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PRINCIPLES, CRITERIA AND GUIDELINES FOR THE SELECTION, ESTABLISHMENT AND MANAGEMENT OF MEDITERRANEAN MARINE AND COASTAL PROTECTED AREAS

prepared by the
International Union for Conservation of Nature and Natural Resources (IUCN)

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FOREWORD
(Prepared by U.N.E.P.)

In accordance with resolution 2997 (XXVII) of the United Nations General Assembly, UNEP was established "as a focal point for environmental action and co-ordination within the United Nations system". The Governing Council of UNEP defined this environmental action as encompassing a comprehensive, trasectoral approach to environmental problems which should deal not only with the consequences but also with the causes of environmental degradation.

The UNEP Governing Council has designated "Oceans" as a priority area in which it will focus effort to fulfil its catalytic role. In order to deal with the complexity of the environmental problems of the oceans in an integrated way, it has adopted a regional approach as exemplified by its Regional Seas Programme.

Although the environmental problems of the oceans are global in scope, a regional approach to solving them seemed more realistic. By adopting this approach, UNEP felt it could focus on specific problems of high priority to the States of a given region thereby more readily responding to the needs of the Governments and helping to mobilize more fully their own national resources. It was thought that undertaking activities of common interest to coastal States on a regional basis should, in due time, provide the basis for dealing effectively with the environmental problems of the oceans as a whole.

Two elements are fundamental to the Regional Seas Programme:

- (a) Co-operation with the Governments of the region. Since any specific regional programme is aimed at benefiting the States of that region, Governments are encouraged to participate from the very beginning in the formulation and acceptance of the programme. After acceptance, the implementation of the adopted programme is carried out by national institutions which have been nominated by their Governments.
- (b) Co-ordination of the technical work through the United Nations system. Although the regional programmes are implemented predominantly by Government-nominated institutions, a large number of the United Nations specialized organizations and other international and regional organizations are called upon to provide assistance to these national institutions. UNEP acts as an overall co-ordinator, although in some cases this role is limited to the initial phase of the activities. Thus the support and experience of the whole system of the United Nations and related organizations contributes to the programme.

The substantive aspect of any regional programme is outlined in an "action plan" which is formally adopted by the Governments before the programme enters an operational phase. All action plans are structured in a similar way, although the specific programme for any region is dependent upon the needs and priorities of that region. A typical action plan includes the following components:

- (a) Assessment component. This concerns assessing and evaluating the causes, magnitude and consequences of environmental problems. The most important activities deal with marine pollution assessment and studies of the coastal and marine activities and socio-economic factors that may influence, or may be influenced by environmental degradation,
- (b) Management component. An assessment of the environmental situation is undertaken to provide a basis for assisting national policy-makers to manage their natural resources in a more effective and sustainable manner. Therefore, each regional programme includes a wide range of activities in the field of environmental management. Such activities may include co-operative regional projects on rational exploitation of marine living resources, utilization of renewable sources of energy, management of fresh-water resources, protection of soil from erosion and desertification, development of tourism without its usual concomitant ecological harm, mitigation of the environmental damage usually associated with human settlements and others,
- (c) Legal component. In several regions a regional convention, elaborated by specific technical protocols, provides the legal framework for co-operative action. The legal commitment of Governments clearly expresses their political will to deal individually and jointly with their common environmental problems,
- (d) Institutional component. As the programme is implemented primarily through designated national institutions, assistance and training are provided, where necessary, to allow national institutions to participate fully in the programme. Existing global or regional co-ordinating mechanisms are used when appropriate. However, specific regional mechanisms may be created if Governments feel they are necessary,
- (e) Financial component. UNEP, together with other United Nations organizations, provides "seed money" or catalytic financing in the early stages of regional programmes. However, as a programme develops, it is expected that Governments of the region will gradually assume financial responsibility. Government financing may be provided directly to the national institutions participating in the programme or through a special regional trust fund to which Governments contribute.

At present there are ten regions where regional action plans are operative or are under development.

The Mediterranean was the first region in which UNEP attempted to assist the coastal States to adopt and apply measures for the protection and development of the marine and coastal environment.

In collaboration with a number of United Nations bodies and specialized agencies, UNEP convened the Intergovernmental Meeting on the Protection of the Mediterranean in Barcelona from 28 January to 4 February 1975. During that meeting, which was attended by 16 of the 18 coastal States, an action plan ^{1/} was approved containing all the components described in general terms above.

One year later at the Conference of the Plenipotentiaries of the Coastal States of the Mediterranean Region for the Protection of the Mediterranean Sea ^{1/}, convened by UNEP in Barcelona from 2 to 16 February 1976, the Mediterranean Governments and the EEC approved the texts of three legal instruments:

- Convention for the Protection of the Mediterranean Sea against Pollution;
- Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft; and
- Protocol Concerning Co-operation in Combating Pollution of the Mediterranean Sea by Oil and other Harmful Substance in Cases of Emergency.

The Convention and the two protocols came into force on 12 February 1978 and have been ratified as of the end of June 1980 by fifteen Mediterranean States and the EEC.

Efforts have continued to develop additional protocols for specific sources of pollution, and, to date, negotiations have been focused on a protocol for the protection of the Mediterranean Sea against pollution from land-based sources which was adopted in Athens on 17 May 1980. Priority has now been assigned to the development of a protocol concerning Mediterranean specially protected areas.

Activities related to the establishment and management of Mediterranean specially protected areas fall under both the environmental management component and the legal component of the Mediterranean Action Plan.

In January 1977, a consultation of experts was convened in Tunis to discuss problems related to the management of areas requiring special protection. The consultation recommended that:

^{1/} Mediterranean Action Plan and the Final Act of the Conference of Plenipotentiaries of the Coastal States of the Mediterranean Region for the Protection of the Mediterranean Sea. UNEP 1978.

(iv)

- (i) Mediterranean protected areas, in particular the aquatic parks, reserves and wetlands, should be organized into an Association of Protected Mediterranean Areas. One member of the Association should act as co-ordinator of the Associations's activities;
- (ii) regular, periodic meetings should be organized for representatives of Mediterranean protected areas to exchange views on their experience and problems;
- (iii) research on ecological problems of protected areas should be intensified and should be related to the ongoing UNEP Co-ordinated Mediterranean Pollution Monitoring and Research Programme;
- (iv) an intergovernmental meeting should be convened to consider and adopt guidelines and technical principles for the establishment and management of Mediterranean protected areas. The report of the Tunis Expert Consultation should be used in the preparatory work of the recommended intergovernmental meeting;
- (v) a Directory of Mediterranean protected Areas should be prepared and kept under constant review.^{2/}

At the first Meeting of the Contracting Parties to the Convention for the Protection of the Mediterranean Sea against Pollution and its related protocols (Generva, 5-10 February 1979), two recommendations were adopted calling for activities in support of the protection and rational management of marine parks, wetlands, and other protected areas. Among other things, UNEP was requested to:

"... in co-operation with Unesco, FAO and IUCN, convene an intergovernmental meeting to consider, with a view to adoption, guidelines and technical principles for the selection, establishment and management of Mediterranean specially protected areas and other related matters. The meeting should also consider the development of a protocol concerning Mediterranean protected areas."^{3/}

The Intergovernmental Meeting on Mediterranean Specially Protected Areas (Athens, 13-17 October 1980) was held in response to that request. A draft of the present document was prepared in an effort to assist Governments of the Mediterranean Region in their discussions on the selection, establishment and management of Mediterranean marine and coastal protected areas as well as in their parallel negotiations and the eventual implementation of a related protocol. Along with other main working documents before the meeting at Athens, this draft was the result of a joint undertaking of the Food and

2/ UNEP/WG.6/5, page 7, sub-paragraphs 8.1 - 8.5

3/ UNEP/IG.14/9, Annex V, page 6, paragraph 25.

Agriculture Organization of the United Nations (FAO), the United Nations Educational, Scientific, and Cultural Organization (Unesco), and the International Union for Conservation of Nature and Natural Resources (IUCN), in close co-operation with UNEP. A meeting of representatives from the participating organizations and invited experts from the Mediterranean Region (Geneva, 11-12 December 1979) took place within the framework of this co-operation to review the documentation for the Athens meeting in draft.

The Athens intergovernmental meeting recommended that a revised version of the document on Principles, Criteria and Guidelines for the Selection, Establishment and Management of Mediterranean Marine and Coastal Protected Areas be submitted to the Governments of the Mediterranean Coastal States at the Second Meeting of Contracting Parties as "a reference document which they could draw upon in the context of their activities related to protected areas". The present document is the result of this revision.

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I. INTRODUCTION

Purpose of document

1. The purpose of this document is to provide Governments with a source of information and guidance to which they may refer in selecting, establishing and managing marine and coastal protected areas in the Mediterranean region. It is also hoped that it will help to encourage States to take such action, whilst clearly recognising that each country will decide on the steps it should take in the light of national requirements, laws and customs. The intended readership is those who plan or manage protected areas in the region.
2. The document provides first a brief overview of the status of living resource conservation in the region, and explains the importance of protected areas in this regard. Next it states the general principles from which functions and types of protected areas are derived. It then presents criteria and guidelines for selecting, establishing, and managing protected areas. Finally, it considers how a regional network of protected areas might be brought into being.
3. There are several aspects of the approach set forth in this document which require special mention. First, since the Mediterranean region is focussed on an almost enclosed sea, the emphasis in this report is on the sea itself and the coastal zone. The coastal zone is the place where land and sea meet; one way to define it is in ecological terms which stress the interconnexions between land and sea rather than the constraints imposed by jurisdictional limitations.
4. Second, the document goes beyond the traditional concentration on national parks which involves defining boundaries around selected sites in order to preserve their value in perpetuity. Such an approach, though necessary, is insufficient to secure conservation, even of terrestrial species and habitats, and the protection of marine resources emphatically requires that protected areas form part of a comprehensive approach to conservation. This is so because coastal and marine ecosystem interdependencies exist across wide geographical areas; in contrast to many of their terrestrial counterparts, marine ecosystems are mostly international. Furthermore, our knowledge of how to set boundaries around ecological units is especially poor for marine environments.
5. Third, the approach stresses the protection of those vital processes that maintain ecological diversity, preserve genetic diversity, and ensure that resources can continue to be used sustainably. In so doing, it advances concepts of protection for the Mediterranean which would help maintain the regions' capability to support human life and well-being.
6. Fourth, the approach as described has broader applicability than the Mediterranean region, being of potential relevance to other marine and coastal regions. However, in order to clarify definitions, concepts and procedures, examples from the Mediterranean are given in the text.

7. Finally, the approach is necessarily a generalized one providing a framework for more detailed operations at the regional, national and local level. The list of references gives many of the sources which can be consulted for more detailed guidance relevant to the conservation of particular Mediterranean ecosystems or biotopes, or to particular aspects of marine and coastal protected area planning and management; and Annex I lists various organizations which can assist Mediterranean Coastal States in this respect.

The Mediterranean and protected areas 4/

8. The Mediterranean has characteristic features which have supported the evolution of indigenous species of plant and animal life. Since it is almost entirely enclosed, its circulation is exceedingly restricted, largely dependent upon surface flow from the Atlantic through the single opening at the Straits of Gibraltar. Circulation is supplemented by exchange with the Black Sea and the input of a few rivers, notably the Nile, Rhone and Po. But in general the waters of the Mediterranean are very stable, and little mixing takes place between the surface and the nutrients contained at deeper levels. Because of this, and because it takes 80 years for the waters of the Mediterranean to be replaced, the Mediterranean is especially vulnerable to pollution and other disturbances.
9. The coasts of the Mediterranean, including its islands, peninsulas, coastal wetlands, lagoons, sandy beaches, cliffs and rocky shores, are no less vulnerable. Many of the Mediterranean's marine and coastal plant and wildlife species depend upon this zone for life support at some particular stage of their development.
10. The coasts of the Mediterranean have been affected by human activity since the ancient civilizations extended their influence over the region through colonies spread around the shores of the Mediterranean. Much more recently, the rapid expansion of cities, the establishment of major industrial complexes, technological advances in agriculture, the growth of tourism and the increase in other activities have greatly intensified the human impact on the Mediterranean sea, its coasts and its living resources. Unplanned development threatens to destroy the very qualities which have made the Mediterranean the site of some of history's most influential civilizations.
11. The situation is the more serious because of large gaps in our knowledge, both about living resources themselves and about the impact of human activities upon them. Nevertheless, it is known that:
 - The Mediterranean exhibits a great variety of habitats, reflecting the variety of ecological processes which give the region its character. Many of these processes, including dynamic relationships between predator and prey, the supply of nutrients through watersheds and

4/ Much of the information contained in this section draws on documents presented at the Athens intergovernmental meeting, 13-17 October 1980; see also list of references, section (a).

wetlands, and sedimentation processes are seriously perturbed or threatened by human activities, most notably overfishing, coastal development, wetland and watershed alteration and those causing pollution.

- The Mediterranean contains a high diversity of species, many of which are unique to the region. However, at least 1,440 species of plants are classified as endangered or rare, 12 species of mammals are threatened, 200 species of birds are in need of special protection and 34 species of reptiles and amphibians are threatened. In addition, a large number of fish and marine invertebrate species are greatly depleted. These numbers are large in comparison with many other regions of the world of similar size.
 - Many species are being over-exploited. The disproportionately high value of fish catches in the Mediterranean when compared to catches elsewhere in the world reflects both the value which the countries place on the resources of the sea and provides an indication of over-utilization. A number of commercial fisheries within the region already show evidence of a general decrease in catch per unit of effort: sponges, red and black corals, turtles, hake and red mullet are examples affecting different parts of the region where - in all probability - neither exploitation levels nor methods are sustainable.
12. Much has already been done by Governments to provide greater protection of living resources, including fishing agreements and a number of the anti-pollution measures taken in the framework of the Barcelona Convention. The role of protected areas has also been recognised; there are, for example, about 90 protected areas already in existence covering a number of the more important wetland, marine, coastal and island areas of the region. But the present coverage falls far short of what is required, and many of the protected areas are not managed to the standard required to conserve or restore the resources they contain. Much more needs to be done to select, establish and manage protected areas on a systematic and effective basis, and eventually to build up a network of such areas.
 13. Each country will have its own ways and means for developing the required protected area network, so the approach suggested in this document is necessarily a rather generalized outline which will require adaptation to specific cases. Indeed, several Mediterranean countries are already implementing programmes along the lines suggested and have made major contributions to the discipline of protected areas management.
 14. In order to help Mediterranean States ensure that protected areas make their full contribution to conservation, a three-step process is put forward: selection of the system of areas; establishment of the individual areas selected; and application of appropriate management to the established areas so as to attain the specific objectives for which the area was established. Although many countries will have already taken some of these steps, the entire process is outlined in order to display the logic of the system (See Table 1).

TABLE 1. AN OUTLINE OF THE PROCESS OF SELECTING, ESTABLISHING, AND MANAGING MEDITERRANEAN MARINE AND COASTAL PROTECTED AREAS

A. Selection (Chapter III)

1. Collect basic resource and ecological information at the national level
2. Identify critical areas by use of tables in Annex III
3. Apply selection criteria
 - practical
 - ecological
 - research, education, and training
 - social and economic benefit
 - landscape and cultural values
 - regional role

Result: Protected areas selected for the national system

B. Establishment (Chapter IV)

1. Collect resource and ecological information specific to the area
2. Determine objectives (which will determine protected area category as explained in Annex II)
3. Prepare plan for establishment
4. Discuss plan for establishment with decision-makers and local population affected
5. Acceptance of plan (with any necessary modifications) by Government
6. Apply legislation

Result: Protected area legally established

C. Management (Chapter V)

1. Develop management system components
 - administration
 - personnel and training
 - equipment and infrastructure
 - finance
 - education and public awareness
 - use and regulation
2. Apply management system to the protected area through the preparation of a management plan to contain the following elements:
 - legal basis for existence, including boundaries
 - specific objectives
 - natural resources to be protected
 - management action recommended
 - management resources (finance, equipment, personnel) required to attain recommended action
 - constraints to management
 - regulations

3. Implementation of the management plan

4. Evaluation and modification of the management plan, involving local people at all stages

Result: Protected area managed effectively

II. PRINCIPLES, FUNCTIONS AND TYPES OF MEDITERRANEAN PROTECTED AREAS

Principles for Mediterranean protected areas

15. A principle is a fundamental of conduct. The principles which should underlie the creation of protected areas should, logically, be those which underlie the concept of living resource conservation generally. These principles, which are derived from the World Conservation Strategy, state that the following are essential:
- the maintenance of essential ecological processes and life support systems, upon which human survival and well-being depend
 - the preservation of genetic diversity, on which depend the functioning of many of the above processes and life support systems, as well as vital breeding programmes necessary for the production of food for science and medical advance, for technical innovation and for the security of the many industries which use living resources
 - ensuring the sustainable utilization of species and ecosystems which support rural and coastal communities as well as major industries.

Types of protected areas

16. There are two main types of protected areas: those in which the objectives are principally living resources conservation, education, research, monitoring and recreation (eg. national parks, strict nature reserves); and those for multiple use, including coastal zone management, habitat restoration, tourist development etc. In addition, the objectives of some areas are reinforced by international agreements.
17. Annex II explains these types in greater detail, and the subject is referred to again under chapter IV on the establishment of protected areas, since the choice of type will derive from the identification of the appropriate management objectives for the area. While national parks are the best known type of protected area, they are not always suitable for the protection of marine and coastal areas; any approach to the creation of a system of protected areas in the Mediterranean should consider parks and reserves as "core areas" of larger multiple resource use systems.

Functions of Mediterranean protected areas

18. It is possible to identify a wide array of functions for which protected areas may be established and managed:

- (a) To protect biological and ecological values. This is the primary aim in establishing protected areas and includes the maintenance of:
 - genetic diversity through the protection of habitats for species, sub-species and varieties, be they resident or migratory, commercial or non-commercial, threatened or common, animal or plant;
 - breeding grounds, especially for threatened and commercial species;
 - areas of high biological productivity;
 - ecological processes.
- (b) To restore, maintain and enhance biological and ecological values which have been depleted or otherwise perturbed by human activities.
- (c) To promote sustainable use of resources, especially those which are over- or under-used, and to encourage a stewardship of natural systems upon which human well-being depends.
- (d) To provide for monitoring, research, education and training, so as extend and deepen man's understanding and use of the marine and coastal environment and its ecological support systems.
- (e) To provide for environmentally compatible forms of recreation and tourism, specially as these relate to public enjoyment and understanding of the region's natural resources, and of its landscape and cultural heritage.

19. These functions emphasize the involvement of man with his biophysical world. While they require the adoption of an environmental ethic, they also imply that the resources of the Mediterranean should be utilized for the benefits they can provide. Although restriction of certain activities, such as those resulting in pollution, draining of wetlands and other detrimental practices, is inherent in these functions, the concept advanced here emphasizes the long-term sustainable use of natural resources by man. Moreover, it is human health and welfare which will benefit from the preservation of environmental quality and open space.

III GUIDELINES AND CRITERIA FOR THE SELECTION OF MEDITERRANEAN PROTECTED AREAS

20. A guideline indicates how policy should be carried out; a criterion is a standard on which a judgement may be based. This chapter provides guidelines for the identification of areas in need of protection and criteria for the selection of individual sites.
21. It is desirable to select protected areas in a scientifically-objective and systematic manner, while taking into account social, economic and other factors. One way in which this can be done is:
 - (a) to identify critical areas which may need protection; and
 - (b) to apply criteria to determine which areas are most in need of protected area status.

Identification of Critical Areas

22. The method which is described in this chapter provides a logical framework for selecting areas which are critical to the conservation of marine and coastal resources. It can, in principle, be applied at the local scale (e.g., for a particular island, or for a stretch of coast and adjoining sea), at the national scale, or throughout the Mediterranean. Undertaken thoroughly, the method calls for fairly detailed information which may not always be available or easy to collect. Where this is the case, planners will often have to adopt simplified approaches to data collection and analysis, but the main features of the method suggested here should, as far as possible, be followed as they will ensure that all the major considerations relevant to selecting protected areas are taken into account.
23. Surveys are required to identify several important sets of data concerning biological, ecological, and socio-economic factors. Data should be collected, evaluated for adequacy, and stored in such a way that they can be easily retrieved for analysis and synthesis, both in written form and, when appropriate, presented on maps of the same scale and projections. Such maps may be analysed and synthesized through overlays in order to assist in understanding the spatial relationships between biological factors (i.e. species), ecological processes, and human activities.
24. It is important that surveys be carefully planned in order to complete the identification process in a reasonable period of time. For example, special attention should be given to "indicator" species and species associations or those which most accurately reflect habitat relationships. Such species should be related, also, to ecological processes. Finally, since data are obviously much more complete for some species than for others, species chosen initially for data-gathering should be among the better known.

25. Identification of sites which are biologically important: animal species perform their various functions (feeding, courtship, breeding, bearing young, migration, etc.) at certain times and in certain places. Although the sum total of such functions is necessary to the maintenance of the species, certain functions deserve more attention than others. Where and when the most limiting of such functions takes place is the most critical habitat for that species. Further, several species may be associated together in time and space, and the degree and/or intensity of such associations indicate especially important habitats.
26. The survey should aim at:
 - (a) identifying critical areas (e.g., for spawning, mating, or feeding) for the survival of economically important living resources, notably commercial fish and invertebrates. Local, national and international fisheries agencies and marine and coastal laboratories should be consulted for information;
 - (b) identifying endangered species (e.g., threatened mammals, birds, reptiles, amphibians, fish and plants) and important migratory species (e.g., birds, marine mammals). As far as possible, their critical breeding and feeding sites should be included, along with seasonal information;
 - (c) compiling an inventory of coastal and marine habitats (e.g. wetlands, lagoons, and estuaries, including their structure and species composition). Information on marine habitats should be sought from marine fisheries and research laboratories. Habitats known to be important for the support (e.g. nutrition) they provide to important commercial and depleted species should be identified where possible.
27. The results of the identification of sites of biological importance are:
 - (a) a descriptive account, mapped if necessary, of the distribution of species and habitats
 - (b) through a synthesis of such data, a habitat classification system which can be used to identify the "representativeness" of an area.
28. Identification of important support systems and ecological processes: no habitat or animal can sustain itself in a vacuum without ecological "inputs" and "outputs". Each biologically critical habitat, or place where species are concentrated or perform important life history functions, is itself supported by various ecological processes. These include currents which bring or remove nutrients, sedimentary processes, leaf fall or plant decay and hydrological processes. Our understanding of the support systems of species and their habitats is dependent upon knowing such inputs and outputs.

29. The survey of these processes may be more difficult to conduct because of the absence of basic information on the dynamics of Mediterranean coastal and marine ecosystems. Nevertheless, within the limits of available information and resources, an analysis of the ecological factors of known areas and processes should be made, covering such items as oceanographic and climatic conditions, currents, vegetational cover and succession, and geological and hydrological aspects. Where data exist, processes which are critical to the maintenance of a biologically important habitat or species should also be identified. For example, the productivity of a coastal wetland may depend upon periodic flooding, filtration of sea water, or the quantity and quality of freshwater supply; species may be dependent upon the simultaneous occurrence of food with a particular water temperature or climatic condition (species functions may be determined by the timing of ecological events and these should be identified wherever possible).
30. The results of the identification of support systems and ecological processes will help in understanding the raison d'être for species and habitat distribution. Clearly, an appreciation of the dynamics of ecosystems, of which species and habitats are reflections, is required for effective management. Thus, whereas the identification of sites of biological importance yield an appreciation of what to manage, the identification of ecological processes and support systems indicates how.
31. Identification of socio-economic factors: the use of the word "critical" implies some sort of threat which, in this context, arises from socio-economic activities (although natural changes, such as ecological succession, can also bring about the demise of some species). It should not, however, be overlooked that the establishment of a protected area should have positive effects from the socio-economic standpoint.
32. Information should be gathered and evaluated on economic and social factors which affect biologically and ecologically important areas and their support bases. The survey should focus both on the existing situation, paying special attention to land-use and "sea-use" factors, and on the changes likely to occur in the foreseeable future, e.g. through the implementation of development plans, including the more intensive exploitation of marine resources. The subject matter will embrace such topics as settlements, industry, agriculture, fisheries, tourism and recreation.
33. The results here are vital to achieving a measure of the threat posed to the resources of the Mediterranean by certain human activities. Many such activities are cumulative and often synergistic. Such a manner of threat is especially important in rating the criterion of "urgency" considered below.

34. Data storage and synthesis: data from all the surveys should be collected, evaluated for adequacy and stored in such a way that they can be easily retrieved for analysis and synthesis, perhaps on a computer, but in any case in a systematic fashion. It will be helpful to plot location data on maps of a common format, backed up by a data bank of relevant information. If data are plotted on standard data maps, analysis and synthesis of information can be achieved through overlays which address specific issues, for example critical areas. This can provide a graphic conceptual understanding - often in visually arresting form - which can be especially instructive in explaining the rationale for site selection to a variety of audiences, including decision-makers and lay audiences. However, maps and overlays should not stand alone; frequent reference to the data bank is necessary for validation and the identification of data gaps (see also Annex 3).
35. Interpreting and using the results: The following should be taken into account:
 - (a) the areas selected as critical - i.e. those which should be subject to examination against criteria - should not be restricted to those in which no significant economic or social activities are envisaged, i.e. the areas left over after other uses have been accommodated. To do so would be to overlook the great potential which many areas already subject to exploitation offer for restoration;
 - (b) opportunities for mutually reinforcing activities should be exploited. For example, a protected area such as a coastal park can be a source of attraction to tourists, and tourists can help finance the park's development; or again, protection offered to a marine area may ensure a spawning ground for commercial fisheries are safeguarded at critical times, while allowing fishing when the spawning season is over;
 - (c) the results of the synthesis should be compared with the distribution of established protected areas. This comparison may well be as illuminating in what it reveals about existing areas (e.g. by indicating that some do not correspond to critical areas at all) as about the need for additional ones;
 - (d) The identification procedure will show that many areas of the Mediterranean region are in need of protection. In selecting which ones should be accorded special status first, it will be necessary to apply criteria.

Criteria for selection

36. These criteria should be applied objectively to the total list of existing and candidate areas identified through the above process in order to establish priorities for the next step: establishment. It is better that criteria are not applied one at a time, but together through a rating system. However as these criteria are non-exclusive (and some are mutually exclusive), it is unlikely that all will apply to any one area; indeed in some cases, one single criterion may

override all the others. Thus, the criteria are in no special order of importance and the values given to each will vary according to the circumstances and each Government's perceptions of its requirements and resources. A numerical rating system, as shown in annex III, can be useful as a way of relating values of a different kind; however the values are, of course, relative and cannot be compared one to another in absolute terms.

37. Practical criteria: these consider whether protection can be accomplished or whether action is necessary:
- (a) Urgency: the degree to which immediate action must be taken, lest values within an area be transformed or lost. (Lack of urgency should not necessarily be taken as low priority, however, as it is often best, and least costly, to protect well in advance of threat).
 - (b) Opportunism: the degree to which existing conditions or actions already underway may justify further action, for example, an extension of an established protected area.
 - (c) Ease of protection: the degree to which an area can be properly safeguarded without difficulty.
 - (d) Defensibility: the degree to which an area can be protected by regulation or contractual agreement.
 - (e) Accessibility: the degree to which an area is accessible to those managing it.
 - (f) Restorability: the degree to which an area may be returned to its former natural state.
38. Ecological criteria: these relate to values of ecosystems and the species within them:
- (a) Dependency: the degree to which a species depends on the area, or the degree to which an ecosystem depends upon ecological processes occurring in the area.
 - (b) Naturalness: the degree to which an area is undisturbed by human activities.
 - (c) Representativeness: the degree to which an area is representative of a habitat type, ecological process, biological community, physiographic feature, or other natural characteristic.
 - (d) Uniqueness: the degree to which an area is "one-of-a-kind"; habitats of endangered species which occur in only one area are an example.

- (e) Diversity: the degree of ecosystem, community and species richness. Though areas having the greatest variety should normally receive priority, this criterion may not apply to simplified ecosystems, such as some pioneer or climax communities, or areas subject to disruptive forces such as shores exposed to high energy wave action.
- (f) Autonomy: the degree to which an area functions as an effective, self-sustaining ecological entity. The more ecologically self-contained the area is, the more likely it is that its values can be effectively protected.
- (g) Productivity: the degree to which production processes within the area contribute to human welfare or species survival. Exceptions are eutrophic areas where high productivity may have a deleterious effect.

39. Criteria relating to research, education and training: these primarily concern areas suitable for study. Such areas may be natural or perturbed, and may accommodate training or educational programmes:

- (a) Accessibility: the degree to which an area is accessible to those wishing to use it for research education or training.
- (b) Benchmark: the degree to which an area may serve as a "control" in the scientific sense, i.e., as a non-manipulative area against which to measure changes occurring elsewhere. Such benchmark areas are essential to the conduct of an ecological monitoring programme.
- (c) Demonstration: the degree to which an area can serve to exemplify techniques or scientific methods.
- (d) Scientific interest: the degree to which an area represents ecological characteristics susceptible to research and study.

40. Social and economic benefit criteria: these consider benefits to human welfare, measured in economic and social terms:

- (a) Economic benefit: the degree to which protection will benefit the local economy in the long term. Although, initially, the establishment of some protected areas may have a short-lived, disruptive economic effect, positive effects are frequently associated with such areas, for example, protection of feeding areas of commercial fishes, or of areas of recreational value.
- (b) Social acceptability: the degree to which support of local people is assured. Should an area already be protected by local tradition, custom or practice, this should be encouraged; moreover, an "official" protected area designation may not be necessary if local support is high.
- (c) Public health: the degree to which the protection of an area may serve to diminish pollution or disease agents that contribute to public health problems. For example, protective status for

contaminated areas, such as shellfish beds or bathing beaches may result in amelioration of pollution as the polluting source is recognized and controlled.

- (d) Recreation: the degree to which an area provides the local community with the opportunity to use, enjoy and learn about their local natural environment.
 - (e) Tourism: the degree to which an area lends itself to forms of tourism which are compatible with the aims of conservation.
41. Landscape and cultural criteria: these consider benefits which provide pleasure to people or enrich their appreciation of the natural or historic environment:
- (a) Landscape: the degree to which a natural area also contains features of outstanding natural beauty; the character of such areas depend upon the maintenance of the integrity of the coastal and adjacent marine systems.
 - (b) Cultural: the degree to which a natural area which also contains important cultural, artistic or historic features; their protection may help maintain the integrity of the adjacent ecosystem.
42. Regional criteria: these criteria can best be applied if a regional approach, as outlined in Chapter VI, is adopted so that it is possible to measure the contribution which each area may make to a Mediterranean network of protected areas:
- (a) Representativity: the degree to which an area represents a characteristic of the Mediterranean as a whole or a significant part of it - whether it be a natural feature, an ecological process or a cultural site. This involves an assessment of the role which the area plays by contributing materials, nutrients, or support for species (especially migratory ones) to the Mediterranean region.
 - (b) Awareness: the degree to which monitoring, research, education, and/or training within an area can contribute knowledge and appreciation of regional values, for example areas which can combine such activities as pollution monitoring and education.
 - (c) Conflict and compatibility: the degree to which an area may help to resolve conflicts between natural resource values and human activities, or the degree to which compatibilities between them may be enhanced. Some protected areas can be used to exemplify the resolution of conflicts elsewhere in the region; other to demonstrate the benefits, values or methods of protection and/or restoration.

IV GUIDELINES FOR THE ESTABLISHMENT OF MEDITERRANEAN PROTECTED AREAS

43. Establishment of protected areas means instituting them on a secure basis. This chapter deals with establishing protection for areas identified through the processes outlined in the previous chapter and sets the context for the management of protected areas as described in the next chapter.
44. The establishment of protected areas involves two components:
- the creation of the necessary legal and institutional framework to ensure that protected areas can be established and managed to achieve their objectives; and
 - the steps necessary to establish each individual protected area.

Legal and Institutional Framework

45. Legislation for the creation of marine and coastal protected areas takes different forms in different countries. Circumstances and needs vary, and the legal, social and economic systems of each country necessarily influence the legislation employed. Nevertheless, there are several common features that apply to the development of such enactments.
46. Each State should designate the competent and appropriate authority for the establishment and management of protected areas. Marine areas are subjected to a variety of jurisdictional regimes based upon international treaty and customary law; depending upon the location of a proposed protected area, different legal regimes may therefore apply. Under the developing law of the sea, for example, separate legal regimes, with a range of powers and duties for coastal States, are appearing for internal waters, the territorial sea, international straits, the exclusive economic zone, the continental shelf and the high seas.
47. Depending upon the legal system involved, authority over marine areas may fall in whole or in part to a variety of Governmental departments. Coordination between these bodies is essential.
48. The intended purpose of the area, its specific requirements, its extent, and the nature of its management, including zoning techniques and the control of certain activities within the area, should be covered in the legislation in the same way as for terrestrial reserves. Marine protected areas differ, however, in that much greater emphasis should be given in the legislation establishing them to the control of activities occurring outside the area which might have an impact inside. The most obvious threats are those from land-based and ship generated sources of pollution, although more

subtle threats, such as those posed by over-exploitation of a neighbouring fishery, could also have serious impacts upon the protected area. The extent to which such threats need to be addressed in the legislation will depend upon local conditions and requirements.

Procedures for Establishing Individual Protected Areas

49. Establishing protected areas involves five closely-related aspects:
(i) collation of information (which is a continuing process);
(ii) determination of objectives; (iii) delineation of boundaries;
(iv) preparation a plan for establishment; and (v) relationship with international agreements.
50. Collation of information: as a prerequisite for the establishment (and management) of a protected area, the various values and characteristics of the site, as identified in the selection process (see Chapter III) should be collated. During site selection, a general idea of the area's fragility, dependence upon outside influences and threats from human activities will have been identified, as will its suitability for restoration, preservation, fishing, farming, recreation and other activities. These should be organized in a standardized manner, preferably in two forms cross-referenced to each other: data banks, and maps and charts. Information corresponding to the various headings of the sheets of the proposed Directory of Mediterranean protected areas (see references), together with additional information such as distribution of equivalent habitat type (worldwide and within the region), ecological process requirements, factors influencing the area, character of contiguous land/water areas (emphasizing buffer effects) and research and monitoring needs, should be collected.
51. Determination of the objectives of the area: it is necessary to decide at a very early stage what the conservation objectives of each protected area should be and thus to decide on the appropriate category of protected area. This is essential for the delineation of boundaries, the zoning of the area, and the various management procedures which will be undertaken. Objectives should not be generalised declarations of intent, but concise and precise statements which provide practical guidance for the management of the area, and form the basis upon which to assess whether the protected area is achieving the purposes for which it was set up.
52. Delineation of boundaries: boundaries must be determined to provide maximum protection for incorporated values. However, the inclusion of an entire ecological unit is seldom possible on land, and is almost impossible at sea. For this reason, it is more practical for many protected areas to delineate core areas and buffer or transition zones, much along the lines which have been established for Unesco's Man and Biosphere (MAB) Programme, as follows:

- (a) Core areas are "centres of action" which are essential for the perpetuation of contained values or for carrying out the objectives of the protected area. As such, they often require "sanctuary" or "strict natural area" designation. They range from rookery sites for seals, birds, or marine turtles, to large areas required for maintenance of productivity. Environmentally sensitive sites will normally be designated as cores and it will most often be the case that the management of cores will involve a very low level of human interference.
- (b) Buffer areas (or transition zones) surround the core. They are included in the protected areas and provide a "shield" so as to protect them from detrimental activities; within them human activities which are compatible with objectives of protecting core values may be allowed, even fostered. For example, a watershed may influence the conditions in an important wetland. Maintenance of high environmental quality in the watershed would not necessarily mean the elimination of all human activities there; rather, activities within the buffer watershed must be carried out so as to reduce or eliminate damaging effects such as erosion, and thus to protect the productivity of the core wetland. Buffer zones are also often suitable for scientific manipulation which may be unacceptable within core areas; it might allow fishing with traditional technology but ban the use of certain forms of modern technology. The concept of "multiple use" obviously applies within the buffer zone as a method for reconciling potentially conflicting or competitive uses of the area.
- (c) Multiple core-buffer systems involve extensive areas containing several core areas within a large buffer. Such systems may include cores which vary in time and/or space, such as areas of seasonal productivity, spawning activity, and the like. Many compatible uses may take place in such large core-buffer areas. For example a multiple core-buffer system might include several sanctuaries and a buffer area zoned for manipulative research; it might also include areas for protection of landscape and cultural aspects, for recreation and tourism, for ecologically compatible forms of agriculture, aquaculture and fishing, for restoration of disturbed ecosystems, and for human settlement. Of course, many of the zones may overlap in objectives, use and the degree of protection afforded, but the characteristic of such areas should be ecological interdependence and the need for unified management.

53. Preparation of a plan for establishment: when a protected area is established, the broad lines of its management should be decided upon and set down. This involves the preparation of a plan for establishment which should set out:

- (a) the objectives for the area;
- (b) boundaries;
- (c) the values of the area, including the most sensitive zones, resource inventories, endemic species, endangered species, interesting features, accesses, basic ecological processes etc.;

- (d) the origin and intensity of the main actual or potential threats to the area;
- (e) the socio-economic factors involved;
- (f) the major considerations to be borne in mind in managing the area, e.g. with regard to uses and activities to be accommodated in the core area and buffer zones;
- (g) major gaps in knowledge about the area and priorities for gathering future information;
- (h) prescriptions for action needed to attain the objectives.

Much of this information can be shown on maps, accompanied by short descriptive texts explaining what is indicated on the maps and additional information, such as the seasonal fluctuations of some of the factors involved.

54. The plan for establishment has two major audiences: those who are going to decide whether the area should be established and what resources will be devoted to doing so; and the authority which will be managing the area once it is established. At this point, the first audience is the more important, so the plan for establishment should be presented in a form which will be convincing to non-specialists who have many competing demands on their time; it should be relatively short, employ carefully-chosen graphic techniques, and stress the points which the decision-makers will consider most important.
55. The plan for establishment will provide the basis upon which management activities can begin, but it will normally need to be superseded by a more detailed management plan (see para. 68), drawn up in the light of experience and more detailed knowledge of the area, and what has been shown to be needed to protect it effectively.
56. Relationship with international agreements or standards: in the establishment of a protected area, each State should give due consideration to relevant criteria or standards recognized by it at the regional or international level, and to those relevant international agreements it has concluded. For example, consideration should be given as to whether the area might be suitable as a potential Biosphere Reserve under the Unesco MAB programme; whether it should be designated under the Convention on Wetlands of International Importance, Especially as Waterfowl Habitat; or whether it might be a potential World Heritage Site under the Convention Concerning the Protection of the World Cultural and Natural Heritage. Also, there may be some threatened species in the area which are migratory or traded among nations and whose protection would be improved through the State concerned adhering to, and applying the requirements of the Convention on the Conservation of Migratory Species of Wild Animals or the Convention on International Trade in Endangered Species of Wild Fauna and Flora. The African Convention on the Conservation of Nature and Natural Resources and the Convention on the Conservation of European Wildlife and Natural Habitats could also be relevant.

V GUIDELINES FOR THE MANAGEMENT OF MEDITERRANEAN PROTECTED AREAS

57. It is important to differentiate between planning and management. Planning concerns making decisions on how the resources of land and sea are to be allocated; i.e., for protected areas, the selection and establishment processes covered in the previous two chapters. Management concerns day-to-day operations, formed within the context of management objectives derived from the planning exercise. Management, however, should not be considered a last stage in a total process. As management proceeds, experience and increased knowledge will reveal many matters for further resolution, as well as some mistakes which will - inevitably - have occurred. Feedback on matters such as boundary delineation, and even on the basic objectives for the area, should be allowed for. It is exceedingly important, therefore, that "adaptive" mechanisms exist to accommodate management flexibility, and that management plans contain feedback mechanisms.

58. The basic purpose of protected areas management is to attain the objectives for which each area has been established, in the most economic and effective way. Management decisions should be made within an overall management policy, reflecting national level objectives for protected areas, and as embodied in the management plan for the site in question; but it is also vital that decisions be based on experience in the field and drawing on the best knowledge of those responsible for the management of each area on a day-to-day basis.

59. A generalized system for the management of protected areas would include the following six basic elements:
 - (i) administration
 - (ii) personnel and training
 - (iii) equipment and infrastructure
 - (iv) finance
 - (v) education and public awareness
 - (vi) use and regulation

60. Administration: Taking into account the local conditions and requirements, each country should, if it has not yet done so, establish the institutional infrastructure that will enable it to attain the objectives for each protected area.

61. Personnel and training: adequate personnel should be employed to:
 - guide the overall development and implementation of protected area policy;
 - direct the management of each protected area;
 - prepare management plans;
 - assess logistic requirements;
 - undertake field operations, including surveillance and maintenance; and
 - assist in activities related to research, monitoring, visitor use, education and training.

62. Staff should be given training appropriate to their level of responsibility. Managing protected areas calls for an understanding of the resource which is being protected, an ability to communicate this to local people and visitors, and competence in many other specialised areas. Training in various aspects of management is essential if personnel are to carry out their tasks effectively.
63. Equipment and infrastructure: the first priority is the provision of the minimum equipment necessary to ensure proper protection of the area, together with the simple means to signal its boundaries (for example, buoys in the sea, posts on land). The sophistication of the equipment required for the surveillance will depend on the type of incursions likely to be made into the reserve, and the assistance which can be obtained from other law-enforcing authorities, such as the police, army and maritime law enforcement. In some cases capital expenditure may be foreseen to protect a resource, but natural processes should be allowed to take place as a first priority. For example, beach restoration and the safeguarding of shorefront property is often met by large engineering works, whereas natural shore processes are usually much more effective in achieving long-term shore stability.
64. Also important is the means necessary for the development of the recreational and scientific use of the area, taking into account the need to use locally available transport, accommodation and other facilities. As well as achieving budgetary savings, the use of locally available equipment will bring economic benefits to the local community, and provide the flexibility needed to respond to the seasonal tourist pressures so typical of the Mediterranean.
65. Finance: adequate resources for capital and annual costs must be made available in time to allow for the proper management of protected areas on a long-term basis. Though some of the resources may be raised locally through fees and other devices, it will usually be necessary to provide funds from the regional or national exchequer. Developing countries may wish to seek international or bilateral assistance to meet the costs of protected area management.
66. Education and public awareness: broadly speaking, there are three "target" groups: the local community, students, and visitors. The long-term aim of public education and awareness for these groups should be to enlist support for conservation. This can be done by encouraging an understanding of the resources and ecological processes within the protected area and its surroundings, of the need for their protection and of the role of management in providing that protection. However, for the local community there may be additional objectives: to use their own experience in elaborating conservation measures; to involve them in the management of the area; and to promote an awareness of the material and other benefits which they can derive directly or indirectly from the protected area. For visitors especially it will often be appropriate to provide educational facilities, varying from large-scale visitor centres to simple trails and leaflets.

67. Use and regulation: within the protected area, it will be necessary to allocate certain areas to certain uses, and to promulgate and enforce regulations to ensure that human activities are conducted in ways which are compatible with the purposes for which the area is being protected. Although the identification of a core area and buffer zone will provide general guidance on the zoning of different uses and the required regulations, decisions on which uses should occur where (and when) in the protected area, and how they should be regulated, will be determined by the conditions in each individual protected area. What follows, therefore, is generalised guidance:
- (a) Management of resources: living resources may be managed by direct or indirect methods. Fish stocks, for example, are largely managed by the regulation of fishing. However, in some cases direct management techniques may be employed in the protected area. Examples are: aquaculture and other forms of propagation; the controlled use of fire to retain a characteristic vegetation; periodic flooding to maintain wetland habitat; tree planting; and restoration of eroded sand dunes or cliffs. It is to be emphasized, however, that simple enhancement techniques should be used whenever possible. To leave natural processes alone is, in itself, a management technique. This is especially important in the marine environment where man still largely depends upon natural productivity for resource sustainability.
 - (b) Regulation of visitor use: use of the resources of the area should be considered for recreation, provided that such uses are compatible with the other objectives assigned to the area. Keeping in mind that visitor use can sometimes be destructive, areas should not be open to visitors in the absence of zoning and related regulations, such as those covering collecting of shells, use of fire, fishing, etc.
 - (c) Regulation of other uses: again, provided that there is no conflict with the objectives of the protected areas, various other uses can be authorized - even encouraged - in well defined zones under careful control and monitoring, for example: traditional fishing in fresh, brackish and salt water; seasonal grazing and other forms of farming; gathering of flotsam and jetsam; harvesting of reeds; and reclamation. Most of these uses can, however, easily be abused. Detailed regulations are necessary and quotas should be set (initially conservative, but progressively relaxed if experience shows this would not be damaging). Particular attention should be paid to the fact that the open sea may contain very large areas, designated as "cores" because they contain a valued resource at some stage of its life cycle. Regulation of use is likely to include limitations on chemical pollution, dumping and thermal effluent.
 - (d) Research and monitoring: some protected areas may be designated for research and monitoring, especially on such topics as: conflict between natural resources and human activities; sustainability of species; and understanding of the ecological processes. Suitable provision should therefore be made within protected areas for the conduct of such studies, including arrangements for the required facilities (buildings, access,

etc.), monitoring within core areas and manipulative research in buffer areas. However, research activities should be regulated to ensure that they are compatible with the purposes for which the protected area has been established. Whenever possible, research and monitoring activities should involve the local community and institutions such as schools and colleges. The establishment of a network of Mediterranean protected areas and associated regional co-operation would facilitate the co-ordination of research and monitoring activities (see also Chapter VI).

The Management Plan

68. Each category of protected area (Annex II) requires different application of the six elements of management in order to attain the different objectives for which the area was established, and each individual protected area will also require different management appropriate to its special conditions. Therefore, each protected area should have its own detailed management plan which is sufficiently flexible to benefit from research, monitoring, and experience.
69. A number of approaches are possible when writing a management plan but each plan should include at least the following:
 - (a) the legal basis for the existence of the protected area, and the extent of the designated area;
 - (b) the objectives for which the area has been identified for protection;
 - (c) the natural resources of the area, stressing endangered species, endemic forms, and relatives of species utilized by man.
 - (d) the management resources (finance, personnel, equipment) to be used in protecting the area, and an explanation of the administrative structure and field staff to be provided;
 - (e) constraints to management, that is, activities or uses which are likely to be in conflict with the basic purposes of protection, (e.g. a coastal road or a concentration of commercial shipping), but which must be accepted in the protected area, at least for a transitional period pending control or removal; or limitations on management consequent upon land ownership patterns;
 - (f) the steps which are required to gain the support of local people and visitors for the protection of the area and its resources;
 - (g) the uses which are to be permitted in the area, along with zoning and related regulations;
 - (h) relationship of the protected area to other protected areas of the Mediterranean region, particularly those which share natural resources, are dependent upon similar ecological processes, or are in other ways interdependent;

- (i) phasing, in terms of timing and investment, for the introduction of the various measures (e.g. land acquisition, establishment of by-laws, control of access) needed to achieve protection of the area.

70. The plan should contain maps and a text. The first plan will inevitably be incomplete. As more information becomes available, and with the benefit of experience, the plan will be refined and made more precise. This should be a continuing process, with periodic reviews and updating of the plan. It is highly desirable to involve local people in the preparation of the plan, and its review.

VI A REGIONAL NETWORK OF MEDITERRANEAN PROTECTED AREASThe Regional Level 5/

71. Ideally, the approach described in the previous three chapters, and especially the selection process outlined in Chapter III, should be applied both in individual nations and in the Mediterranean region as a whole, covering the entire marine and coastal area. The regional approach is desirable, first because the region has a distinctive identity, as follows:
- many plants and some animal species are effectively confined to the region, while others use parts of the region for their breeding, feeding, resting and other life-support activities. Wetlands, in this regard, are especially important;
 - the ecological processes - those intricate, interacting components that connect the physical, biological and chemical elements of the living system so as to sustain life in and around the Mediterranean Sea - also give the region a discrete identity (e.g. currents, nutrients and productivity).
72. Second, a regional approach is desirable because the region is rich in interactions and interdependancies. Though the Mediterranean Coastal States have a widely varied level of development and resource use, social and economic factors operating in the Mediterranean frequently reveal connections and interdependencies which should be seen in a regional perspective so that one nation's activities do not conflict with those of others.
73. Third, a regional approach is desirable because so many of the factors which need to be considered in identifying protected areas in the Mediterranean are best comprehended at a regional scale. Such factors as species movements, energy transfer, and the downstream effect of man's activities, which frequently cross national boundaries and affect distant areas, suggest the need for a regional approach to protected areas. Some national conservation interests can only be
- 5/ Though this chapter emphasizes the importance of adopting a regional approach, this should not obscure the vital contribution which has to be made at the national level in selecting protected areas; nor is the absence of a regional study and classification scheme a reason for delaying action at the national level in the selection, establishment and management of protected areas within national jurisdictions. Valuable data exist at the international level on biological factors in the Mediterranean, for example, data on threatened Mediterranean species and biotopes. Although much of this information is incomplete and unsynthesized, it provides a good start for a regional data base. Also, there is a wealth of information at the national level upon which to base decisions related to protected areas.

served by a regional approach; for example effective protection of a migratory species in one country will normally call for corresponding action in another.

74. Fourth, a regional approach to protected areas is desirable so as to make full use of comparable studies and related data, e.g., those on pollution brought together within the environmental assessment programme of the Mediterranean Action Plan; a network of monitoring stations in protected areas would provide the opportunity for tracking and measuring pollution effects.
75. Fifth, a regional approach is desirable in order that the network of protected areas is representative of national and regional values and requirements. Such a network would be most representative if there were a regional habitat classification scheme.

Regional co-operation

76. Although protected areas will be established and managed by individual, sovereign Mediterranean Coastal States, in accordance with each State's particular needs and resources, national level action will therefore be assisted and strengthened by bilateral and regional co-operation ^{6/}. While national actions should not wait upon regional co-operation, it is suggested that the long-term interests of Mediterranean States will be best served through the establishment of a regional mechanism of co-operation.
77. Such a regional mechanism might be established within the framework of the Mediterranean Action Plan. It should ensure the liaison between managers of established Mediterranean protected areas and institutions, and/or Government services which are involved at the technical level in the selection, establishment or management of protected areas.
78. Functions: The following functions in respect of protected areas should be fulfilled at the regional level:
 - identification of conservation needs according to regional requirements;
 - sharing of experience, refinement of methodology and international co-operation in surveys and criteria to identify critical areas for protection;
 - encouragement of the preparation of regional and sub-regional habitat classification schemes;

^{6/} The protection of certain resources, for example an ecologically important wetland which is split by an international frontier, calls for bilateral co-operation. In some cases it may be desirable to create an international reserve, administered by two adjoining Mediterranean States, but managed as a single entity.

- development of measures for the protection of migratory species;
- regular exchange of information on protected areas status, development and management;
- development of opportunities for the periodic exchange of ideas and personnel;
- promotion of training activities at the regional level;
- provision of technical advice on the implementation of the protected areas aspects of the Convention on the Protection of the Mediterranean Sea against Pollution and its protocols.

Particular attention should be given to the needs of developing countries in carrying out these functions.

79. Emphasis should be given to support for region-wide studies concerned with the identification of critical coastal and marine habitats based on biological, ecological, and socio-economic considerations described earlier in this document. Also important would be the preparation of a regional habitat classification scheme upon which a representative network of protected areas can be selected, established and managed. Such a network would ensure the protection of rare and commercially important species, habitat and species diversity, and the opportunity to monitor ecological processes throughout the region effectively. Protected areas within a representative classification scheme would allow each State to make its own contribution to, and derive the benefits of, regional co-operation: each will be responsible for the protection of values shared by and common to its neighbours, and to the region as a whole.

Network of Mediterranean protected areas

80. The concept of a network is used here to mean a region-wide system of protected areas, linked by the exchange of information etc. through a central clearing house, and developing along agreed lines and to common objectives. The establishment and operation of a regional mechanism of co-operation and the implementation at the regional and national levels of the principles, criteria and guidelines contained in this document will provide the essential means for the establishment of such a network of protected areas in the Mediterranean.

ANNEX I

INTERNATIONAL ORGANIZATIONS AND INSTITUTIONS WHICH CAN ASSIST
MEDITERRANEAN COASTAL STATES IN THE SELECTION, ESTABLISHMENT AND
MANAGEMENT OF PROTECTED AREAS.

UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP)

- a) Headquarters
P.O. Box 30552
Nairobi
Kenya

General environmental matters.

- b) Regional Seas Activity Centre
UNEP/Palais des Nations
1211 Geneva 10
Switzerland

Environmental matters related to regional seas

- c) Co-ordinating Unit for the Mediterranean Action Plan

UNEP/Palais des Nations
1211 Geneva 10
Switzerland

FOOD AND AGRICULTURAL ORGANIZATION OF THE UNITED NATIONS (FAO)
Via delle Terme di Caracalla
00100 Rome
Italy

Fisheries, forestry, national parks, international conventions.

UNITED NATIONS EDUCATIONAL, SCIENTIFIC & CULTURAL ORGANIZATION (Unesco)
7 Place de Fontenoy
75700 PARIS
France

Man and Biosphere Programme, biosphere reserves, environmental education.
Convention concerning the Protection of World Cultural and Natural
Heritage.

COUNCIL OF EUROPE
67006 Strasbourg
France

Species and habitats conservation, biogenetic reserves. Convention on
the Conservation of European Wildlife and Natural Habitats.

ORGANIZATION OF AFRICAN UNITY

P.O. Box 3243

Addis Ababa

Ethiopia

African Convention on the Conservation of Nature and Natural Resources.

ORGANIZATION FOR THE PHYTO-TAXONOMIC INVESTIGATION OF THE MEDITERRANEAN AREA (OPTIMA)

Botanischer Garten und botanisches Museum

Konigin-Luisestr. 628

1000 Berlin 33

Federal Republic of Germany

Has a Conservation Committee which can advise on the conservation of plants.

INTERNATIONAL COUNCIL FOR BIRD PRESERVATION (ICBP)

219C Huntingdon Road

Cambridge CB3 0DL

England

Conservation of birds.

INTERNATIONAL COUNCIL FOR THE SCIENTIFIC EXPLORATION OF THE MEDITERRANEAN

Monte Carlo

Monaco

General marine matters.

INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES (IUCN)

Avenue du Mont-Blanc

1196 Gland

Switzerland

General conservation matters, conservation status of species of plants and animals, international conservation conventions.

INTERNATIONAL WATERFOWL RESEARCH BUREAU (IWRB)

Slimbridge

Gloucestershire G12 7BK

United Kingdom

Conservation of wetlands and waterfowl. Technical advice on Convention on the Conservation of Wetlands of International Importance, Especially as Waterfowl Habitat.

TOUR DU VALAT FOUNDATION

Station biologique de la tour du Valat
Le Sambuc
13200 Arles
France

Technical advice on Wetlands conservation.

WORLD WILDLIFE FUND (WWF)

Avenue du Mont-Blanc
1196 Gland
Switzerland

Financial assistance for conservation projects.

ANNEX II

CATEGORIES AND OBJECTIVES OF COASTAL AND MARINE PROTECTED AREAS

IUCN's Commission on National Parks and Protected Areas (CNPPA) produced a paper on "Categories, objectives, and criteria for protected areas" (IUCN, 1978). This paper defined categories of protected areas in terms of the objectives for which they were established, resulting in a set of 10 named categories; this has facilitated comparisons between countries and has removed many misunderstandings due to differences in terminology.

This system can be adapted to the special conditions of Mediterranean coastal and marine protected areas as follows:

GROUP A. The major objectives are related to living resource protection, education, research, monitoring, and recreation. Management usually falls under a single agency.

Category I - Strict Nature Reserves. Areas of special biological or ecological importance. Access is usually restricted to researchers. Such areas serve the important aspect of scientific "control" or "benchmark" areas, as well protection of especially fragile systems. Manipulative management is not permitted.

Category II - National Parks or Provincial Parks. A large area (usually over 1,000 ha) managed to protect areas of special biological, cultural, or scenic importance. Public access is allowed or encouraged for recreational or educational purposes. Facilities may be provided for these purposes, especially to accommodate access to underwater sites, but considerable care must be devoted to prevent the facilities from detracting from the natural values which are being protected.

Category III - National or Provincial Monument. Similar to Category II, but usually smaller. This category is especially useful to protect relatively confined areas of unique value.

Category IV - Managed Nature Reserves. Designated for the protection of specific "critical habitats" necessary for the protection of species, communities, or ecological processes. Habitat manipulation may be required, depending upon the biology and ecology of the species and habitats contained.

GROUP B. Areas directed towards multiple use, especially including coastal zone management, controlled resource utilization, habitat restoration, tourism development, and manipulative management. Management usually falls under more than one agency.

Category V - Resource Reserve. Usually extensive areas which are not heavily utilized and for which data on natural resource value are lacking. Restricted use is implied, pending the collection of sufficient knowledge for the re-designation of the area into other categories and uses.

Category VI - Multiple-use Management Areas. Usually large and diverse areas wherein a number of compatible activities are allowed; any of the categories under Group A can form part of this category. Such subdivisions as "sustained yield harvest zones", "water quality control zones", "manipulative research areas", "strict nature reserves" and others may be included within an overall coastal/marine zone management scheme. Considerable management flexibility and expertise are implied.

GROUP C. Areas for which the objectives are reinforced by international agreements. Management may be under a single agency or under a group of agencies, but it must meet standards established by international agreement. These areas will typically fall under one or more of the six categories summarized above and serve to reinforce these areas rather than to establish different sorts of areas.

Category VII - Biosphere Reserves. Each biosphere reserve will include one or more of the following:

(a) representative examples of natural biomes; (b) unique communities or areas with unusual natural features of exceptional interest; (c) examples of harmonious landscapes resulting from traditional patterns of land use; and (d) examples of modified or degraded ecosystems capable of being restored to more natural conditions. Each reserve must be approved by the Man and the Biosphere International Co-ordinating Council before it can receive designation as a biosphere reserve.

Category VIII - World Heritage Sites (Natural)

The World Heritage List is intended to include only areas of "outstanding universal value". Sites can only be nominated by a country which is a Party to the World Heritage Convention. The secretariat of the World Heritage Convention is provided by Unesco. Nominated sites are screened by IUCN in relation to the criteria established by the World Heritage Committee. Sites should:

- (i) be outstanding examples representing the major stages of the earth's evolutionary history;
- (ii) be outstanding examples representing significant ongoing geological processes, biological evolution and man's interaction with his natural environment;
- (iii) contain unique, rare or superlative natural phenomena, formations or features or areas of exceptional natural beauty;
- (iv) be habitats where populations of rare or endangered species of plants and animals still survive. Nominations based solely on this criterion must ensure that critical elements of a species habitat are considered throughout the range required for survival of the species.

ANNEX III

APPLICATION OF CRITERIA FOR SELECTION OF PROTECTED AREAS

Explanation: Each potential protected area can be categorised for the priority it should receive in relation to each criterion. The figures below are purely illustrative of the kind of priority ratings which could be employed; see also paragraph 36.

<u>Practical</u> (para. 37)	Site 1	Site 2	Site 3	Site 4
Urgency	3	1		
Opportunism	2	2		
Ease of protection	3	3		etc.
Defensibility	1	1		
Accessibility	3	2		
Restorability	2	1		
Sub-Total	14	10		
<u>Ecological</u> (para. 38)				
Dependency				
Naturalness				
Representativeness				
Uniqueness				etc.
Diversity				
Autonomy				
Productivity				
<u>Research/education/ training</u> (para. 39)				
Accessibility				
Benchmark				etc.
Demonstration				
Scientific interest				

TABLE 2 (cont.)

APPLICATION OF CRITERIA FOR SELECTION OF PROTECTED AREAS

<u>Social/Economic</u> (para. 40)	Site 1	Site 2	Site 3	Site 4
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Economic benefit				
Social Acceptability				
Public Health				etc.
Recreation				
Tourism				

<u>Landscape/Cultural</u> (para. 41)	Site 1	Site 2	Site 3	Site 4
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Landscape				
Cultural				etc.

<u>Regional</u> (para. 42)	Site 1	Site 2	Site 3	Site 4
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Representativity				
Awareness				etc.
Conflict/Compatibility				

Total				
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Note: In selecting a point range 1-3, a simple approach to evaluation can normally be adopted. For each criterion the question is essentially the same: does the site "score" positively, neutrally or negatively against the criterion? For example, in the case of the first criterion listed above, urgency:

is it urgent to create the protected area?	yes = 3
is the time-factor immaterial?	yes = 2
is there a good case for delay?	yes = 1

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- UNEP/IG.20/INF.4 Proposed Directory of Mediterranean Protected Areas
(IUCN) (English and French only)
- UNEP/IG.20/INF.5 Preliminary Annotated Lists of Existing and
Potentially Mediterranean Protected Areas (IUCN)
(Bilingual English and French)
- UNEP/IG.20/INF.6 Mediterranean Marine Species in Possible Need of
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- UNEP/IG.20/INF.7 Preliminary List of Mediterranean Birds in Need of
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- UNEP/IG.20/INF.8 Threatened Mammals of the Mediterranean (IUCN)
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