamp woods
44.913 Southern Helleno-Balkanic swamp alder woods
45. TEMPERATE BROAD-LEAVED EVERGREEN FORESTS
45.1 Olive-carob forests
45.11 Wild olive woodland
45.12 Carob woodland
45.2 Cork-oak forests
45.31 Meso-Mediterranean holm-oak forests
45.315 Corsican lowland holm-oak woodland
45.319 Illyrian holm-oak woodland
45.31C Greek holm-oak woodland
45.31D Cretan holm-oak woodland
45.7 Temperate palm groves
45.71 Cretan palm groves
53.1 Reed beds
53.2 Large sedge communities
65. CAVES

ANNEX II

A. List of international Conventions, Protocols, etc. signed/ratified by Greece

Legislative Decrees 4529/66 and 297/76

Ratification of the International London Convention "As to the prevention of sea pollution from oil"

Law 1147/18-4-1981 (Official Journal 110/A/23-4-1981)

Ratification of the London Convention (1972) "As to the prevention of sea pollution from residues and other substances disposal"

Law 314/76 (Official Journal 106/A/76)

Ratification of the International Brussels Convention "As to the civil responsibility impact from oil damages and pollution"

Law 855/23-12-78 (Official Journal 235/23-12-78)

"Convention for the Protection of the Mediterranean Sea against Pollution", ratification of the Barcelona Convention and the Protocols 1 for prevention of pollution in the Mediterranean from jettison and aeroplane waste disposal and 2 for fighting pollution from oil and other noxious substances in the Mediterranean.

Law 1634/17-7-86 (Official Journal 104/A/18-7-86)

"Ratification of protocols 3 for protecting the Mediterranean against pollution from land pollution sources and 4 as to the Especially Protected Mediterranean sites of the Barcelona Convention"

Law 1146/18-4-1981 (Official Journal 109/A/23-4-81)

"Amendments to the Convention concerning the Intergovernmental Maritime Organisation – IMO)".

Law 1269/20-7-82 (Official Journal 99/A/21-7-82)

"As to the prevention of sea pollution from ships". Ratification of the MARPOL Convention and the protocol for prevention from ship pollution.

Law 2252/94 (Official Journal 192/A/94)

Ratification of an international Convention "for readiness, co-operation and dealing with sea pollution from oil".

Legislative Decree 191/74 (Official Journal 350/A/29-11-74)

"As to the ratification of the International Ramsar Convention for the protection of wetlands of international importance".

Law 1757/88 (Official Journal 26/A/9-2-88)

"As to the ratification of the protocol amending the 1971 Ramsar Convention for the protection of wetlands of international importance especially as biotopes".

Law 1950/91 (Official Journal 84/A/31-5-91)

"Ratification of the amendments of the 1971 Ramsar Convention for the protection of wetlands of international importance especially as biotopes".

Law 1335/83

Ratification of the Bern Convention "on the Conservation of European Wildlife and Natural Habitats".

Law 2204/94 (Official Journal 59/A/15-4-94)

"Ratification of the Convention on Biological Diversity".

Law 2055/92

Ratification of the Convention "on International Trade in Endangered Species of Wild Flora and Fauna (CITES)".

Law 2321/95

Ratification of the Convention "on the Law of the sea".

Joint Ministerial Decision 41498/29-11-85

"Management measures for wild bird fauna in conformity with the 79/409/EEC directive as amended by the 81/854/EEC directive".

Joint Ministerial Decision 33318/3028/98

"On the conservation of natural habitats and of wild fauna and flora" (Directive 92/43/EEC).

B. List of national legislation

GENERAL ISSUES

Laws

Law 1650/86 (Official Journal 160/A/86)

"On the protection of the environment".

Law 2242/94 (Official Journal 162/A/94)

Urban planning of secondary residence areas in Habitat Control Zones, protection of the natural constructed environment and other provisions.

Law 2742/1999 (Official Journal 207/A99)

Physical planning and sustainable development and other regulations

Presidential decrees

Presidential Decree 1180/81 (Official Journal 293/A/81)

As to the regulation of issues relative to the foundation and operation of industries, manufactures, mechanical facilities of all kinds and warehouses and environmental from them protection in general.

Presidential Decree 28/93 (Official Journal 9/A/93)

Competence definition for the Minister and the interprefectural level regional services of the Ministry of Environment, Physical Planning and Public Works.

Joint Ministerial Decisions

Joint Ministerial Decision 69269/5387/90 (Official Journal 678/B/90)

Classification of works and activities into categories, subject-matter of the Environmental Impact Assessment (EIA), definition of the subject-matter of Special Environmental Studies (SES) and remaining relative provisions, in conformity with Law 1650/1986.

Joint Ministerial Decision 75308/5512/90 (Official Journal 691/B/90)

Definition of the means of informing citizens and their representatives about the subject-matter of the Environmental Impact and Activities Study, according to the paragraph 2 of article 5 of Law 1650/1986.

Joint Ministerial Decision 1661/94 (Official Journal 786/B/94)

Amendment and completion of the provisions of the Joint Decision No 69269/5387 of the Ministers of Environment, Physical Planning and Public Works and Tourism (Tourist facilities).

Joint Ministerial Decision 95209/94 (Official Journal 871/B/94)

Competence transfer to the Prefects regarding the environmental terms approval for certain works or activities pertaining to the first work and activity category of the article 3 of Law 1650/1986.

Joint Ministerial Decision 21631/95 (Official Journal 541/B/95)

Charging the General Secretaries of the Country's Regions, except for the Region of Attiki (poultry-cattle facilities), with the environmental terms approval for certain works or activities of the first work category of the article 3 of Law 1650/1986.

Joint Ministerial Decision 24635/95 (Official Journal 755/B/95)

Charging the General Secretaries of the Country's Regions, except for the Region of Attiki (tourist facilities), with the environmental terms approval for certain activities of the first work category of the article 3 of Law 1650/1986.

Joint Ministerial Decision 82742/95 (Official Journal 821/B/95)

Charging the General Secretaries of the Country's Regions, except for the Region of Attiki (biological treatments), with the environmental terms approval for certain activities of the first work category of the article 3 of Law 1650/1986.

WATER PROTECTION AND MANAGEMENT

Laws

Law 743/77 (Official Journal 319A/77)

As to the sea environment protection.

Law 1739/1987 (Official Journal 201/A/20-11-87)

“Water resources management and other provisions”.

Presidential Decrees

Presidential Decree 658/1981

As to the protection of fish fauna in lakes and rivers.

Presidential Decree 205/1990 (Official Journal 79/A/90)

“Establishment of higher limits for fine imposition on those breaking the legislation for the protection of sea environment”.

Presidential Decree 436/1994 (Official Journal 183/A/94)

“Obligations for ships carrying dangerous or polluting cargo”.

Ministerial decisions

Ministerial decision 181051/2079/78 (Official Journal 1135/B/78)

"Prohibition of disposal into sea for certain substances".

Ministerial decision 1-4-92 (Official Journal 62/A/13-4-92)

“Approval of the minutes of the Hellenic-Bulgarian experts joint committee meeting concerning monitoring and control of water and transboundary Evros, Nestos and Strimonas rivers' quality and quantity”.

Joint Ministerial Decisions

Joint Ministerial Decision 46399/1352/27-6-86 (Official Journal 438/B/86)

“Required quality for surface water used for drinking water, swimming, fish life in freshwater, shell-fish culture and fishing, measurement method, sampling frequency and analysis of surface water used as drinking water”.

Joint Ministerial Decision 18186/271/88 (Official Journal 126/B/3.3.88)

“Measures and limitations for the protection of aquatic environment and more specifically definition of marginal rates for dangerous substances in liquid waste”.

NATURAL ENVIRONMENT

Presidential decrees

Presidential decree 67/81 (Official Journal 23/A/30-1-81) and Presidential Decree 256/87 (Official Journal 114/A/7-6-87 – amendment)

“As to the protection of agrestial flora and wild fauna and definition of the procedure, co-ordination and monitoring of the relative research”.

FORESTS

Laws

Law 998/1979 (Official Journal 289/A/29-12-79)

“On the protection of forests and forest areas”.

PHYSICAL PLANNING – TOURISM

Laws

Rev. Law 1590

"Definition of the foreshore borderline".

Rev. Law 2344/1940(Official Journal A/154/40)

"As to the foreshore and coast".

Law 971/2001 (Official Journal 285A)

"Foreshore and coast and other regulation".

Rev. Law 827/48

"As to the completion of the Legislative Decree 180/46 on tourist sites'.

Law 1337/83 (Official Journal A/33/83)

The law provides for special protection regulations in coastal areas.

Law 2160 (Official Journal 118/A/93)

"On tourism"; it allows privatisation of public harbours and flowage lines and requires coastal zones for tourist facilities.

Law 2242/94 (Official Journal 162/A/3-10-84)

"Urban planning of secondary residence areas in Zones for Development Control, natural and constructed environment protection and other provisions".

Presidential decree

Presidential Decree 30-6-91

It allows hotel construction on the coast in main tourist coastal zones.

FISHERY

Laws

Legislative Decree 420/1970 (Official Journal 27/A/70)

"Fishing Code".

Presidential decree

Presidential decree 40/93

Prohibition of fishing with drift nets.

PROTECTION OF THE MARINE ENVIRONMENT – TECHNICAL WORKS AND CONSTRUCTIONS OF PORTS- PORT INSTALLATIONS

Laws

855/78, 1147/81, 743/77, 1269/94, 2252/94

Presidential decree
55/98, 68/95, 11/02
Ministerial Decisions
181051/2079/78, (joint) 3418/07/2002

ANNEX III

List of marine and coastal sites proposed by Greece as sites of Community Importance (NATURA 2000- pSCIs)

	SITECODE	SITE_NAME
1	GR1110007	DELTA EVROU KAI DYTIKOS VRAXIONAS
2	GR1130009	LIMNES & LIMNOTHALASSES TIS THRAKIS-EVRYTERI PERIOCHI KAI PARAKTIA ZONI
3	GR1150008	ORMOS POTAMIAS-AKR. PYRGOS EOS N. GRAMVOUSSA
4	GR1150009	KOLPOS PALAIOU-ORMOS ELEFTHERON
5	GR1150010	DELTA NESTOU & LIMNOTHALASSES KERAMOTIS-EVRYTERI PERIOCHI KAI PARAKTIA ZONI
6	GR1220001	LIMNES VOLVI KAI LAGKADA-EVRYTERI PERIOCHI
7	GR1220002	DELTA AXIOU-LOUDIA-ALIAKMONA-EVRYTERI PERIOCHI-AXIOUPOLI
8	GR1220003	STENA RENTINAS-EVRYTERI PERIOCHI
9	GR1220012	LIMNOTHALASSA EPANOMIS KAI THALASSIA PARAKTIA ZONI
10	GR1220005	LIMNOTHALASSA ANGELOCHORIOU
11	GR1250004	ALYKI KITROUS-EVRYTERI PERIOCHI
12	GR1260002	EKVOLES POTAMOU STRYMONA
13	GR1270002	OROS ITAMOS-SITHONIA
14	GR1270004	LIMNOTHALASSA AGIOU MAMA
15	GR1270007	AKROTIRIO ELIA-AKROTIRIO KASTRO-EKVOLI RAGOULA
16	GR1270008	PALIOURI-AKROTIRI
17	GR1270009	PLATANITSI-SYKIA: ÁKR. RIGAS-AKR. ADOLO
18	GR1270010	AKROTIRIO PYRGOS-ORMOS KYPSAS-MALAMO
19	GR1420004	KARLA - MAVROVOUNI - KEFALOVRYSO VELESTINOU-NEOCHORI
20	GR1430001	OROS PILIO KAI PARKATIA THALASSIA ZONI
21	GR1430003	SKIATHOS: KOUKOUNARIES KAI EVRYTERI THALASSIA PERIOCHI
22	GR1430004	ETHNIKO THALASSIO PARKO ALONNISOU - VOREION SPORADON, ANATOLIKI SKOPELOS
23	GR2110001	AMVRAKIKOS KOLPOS, DELTA LOUROU KAI ARACHTHOU (PETRA, MYTIKAS, EVRYTERI PERIOCHI)
24	GR2120001	EKVOLES (DELTA) KALAMA
25	GR2140001	EKVOLES ACHERONTA (APO GLOSSA EOS ALONAKI) KAI STENA ACHERONTA
26	GR2140003	PARAKTIA THALASSIA ZONI APO PARGA EOS AKROTIRIO AGIOS THOMAS (PREVEZA), AKR. KELADIO-AG. THOMAS
27	GR2210001	DYTIKES KAI BORIOANATOLIKES AKTES ZAKYNTHOU
28	GR2210002	KOLPOS LAGANA ZAKYNTHOU (AKR. GERAKI-KERI) KAI NISIDES MARATHONISI KAI PELOUZO
29	GR2210003	NISOI STROFADES
30	GR2220003	ESOTERIKO ARCHIPELAGOS IONIOU (MEGANISI, ARKOUDI, ATOKOS, VROMONAS)
31	GR2220004	PARAKTIA THALASSIA ZONI APO ARGOSTOLI EOS VLACHATA (KEFALONIA) & ORMOS MOUNTA
32	GR2220005	DYTIKES AKTES KEFALLINIAS - STENO KEFALLINIAS ITHAKIS - BORIA ITHAKI (AKROTIRIA GERO GOMPOS - DRAKOU PIDIMA - KENTRI - AG. IOANNIS)
33	GR2230001	LIMNOTHALASSA ANTINIOTI (KERKYRA)
34	GR2230002	LIMNOTHALASSA KORISSION (KERKYRA)
35	GR2230003	ALYKI LEFKIMIS (KERKYRA)
36	GR2230004	NISOI PAXI KAI ANTIPAXI
37	GR2230005	PARAKTIA THALASSIA ZONI APO KANONI EOS MESONGI (KERKYRA)
38	GR2240001	LIMNOTHALASSES STENON LEFKADAS (PALIONIS-AVLIMON) KAI ALYKES LEFKADAS
39	GR2310001	DELTA ACHELOOU, LIMNOTHALASSA MESOLOGGIOU-AITOLIKOU, EKVOLES EVINOU, NISOI ECHINADES, NISOS PETALAS
40	GR2310006	LIMNES VOULKARIA KAI SALTINI
41	GR2320001	LIMNOTHALASSA KALOGRIAS, DASOS STROFILIAS KAI ELOS LAMIAS, ARAXOS
42	GR2320006	ALYKI AIGIOU
43	GR2330003	EKVOLES (DELTA) PINEIOU
44	GR2330005	THINES KAI PARALIAKO DASOS ZACHAROS, LIMNI KAIAFA, STROFYLIA, KAKOVATOS

45	GR2330006	LIMNOTHALASSA KOTYCHI, BRINIA
46	GR2330007	PARAKTIA THALASSIA ZONI APO AKR. KYLLINI EOS TOUMPI-KALOGRIA
47	GR2330008	THALASSIA PERIOCHI KOLPOU KYPARISSIAS: AKR. KATAKOLO-KYPARISSIA
48	GR2420001	OROS OCHI - KAMPOS KARYSTOU - POTAMI - AKROTIRIO KAFIREFS - PARAKTIA THALASSIA ZONI
49	GR2420004	MEGALO KAI MIKRO LIVARI - DELTA XIRIA - YDROCHARES DASOS AG. NIKOLAOU-PARAKTIA THALASSIA ZONI
50	GR2420006	SKYROS: OROS KOCHYLAS
51	GR2440002	KOILADA KAI EKVOLES SPERCHEIOU - MALIAKOS KOLPOS
52	GR2520003	LIMNOTHALASSA MOUSTOU
53	GR2540001	ORI GIDOVOUNI, CHIONOVOUNI, GAIDOUROVOUNI, KORAKIA, KALOGEROVOUNI, KOULOCHERA KAI PERIOCHI MONEMVASIAS
54	GR2540003	EKVOLES EVROTA
55	GR2550001	FARAGGI NEDONA (PETALON-CHANI)
56	GR2550003	NISOI SAPIENTZA KAI SCHIZA, AKROTIRIO AKRITAS
57	GR2550004	LIMNOTHALASSA PYLOU (DIVARI) KAI NISOS SFAKTIRIA, AGIOS DIMITRIOS
58	GR2550005	THINES KYPARISSIAS (NEOCHORI-KYPARISSIA)
59	GR2550007	THALASSIA PERIOCHI STENOY METHONIS
60	GR3000004	VRAVRONA-PARAKTIA THALASSIA ZONI
61	GR3000005	SOUNIO - NISIDA PATROKLOU KAI PARAKTIA THALASSIA ZONI
62	GR3000006	YMITTOS - AISTHITIKO DASOS KAISARIANIS - LIMNI VOULIAGMENIS
63	GR3000008	ANTIKYTHIRA - PRASSONISI KAI LAGOUVARDO
64	GR3000010	NISIDES KYTHIRON: PRASONISI, DRAGONERA, ANTIDRAGONERA
65	GR4110001	LIMNOS: CHORTAROLIMNI - LIMNI ALYKI KAI THALASSIA PERIOCHI
66	GR4110002	AGIOS EFSTRATIOS KAI PARAKTIA THALASSIA ZONI
67	GR4110003	LESVOS: DYTIKI CHERSONISOS - APOLITHOMENO DASOS
68	GR4110004	LESVOS: KOLPOS KALLONIS KAI CHERSAIA PARAKTIA ZONI
69	GR4110005	LESVOS: KOLPOS GERAS, ELOS NTIPI KAI OROS OLYMPOS
70	GR4120001	SAMOS: PARALIA ALYKI
71	GR4120003	SAMOS: OROS KERKETEFS - MIKRO KAI MEGALO SEITANI - DASOS KASTANIAS KAI LEKKAS, AKR. KATAVASIS-LIMENAS
72	GR4120004	IKARIA - FOURNOI KAI PARAKTIA ZONI
73	GR4130001	VOREIA CHIOS KAI NISOI OINOUSES KAI PARAKTIA THALASSIA ZONI
74	GR4210001	KASOS KAI KASONISIA-EVRYTERI THALASSIA PERIOCHI
75	GR4210002	KENTRIKI KARPATHOS: KALILIMNI - LASTHOS - KYRA PANAGIA KAI PARAKTIA THALASSIA ZONI
76	GR4210003	VOREIA KARPATHOS KAI SARIA KAI PARAKTIA THALASSIA ZONI
77	GR4210004	KASTELLORIZO KAI NISIDES RO KAI STRONGYLI KAI PARAKTIA THALASSIA ZONI
78	GR4210005	RODOS: AKRAMYTIS, ARMENISTIS, ATTAVYROS KAI THALASSIA ZONI (KARAVOLA-ORMOS GLYFADA)
79	GR4210007	NOTIA NISYROS KAI STRONGYLI KAI PARAKTIA THALASSIA ZONI
80	GR4210008	KOS: AKROTIRIO LOUROS - LIMNI PSALIDI - OROS DIKAIOS - ALYKI-PARAKTIA THALASSIA ZONI
81	GR4210009	ASTYPALAIA: ANATOLIKO TMIMA, GYRO NISIDES KAI OFIDOUSA KAI THALASSIA ZONI (AKR. LANTA-AKR. VRYSI)
82	GR4210010	ARKOI, LEIPSOI, AGATHONISI KAI VRACHONISIDES
83	GR4210011	VRACHONISIA NOTIOU AIGAIOU: VELOPOULA, FALKONERA, ANANES, CHRISTIANA, PACHEIA, FTENO, MAKRA, ASTAKIDONISIA, SYRNA-GYRO NISIA KAI THALASSIA ZONI
84	GR4220001	ANDROS: ORMOS VITALI KAI KENTRIKOS OREINOS OGKOS
85	GR4220002	ANAFI: CHERSONISOS KALAMOS - ROUKOUNAS
86	GR4220003	SANTORINI: NEA KAI PALIA KAMENI - PROFITIS ILIAS
87	GR4220004	FOLEGANDROS ANATOLIKI MECHRI DYTIKI SIKINO KAI THALASSIA ZONI
88	GR4220006	NISOS POLYAIGOS-KIMOLOS
89	GR4220007	NISOS ANTIMILOS-THALASSIA PARAKTIA ZONI
90	GR4220008	SIFNOS: PROFITIS ILIAS MECHRI DYTIKES AKTES KAI THALASSIA PERIOCHI
91	GR4220009	NOTIA SERIFOS
92	GR4220010	VOREIODYTIKI KYTHNOS: OROS ATHERAS-AKROTIRIO KEFALOS KAI PARAKTIA ZONI

93	GR4220011	ANATOLIKI KEA
94	GR4220012	VOREIA AMORGOS KAI KYNAROS, LEVITHA, MAVRIA, GLAROS KAI THALASSIA ZONI
95	GR4220013	MIKRES KYKLADES: IRAKLEIA, SCHINOUSSA, KOUFONISIA, KEROS, ANTIKERI KAI THALASSIA ZONI
96	GR4220014	KENTRIKI KAI NOTIA NAXOS: ZEFS KAI VIGLA EOS MAVROVOUNI KAI THALASSIA ZONI (ORMOS KARADES-ORMOS MOUTSOUNAS)
97	GR4220017	NISOI DESPOTIKO KAI STRONGYLO KAI THALASSIA ZONI
98	GR4220018	SYROS: OROS SYRINGAS OS PARALIA
99	GR4220019	TINOS: MYRSINI - AKROTIRIO LIVADA
100	GR4220020	NISOS MILOS: PROFITIS ILIAS - EYRYTERI PERIOCHI
101	GR4310003	NISOS DIA
102	GR4310004	DYTIKA ASTEROUSIA (APO AGIOFARAGGO OS KOKKINO PYRGO)
103	GR4310005	ASTEROUSIA (KOFINAS)
104	GR4320003	NISOS CHRYSI
105	GR4320004	MONI KAPSA (FARANGI KAPSA KAI GYRO PERIOCHI)
106	GR4320006	VOREIOANATOLIKO AKRO KRITIS: DIONYSADES, ELASA KAI CHERSONISOS SIDERO (AKRA MAVROVOUNI - VAI - AKRA PLAKOS) KAI THALASSIA ZONI
107	GR4320008	NISOS KOUFONISI KAI PARAKTIA THALASSIA ZONI
108	GR4330003	KOURTALIOTIKO FARANGI - MONI PREVELI - EVRYTERI PERIOCHI
109	GR4330004	PRASIANO FARAGGI - PATSOS - SFAKORYAKO REMA - PARALIA RETHYMNOU KAI EKVOLI GEROPOTAMOU, AKR. LIANOS KAVOS-PERIVOLIA
110	GR4340001	IMERI KAI AGRIA GRAMVOUSA - TIGANI KAI FALASARNA - PONTIKONISI, ORMOS LIVADIA-VIGLIA
111	GR4340002	NISOS ELAFONISOS KAI PARAKTIA THALASSIA ZONI
11	GR4340003	CHERSONISOS RODOPOU - PARALIA MALEME
113	GR4340005	ORMOS SOUGIAS - BARDIA - FARAGGI LISSOU - ANYDROUS KAI PARAKTIA ZONI
114	GR4340006	LIMNI AGIAS - PLATANIAS - REMA KAI EKVOLI KERITI - KOILADA FASAS
115	GR4340008	LEFKA ORI KAI PARAKTIA ZONIA
116	GR4340010	DRAPANO (VOREIOANATOLIKES AKTES) - PARALIA GEORGIOUPOLIS - LIMNI KOURNA
117	GR4340012	ASFENDOU - KALLIKKRATIS KAI PARAKTIA ZONI
118	GR4340013	NISOI GAVDOS KAI GAVDOPOULA
119	GR4340015	PARALIA APO CHRYSOSKALITISSA MECHRI AKROTIRIO KRIOS
120	GR4220005	PARAKTIA ZONI DYTIKIS MILOY
121	GR2220005	DYTIKES AKTES KEFALLINIAS - STENO KEFALLINIAS ITHAKIS - BORIA ITHAKI (AKROTIRIA GERO GOMPOS - DRAKOU PIDIMA - KENTRI - AG. IOANNIS)