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## **Principles, Criteria and Guidelines for the Selection, Establishment and Management of Mediterranean Marine and Coastal Protected Areas**

IN CO-OPERATION WITH:



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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F O R E W A R D

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, transectoral 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 regions. 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

(ii)

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 the 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 <sup>1/</sup> 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 <sup>1/</sup>, 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 Substances 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.

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<sup>1/</sup> 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.

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:

- (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 Association'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. <sup>2/</sup>

At the First Meeting of the Contracting Parties to the Convention for the Protection of the Mediterranean Sea against Pollution and its related protocols (Geneva, 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:

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

"... 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." <sup>3/</sup>

The Intergovernmental Meeting on Mediterranean Specially Protected Areas (Athens, 13-17 October 1980) is being held in response to that request. The present document has been 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.

The preparation of the main working documents before the intergovernmental meeting on Mediterranean specially protected areas was a joint undertaking of the Food and 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.

The first results of this co-operative effort were reviewed by a meeting of representatives from the participating organizations and invited experts from the Mediterranean Region (Geneva, 11-12 December 1979). The present document, which is submitted to the intergovernmental meeting for its consideration, reflects the revisions suggested by the inter-agency/expert meeting.

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



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## I INTRODUCTION

### Purpose

1. The purpose of this document is to assist Governments in the selection, establishment and management of protected areas within the Mediterranean region. It considers the region as a whole, leaving the needs of particular sites to individual Governments, as dictated by their requirements, resources, laws, and customs. First, it states general principles and concepts from which functions of protected areas are derived (Chapter II). It then presents criteria and guidelines for selecting, establishing, and managing areas of significance for a region-wide system of protected areas (Chapters III-V). Finally, it considers how such a system may be implemented and managed regionally (Chapter VI).
2. There are several aspects of the approach set forth in this document which require special mention. First, since the Mediterranean region is focussed on its 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; it can be defined in various ways, e.g. biologically, jurisdictionally and ecologically. An ecological perspective is preferable, as it stresses the interconnections between land and sea and is not constrained by jurisdictional limitations.
3. Secondly, the document goes beyond the traditional concentration on national parks which involves defining boundaries around selected sites in order to preserve their value for perpetuity. Such an approach, though still necessary, is no longer regarded as sufficient 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 necessary 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.
4. Thirdly, 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 maintain the regions' natural support base for man.
5. Finally, the approach advocated is necessarily generalized. The document should therefore be read in conjunction with the other reports which have been prepared by the International Union for Conservation of Nature and Natural Resources (IUCN) for the intergovernmental meeting

in Greece in October 1980 1/. These reports, on threatened species and biotopes of the Mediterranean, provide the detailed information on the situation in the region which will be needed by Governments in following the advice contained in this present document. Governments will also find it helpful to refer to a number of other publications on the Mediterranean and marine and coastal park planning (see list of references) and in particular the recent reports published by Unesco relating to the establishment of Mediterranean protected areas 2/.

### Background

6. The Mediterranean is a unique sea with characteristic features which have supported the evolution of indigenous species of plant and animal life. 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 Rhone, Po and Nile. 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 the residence time of the water - 80 years - is exceptionally long, the Mediterranean is especially vulnerable to pollution and other disturbances.

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- 1/ UNEP/IG.20/1 - Provisional agenda; UNEP/IG.20/2 - Annotated Provisional Agenda; UNEP/IG.20/3 - Principles, criteria and guidelines for the selection, establishment and management of Mediterranean marine and coastal protected natural areas; UNEP/IG.20/4 - Guidelines proposed for a protocol concerning Mediterranean marine and coastal protected natural areas; UNEP/IG.20/INF.1 - Provisional list of documents; UNEP/IG.20.2 - List of participants; UNEP/IG.20/INF.3 - Survey of existing national legislation relevant to Mediterranean protected areas; UNEP/IG.20/INF.4 - Proposed directory of Mediterranean protected areas; UNEP/IG.20/INF.5 - Preliminary annotated list of existing and potential Mediterranean protected areas; UNEP/IG.20/INF.6 - Mediterranean marine species in possible need of protection; UNEP/IG.20/INF.7 - Preliminary list of Mediterranean birds in need of special protection; UNEP/IG.20/INF.8 - Threatened mammals of the Mediterranean; UNEP/IG.20/INF.9 - Preliminary list of amphibians and reptiles of the Mediterranean region, known or considered to be threatened; UNEP/IG.20/INF.10 - List of rare and threatened plants of the states of the Mediterranean basin.
  - 2/ UNESCO. 1979. Workshop on Biosphere Reserves in the Mediterranean Region: Development of a Conceptual Basis and a Plan for the Establishment of a Regional Network. MAB Report Series No. 45. Unesco, Paris.

7. 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. The coasts are the focus of numerous human settlements, many very large, and are intensively used for industrial, agricultural, recreational and other uses. Unplanned development can destroy the very amenities that make this zone so productive and attractive.
8. Conflicts caused by development in the Mediterranean are particularly serious because so little is known about the effects of human activities on the marine and coastal environment; for example, subtle alterations in the ecological processes of the region often go unrecognised. It is, therefore, important to proceed cautiously with development in the Mediterranean region and to monitor the effects of these changes so as to respond quickly to warning signs. Identifying and protecting those areas that sustain the Mediterranean's biological productivity is one way to maintain a healthy environment, while also securing the resource base for continued socio-economic development.
9. Protected areas in the Mediterranean are needed for the protection they can afford to valued ecosystems and species. They also serve as centres in which to assess man's effects on ecosystems, to rehabilitate or refurbish populations, habitats and processes, and to preserve and monitor representative samples of habitats, ecosystem processes and species diversity. They should be used, too, for purposes of education, public awareness and training, to help people appreciate the need to conserve, value and enjoy their natural environment. Wherever possible they should be areas within which traditional and cultural practices and economic activities may continue - provided these activities are resource-sustainable and consistent with the basic aims of conservation. In short, Mediterranean protected areas should serve a variety of purposes so as to contribute to the social, economic, cultural and aesthetic well-being of the people of the region, and of those further afield.
10. The effectiveness of Mediterranean protected areas will be enhanced through the creation of a network of protected areas to preserve shared resources. Such a network would be especially important for migratory species which cross national boundaries and those ecological processes vital to the Mediterranean as a whole. This network should include arrangements for monitoring resources and processes within the protected areas and thereby improve understanding of how the region as a whole functions.

II PRINCIPLES, CONCEPTS AND FUNCTIONS OF MEDITERRANEAN PROTECTED AREAS

11. Principles are fundamentals of conduct. As such, it is appropriate that the guiding principles for the selection, establishment and management of marine and coastal protected areas reflect the objectives of conservation itself. These objectives have been set out in the World Conservation Strategy 3/:
- to maintain essential ecological processes and life support-systems, upon which human survival and development depend;
  - to preserve 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;
  - to ensure the sustainable utilization of species and ecosystems, which support rural communities as well as major industries.
12. The World Conservation Strategy advocates that these objectives be incorporated in national and international policies. One very important way of doing this is through the creation and management of protected areas. The remainder of this document addresses this subject in the context of the Mediterranean region.

Principles for Mediterranean protected areas.

13. It is suggested that the principles underlying the rationale for establishing protected areas in the Mediterranean should be as follows:
- (a) The Mediterranean region is diverse: its species and habitat diversity should be maintained for the benefit of this and subsequent generations, and for the advantage of the people of the region itself as well as those from further afield.
  - (b) As the Mediterranean countries share common boundaries and common resources, interstate and regional cooperation is required to ensure that, collectively, the resources are effectively protected.
  - (c) Governments should establish the necessary machinery and provide the required resources for the selection, establishment and management of protected areas.

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3/ Prepared by the International Union for Conservation of Nature and Natural Resources (IUCN), with the advice, cooperation and financial assistance of the United Nations Environment Programme (UNEP) and the World Wildlife Fund (WWF); and in collaboration with FAO and Unesco. IUCN, Gland, March 1980.

- (d) Protected areas should follow the general objectives of conservation; however, more detailed objectives should also be pursued which accord with the particular requirements and opportunities of each area. This will ensure that the maximum benefit gained by the protection of each area can be derived both by people of the immediate vicinity and of the region in general.
  - (e) Socio-economic uses should be allowed in protected areas, even fostered, so long as they are consistent with the objectives of conservation. In some areas, however, the conservation of ecosystems and species will not be compatible with other uses.
  - (f) As the Mediterranean is intensively used, protected areas will not long endure if they become islands in a sea of deteriorating environmental quality. This is especially important in marine areas because marine processes and concentrations of resources occur over such wide expanses.
  - (g) The utility and success of protected areas in the Mediterranean depend upon the cooperation of local people and visitors. The involvement, understanding and support of local people and others for protected areas require education and training about the need for conservation.
  - (h) As there are important and productive habitats in the Mediterranean region that have been severely altered or disturbed, protection of such areas should be established to restore their former character.
14. These principles emphasize the importance of a regional approach. Although national action should not wait for agreement at the regional level, conservation in the Mediterranean region will benefit from a regional perspective (see Chapter VI). Also, even though the principal focus of this document is on the protection of ecosystems and species of the region, this will often serve the aims of protecting valued landscapes and cultural resources; the Mediterranean is uniquely rich in both respects (Paragraph 36).

#### Functions of Mediterranean Protected Areas

15. A wide array of protected area functions may be identified. The following are specifically addressed to the needs of the Mediterranean region:
- (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, plant or microbial;

- 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. This function recognizes that environmental problems can be minimized or solved when coastal and marine resources are managed along ecologically sound lines, and that protected area management need not therefore exclude compatible use.
- (d) To provide for monitoring, research, education and training, so as to 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 its landscape and cultural heritage.
16. 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. Also, as environmental quality and open space are preserved, human health and welfare will also gain.

#### Types of Protected Areas

17. Types of protected areas are best identified by function. Information on the types is set out in the Final Report of the Committee on Criteria and Nomenclature of the IUCN Commission on National Parks and Protected Areas (CNPPA, 1978). Annex I lists some of the major alternatives as derived for terrestrial areas by the CNPPA. Marine and coastal areas may require some modification to this listing and associated criteria. It is important that semantics do not dominate choice of type: the objectives carried out within each protected area are the determining factors (see paragraph 47). The objectives of Group A areas are generally nature protection, education and recreation; management usually falls under a single agency. The objectives of Group B areas are much wider and more complex, being directed towards multiple resource use, habitat restoration, and



environmental research and monitoring; such areas usually require the cooperation of several agencies. The objectives of Group C are defined by international agreements; they require both multiple agency management and cooperation among nations.

18. The CNPPA report states that while "the national park is the most common method for the management of conservation areas", other types are even more essential as knowledge of ecosystems increases. National parks, strictly speaking, are not as suitable for the protection of large marine or coastal areas as they are for terrestrial areas. Therefore, any strategy for conservation of marine and coastal resources should include the definition of multiple resource-use areas.

III GUIDELINES AND CRITERIA FOR THE SELECTION OF  
MEDITERRANEAN PROTECTED AREAS

19. 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.
20. 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 habitats" and high quality representative areas (for basic concepts, see paras 23-27; for procedures, see paras 28-30);
  - (b) to apply criteria to determine which habitats should be given protected area status (paras 31-38).
21. This approach can best be applied at a regional scale for the entire Mediterranean (see also Chapter VI), but in the absence of such a regional context, it can also provide a methodology for application by individual countries of the region.

Identification of critical coastal and marine habitats: basic concepts

22. The method described below for "critical habitat" identification provides a logical framework for selecting such areas. However, it is not intended to discourage more intuitive approaches when resources or information are hard to come by, or urgent action is called for.
23. 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. An example is a coastal wetland essential for the feeding or breeding of wading birds and also of commercial fish.
24. 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 (which provide detritus essential for many commercial marine species), hydrological processes and the like. Our understanding of the support systems of species and their habitats is dependent upon knowing such inputs and outputs.

25. 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). Obviously, critical habitats which are most threatened are also most endangered, and every effort should be made to provide protection for them.
  
26. In this respect, the concept of "residuals" - i.e. the "side effects" of human activities - is important. Table 1 shows that man's activities affect the natural environment and, through feedback mechanisms, environmental links and ecological interactions, also have an effect upon his own activities. For example, development associated with tourism and recreation may produce sewage, altered circulation, discharge of solid wastes, noise and artificial illumination. These, in turn, may affect the marine environment by causing turbidity, erosion and heavy metal pollution and by altering water temperature and aesthetic values. Such effects have impacts on fisheries and wildlife, as well as directly upon tourism and recreation themselves. Consideration of residuals is important in establishing "buffer" areas as parts of protected areas (paragraph 48). Thus, an analysis of the environmental threats posed by certain socio-economic factors involves not only conflicts between man and nature, but also those between man and man.
  
27. Synthesis of the information obtained: in order to identify biologically and ecologically critical areas that are also in greatest danger and most in need of protection, it is necessary to bring together the biological, ecological and relevant socio-economic information (Paragraph 30).

Identification of critical coastal and marine habitats: procedures

28. The purpose here is to identify candidate areas for protection. A survey identifies relevant biological, ecological and socio-economic factors, both by literature search and field investigation. Analysis and synthesis integrate these data. The identification process should not be confused with final area selection which is determined by applying criteria (paragraph 32-38).

29. Survey: this should cover each of the three main components needed for analysis:
- (a) Biological factors. The survey should aim at:
    - (i) identifying critical areas (e.g., spawning or mating, 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;
    - (ii) 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;
    - (iii) 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.
  - (b) Ecological processes. The survey of these may prove 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, current and river direction and rate, 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).
  - (c) Social and economic factors. 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 factors, and on the changes likely to occur in the foreseeable future, e.g. through the implementation of development plans. The subject matter will embrace such topics as settlements, industry, agriculture, fisheries, tourism and recreation.

30. 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.

#### The selection process

31. In interpreting and using the results of the survey, data storage and synthesis of critical habitats, the following factors should be taken into account:
- (a) the sites selected for protected area status should not be restricted to those in which no significant economic or social activities are envisaged, that is, areas left over after other uses have preempted the more valued resources. Where the biological or ecological resources are especially important, it may on occasion be desirable to reconsider the planned location of some economic activity; indeed, it may even be necessary to remove an existing enterprise altogether, e.g. to restore former environmental quality. Moreover, every opportunity should be taken to exploit mutually reinforcing activities through good planning and management. For example, a protected area such as a coastal park can be a source of attraction to tourists, and tourists can help finance its development; or protection offered to a marine area may ensure that commercial fishing spawning grounds are safeguarded at critical times, while allowing fishing when the spawning season is over;
  - (b) the method outlined above can be used for purposes other than the selection of protected areas. It can, for example, be used to help identify areas where industry or human settlements will be least damaging to the environment;
  - (c) the identification procedure will reveal 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 the criteria listed below.

#### Criteria for selection

32. These criteria should be applied objectively to the total list of candidate areas in order to establish priorities for the next step, establishment. It is most useful that criteria be applied not one at

a time, but together as a rating system. As these criteria are non-exclusive, it is unlikely that all will apply to any one area; thus, the values given will vary according to the circumstances. Each Government must identify the types of protection most suited to its requirements and resources, and assign values to criteria accordingly. A numerical rating system, as used in table 2, 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.

33. 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. If an area is critical to more than one species (or process), it should have high rating.

(b) Naturalness: the degree of perturbation of the area. Undisturbed areas should have higher rating.

(c) Representativeness: the degree to which the area is representative of a habitat type, ecological process, biological community, physiographic feature, or other natural characteristic. If no area of the type is protected, it should have high rating.

Note: A classification system for coastal and marine areas is desirable for the application of this criterion.

(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. These should have high rating.

(e) Diversity: the degree of ecosystem, community and species variety or richness. Areas having the greatest variety should receive priority. (However, 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) Integrity: the degree to which the area is a functional unit, that is, 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, and so higher rating should be given to such areas.

(g) Productivity: the degree to which productive processes within the area contribute to species or to human values. Productive areas which contribute most to ecosystem sustainment should receive high rating.

Note: Exceptions are eutrophic areas where high productivity may have a deleterious effect.

34. Scientific and educational criteria: these primarily concern areas for research and monitoring. Such areas may be natural or perturbed, and may accommodate training or educational programmes:
- (a) Proximity: the degree to which the area is accessible to those wishing to do research in it. Greater proximity should receive high rating.
  - (b) Benchmark: the degree to which the 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 and should receive a higher rating.
  - (c) Demonstration: the degree to which the area can serve to exemplify techniques or scientific methods. Such areas should receive higher rating.
  - (d) Process relationship: the degree to which the area represents ecological characteristics of regional value susceptible to research and study; these should receive a high rating.
35. Social and economical benefit criteria: these consider benefits to human welfare, measured in economic and social terms:
- (a) Economic benefit: the degree to which protection will affect the local economy in the long term. Initially, some protected areas may have a short-lived, disruptive economic effect. Those that have obvious positive effects should have a higher rating (for example, protection of feeding areas of commercial fishes, or of areas of recreational value).
  - (b) Social acceptance: 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 and the area should receive a higher rating; moreover, an "official" protected area designation may not be necessary if local support is high.
  - (c) Public health: the degree to which the creation of a protected area may serve to diminish pollution or other 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: areas which benefit the local community by providing them with the opportunity to use, enjoy and learn about their local natural environment should receive high rating.
  - (e) Tourism: areas which lend themselves to forms of tourism which are compatible with the aims of conservation should receive high rating.

36. Landscape and cultural criteria: these consider benefits which provide pleasure to people or enrich their appreciation of the natural or historic environment:
- (a) Landscape: natural areas which also contain features of exceptional natural beauty should be given higher rating, since such areas depend upon the maintenance of the integrity of the coastal and adjacent marine systems.
  - (b) Cultural: natural areas which also contain important cultural, artistic or historic features should be given high rating as their protection may help maintain the integrity of the adjacent ecosystem.
37. 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 an area may make to a Mediterranean network of protected areas:
- (a) Regional significance: the degree to which the area represents a characteristic of the Mediterranean - 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 region as a whole. As both ecological processes and natural resources are shared among Mediterranean nations, areas contributing towards maintenance of species or of ecosystems beyond national boundaries should have high rating.
  - (b) Sub-regional significance: within the Mediterranean there are numerous sub-regions whose characteristics would be classified by a regional classification scheme. It is relevant, therefore, to determine whether an area fills a gap in the network from a sub-regional point of view. This may be done by comparing the distribution of protected areas with sub-regional characteristics. If a type of area is preserved in one sub-region, that type should also be protected in another sub-region.
  - (c) Awareness: the degree to which monitoring, research, education, and/or training within the area can contribute knowledge and appreciation of regional values. Areas which can combine such activities as pollution monitoring and education should have high rating.
  - (d) Conflict and compatibility: the degree to which the area may help to resolve conflicts between natural resource values and human activities, or the degree to which compatibilities between them may be enhanced. If areas can be used to exemplify the resolution of conflicts elsewhere in the region, it should receive high rating. Protected areas which demonstrate the benefits, values or methods of protection and/or restoration should also have high rating.



38. Pragmatic 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 the 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 should have high rating.
  - (c) Defensibility: the degree to which an area can be properly safeguarded or restored. Sites which are defensible should have high rating.
  - (d) Availability: the degree to which the area is available for acquisition or can be managed satisfactorily by agreement; such areas should have high rating.
  - (e) Accessibility: the degree to which the area is accessible to those managing it or those doing research or other activities within it; such areas should have high rating. Indeed, areas of very low accessibility may be protected by that fact.
  - (f) Restorability: the degree to which the area may be returned to its former natural state. Areas capable of having their productivity increased should receive high rating.

IV GUIDELINES FOR THE ESTABLISHMENT OF MEDITERRANEAN PROTECTED AREAS

39. 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.
40. 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

41. 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.
42. The initial point of consideration is one of jurisdiction in international law. 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.
43. Having determined the nature of the coastal State's authority over the marine area in question, it is next necessary to give consideration to jurisdictional responsibility within that State. Depending upon the legal system involved, authority over marine areas may fall in whole or in part to a variety of Governmental departments or federal sub-units. Coordination between these bodies is essential and must be reflected in the legislation establishing the area if effective protection and management are to be achieved.
44. 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. For a more detailed treatment of the legal requirements for the establishment of protected areas, the reader is referred to document UNEP/IG.20/INF.3, Survey of existing national legislation relevant to Mediterranean protected areas, a study specially made for the Mediterranean. For a consideration of protected areas in general, see also Lausche, B, (in preparation). Guidelines for Protected Areas Legislation, IUCN, Gland.

#### Procedures for Establishing individual Protected Areas

45. These involves five closely-related phases: (i) collation of information; (ii) determination of objectives; (iii) delineation of boundaries; (iv) preparation of preliminary management plans; and (v) association with international agreements.
  
46. 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 (Paragraph 30), preferably in two forms cross-referenced to each other: data banks, and maps or charts. Information corresponding to the various headings of the sheets of the proposed Directory of Mediterranean protected areas, 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
  
47. 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. This is essential for the delineation of boundaries and the zoning of the area. Objectives should not be generalised declarations of intent, but concise and precise statements which provide practical guidance for the management of the area, and the basis upon which to assess whether the protected area is achieving the purposes for which it was set up. As mentioned above (paragraph 17), protected area type is determined by the objectives for its management.

48. Delineation of boundaries: boundaries must be determined to provide maximum protection for incorporated values. However, the inclusion of an entire ecological unit is not often 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. Thus the productivity of the core wetland may be protected. Buffer zones are also often suitable for scientific manipulation which may be unacceptable within core areas. The concept of "multiple use" obviously applies within the buffer zone as a method for reconciling potentially conflicting or competitive uses of the area. In this connection, the earlier discussion of residuals (paragraph 26) is relevant.
  - (c) Multiple core-buffer systems involve extensive areas containing several core areas within a large buffer. These systems involve the widest application of protected area concepts. 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.

49. Preparation of a preliminary management plan: 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 preliminary management plan which should set out:
- (i) the objectives for the area;
  - (ii) boundaries;
  - (iii) the most sensitive zones, unique resources, interesting features, accesses, etc.;
  - (iv) the origin and intensity of the main actual or potential threats to the area;
  - (v) 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;
  - (vi) major gaps in knowledge about the area and priorities for gathering future information.

Much of this information can be shown on maps, which should be 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.

50. The preliminary management plan should, indeed, be preliminary. It 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. 63), 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.
51. Association with international agreements or standards: in the establishment of a protected area, due consideration should be given to relevant criteria or standards recognized at the regional or international level, and to relevant international agreements. 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.



TABLE 2

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 32.

| Ecological<br>Criteria (para. 33)      | Site 1    | Site 2    | Site 3 | Site 4 |
|--|-----------|-----------|--------|--------|
| Dependency                             | 4         | 3         |        |        |
| Naturalness                            | 1         | 5         |        |        |
| Representativeness                     | 3         | 3         |        |        |
| Uniqueness                             | 1         | 4         |        | etc.   |
| Diversity                              | 4         | 4         |        |        |
| Integrity                              | 4         | 4         |        |        |
| Productivity                           | 3         | 2         |        |        |
| <b>Total</b>                           | <b>20</b> | <b>25</b> |        |        |
| <b>Scientific/Education (para. 34)</b> |           |           |        |        |
| Proximity                              |           |           |        |        |
| Benchmark                              |           |           |        | etc.   |
| Demonstration                          |           |           |        |        |
| Process Relationship                   |           |           |        |        |
| <b>Total</b>                           |           |           |        |        |
| <b>Social/Economic (para. 35)</b>      |           |           |        |        |
| Economic benefit                       |           |           |        |        |
| Social Acceptance                      |           |           |        |        |
| Public Health                          |           |           |        | etc.   |
| Recreation                             |           |           |        |        |
| Tourism                                |           |           |        |        |
| <b>Total</b>                           |           |           |        |        |

TABLE 2 (cont.)

CRITERIA FOR SELECTION OF PROTECTED AREAS

| Landscape/Cultural<br>(para. 36) | Site 1 | Site 2 | Site 3 | Site 4 |
|----------------------------------|--------|--------|--------|--------|
|----------------------------------|--------|--------|--------|--------|

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|                       |  |  |  |      |
|-----------------------|--|--|--|------|
| Landscape<br>Cultural |  |  |  | etc. |
|-----------------------|--|--|--|------|

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Total

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Regional (para. 37)

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|  |  |  |  |      |
|--|--|--|--|------|
| Regional Significance<br>Sub-regional<br>Significance<br>Awareness<br>Conflict/Compatibility |  |  |  | etc. |
|--|--|--|--|------|

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Pragmatic (para. 38)

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|   |  |  |  |      |
|---|--|--|--|------|
| Urgency<br>Opportunism<br>Defensibility<br>Availability<br>Accessibility<br>Restorability |  |  |  | etc. |
|---|--|--|--|------|

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V GUIDELINES FOR THE MANAGEMENT OF MEDITERRANEAN PROTECTED AREAS

52. 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 principles and guidelines, should be allowed for. It is exceedingly important, therefore, that "adaptive" mechanisms exist to accommodate management flexibility.
53. 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 should aim at the most appropriate use of the area. 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.
54. Each category of protected area (Table 1) will require different management regimes; and each individual area will also require different management. Only a general outline is provided here, covering the following seven elements of management:
- (i) administration;
  - (ii) personnel and training;
  - (iii) equipment and infrastructure;
  - (iv) finance;
  - (v) education and public awareness;
  - (vi) use and regulation;
  - (vii) management plan.
55. Administration: an institutional infrastructure is required which will facilitate the attainment of the objectives for the area. Taking into account the need to adapt to national requirements, it is probable that most Mediterranean countries which have not already done so, will wish to establish a two-level protected area administration, as follows:
- (a) National level administration: under appropriate national legislation, this would be responsible for: the overall development of protected area policy, including advice to Government on such matters; disbursement of resources available at the national level; appointment of protected area managers

(i.e., chief officers), normally one for each protected area; involvement in the preparation and/or approval of management plans for protected areas; general guidance on protected area management; and all other matters where national level leadership or decision-making is desirable.

- (b) Protected area level administration: each protected area would normally require its own administration. This may be discharged by the chief officer under guidance from the national level administration; he may be assisted by a local committee. The local administration would be responsible for: preparing the management plan (paragraph 63) and for its implementation; hiring its own staff, (although the chief officer of each protected area would normally be appointed at the national level); day-to-day decisions on finance; liaison with the local community; provision of facilities for visitors; making and enforcing of regulations; and all other matters which are best left to local initiative.

56. 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.

57. 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.

58. 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.

59. 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.
60. 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 assistance to meet the costs of protected area management.
61. 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.
62. 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 (paragraph 51) 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. It will be helpful to distinguish between intensive use zones (where heavy visitor use is expected and catered for through, e.g. car parking provision, docking facilities, educational centres); extensive use zones (less developed for visitor use, but where informal facilities are provided, such as trails, viewing platforms, boat transport); wilderness zones (where no facilities are provided, but access is authorized under strict regulations); and scientific zones where only duly authorized visits are permitted for scientific missions. The distribution of such visitor use zones should, of course, correspond to the broad policy divisions arrived at in delineating core areas and buffer zones. For example, visitor use should be restricted in sensitive areas such as waterfowl breeding areas and seal pupping areas during breeding seasons; during other seasons, use could be made of such areas so long as habitat is preserved.
- (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 of the proposed Association of Mediterranean Protected Areas (see Paragraph 69) will facilitate the coordination of research and monitoring activities.

63. Management Plan: a management plan should be prepared for each protected area. It should be flexible so as to benefit from research, monitoring, and experience. It should set out:
- (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 resources (finance, personnel, equipment) to be used in protecting the area, and an explanation of the administrative structure and field staff to be provided;
  - (d) 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;
  - (e) the steps which are planned to gain the support of local people and visitors for the protection of the area and its resources;
  - (f) the uses which are to be permitted in the area, along with zoning and related regulations;
  - (g) 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;
  - (h) 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.
64. The plan should contain maps and a text. Initially it will derive from the preliminary management plan (paragraph 49) and 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 AREAS

The Regional Level 4/

65. 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);
  - 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 (e.g. transport, pollution, and fisheries). A regional appreciation is required so that one nation's activities do not conflict with those of others.
66. Second, 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

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4/ 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 should the absence of a regional study and classification scheme be an excuse 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. Nations may act individually, but they also interact with the whole system, whether it is their wish or not.

67. Third, 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. Data collected within national boundaries or international waters will make more sense in a regional context; and a network of monitoring stations in protected areas will provide the opportunity for tracking and measuring pollution effects.
68. Fourth, 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.

#### Proposed Association of Mediterranean Protected Areas

69. 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 cooperation <sup>5/</sup>. While national actions should not wait upon regional cooperation, it is suggested that the long-term interests of Mediterranean States will be best served through the establishment of an Association of Mediterranean Protected Areas, as recommended at various meetings of Mediterranean Coastal States.
70. Composition and constitution: Such an association might be established within the framework of the Mediterranean Action Plan. It could consist of 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. In order for the association to function properly, it would probably need to have a secretariat; this could be provided by one of the members of the association, with appropriate assistance from a competent international organization.

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<sup>5/</sup> The protection of certain resources, for example an ecologically important wetland which is split by an international frontier, calls for bilateral cooperation. In some cases it may be desirable to create an international reserve, administered by two adjoining Mediterranean States, but managed as a single entity.

71. Functions: The association would be most effective if it were to fulfil the following functions in respect of protected areas:
- identification of conservation needs according to regional requirements;
  - sharing of experience, refinement of methodology and international cooperation in surveys and criteria to identify critical areas for protection;
  - encouragement of the preparation of regional and sub-regional habitat classification schemes;
  - development measures for the protection of migratory species;
  - exchange of information on protected areas status, development and management;
  - development of opportunities for the exchange of ideas and personnel;
  - encouragement of training activities at the regional level;
  - provision of technical advice on the implementation of the aspects of the Convention on the Protection of the Mediterranean Sea against Pollution and its protocols, which are relevant to protected areas.

The association would need to give particular attention to the needs of developing countries in carrying out its functions.

72. One particularly important function of the association would be support to the 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 cooperation: each will be responsible for the protection of values shared by and common to its neighbours, and to the region as a whole.
73. Modus operandi: Much of the association's work could be conducted through correspondence and circulation of bulletins, but annual (or more frequent) meetings would probably be required. It might prepare reports, including recommendations for specific action, for meetings of the Parties to the Convention for the Protection of the Mediterranean Sea against Pollution and Intergovernmental Review Meetings of the of the Mediterranean Coastal States on the Mediterranean Action Plan. The association should maintain regular contact with organizations active in the field of protected area conservation, both regionally and internationally.



Network of Mediterranean protected areas

74. 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 the proposed Association of Mediterranean Protected Areas, 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.

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ANNEX I

CATEGORIES OF PROTECTED AREAS

The following categorisation of protected areas is based upon the paper "Categories, Objectives and Criteria for Protected Areas" (IUCN, 1978). It provides basic guidance on the types of protected areas which can be established and on their selection and management. The categorisation was drawn up principally with terrestrial areas in mind, but it can also be readily adapted to marine conditions also.

GROUP A (see para. 17)

Category I - Scientific Reserves/Strict Nature Reserves

Selection and Management

These areas possess some outstanding ecosystems, features and/or species of flora and fauna of national scientific importance. They are generally closed to public access, recreation and tourism. They often contain fragile ecosystems or life forms, areas of important biological or geological diversity, or are of particular importance to the conservation of genetic resources. Size is determined by the area required to ensure the integrity of the area to accomplish the scientific management objective and provide for its protection.

Natural processes are allowed to take place in the absence of any direct human interference. These processes may include natural acts that alter the ecological system or physiographic feature at any given time, such as naturally occurring fires, natural succession, insect or disease outbreaks, storms, earthquakes and the like, but necessarily exclude man-made disturbances. The educational function of the site is to serve as a resource for studying and obtaining scientific knowledge.

Land-use control and ownership should in most cases be by central government. Exceptions may be made where adequate safeguards and controls relating to long-term protection is ensured and where the central government concurs.

Category II - National Parks/Provincial Parks

The criteria for the selection of national parks for the List are the same as the criteria used in 1975 with the exception of "effective protection". At its meeting in February 1978, in Portugal, the Commission decided to delete the financial and staff criteria for effective protection. A CNPPA task force will redefine what is considered to be effective protection.

Definition of National Park

The 10th General Assembly of IUCN, held in New Delhi in November 1969 approved a definition of the term "national park" in accordance with the following resolution:

Considering the importance given by the United Nations to the national park concept, as a sensible use of natural resources, and considering the increasing use which has been made during these last few years in some countries of the term "national park" to designate areas with increasingly different status and objectives. The 10th General Assembly of IUCN meeting in New Delhi in November 1969 recommends that all governments agree to reserve the term "national park" to areas answering the following characteristics and to ensure that their local authorities and private organizations wishing to set aside nature reserves do the same:

A national park is a relatively large area: 1) where one or several ecosystems are not materially altered by human exploitation and occupation, where plant and animal species, geomorphological sites and habitats are of special scientific, educative and recreative interest or which contains a natural landscape of great beauty; and 2) where the highest competent authority of the country has taken steps to prevent or eliminate as soon as possible exploitation or occupation in the whole area and to enforce effectively the respect of ecological, geomorphological or aesthetic features which have led to its establishment; and 3) where visitors are allowed to enter, under special conditions, for inspirational, educative, cultural and recreative purposes.

Governments are accordingly requested not to designate as "national park":

1. A scientific reserve which can be entered only by special permission (strict nature reserve).
2. A natural reserve managed by a private institution or a lower authority without some type of recognition and control by the highest competent authority of the country.
3. A "special reserve" as defined in the African Convention on the Conservation of Nature and Natural Resources of 1968 (fauna or flora reserve, game reserve, bird sanctuary, geological or forest reserve, etc.).
4. An inhabited and exploited area where landscape planning and measures taken for the development of tourism have led to the setting up of "recreation areas" where industrialization and urbanization are controlled and where public outdoor recreation takes priority over the conservation of ecosystems (parc naturel régional, nature park, Naturpark, etc.). Areas of this description which may have been established as "national parks" should be redesignated in due course.

This resolution was subsequently adopted by the Second World Conference on National Parks (Yellowstone and Grand Teton National Parks, 1972).

#### Size

The minimum surface area for inclusion in the List is 1,000 hectares and this must consist entirely of zones in which protection of nature takes precedence (e.g. strict natural zones, managed natural zones or wilderness zones). Zones developed or modified for administrative or touristic purposes are excluded in calculating the minimum area. Exceptions may be made for islands.

### Exploitation

In general, exploitation of natural resources must be prohibited in an area which is to be included in the List. Exploitation, in this sense, is considered to include the removal of mineral resources, timber and other vegetation, and animal life, or the development of dams or other structures for irrigation or hydroelectric power. Prohibition should extend to agricultural and pastoral activities, hunting, fishing, lumbering, mining, public works construction (transportation, communications, power, etc.), and residential, commercial or industrial occupation.

Certain exceptions to this general rule may be permitted:

1. Some of the activities included in the general prohibition must be permitted in those national parks and related reserves in which zones have been established to protect a cultural heritage (e.g. managed agricultural or pastoral landscape zones; villages, towns or urbanized areas of historical or archaeological interest, etc.), since these activities form part of the heritage to be protected.
2. Sport fishing is regarded in the same category as sport hunting and should normally be excluded from national parks and equivalent reserves. It must be totally excluded from strict natural areas or nature reserves. In wilderness areas the continuance of sport fishing, where this has been a traditional practice, will not be a basis for exclusion from the List, providing adequate fauna exist in other areas. Sport fishing may be accepted in zones developed for intensive recreational or touristic use.

It is recognized that within the boundaries of certain national parks there are existing villages, towns, communication networks, and the on-going activities connected with them (apart from those referred to under exception 1. above). Provided that these areas do not occupy a significant part of the land and are de facto zoned and so arranged that they do not disturb the effective protection of the remaining area, they will not be considered as a basis for exclusion from the List.

Similar considerations apply in regard to private rights which existed before the reserve was created, such as residential rights or rights to practise agricultural, pastoral or mining activities, always provided that these rights are confined to a small part of the area. They should not be permanent and their redemption or termination should be anticipated in the long term.

The general requirement against exploitation must be rigidly enforced.

### Management activities

Not to be considered under the category of exploitation are those activities necessary for the administration and management of the protected area, or for the reasonable development of a national park or provincial park as a site for public outdoor recreation or tourism. Amongst these activities are the following:

1. Since public access is allowed in areas in the List of National Parks and Equivalent Reserves, the construction and maintenance of a road network, the setting aside of areas for public accommodation with



consequent cultivation of gardens and the construction of recreation facilities, and related services must be permitted. However, accommodation, recreation facilities and the like should not be scattered throughout the protected area, and the area they occupy should be restricted to a minimum. They should be located in areas zoned for this purpose or preferably located outside the reserve.

2. The public works necessary for the actual administration and management of the protected area, including staff housing, offices, access roads, gardens, and so on are permitted but should also be restricted to a minimum.
3. Management activities for the purpose of maintaining the desired flora or fauna are an essential ingredient in the conservation of protected areas in the managed natural zones and nature reserves and are permitted in them. These may include the removal of animals by shooting or capturing to maintain population levels, the removal of undesirable vegetation, and the use of controlled burning or grazing to maintain particular plant communities.

### Zoning

At the 11th General Assembly of IUCN at Banff it was agreed by the Commission that areas to be designated as national parks should include areas here designated as "strict natural zones", "managed natural zones", and "wilderness zones".

In addition it was agreed that they could appropriately contain areas of the kind here designated as "protected anthropological zones" or "protected historical" or "archaeological zones". To be considered as national parks, however, they must be available for public visitation. This use, it was agreed, could be combined with the primary function of nature conservation through a system of zoning. In this, one zone would be established in which roads or other access ways may be constructed, buildings or other structures to accommodate tourism and park administrative functions may be located, and in which appropriate recreational facilities may be placed. This special tourism/administrative zone would not be one designated primarily for nature conservation, but would be so delimited and located as to create minimum interference with the nature conservation function of the park. National parks can also satisfy the public visitation function by establishment of wilderness areas over all or part of the national park, thus providing for limited tourism of a special kind.

To qualify as a national park, in the IUCN sense, an area may consist of various combinations of zones, as follows:

1. Wilderness zone only.
2. Wilderness zone combined with strict natural zone, managed natural zone or both.
3. Any or all of the above zones combined with a tourist/administrative zone.
4. Any or all of the above zones combined with one or more zones classified as anthropological, archaeological or historical.

### Category III - Natural Monuments/Natural Landmarks

#### Selection and Management

This category normally contains one or several specific natural features of outstanding national significance such as geological formation, a unique natural site, animal or plant species or habitat which, because of uniqueness or rarity, may be threatened and should be protected. The specific feature to be protected ideally has little or no evidence of man's activities. These features are not of the size nor is there a diversity of features or representative ecosystems which would justify the area's inclusion as a national park. These areas have particular potential for public education and appreciation. Size is not a significant factor; the area should only be large enough to protect the integrity of the site.

Although Category III areas may have recreational and touristic value, they should be managed in such a way that they remain relatively free from human disturbance. These areas may be owned and managed by either central or other government agencies or non-profit trusts or corporations, as long as there is assurance that they will be managed to protect their inherent features for the long term.

### Category IV - Nature Conservation Reserves/Managed Nature Reserves/Wildlife Sanctuaries

#### Selection and Management

A Category IV area is desirable when protection of specific sites or habitats is essential to the continued existence or well-being of individual biotic species, resident or migratory fauna of national or global significance.

Although a variety of (protected) areas fall within this category, each would have as its primary purpose the protection of nature, and not the production of harvestable, renewable resources, although this may play a role in the management of a particular area. The size of the area or, in certain instances, seasons in which special management is necessary, will be dependent upon the habitat requirement or specific characteristics of the species to be protected. These need not require vast areas but could be relatively small, consisting of nesting areas, marshes, or lakes, estuaries, forest, or grassland habitats.

The area may require habitat manipulation to provide optimum conditions for the species, vegetative community, or feature according to individual circumstances. For example, a particular grassland or heath community may be protected and perpetuated through a limited amount of livestock grazing. A marsh for wintering waterfowl may require continual removal of excess reeds and supplementary planting of waterfowl food, whereas a reserve for an endangered animal may need protection against predators. These areas may be developed in limited areas for public education and appreciation of the work of wildlife management.

Ownership may be by the central government or, with adequate safeguards and controls in which long-term protection is ensured, by lower levels of government, non-profit trusts or corporations, or private individuals or groups.

Category V - Protected Landscapes

Selection and Management

The scope or character of areas that fall within this category are necessarily broad because of the wide variety of semi-natural and cultural landscapes that occur within various nations. This may be reflected in two types of areas: those whose landscapes possess special aesthetic qualities, which are a result of the interaction of man and land, and those that are primarily natural areas managed intensively by man for recreational and touristic uses.

In the first case, these landscapes may demonstrate certain cultural manifestations such as: customs, beliefs, social organization, or material traits as reflected in land-use patterns. These landscapes are characterized by either scenically attractive or aesthetically unique patterns of human settlement. Traditional land-use practices associated with agriculture, grazing, and fishing would be dominant. The size of the area would be large enough to ensure the integrity of the landscape pattern.

In the latter case, natural or scenic areas found along coastlines and lake shores, in hilly or mountainous terrain, along the shores of rivers, or inland, adjacent to important tourist highways or population centres, and offering scenic views and climatic variation, are often included. Many will have the physical qualities and potential to be developed for a variety of outdoor recreational uses with national significance.

In some cases the land would be privately held and the use of either central or delegated planning control would likely be necessary to assist in the perpetuation of both the land use and life style. Means of subsidization, or other government assistance, might be required for external renovations or construction to disguise improvements in the standard of living while recognizing the dynamics of evolution of the land and its use. Efforts would be made to maintain the quality of landscape through appropriate management practices. In other instances the areas are established and managed under public ownership in perpetuity.

GROUP B (see para. 17)

Category VI - Resource Reserves

Selection and Management

Category VI areas will normally comprise extensive and relatively isolated and uninhabited areas having difficult access, or regions that are lightly populated yet may be under considerable pressure for colonization and greater utilization. In many cases, there has been little study or evaluation of these areas, and the consequence of converting these lands to agriculture, mineral or timber extraction, or the construction of roads, etc. is unclear. Similarly, use of the resources may not be appropriate because of the lack of technology, human or financial resource restrictions or alternate national priorities. Consequently, natural, social, and economic values are not sufficiently identified to permit the area to be managed for specific objectives or to justify its conversion to other land uses. Restricted access is implied so areas will normally require control,

depending upon the pressures to enter and utilize the area. Some lands may be government-owned while others may be owned or administered by public corporations.

Maintenance of existing conditions to allow for studies as to the potential use for the designated areas is a prerequisite. Protection, studies, and planning are envisaged as the major activities while under this short-term designation. No exploitation should occur, with the exception of use of resources by indigenous inhabitants. There is an acceptance of ongoing eco-sensitive activities.

#### Category VII - Anthropological Reserves/Natural Biotic Areas

##### Selection and Management

Category VII areas are characterized by natural areas where the influence or technology of modern man has not significantly interfered with or been absorbed by the traditional ways of life of the inhabitants. These areas may be remote and isolated and their inaccessibility may be maintained for a considerable period of time. The societies are considered relatively unique and may be of particular significance to the maintenance of genetic diversity and/or for research as to the evolution of man. These are predominantly natural areas of which man is an integral component. There is a strong dependence of man upon the natural environment for food, shelter, and other basic material to sustain life. Extensive cultivation or other major modifications to the vegetation and animal life are not permitted.

Management is oriented toward the maintenance of habitat for traditional societies so as to provide for their continuance within their own cultural mores.

#### Category VIII - Multiple Use Management Areas/Managed Resource Areas

##### Selection and Management

A large area, containing considerable territory suitable for production of wood products, water, pasture, wildlife, and outdoor recreation. Parts of the area may be settled and may have been altered by man. Generally, these forest or other wildland areas do not possess nationally unique or exceptional natural features.

Planning to ensure the area is managed on a sustained yield basis would be a prerequisite. Land ownership would be under government control. Through proper zoning, significant areas could be given specific additional protection. For instance, the establishment of wilderness-type areas is consistent with the purpose of these areas as would be setting aside nature reserves. Multiple use, in the context of Category VIII, is considered to be the management of all renewable surface resources, utilized in some combination to meet best the needs of the country. The major premise in the management of these lands is that they will be managed to maintain the overall productivity of the land and its resources in perpetuity.

GROUP C (see para. 17)

Category IX - Biosphere Reserves

Selection and Management

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. A biosphere reserve must have adequate long-term legal protection. Each biosphere reserve will be large enough to be an effective conservation unit, and to accommodate different uses without conflict. Each reserve must be approved by the Man and the Biosphere International Coordinating Council before it can receive designation as a biosphere reserve.

Each biosphere reserve will be zoned to provide direction as to its management. Four zones may be delineated as follows: (a) Natural or Core Zone; (b) Manipulative or Buffer Zone; (c) Reclamation or Restoration Zone; and (d) Stable Cultural Zone.

Category X - World Heritage Sites (Natural)

Selection

The World Heritage List is intended to include only areas of "outstanding universal value". In this respect each nation will not necessarily have a World Heritage site. 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.

Criteria for the inclusion of natural properties in the World Heritage List as established by the World Heritage Committee:

Outstanding universal value will be recognized when a natural heritage property - as defined in Article 2 of the Convention - submitted for inclusion in the World Heritage List, is found to meet one or more of the following criteria. Therefore, properties nominated should meet the following (abridged) criteria:

- (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.

It should be realized that individual sites may not possess the most spectacular or outstanding single example of the above, but when the sites are viewed in a broader perspective with a complex of many surrounding features of significance, the entire area may qualify to demonstrate an array of features of global significance.

All areas must also meet the criteria of "integrity".

ANNEX II

Organizations and Institutions which can provide advice and assistance on various aspects of the identification, establishment and management of protected areas, and generally on conservation.

UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP)

P.O. Box 30552

Nairobi

Kenya

REGIONAL SEAS PROGRAMME ACTIVITY CENTRE

UNEP/Palais des

1211 Geneva 10

Switzerland

General environmental matters.

FOOD AND AGRICULTURAL ORGANIZATION OF THE UNITED NATIONS (FAO)

Via delle Terme di Caracalla

1 - 00100 Rome

Italy

Fisheries, forestry, national parks, international conventions.

UNITED NATIONS EDUCATIONAL, SCIENTIFIC & CULTURAL ORGANIZATION (Unesco)

7 Place de Fontenoy

F - 75700 PARIS

France

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

COUNCIL OF EUROPE

F - 67006 Strasbourg

Federal Republic of Germany

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.

UNEP/IG.20/3

Annex II

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WORLD WILDLIFE FUND (WWF)

Avenue du Mont-Blanc

CH-1196 Gland

Switzerland

Financial assistance for conservation projects.